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BWC Wades Stream, LLC
c/o BlueWave Solar
2.0 MW AC Ground-Mount Solar PV Development

Stormwater Management Report

2026-07-07

US-EI-3652230438

Document distribution

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Prepared for

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c/o BlueWave Solar

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Submitted to

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Abbreviations and glossary

Abbreviations

Abbreviation	Description
AC	Alternating Current
BESS	Battery Energy Storage System
DP	Design Point
HSG	Hydrologic Soil Group
IWPA	Interim Wellhead Protection Area
LOW	Limit of Work
LTPPP	Long-term Pollution Prevention Plan
LUHPPL	Land use with higher potential pollutant loads
MS4	Municipal Separate Storm Sewer System
MV	Medium Voltage
MW	Megawatt
O&M	Operation and maintenance
PV	Photovoltaic
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UP	Utility pole
WSPD	Water Supply Protection District

Glossary of terms

Term	Explanation
Ephemeral stream	A watercourse that only flows during and shortly after rainfall events
Forested wetland	Inland wetland where the dominant vegetation consists of woody trees over 20 feet tall
Project area	The all-encompassing area within the limit of work and disturbance
Shallow marsh/fen wetland	A.K.A. Emergent Wetland; wetland in which the tallest life form is emergent plants (erect & rooted hydrophytes) covering at least 30% of the area
Property	Parcel of land which the Project is located on: Tax Map 407 Lot 28

Executive summary

WSP USA Inc. (WSP) performed a stormwater evaluation to assess the impacts of the proposed 2.0-megawatt (MW) alternating current (AC) solar photovoltaic (PV) development (the Project) being installed at 190 Ridge Road, Worthington, MA (the Property). Stormwater drainage plans are attached to this report for reference (Appendix F – Drainage Figures). The 30.22-acre project area includes proposed ground-mounted PV modules on tracker systems. The array will be surrounded by a fixed knot game fence. Existing vegetative borders shall be maintained, and additional trees shall be planted as screening. An existing gravel driveway connects the Property to Ridge Road and will be widened to 20 feet to a hammerhead intersection for maintenance access. A temporary extended construction vehicle turnaround shall be installed for larger delivery vehicles. The Project includes a consolidated 4,790 square feet gravel equipment pad area with individual concrete foundations for each piece of equipment. This equipment includes inverters, switchboards, transformers, and Battery Energy Storage System (BESS) components. A total of 12 separate concrete foundations will be installed within the gravel equipment pad area with a combined area of 830 square feet. Power from the transformer will run in underground Medium Voltage (MV) lines to a series of seven proposed utility poles along the driveway. Overhead MV lines will connect the array to an interconnection point at an existing utility pole near the intersection of the existing driveway and Ridge Road (UP #27-20-11). The array will also be accompanied by 1.0-3.0 MW of Battery Energy Storage System (BESS) equipment located within the consolidated gravel equipment pad area. The BESS will consist of the cabinet body, Lithium Iron Phosphate (LFP) battery system, temperature control system, and fire suppression system. All BESS components will be located outside of the Worthington Water Supply Protection District (WSPD), which overlaps with the field primarily north of the driveway. To provide screening and manage stormwater runoff from the northern portion of the Project area, a landscaped earthen berm will be constructed along the northeastern side of the Property, generally oriented in a north-south direction. The berm will intercept and redirect flow from the array area towards the south. Runoff will be conveyed along the berm and into a riprap apron designed for energy dissipation. Flow will then be directed eastward where further energy dissipation devices such as level spreaders will ensure sheet flow conditions. This runoff will follow existing drainage paths along the stonewall south to the driveway. A grassed conveyance channel will direct flow eastward along the northern side of the proposed access road and have associated pipe outlets to carry the water under the roadway and into a riprap apron/stilling basin to manage sediment and direct runoff away from the equipment pad. Two organic media filters will be installed to treat and recharge groundwater. All stormwater management practices have been designed to maintain the required separation from groundwater in accordance with applicable standards. WSP has performed the analysis described in detail below to compare the existing (pre-construction) stormwater runoff volumes and rates to the proposed (post-construction) stormwater runoff volumes and rates. The analysis includes contributing offsite drainage areas which may impact downstream BMPs and assumes that existing downstream conveyance infrastructure, including the culvert near the southeast portion of the site, is functional and actively conveying flow.

1. Stormwater Modelling

1.1 Existing Conditions

The 71.6-acre Property's primary use is agricultural hay production. A gravel driveway provides access to some structures on Property and a gravel pit is area used for storage. There are three structures present on-site: a house, barn, and log cabin. A presumably domestic use well was identified during a field survey by SGC Engineering, LLC (SGC) in November 2023 within the northern hay field near the house. While the primary use of the Property is agricultural, approximately a third of the Property is forested. Watts Stream flows directly through the Property within the forested portion. Adjacent to the western side of the Property, there is a swath of permanently protected forested open space. This land is either owned by the Commonwealth, the Town, nonprofits, or is conserved under an Agricultural Preservation Restriction (APR) or Conservation Restriction (CR).

1.1.1 Soils

The Property is made up of soils rated as Hydrologic Soil Group (HSG) C and D with a slow to very slow infiltration rate. Soils near the house, barn and pit area are HSG C. Majority of the hay fields are HSG D and classified as either farmland of statewide importance or prime farmland. Farmland classification and HSG was obtained from publicly available United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) soil surveys at the Property (Appendix B – Soils Information). Soils within the Project area are primarily classified as fine sandy loam with an assumed conductivity of 0.17 inches per hour according to the 1982 Rawl's Rates referenced in the Massachusetts Stormwater Handbook (the Handbook).

1.1.2 Waters

1.1.2.1 Wetlands

Fleetwood Environmental Solutions, LLC (Fleetwood) performed a wetland and waterbody delineation field survey of the Property in Q2-3 of 2023 and delineated two wetlands near the Project area. These wetland systems will be referred to according to their relative location on the Property: west and southeast. Both wetlands are classified as bordering vegetated wetlands. The western wetland connects to Watts Stream through a series of ephemeral streams and their associated wetlands. Watts Stream flows through the Property and has corresponding forested and shallow marsh/fen wetlands. The southeastern wetland is downstream of a culvert under an overgrown driveway to the log cabin on the south side of the Property. An apparent man-made drainage swale provides a flow path for runoff from the culvert at the southern edge of the Property through the adjacent property to at least the edge of the forest surrounding Watts Stream.

Following Massachusetts Department of Environmental Protection (MassDEP) review of a Request for a Determination of Applicability (RDA) submitted on December 15, 2025, a third wetland has been delineated in the western portion of the Property within the pit area. The pit area wetland appears to have been established from a man-made ditch for stormwater control. The wetland drains

south/southwest into the western wetland delineated by Fleetwood which ultimately connects to Watts Stream.

1.1.2.2 Groundwater

The water table across the Project area is estimated 1.5 feet or more below the ground surface based on the USDA NRCS Web Soil Survey publicly available data. The water table is where the soil is considered saturated, soils with higher water tables will infiltrate less water because they have less capacity for storage of water and, therefore, they also generate more runoff. A Phase I geotechnical investigation performed by WSP in March 2026 observed groundwater seepage in test pits at depths ranging from approximately 2 to 8 feet below ground surface, indicating that groundwater levels generally follow site topography and may fluctuate seasonally based on precipitation and site conditions.

While publicly available data could not be found for the well on-site, multiple wells on adjacent properties have Well Driller Reports filed with the MA Executive Office of Energy & Environmental Affairs. These reports provide an estimated on-site depth to static water level of 20 feet and depth to bedrock approximately 15 feet below ground surface.

Approximately 22,560 square feet of an Interim Wellhead Protection Area (IWPA) falls within the Property and 20,316 square feet of that is within the Project limit of work. Approximately 350 feet from the Property is a transient non-community groundwater well which is considered a public water supply source. This well is identified as the Buffington Hill Partnership with ID 1349007-01G. Farther north along Ridge Road are ten wells which are community groundwater wells contributing to the public water supply of Worthington. These community groundwater wells are more than 1,000 feet from the Property. The area surrounding these wells and encompassing the associated IWPAs has been identified by Worthington as a Water Supply Protection District (WSPD). The northern portion of the Property falls within the WSPD, approximately 21 acres. The limit of work overlaps with the WSPD over approximately 19.6 acres. These wells and the WSPD have been taken into consideration when designing the Project layout and BMPs.

During the field assessments performed by Fleetwood in 2023, one of the Property owners, Timothy Sena, reported a historic drain tile system underlies both portions of the field divided by the driveway. To his knowledge, no surface outlet pipes beyond the fields exist and none were observed by Fleetwood. Additionally, no drain tiles were observed during phase I geotechnical investigations.

1.1.2.3 Floodplain

Overlapping with Watts Stream is FEMA Flood Zone A, meaning it has a 1% annual chance of flooding (once every 100 years) and a base flood elevation has not been determined (Appendix C – FEMA Map). The Project has a significant buffer from the floodplain (> 300 feet).

1.1.3 Drainage Patterns

An on-the-ground existing conditions topographic survey was completed by SGC in November 2023. The field areas where trackers and modules will be installed have slopes primarily between 0% and 10%. Runoff from the fields runs primarily in two directions: west and east. Runoff flowing west takes a more direct route to Watts Stream and its corresponding bordering wetlands. Runoff flowing east combines into a roadside ditch along Ridge Road. This drainage channel has a high point parallel to the

high point of Ridge Road, approximately 300 feet south of the Ridge Road and Buffington Hill Road intersection. Runoff entering the drainage channel north of this high point will flow north to an existing culvert crossing under Ridge Road at the intersection mentioned above. This water continues in roadside channels for approximately 2,400 feet where it then flows into Wards Stream. Runoff entering the drainage channel south of the high point will flow south through culvert reaches under two driveways intersecting with Ridge Road. The southernmost culvert being the same one mentioned in Section 1.1.2.1 which flows into a man-made drainage swale leading to Watts Stream.

Watts Stream (sub-basin 4,075) and Wards Stream (sub-basin 4,072) combine south of Witt Hill Road into Little River. Little River drains into Westfield River which is controlled by Knightville Reservoir before continuing its flow southeast to the Connecticut River. Knightville Reservoir is a U.S. Army Corps of Engineers flood control facility consisting of a dam and large reservoir. It has a drainage area of approximately 162 square miles and a flood storage capacity of 49,000 acre-feet. Its primary function is to regulate flows in the Westfield River to reduce flooding by gradually releasing stored water.

The Property is within the major watershed known as Westfield which is a sub-watershed of the Connecticut River Watershed. Both the Westfield (MA32-04) and Connecticut (MA34-05) basins have Massachusetts Statewide Total Maximum Daily Load (TMDL) for Pathogen-impaired Waterbodies (CN 515.1). Both are in reference to the pollutant *E. coli* under pollutant group Pathogens. The Westfield River Basin TMDL is preventative while the Connecticut River Basin TMDL is restorative.

1.2 Proposed Conditions

The Project includes the installation of ground-mounted PV modules on tracker systems. The array will be surrounded by a woven wire fence. The total fenced area of the Project is approximately 26.01 acres. Much of the Property has an existing vegetative border which shall be maintained as screening. Additional landscaped screening will be installed at the northern eastern side property line and along the eastern property line adjacent to Ridge Road south of the driveway. An existing gravel driveway connects the Property to Ridge Road. This driveway shall be improved and widened as necessary to provide a road width of 20 feet up to a new access hammerhead turnaround to provide access to the equipment pad for maintenance vehicles. The turnaround will have a temporary extension for larger vehicles during construction. The temporary construction turnaround will be removed and returned to typical vegetative cover upon completion of construction. A consolidated 4,790 square feet gravel equipment pad will be constructed with individual concrete foundations for each piece of equipment. This equipment includes inverters, switchboards, transformers, and Battery Energy Storage System (BESS) components. A total of 12 separate concrete foundations will be installed within the gravel equipment pad area with a combined area of 830 square feet. The BESS equipment will consist of the cabinet body, Lithium Iron Phosphate (LFP) battery system, temperature control system, and fire suppression system. Power from the transformer will run in underground Medium Voltage (MV) lines to proposed utility poles along the existing driveway. A total of seven utility poles will be installed between the existing driveway and proposed fence. Overhead MV lines will connect the array to an interconnection point at an existing utility pole near the intersection of the existing driveway and Ridge Road (UP #27-20-11).

The Project is an agrivoltaics system which allows dual use of the farmland for solar energy and hay production. Throughout the design process, the owner and farmer of the land has been consulted to affirm the solar PV development does not remarkably decrease hay production nor impede the use of the property.

The Project has been designed to minimize the total increase in impervious area and disturbance to surrounding natural resources to the maximum extent practicable while accomplishing the Project design goals (Table 1.1). In totality, the project covers approximately 30.22 acres of the Property and introduce approximately 13,121 square feet of impervious area. Majority of the increase in impervious area accounts for the consolidated gravel equipment pad and it's encompassed concrete foundations for electrical equipment, driveway widening, and hammerhead turnaround off the existing driveway. The fence posts and utility poles introduce a negligible amount of impervious area comparatively. Temporary construction disturbance areas are not included in the permanent impervious area totals and are assumed to be stabilized with vegetation in final site conditions.

Table 1.1 Land Disturbance Summary

Area Description	Area (square feet)
Limit of Work (LOW)	1,316,400
Existing Impervious Area	42,033
Proposed Impervious Area	55,154
Net Change in Impervious Area	13,121

1.2.1 Soils

Being an agrivoltaics system, nearly all of the farmland will continue producing hay post-construction. Permanent impacts to the prime and important farmland have been minimized to the maximum extent practicable while achieving the Project design goals.

Earthwork has been minimized to extent practicable; however, it is required for construction of BMPs, widening the access drive, and flattening areas for the consolidated gravel equipment pad. The design aims to balance the volume of cut and fill such that the transport of soil to and from the site is minimized. The construction of stormwater management features and access drives will require crushed stone deliveries to the site. A designated laydown area shall be used to store the stockpiles. Fertile soils/loam may be brought to the site to promote vegetative growth.

1.2.2 Waters

1.2.2.1 Wetlands

The Project has been designed with a significant buffer from Watts Stream (> 300 feet) and a 100-foot buffer from the wetlands for work particular to the solar installation. Portions of the wetland and wetland buffer are currently farmed, and the farmer intends to continue utilizing this area for hay production post construction. Farming improvements are exempt from Wetland Protection Act (WPA) regulations. The Applicant filed a Request for Determination of Applicability (RDA) from the Conservation Commission to confirm there shall be no impacts to the wetlands on the Property. The Conservation Commission issued a Negative Determination on January 21, 2026, confirming that the proposed work is not within an area subject to WPA jurisdiction and thus, no Notice of Intent (NOI) is required. MassDEP then issued a Superseding Determination of Applicability on April 24, 2026, with a Positive Determination noting the pit

area wetland in the western portion of the Property. The Project layout has since been updated to maintain a 100-foot buffer between the wetland and solar generating equipment. An NOI is being prepared and will be submitted for approval for improvements within Site wetland buffers. All construction activities will occur outside of jurisdictional wetlands. Temporary construction impacts will be controlled through best management practices as detailed in the erosion and sediment control plans and report section (Section 2.1).

1.2.2.2 Groundwater

Through installation of the proposed BMPs, properly treated groundwater recharge volume on-site shall increase. A negligible amount of impervious area shall be introduced within the IWPA at the northern edge of the Property. Recharge BMPs and earthwork in general shall not be within the IWPA. The northeast portion of the consolidated gravel equipment pad as well as majority of the access drive expansion are located primarily within the broader WSPD. The concrete equipment foundation supporting BESS components is located outside of the WSPD. These larger impervious areas shall be graded to drain away from the WSPD and primarily south. The access road and equipment pad area are placed central to the Property, significantly buffered from the IWPA.

No wastewater nor hazardous materials will be discharged on-site. All proposed measures ensure that groundwater will not be contaminated, under-recharged, or otherwise adversely impacted. Stormwater management practices have been designed to maintain the required separation from groundwater in accordance with applicable standards. Structural stormwater BMPs have been designed to provide water quality treatment and controlled conveyance in accordance with applicable standards. These practices include energy dissipation features, level spreaders, vegetated filter strips, and organic media filtration systems. By directing stormwater runoff through properly designed BMPs, the water will be treated in accordance with all applicable federal, state, and local stormwater management standards. These practices maintain groundwater recharge while avoiding direct infiltration where separation requirements govern design.

1.2.2.3 Floodplain

The Project does not involve work within the floodplain and will not adversely impact the floodplain.

1.2.3 Drainage Patterns

Flow paths are primarily maintained in the central and western portions of the Property; the main areas of alteration correspond with the gravel equipment pad and driveway widening. The driveway shall be gently sloped to the south to promote runoff flow directly across the semi-pervious gravel. Existing culverts under the modified portion of the driveway will be removed and replaced during construction.

A new drainage conveyance system will be installed to manage runoff in the vicinity of the equipment pad and access junction. North of the access road, a grassed conveyance channel shall be installed to direct flow east along the roadway. This channel consists of some check-dam structures to break up the flow and depressional storage. Primary outlets from this channel are culverts which shall carry flow under the roadway. Riprap apron and stilling basin energy dissipators shall be used to control flow rates and promote sheet flow in downstream adjacent vegetated areas. Otherwise, grading around the gravel equipment pad area shall gently divert flow around the pad to then continue along existing flow patterns.

On the northern portion of the Property, runoff intercepted by the proposed landscaped screening berm along the northeastern Property line will be channelized along the berm and discharge to a riprap apron. The riprap apron will dissipate the energy from the channelized flow and an additional level spreader will be installed to continuously promote sheet flow across the vegetated area, reducing flow concentration and minimizing erosion potential. Runoff from this northern area, much of which under existing conditions flows north towards the intersection of Ridge Road and Buffington Hill Road to ultimately drain to Wards Stream, is redirected primarily south as part of the Watts Stream watershed. The additional culverts and associated grading along the access drive described above accommodate this redistribution of flow.

To treat and infiltrate new runoff from the increase in impervious area, pretreatment and filtration practices shall be implemented. Runoff from the equipment pad and driveway areas shall be directed to vegetated filter strips to provide coarse sediment removal prior to entering downstream treatment systems. The vegetated filter strips will also slow runoff and promote distributed flow to the downstream systems. Organic media filtration systems shall provide water quality treatment through filtration and adsorption processes.

Running perpendicular to the ground slope in the southern field is a short ridge and associated drainage channel which direct water west towards Watts Stream before it can combine with the existing roadside drainage ditch. Due to the increase in flow directed south from the northern portion of the property, the volume of water which runs along this ridge and the roadside ditch shall be split. This requires grading a portion of the raised land down to continue and connect the existing drainage channels to the north and south. By redirecting some flow further south, runoff arrival times can be staggered, reducing the amount of flow reaching the design point at the same time and lowering the peak discharge rate.

1.3 Hydrologic Analysis

A hydrologic analysis was performed using HydroCAD (Version 10.20-6a) for 24-hour, Type III, 2-, 10- and 100-year return frequency rainfall events for Worthington, MA. According to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 10, Version 3, the storm events generate 3.29, 5.14, and 8.09 inches of precipitation respectively (Appendix D – Rainfall Data). HydroCAD is an industry accepted modelling software that combines the capabilities of the TR-20 and TR-55 methodology. The calculations confirm the Project meets the Massachusetts Stormwater Standards, as described in further detail in Section 4. Each rainfall event was analysed under two scenarios: the Existing Condition (pre-construction) and the Proposed Condition (post-construction). The detailed stormwater models are included in Appendix H – HydroCAD Reports.

The Site was analysed as two design points which represent the final coalescing points of all runoff from the Site; the first being Watts Stream which flows through the Property to the west of the Project (DP-S) and the other being Wades Stream east of the Property (DP-N). Hydrologic analysis results show proposed conditions demonstrate a lower peak rate of runoff at each final design point when compared to existing conditions (Table 1.2).

Table 1.2 Hydrologic Analysis Results – Final Design Points

Design point	Rainfall event	Peak flow (cfs)		Runoff volume (cf)	
		Existing	Proposed	Existing	Proposed
DP-N	2-year	15.57	9.77	75,913	52,120
	10-year	32.98	20.65	157,943	108,439
	100-year	62.46	39.06	302,196	207,479
DP-S	2-year	41.61	39.90	211,265	234,467
	10-year	89.06	86.10	441,834	490,452
	100-year	164.55	153.20	848,549	942,131

2. Erosion and Sedimentation Control

2.1 During Construction

The Contractor shall be responsible for implementing and maintaining appropriate erosion and sedimentation controls to prevent sediment laden runoff from entering the existing stormwater management system. All controls shall be installed prior to beginning land disturbance and shall be maintained until the site is fully stabilized.

Sediment barriers (straw wattles, compost socks, or other appropriate best management practices (BMPs)) shall be placed around the perimeter of the proposed development area. Any disturbed area that are proposed to have vegetated ground cover will be restored to pre-construction conditions or seeded with similar vegetation to the maximum extent practicable. The area of disturbed soil exposed at any one time shall be minimized to the extent practicable.

Temporary erosion control measures shall be implemented within 14 days of soil exposure or disturbance. Fast and effective measures include mulching and sprinkling for dust control. Reference manufacturer recommendations for mulching as well as the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, 2003. The implementation of a stabilized construction entrance/exit will prevent tracking of mud and sediment onto public roadways. Any material stockpiles shall be maintained in one or more designated, centralized locations away from drainage features. Perimeter erosion control shall surround all stockpiles and will consist of sediment barriers sized and maintained to effectively contain sediment. On any disturbed areas with steep slopes (slopes exceeding 20%), erosion control blankets shall be installed to provide immediate soil stabilization.

The contractor shall inspect all erosion control devices a minimum of once weekly during construction and additionally following a major storm event. The contractor shall perform an inspection and any necessary repairs to achieve working order according to the original design. All temporary controls shall be maintained in working order until permanent stabilization is achieved.

The erosion prevention activities typically occur in the following sequence:

- Establish the Limits of Work (Surveying and staking the LOW boundary)
- Install Erosion and Sediment Controls
- Perform Clearing and Grubbing
- Conduct Necessary Site Grading
- Seed Disturbed Areas with Temporary Vegetation Mix
- Install Crushed Stone Access Road and BMPs
- Install Gravel Equipment Pad
- Install Concrete Equipment Foundations
- Install Perimeter Fence

- Perform Final Seeding and Landscaping (permanent stabilization of the site)
- Remove Temporary Erosion Controls Upon Close of Construction

2.2 Long-Term Pollution Prevention Plan

In accordance with EPA Standards, the development and implementation of suitable practices for source control and pollution prevention shall be incorporated in a Long-Term Pollution Prevention Plan (LTPPP). The primary focus of the LTPPP is to establish procedures and controls for limiting the potential sources of pollutants, including nutrients that may contribute to excessive contaminant levels in the site's stormwater runoff. To this end the following source controls and procedures will be in place at the site:

- Good housekeeping – The site shall be kept clean at all times. Refuse collection and disposal shall occur on a regular basis. All materials shall be disposed of in approved, designated locations in accordance with the relevant regulations.
- Storing material and waste products inside or under cover – No material storage shall take place outside at the site on paved or lawn surfaces. All materials and waste products stored on-site shall be stored in compliance with all local, state, and federal requirements for spill prevention and containment.
- Vehicle washing controls – Vehicle washing shall not occur at the site during construction. Any vehicle cleaning will be performed at an off-site facility with proper wastewater treatment. This prevents potentially harmful detergents, wash water or other associated pollutants from entering the stormwater BMPs. Standard farming equipment maintenance may require washing post-construction as may be typical pre-construction. The landowner/farmer shall be provided a copy of this report with the following recommendations for vehicle washing:
    - Use biodegradable, phosphate-free, water-based detergents.
    - Limit the amount of detergent used to only what is necessary.
    - Wash vehicles away from stormwater BMPs and wetlands.
    - Direct the wash water to pervious ground covers such as grassed areas.
- Requirement for routine inspections and maintenance of stormwater BMPs – All stormwater BMPs shall be inspected and maintained according to the Long-Term Operations and Maintenance (O&M) Plan (see Section 3).
- Spill prevention and response plans – A spill recovery kit shall always be readily accessible at the site. Emergency contact information for a certified cleanup vendor shall be visible and apparent at the site. All employees shall be briefed on clean-up response and procedures. All spills shall be documented and reported as required by law.
- Maintenance of lawns, gardens, and other landscaped areas – Landscaping activities shall be performed to avoid disturbing stabilized surfaces. Mowing shall be conducted in coordination with the farmer's hay production schedule and limited to only what is necessary to promote plant health.
- Requirements for storage and use of fertilizers, herbicides, and pesticides – Herbicide and pesticide use shall not take place during construction. If used post-construction, application shall be performed

in accordance with product labels and applicable guidelines. Any fertilizer, herbicide, or pesticide application shall be coordinated with the farmer's hay production practices to avoid impacts on crop quality and yield.

- Pet waste management provisions – Pets shall not be present on-site during construction or operation. Waste from livestock present for vegetative management shall be managed through manual removal and specific grazing schedules to avoid accumulation of waste.
- Provisions for operation and management of septic systems – No septic systems are proposed for the site. Temporary facilities present during construction shall be maintained according to the relevant regulations. It is unknown if the current residential building on the Property has a correlated septic system. If one exists, it is the owner's responsibility to properly manage and maintain the septic system.
- Provisions for solid waste management – Solid waste generated during construction shall be stored in designated locations in covered containers. Containers will be removed by a licensed vendor, in compliance with the applicable regulations. Minimal waste generation is expected post-construction, and any found shall be removed promptly during routine maintenance visits.
- Snow disposal and plowing plans relative to Wetland Resources Act – Where snow plowing is appropriate, snow shall be compiled in upland areas, away from wetland resources and structural BMPs, to prevent direct discharge of meltwater. Snow shall not be piled within 100 feet of wetland resources and structural BMPs.
- Winter Road Salt and/or Sand Use and Storage restrictions – De-icing chemicals will be used strategically to minimize environmental impacts. Mechanical snow removal shall be prioritized over chemical treatment when possible. Snow piles shall be located away from storm drains and BMPs.
- Street sweeping schedules – During construction, street sweeping shall occur after all significant sediment disturbances. Driveways and adjacent roads shall be inspected for sediment tracking at the end of each workday and swept if deemed necessary. Post-construction, street sweeping shall occur twice annually during routine maintenance inspections.
- Provisions for prevention of illicit discharges to the stormwater management system – There are no illicit discharges (i.e., wastewater, discharges of substance, oil, or grease) associated with the Project. Illicit discharge detection and elimination measures shall be implemented including signage and regular inspections. Any evidence of illicit discharge shall be addressed immediately.

All stormwater BMPs referenced herein reflect the finalized design, including energy dissipation features, vegetated conveyance systems, level spreaders, and organic media filtration practices. No new discharges shall occur near critical areas nor from any LUHPPLs. All personnel responsible for maintenance, repair of stormwater controls, and/or implementation of the LTPPP must receive adequate training related to the scope of their job duties. This includes training on the proper procedures to follow with respect to the LTPPP requirements and understand the principles and practices of erosion and sediment control. The following contact(s) can be reached in case of any questions or emergencies surrounding implementation of the LTPPP:

BlueWave Asset Management
T +1 617-209-3122
assetmgmt@bluewave.energy

2.2.1 Total Maximum Daily Loads

As described in Section 1.1.3, the Property is within two major watersheds which both have Massachusetts Statewide Total Maximum Daily Load (TMDL) for Pathogen-impaired Waterbodies (CN 515.1) in reference to the pollutant *E. coli*. In accordance with these TMDLs, the development and implementation of suitable practices for source control and pollution prevention of pathogens shall be incorporated in this LTPPP. The Town of Worthington has no specific ordinances or bylaws pertaining to the TMDLs and is not within the regulated MS4 area.

For both the Westfield and Connecticut TMDLs, agricultural activities and wildlife waste have been identified as potential sources of pollution. These sources are applicable to the Property and its current and proposed use. Manure storage and spreading, if not well managed, can introduce pathogens to nearby waterbodies. It is recommended that any and all manure and fertilizer application be performed in accordance with applicable guidelines and in a conservative manner. Due to the large areas within the major watersheds dedicated to conservation and the wetlands throughout the watershed, wildlife waste can introduce pathogen pollution. Waterfowl are attracted to large open mowed areas near waterbodies, bringing with them a potential increase in bacteria levels. It is probable the solar PV development shall deter excessive waterfowl from the wetlands on the Property. By practicing the measures outlined in this LTPPP, pathogen pollution will be mitigated throughout construction and the life of the Project.

3. Operation and Maintenance

3.1 Responsible Party & Notification of Future Owners

Property Owner: Timothy J. Sena & Catherine Rude-Sena
Property Adress: 190 Ridge Road, Worthington, MA 01098
Mailing Address: P.O. Box 132 Worthington, MA 01098

The property owner noted above is the stormwater management system owner. Upon transfer of property, and therefore stormwater system ownership, the seller shall notify the buyer of the presence and location of all stormwater BMPs and the ongoing responsibility to maintain them in accordance with this plan. O&M requirements and contract details shall be included in property transaction documents when possible.

It is the responsibility of the operator of the solar PV development to implement this O&M plan as outlined in their agreement with the owner.

Energy Storage Facility Operator: BlueWave Asset Manager
Mailing Address: 116 Huntington Avenue, Suite 601, Boston, MA 02116
Phone: +1 617-209-3122
Email: assetmgmt@bluewave.energy

3.2 General Site Maintenance

General site-wide conditions may be inspected simultaneously with stormwater inspections. The site shall be checked for any eroded drainage paths and repaired, as necessary. Any loose debris on-site shall be removed and disposed of appropriately. If any significant sediment build-up occurs on the roadways or drives, it shall be removed by sweeping or other methods.

The array areas shall continue to be farmed post-construction as hay pastures by the landowner/farmer. Pesticides, fungicides and herbicides shall only be applied by the landowner/farmer in accordance with product labels and applicable guidelines. All landscaping and landscaping maintenance shall be performed by the landowner/farmer or a licensed subcontractor.

In general, maintenance of BMPs requiring earth disturbance should occur in late spring or summer, after spring rains have diminished, drier weather has set in, and when vegetation can re-establish itself through the growing season. Other times may be suitable if weather permits or if the potential for sediment transport is low. Any maintenance should occur with the intent to limit earth disturbance during times of high erosion potential. If earth disturbance occurs as part of maintenance activities, appropriate erosion and sediment controls shall be implemented.

The following maintenance procedures are necessary to ensure proper function of the stormwater management system and compliance with regulatory standards. The maintenance tasks are grouped by system component and summarized in the tables below. These actions, routine and corrective, shall be performed in a timely manner by the responsible party throughout the life of the system. At all times, across all activity relating to system O&M trash, sediment, and other debris that is removed from the

system shall be disposed of in accordance with applicable local, state and federal guidelines and regulations.

Based on the following O&M activities, the anticipated annual cost for full site-wide maintenance of the stormwater control system is estimated at $5,000.

3.2.1 Crushed Stone Access Road

The access road is a semi-permeable surface that can become unsafe if drainage or infiltration is impaired due to clogging or compaction. Inspecting and repairing the access road in a timely manner is essential for overall system success. The surface of the crushed stone access road shall not be used to store soil or other materials that could clog the permeable stone surface.

Table 3.1 Routine O&M Activities – Crushed Stone Access Road

Activity	Details	Frequency
Inspect	Check for standing water, uneven surface, snowplow damage, and vegetation.	Twice a year or more often if needed, especially during winter.
Re-grade the stone	Redistribute and compact washed crushed stone to restore grades in original design.	As necessary
Remove vegetation	Manually remove vegetation that is growing within the road surface area.	Immediately when observed
Repair potholes and snowplow damage	Fill and compact potholes and other road damage with design specific material.	As necessary
Restore infiltration	If water remains on road surface >48 hours after storm, excavate, scarify the underlying topsoil, and replace the stone.	As necessary
Clean	Remove trash and debris from the road surface.	Immediately when observed

3.2.2 Drainage Channels

Vegetated drainage channels convey stormwater and allow for infiltration. Regular inspection and vegetation management are critical for channel flow.

Table 3.2 Routine O&M Activities – Drainage Channels

Activity	Details	Frequency
Inspect	Inspect channels to make sure vegetation is adequate and for signs of rilling and gullying. Repair rills and gullies. Replace dead vegetation.	Biannually
Mow	Grass height shall not exceed 6 inches.	As necessary
Remove sediment	Remove sediment and other debris manually.	At least once a year

Activity	Details	Frequency
Reseed	Reseed as necessary to ensure that vegetative cover is never below 80% across the channel.	As necessary

3.2.3 Vegetated Filter Strips

Efficiency of the vegetated filter strips shall benefit from the regular maintenance outlined below which shall ensure flow does not short-circuit the system and runoff is properly filtered.

Table 3.3 Routine O&M Activities – Vegetated Filter Strip

Activity	Details	Frequency
Inspect	Inspect for sediment buildup and signs of erosion. Check the vegetation for bare spots and overall health.	At least once a year
Mow	Grass height shall not exceed 6 inches.	As necessary
Remove sediment	Remove sediment and other debris manually.	At least once a year
Reseed	Reseed as necessary to ensure that vegetative cover is never below 80%.	As necessary

3.2.4 Sediment Forebays

Sediment forebays are designed to capture coarse sediment and debris prior to discharge to downstream stormwater management systems, thereby reducing maintenance requirements and prolonging the functional life of downstream treatment practices. Routine inspection and sediment removal are critical to maintaining storage capacity and overall system performance.

Table 3.4 Routine O&M Activities – Sediment Forebays

Activity	Details	Frequency
Inspect	Inspect for sediment accumulation, erosion, inlet and outlet stability, and overall structural integrity of the basin.	Twice a year and after major storm events
Measure Sediment	Measure sediment depth and compare to design storage capacity to determine need for removal.	Annually or as needed
Remove Sediment	Remove accumulated sediment when it reaches approximately 50% of the forebay's designed storage volume.	As necessary
Repair Erosion	Repair erosion within the basin and at inflow/outflow points to maintain proper function.	As necessary

3.2.5 Energy Dissipators

Energy dissipators such as level spreaders, riprap aprons, stilling basins, etc., are designed to distribute concentrated flow into sheet flow in order to reduce erosion and improve downstream stability. Proper maintenance ensures uniform flow distribution and prevents channelization. This category of BMP shall be routinely inspected according to the outline below to ensure proper functionality and ability to dissipate energy.

Table 3.5 Routine O&M Activities – Energy Dissipators

Activity	Details	Frequency
Inspect	Check for damaged/misplaced stones, sediment accumulation, significant erosion, vegetation growth.	Twice a year
Clean	Remove trash, sediment, and other debris.	Twice a year or more often as necessary
Clear Vegetation	Manually remove vegetation from between or over the stones.	Immediately as observed
Replace Stone	Replace or reconfigure missing or dislodged stones to maintain original design functionality.	As necessary

3.2.6 Organic Media Filters

Organic media filtration practices are utilized to provide water quality treatment through filtration and adsorption. These systems require regular inspection and maintenance to ensure proper function and prevent clogging of the media layer.

Table 3.6 Routine O&M Activities – Organic Media Filters

Activity	Details	Frequency
Inspect	Inspect for sediment buildup, ponding, and overall condition of the organic media and surface.	Twice a year or more often if needed
Remove sediment	Remove accumulated sediment and debris from the surface and pretreatment areas to prevent clogging of the filter media.	Twice a year or more often if needed
Maintain surface	Remove accumulated organic matter, trash, or vegetation that may inhibit uniform flow distribution across the filter surface.	As necessary
Restore filtration capacity	If ponding persists for more than 48 hours after a storm event, remove and replace or amend the clogged upper layer of organic media.	As necessary

Activity	Details	Frequency
Replace media	Replace filter media when it shows reduced permeability, poor vegetative growth (if applicable), or diminished treatment performance.	As necessary

3.3 Public Safety Features

The stormwater management system and energy storage facility shall have several features to ensure public safety, prevent unauthorized access to the Property, and ensure effective emergency response. The Project will be surrounded by a perimeter fence and will have a lockable gate at all entrances. The gate at the main entrance will include signage with operator identification and emergency contact information. A secure lockbox containing access key(s) shall be installed in case of emergency to provide full access to the Project for the local fire department. In accordance with the Worthington Protective Zoning Bylaws (the Bylaws) Section 8.5.6(A), “All means of shutting down the solar photovoltaic installation shall be clearly marked and approved by the Town fire chief.” In addition to gate and emergency shutoff signage, temporary and permanent signs may be installed near BMPs as is appropriate.

Aside from secondary protective measures to be implemented, the proposed BESS has several incorporated safety features to prevent emergency situations. The BESS is sealed and fabricated in a container before delivery. Any materials considered hazardous are enclosed in a secure storage container of an impervious material. The container is installed on an impervious concrete foundation which is surrounded by gravel. A spill event is highly unlikely. O&M procedures are in place to maintain proper working order, 24/7 monitoring, and suppression systems. In the unlikely event of a spill from the storage container and concrete foundation, runoff is directed across the gravel surface and through downstream stormwater management practices designed to provide treatment and controlled conveyance away from stormwater-sensitive resources. Furthermore, in the unlikely scenario of a spill, temporary flow barriers can be quickly and reliably implemented to block flow downstream and isolate the affected area. Such flow barriers can be kept on-site as part of the spill response kit and could include items such as hazardous material absorbent booms and socks or rapid-deployment dams.

4. Massachusetts Stormwater Management Standards

The Project has been designed in accordance with the Massachusetts Stormwater Management Standards.

4.1 Standard 1: No New Untreated Discharges

No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Impervious areas as a result of the development include the gravel equipment pad, widening of the existing driveway and an additional turnaround extending from the driveway. Runoff rates and volumes would increase without mitigation due to the ground cover change from hay pasture to concrete and gravel. With the BMPs implemented on the site, the peak rate has been attenuated and the runoff discharging to the wetlands on-site is reduced and treated per the Standards. Much of the runoff generated from impervious areas flow into vegetated filter strips and organic media filtration systems, which together provide 80% removal of Total Suspended Solids (TSS) as described in Volume 2 of the Handbook. New impervious areas which are not captured are treated through vegetative filtration through existing and natural stormwater conveyances which provide up to 45% TSS removal.

4.2 Standard 2: Peak Rate Attenuation

Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

The post-development peak discharge rates have been attenuated to be less than or equal to the pre-development rates through design of the BMPs (see **Error! Reference source not found.**). Peak rate attenuation is achieved using distributed conveyance systems, depressional storage, controlled discharge through culverts, and sheet flow conditions provided by level spreaders and vegetated areas.

4.3 Standard 3: Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management

system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The required recharge volume for the area within the limit of work was calculated as follows:

$$\begin{aligned}
&Required\ Recharge\ Volume \\
&\qquad = 0.25\ in.runoff\ \times total\ impervious\ area\ within\ HSG\ C \\
&\qquad + 0.10\ in.runoff\ \times total\ impervious\ area\ within\ HSG\ D \\
&= 0.25\ in.runoff\left({}^{1\ ft}/_{12\ in.}\right) \times 15{,}058\ sf + \ 0.10\ in.runoff\left({}^{1\ ft}/_{12\ in.}\right) \times 45{,}591\ sf \\
&= 314\ cf\ runoff + 380\ cf\ runoff \\
&\qquad = 694\ cf\ runoff
\end{aligned}$$

The Site is comprised solely of HSG soil types C and D, which have limited infiltration capacity. The proposed BMPs have been designed to meet the required recharge and water quality volumes to the maximum extent practicable. Due to these soil limitations and the requirement to maintain separation from groundwater, infiltration is implemented through distributed and shallow practices rather than deep subsurface systems. Furthermore, due to these constraints, the recharge requirement must only be met to the maximum extent practicable.

Recharge is achieved through a combination of distributed infiltration across pervious site features and stormwater management practices designed to promote infiltration to the maximum extent practicable. The proposed organic media filtration systems provide a recharge capacity of 2,551 cubic feet assuming a 40% void ratio in the backfilled media, as recommended by the Volume 2 of the Handbook. The filters are built over soil classified as HSG C and C/D which has moderate drainage and an assumed conductivity of 0.17 inches per hour according to the 1982 Rawl's Rates referenced in the Handbook. The bottom of each filter system is more than two feet from the seasonal high-water table and bedrock.

$$\begin{aligned}
&Provided\ Recharge\ Volume = total\ depth\ of\ filter\ trench \times surface\ area\ of\ filter \times 40\% \\
&= 2.25\ ft \times (2{,}049\ sf + 785\ sf) \times 40\% \\
&= 2{,}551\ cf
\end{aligned}$$

Furthermore, the BMPs which provide temporary detention have been sized to drain the water quality volume within approximately 24 hours and fully drain within 72 hours after the storm event to the maximum extent practicable. Stormwater management practices have been designed to promote drainage and infiltration without prolonged ponding, consistent with Massachusetts Stormwater Handbook guidance. Field geologic testing for infiltration rates has not yet been conducted; however, conservative assumptions have been used in design. Actual site conditions may result in improved infiltration performance relative to modelled conditions.

$$\begin{aligned}
&Time\ to\ DrainRequired\ Water\ Qaulity\ Volume\ (hr) \\
&\qquad = 1 \\
&\qquad \div \left(exfiltraion\ rate\ \left(\frac{in}{hr}\right)\left(\frac{1\ ft}{12\ in}\right) \times surface\ area\ of\ filter\ (sf) \right. \\
&\qquad \left. \div Required\ Water\ Qaulity\ Volume\ (cf) \right) \\
&= 1 \div \left(\frac{0.17\ in}{1\ hr} \times \frac{1\ ft}{12\ in} \times (2{,}049\ sf + 785\ sf) \div 1{,}013\ cf \right)
\end{aligned}$$

$$= 25\ hr$$

$$Time\ to\ Fully\ Drain\ (hr) = 1 \div \left(exfiltraion\ rate\ \left(\frac{in}{hr}\right)\left(\frac{1\ ft}{12\ in}\right) \times surface\ area\ of\ filter\ (sf) \div Provided\ Recharge\ Volume\ (cf) \right)$$

$$= 1 \div \left(\frac{0.17\ in}{1\ hr} \times \frac{1\ ft}{12\ in} \times (2{,}049\ sf + 785\ sf) \div 2{,}551\ cf \right)$$

$$= 64\ hr$$

4.4 Standard 4: Water Quality

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;

b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and

c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook

A portion of the Property is within an IWPA which requires a water quality volume equal to 1.0 inch of runoff times the total impervious area of the post-development condition. Within this area, an insignificant amount of impervious area (less than 3 square feet) shall be introduced through the installation of fence posts and the ground-mounted trackers. The remainder of the site does not meet any of the criteria requiring 1.0 inch of runoff and therefore 0.5 inches of runoff may be used instead.

The required water quality volume for the area within the limit of work was calculated as follows:

$$Required\ Water\ Quality\ Volume = 1.0\ in.runoff\ \times total\ impervious\ area\ within\ the\ IWPA + 0.5\ in.runoff\ \times total\ impervious\ area\ of\ the\ post-development\ site$$

$$= 1.0\ in.runoff\ \left({}^{1\ ft}/_{12\ in.}\right) \times 2\ sf + 0.5\ in.runoff\left({}^{1\ ft}/_{12\ in.}\right) \times 24{,}301\ sf = 1{,}013\ cf\ runoff$$

The stormwater management system has been designed to capture and treat the required water quality volume through pretreatment and filtration practices. Vegetated filter strips provide initial removal of coarse sediment and debris as they distribute and slow flow, and organic media filtration systems provide primary water quality treatment through filtration and adsorption processes. The combined system of pretreatment and filtration BMPs is designed to achieve at least 80% removal of Total Suspended Solids (TSS) as described in Volume 2 of the Massachusetts Stormwater Handbook.

$$Provided\ Water\ Quality\ Volume = total\ depth\ of\ filter\ trench \times surface\ area\ of\ filter \times 40\%$$
$$= 2.25\ ft \times (2049\ sf + 785\ sf) \times 40\%$$
$$= 2{,}551\ cf$$

A TMDL does exist for two major watersheds the Property is within as discussed in Section 2.2.1. These TMDLs have been appropriately taken into account when designing the BMPs and the LTPPP is provided in Section 2.2. The TMDLs do not have explicit guidance on BMP selection for efficient removal of E. Coli. Volume 2 of the Massachusetts Stormwater Handbook indicates that properly designed pretreatment and filtration systems can provide substantial pathogen removal efficiency, which, in combination with source control measures, will mitigate potential impacts associated with pathogen-impaired watersheds.

4.5 Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

The solar PV development is not considered a land use with higher potential pollutant loads (LUHPPL).

4.6 Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A “storm water discharge” as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

Critical areas protected under the Massachusetts stormwater handbook include the following areas:

- Outstanding Resource Waters (ORWs) as designated in 314 CMR 4.00
- Special Resource Waters (SRWs) as designated in 314 CMR 4.00
- Recharge areas for public water supplies as defined in 310 CMR 22.02 (Zone Is, Zone IIs and Interim Wellhead Protection Areas for groundwater sources and Zone As for surface water sources)
- Bathing beaches as defined in 105 CMR 445.000
- Cold-water fisheries as defined in 310 CMR 10.04 and 314 CMR 9.02
- Shellfish growing areas as defined in 310 CMR 10.04 and 314 CMR 9.02.

Based on a review of MassGIS and Massachusetts Department of Environmental Protection (MassDEP) data and mapping resources:

- There are no ORWs mapped within or near the Project area.
- The Property is in the Connecticut River Basin, an area that currently does not have any SRWs.
- The northern half of the Project area, north of the existing driveway, is within the Worthington WSPD. A small sliver at the northern edge of the Property is within an Interim Wellhead Protection Zone. For more information on the groundwater resources near the Property, see Section 1.1.2.2. The Project is not anticipated to significantly impact these areas and has a low likelihood of doing so, see Section 1.2.2.2 for more information. The Project will not have any discharges within Zone I, Zone II, or Zone A areas.
- There are no bathing beaches within or near the Property
- Both receiving streams of the Property's subcatchments are cold-water fisheries: Watts Stream (ID 3211150) and Wards Stream (ID 3211175). The Project does not include any changes which are likely to reduce the ability of these waters to support cold-water fish reproduction. The Project has been specifically designed to not significantly impact these streams.
- There are no shellfish growing areas within or near the Property.

By proximity there are critical areas near the Property, but there are no discharges which have a strong likelihood of a significant impact to these areas. Therefore, by definition, there is no discharge near a critical area

4.7 Standard 7: Redevelopments

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The Project is new development; therefore, this standard does not apply.

4.8 Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

The erosion and sediment control plan narrative is provided in Section 2 and is included in the Issued for Permitting (IFP) plan set which shows the locations of measures to be implemented and visualizations of prevention measures (Appendix E – Issued for Permitting Plan Set).

4.9 Standard 9: Operation and Maintenance Plan

A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The operation and maintenance (O&M) plan is provided in Section 3.

4.10 Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

There are no illicit discharges (i.e., wastewater, discharges of substance, oil, or grease) associated with the Project. See Section 2.2 for the long-term pollution prevention plan detailing measures to prevent illicit discharges. An Illicit Discharge Compliance Statement shall be submitted prior to the discharge of any stormwater to post-construction BMPs.

wsp

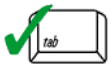
Appendix A – MA DEP Checklist for Stormwater Report

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

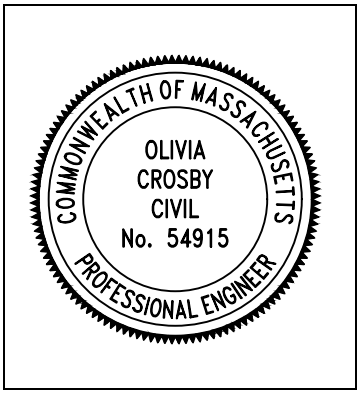
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



07/07/2026

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☒ Water Quality Swale
- ☒ Grass Channel
- ☐ Green Roof
- ☒ Other (describe): Crushed stone access drive, vegated filter strips, organic media filter

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☒ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☒ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☒ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☒ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☒ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☒ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

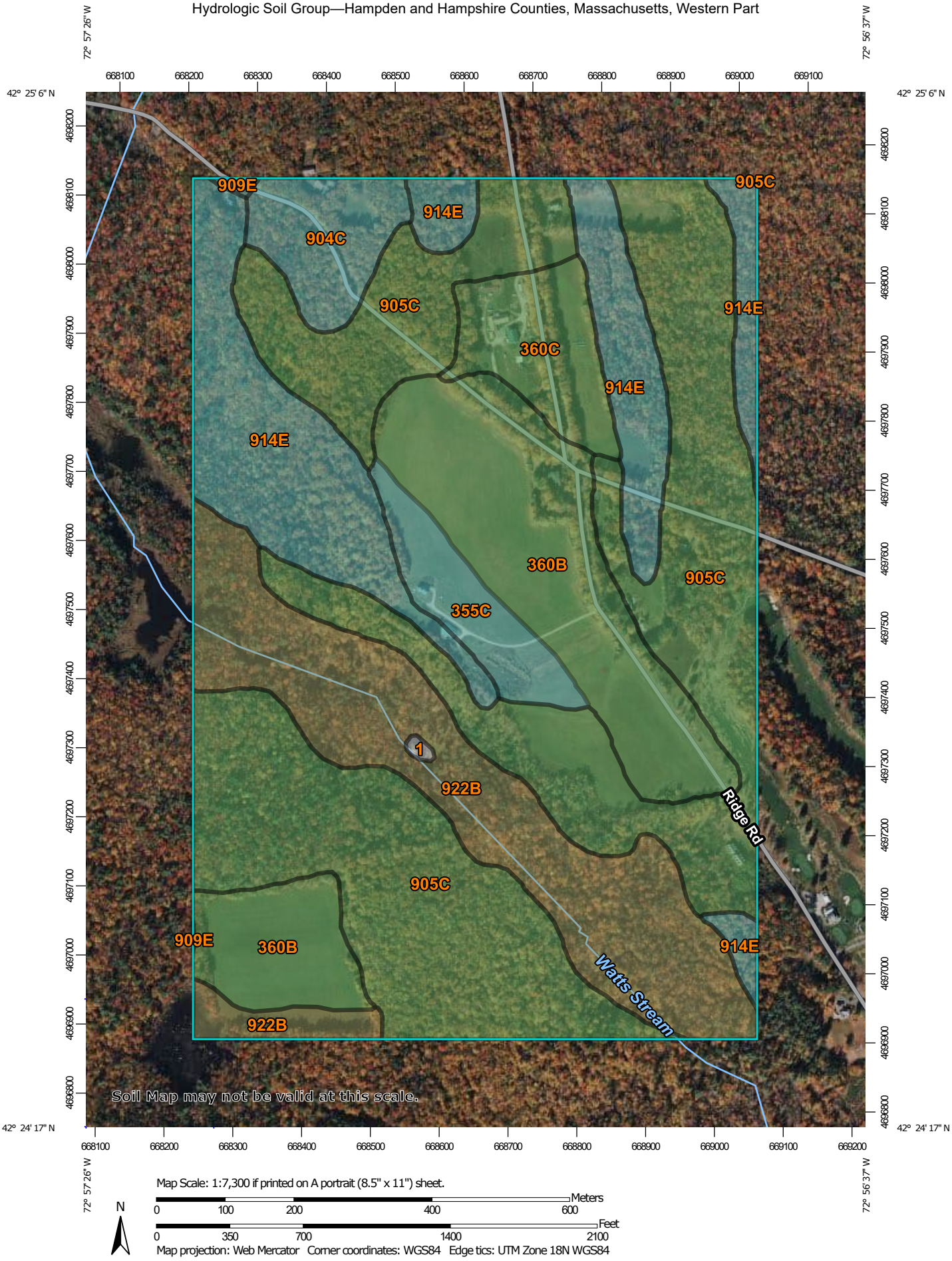
☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Appendix B – Soils Information

USDA NRCS HSG Soil Map



Map Scale: 1:7,300 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

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 Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Hampden and Hampshire Counties, Massachusetts, Western Part
Survey Area Data: Version 21, Sep 5, 2025

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		0.2	0.1%
355C	Marlow fine sandy loam, 8 to 15 percent slopes	C	8.3	3.3%
360B	Peru fine sandy loam, 3 to 8 percent slopes	C/D	40.0	15.8%
360C	Peru fine sandy loam, 8 to 15 percent slopes	C/D	10.5	4.2%
904C	Lyman-Tunbridge association, 3 to 15 percent slopes, extremely stony	C	9.0	3.5%
905C	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	105.0	41.4%
909E	Tunbridge-Lyman association, 15 to 60 percent slopes, extremely stony	C	0.3	0.1%
914E	Marlow-Berkshire association, 35 to 60 percent slopes, extremely stony	C	39.4	15.6%
922B	Pillsbury-Peacham-Wonsqueak association, 0 to 8 percent slopes, extremely stony	D	40.8	16.1%
Totals for Area of Interest			**253.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

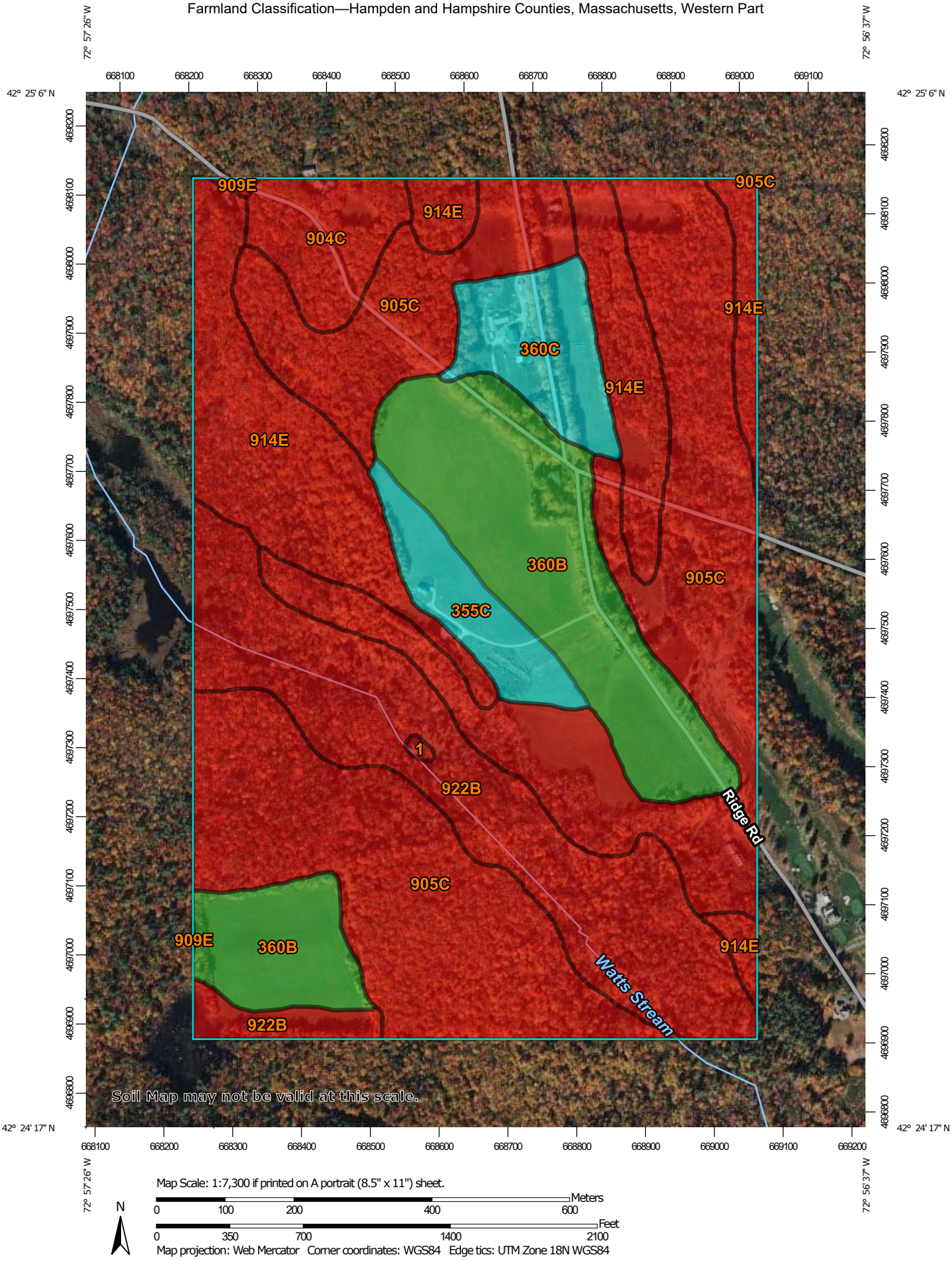
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

USDA NRCS Farmland Classification Map



Map Scale: 1:7,300 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

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 Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

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Soil Survey Area: Hampden and Hampshire Counties, Massachusetts, Western Part
Survey Area Data: Version 21, Sep 5, 2025

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Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

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.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water	Not prime farmland	0.2	0.1%
355C	Marlow fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance	8.3	3.3%
360B	Peru fine sandy loam, 3 to 8 percent slopes	All areas are prime farmland	40.0	15.8%
360C	Peru fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance	10.5	4.2%
904C	Lyman-Tunbridge association, 3 to 15 percent slopes, extremely stony	Not prime farmland	9.0	3.5%
905C	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	Not prime farmland	105.0	41.4%
909E	Tunbridge-Lyman association, 15 to 60 percent slopes, extremely stony	Not prime farmland	0.3	0.1%
914E	Marlow-Berkshire association, 35 to 60 percent slopes, extremely stony	Not prime farmland	39.4	15.6%
922B	Pillsbury-Peacham-Wonsqueak association, 0 to 8 percent slopes, extremely stony	Not prime farmland	40.8	16.1%
Totals for Area of Interest			**253.5**	**100.0%**

Description

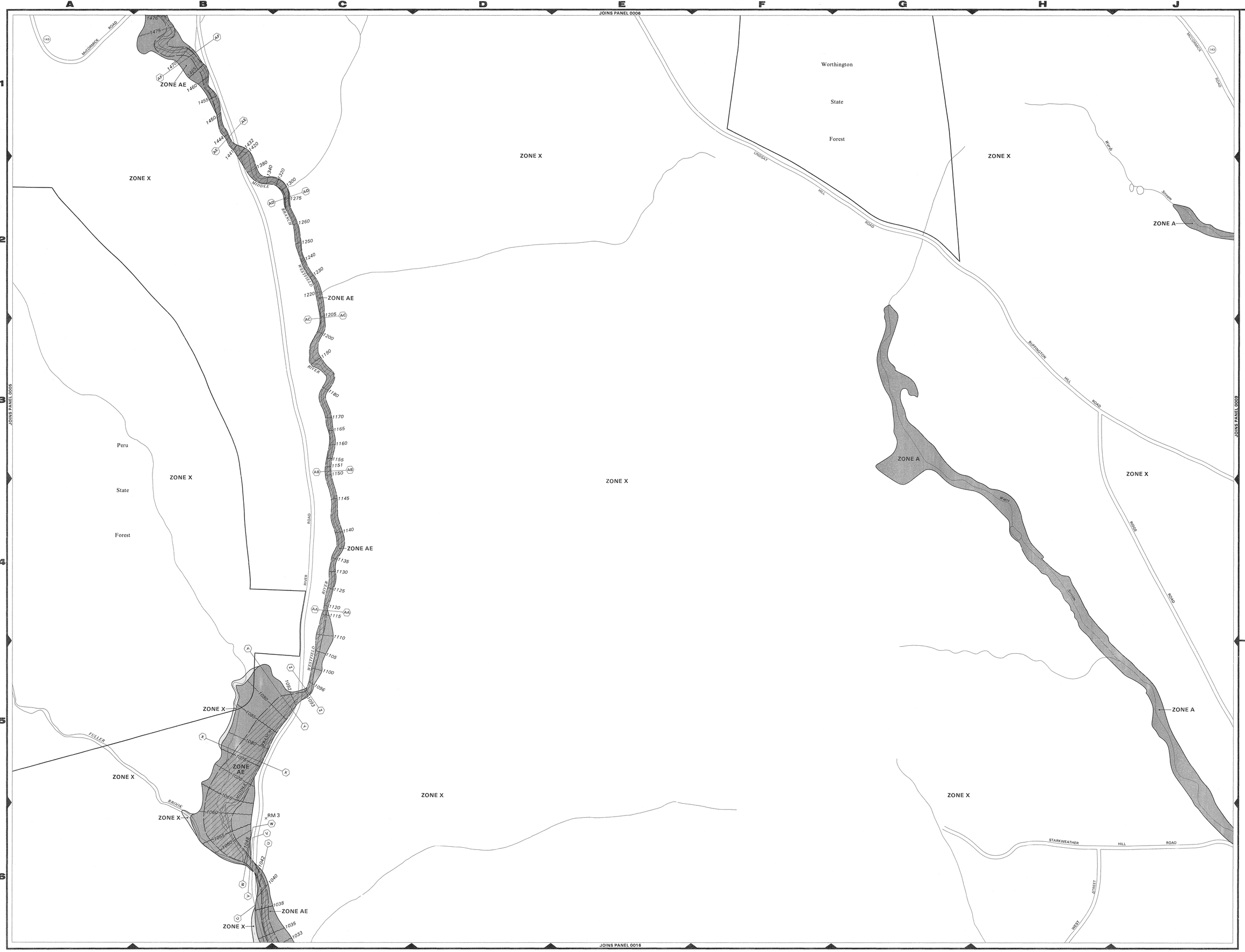
Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Appendix C – FEMA Map



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding; velocities also determined.

ZONE A99 To be protected from 100-year flood by federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D Cross Section Line

(EL 987) Base Flood Elevation in Feet Where Uniform Within Zone*

RM 7x Elevation Reference Mark

•M1.5 River Mile

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Elevation reference marks are described in the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

MAP REPOSITORY

Town Clerk's Vault, Town Hall, Huntington Road, Worthington, Massachusetts 01098 (Maps available for reference only, not for distribution).

INITIAL IDENTIFICATION:
JUNE 28, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
APRIL 9, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
JUNE 19, 1989

FLOOD INSURANCE RATE MAP REVISONS:

Refer to the Flood Insurance Rate Map Effective date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
WORTHINGTON,
MASSACHUSETTS
HAMPSHIRE COUNTY

PANEL 8 OF 25
(SEE MAP INDEX FOR PANELS NOT PRINTED)

PANEL LOCATION

COMMUNITY-PANEL NUMBER
250175 0008 B

EFFECTIVE DATE:
JUNE 19, 1989

Federal Emergency Management Agency

Appendix D – Rainfall Data

NOAA Atlas 14, Volume 10, Version 3
Location name: Worthington, Massachusetts, USA*
Latitude: 42.4107°, Longitude: -72.9484°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.323 (0.248-0.415)	0.377 (0.289-0.484)	0.465 (0.355-0.599)	0.538 (0.409-0.697)	0.639 (0.471-0.861)	0.715 (0.518-0.984)	0.794 (0.558-1.13)	0.879 (0.590-1.28)	0.998 (0.646-1.51)	1.09 (0.691-1.68)
10-min	0.458 (0.351-0.587)	0.534 (0.409-0.686)	0.659 (0.503-0.849)	0.762 (0.579-0.988)	0.905 (0.667-1.22)	1.01 (0.732-1.39)	1.12 (0.790-1.60)	1.25 (0.836-1.82)	1.41 (0.915-2.14)	1.55 (0.979-2.39)
15-min	0.538 (0.413-0.691)	0.628 (0.481-0.807)	0.775 (0.592-0.999)	0.896 (0.682-1.16)	1.06 (0.785-1.44)	1.19 (0.861-1.64)	1.32 (0.929-1.88)	1.46 (0.983-2.14)	1.66 (1.08-2.51)	1.82 (1.15-2.81)
30-min	0.767 (0.589-0.985)	0.891 (0.683-1.14)	1.09 (0.835-1.41)	1.26 (0.958-1.63)	1.49 (1.10-2.01)	1.67 (1.20-2.29)	1.85 (1.29-2.61)	2.03 (1.36-2.97)	2.29 (1.48-3.46)	2.49 (1.57-3.83)
60-min	0.996 (0.764-1.28)	1.15 (0.884-1.48)	1.41 (1.08-1.82)	1.62 (1.23-2.10)	1.92 (1.41-2.58)	2.14 (1.54-2.94)	2.37 (1.66-3.35)	2.60 (1.75-3.80)	2.91 (1.89-4.40)	3.15 (2.00-4.86)
2-hr	1.29 (0.992-1.64)	1.49 (1.15-1.90)	1.82 (1.40-2.33)	2.09 (1.60-2.69)	2.47 (1.83-3.30)	2.76 (2.00-3.76)	3.05 (2.15-4.30)	3.36 (2.27-4.88)	3.80 (2.47-5.71)	4.14 (2.63-6.36)
3-hr	1.48 (1.14-1.88)	1.72 (1.33-2.18)	2.11 (1.62-2.69)	2.43 (1.87-3.12)	2.88 (2.14-3.85)	3.22 (2.35-4.39)	3.57 (2.53-5.04)	3.96 (2.67-5.73)	4.51 (2.93-6.75)	4.96 (3.15-7.57)
6-hr	1.84 (1.43-2.32)	2.17 (1.69-2.75)	2.72 (2.11-3.45)	3.17 (2.45-4.04)	3.80 (2.84-5.06)	4.26 (3.13-5.80)	4.76 (3.41-6.72)	5.33 (3.61-7.67)	6.18 (4.03-9.20)	6.89 (4.39-10.5)
12-hr	2.25 (1.76-2.82)	2.72 (2.13-3.41)	3.49 (2.72-4.39)	4.12 (3.20-5.22)	5.00 (3.77-6.64)	5.65 (4.18-7.67)	6.35 (4.59-8.99)	7.20 (4.89-10.3)	8.48 (5.55-12.6)	9.58 (6.13-14.5)
24-hr	2.67 (2.10-3.32)	3.29 (2.59-4.10)	4.30 (3.37-5.38)	5.14 (4.01-6.47)	6.30 (4.78-8.34)	7.15 (5.34-9.69)	8.09 (5.90-11.4)	9.24 (6.30-13.2)	11.0 (7.24-16.2)	12.6 (8.08-18.9)
2-day	3.08 (2.45-3.82)	3.85 (3.04-4.76)	5.09 (4.02-6.32)	6.12 (4.80-7.65)	7.54 (5.76-9.93)	8.58 (6.45-11.6)	9.73 (7.16-13.7)	11.2 (7.65-15.8)	13.5 (8.89-19.8)	15.5 (10.0-23.2)
3-day	3.38 (2.69-4.17)	4.22 (3.35-5.21)	5.60 (4.43-6.92)	6.73 (5.30-8.38)	8.30 (6.37-10.9)	9.45 (7.13-12.7)	10.7 (7.93-15.1)	12.4 (8.46-17.4)	15.0 (9.88-21.9)	17.3 (11.2-25.7)
4-day	3.65 (2.91-4.48)	4.54 (3.62-5.59)	6.01 (4.77-7.42)	7.22 (5.70-8.97)	8.90 (6.84-11.7)	10.1 (7.65-13.6)	11.5 (8.51-16.2)	13.2 (9.08-18.6)	16.1 (10.6-23.4)	18.5 (12.0-27.5)
7-day	4.39 (3.52-5.37)	5.39 (4.32-6.60)	7.03 (5.61-8.63)	8.39 (6.65-10.4)	10.3 (7.92-13.3)	11.6 (8.82-15.5)	13.1 (9.75-18.3)	15.1 (10.4-21.1)	18.1 (12.0-26.2)	20.8 (13.5-30.7)
10-day	5.14 (4.13-6.26)	6.19 (4.97-7.55)	7.91 (6.33-9.68)	9.34 (7.42-11.5)	11.3 (8.73-14.6)	12.7 (9.66-16.9)	14.3 (10.6-19.8)	16.3 (11.2-22.7)	19.4 (12.8-27.9)	22.0 (14.3-32.3)
20-day	7.45 (6.03-9.02)	8.55 (6.90-10.4)	10.3 (8.32-12.6)	11.8 (9.46-14.5)	13.9 (10.7-17.7)	15.4 (11.7-20.1)	17.0 (12.5-23.1)	18.9 (13.1-26.1)	21.7 (14.5-31.0)	24.0 (15.6-35.1)
30-day	9.37 (7.60-11.3)	10.5 (8.51-12.7)	12.3 (9.96-14.9)	13.9 (11.1-16.9)	16.0 (12.4-20.2)	17.6 (13.3-22.7)	19.2 (14.1-25.7)	21.0 (14.6-28.9)	23.5 (15.7-33.5)	25.6 (16.6-37.2)
45-day	11.7 (9.53-14.0)	12.9 (10.5-15.5)	14.9 (12.0-17.9)	16.5 (13.3-20.0)	18.7 (14.5-23.5)	20.5 (15.5-26.2)	22.2 (16.2-29.3)	23.9 (16.7-32.7)	26.2 (17.6-37.1)	27.8 (18.2-40.3)
60-day	13.6 (11.1-16.3)	14.9 (12.2-17.9)	17.0 (13.8-20.4)	18.8 (15.1-22.7)	21.2 (16.5-26.4)	23.0 (17.5-29.3)	24.9 (18.1-32.5)	26.6 (18.6-36.2)	28.7 (19.3-40.5)	30.1 (19.7-43.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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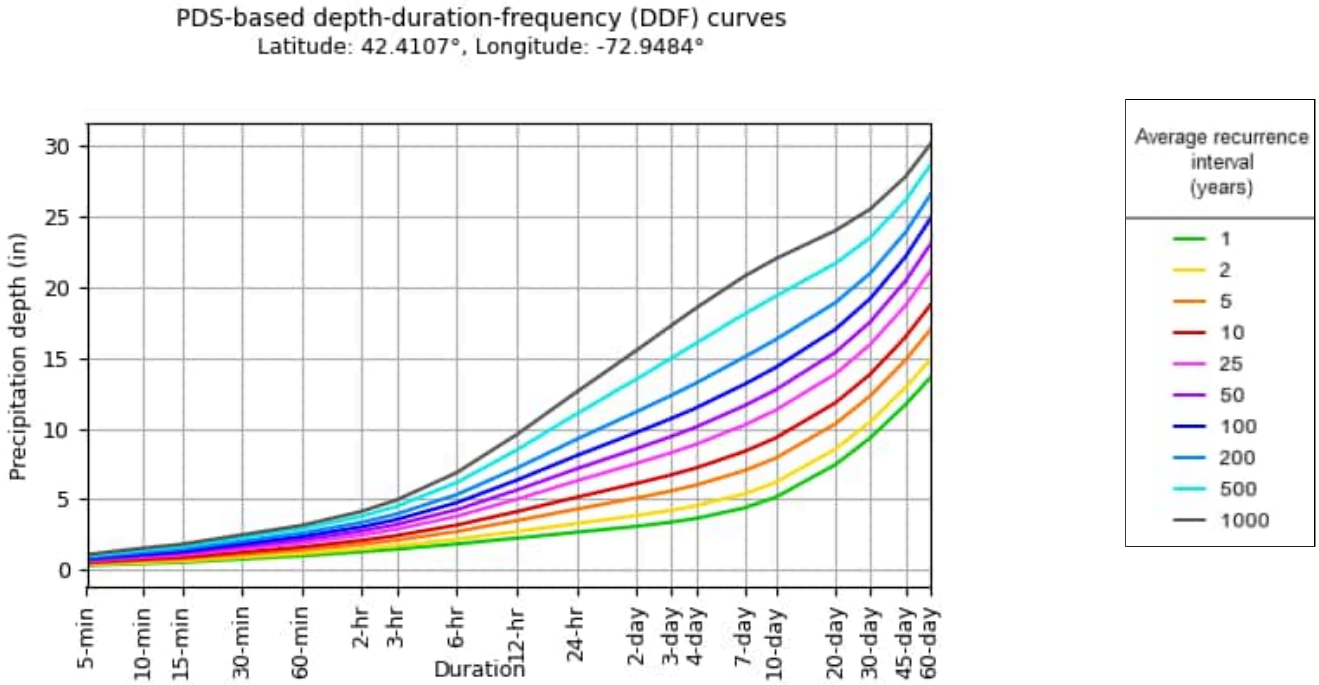
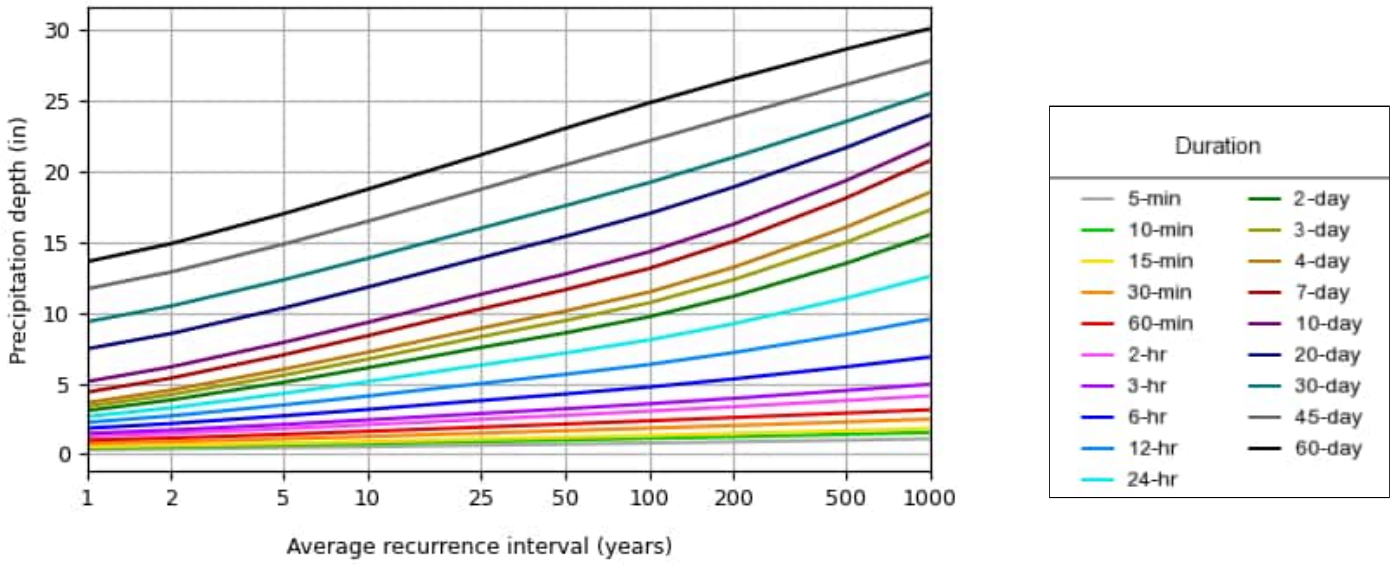
PF graphical





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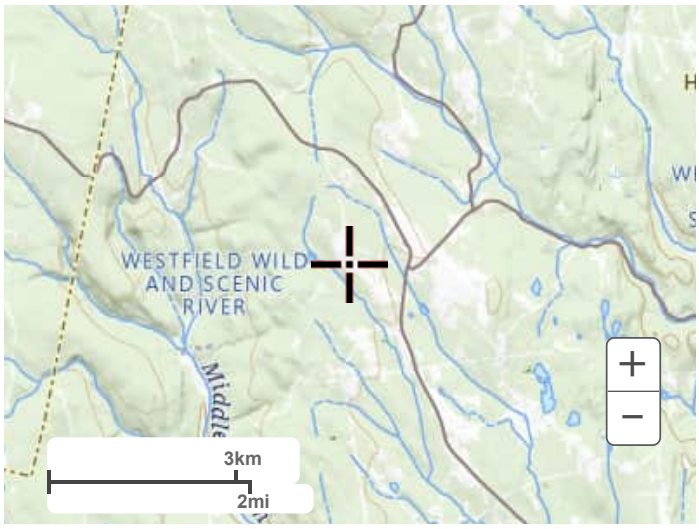
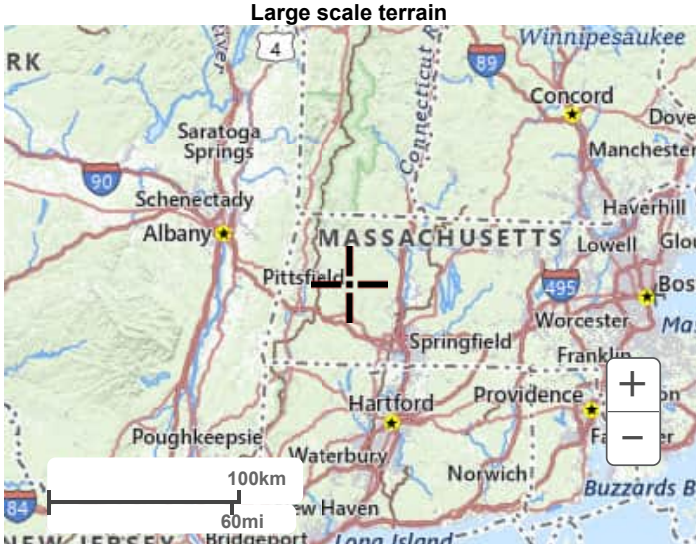
Maps & aerials

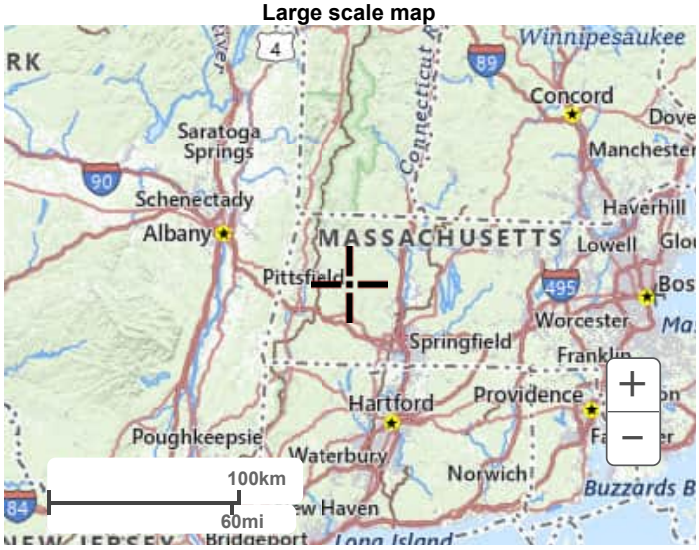
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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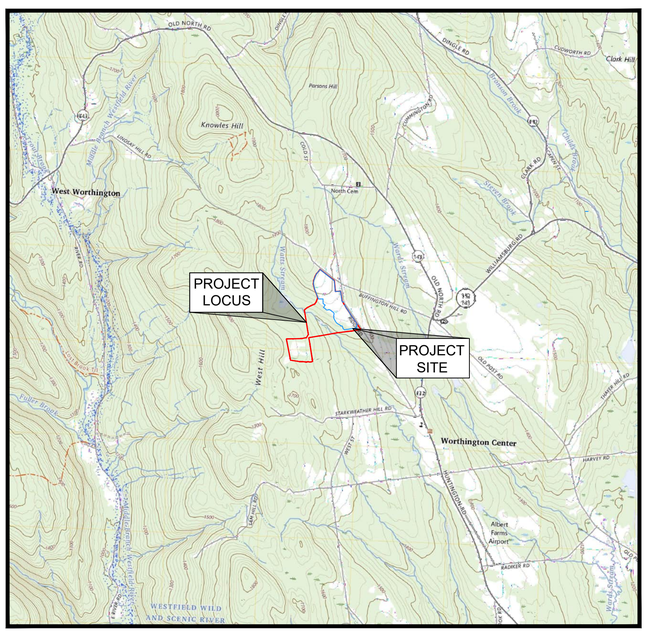
Disclaimer

Appendix E – Issued for Permitting Plan Set

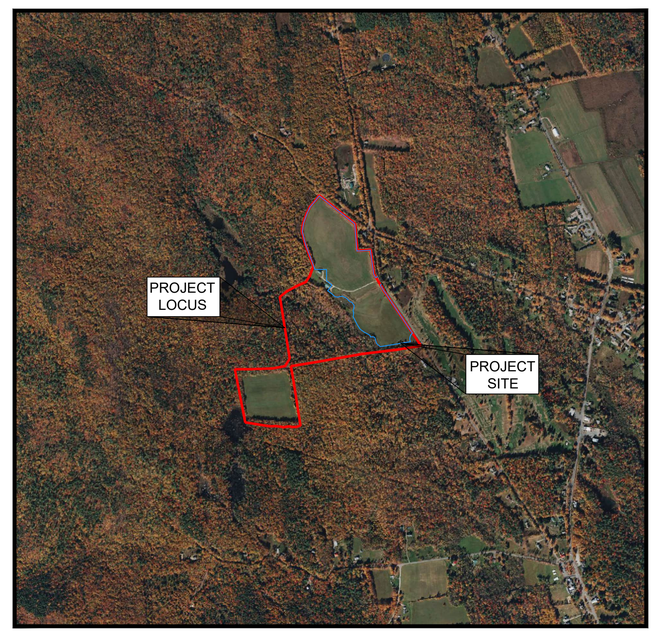
PROPRIETARY INFORMATION: THIS DRAWING IS THE PROPERTY OF WSP USA INC. AND IS NOT TO BE LOANED OR REPRODUCED IN ANY WAY WITHOUT THE PERMISSION OF WSP USA INC.

BWC WADES STREAM, LLC

2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098
SEPTEMBER 23, 2025
LAST REVISED JULY 07, 2026
ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION



LOCUS MAP
1"=2500'



AERIAL IMAGE
1"=1000'

DRAWING INDEX

SHEET NUMBER	DRAWING TITLE	DRAWING NUMBER
	COVER SHEET	
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10	DETAILS (SHEET 2 OF 3)	C-502
11	DETAILS (SHEET 3 OF 3)	C-503

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D:\BlueWave\US-EI-365220437 - Ridge Rd Worthington\4 Permitting\Sheets\0 - Ridge Rd - G-000.dwg - G-000 - Jul. 07, 2026 1:15pm - wade_morgan.mcdonald

MATERIAL SPECIFICATIONS AND PLACEMENT REQUIREMENTS:

1.1 ANGULAR ROCK FILL

ANGULAR ROCK FILL SHALL BE USED FOR THE CONSTRUCTION ENTRANCE AS SHOWN ON THE DRAWINGS, AND SHALL MEET THE GRADATION REQUIREMENTS LISTED BELOW.

U.S. STANDARD SIEVE	PERCENT PASSING
3 INCH	100
2 INCH	80 - 100
1 INCH	50 - 80
NO. 200	0 - 10

PRIOR TO USE, THE ANGULAR ROCK FILL SHALL BE TESTED FOR APPROVAL AS DESCRIBED IN SECTION 2.0 AND SHALL BE PLACED AS DESCRIBED IN SECTION 3.0.

1.2 DENSE GRADED CRUSHED STONE

DENSE GRADED CRUSHED STONE SHALL BE USED TO CONSTRUCT THE CRUSHED STONE ACCESS ROAD, AND SHALL MEET THE REQUIREMENTS OF A MATERIAL SUCH AS MASSDOT SPECIFICATION M2.01.7 CRUSHED STONE, OR APPROVED EQUAL. THIS MATERIAL SHALL BE PLACED AT A MINIMUM THICKNESS OF 6-INCHES AND SHALL BE IN DIRECT CONTACT WITH THE BALLAST BLOCKS. THIS MATERIAL SHALL CONSIST OF CLEAN, HARD, DURABLE CRUSHED ROCK OR CRUSHED GRAVEL STONE, FREE FROM LOAM AND CLAY AND DELETERIOUS MATERIAL AND NO MORE THAN 10 PERCENT PASSING THE U.S. NO. 200 SIEVE. THIS MATERIAL SHALL MEET THE FOLLOWING GRADATION:

SIEVE DESIGNATION	PERCENT PASSING
2-INCH	100
1.5-INCH	70-100
¾-INCH	50-85
NO. 4	30-55
NO. 50	8-24
NO. 200	3-10

PRIOR TO USE, THE DENSE GRADED CRUSHED STONE SHALL BE TESTED FOR APPROVAL AS DESCRIBED BELOW IN SECTION 2.0 AND SHALL BE PLACED AS DESCRIBED BELOW IN SECTION 3.0.

1.3 GRANULAR FILL MATERIAL

CLEAN GRANULAR FILL MAY BE USED FOR FILL OR GRADING MATERIAL. GRANULAR FILL SHALL CONSIST OF MASSDOT MATERIAL M1.03.0, GRAVEL BORROW, TYPE C, OR APPROVED EQUAL, AND MEET THE FOLLOWING GRADATION:

SIEVE DESIGNATION	PERCENT PASSING
2-INCH	100
½-INCH	50-85
NO. 4	40-75
NO. 50	8-28
NO. 200	0-10

PRIOR TO USE, THE GRANULAR FILL SHALL BE TESTED FOR APPROVAL AS DESCRIBED IN SECTION 2.0 AND SHALL BE PLACED AS DESCRIBED IN SECTION 3.0.

1.4 LOAM BORROW MATERIAL

THE LOAM BORROW SHALL CONFORM TO MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, DIVISION III - MATERIALS SPECIFICATIONS, SECTION M1.05.0 "LOAM BORROW". THE LOAM SHALL CONTAIN NOT LESS THAN 4% NOR MORE THAN 20% ORGANIC MATTER.

1.5 GEOTEXTILE FABRIC

FIBERS USED IN MANUFACTURING OF THE GEOTEXTILES SHALL CONSIST OF POLYPROPYLENE, POLYVINYL CHLORIDE, NYLON, POLYOLEFINS, POLYAMIDES, OR POLYESTER. THE FIBERS SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING SELVAGES. THE GEOTEXTILE SHALL CONTAIN STABILIZERS AND/OR INHIBITORS TO MAKE THE FIBERS RESISTANT TO DETERIORATION RESULTING FROM EXPOSURE TO SUNLIGHT, WATER, OR HEAT. THE GEOTEXTILE SHALL BE FREE OF DEFECTS OR FLAWS WHICH WILL AFFECT ITS PHYSICAL PROPERTIES. PROVIDE A GEOTEXTILE MEETING THE PROPERTIES LISTED IN TABLE 1:

TABLE 1
REQUIRED PHYSICAL PROPERTIES OF GEOTEXTILE FABRIC

PROPERTY	TEST METHOD	NON-WOVEN	WOVEN
MASS PER UNIT AREA	D 5261	6	N/A
GRAB TENSILE STRENGTH (LBS)	D 4632	170	N/A
TENSILE STRENGTH (LBS/FT)	D 4595	N/A	7200
ELONGATION (%)	D 4632	50	N/A
PUNCTURE STRENGTH (LBS)	D 6241	435	N/A
TRAPEZOID TEAR (LBS)	D 4533	70	N/A
PERMITTIVITY (SEC^{-1})	D 4491	1.50	0.90
WATER FLOW RATE (GPM/FT^2)	D 4491	110	65
ULTRAVIOLET STABILITY (% FOR MIN 500 HRS)	D 4355	70	80
APPARENT OPENING SIZE (AOS) (STANDARD SIEVE)	D 4751	70	20

TABLE NOTES:

1. ALL NUMERICAL VALUES EXCEPT AOS AND ULTRAVIOLET STABILITY REPRESENT MINIMUM AVERAGE ROLL VALUES (MARV), IN THE WEAKER PRINCIPAL DIRECTION.
2. AOS VALUE IS A MAXIMUM AVERAGE ROLL VALUE OR MAXARV.
3. ULTRAVIOLET STABILITY IS MEASURED AS A MINIMUM AVERAGE PERCENTAGE.
4. SEE DETAILS ON DRAWING C-501 FOR LOCATIONS OF WOVEN AND NON-WOVEN GEOTEXTILES.

2.0 BORROW SOURCE TESTING REQUIREMENTS

PRIOR TO USE, BORROW SOURCE TESTING, INCLUDING GEOTECHNICAL CHARACTERIZATION REQUIREMENTS, SHALL BE CONDUCTED ON ALL SOIL MATERIALS PROPOSED FOR CONSTRUCTION AND SUBMITTED TO THE ENGINEER TO ASSESS CONFORMANCE TO MATERIAL SPECIFICATIONS.

3.0 MATERIAL PLACEMENT AND FIELD QUALITY CONTROL REQUIREMENTS

1. FILL MATERIAL SHALL NOT BE PLACED ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE.
2. SURFACES ON WHICH THE GEOTEXTILE WILL BE PLACED SHALL BE PREPARED TO A RELATIVELY SMOOTH SURFACE CONDITION. SURFACES SHALL BE FREE FROM OBSTRUCTION, DEBRIS, DEPRESSIONS, EROSION FEATURE, OR VEGETATION. ANY IRREGULARITIES SHALL BE REMOVED SO AS TO ENSURE CONTINUOUS, INTIMATE CONTACT OF THE GEOTEXTILE WITH THE SURFACE. ANY LOOSE MATERIAL, OR SOFT OR LOW DENSITY POCKETS OF MATERIAL, SHALL BE REMOVED, FILLED WITH SUITABLE SUBGRADE FILL, AND COMPACTED. EROSION FEATURES SUCH AS RILLS AND GULLIES MUST BE GRADED OUT OF THE SURFACE BEFORE GEOTEXTILE PLACEMENT.
3. AT THE TIME OF INSTALLATION, FABRIC SHALL BE REJECTED IF IT HAS DEFECTS, RIPS, HOLES, FLAWS, DETERIORATION OR DAMAGE INCURRED DURING MANUFACTURE, TRANSPORT OR STORAGE.
4. FABRIC SHALL LAY SMOOTH AND BE FREE OF TENSION, STRESS, FOLDS, WRINKLES, OR CREASES.
5. CRUSHED STONE FOR ACCESS ROADS SHALL BE PLACED IN MAXIMUM 6-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY (MODIFIED PROCTOR (ASTM D 1557)).
6. LOAM BORROW FOR STORMWATER INFILTRATION BEST MANAGEMENT PRACTICES (BMPS) SHALL BE PLACED IN MAXIMUM 6-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 92% OF MAXIMUM DRY DENSITY (MODIFIED PROCTOR (ASTM D 1557)).

CONCEPTUAL CONSTRUCTION SEQUENCE:

1. ESTABLISHMENT OF LIMITS OF WORK;
2. PLACEMENT OF EROSION CONTROLS;
3. MINOR CLEARING AND GRUBBING AND SITE GRADING;
4. CONSTRUCTION OF ACCESS ROAD;
5. CONSTRUCTION OF THE SOLAR ARRAY AND APPURTENANT EQUIPMENT;
4. RESTORATION OF DISTURBED AREAS;
5. CONSTRUCTION OF STORMWATER INFILTRATION BMPS;
6. ERECTION OF THE PERIMETER FENCE; AND
7. FINAL STABILIZATION OF DISTURBED AREAS.

EROSION AND SEDIMENTATION CONTROL PLAN:

THIS PLAN HAS BEEN DEVELOPED TO PROVIDE A STRATEGY FOR CONTROLLING SOIL EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION OF THE PROPOSED PROJECT.

THIS PLAN IS BASED ON STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION IN DEVELOPING AREAS AS CONTAINED IN MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, 2003.

GENERAL EROSION AND SEDIMENTATION CONSTRUCTION DETAIL NOTES:

DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ALL REASONABLE MEASURES TO SCHEDULE EARTHWORK OPERATIONS SUCH THAT THE AREA OF EXPOSED AND DISTURBED SOIL IS MINIMIZED. CONSTRUCTION SHALL BE PHASED TO MINIMIZE THE AREA OF DISTURBED SOIL THAT IS EXPOSED AT ANY ONE TIME. UPGRADIENT STORM WATER DIVERSION AND DISPERSION MEASURES SHALL BE INSTALLED WHERE APPROPRIATE. ALL CUT AND FILL SLOPES SHALL BE STABILIZED UPON COMPLETION. THE FOLLOWING MEASURES WILL BE UNDERTAKEN TO PROVIDE MAXIMUM PROTECTION TO THE SOIL, WATER, AND ABUTTING LANDS:

PRIOR TO GRUBBING OR ANY EARTH MOVING OPERATION, SEDIMENT BARRIERS, OR OTHER APPROPRIATE PERIMETER CONTROL BMPS SHALL BE INSTALLED ACROSS THE SLOPE ON THE CONTOUR AT THE DOWNHILL LIMIT OF THE WORK AS PROTECTION AGAINST CONSTRUCTION RELATED EROSION. INSTALL ALL NECESSARY STORMWATER DIVERSIONS AND DISPERSION MEASURES.

1. PERMANENT SOIL STABILIZATION MEASURES FOR ALL SLOPES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN FOURTEEN CALENDAR DAYS AFTER FINAL GRADING HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE OR PRACTICAL TO PERMANENTLY STABILIZE DISTURBED LAND, TEMPORARY EROSION CONTROL MEASURES SHALL BE IMPLEMENTED ON DISTURBED AREAS (INCLUDING STOCKPILES) WITHIN FOURTEEN CALENDAR DAYS OF EXPOSURE OF SOIL OR FORMATION OF PILES, UNLESS THESE AREAS ARE TO BE SUBSEQUENTLY SURFACED WITH PERMANENT STRUCTURES. ALL DISTURBED AREAS SHALL BE MULCHED FOR EROSION CONTROL UPON COMPLETION OF ROUGH GRADING.
2. ANY EXPOSED SLOPES 3:1 OR GREATER SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS (NORTH AMERICAN GREEN C125BN OR APPROVED EQUAL) TO PREVENT EROSION DURING CONSTRUCTION AND TO FACILITATE REVEGETATION AFTER TOPSOILING AND SEEDING.
3. EXISTING TOPSOIL SHALL BE SAVED, STOCKPILED, AND REUSED AS MUCH AS POSSIBLE ON SITE. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF STOCKPILES AT THE DOWNHILL LIMIT TO PROTECT AGAINST EROSION. STOCKPILES ANTICIPATED TO REMAIN FOR MORE THAN 14 CALENDAR DAYS SHALL BE STABILIZED BY SEEDING AND MULCHING UPON FORMATION OF THE PILES. UPGRADIENT OF THE STOCKPILES, STABILIZED DITCHES AND/OR BERMS SHALL BE CONSTRUCTED TO DIVERT STORMWATER RUNOFF AWAY FROM THE PILES.
4. INTERCEPTED SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SEDIMENT BARRIER, OR AS DIRECTED IN THE DRAWING DETAILS FOR OTHER BMPS, AND SHALL BE DEPOSITED IN AN AREA THAT SHALL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED. ALL DAMAGED EROSION CONTROL DEVICES SHALL BE REPAIRED AND/OR REPLACED IMMEDIATELY. DEVICES NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION SHALL ALSO BE REPAIRED AND/OR REPLACED AS REQUIRED.
5. ADDITIONAL EROSION CONTROL METHODS SHALL BE IMPLEMENTED IF CONSTRUCTION OCCURS BETWEEN NOVEMBER 1ST AND APRIL 15TH. ALL DISTURBED AREAS SHALL BE MINIMIZED TO THE EXTENT POSSIBLE. PRIOR TO FREEZING, ADDITIONAL EROSION CONTROL DEVICES SHALL BE INSTALLED AS APPROPRIATE. INSPECTION OF THESE EROSION CONTROL ITEMS SHALL BE FREQUENT, WITH PARTICULAR ATTENTION PAID TO WEATHER PREDICTIONS TO ENSURE THAT THESE MEASURES ARE PROPERLY IN PLACE TO HANDLE LARGE QUANTITIES OF RUNOFF RESULTING FROM HEAVY RAINS OR EXCESSIVE THAWS.
6. GENERAL EROSION AND SEDIMENTATION CONTROL ACTIONS SHALL BE EMPLOYED, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   - MARK SOIL DISTURBANCE LIMITS
   - INSTALL SEDIMENT BARRIERS BEFORE DISTURBING ANY SOILS
   - DIVERT AND DISPERSE STORM WATER RUNOFF TO UNDISTURBED AREAS WHEREVER POSSIBLE
   - MULCH DISTURBED AREAS
   - PROTECT STEEP SLOPES
   - INSPECT AND REPAIR EROSION CONTROLS AND SEDIMENT BARRIERS

DUST CONTROL:

1. CONSTRUCTION ACTIVITIES SHALL BE SCHEDULED TO MINIMIZE THE AREA OF DISTURBED SOIL THAT IS EXPOSED AT ONE TIME.
2. DUST CONTROL SHALL BE USED ON CONSTRUCTION ROUTES AND OTHER DISTURBED AREAS SUBJECT TO SURFACE DUST MOVEMENT AND DUST BLOWING.
3. MAINTAIN DUST CONTROL MEASURES PROPERLY THROUGH DRY WEATHER PERIODS UNTIL ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
4. DUST CONTROL METHODS SHALL BE APPROVED BY THE ENGINEER AND MAY INCLUDE VEGETATIVE COVER, MULCH (INCLUDING GRAVEL MULCH), SPRINKLING, STONE, AND BARRIERS.
5. VEGETATIVE COVER - FOR DISTURBED AREAS NOT SUBJECT TO TRAFFIC, VEGETATION PROVIDES THE MOST PRACTICAL METHOD OF DUST CONTROL.
6. MULCH (INCLUDING GRAVEL MULCH) - WHEN PROPERLY APPLIED, MULCH OFFERS A FAST, EFFECTIVE MEANS OF CONTROLLING DUST. SEE MANUFACTURER'S RECOMMENDATIONS OR THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, 2003 FOR APPLICATION RATES.
7. SPRINKLING - EXPOSED SOILS MAY BE SPRINKLED UNTIL THE SURFACE IS WET. SPRINKLING IS ESPECIALLY EFFECTIVE FOR DUST CONTROL ON HAUL ROADS AND OTHER TRAFFIC ROUTES.
8. STONE - USED TO STABILIZE CONSTRUCTION ROADS; CAN ALSO BE EFFECTIVE FOR DUST CONTROL.
9. BARRIERS - A BOARD FENCE, WIND FENCE, SEDIMENT FENCE, OR SIMILAR BARRIER CAN CONTROL AIR CURRENTS AND BLOWING SOIL. ALL OF THESE FENCES ARE NORMALLY CONSTRUCTED OF WOOD AND THEY PREVENT EROSION BY OBSTRUCTING THE WIND NEAR THE GROUND AND PREVENTING THE SOIL FROM BLOWING OFFSITE.

MONITORING PROGRAM:

1. EROSION AND SEDIMENTATION CONTROLS SHALL BE INSPECTED AT LEAST ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.25 INCHES OR GREATER. DAILY RAINFALL SHALL BE MONITORED AND RECORDED BY THE CONTRACTOR. ALL STRUCTURES DAMAGED BY CONSTRUCTION EQUIPMENT, VANDALS, OR THE ELEMENTS SHALL BE REPAIRED OR REPLACED IMMEDIATELY, PRIOR TO CONTINUING THE CONSTRUCTION.
2. FOLLOWING THE FINAL SEEDING, THE SITE SHALL BE INSPECTED IN ACCORDANCE WITH THE SCHEDULE OUTLINED IN #1 ABOVE, TO ENSURE THAT THE VEGETATION HAS BEEN ESTABLISHED (90% COVER ACHIEVED). IN THE EVENT OF ANY UNSATISFACTORY GROWTH, RESEEDING WILL BE CARRIED OUT, WITH FOLLOW-UP INSPECTION.
3. AFTER THE CONSTRUCTION INSPECTOR HAS DETERMINED THAT THE PROJECT AREA HAS BEEN PERMANENTLY STABILIZED (70% COVER HAS BEEN ACHIVED OR NON-VEGETATED MEASURES HAVE BEEN IMPLEMENTED), THE CONTRACTOR SHALL REMOVE ALL SEDIMENT BARRIERS, TEMPORARY SEDIMENTATION CONTROL RISERS AND ANY OTHER TEMPORARY EROSION CONTROL MEASURES.

SEEDING AND REVEGETATION PLAN:

IMMEDIATELY FOLLOWING THE COMPLETION OF TREE CLEARING, ALL DISTURBED AREAS SHALL BE TREATED AS STATED BELOW IN ORDER TO MINIMIZE CONSTRUCTION-PERIOD EROSION.

APPLY SEED/TACKIFIER MIX ACCORDING TO THE FOLLOWING SPECIFICATIONS:

1. SEED: ERNST SEEDS QUICK EROSION CONTROL COVER MIX CONSISTING OF (% BY WEIGHT):
   - 50% LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)
   - 50% LOLIUM PERENNE, 'BIGLEAGUE' (PERENNIAL RYEGRASS, 'BIGLEAGUE')

   1.1. SEEDING RATE: 50 LBS PER ACRE
2. TACKIFIER: GEOPERM BONDED FIBER MATRIX (OR APPROVED EQUAL) APPLIED PER MANUFACTURER SPECIFICATIONS.

UPON COMPLETION OF SITE CONSTRUCTION, ALL AREAS PREVIOUSLY DISTURBED WITHIN THE FENCED AREA SHALL BE TREATED AS STATED BELOW. THESE AREAS WILL BE CLOSELY MONITORED BY THE CONTRACTOR UNTIL SUCH TIME AS A SATISFACTORY GROWTH OF VEGETATION IS ESTABLISHED. SATISFACTORY GROWTH SHALL MEAN A MINIMUM OF 90% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

1. TOPSOIL WILL BE SPREAD OVER ALL DISTURBED AREAS TO BE REVEGETATED AND SHALL BE GRADED TO A UNIFORM DEPTH OF FOUR (4) TO SIX (6) INCHES.
2. APPLY SEED AS DIRECTED BY THE OWNER AND FARMER OF THE LAND TO MAINTAIN HAY PRODUCTION AND RESTORE SITE TO PRE-EXISTING CONDITIONS TO THE MAXIMUM EXTENT PRACTICABLE.
3. SEEDING METHODS MAY BE DRILL SEEDINGS, BROADCASTS AND ROLLED, CULTIPACKED, OR TRACKED WITH A SMALL TRACK PIECE OF CONSTRUCTION EQUIPMENT, OR HYDRO-SEEDING, WITH SUBSEQUENT TRACKING.
4. WATERING MAY BE REQUIRED DURING DRY PERIODS, THE CONTRACTOR MUST CONSULT SEED MANUFACTURER'S INSTRUCTIONS.
5. INSPECT SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEED IMMEDIATELY. CONDUCT A FOLLOW-UP SURVEY AFTER ONE YEAR AND RESEED WHERE NECESSARY.
6. ALL SEDIMENT CONTROL STRUCTURES LOCATED DOWN GRADIENT OF SOILS STABILIZED BY VEGETATIVE MEASURES SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 70% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

UPON COMPLETION OF SITE CONSTRUCTION, ALL AREAS PREVIOUSLY DISTURBED OUTSIDE THE FENCED AREA SHALL BE TREATED AS STATED BELOW. THESE AREAS WILL BE CLOSELY MONITORED BY THE CONTRACTOR UNTIL SUCH TIME AS A SATISFACTORY GROWTH OF VEGETATION IS ESTABLISHED. SATISFACTORY GROWTH SHALL MEAN A MINIMUM OF 90% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

1. APPLY SEED AS DIRECTED BELOW:

   (APRIL 1ST THROUGH OCTOBER 1ST)

   - SEED DISTURBED AREAS AT THE RATE OF 30 LBS PER ACRE OF ERNST SEEDS NORTHEAST SOLAR POLLINATOR 4' MIX CONSISTING OF (% BY WEIGHT):
     - 35% BOUTELOUA CURTIPENDULA, BUTTE (SIDEOATS GRAMA, BUTTE)
     - 35% SCHIZACHYRIUM SCOPARIUM, 'CAMPER' (LITTLE BLUESTEM, 'CAMPER')
     - 10% PANICUM SPHAERONCARPON (ROUNDSEED PANICGRASS)
     - 4% ASCLEPIAS TUBEROSA (BUTTERFLY MILKWEED)
     - 4% CHAMAECRISTA FASCICULATA, PA ECOTYPE (PARTRIDGE PEA, PA ECOTYPE)
     - 4% COREOPSIS LANCEOLATA (LANCELEAF COREOPSIS)
     - 4% RUDBECKIA HIRTA (BLACKEYED SUSAN)
     - 0.9% PYCNANTHEMUM TENUIFOLIUM (NARROWLEAF MOUNTAINMINT)
     - 0.7% ASTER OBLONGIFOLIUS, (AROMATIC ASTER, PA ECOTYPE)
     - 0.5% ASTER PRENANTHOIDES, PA ECOTYPE (ZIGZAG ASTER, PA ECOTYPE)
     - 0.5% PENSTEMON DIGITALIS (TALL WHITE BEARDTONGUE)
     - 0.5% TRADESCANTIA OHIENSIS (OHIO SPIDERWORT, PA ECOTYPE)
     - 0.5% ZIZIA AUREA (GOLDEN ALEXANDERS)
     - 0.3% OENOTHERA FRUTICOSA VAR. FRUTICOSA (SUNDROPS)
     - 0.1% SOLIDAGO NEMORALIS, PA ECOTYPE (GRAY GOLDENROD, PA ECOTYPE)
   - APPLY WOOD FIBER MULCH AT A RATE OF 2,000 LBS PER ACRE FOR MAXIMUM MOISTURE RETENTION.
   - SEEDING SHALL HAVE A MINIMUM GERMINATION PERCENTAGE OF 85%.

   (NOVEMBER 1ST THROUGH DECEMBER 15TH)

   - SEED DISTURBED AREAS AT THE RATE OF 3 LBS PER 1,000 SQ. FT. OF WINTER RYE
   - APPLY HAY MULCH AT THE RATE OF 100 LBS PER 1,000 SQ. FT.

   (AFTER DECEMBER 15TH)

   - DO NOT SEED.
   - APPLY HAY MULCH AT THE RATE OF 100 LBS PER 1,000 SQ. FT.
2. SEEDING METHODS MAY BE DRILL SEEDINGS, BROADCASTS AND ROLLED, CULTIPACKED, OR TRACKED WITH A SMALL TRACK PIECE OF CONSTRUCTION EQUIPMENT, OR HYDRO-SEEDING, WITH SUBSEQUENT TRACKING.
3. WATERING MAY BE REQUIRED DURING DRY PERIODS CONSULT SEED MANUFACTURER'S INSTRUCTIONS.
4. INSPECT SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEED IMMEDIATELY. CONDUCT A FOLLOW-UP SURVEY AFTER ONE YEAR AND RESEED WHERE NECESSARY.
5. ALL SEDIMENT CONTROL STRUCTURES LOCATED DOWN GRADIENT OF SOILS STABILIZED BY VEGETATIVE MEASURES SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 70% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

AGRIVOLTAICS SPECIFICS:

1. REMOVE TOPSOIL IN AREAS OF PROPOSED GRADING TO ACHIEVE REQUIRED RACKING SYSTEM SLOPES. STOCKPILE TOPSOIL SEPERATELY TO AVOID MIXING WITH OTHER SOILS AND INVERTING SOIL LAYERS. LOAM AND SEED DISTURBED AREAS WITH TEMPORARY SEEDING AND INSTALL INTERMEDIATE EROSION CONTROL MEASURES PARALLEL TO THE SLOPES IMMEDIATELY FOLLOWING COMPLETION OF GRADING.
2. TOPSOIL SHALL NOT BE MIXED WITH SUBGRADE MATERIALS. TOPSOIL SHALL NOT BE BURIED. NO TOPSOIL SHALL LEAVE THE SITE. CONTRACTOR SHALL EMPLOY BEST MANAGEMENT PRACTICES TO ENSURE NO INVERSION OF TOPSOIL AND PROVIDE DECOMPACTION FOR FUTURE SOIL PRESERVATION.
3. APPLY NPK FERTILIZER AND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT MANUFACTURER'S RECOMMENDED RATES. FINE GRADE, LOAM DISTURBED AREAS AS NECESSARY AND SEED SITE FOLLOWING INSTALLATION OF PANELS. DISTURBED AREAS SHALL BE TREATED WITH SUFFICIENT TOPSOIL/LOAM TO PROMOTE VEGETATION GROWTH FOR STABILIZATION IN ACCORDANCE WITH THE NOTES IN THIS PLAN. DISTURBED AREAS SHALL BE RAKED AND SURFACE STONES LARGER THAN 6" SHALL BE REMOVED PRIOR TO PLACEMENT OF SEED.
4. REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED SHALL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
   - 4.1. INTER-ROW AREAS SHALL BE DECOMPACTED TO A DEPTH OF 12", REMOVING STONES GREATER THAN 3" AND WOOD DEBRIS. ENSURE PROTECTIONS OF BURIED CONDUIT DURING DECOMPACTION.
   - 4.2. ANY TOPSOIL TO BE PLACED FOR REVEGETATION MEASURES (WHETHER SCREENED ON-SITE OR IMPORTED) SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS, AND SHALL BE PLACED TO A DEPTH OF FOUR (4) INCHES ON ALL LOAM AND SEED AREAS OR AS SPECIFIED ON THE DRAWINGS.
   - 4.3. APPLY FERTILIZER AND/OR LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT MANUFACTURER'S RECOMMENDED RATES.
   - 4.4. THE DESIGN MIXES FOR SEEDING SHALL BE IN ACCORDANCE WITH THE SEED MIX TABLES AS SHOWN IN THIS PLAN. THE SEED MIX SHALL BE INOCULATED WITHIN TWENTY-FOUR (24) HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY. (ALTERNATIVE SEED MIXES SHALL BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION).

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

WSP USA INC.
100 APOLLO DRIVE, SUITE 302
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REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
5	06/15/2026	REVISED PER GEOTECHNICAL FINDINGS	MRB	OAC
4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
3	02/03/2026	RESPONSE TO COMMENTS	MRB	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
CONSTRUCTION, EROSION, AND SEDIMENTATION CONTROL NOTES

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY CIVIL
No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: G-001	
SHEET NUMBER: 1 OF 11	

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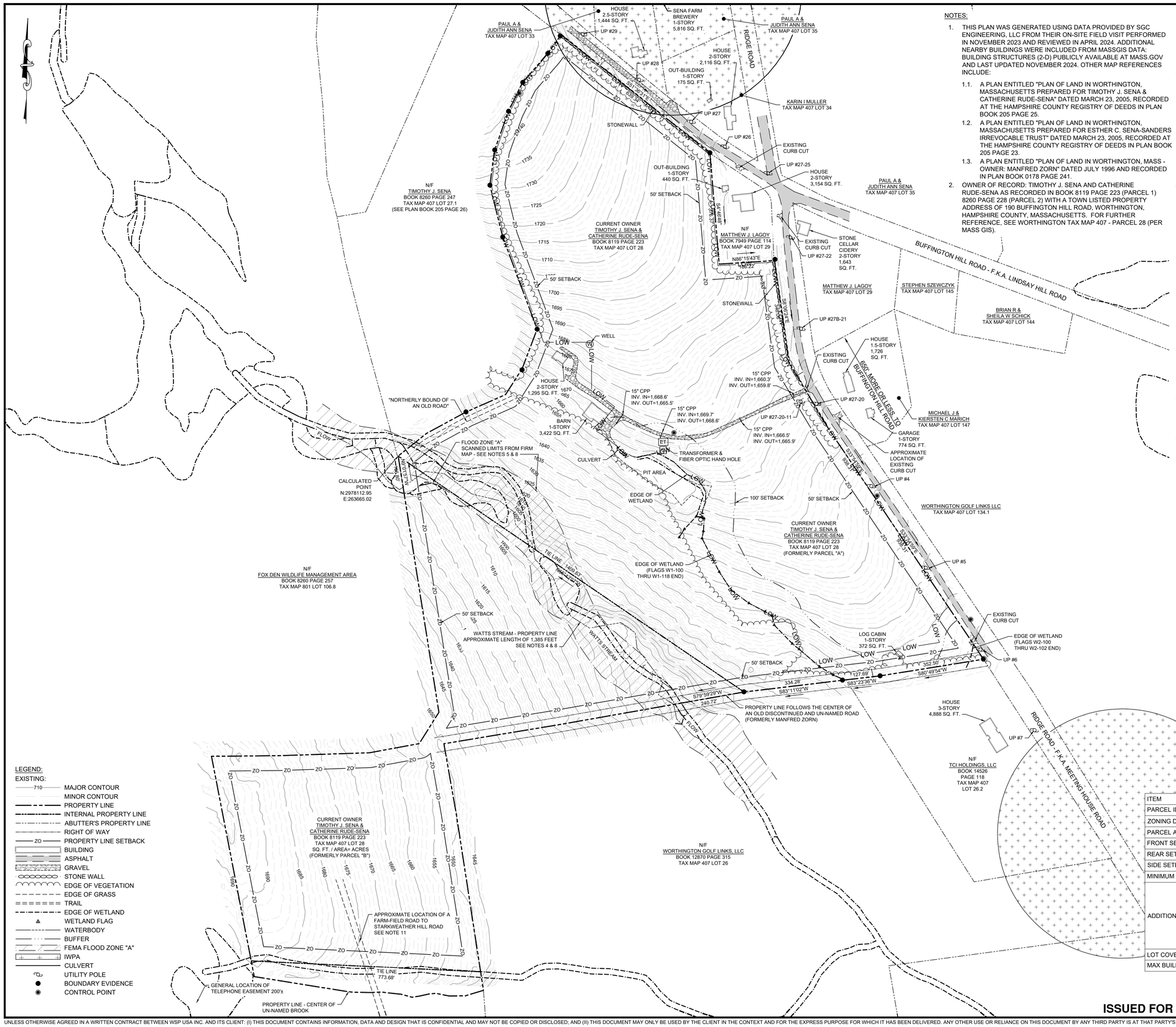

NOTES:

1. THIS PLAN WAS GENERATED USING DATA PROVIDED BY SGC ENGINEERING, LLC FROM THEIR ON-SITE FIELD VISIT PERFORMED IN NOVEMBER 2023 AND REVIEWED IN APRIL 2024. ADDITIONAL NEARBY BUILDINGS WERE INCLUDED FROM MASSGIS DATA: BUILDING STRUCTURES (2-D) PUBLICLY AVAILABLE AT MASS.GOV AND LAST UPDATED NOVEMBER 2024. OTHER MAP REFERENCES INCLUDE:
   - 1.1. A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASSACHUSETTS PREPARED FOR TIMOTHY J. SENA & CATHERINE RUDE-SENA" DATED MARCH 23, 2005, RECORDED AT THE HAMPSHIRE COUNTY REGISTRY OF DEEDS IN PLAN BOOK 205 PAGE 25.
   - 1.2. A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASSACHUSETTS PREPARED FOR ESTHER C. SENA-SANDERS IRREVOCABLE TRUST" DATED MARCH 23, 2005, RECORDED AT THE HAMPSHIRE COUNTY REGISTRY OF DEEDS IN PLAN BOOK 205 PAGE 23.
   - 1.3. A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASS - OWNER: MANFRED ZORN" DATED JULY 1996 AND RECORDED IN PLAN BOOK 0178 PAGE 241.
2. OWNER OF RECORD: TIMOTHY J. SENA AND CATHERINE RUDE-SENA AS RECORDED IN BOOK 8119 PAGE 223 (PARCEL 1) 8260 PAGE 228 (PARCEL 2) WITH A TOWN LISTED PROPERTY ADDRESS OF 190 BUFFINGTON HILL ROAD, WORTHINGTON, HAMPSHIRE COUNTY, MASSACHUSETTS. FOR FURTHER REFERENCE, SEE WORTHINGTON TAX MAP 407 - PARCEL 28 (PER MASS GIS).
3. HORIZONTAL DATUM IS BASED ON MASSACHUSETTS STATE GRID COORDINATE SYSTEM NAD83 (2011 - MAINLAND). VERTICAL DATUM IS REFERENCED TO NAVD 88. TOPOGRAPHY SHOWN WAS DEVELOPED UTILIZING THE MOST UP TO DATE ONLINE ELECTRONIC LIDAR FILES FROM NGS, IN COMBINATION WITH ON THE GROUND DATA COLLECTION WITH SURVEY GRADE GPS AND OR ROBOTIC TOTAL STATION. CONTOUR INTERVAL SHOWN ON PLAN IS 1 FOOT.
4. BUILDING STORY HEIGHTS WERE OBTAINED FROM PUBLICLY AVAILABLE PROPERTY RECORD CARDS AND GOOGLE IMAGERY. AN AVERAGE STORY IS APPROXIMATELY 10 FEET TALL FLOOR TO FLOOR AND ROOFING CAN PROVIDE AN ADDITIONAL AVERAGE 3 TO 7 FEET TO THE TOTAL BUILDING HEIGHT.
5. THE WETLANDS SHOWN ON THIS PLAN WERE REVIEWED, DEFINED, AND FLAGGED BY OTHERS AND FIELD LOCATED BY SGC ENGINEERING DATED NOVEMBER 22, 2023. ADDITIONAL WETLANDS SHOWN WITHOUT BUFFERS WERE INCLUDED FROM MASSGIS DATA: NATIONAL WETLANDS INVENTORY PUBLICLY AVAILABLE AT MASS.GOV AND LAST UPDATED SEPTEMBER 2025. ON APRIL 24, 2026 MASSDEP ISSUED A SUPERSEDING DETERMINATION OF APLICABILITY WHICH IDENTIFIED AN ADDITIONAL WETLAND ALONG THE PIT AREA.
6. A PREDOMINATE PORTION OF THE PROPERTY LIES WITHIN ZONE "X" AND THE PROPOSED SOLAR DEVELOPMENT IS NOT AFFECTED (SEE PLAN). A SMALL CENTRAL PORTION OF THE LOCUS PARCEL IS AFFECTED BY ZONE "A" AND IS CATEGORIZED AS A SPECIFIED FLOOD HAZARD ZONE. FOR FURTHER REFERENCE SEE F.I.R.M. - FLOOD INSURANCE RATE MAP - COMMUNITY PANEL NUMBER 250175 0008 SUFFIX B / MAP NUMBER 8 OF 25 FOR THE TOWN OF WORTHINGTON, HAMPSHIRE COUNTY (ALL JURISDICTIONS), MASSACHUSETTS, WITH AN EFFECTIVE DATE OF JUNE 19, 1989. ZONE "A" (WATTS STREAM SO-CALLED) IS DESCRIBED AS AN AREA THAT NO BASE FLOOD ELEVATION HAS BEEN DETERMINED. THE BASE FLOOD ELEVATION IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. ZONE "X" IS DETERMINED AS AREAS OUTSIDE 500 - YEAR FLOOD PLAIN.
7. NEITHER SGC ENGINEERING, LLC NOR WSP HAVE INDEPENDENTLY VERIFIED THE LOCATION, EXISTENCE, AND SERVICEABILITY OF ANY UTILITIES AND MAKE NO GUARANTEE TO THE COMPLETENESS OR THE ACCURACY OF ANY UTILITIES SHOWN ON THIS PLAN. UTILITIES SHOWN WERE FIELD LOCATED ABOVEGROUND AND VISUAL, AND OR REFERENCED FROM PLANS AND MAP REFERENCES. ADDITIONAL UTILITIES MAY EXIST IN THE FIELD, WHICH ARE NOT SHOWN ON THIS PLAN. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD PRIOR TO EXCAVATION OR OTHER CONSTRUCTION ACTIVITIES. CALL "DIG SAFE" AT 1-888-344-7233 OR DIAL 811. SGC ENGINEERING, LLC AND WSP USA INC. ASSUME NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN ON THIS PLAN.
8. THIS SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF THE PERSON, PERSONS, OR ENTITY NAMED IN THE CERTIFICATION AND TITLE BLOCK OF THIS PLAN. THIS SURVEY DOES NOT EXTEND TO ANY UNNAMED PERSON, PERSONS, OR ENTITY WITHOUT HAVING SGC ENGINEERING'S CONSENT IN WRITING.
9. THE LOCATIONS OF THE WATTS STREAM, WITHIN PARCEL "A" (SO CALLED), AND AN UN-NAMED BROOK, THAT DEMARCATES A WESTERLY BOUNDARY LINE OF PARCEL "B", ARE BOTH BASED ON PHYSICAL FIELD EVIDENCE, DEED CALLS, AND OR PLANS OF RECORD AT TIME OF SURVEY. BOTH WATTS STREAM AND THE UN-NAMED BROOK MAY OR MAY NOT AFFECT THE PRESENT - FUTURE PROPERTY DUE TO AVULSION, ACCRETION, AND/OR RELICTION.
10. OBSERVATIONS OF THE PREMISES BY SGC IN NOVEMBER 2023:
   - 10.a. LOCUS PARCEL HAS FREE AND CLEAR ACCESS, IN AND TO BUFFINGTON HILL ROAD AND RIDGE ROAD AS SHOWN ON PLAN. BOTH ROADS ARE DEDICATED AND PUBLIC WAYS OF VARIABLE WIDTHS.
   - 10.b. THE LOCUS PARCEL IS THE SAME LAND AS DESCRIBED IN THE TITLE COMMITMENT AS EXHIBIT "A".
   - 10.c. NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, AND BUILDING ADDITIONS WERE OBSERVED ON SURVEYED PREMISES.
   - 10.d. THE PROPERTY COMPRISES A SINGLE TAX LOT - TOWN OF WORTHINGTON TAX MAP NUMBER 407 PARCEL 28.
   - 10.e. NO EVIDENCE WAS NOTICED OF THE SITE BEING USED AS A SOLID WASTE DUMP.

LEGEND:

EXISTING:

- MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

ITEM	REQUIRED		PROPOSED
PARCEL ID NUMBER(S)	TAX MAP 407 0 28		
ZONING DISTRICT	RESIDENTIAL - AGRICULTURAL DISTRICT		
PARCEL ACREAGE	2.0		71.6
FRONT SETBACK (FT)	50		50
REAR SETBACK (FT)	50		>500
SIDE SETBACK (FT)	50		50
MINIMUM FRONTAGE (FT)	400		1542
ADDITIONAL SETBACKS	ACCESS TO SIDE-REAR (FT)	25	>400
	ACCESS EASEMENT (FT)	15	15
	UTILITY EASEMENT (FT)	20	20
	LEASE TO FENCE (FT)	25	25
	LEASE TO BASINS (FT)	15	15
	WETLANDS (FT)	100	100
LOT COVERAGE	<50%		1.8%
MAX BUILDING HEIGHT (FT)	35		~16

0' 75' 150' 225'
1" = 150' WHEN PLOTTED 24" X 36"

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PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
EXISTING CONDITIONS

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY CIVIL No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: V-101	
SHEET NUMBER: 2 OF 11	

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NOTES:

1. ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.
2. PROPOSED EQUIPMENT PAD LOCATION TO BE GRADED TO A MAXIMUM 2% SLOPE.

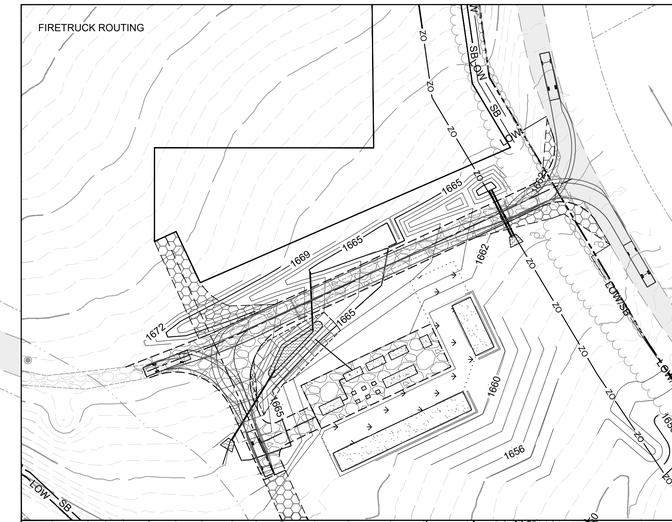
LEGEND:

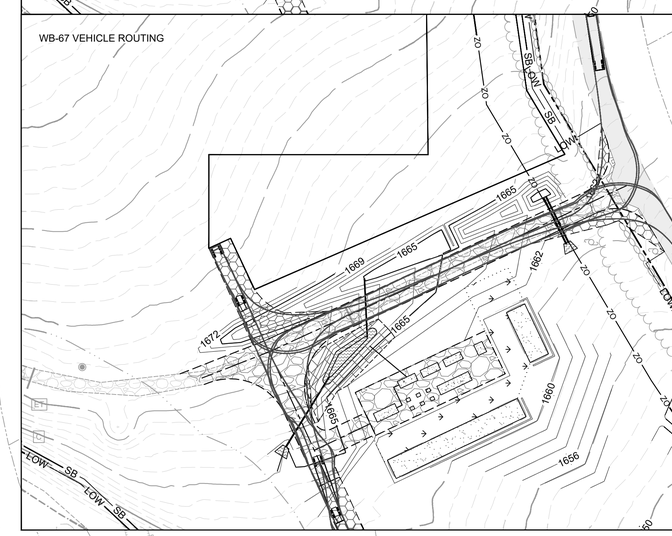
EXISTING:

- 710 — MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- ZO — PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

PROPOSED:

- LOW — LIMIT OF WORK
- 1670 — MAJOR CONTOUR
- MINOR CONTOUR
- SB — SEDIMENT BARRIER (4 / C-501)
- EROSION CONTROL BLANKET (19 / C-502)
- EC — ELECTRICAL CONDUIT (2 / C-501)
- ACCESS ROAD (1 / C-501)
- CONCRETE PAD (6 / C-501)
- SOLAR PV ARRAY (8 / C-501)
- CULVERT (3 / C-501)
- ORGANIC MEDIA FILTER (13 / C-502)
- VEGETATED FILTER STRIP (14 / C-502)
- TEMPORARY ROAD (5 / C-501)
- RIPRAP APRON (17,18 / C-503)
- LANDSCAPE SCREENING (21-23 / C-503)





0' 30' 60' 90'
1" = 60' WHEN PLOTTED 24" X 36"

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

WSP USA INC.
100 APOLLO DRIVE, SUITE 302
CHELMSFORD MASSACHUSETTS 01824
TELEPHONE: (978) 692-9090
FAX: (978) 692-6633
WEB: WWW.WSP.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
5	06/15/2026	REVISED PER GEOTECHNICAL FINDINGS	MRB	OAC
4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
3	02/03/2026	RESPONSE TO COMMENTS	MRB	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT: **2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT 190 RIDGE ROAD WORTHINGTON, MA 01098**

TITLE: **GRADING/EARTHWORK PLAN**

CLIENT: BWC WADES STREAM, LLC

SEAL: COMMONWEALTH OF MASSACHUSETTS — OLIVIA CROSBY CIVIL No. 54915 — PROFESSIONAL ENGINEER — 07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: C-101	
SHEET NUMBER: 3 OF 11	

D:\BlueWave\US-EI-365230437 - Ridge Rd Worthington\4 Permitting\Sheets\3-5 - Ridge Rd - C-101-3.dwg - C-101 - Jul. 07, 2026 1:26pm - wsp_morgan.mcdonald

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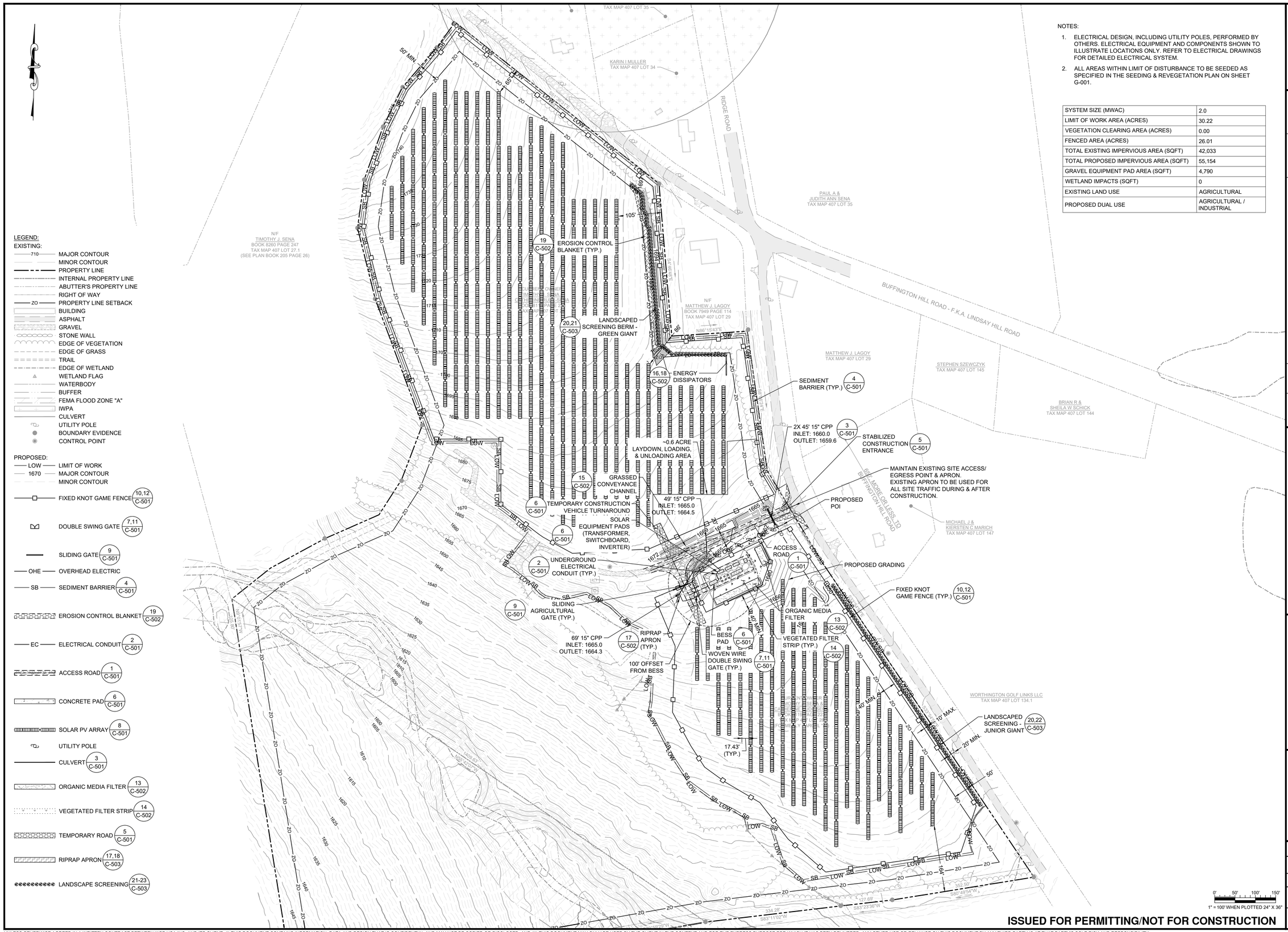

LEGEND:

EXISTING:

- 710 MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- ZO PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

PROPOSED:

- LOW LIMIT OF WORK
- 1670 MAJOR CONTOUR
- MINOR CONTOUR
- FIXED KNOT GAME FENCE 10,12 C-501
- DOUBLE SWING GATE 7,11 C-501
- SLIDING GATE 9 C-501
- OHE OVERHEAD ELECTRIC
- SB SEDIMENT BARRIER 4 C-501
- EROSION CONTROL BLANKET 19 C-502
- EC ELECTRICAL CONDUIT 2 C-501
- ACCESS ROAD 1 C-501
- CONCRETE PAD 6 C-501
- SOLAR PV ARRAY 8 C-501
- UTILITY POLE
- CULVERT 3 C-501
- ORGANIC MEDIA FILTER 13 C-502
- VEGETATED FILTER STRIP 14 C-502
- TEMPORARY ROAD 5 C-501
- RIPRAP APRON 17,18 C-503
- LANDSCAPE SCREENING 21-23 C-503

NOTES:

1. ELECTRICAL DESIGN, INCLUDING UTILITY POLES, PERFORMED BY OTHERS. ELECTRICAL EQUIPMENT AND COMPONENTS SHOWN TO ILLUSTRATE LOCATIONS ONLY. REFER TO ELECTRICAL DRAWINGS FOR DETAILED ELECTRICAL SYSTEM.
2. ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.

SYSTEM SIZE (MWAC)	2.0
LIMIT OF WORK AREA (ACRES)	30.22
VEGETATION CLEARING AREA (ACRES)	0.00
FENCED AREA (ACRES)	26.01
TOTAL EXISTING IMPERVIOUS AREA (SQFT)	42,033
TOTAL PROPOSED IMPERVIOUS AREA (SQFT)	55,154
GRAVEL EQUIPMENT PAD AREA (SQFT)	4,790
WETLAND IMPACTS (SQFT)	0
EXISTING LAND USE	AGRICULTURAL
PROPOSED DUAL USE	AGRICULTURAL / INDUSTRIAL

WSP USA INC.
100 APOLLO DRIVE, SUITE 302
CHELMSFORD MASSACHUSETTS 01824
TELEPHONE: (978) 692-9090
FAX: (978) 692-6633
WEB: WWW.WSP.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
5	06/15/2026	REVISED PER GEOTECHNICAL FINDINGS	MRB	OAC
4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
3	02/03/2026	RESPONSE TO COMMENTS	MRB	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT: **2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT 190 RIDGE ROAD WORTHINGTON, MA 01098**

TITLE: **PROPOSED CONDITIONS**

CLIENT: BWC WADES STREAM, LLC

SEAL: COMMONWEALTH OF MASSACHUSETTS — OLIVIA CROSBY CIVIL No. 54915 — PROFESSIONAL ENGINEER — 07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: C-102	
SHEET NUMBER: 4 OF 11	

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

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NOTES:

1. ELECTRICAL DESIGN, INCLUDING UTILITY POLES, PERFORMED BY OTHERS. ELECTRICAL EQUIPMENT AND COMPONENTS SHOWN TO ILLUSTRATE LOCATIONS ONLY. REFER TO ELECTRICAL DRAWINGS FOR DETAILED ELECTRICAL SYSTEM.
2. ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.

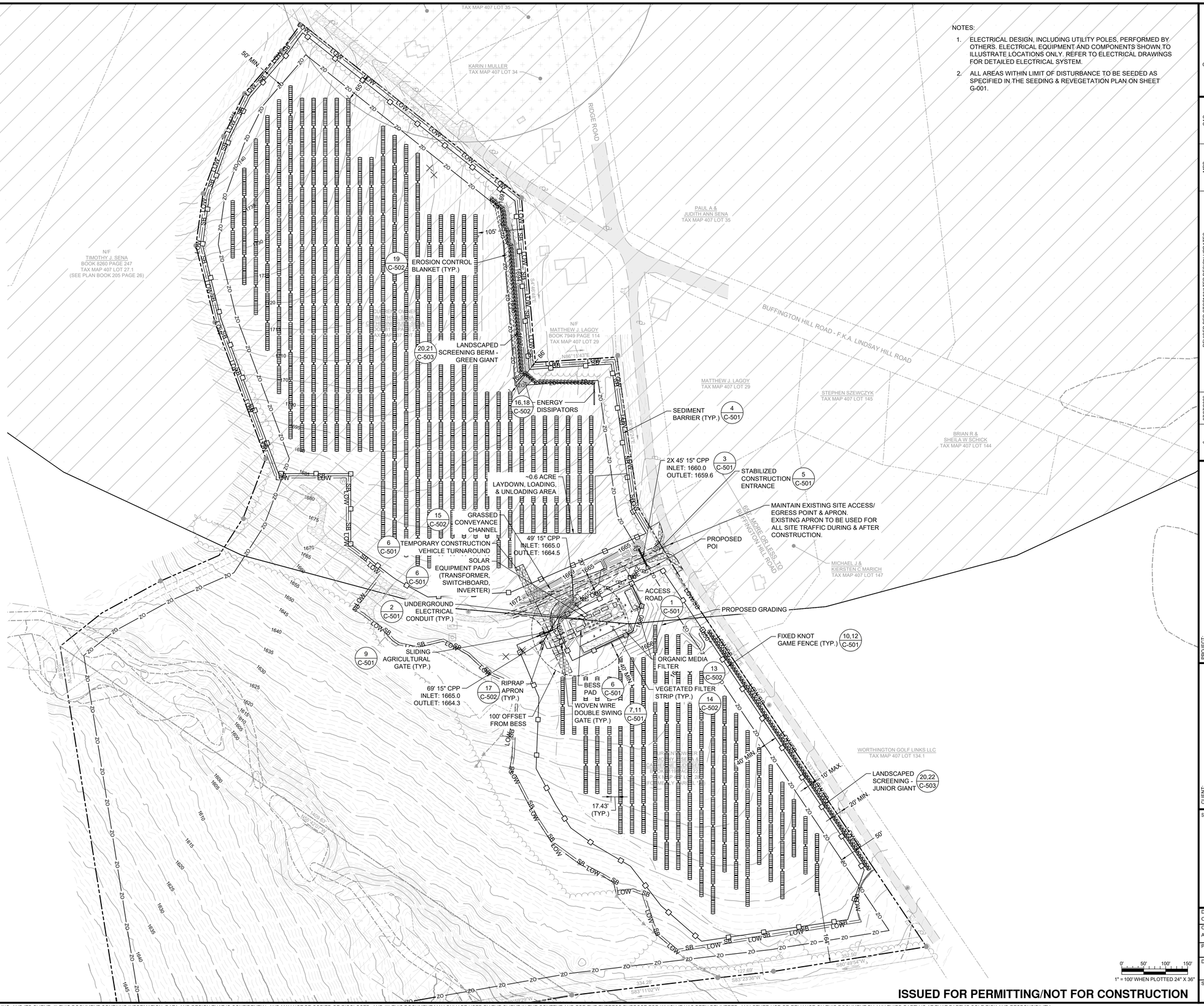
LEGEND:

EXISTING:

- 710 — MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- ZO — PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- WATER SUPPLY PROTECTION DISTRICT
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

PROPOSED:

- LOW — LIMIT OF WORK
- 1670 — MAJOR CONTOUR
- MINOR CONTOUR
- FIXED KNOT GAME FENCE 10,12 / C-501
- DOUBLE SWING GATE 7,11 / C-501
- SLIDING GATE 9 / C-501
- OHE — OVERHEAD ELECTRIC
- SB — SEDIMENT BARRIER 4 / C-501
- EROSION CONTROL BLANKET 19 / C-502
- EC — ELECTRICAL CONDUIT 2 / C-501
- ACCESS ROAD 1 / C-501
- CONCRETE PAD 6 / C-501
- SOLAR PV ARRAY 8 / C-501
- UTILITY POLE
- CULVERT 3 / C-501
- ORGANIC MEDIA FILTER 13 / C-502
- VEGETATED FILTER STRIP 14 / C-502
- TEMPORARY ROAD 5 / C-501
- RIPRAP APRON 17,18 / C-503
- LANDSCAPE SCREENING 21-23 / C-503



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WSP USA INC.
100 APOLLO DRIVE, SUITE 302
CHELMSFORD MASSACHUSETTS 01824
TELEPHONE: (978) 692-9090
FAX: (978) 692-6633
WEB: WWW.WSP.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
5	06/15/2026	REVISED PER GEOTECHNICAL FINDINGS	MRB	OAC
4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
3	02/03/2026	RESPONSE TO COMMENTS	MRB	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
WATER SUPPLY PROTECTION DISTRICT OVERLAY

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY
CIVIL
No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: C-103	
SHEET NUMBER: 5 OF 11	

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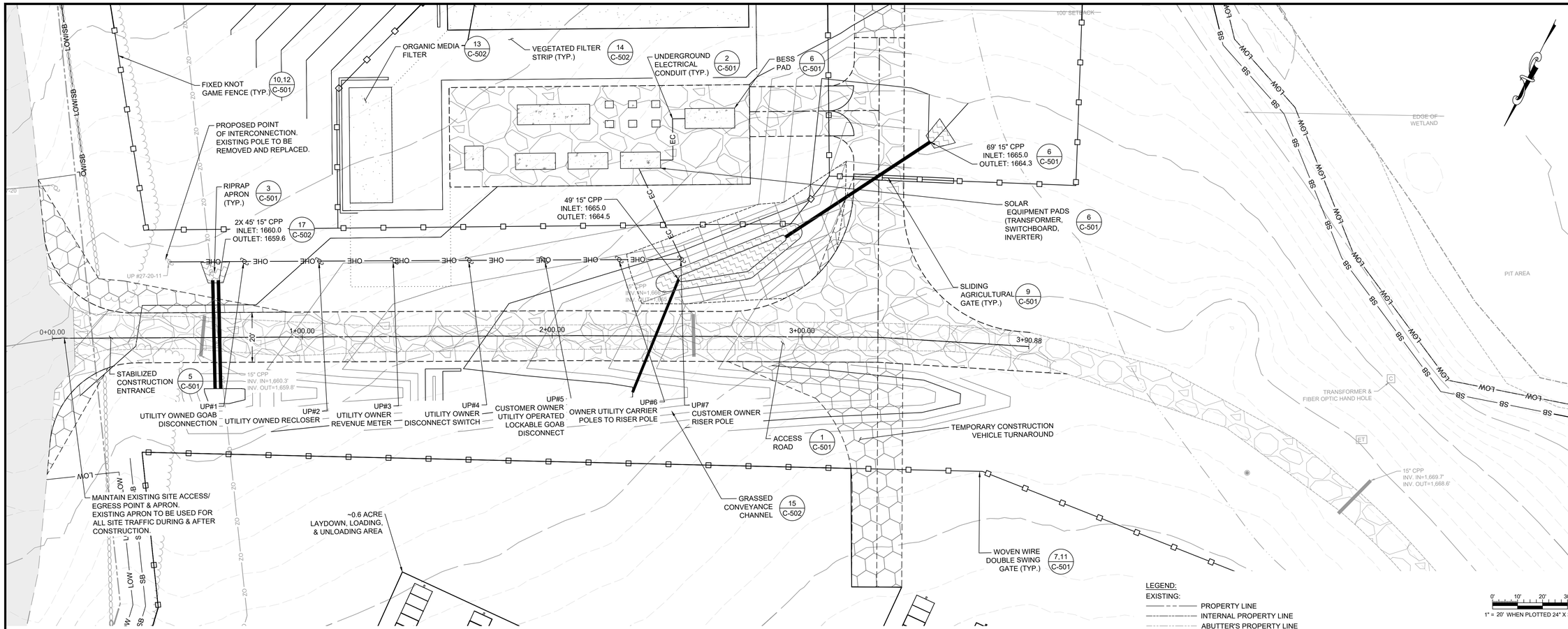

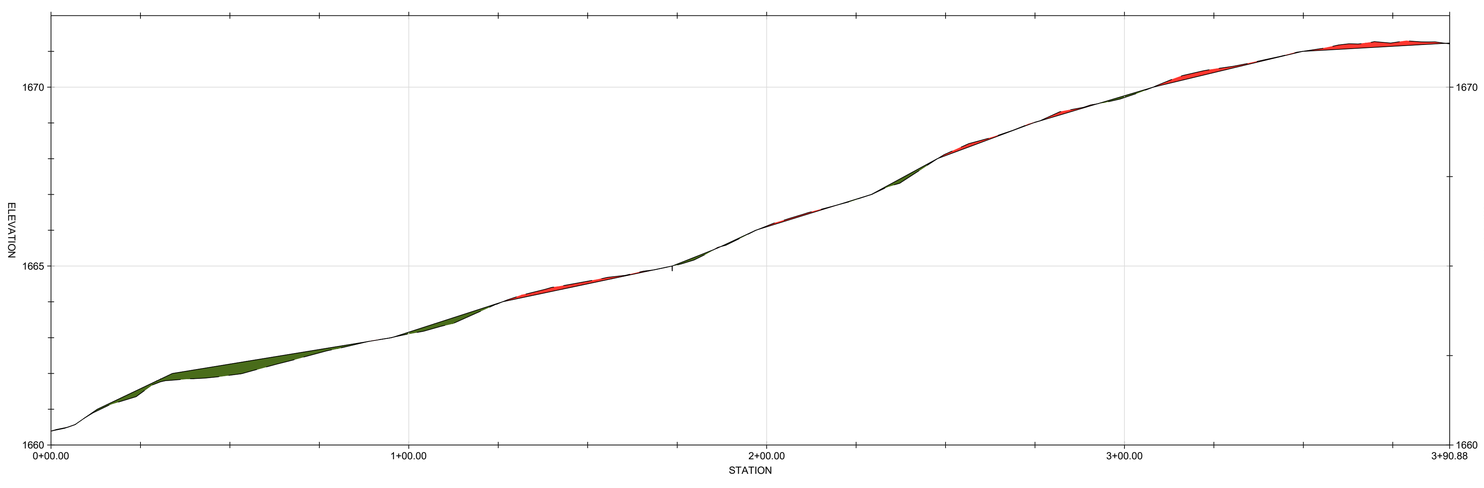

PROFILE LEGEND:
- EXISTING ELEVATION
- PROPOSED ELEVATION
- CUT AREA
- FILL AREA

LEGEND:

EXISTING:
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
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- EDGE OF GRASS
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- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

PROPOSED:
- LIMIT OF WORK
- MAJOR CONTOUR
- MINOR CONTOUR
- FIXED KNOT GAME FENCE 10,12 C-501
- DOUBLE SWING GATE 7,11 C-501
- SLIDING GATE 9 C-501
- OVERHEAD ELECTRIC
- SEDIMENT BARRIER 4 C-501
- EROSION CONTROL BLANKET 19 C-502
- ELECTRICAL CONDUIT 2 C-501
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- CONCRETE PAD 6 C-501
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- UTILITY POLE
- CULVERT 3 C-501
- ORGANIC MEDIA FILTER 13 C-502
- VEGETATED FILTER STRIP 14 C-502
- TEMPORARY ROAD 5 C-501
- RIPRAP APRON 17,18 C-503
- LANDSCAPE SCREENING 21-23 C-503

NOTES:

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2. ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.
3. THE TOTAL GRADING CUT VOLUME FOR THE SITE IS 1627.87 CUBIC YARDS. THE TOTAL GRADING FILL VOLUME IS 1482.78 CUBIC YARDS. THE GRADING WILL RESULT IN A NET CUT VOLUME OF 145.09 CUBIC YARDS WHICH CAN BE DISPERSED ACROSS THE SITE AT THE OWNER'S DISCRETION.

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

WSP USA INC.
100 APOLLO DRIVE, SUITE 302
CHELMSFORD MASSACHUSETTS 01824
TELEPHONE: (978) 692-9090
FAX: (978) 692-6633
WEB: WWW.WSP.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
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4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
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2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
ACCESS ROAD TOPOGRAPHIC PROFILE ANALYSIS

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY
CIVIL
No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: **C-104**	
SHEET NUMBER: **6 OF 11**	

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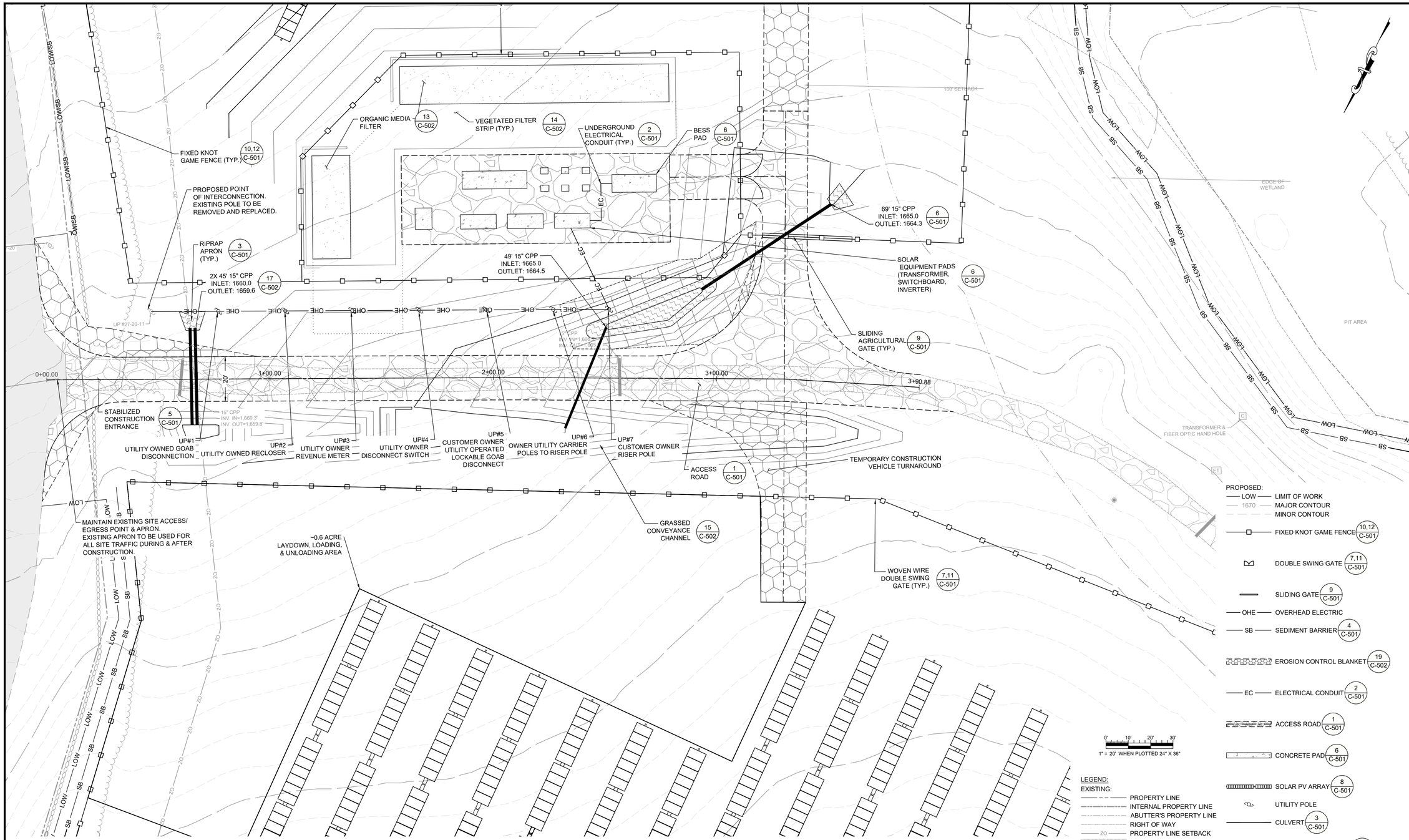

PROPOSED:

- LOW — LIMIT OF WORK
- 1670 — MAJOR CONTOUR
- MINOR CONTOUR
- FIXED KNOT GAME FENCE 10,12 C-501
- DOUBLE SWING GATE 7,11 C-501
- SLIDING GATE 9 C-501
- OHE — OVERHEAD ELECTRIC
- SB — SEDIMENT BARRIER 4 C-501
- EROSION CONTROL BLANKET 19 C-502
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- TEMPORARY ROAD 5 C-501
- RIPRAP APRON 17,18 C-503
- LANDSCAPE SCREENING 21-23 C-503

LEGEND:

EXISTING:

- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
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- ZO — PROPERTY LINE SETBACK
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NOTES:

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CHELMSFORD MASSACHUSETTS 01824
TELEPHONE: (978) 692-9090
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0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
EQUIPMENT PADS

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY
CIVIL
No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN

PROJECT NUMBER: US-EI-365230438

DRAWING NUMBER: **C-105**

SHEET NUMBER: **7 OF 11**

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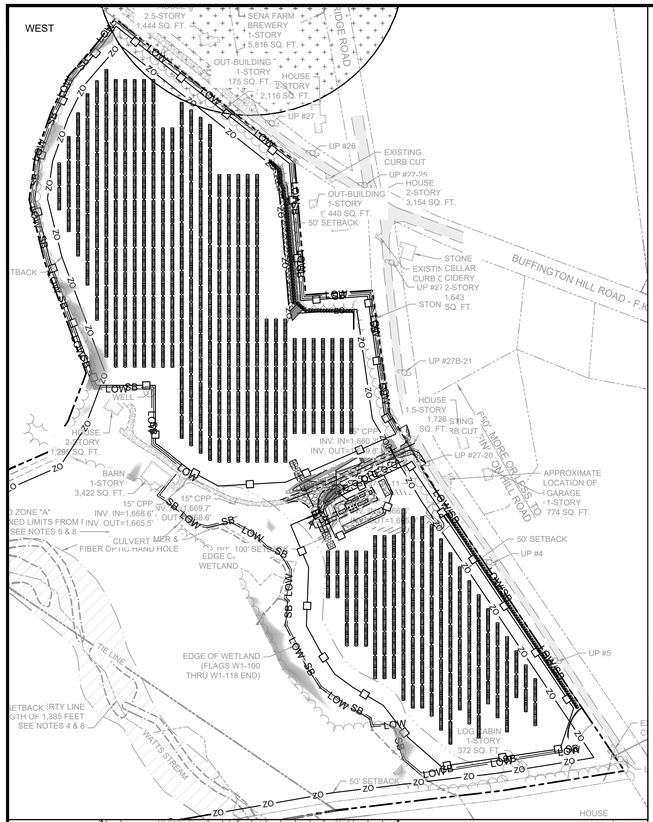

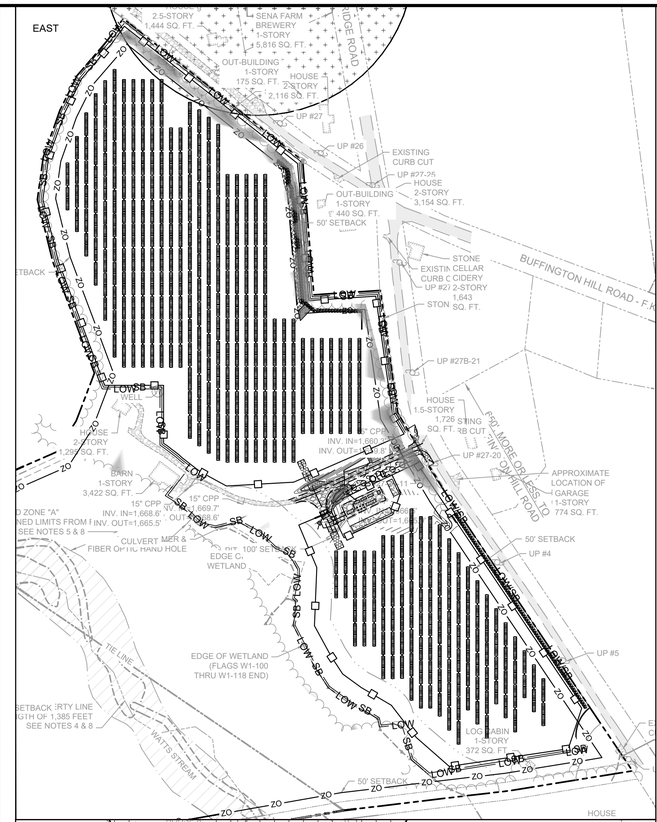

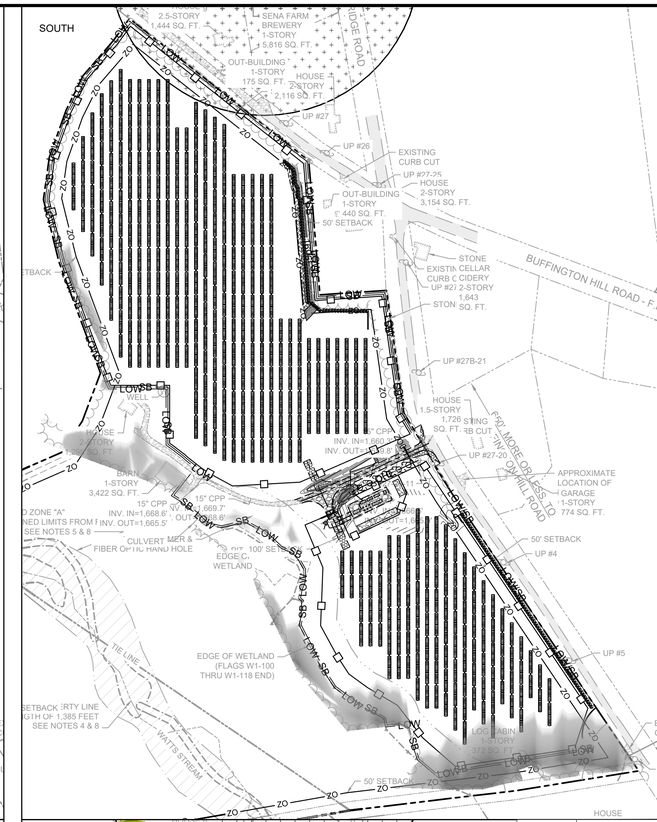

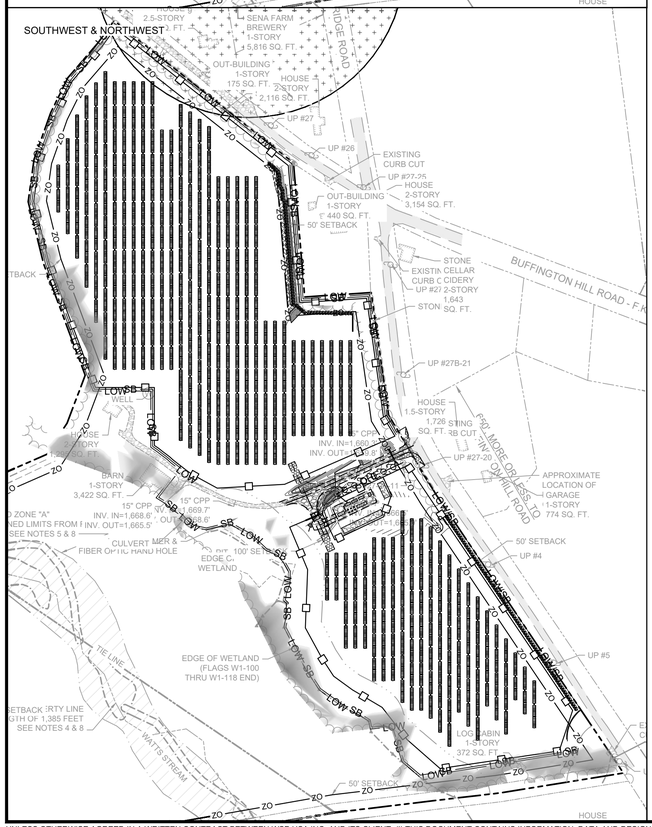

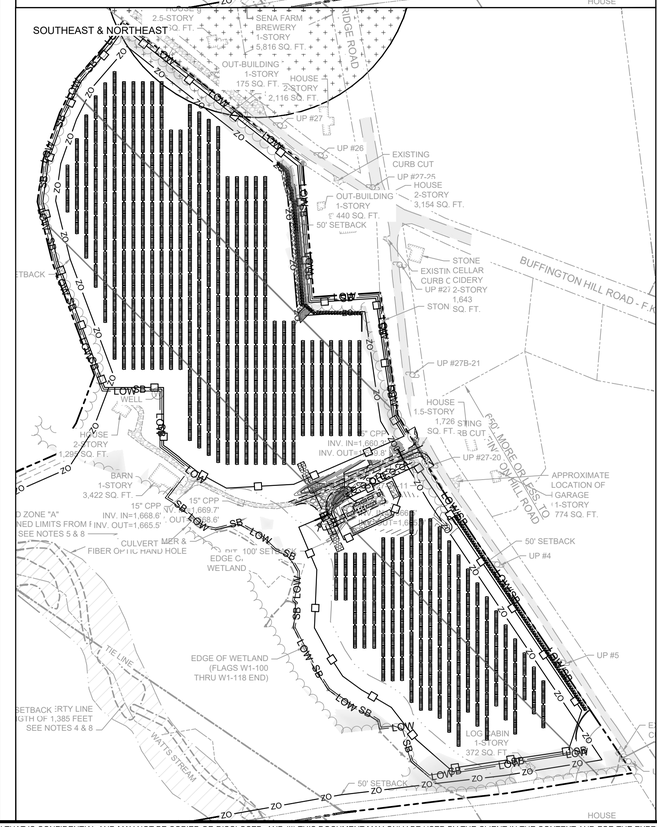

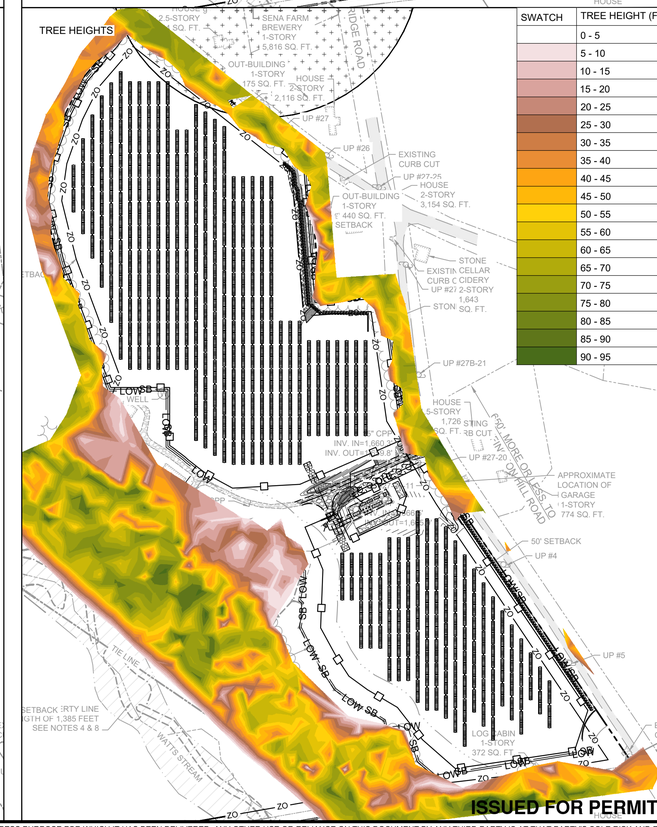

NOTES:

1. IDEAL SHADING SETBACKS:
   - 1.1. SOUTHERN TREES: 3X TREE HEIGHT
   - 1.2. EAST& WEST TREES: 2.5X TREE HEIGHT
   - 1.3. SOUTHWEST & SOUTHEAST TREES: 3X TREE HEIGHT
   - 1.4. NORTHWEST AND NORTHEAST TREES: 0.85X TREE HEIGHT

SWATCH	TREE HEIGHT (FT)
	0 - 5
	5 - 10
	10 - 15
	15 - 20
	20 - 25
	25 - 30
	30 - 35
	35 - 40
	40 - 45
	45 - 50
	50 - 55
	55 - 60
	60 - 65
	65 - 70
	70 - 75
	75 - 80
	80 - 85
	85 - 90
	90 - 95

LEGEND:

EXISTING:

- 710 — MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- ZO — PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

PROPOSED:

- LOW — LIMIT OF WORK
- 1670 — MAJOR CONTOUR
- MINOR CONTOUR
- FIXED KNOT GAME FENCE (10,12 / C-501)
- DOUBLE SWING GATE (7,11 / C-501)
- SLIDING GATE (9 / C-501)
- OHE — OVERHEAD ELECTRIC
- SB — SEDIMENT BARRIER (4 / C-501)
- EROSION CONTROL BLANKET (19 / C-502)
- EC — ELECTRICAL CONDUIT (2 / C-501)
- ACCESS ROAD (1 / C-501)
- CONCRETE PAD (6 / C-501)
- SOLAR PV ARRAY (8 / C-501)
- UTILITY POLE
- CULVERT (3 / C-501)
- ORGANIC MEDIA FILTER (13 / C-502)
- VEGETATED FILTER STRIP (14 / C-502)
- TEMPORARY ROAD (5 / C-501)
- RIPRAP APRON (17,18 / C-503)
- LANDSCAPE SCREENING (21-23 / C-503)

0' 100' 200' 300'
1" = 200' WHEN PLOTTED 24" X 36"

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

WSP USA INC.
100 APOLLO DRIVE, SUITE 302
CHELMSFORD MASSACHUSETTS 01824
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WEB: WWW.WSP.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
5	06/15/2026	REVISED PER GEOTECHNICAL FINDINGS	MRB	OAC
4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
3	02/03/2026	RESPONSE TO COMMENTS	MRB	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	08/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT: 2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE: SHADOW ANALYSIS OF PROPOSED CONDITIONS

CLIENT: BWC WADES STREAM, LLC

SEAL: COMMONWEALTH OF MASSACHUSETTS — OLIVIA CROSBY — CIVIL — No. 54915 — PROFESSIONAL ENGINEER — JULY 7, 2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: C-106	
SHEET NUMBER: 8 OF 11	

D:\BlueWave\US-EI-365230437 - Ridge Rd Worthington\4 Permitting\Sheets\8 - Ridge Rd - C-106.dwg - C-105 - Jul. 07, 2026 1:47pm - wds_morgan.mcdonald

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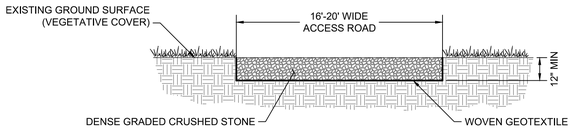
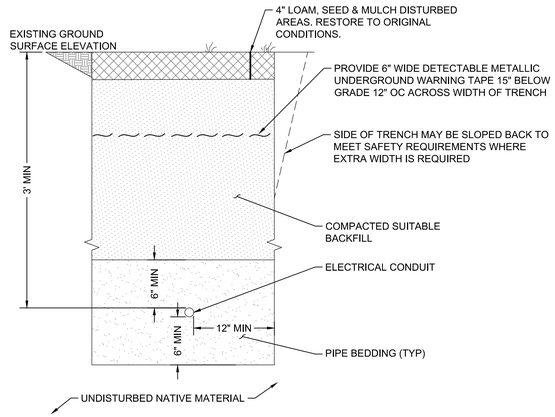


NOTE(S):

1. ACCESS ROAD TO BE CONSTRUCTED OF A MINIMUM 6" OF DENSE GRADED CRUSHED STONE.
2. WOVEN GEOTEXTILE TO BE PLACED BETWEEN THE GROUND SURFACE AND THE CRUSHED STONE.
3. CRUSHED STONE SHALL BE COMPACTED TO A FIRM AND NON-YIELDING CONDITION.

FLUSH CRUSHED STONE ACCESS ROAD (1)

NOT TO SCALE

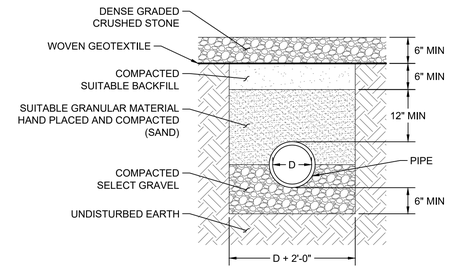


NOTE(S):

1. DETAIL SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. ELECTRICAL ENGINEER TO CONFIRM REGULATORY AND CODE COMPLIANCE.

TYPICAL ELECTRICAL CONDUIT UTILITY TRENCH (2)

NOT TO SCALE

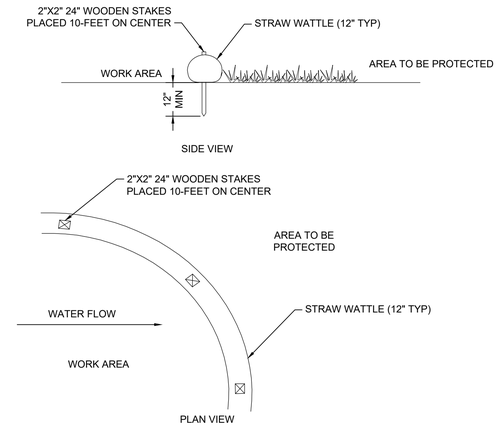


NOTE(S):

1. ALIGN CENTER OF PIPE WITH CENTERLINE OF DITCH AND BOTTOM OF PIPE WITH DITCH LINE.
2. PIPE EXTENDS A MINIMUM OF 3" BEYOND DENSE GRADED CRUSHED STONE AT INLET AND OUTLET.
3. PIPE SLOPE SHALL FOLLOW EXISTING DITCH LINE BUT BE NO LESS THAN 1.5% AND NO MORE THAN 10%.

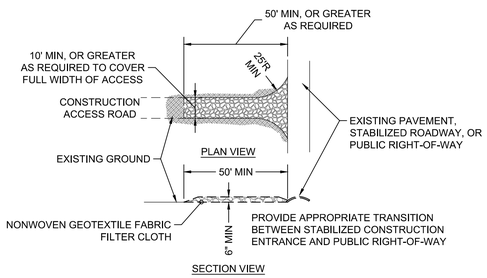
TYPICAL CULVERT TRENCH (3)

NOT TO SCALE



SEDIMENT BARRIER - STRAW WATTLE (4)

NOT TO SCALE

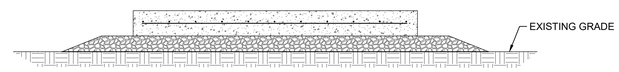


NOTE(S):

1. STONE TO BE 1"-3" STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FT.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TEN (10) FT. MIN, BUT NOT LESS THAN THE FULL TRAVELED WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. FILTER CLOTH - SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCE SHALL BE PIPED ACROSS OR BENEATH THE ENTRANCE.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. IF WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE (5)

NOT TO SCALE

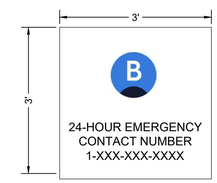


NOTE(S):

1. CONCRETE PAD SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.

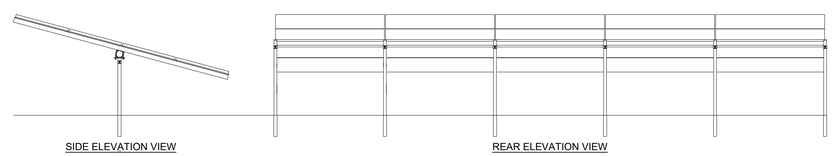
TYPICAL CONCRETE EQUIPMENT PAD SECTION (6)

NOT TO SCALE



TYPICAL ENTRANCE SIGN (7)

NOT TO SCALE

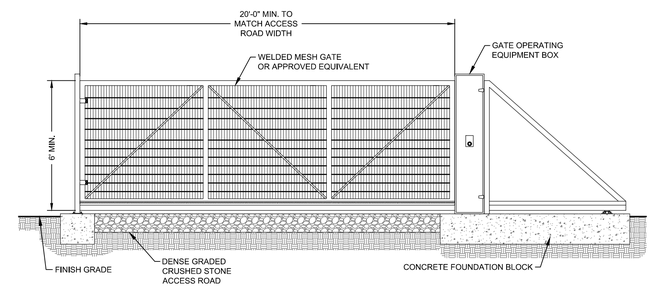


NOTE(S):

1. DESIGN FOR FOUNDATIONS, RACKING, AND MODULES BY OTHERS. DETAILS SHOWN FOR ILLUSTRATION PURPOSES ONLY.

TRACKER SOLAR PV ARRAY (8)

NOT TO SCALE

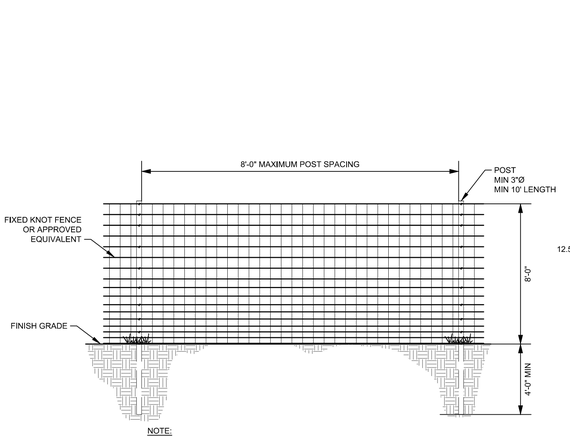


NOTE:

1. TYPICAL GATE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.

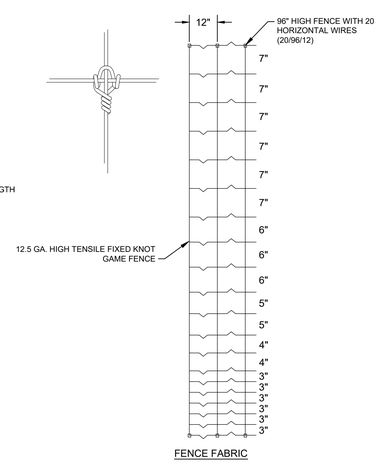
WELDED MESH ELECTRIC SLIDING GATE (9)

NOT TO SCALE



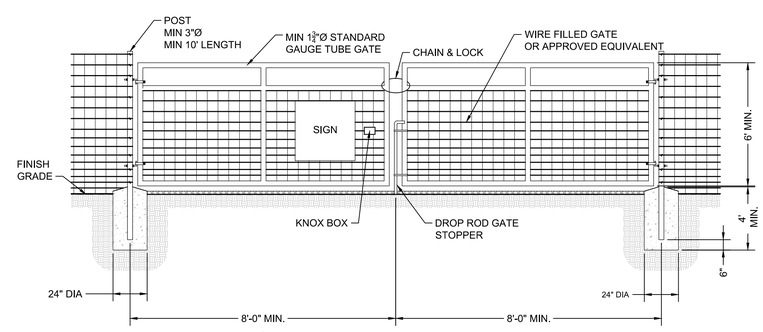
NOTE:

1. TYPICAL FENCE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.



WOVEN WIRE FENCE (10)

NOT TO SCALE

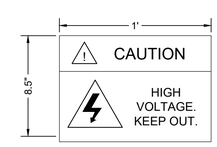


NOTE:

1. TYPICAL GATE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.

WOVEN WIRE DOUBLE SWING GATE (11)

NOT TO SCALE



NOTES:

1. PLACE ALONG PERIMETER FENCING AT AN INTERVAL NO LESS THAN 100 FEET.
2. DETAIL SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.

HIGH VOLTAGE SIGN (12)

NOT TO SCALE

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WSP USA INC.
100 APOLLO DRIVE, SUITE 302
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REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
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2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
DETAILS (SHEET 1 OF 3)

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY CIVIL
No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: **C-501**	
SHEET NUMBER: **9 OF 11**	

D:\BlueWave\US-EI-365230437 - Ridge Rd Worthington\4 Permitting\Sheets\B-11 - Ridge Rd - C-501-3.dwg - C-501 - JUL 07, 2026 1:16pm - wds_morgan.mcdonald

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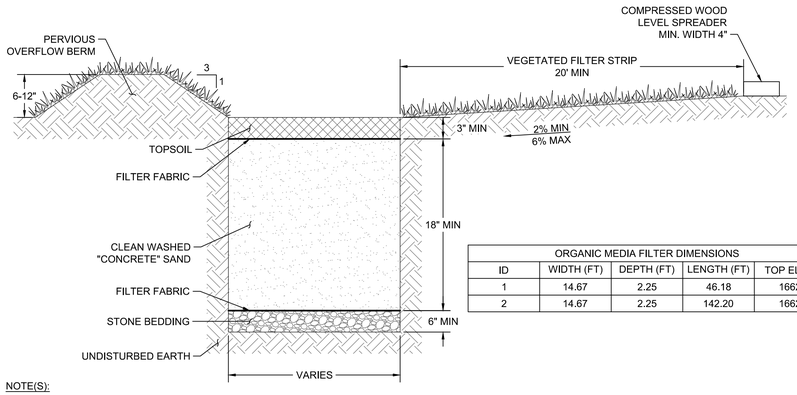
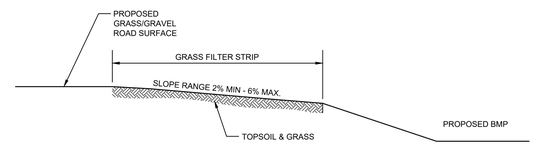


ORGANIC MEDIA FILTER DIMENSIONS				
ID	WIDTH (FT)	DEPTH (FT)	LENGTH (FT)	TOP ELEV.
1	14.67	2.25	46.18	1662
2	14.67	2.25	142.20	1662

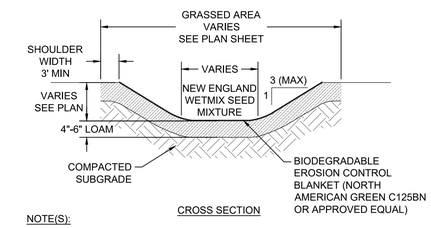
NOTE(S):

1. PERVIOUS BERM MAY VARY IN HEIGHT BETWEEN 6 TO 12 INCHES IN ORDER TO ACHIEVE A LEVEL ELEVATION ALONG THE TOP OF THE BERM TO THE MAXIMUM EXTENT POSSIBLE.

ORGANIC MEDIA FILTER (13)
NOT TO SCALE



VEGETATED FILTER STRIP (14)
NOT TO SCALE

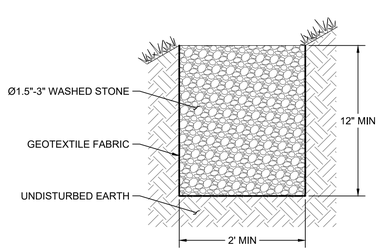


CROSS SECTION

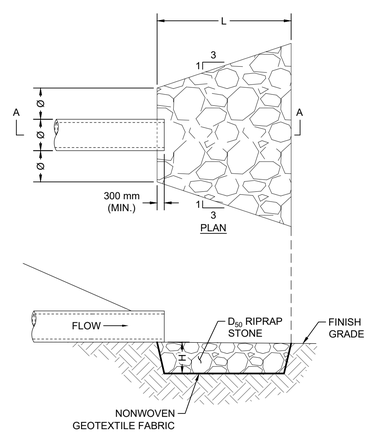
NOTE(S):

1. THE LONGITUDINAL SLOPE OF THE CHANNEL BOTTOM SHOULD BE AS FLAT AS POSSIBLE AND NO GREATER THAN 10%.
2. CHANNEL PORTIONS WITH A LONGITUDINAL SLOPE GREATER THAN 5% TO BE LINED WITH EROSION CONTROL BLANKETS OR EQUIVALENT EROSION CONTROL MEASURE AS APPROVED BY THE ENGINEER.

GRASSED CONVEYANCE CHANNEL (15)
NOT TO SCALE



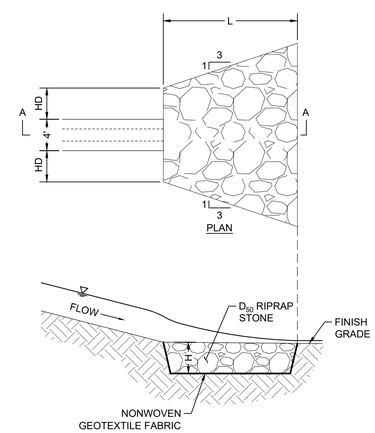
ENERGY DISSIPATOR TRENCH (16)
NOT TO SCALE



SECTION A-A

RIPRAP APRON DIMENSIONS				
PIPE Ø	CLASS	D_{50} (IN)	LENGTH L (FT)	HEIGHT H (IN)
12"	1	5	4	18
15"	1	5	5	18

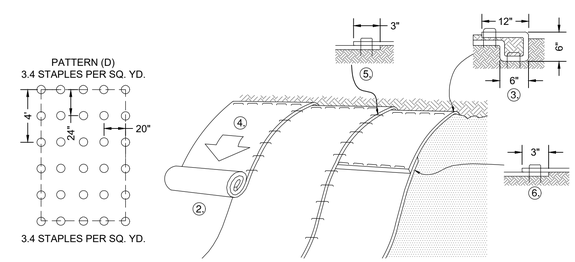
RIPRAP APRON (PIPE) (17)
NOT TO SCALE



SECTION A-A

RIPRAP APRON DIMENSIONS				
HYDRAULIC DIAMETER (HD)	CLASS	D_{50} (IN)	LENGTH L (FT)	HEIGHT H (IN)
1.5'	4	14	9	31

RIPRAP APRON (CHANNEL) (18)
NOT TO SCALE



STAPLE PATTERN GUIDE
6.67' WIDE ROLLS

SLOPE INSTALLATION
(SEE STEPS BELOW)

NOTE(S):

1. THIS DETAIL REFERENCES PRODUCTS BY NORTH AMERICAN GREEN. EQUIVALENT PRODUCTS MAY BE USED AS APPROVED BY THE ENGINEER. EROSION CONTROL BLANKETS TO BE INSTALLATED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.
2. EROSION CONTROL MATTING TO BE NORTH AMERICAN GREEN C125BN OR APPROVED EQUAL. INSTALL USING STAPLE PATTERN D.
3. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPs), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED (SEE DRAWING G-001).
4. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPs IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECPs EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPs WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECPs BACK OVER SEED AND COMPACTED SOIL. SECURE RECPs OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECPs.
5. ROLL THE RECPs DOWN THE SLOPE. RECPs WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPs MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
6. THE EDGES OF PARALLEL RECPs MUST BE STAPLED WITH AN APPROXIMATE 3" OVERLAP.
7. CONSECUTIVE RECPs SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECPs WIDTH.
8. STAPLES LONGER THAN 6 INCHES SHALL NOT BE USED WITHIN THE LIMIT OF WASTE TO AVOID PENETRATION INTO THE LANDFILL CAP.

EROSION CONTROL BLANKET INSTALLATION (19)
NOT TO SCALE

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

WSP USA INC.
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REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
5	06/15/2026	REVISED PER GEOTECHNICAL FINDINGS	MRB	OAC
4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
3	02/03/2026	RESPONSE TO COMMENTS	MRB	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
DETAILS (SHEET 2 OF 3)

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY CIVIL No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: **C-502**	
SHEET NUMBER: **10 OF 11**	

D:\BlueWave\US-EI-365230437 - Ridge Rd Worthington\4 Permitting\Sheets\B-11 - Ridge Rd - C-501-3.dwg - C-502 - Jul. 07, 2026 1:16pm - wds_morgan.mcdonald

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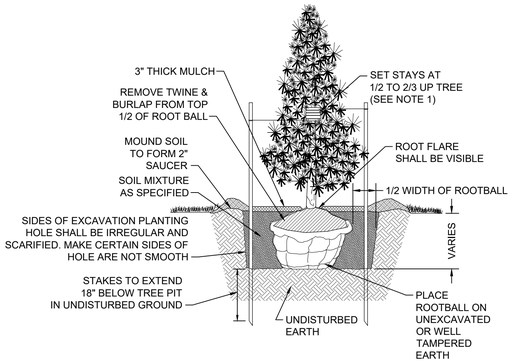
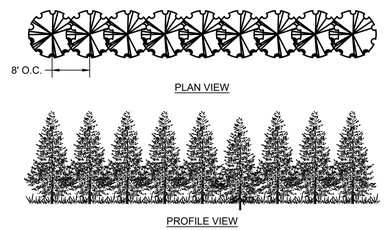


NOTE(S):

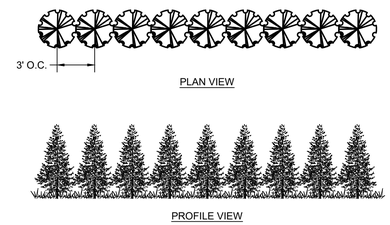
1. STAKE ALL TREES OVER 6 FEET TALL.
2. TREE SHALL BEAR SAME RELATION TO FINISHED GRADE AS IT BORE TO PREVIOUS GRADE (OR SLIGHTLY ABOVE).
3. NEVER CUT LEADERS.
4. PRUNE ONLY TO REMOVE DAMAGED OR BROKEN BRANCHES.
5. REMOVE ALL WIRE BRACKETS FROM ROOTBALL.
6. REMOVE ALL STAKES 1 YEAR AFTER PLANTING.

VEGETATIVE SCREENING PLANTING 20
NOT TO SCALE



SPECIES	COMMON NAME	HEIGHT WHEN PLANTED	MATURE HEIGHT	MATURE WIDTH	ROOT
THUJA PLICATA X STANDISHII 'GREEN GIANT'	GREEN GIANT ARBORVITAE	6'-7'	30'-50'	10'-15'	BALLED & BURLAPED (B&B)

VEGETATIVE SCREENING PLANTING PLAN - NORTHERN PLANTING 21
NOT TO SCALE



SPECIES	COMMON NAME	HEIGHT WHEN PLANTED	MATURE HEIGHT	MATURE WIDTH	ROOT
THUJA X PLICATA 'JUNIOR GIANT'	JUNIOR GIANT ARBORVITAE	6'-7'	15'-20'	3'-5'	BALLED & BURLAPED (B&B)

VEGETATIVE SCREENING PLANTING PLAN - SOUTHERN PLANTING 22
NOT TO SCALE

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REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
6	07/07/2026	REVISED PER STORMWATER DESIGN UPDATES	MRB	OAC
5	06/15/2026	REVISED PER GEOTECHNICAL FINDINGS	MRB	OAC
4	02/18/2026	RESPONSE TO COMMENTS	MRB	OAC
3	02/03/2026	RESPONSE TO COMMENTS	MRB	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB	OAC
1	10/21/2025	RESVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB	OAC
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
DETAILS (SHEET 3 OF 3)

CLIENT:
BWC WADES STREAM, LLC

SEAL:
COMMONWEALTH OF MASSACHUSETTS
OLIVIA CROSBY
CIVIL
No. 54915
PROFESSIONAL ENGINEER
07/07/2026

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: **C-503**	
SHEET NUMBER: **11 OF 11**	

D:\BlueWave\US-EI-365230437 - Ridge Rd Worthington\4 Permitting\Sheets\9-11 - Ridge Rd - C-501-3.dwg - C-503 - JUL 07, 2026 1:17pm - wds_morgan.mcdonald

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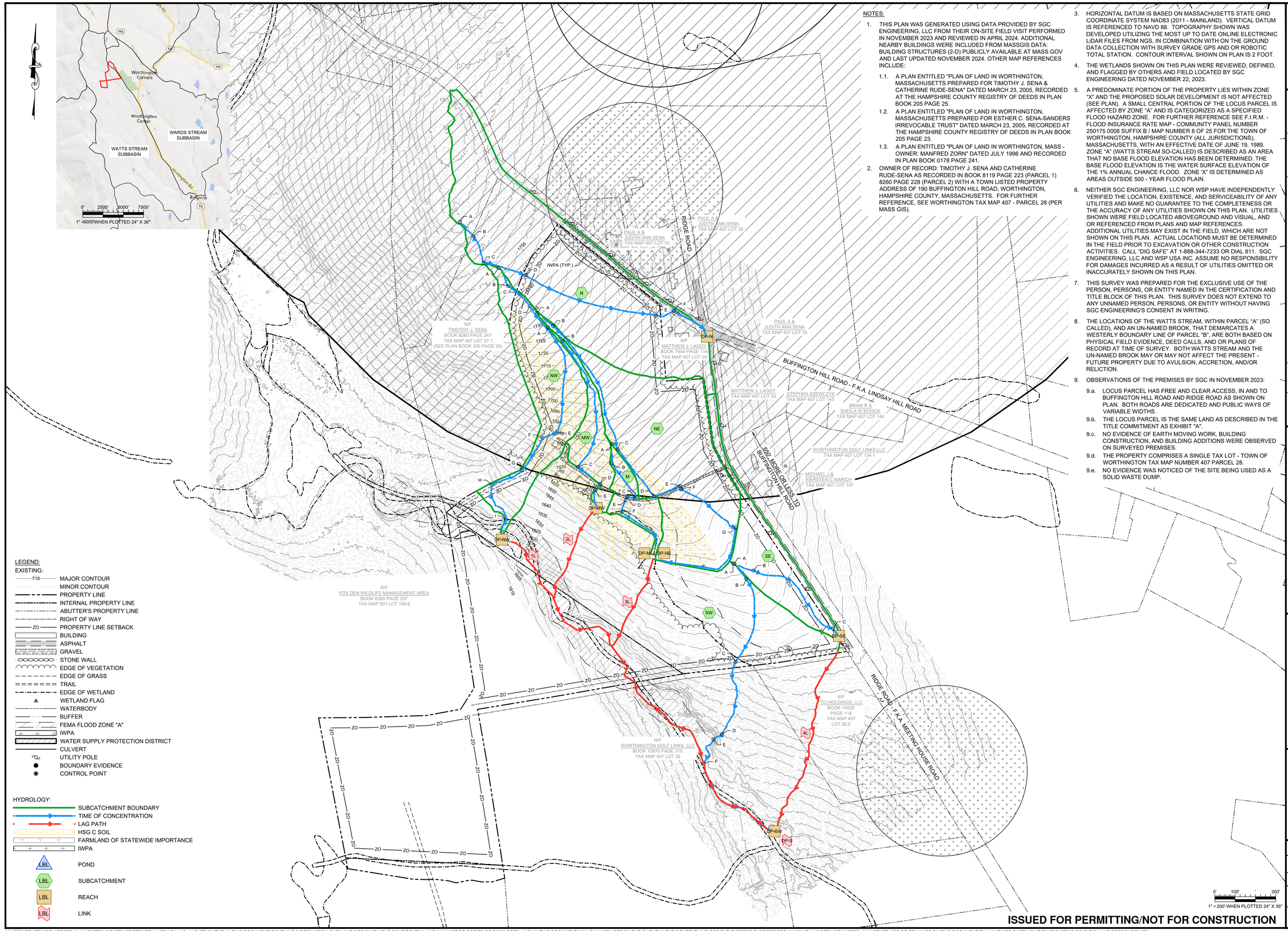
Appendix F – Drainage Figures



NOTES:

1. THIS PLAN WAS GENERATED USING DATA PROVIDED BY SGC ENGINEERING, LLC FROM THEIR ON-SITE FIELD VISIT PERFORMED IN NOVEMBER 2023 AND REVIEWED IN APRIL 2024. ADDITIONAL NEARBY BUILDINGS WERE INCLUDED FROM MASSGIS DATA: BUILDING STRUCTURES (2-D) PUBLICLY AVAILABLE AT MASS.GOV AND LAST UPDATED NOVEMBER 2024. OTHER MAP REFERENCES INCLUDE:
   - 1.1. A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASSACHUSETTS PREPARED FOR TIMOTHY J. SENA & CATHERINE RUDE-SENA" DATED MARCH 23, 2005, RECORDED AT THE HAMPSHIRE COUNTY REGISTRY OF DEEDS IN PLAN BOOK 205 PAGE 25.
   - 1.2. A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASSACHUSETTS PREPARED FOR ESTHER C. SENA-SANDERS IRREVOCABLE TRUST" DATED MARCH 23, 2005, RECORDED AT THE HAMPSHIRE COUNTY REGISTRY OF DEEDS IN PLAN BOOK 205 PAGE 23.
   - 1.3. A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASS - OWNER: MANFRED ZORN" DATED JULY 1996 AND RECORDED IN PLAN BOOK 0178 PAGE 241.
2. OWNER OF RECORD: TIMOTHY J. SENA AND CATHERINE RUDE-SENA AS RECORDED IN BOOK 8119 PAGE 223 (PARCEL 1) 8260 PAGE 228 (PARCEL 2) WITH A TOWN LISTED PROPERTY ADDRESS OF 190 BUFFINGTON HILL ROAD, WORTHINGTON, HAMPSHIRE COUNTY, MASSACHUSETTS. FOR FURTHER REFERENCE, SEE WORTHINGTON TAX MAP 407 - PARCEL 28 (PER MASS GIS).
3. HORIZONTAL DATUM IS BASED ON MASSACHUSETTS STATE GRID COORDINATE SYSTEM NAD83 (2011 - MAINLAND). VERTICAL DATUM IS REFERENCED TO NAVD 88. TOPOGRAPHY SHOWN WAS DEVELOPED UTILIZING THE MOST UP TO DATE ONLINE ELECTRONIC LIDAR FILES FROM NGS, IN COMBINATION WITH ON THE GROUND DATA COLLECTION WITH SURVEY GRADE GPS AND OR ROBOTIC TOTAL STATION. CONTOUR INTERVAL SHOWN ON PLAN IS 2 FOOT.
4. THE WETLANDS SHOWN ON THIS PLAN WERE REVIEWED, DEFINED, AND FLAGGED BY OTHERS AND FIELD LOCATED BY SGC ENGINEERING DATED NOVEMBER 22, 2023.
5. A PREDOMINATE PORTION OF THE PROPERTY LIES WITHIN ZONE "X" AND THE PROPOSED SOLAR DEVELOPMENT IS NOT AFFECTED (SEE PLAN). A SMALL CENTRAL PORTION OF THE LOCUS PARCEL IS AFFECTED BY ZONE "A" AND IS CATEGORIZED AS A SPECIFIED FLOOD HAZARD ZONE. FOR FURTHER REFERENCE SEE F.I.R.M. - FLOOD INSURANCE RATE MAP - COMMUNITY PANEL NUMBER 250175 0008 SUFFIX B / MAP NUMBER 8 OF 25 FOR THE TOWN OF WORTHINGTON, HAMPSHIRE COUNTY (ALL JURISDICTIONS), MASSACHUSETTS, WITH AN EFFECTIVE DATE OF JUNE 19, 1989. ZONE "A" (WATTS STREAM SO-CALLED) IS DESCRIBED AS AN AREA THAT NO BASE FLOOD ELEVATION HAS BEEN DETERMINED. THE BASE FLOOD ELEVATION IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. ZONE "X" IS DETERMINED AS AREAS OUTSIDE 500 - YEAR FLOOD PLAIN.
6. NEITHER SGC ENGINEERING, LLC NOR WSP HAVE INDEPENDENTLY VERIFIED THE LOCATION, EXISTENCE, AND SERVICEABILITY OF ANY UTILITIES AND MAKE NO GUARANTEE TO THE COMPLETENESS OR THE ACCURACY OF ANY UTILITIES SHOWN ON THIS PLAN. UTILITIES SHOWN WERE FIELD LOCATED ABOVEGROUND AND VISUAL, AND OR REFERENCED FROM PLANS AND MAP REFERENCES. ADDITIONAL UTILITIES MAY EXIST IN THE FIELD, WHICH ARE NOT SHOWN ON THIS PLAN. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD PRIOR TO EXCAVATION OR OTHER CONSTRUCTION ACTIVITIES. CALL "DIG SAFE" AT 1-888-344-7233 OR DIAL 811. SGC ENGINEERING, LLC AND WSP USA INC. ASSUME NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN ON THIS PLAN.
7. THIS SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF THE PERSON, PERSONS, OR ENTITY NAMED IN THE CERTIFICATION AND TITLE BLOCK OF THIS PLAN. THIS SURVEY DOES NOT EXTEND TO ANY UNNAMED PERSON, PERSONS, OR ENTITY WITHOUT HAVING SGC ENGINEERING'S CONSENT IN WRITING.
8. THE LOCATIONS OF THE WATTS STREAM, WITHIN PARCEL "A" (SO CALLED), AND AN UN-NAMED BROOK, THAT DEMARCATES A WESTERLY BOUNDARY LINE OF PARCEL "B", ARE BOTH BASED ON PHYSICAL FIELD EVIDENCE, DEED CALLS, AND OR PLANS OF RECORD AT TIME OF SURVEY. BOTH WATTS STREAM AND THE UN-NAMED BROOK MAY OR MAY NOT AFFECT THE PRESENT - FUTURE PROPERTY DUE TO AVULSION, ACCRETION, AND/OR RELICTION.
9. OBSERVATIONS OF THE PREMISES BY SGC IN NOVEMBER 2023:
   - 9.a. LOCUS PARCEL HAS FREE AND CLEAR ACCESS, IN AND TO BUFFINGTON HILL ROAD AND RIDGE ROAD AS SHOWN ON PLAN. BOTH ROADS ARE DEDICATED AND PUBLIC WAYS OF VARIABLE WIDTHS.
   - 9.b. THE LOCUS PARCEL IS THE SAME LAND AS DESCRIBED IN THE TITLE COMMITMENT AS EXHIBIT "A".
   - 9.c. NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, AND BUILDING ADDITIONS WERE OBSERVED ON SURVEYED PREMISES.
   - 9.d. THE PROPERTY COMPRISES A SINGLE TAX LOT - TOWN OF WORTHINGTON TAX MAP NUMBER 407 PARCEL 28.
   - 9.e. NO EVIDENCE WAS NOTICED OF THE SITE BEING USED AS A SOLID WASTE DUMP.

LEGEND:

EXISTING:

- 710 MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- ZO PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- WATER SUPPLY PROTECTION DISTRICT
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

HYDROLOGY:

- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION
- LAG PATH
- HSG C SOIL
- FARMLAND OF STATEWIDE IMPORTANCE
- IWPA
- LBL POND
- LBL SUBCATCHMENT
- LBL REACH
- LBL LINK

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

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WEB: WWW.WSP.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED	APPROVED
2	07/07/2026	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC
1	02/18/2026	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC
0	08/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB	OAC

PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
EXISTING CONDITIONS DRAINAGE ANALYSIS

CLIENT:
BWC WADES STREAM, LLC

SEAL:
APPROVED
NOT SEALED

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230437	
DRAWING NUMBER: **D-101**	
SHEET NUMBER: **1 OF 2**	

D:\Blue\Vault\US-EI-365230437 - Ridge Rd, Worthington\4 Stormwater\SHEETS\Ridge Rd - D-101-2.dwg - D-101 - Jul. 07, 2026 1:45pm - wds_morgan.mcdonald

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LEGEND:

EXISTING:

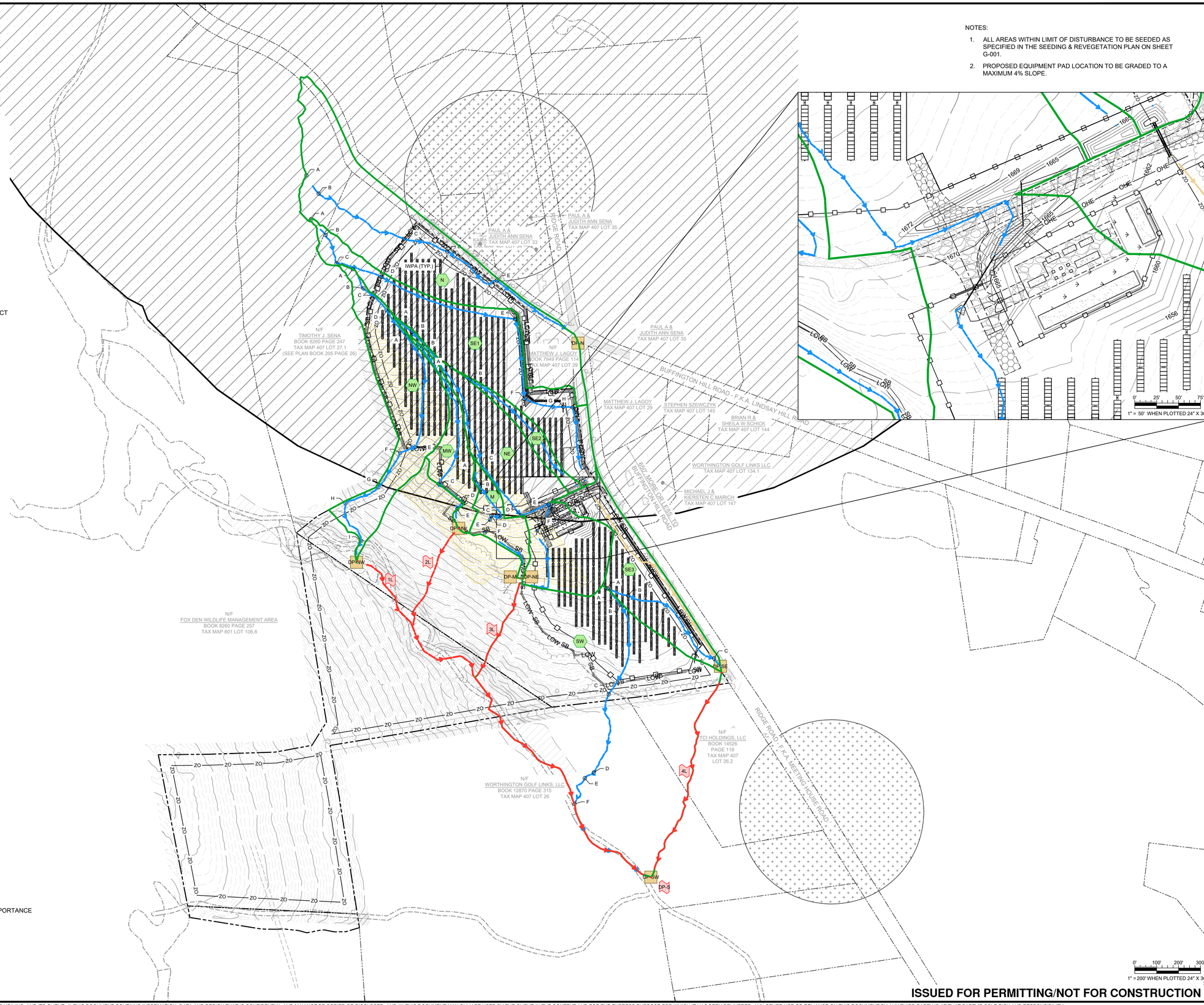
- 710 — MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- ZO — PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- WATER SUPPLY PROTECTION DISTRICT
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

PROPOSED:

- LOW — LIMIT OF WORK
- 1670 — MAJOR CONTOUR
- MINOR CONTOUR
- FIXED KNOT GAME FENCE
- DOUBLE SWING GATE
- SLIDING GATE
- OHE — OVERHEAD ELECTRIC
- SB — SEDIMENT BARRIER
- EROSION CONTROL BLANKET
- EC — ELECTRICAL CONDUIT
- ACCESS ROAD
- CONCRETE PAD
- SOLAR PV ARRAY
- UTILITY POLE
- CULVERT
- ORGANIC MEDIA FILTER
- VEGETATED FILTER STRIP
- TEMPORARY ROAD
- RIPRAP APRON
- LANDSCAPE SCREENING

HYDROLOGY:

- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION
- LAG PATH
- HSG C SOIL
- FARMLAND OF STATEWIDE IMPORTANCE
- IWPA
- LBL — POND
- LBL — SUBCATCHMENT
- LBL — REACH
- LBL — LINK



NOTES:

1. ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.
2. PROPOSED EQUIPMENT PAD LOCATION TO BE GRADED TO A MAXIMUM 4% SLOPE.

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PROJECT:
2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
190 RIDGE ROAD
WORTHINGTON, MA 01098

TITLE:
PROPOSED CONDITIONS DRAINAGE ANALYSIS

CLIENT:
BWC WADES STREAM, LLC

SEAL:
APPROVED
NOT SEALED

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN

PROJECT NUMBER: US-EI-365230438

DRAWING NUMBER: **D-102**

SHEET NUMBER: **2 OF 2**

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Appendix G – Operation & Maintenance Log Forms

Operation & Maintenance Log Form

Site: Add name

Address: Click or tap here to enter text.

Inspector: Add name

Company: Add name

Date: YYYY-MM-DD

Date of last inspection: YYYY-MM-DD

General Site Maintenance

Activity	Details	Performed?	Notes
Inspect	Inspect for any eroded drainage paths and repair as necessary.	☐ Y ☐ N	
Clean	Remove trash, leaves, and other debris.	☐ Y ☐ N	
Mow	Grass height shall not exceed 18 inches.	☐ Y ☐ N	
Sweep	Remove sediment build-up on roadways and drives.	☐ Y ☐ N	

Crushed Stone Access Road

Activity	Details	Performed?	Notes
Inspect	Check for standing water, uneven surface, snowplow damage, and vegetation.	☐ Y ☐ N	
Re-grade the stone	Redistribute and compact washed crushed stone to restore grades in original design.	☐ Y ☐ N	
Remove vegetation	Manually remove vegetation that is growing within the road surface area.	☐ Y ☐ N	
Repair potholes and snowplow damage	Fill and compact potholes and other road damage with design specific material.	☐ Y ☐ N	
Restore infiltration	If water remains on road surface >48 hours after storm, excavate, scarify the underlying topsoil, and replace the stone.	☐ Y ☐ N	

Activity	Details	Performed?	Notes
Clean	Remove trash and debris from the road surface.	☐ Y ☐ N	

Drainage Channels

Activity	Details	Performed?	Notes
Inspect	Inspect channels to make sure vegetation is adequate and for signs of rilling and gullying. Repair rills and gullies. Replace dead vegetation.	☐ Y ☐ N	
Mow	Grass height shall not exceed 6 inches.	☐ Y ☐ N	
Remove sediment	Remove sediment and other debris manually.	☐ Y ☐ N	
Reseed	Reseed as necessary to ensure that vegetative cover is never below 80% across the channel.	☐ Y ☐ N	

Vegetated Filter Strips

Activity	Details	Performed?	Notes
Inspect	Inspect for sediment buildup and signs of erosion. Check the vegetation for bare spots and overall health.	☐ Y ☐ N	
Mow	Grass height shall not exceed 6 inches.	☐ Y ☐ N	
Remove sediment	Remove sediment and other debris manually.	☐ Y ☐ N	

Sediment Forebays

Activity	Details	Performed?	Notes
Inspect	Inspect for sediment accumulation, erosion, inlet and outlet stability, and overall structural integrity of the basin.	☐ Y ☐ N	

Activity	Details	Performed?	Notes
Measure Sediment	Measure sediment depth and compare to design storage capacity to determine need for removal.	☐ Y ☐ N	
Remove Sediment	Remove accumulated sediment when it reaches approximately 50% of the forebay's designed storage volume.	☐ Y ☐ N	
Repair Erosion	Repair erosion within the basin and at inflow/outflow points to maintain proper function.	☐ Y ☐ N	

Energy Dissipators

Activity	Details	Performed?	Notes
Inspect	Check for damaged/misplaced stones, sediment accumulation, significant erosion, vegetation growth.	☐ Y ☐ N	
Clean	Remove trash, sediment, and other debris.	☐ Y ☐ N	
Clear Vegetation	Manually remove vegetation from between or over the riprap stones.	☐ Y ☐ N	
Replace Stone	Replace or reconfigure missing or dislodged stones to maintain original design functionality.	☐ Y ☐ N	

Organic Media Filters

Activity	Details	Performed?	Notes
Inspect	Inspect for sediment buildup, ponding, and overall condition of the organic media and surface.	☐ Y ☐ N	
Remove sediment	Remove accumulated sediment and debris from the surface and pretreatment areas to prevent clogging of the filter media.	☐ Y ☐ N	
Maintain surface	Remove accumulated organic matter, trash, or vegetation that may inhibit uniform flow	☐ Y ☐ N	

Activity	Details	Performed?	Notes
	distribution across the filter surface.		
Restore filtration capacity	If ponding persists for more than 48 hours after a storm event, remove and replace or amend the clogged upper layer of organic media.	☐ Y ☐ N	
Replace media	Replace filter media when it shows reduced permeability, poor vegetative growth (if applicable), or diminished treatment performance.	☐ Y ☐ N	

Non-compliance/Corrective actions

Describe any incidents of non-compliance and corrective actions taken to address those not described above:

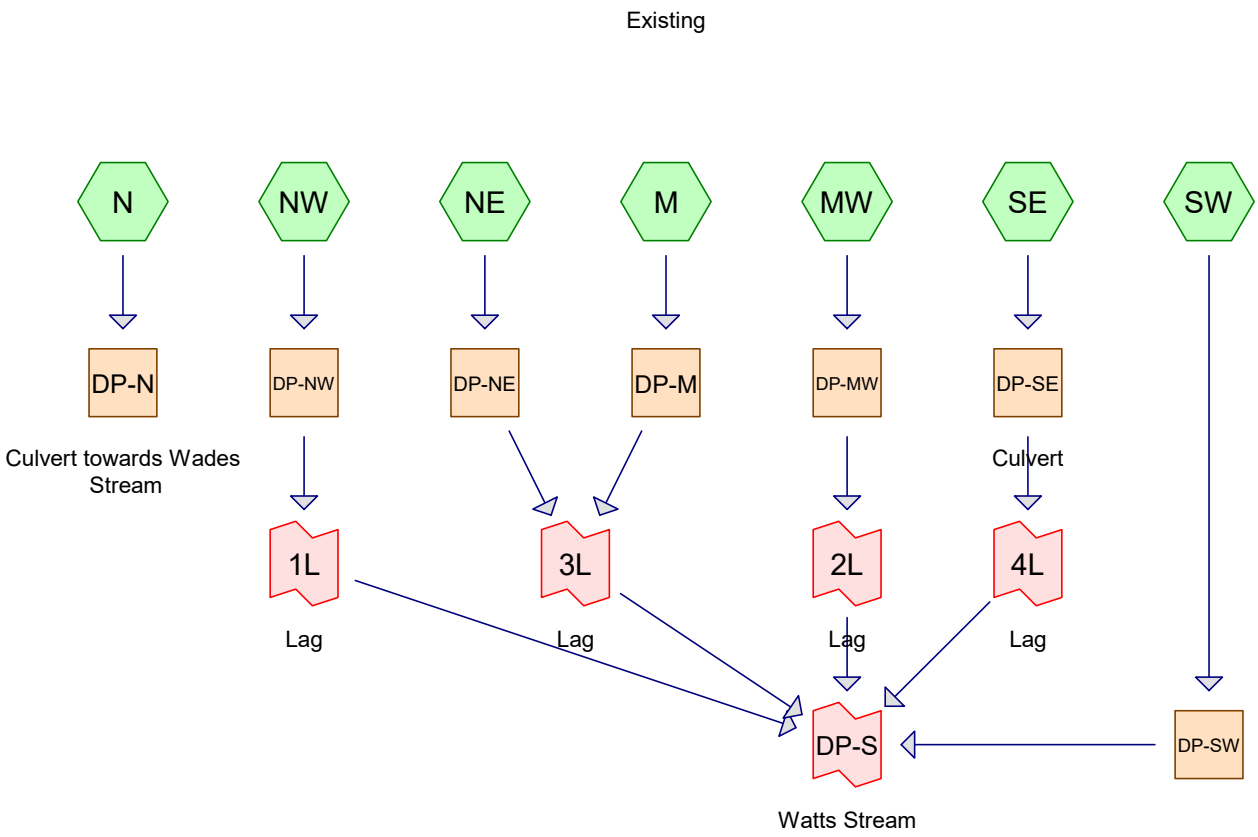
Print Name: Add name

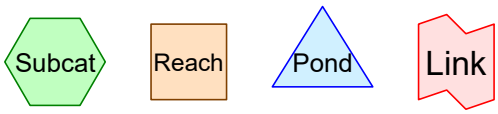
Signature: Add name

Date: YYYY-MM-DD

Appendix H – HydroCAD Reports

Existing Conditions HydroCAD





Routing Diagram for HydroCAD Ridge Rd
Prepared by WSP USA, Printed 7/6/2026
HydroCAD® 10.20-6a s/n 01336 © 2024 HydroCAD Software Solutions LLC

Summary for Subcatchment M:

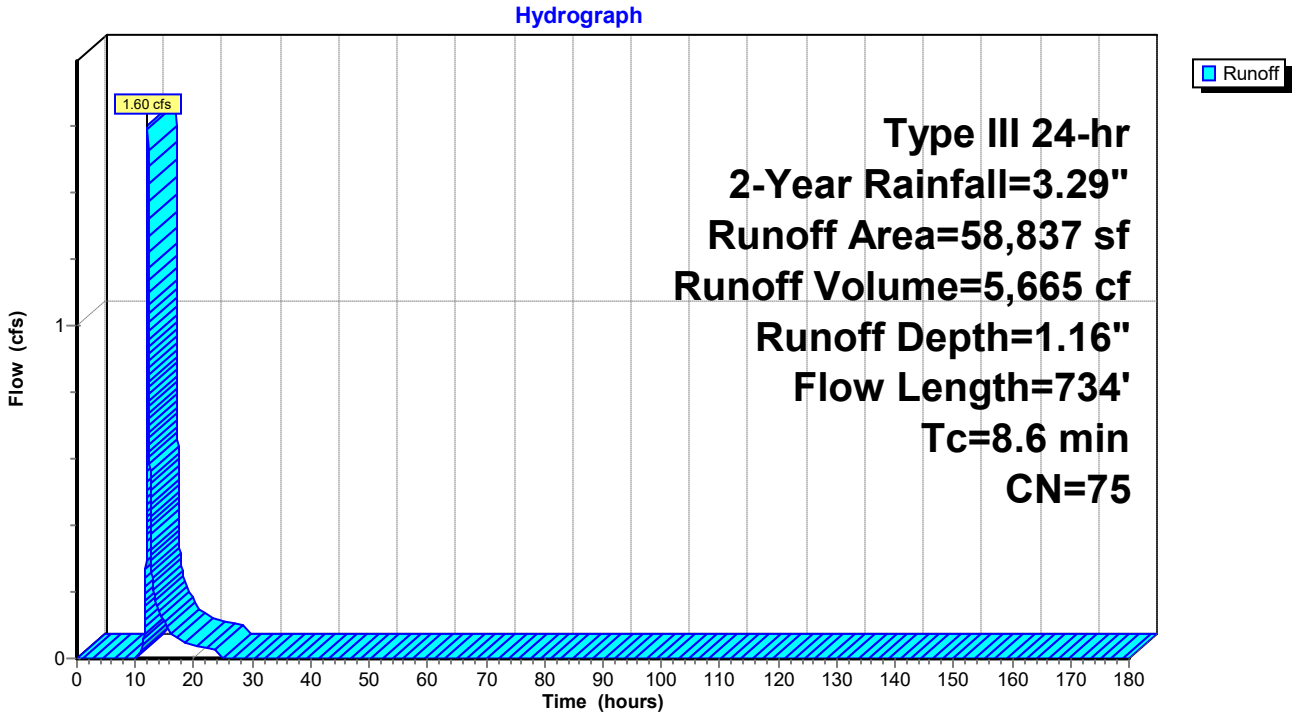
Runoff = 1.60 cfs @ 12.13 hrs, Volume= 5,665 cf, Depth= 1.16"
Routed to Reach DP-M :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
56,266	74	Pasture/grassland/range, Good, HSG C
2,571	96	Gravel surface, HSG C
58,837	75	Weighted Average
58,837		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	95	0.0625	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
2.3	214	0.0510	1.58		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.4	42	0.0587	1.70		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.0	18	0.0597	13.93	17.10	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.3	64	0.1973	3.11		**Shallow Concentrated Flow, EF** Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0846	11.68	105.15	**Trap/Vee/Rect Channel Flow, FG** Bot.W=6.00' D=1.00' Z= 3.0 '/' Top.W=12.00' n= 0.030 Earth, grassed & winding
8.6	734	Total			

Subcatchment M:



Hydrograph for Subcatchment M:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.00
12.00	1.64	0.22	**0.70**
14.00	2.67	0.75	**0.14**
16.00	2.91	0.91	0.08
18.00	3.05	1.00	0.05
20.00	3.15	1.06	0.04
22.00	3.23	1.11	0.03
24.00	**3.29**	**1.16**	0.03
26.00	3.29	1.16	0.00
28.00	3.29	1.16	0.00
30.00	3.29	1.16	0.00
32.00	3.29	1.16	0.00
34.00	3.29	1.16	0.00
36.00	3.29	1.16	0.00
38.00	3.29	1.16	0.00
40.00	3.29	1.16	0.00
42.00	3.29	1.16	0.00
44.00	3.29	1.16	0.00
46.00	3.29	1.16	0.00
48.00	3.29	1.16	0.00
50.00	3.29	1.16	0.00
52.00	3.29	1.16	0.00
54.00	3.29	1.16	0.00
56.00	3.29	1.16	0.00
58.00	3.29	1.16	0.00
60.00	3.29	1.16	0.00
62.00	3.29	1.16	0.00
64.00	3.29	1.16	0.00
66.00	3.29	1.16	0.00
68.00	3.29	1.16	0.00
70.00	3.29	1.16	0.00
72.00	3.29	1.16	0.00
74.00	3.29	1.16	0.00
76.00	3.29	1.16	0.00
78.00	3.29	1.16	0.00
80.00	3.29	1.16	0.00
82.00	3.29	1.16	0.00
84.00	3.29	1.16	0.00
86.00	3.29	1.16	0.00
88.00	3.29	1.16	0.00
90.00	3.29	1.16	0.00
92.00	3.29	1.16	0.00
94.00	3.29	1.16	0.00
96.00	3.29	1.16	0.00
98.00	3.29	1.16	0.00
100.00	3.29	1.16	0.00
102.00	3.29	1.16	0.00
104.00	3.29	1.16	0.00
106.00	3.29	1.16	0.00
108.00	3.29	1.16	0.00
110.00	3.29	1.16	0.00
112.00	3.29	1.16	0.00
114.00	3.29	1.16	0.00
116.00	3.29	1.16	0.00
118.00	3.29	1.16	0.00
120.00	3.29	1.16	0.00
122.00	3.29	1.16	0.00
124.00	3.29	1.16	0.00
126.00	3.29	1.16	0.00
128.00	3.29	1.16	0.00
130.00	3.29	1.16	0.00
132.00	3.29	1.16	0.00
134.00	3.29	1.16	0.00
136.00	3.29	1.16	0.00
138.00	3.29	1.16	0.00
140.00	3.29	1.16	0.00
142.00	3.29	1.16	0.00
144.00	3.29	1.16	0.00
146.00	3.29	1.16	0.00
148.00	3.29	1.16	0.00
150.00	3.29	1.16	0.00
152.00	3.29	1.16	0.00
154.00	3.29	1.16	0.00
156.00	3.29	1.16	0.00
158.00	3.29	1.16	0.00
160.00	3.29	1.16	0.00
162.00	3.29	1.16	0.00
164.00	3.29	1.16	0.00
166.00	3.29	1.16	0.00
168.00	3.29	1.16	0.00
170.00	3.29	1.16	0.00
172.00	3.29	1.16	0.00
174.00	3.29	1.16	0.00
176.00	3.29	1.16	0.00
178.00	3.29	1.16	0.00
180.00	3.29	1.16	0.00

Summary for Subcatchment MW:

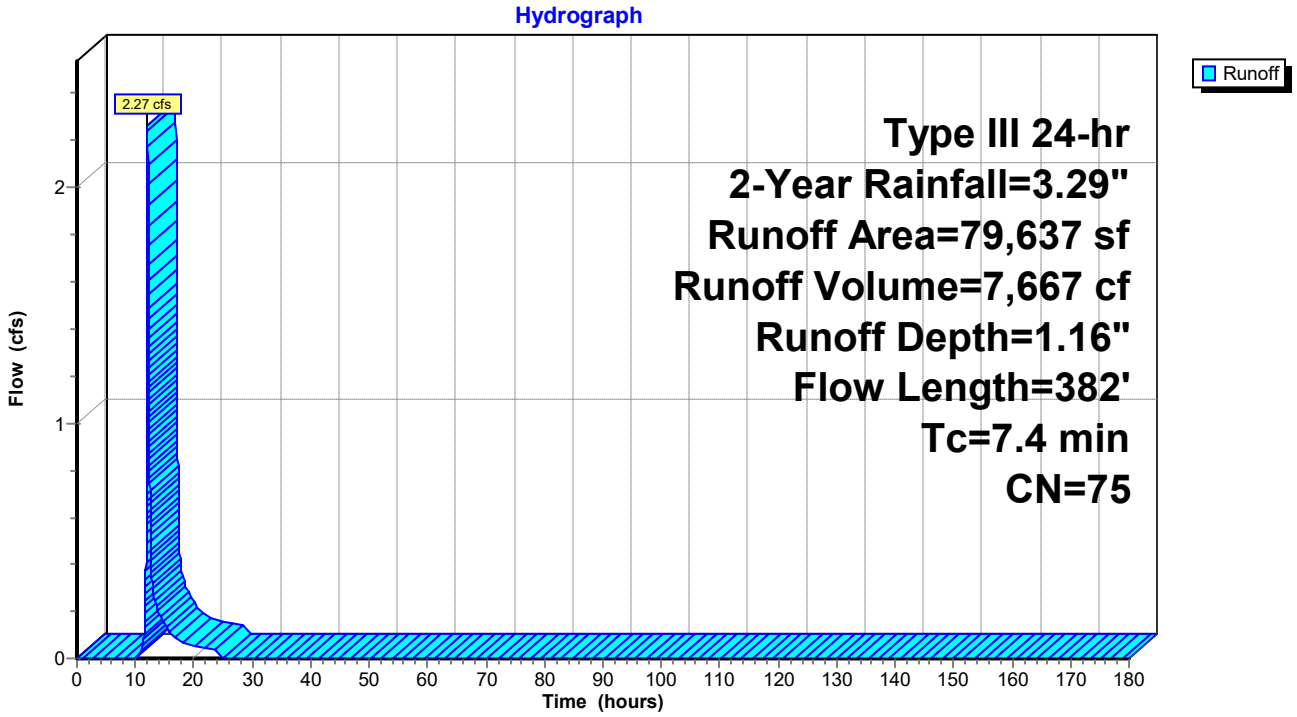
Runoff = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf, Depth= 1.16"
Routed to Reach DP-MW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
63,459	74	Pasture/grassland/range, Good, HSG C
15,207	80	Pasture/grassland/range, Good, HSG D
971	96	Gravel surface, HSG C
79,637	75	Weighted Average
79,637		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0583	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.1	39	0.0793	6.42	7.88	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.030 Earth, grassed & winding
0.1	97	0.1563	14.13	226.11	**Trap/Vee/Rect Channel Flow, EF** Bot.W=6.00' D=1.00' Z= 10.0 '/' Top.W=26.00' n= 0.030 Earth, grassed & winding
7.4	382	Total			

Subcatchment MW:



Hydrograph for Subcatchment MW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.00
12.00	1.64	0.22	**1.06**
14.00	2.67	0.75	**0.19**
16.00	2.91	0.91	0.11
18.00	3.05	1.00	0.07
20.00	3.15	1.06	0.05
22.00	3.23	1.11	0.04
24.00	**3.29**	**1.16**	0.04
26.00	3.29	1.16	0.00
28.00	3.29	1.16	0.00
30.00	3.29	1.16	0.00
32.00	3.29	1.16	0.00
34.00	3.29	1.16	0.00
36.00	3.29	1.16	0.00
38.00	3.29	1.16	0.00
40.00	3.29	1.16	0.00
42.00	3.29	1.16	0.00
44.00	3.29	1.16	0.00
46.00	3.29	1.16	0.00
48.00	3.29	1.16	0.00
50.00	3.29	1.16	0.00
52.00	3.29	1.16	0.00
54.00	3.29	1.16	0.00
56.00	3.29	1.16	0.00
58.00	3.29	1.16	0.00
60.00	3.29	1.16	0.00
62.00	3.29	1.16	0.00
64.00	3.29	1.16	0.00
66.00	3.29	1.16	0.00
68.00	3.29	1.16	0.00
70.00	3.29	1.16	0.00
72.00	3.29	1.16	0.00
74.00	3.29	1.16	0.00
76.00	3.29	1.16	0.00
78.00	3.29	1.16	0.00
80.00	3.29	1.16	0.00
82.00	3.29	1.16	0.00
84.00	3.29	1.16	0.00
86.00	3.29	1.16	0.00
88.00	3.29	1.16	0.00
90.00	3.29	1.16	0.00
92.00	3.29	1.16	0.00
94.00	3.29	1.16	0.00
96.00	3.29	1.16	0.00
98.00	3.29	1.16	0.00
100.00	3.29	1.16	0.00
102.00	3.29	1.16	0.00
104.00	3.29	1.16	0.00
106.00	3.29	1.16	0.00
108.00	3.29	1.16	0.00
110.00	3.29	1.16	0.00
112.00	3.29	1.16	0.00
114.00	3.29	1.16	0.00
116.00	3.29	1.16	0.00
118.00	3.29	1.16	0.00
120.00	3.29	1.16	0.00
122.00	3.29	1.16	0.00
124.00	3.29	1.16	0.00
126.00	3.29	1.16	0.00
128.00	3.29	1.16	0.00
130.00	3.29	1.16	0.00
132.00	3.29	1.16	0.00
134.00	3.29	1.16	0.00
136.00	3.29	1.16	0.00
138.00	3.29	1.16	0.00
140.00	3.29	1.16	0.00
142.00	3.29	1.16	0.00
144.00	3.29	1.16	0.00
146.00	3.29	1.16	0.00
148.00	3.29	1.16	0.00
150.00	3.29	1.16	0.00
152.00	3.29	1.16	0.00
154.00	3.29	1.16	0.00
156.00	3.29	1.16	0.00
158.00	3.29	1.16	0.00
160.00	3.29	1.16	0.00
162.00	3.29	1.16	0.00
164.00	3.29	1.16	0.00
166.00	3.29	1.16	0.00
168.00	3.29	1.16	0.00
170.00	3.29	1.16	0.00
172.00	3.29	1.16	0.00
174.00	3.29	1.16	0.00
176.00	3.29	1.16	0.00
178.00	3.29	1.16	0.00
180.00	3.29	1.16	0.00

Summary for Subcatchment N:

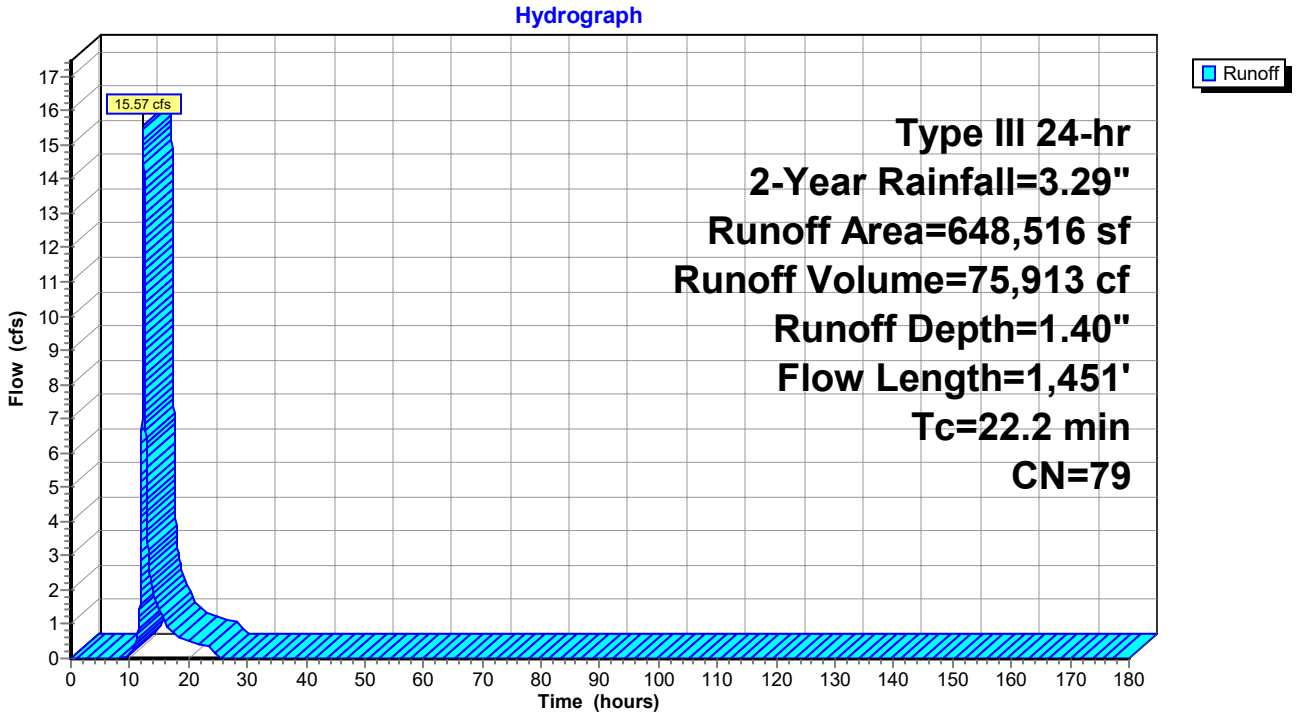
Runoff = 15.57 cfs @ 12.31 hrs, Volume= 75,913 cf, Depth= 1.40"
Routed to Reach DP-N : Culvert towards Wades Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
278,570	80	Pasture/grassland/range, Good, HSG D
77,593	72	Woods/grass comb., Good, HSG C
270,211	79	Woods/grass comb., Good, HSG D
4,456	96	Gravel surface, HSG C
8,912	96	Gravel surface, HSG D
8,774	98	Unconnected pavement, HSG D
648,516	79	Weighted Average
639,742		98.65% Pervious Area
8,774		1.35% Impervious Area
8,774		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0707	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
1.8	144	0.0705	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.4	216	0.0566	8.78	52.70	**Trap/Vee/Rect Channel Flow, CD** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.030 Earth, grassed & winding
6.0	679	0.0721	1.88		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.9	97	0.1409	1.88		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.3	215	0.1254	12.49	62.43	**Trap/Vee/Rect Channel Flow, FG** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
22.2	1,451	Total			

Subcatchment N:



Hydrograph for Subcatchment N:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.06
12.00	1.64	0.33	**4.69**
14.00	2.67	0.95	**1.93**
16.00	2.91	1.13	1.06
18.00	3.05	1.23	0.64
20.00	3.15	1.30	0.50
22.00	3.23	1.36	0.41
24.00	**3.29**	**1.40**	0.33
26.00	3.29	1.40	0.00
28.00	3.29	1.40	0.00
30.00	3.29	1.40	0.00
32.00	3.29	1.40	0.00
34.00	3.29	1.40	0.00
36.00	3.29	1.40	0.00
38.00	3.29	1.40	0.00
40.00	3.29	1.40	0.00
42.00	3.29	1.40	0.00
44.00	3.29	1.40	0.00
46.00	3.29	1.40	0.00
48.00	3.29	1.40	0.00
50.00	3.29	1.40	0.00
52.00	3.29	1.40	0.00
54.00	3.29	1.40	0.00
56.00	3.29	1.40	0.00
58.00	3.29	1.40	0.00
60.00	3.29	1.40	0.00
62.00	3.29	1.40	0.00
64.00	3.29	1.40	0.00
66.00	3.29	1.40	0.00
68.00	3.29	1.40	0.00
70.00	3.29	1.40	0.00
72.00	3.29	1.40	0.00
74.00	3.29	1.40	0.00
76.00	3.29	1.40	0.00
78.00	3.29	1.40	0.00
80.00	3.29	1.40	0.00
82.00	3.29	1.40	0.00
84.00	3.29	1.40	0.00
86.00	3.29	1.40	0.00
88.00	3.29	1.40	0.00
90.00	3.29	1.40	0.00
92.00	3.29	1.40	0.00
94.00	3.29	1.40	0.00
96.00	3.29	1.40	0.00
98.00	3.29	1.40	0.00
100.00	3.29	1.40	0.00
102.00	3.29	1.40	0.00
104.00	3.29	1.40	0.00
106.00	3.29	1.40	0.00
108.00	3.29	1.40	0.00
110.00	3.29	1.40	0.00
112.00	3.29	1.40	0.00
114.00	3.29	1.40	0.00
116.00	3.29	1.40	0.00
118.00	3.29	1.40	0.00
120.00	3.29	1.40	0.00
122.00	3.29	1.40	0.00
124.00	3.29	1.40	0.00
126.00	3.29	1.40	0.00
128.00	3.29	1.40	0.00
130.00	3.29	1.40	0.00
132.00	3.29	1.40	0.00
134.00	3.29	1.40	0.00
136.00	3.29	1.40	0.00
138.00	3.29	1.40	0.00
140.00	3.29	1.40	0.00
142.00	3.29	1.40	0.00
144.00	3.29	1.40	0.00
146.00	3.29	1.40	0.00
148.00	3.29	1.40	0.00
150.00	3.29	1.40	0.00
152.00	3.29	1.40	0.00
154.00	3.29	1.40	0.00
156.00	3.29	1.40	0.00
158.00	3.29	1.40	0.00
160.00	3.29	1.40	0.00
162.00	3.29	1.40	0.00
164.00	3.29	1.40	0.00
166.00	3.29	1.40	0.00
168.00	3.29	1.40	0.00
170.00	3.29	1.40	0.00
172.00	3.29	1.40	0.00
174.00	3.29	1.40	0.00
176.00	3.29	1.40	0.00
178.00	3.29	1.40	0.00
180.00	3.29	1.40	0.00

Summary for Subcatchment NE:

[47] Hint: Peak is 1557% of capacity of segment #5

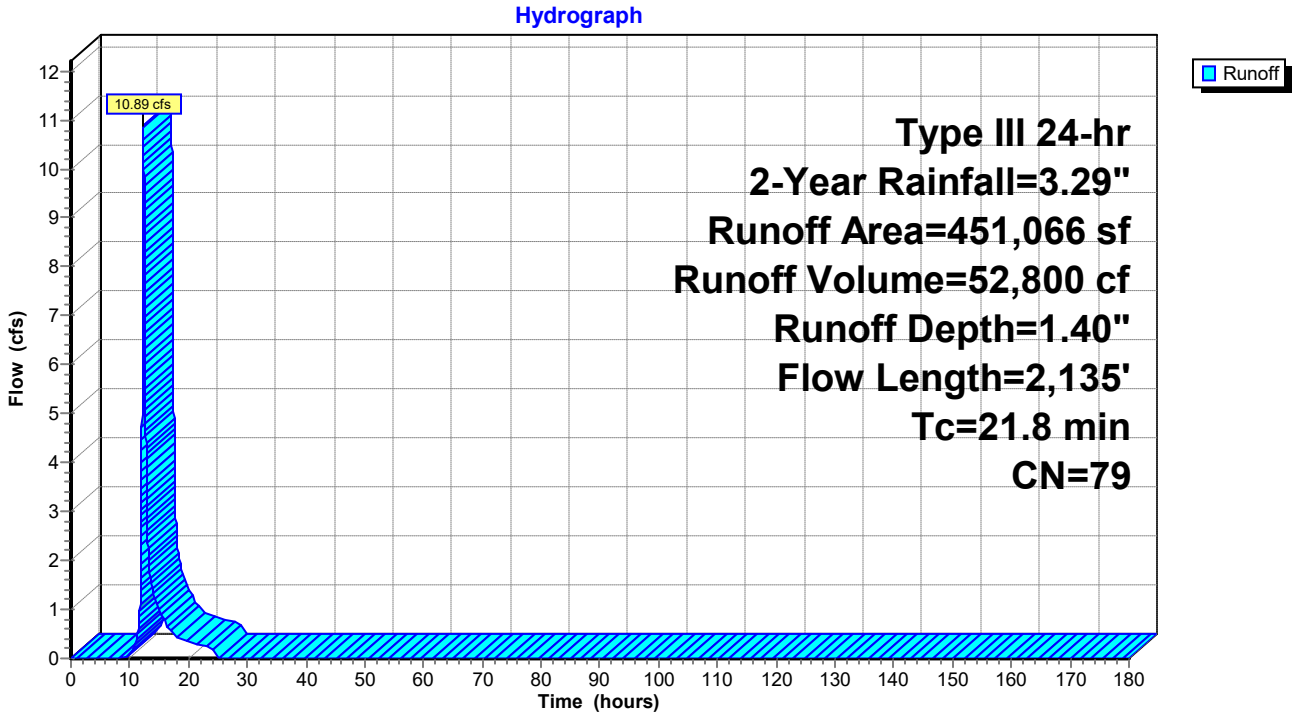
Runoff = 10.89 cfs @ 12.32 hrs, Volume= 52,800 cf, Depth= 1.40"
Routed to Reach DP-NE :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
79,061	74	Pasture/grassland/range, Good, HSG C
345,355	80	Pasture/grassland/range, Good, HSG D
22,632	79	Woods/grass comb., Good, HSG D
603	96	Gravel surface, HSG C
3,415	96	Gravel surface, HSG D
451,066	79	Weighted Average
451,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0675	0.31		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
7.1	705	0.0566	1.67		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
3.1	295	0.0513	1.59		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0393	1.39		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.5	17	0.0001	0.57	0.70	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
3.4	335	0.0540	1.63		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
0.7	543	0.1506	13.10	170.34	**Trap/Vee/Rect Channel Flow, GH** Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.030 Earth, grassed & winding
21.8	2,135	Total			

Subcatchment NE:



Hydrograph for Subcatchment NE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.05
12.00	1.64	0.33	**3.33**
14.00	2.67	0.95	**1.34**
16.00	2.91	1.13	0.74
18.00	3.05	1.23	0.45
20.00	3.15	1.30	0.35
22.00	3.23	1.36	0.29
24.00	**3.29**	**1.40**	0.23
26.00	3.29	1.40	0.00
28.00	3.29	1.40	0.00
30.00	3.29	1.40	0.00
32.00	3.29	1.40	0.00
34.00	3.29	1.40	0.00
36.00	3.29	1.40	0.00
38.00	3.29	1.40	0.00
40.00	3.29	1.40	0.00
42.00	3.29	1.40	0.00
44.00	3.29	1.40	0.00
46.00	3.29	1.40	0.00
48.00	3.29	1.40	0.00
50.00	3.29	1.40	0.00
52.00	3.29	1.40	0.00
54.00	3.29	1.40	0.00
56.00	3.29	1.40	0.00
58.00	3.29	1.40	0.00
60.00	3.29	1.40	0.00
62.00	3.29	1.40	0.00
64.00	3.29	1.40	0.00
66.00	3.29	1.40	0.00
68.00	3.29	1.40	0.00
70.00	3.29	1.40	0.00
72.00	3.29	1.40	0.00
74.00	3.29	1.40	0.00
76.00	3.29	1.40	0.00
78.00	3.29	1.40	0.00
80.00	3.29	1.40	0.00
82.00	3.29	1.40	0.00
84.00	3.29	1.40	0.00
86.00	3.29	1.40	0.00
88.00	3.29	1.40	0.00
90.00	3.29	1.40	0.00
92.00	3.29	1.40	0.00
94.00	3.29	1.40	0.00
96.00	3.29	1.40	0.00
98.00	3.29	1.40	0.00
100.00	3.29	1.40	0.00
102.00	3.29	1.40	0.00
104.00	3.29	1.40	0.00
106.00	3.29	1.40	0.00
108.00	3.29	1.40	0.00
110.00	3.29	1.40	0.00
112.00	3.29	1.40	0.00
114.00	3.29	1.40	0.00
116.00	3.29	1.40	0.00
118.00	3.29	1.40	0.00
120.00	3.29	1.40	0.00
122.00	3.29	1.40	0.00
124.00	3.29	1.40	0.00
126.00	3.29	1.40	0.00
128.00	3.29	1.40	0.00
130.00	3.29	1.40	0.00
132.00	3.29	1.40	0.00
134.00	3.29	1.40	0.00
136.00	3.29	1.40	0.00
138.00	3.29	1.40	0.00
140.00	3.29	1.40	0.00
142.00	3.29	1.40	0.00
144.00	3.29	1.40	0.00
146.00	3.29	1.40	0.00
148.00	3.29	1.40	0.00
150.00	3.29	1.40	0.00
152.00	3.29	1.40	0.00
154.00	3.29	1.40	0.00
156.00	3.29	1.40	0.00
158.00	3.29	1.40	0.00
160.00	3.29	1.40	0.00
162.00	3.29	1.40	0.00
164.00	3.29	1.40	0.00
166.00	3.29	1.40	0.00
168.00	3.29	1.40	0.00
170.00	3.29	1.40	0.00
172.00	3.29	1.40	0.00
174.00	3.29	1.40	0.00
176.00	3.29	1.40	0.00
178.00	3.29	1.40	0.00
180.00	3.29	1.40	0.00

Summary for Subcatchment NW:

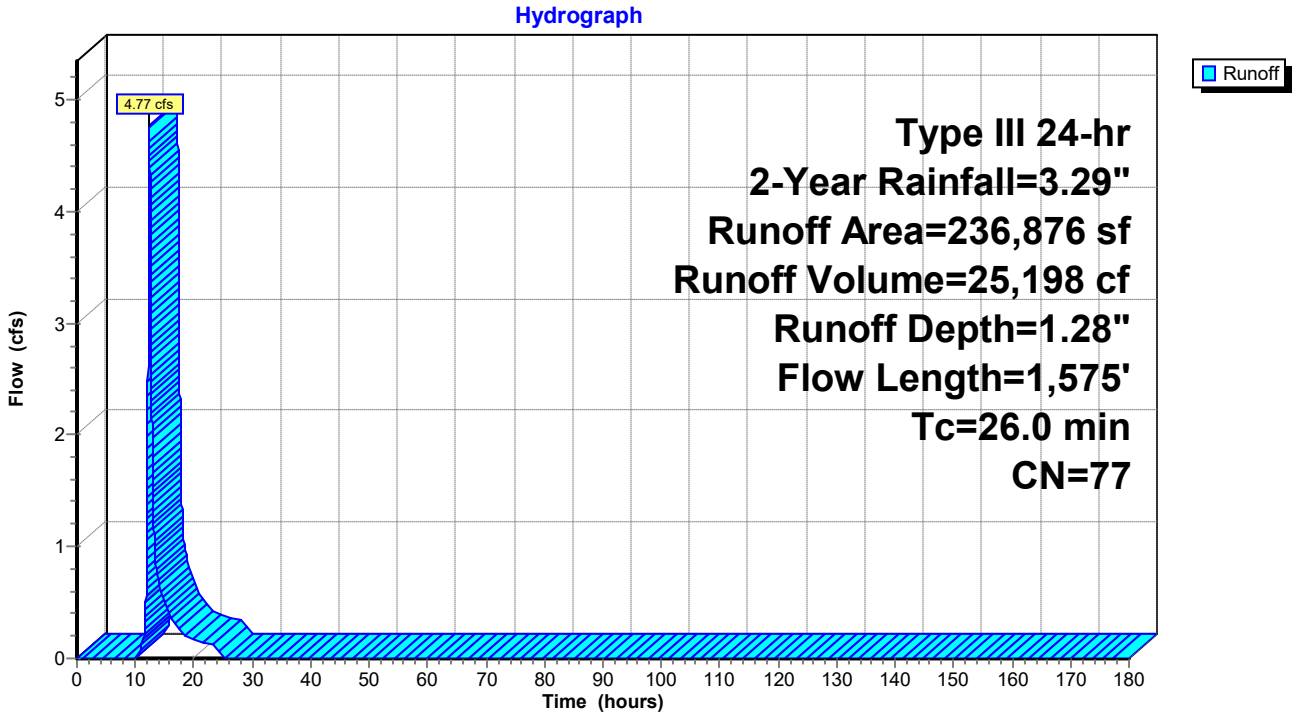
Runoff = 4.77 cfs @ 12.39 hrs, Volume= 25,198 cf, Depth= 1.28"
Routed to Reach DP-NW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
117,984	74	Pasture/grassland/range, Good, HSG C
48,562	80	Pasture/grassland/range, Good, HSG D
9,923	72	Woods/grass comb., Good, HSG C
58,620	79	Woods/grass comb., Good, HSG D
492	96	Gravel surface, HSG C
1,295	98	Unconnected pavement, HSG C
236,876	77	Weighted Average
235,581		99.45% Pervious Area
1,295		0.55% Impervious Area
1,295		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	102	0.0665	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.9	685	0.0763	1.93		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.1	75	0.0926	10.58	137.52	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=1.00' Z= 9.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.4	87	0.3254	3.99		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
1.7	174	0.1201	1.73		**Shallow Concentrated Flow, GH** Woodland Kv= 5.0 fps
2.9	202	0.0555	1.18		**Shallow Concentrated Flow, HI** Woodland Kv= 5.0 fps
0.1	104	0.1222	26.85	1,852.49	**Trap/Vee/Rect Channel Flow, IJ** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
26.0	1,575	Total			

Subcatchment NW:



Hydrograph for Subcatchment NW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.00
12.00	1.64	0.27	**1.19**
14.00	2.67	0.85	**0.68**
16.00	2.91	1.01	0.37
18.00	3.05	1.11	0.23
20.00	3.15	1.18	0.17
22.00	3.23	1.23	0.14
24.00	**3.29**	**1.28**	0.12
26.00	3.29	1.28	0.00
28.00	3.29	1.28	0.00
30.00	3.29	1.28	0.00
32.00	3.29	1.28	0.00
34.00	3.29	1.28	0.00
36.00	3.29	1.28	0.00
38.00	3.29	1.28	0.00
40.00	3.29	1.28	0.00
42.00	3.29	1.28	0.00
44.00	3.29	1.28	0.00
46.00	3.29	1.28	0.00
48.00	3.29	1.28	0.00
50.00	3.29	1.28	0.00
52.00	3.29	1.28	0.00
54.00	3.29	1.28	0.00
56.00	3.29	1.28	0.00
58.00	3.29	1.28	0.00
60.00	3.29	1.28	0.00
62.00	3.29	1.28	0.00
64.00	3.29	1.28	0.00
66.00	3.29	1.28	0.00
68.00	3.29	1.28	0.00
70.00	3.29	1.28	0.00
72.00	3.29	1.28	0.00
74.00	3.29	1.28	0.00
76.00	3.29	1.28	0.00
78.00	3.29	1.28	0.00
80.00	3.29	1.28	0.00
82.00	3.29	1.28	0.00
84.00	3.29	1.28	0.00
86.00	3.29	1.28	0.00
88.00	3.29	1.28	0.00
90.00	3.29	1.28	0.00
92.00	3.29	1.28	0.00
94.00	3.29	1.28	0.00
96.00	3.29	1.28	0.00
98.00	3.29	1.28	0.00
100.00	3.29	1.28	0.00
102.00	3.29	1.28	0.00
104.00	3.29	1.28	0.00
106.00	3.29	1.28	0.00
108.00	3.29	1.28	0.00
110.00	3.29	1.28	0.00
112.00	3.29	1.28	0.00
114.00	3.29	1.28	0.00
116.00	3.29	1.28	0.00
118.00	3.29	1.28	0.00
120.00	3.29	1.28	0.00
122.00	3.29	1.28	0.00
124.00	3.29	1.28	0.00
126.00	3.29	1.28	0.00
128.00	3.29	1.28	0.00
130.00	3.29	1.28	0.00
132.00	3.29	1.28	0.00
134.00	3.29	1.28	0.00
136.00	3.29	1.28	0.00
138.00	3.29	1.28	0.00
140.00	3.29	1.28	0.00
142.00	3.29	1.28	0.00
144.00	3.29	1.28	0.00
146.00	3.29	1.28	0.00
148.00	3.29	1.28	0.00
150.00	3.29	1.28	0.00
152.00	3.29	1.28	0.00
154.00	3.29	1.28	0.00
156.00	3.29	1.28	0.00
158.00	3.29	1.28	0.00
160.00	3.29	1.28	0.00
162.00	3.29	1.28	0.00
164.00	3.29	1.28	0.00
166.00	3.29	1.28	0.00
168.00	3.29	1.28	0.00
170.00	3.29	1.28	0.00
172.00	3.29	1.28	0.00
174.00	3.29	1.28	0.00
176.00	3.29	1.28	0.00
178.00	3.29	1.28	0.00
180.00	3.29	1.28	0.00

Summary for Subcatchment SE:

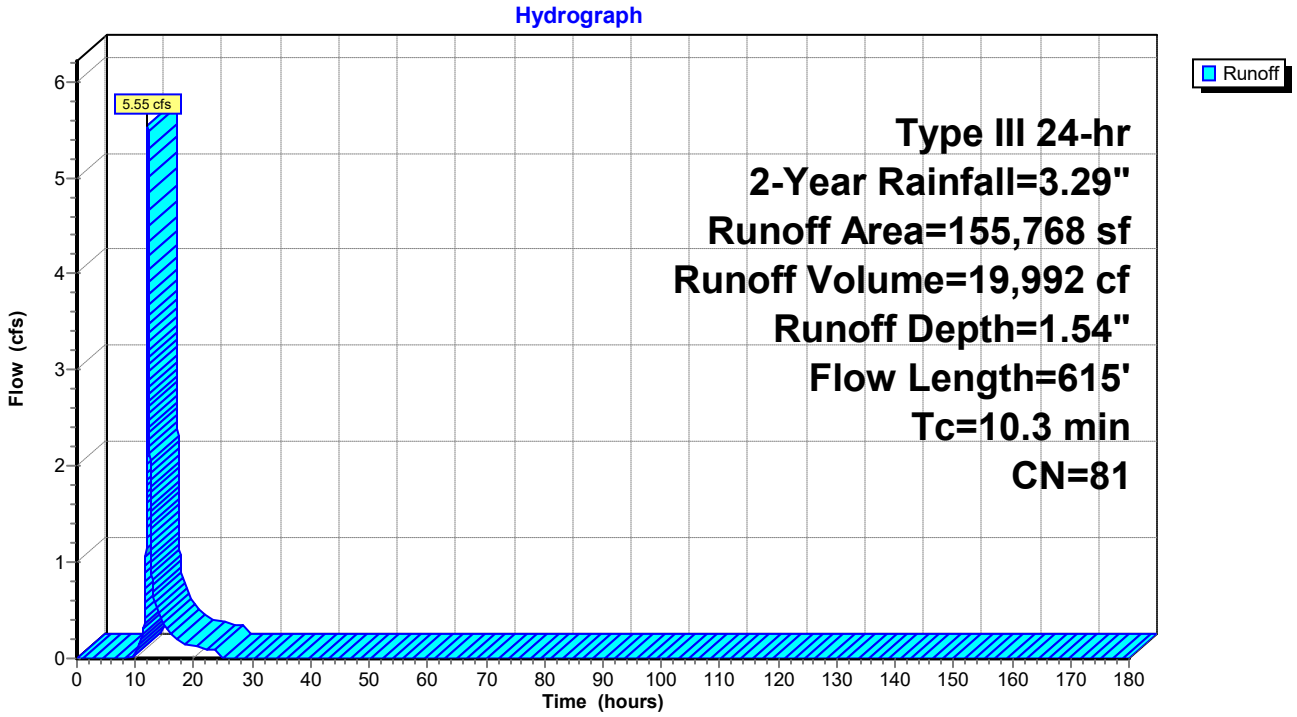
Runoff = 5.55 cfs @ 12.15 hrs, Volume= 19,992 cf, Depth= 1.54"
Routed to Reach DP-SE : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
130,248	80	Pasture/grassland/range, Good, HSG D
12,734	79	Woods/grass comb., Good, HSG D
276	96	Gravel surface, HSG D
12,510	98	Unconnected pavement, HSG D
155,768	81	Weighted Average
143,258		91.97% Pervious Area
12,510		8.03% Impervious Area
12,510		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	47	0.0304	0.20		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.1	521	0.0416	1.43		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.2	47	0.0304	4.04	18.19	**Trap/Vee/Rect Channel Flow, CD** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
10.3	615	Total			

Subcatchment SE:



Hydrograph for Subcatchment SE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.01	0.06
12.00	1.64	0.39	**2.47**
14.00	2.67	1.06	**0.46**
16.00	2.91	1.25	0.25
18.00	3.05	1.35	0.15
20.00	3.15	1.43	0.12
22.00	3.23	1.49	0.10
24.00	**3.29**	**1.54**	0.08
26.00	3.29	1.54	0.00
28.00	3.29	1.54	0.00
30.00	3.29	1.54	0.00
32.00	3.29	1.54	0.00
34.00	3.29	1.54	0.00
36.00	3.29	1.54	0.00
38.00	3.29	1.54	0.00
40.00	3.29	1.54	0.00
42.00	3.29	1.54	0.00
44.00	3.29	1.54	0.00
46.00	3.29	1.54	0.00
48.00	3.29	1.54	0.00
50.00	3.29	1.54	0.00
52.00	3.29	1.54	0.00
54.00	3.29	1.54	0.00
56.00	3.29	1.54	0.00
58.00	3.29	1.54	0.00
60.00	3.29	1.54	0.00
62.00	3.29	1.54	0.00
64.00	3.29	1.54	0.00
66.00	3.29	1.54	0.00
68.00	3.29	1.54	0.00
70.00	3.29	1.54	0.00
72.00	3.29	1.54	0.00
74.00	3.29	1.54	0.00
76.00	3.29	1.54	0.00
78.00	3.29	1.54	0.00
80.00	3.29	1.54	0.00
82.00	3.29	1.54	0.00
84.00	3.29	1.54	0.00
86.00	3.29	1.54	0.00
88.00	3.29	1.54	0.00
90.00	3.29	1.54	0.00
92.00	3.29	1.54	0.00
94.00	3.29	1.54	0.00
96.00	3.29	1.54	0.00
98.00	3.29	1.54	0.00
100.00	3.29	1.54	0.00
102.00	3.29	1.54	0.00
104.00	3.29	1.54	0.00
106.00	3.29	1.54	0.00
108.00	3.29	1.54	0.00
110.00	3.29	1.54	0.00
112.00	3.29	1.54	0.00
114.00	3.29	1.54	0.00
116.00	3.29	1.54	0.00
118.00	3.29	1.54	0.00
120.00	3.29	1.54	0.00
122.00	3.29	1.54	0.00
124.00	3.29	1.54	0.00
126.00	3.29	1.54	0.00
128.00	3.29	1.54	0.00
130.00	3.29	1.54	0.00
132.00	3.29	1.54	0.00
134.00	3.29	1.54	0.00
136.00	3.29	1.54	0.00
138.00	3.29	1.54	0.00
140.00	3.29	1.54	0.00
142.00	3.29	1.54	0.00
144.00	3.29	1.54	0.00
146.00	3.29	1.54	0.00
148.00	3.29	1.54	0.00
150.00	3.29	1.54	0.00
152.00	3.29	1.54	0.00
154.00	3.29	1.54	0.00
156.00	3.29	1.54	0.00
158.00	3.29	1.54	0.00
160.00	3.29	1.54	0.00
162.00	3.29	1.54	0.00
164.00	3.29	1.54	0.00
166.00	3.29	1.54	0.00
168.00	3.29	1.54	0.00
170.00	3.29	1.54	0.00
172.00	3.29	1.54	0.00
174.00	3.29	1.54	0.00
176.00	3.29	1.54	0.00
178.00	3.29	1.54	0.00
180.00	3.29	1.54	0.00

Summary for Subcatchment SW:

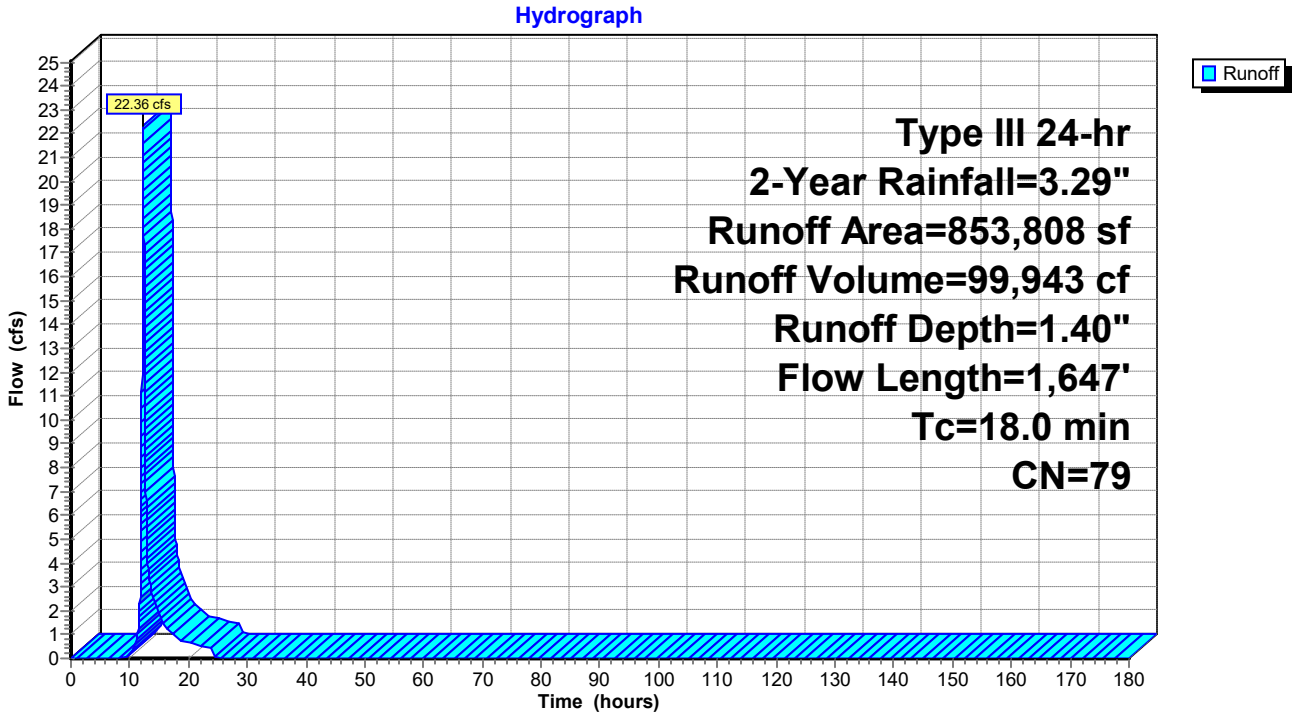
Runoff = 22.36 cfs @ 12.26 hrs, Volume= 99,943 cf, Depth= 1.40"
Routed to Reach DP-SW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
250,115	80	Pasture/grassland/range, Good, HSG D
603,267	79	Woods/grass comb., Good, HSG D
54	96	Gravel surface, HSG D
372	98	Unconnected pavement, HSG D
853,808	79	Weighted Average
853,436		99.96% Pervious Area
372		0.04% Impervious Area
372		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0398	0.25		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
4.0	442	0.0697	1.85		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
4.4	387	0.0848	1.46		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
0.3	51	0.3946	3.14		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
2.2	149	0.0530	1.15		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.6	518	0.0304	13.39	923.97	**Trap/Vee/Rect Channel Flow, FG** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
18.0	1,647	Total			

Subcatchment SW:



Hydrograph for Subcatchment SW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.10
12.00	1.64	0.33	**7.64**
14.00	2.67	0.95	**2.48**
16.00	2.91	1.13	1.36
18.00	3.05	1.23	0.83
20.00	3.15	1.30	0.65
22.00	3.23	1.36	0.54
24.00	**3.29**	**1.40**	0.43
26.00	3.29	1.40	0.00
28.00	3.29	1.40	0.00
30.00	3.29	1.40	0.00
32.00	3.29	1.40	0.00
34.00	3.29	1.40	0.00
36.00	3.29	1.40	0.00
38.00	3.29	1.40	0.00
40.00	3.29	1.40	0.00
42.00	3.29	1.40	0.00
44.00	3.29	1.40	0.00
46.00	3.29	1.40	0.00
48.00	3.29	1.40	0.00
50.00	3.29	1.40	0.00
52.00	3.29	1.40	0.00
54.00	3.29	1.40	0.00
56.00	3.29	1.40	0.00
58.00	3.29	1.40	0.00
60.00	3.29	1.40	0.00
62.00	3.29	1.40	0.00
64.00	3.29	1.40	0.00
66.00	3.29	1.40	0.00
68.00	3.29	1.40	0.00
70.00	3.29	1.40	0.00
72.00	3.29	1.40	0.00
74.00	3.29	1.40	0.00
76.00	3.29	1.40	0.00
78.00	3.29	1.40	0.00
80.00	3.29	1.40	0.00
82.00	3.29	1.40	0.00
84.00	3.29	1.40	0.00
86.00	3.29	1.40	0.00
88.00	3.29	1.40	0.00
90.00	3.29	1.40	0.00
92.00	3.29	1.40	0.00
94.00	3.29	1.40	0.00
96.00	3.29	1.40	0.00
98.00	3.29	1.40	0.00
100.00	3.29	1.40	0.00
102.00	3.29	1.40	0.00
104.00	3.29	1.40	0.00
106.00	3.29	1.40	0.00
108.00	3.29	1.40	0.00
110.00	3.29	1.40	0.00
112.00	3.29	1.40	0.00
114.00	3.29	1.40	0.00
116.00	3.29	1.40	0.00
118.00	3.29	1.40	0.00
120.00	3.29	1.40	0.00
122.00	3.29	1.40	0.00
124.00	3.29	1.40	0.00
126.00	3.29	1.40	0.00
128.00	3.29	1.40	0.00
130.00	3.29	1.40	0.00
132.00	3.29	1.40	0.00
134.00	3.29	1.40	0.00
136.00	3.29	1.40	0.00
138.00	3.29	1.40	0.00
140.00	3.29	1.40	0.00
142.00	3.29	1.40	0.00
144.00	3.29	1.40	0.00
146.00	3.29	1.40	0.00
148.00	3.29	1.40	0.00
150.00	3.29	1.40	0.00
152.00	3.29	1.40	0.00
154.00	3.29	1.40	0.00
156.00	3.29	1.40	0.00
158.00	3.29	1.40	0.00
160.00	3.29	1.40	0.00
162.00	3.29	1.40	0.00
164.00	3.29	1.40	0.00
166.00	3.29	1.40	0.00
168.00	3.29	1.40	0.00
170.00	3.29	1.40	0.00
172.00	3.29	1.40	0.00
174.00	3.29	1.40	0.00
176.00	3.29	1.40	0.00
178.00	3.29	1.40	0.00
180.00	3.29	1.40	0.00

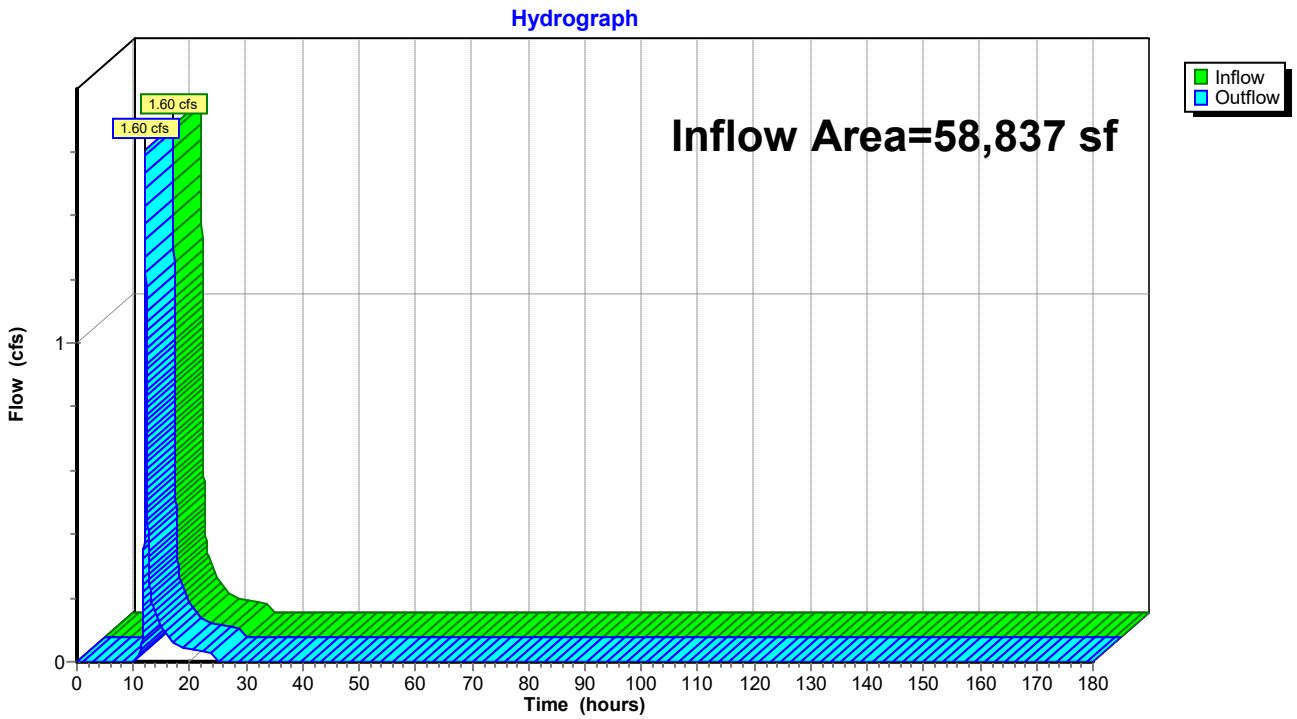
Summary for Reach DP-M:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 58,837 sf, 0.00% Impervious, Inflow Depth = 1.16" for 2-Year event
Inflow = 1.60 cfs @ 12.13 hrs, Volume= 5,665 cf
Outflow = 1.60 cfs @ 12.13 hrs, Volume= 5,665 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-M:



Hydrograph for Reach DP-M:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.00		0.00	114.00	0.00		0.00
12.00	**0.70**		**0.70**	116.00	0.00		0.00
14.00	**0.14**		**0.14**	118.00	0.00		0.00
16.00	0.08		0.08	120.00	0.00		0.00
18.00	0.05		0.05	122.00	0.00		0.00
20.00	0.04		0.04	124.00	0.00		0.00
22.00	0.03		0.03	126.00	0.00		0.00
24.00	0.03		0.03	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

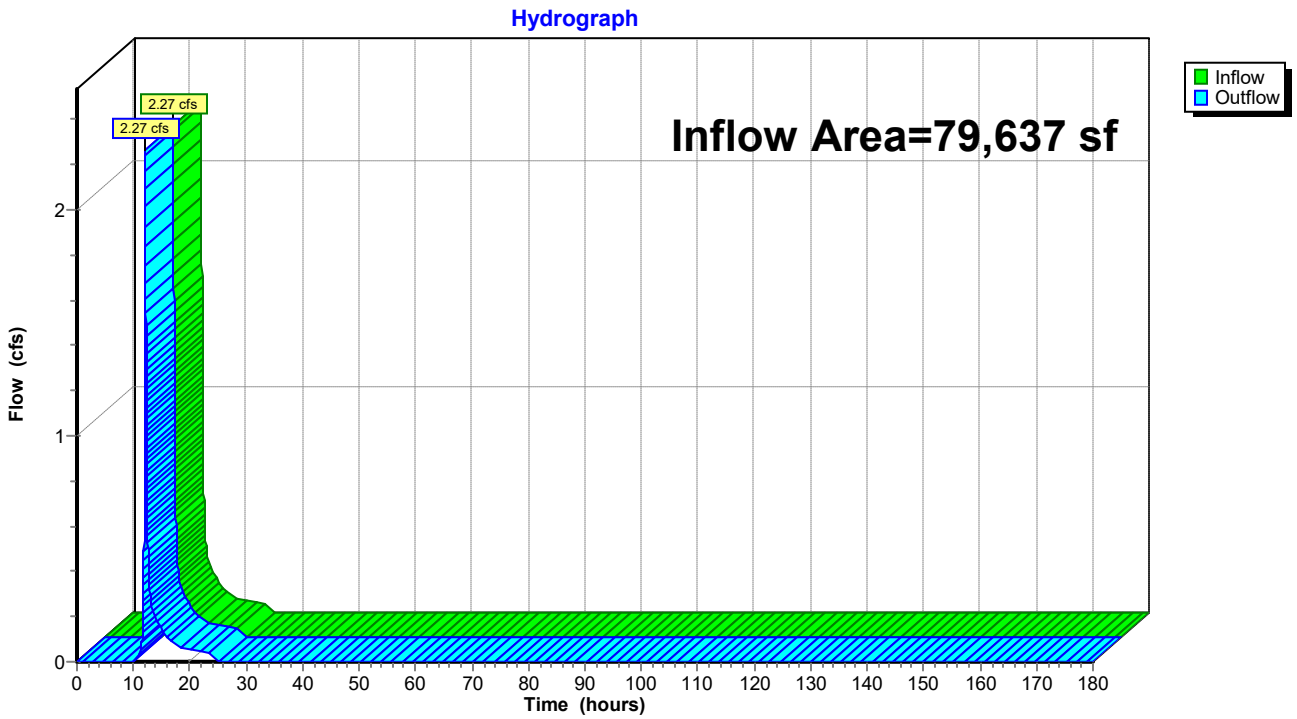
Summary for Reach DP-MW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79,637 sf, 0.00% Impervious, Inflow Depth = 1.16" for 2-Year event
Inflow = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf
Outflow = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-MW:



Hydrograph for Reach DP-MW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.00		0.00	114.00	0.00		0.00
12.00	**1.06**		**1.06**	116.00	0.00		0.00
14.00	**0.19**		**0.19**	118.00	0.00		0.00
16.00	0.11		0.11	120.00	0.00		0.00
18.00	0.07		0.07	122.00	0.00		0.00
20.00	0.05		0.05	124.00	0.00		0.00
22.00	0.04		0.04	126.00	0.00		0.00
24.00	0.04		0.04	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

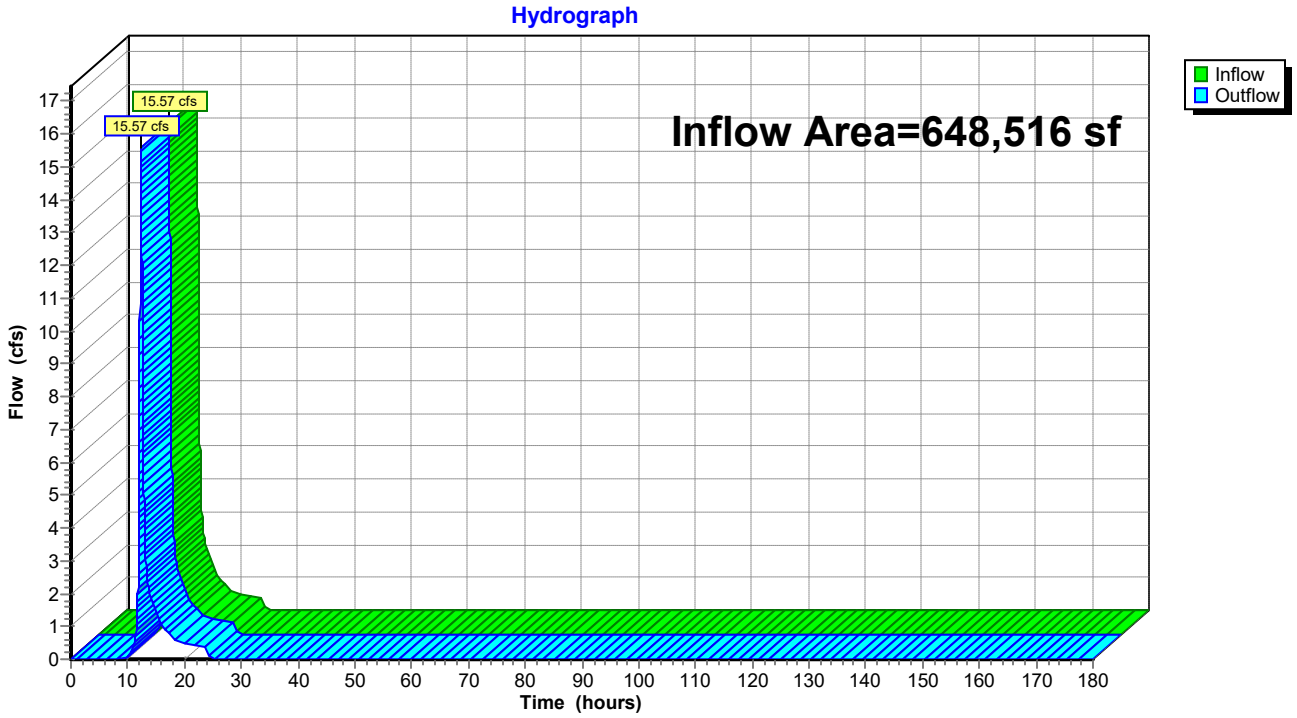
Summary for Reach DP-N: Culvert towards Wades Stream

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 648,516 sf, 1.35% Impervious, Inflow Depth = 1.40" for 2-Year event
Inflow = 15.57 cfs @ 12.31 hrs, Volume= 75,913 cf
Outflow = 15.57 cfs @ 12.31 hrs, Volume= 75,913 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-N: Culvert towards Wades Stream



Hydrograph for Reach DP-N: Culvert towards Wades Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.06		0.06	114.00	0.00		0.00
12.00	**4.69**		**4.69**	116.00	0.00		0.00
14.00	**1.93**		**1.93**	118.00	0.00		0.00
16.00	1.06		1.06	120.00	0.00		0.00
18.00	0.64		0.64	122.00	0.00		0.00
20.00	0.50		0.50	124.00	0.00		0.00
22.00	0.41		0.41	126.00	0.00		0.00
24.00	0.33		0.33	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

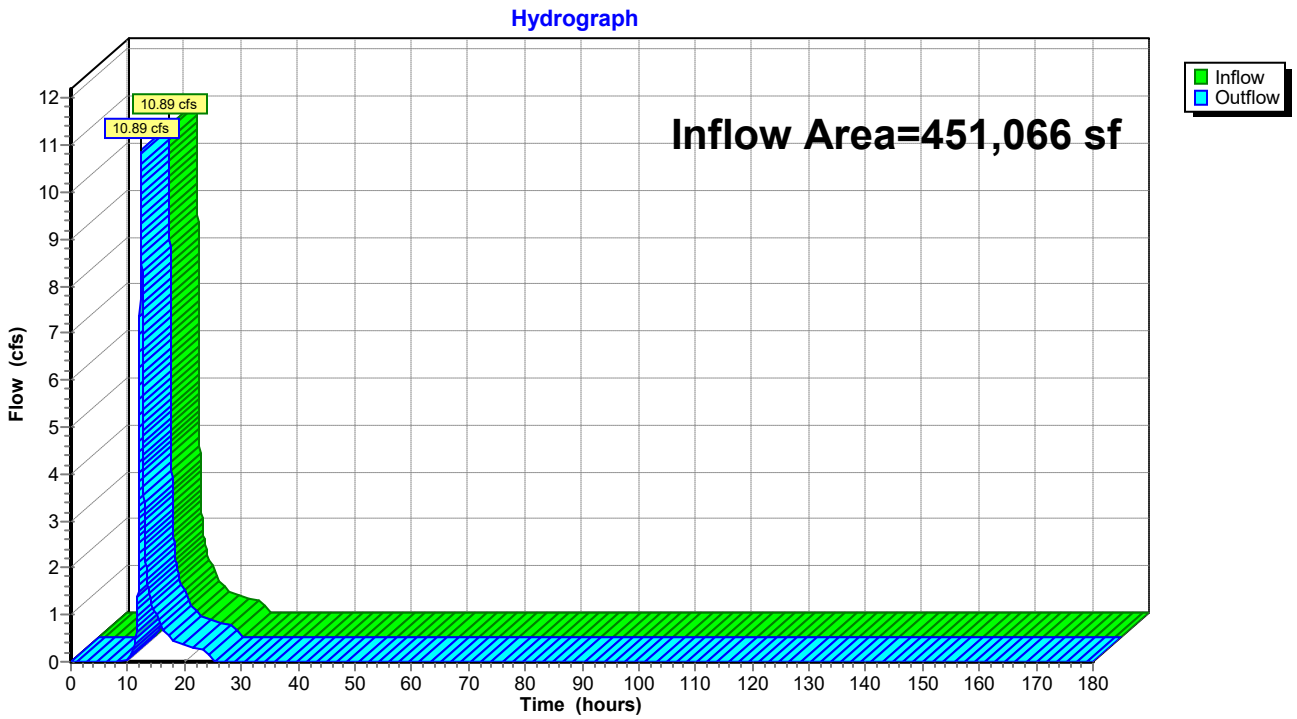
Summary for Reach DP-NE:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 451,066 sf, 0.00% Impervious, Inflow Depth = 1.40" for 2-Year event
Inflow = 10.89 cfs @ 12.32 hrs, Volume= 52,800 cf
Outflow = 10.89 cfs @ 12.32 hrs, Volume= 52,800 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-NE:



Hydrograph for Reach DP-NE:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.05		0.05	114.00	0.00		0.00
12.00	**3.33**		**3.33**	116.00	0.00		0.00
14.00	**1.34**		**1.34**	118.00	0.00		0.00
16.00	0.74		0.74	120.00	0.00		0.00
18.00	0.45		0.45	122.00	0.00		0.00
20.00	0.35		0.35	124.00	0.00		0.00
22.00	0.29		0.29	126.00	0.00		0.00
24.00	0.23		0.23	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

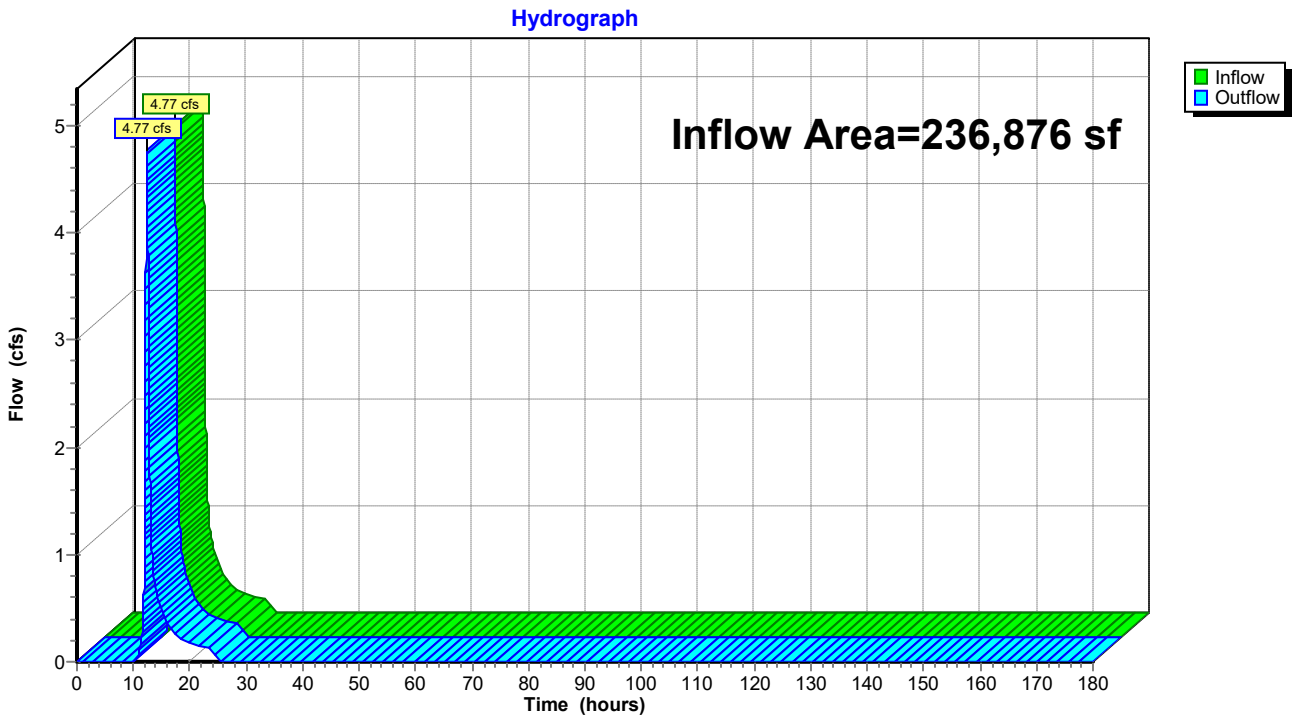
Summary for Reach DP-NW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 236,876 sf, 0.55% Impervious, Inflow Depth = 1.28" for 2-Year event
Inflow = 4.77 cfs @ 12.39 hrs, Volume= 25,198 cf
Outflow = 4.77 cfs @ 12.39 hrs, Volume= 25,198 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 1L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-NW:



Hydrograph for Reach DP-NW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.00		0.00	114.00	0.00		0.00
12.00	**1.19**		**1.19**	116.00	0.00		0.00
14.00	**0.68**		**0.68**	118.00	0.00		0.00
16.00	0.37		0.37	120.00	0.00		0.00
18.00	0.23		0.23	122.00	0.00		0.00
20.00	0.17		0.17	124.00	0.00		0.00
22.00	0.14		0.14	126.00	0.00		0.00
24.00	0.12		0.12	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Reach DP-SE: Culvert

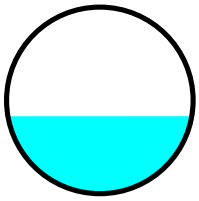
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 155,768 sf, 8.03% Impervious, Inflow Depth = 1.54" for 2-Year event
Inflow = 5.55 cfs @ 12.15 hrs, Volume= 19,992 cf
Outflow = 5.55 cfs @ 12.15 hrs, Volume= 19,992 cf, Atten= 0%, Lag= 0.1 min
Routed to Link 4L : Lag

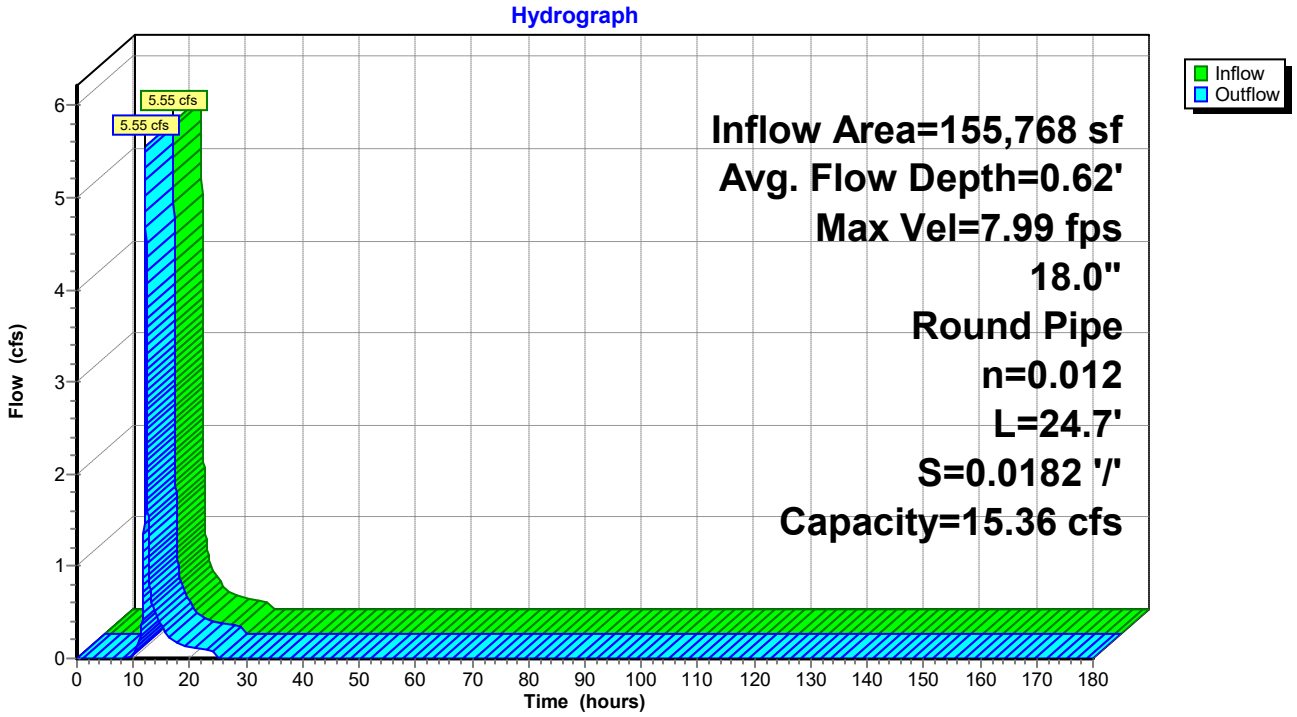
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.99 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.05 fps, Avg. Travel Time= 0.1 min

Peak Storage= 17 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.62' , Surface Width= 1.48'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.36 cfs

18.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 24.7' Slope= 0.0182 '/'
Inlet Invert= 1,620.00', Outlet Invert= 1,619.55'



Reach DP-SE: Culvert



Hydrograph for Reach DP-SE: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,620.00	0.00
5.00	0.00	0	1,620.00	0.00
10.00	**0.06**	**1**	**1,620.07**	**0.06**
15.00	**0.35**	**2**	**1,620.16**	**0.35**
20.00	0.12	1	1,620.09	0.12
25.00	0.00	0	1,620.00	0.00
30.00	0.00	0	1,620.00	0.00
35.00	0.00	0	1,620.00	0.00
40.00	0.00	0	1,620.00	0.00
45.00	0.00	0	1,620.00	0.00
50.00	0.00	0	1,620.00	0.00
55.00	0.00	0	1,620.00	0.00
60.00	0.00	0	1,620.00	0.00
65.00	0.00	0	1,620.00	0.00
70.00	0.00	0	1,620.00	0.00
75.00	0.00	0	1,620.00	0.00
80.00	0.00	0	1,620.00	0.00
85.00	0.00	0	1,620.00	0.00
90.00	0.00	0	1,620.00	0.00
95.00	0.00	0	1,620.00	0.00
100.00	0.00	0	1,620.00	0.00
105.00	0.00	0	1,620.00	0.00
110.00	0.00	0	1,620.00	0.00
115.00	0.00	0	1,620.00	0.00
120.00	0.00	0	1,620.00	0.00
125.00	0.00	0	1,620.00	0.00
130.00	0.00	0	1,620.00	0.00
135.00	0.00	0	1,620.00	0.00
140.00	0.00	0	1,620.00	0.00
145.00	0.00	0	1,620.00	0.00
150.00	0.00	0	1,620.00	0.00
155.00	0.00	0	1,620.00	0.00
160.00	0.00	0	1,620.00	0.00
165.00	0.00	0	1,620.00	0.00
170.00	0.00	0	1,620.00	0.00
175.00	0.00	0	1,620.00	0.00
180.00	0.00	0	1,620.00	0.00

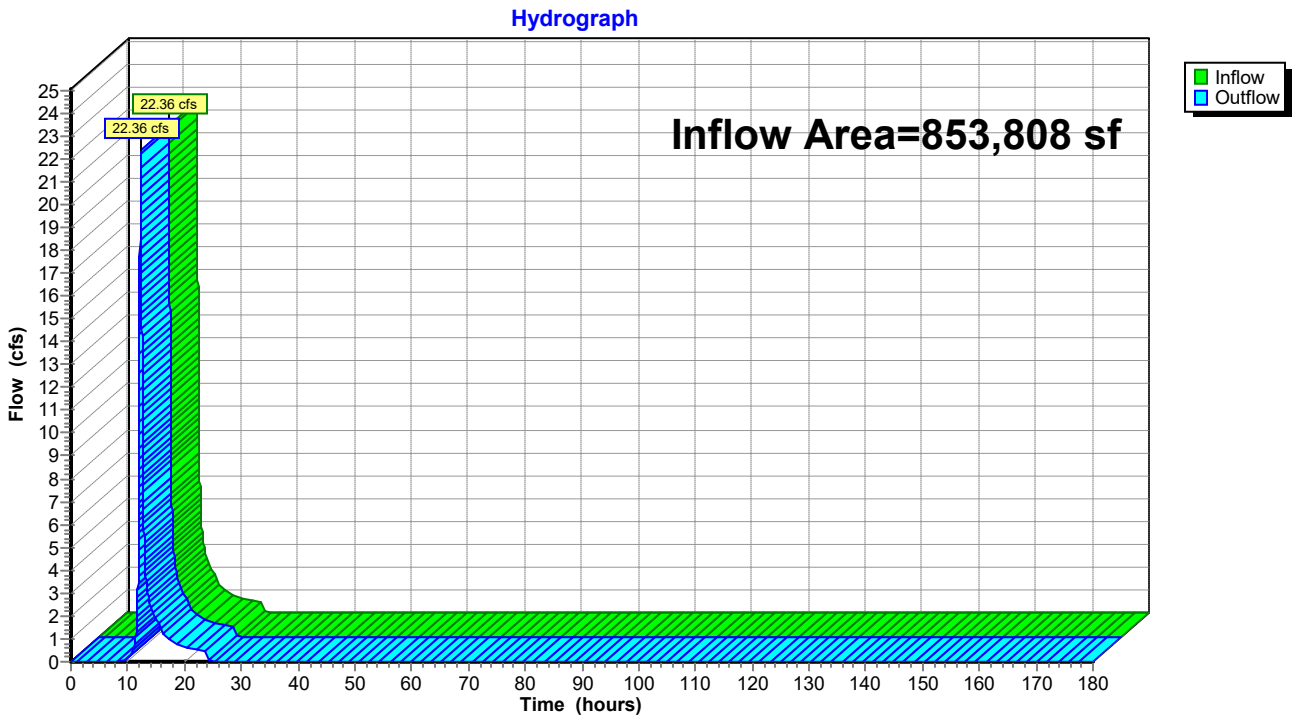
Summary for Reach DP-SW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 853,808 sf, 0.04% Impervious, Inflow Depth = 1.40" for 2-Year event
Inflow = 22.36 cfs @ 12.26 hrs, Volume= 99,943 cf
Outflow = 22.36 cfs @ 12.26 hrs, Volume= 99,943 cf, Atten= 0%, Lag= 0.0 min
Routed to Link DP-S : Watts Stream

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-SW:



Hydrograph for Reach DP-SW:

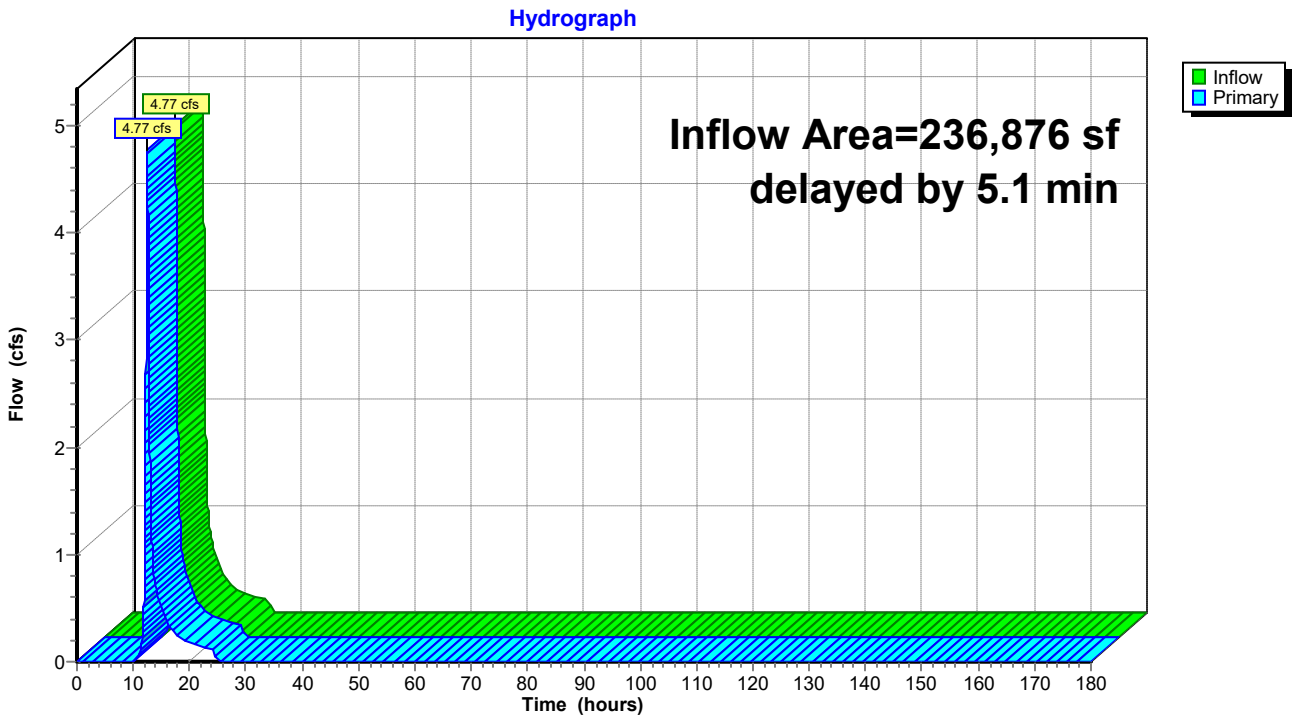
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.10		0.10	114.00	0.00		0.00
12.00	**7.64**		**7.64**	116.00	0.00		0.00
14.00	**2.48**		**2.48**	118.00	0.00		0.00
16.00	1.36		1.36	120.00	0.00		0.00
18.00	0.83		0.83	122.00	0.00		0.00
20.00	0.65		0.65	124.00	0.00		0.00
22.00	0.54		0.54	126.00	0.00		0.00
24.00	0.43		0.43	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Link 1L: Lag

Inflow Area = 236,876 sf, 0.55% Impervious, Inflow Depth = 1.28" for 2-Year event
Inflow = 4.77 cfs @ 12.39 hrs, Volume= 25,198 cf
Primary = 4.77 cfs @ 12.47 hrs, Volume= 25,198 cf, Atten= 0%, Lag= 5.0 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 5.1 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 1L: Lag



Hydrograph for Link 1L: Lag

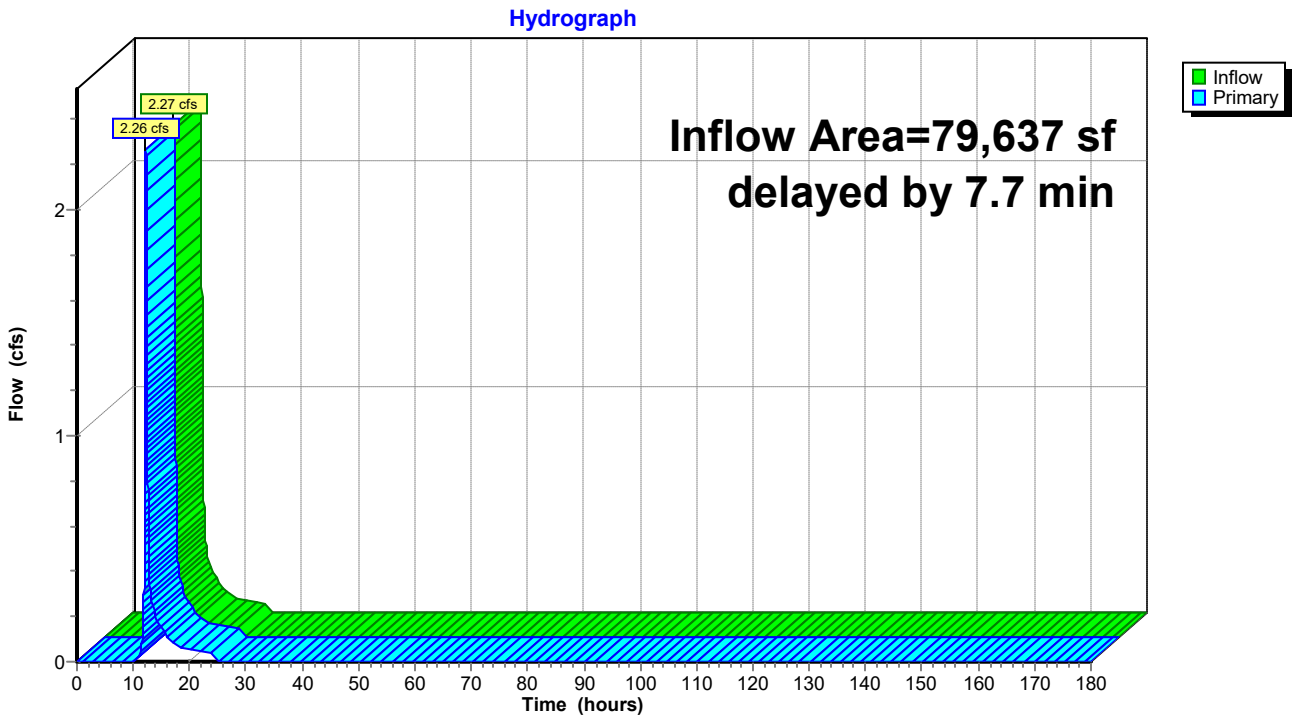
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	114.00	0.00	0.00	0.00
12.00	**1.19**	0.00	**0.81**	116.00	0.00	0.00	0.00
14.00	**0.68**	0.00	**0.70**	118.00	0.00	0.00	0.00
16.00	0.37	0.00	0.39	120.00	0.00	0.00	0.00
18.00	0.23	0.00	0.23	122.00	0.00	0.00	0.00
20.00	0.17	0.00	0.18	124.00	0.00	0.00	0.00
22.00	0.14	0.00	0.15	126.00	0.00	0.00	0.00
24.00	0.12	0.00	0.12	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 2L: Lag

Inflow Area = 79,637 sf, 0.00% Impervious, Inflow Depth = 1.16" for 2-Year event
Inflow = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf
Primary = 2.26 cfs @ 12.24 hrs, Volume= 7,667 cf, Atten= 0%, Lag= 7.7 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 7.7 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 2L: Lag



Hydrograph for Link 2L: Lag

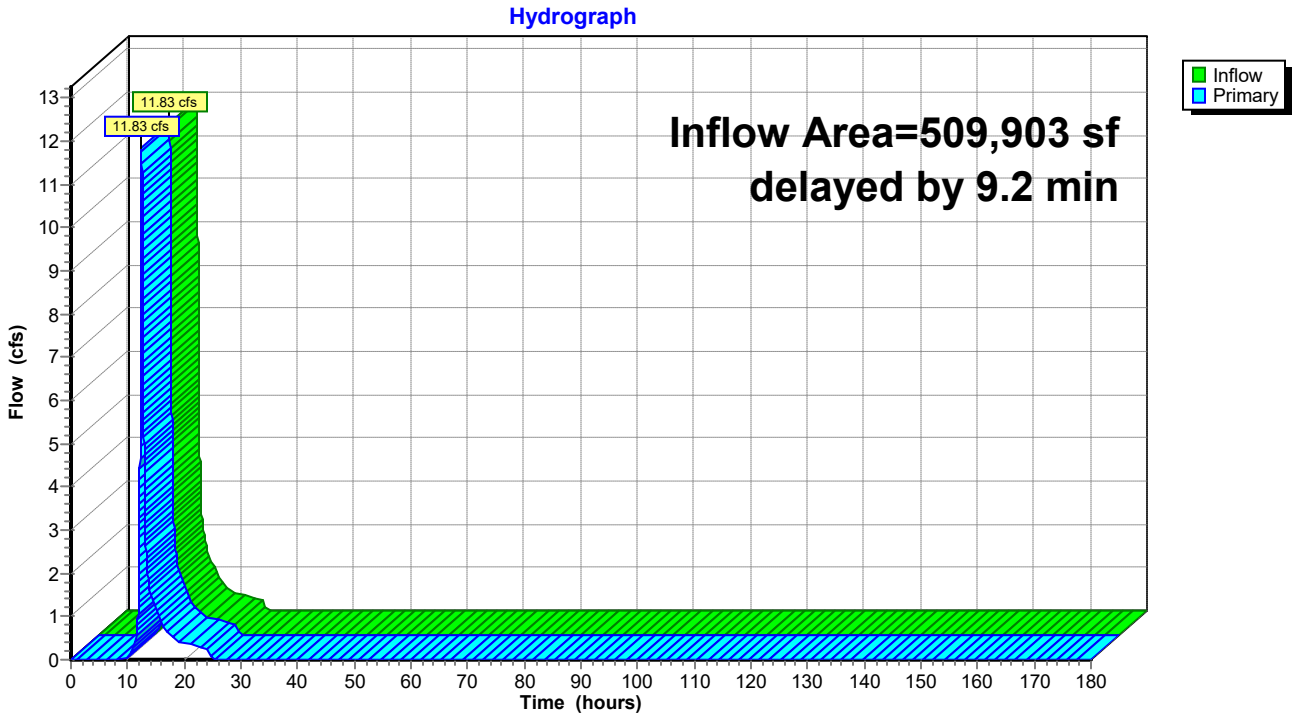
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	114.00	0.00	0.00	0.00
12.00	**1.06**	0.00	**0.53**	116.00	0.00	0.00	0.00
14.00	**0.19**	0.00	**0.20**	118.00	0.00	0.00	0.00
16.00	0.11	0.00	0.11	120.00	0.00	0.00	0.00
18.00	0.07	0.00	0.07	122.00	0.00	0.00	0.00
20.00	0.05	0.00	0.05	124.00	0.00	0.00	0.00
22.00	0.04	0.00	0.05	126.00	0.00	0.00	0.00
24.00	0.04	0.00	0.04	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 3L: Lag

Inflow Area = 509,903 sf, 0.00% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 11.83 cfs @ 12.30 hrs, Volume= 58,465 cf
Primary = 11.83 cfs @ 12.46 hrs, Volume= 58,465 cf, Atten= 0%, Lag= 9.2 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.2 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 3L: Lag



Hydrograph for Link 3L: Lag

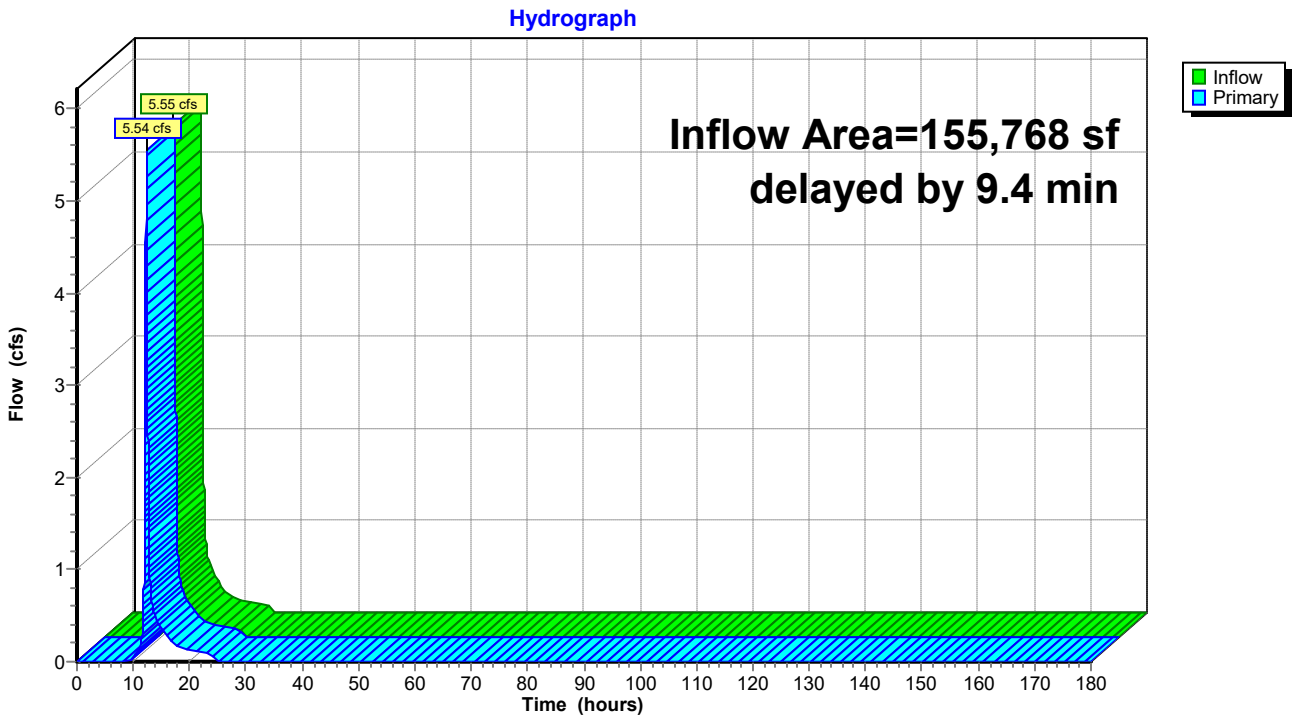
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.05	0.00	0.02	114.00	0.00	0.00	0.00
12.00	**4.03**	0.00	**2.05**	116.00	0.00	0.00	0.00
14.00	**1.48**	0.00	**1.57**	118.00	0.00	0.00	0.00
16.00	0.82	0.00	0.86	120.00	0.00	0.00	0.00
18.00	0.50	0.00	0.52	122.00	0.00	0.00	0.00
20.00	0.39	0.00	0.39	124.00	0.00	0.00	0.00
22.00	0.32	0.00	0.33	126.00	0.00	0.00	0.00
24.00	0.26	0.00	0.26	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 4L: Lag

Inflow Area = 155,768 sf, 8.03% Impervious, Inflow Depth = 1.54" for 2-Year event
Inflow = 5.55 cfs @ 12.15 hrs, Volume= 19,992 cf
Primary = 5.54 cfs @ 12.30 hrs, Volume= 19,992 cf, Atten= 0%, Lag= 9.4 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.4 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 4L: Lag



Hydrograph for Link 4L: Lag

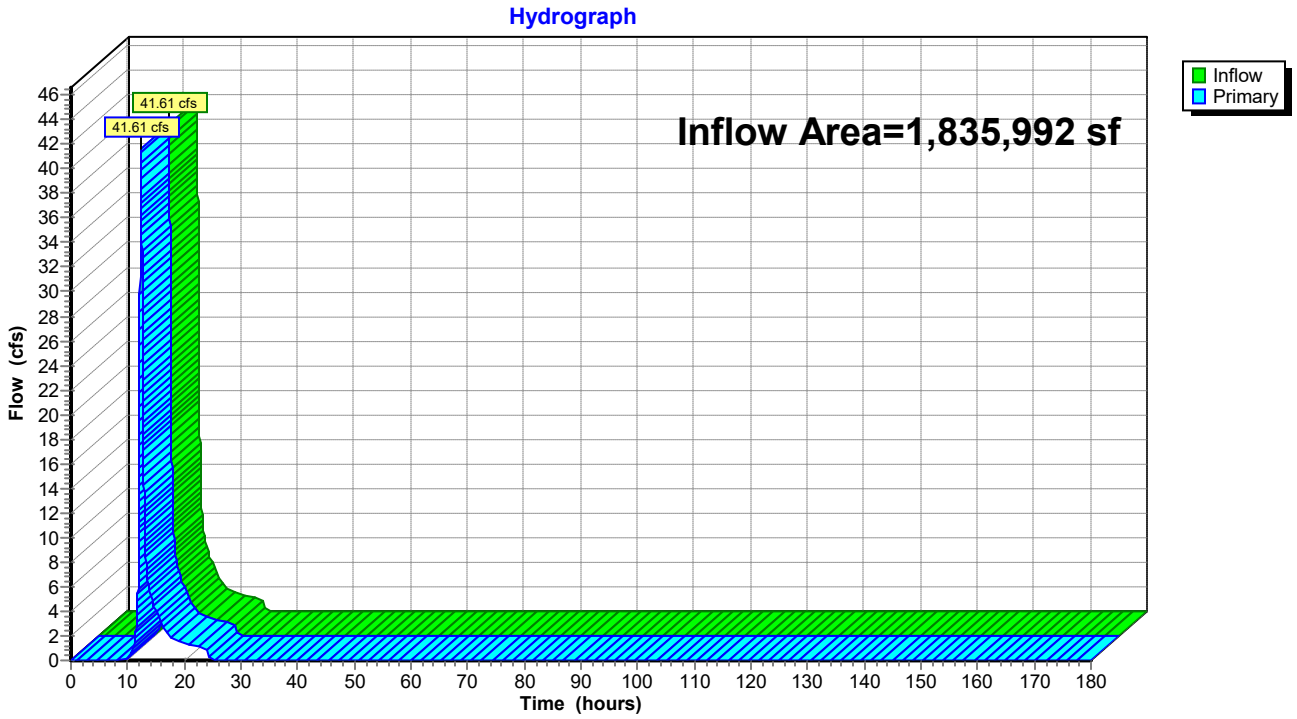
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.06	0.00	0.04	114.00	0.00	0.00	0.00
12.00	**2.46**	0.00	**1.30**	116.00	0.00	0.00	0.00
14.00	**0.46**	0.00	**0.49**	118.00	0.00	0.00	0.00
16.00	0.25	0.00	0.27	120.00	0.00	0.00	0.00
18.00	0.15	0.00	0.16	122.00	0.00	0.00	0.00
20.00	0.12	0.00	0.12	124.00	0.00	0.00	0.00
22.00	0.10	0.00	0.10	126.00	0.00	0.00	0.00
24.00	0.08	0.00	0.08	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link DP-S: Watts Stream

Inflow Area = 1,835,992 sf, 0.77% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 41.61 cfs @ 12.31 hrs, Volume= 211,265 cf
Primary = 41.61 cfs @ 12.31 hrs, Volume= 211,265 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link DP-S: Watts Stream



Hydrograph for Link DP-S: Watts Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.17	0.00	0.17	114.00	0.00	0.00	0.00
12.00	**12.32**	0.00	**12.32**	116.00	0.00	0.00	0.00
14.00	**5.44**	0.00	**5.44**	118.00	0.00	0.00	0.00
16.00	2.99	0.00	2.99	120.00	0.00	0.00	0.00
18.00	1.81	0.00	1.81	122.00	0.00	0.00	0.00
20.00	1.40	0.00	1.40	124.00	0.00	0.00	0.00
22.00	1.16	0.00	1.16	126.00	0.00	0.00	0.00
24.00	0.93	0.00	0.93	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Subcatchment M:

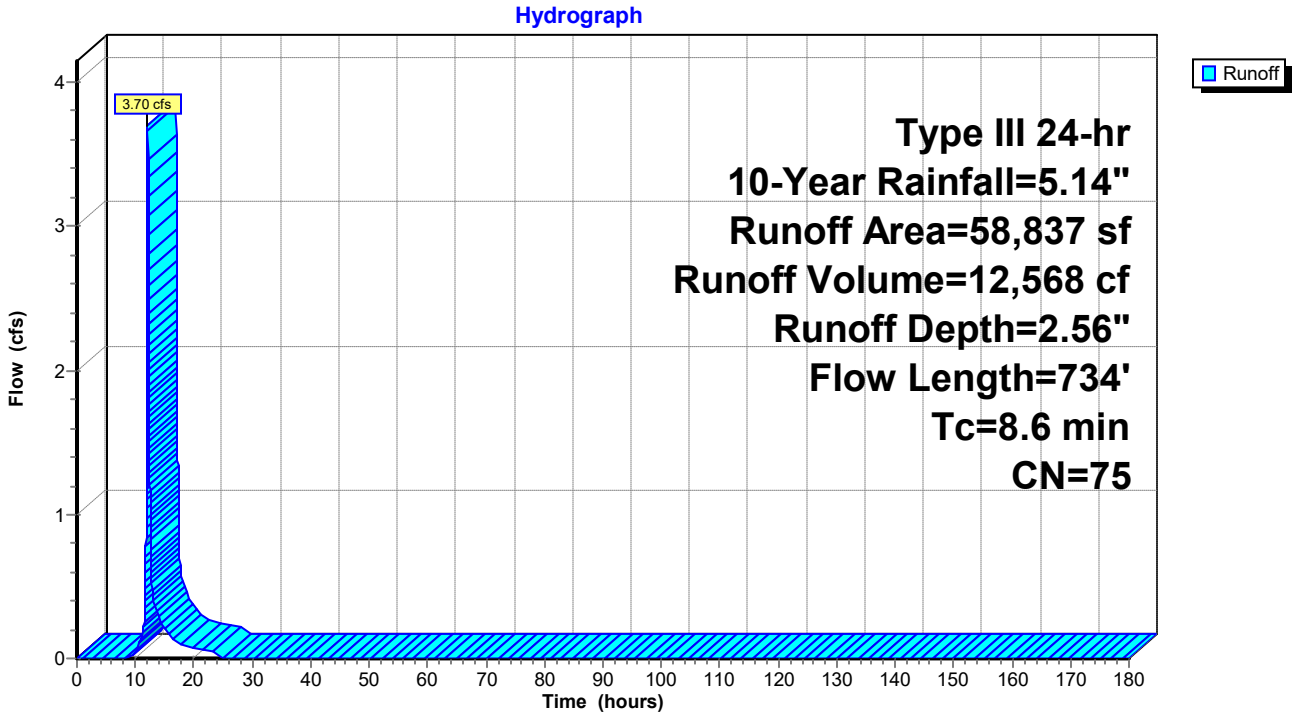
Runoff = 3.70 cfs @ 12.12 hrs, Volume= 12,568 cf, Depth= 2.56"
Routed to Reach DP-M :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
56,266	74	Pasture/grassland/range, Good, HSG C
2,571	96	Gravel surface, HSG C
58,837	75	Weighted Average
58,837		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	95	0.0625	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
2.3	214	0.0510	1.58		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.4	42	0.0587	1.70		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.0	18	0.0597	13.93	17.10	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.3	64	0.1973	3.11		**Shallow Concentrated Flow, EF** Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0846	11.68	105.15	**Trap/Vee/Rect Channel Flow, FG** Bot.W=6.00' D=1.00' Z= 3.0 '/' Top.W=12.00' n= 0.030 Earth, grassed & winding
8.6	734	Total			

Subcatchment M:



Hydrograph for Subcatchment M:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.00
10.00	0.97	0.03	0.05
12.00	2.57	0.69	**1.79**
14.00	4.17	1.79	**0.28**
16.00	4.55	2.09	0.15
18.00	4.77	2.26	0.09
20.00	4.92	2.38	0.07
22.00	5.04	2.48	0.06
24.00	**5.14**	**2.56**	0.05
26.00	5.14	2.56	0.00
28.00	5.14	2.56	0.00
30.00	5.14	2.56	0.00
32.00	5.14	2.56	0.00
34.00	5.14	2.56	0.00
36.00	5.14	2.56	0.00
38.00	5.14	2.56	0.00
40.00	5.14	2.56	0.00
42.00	5.14	2.56	0.00
44.00	5.14	2.56	0.00
46.00	5.14	2.56	0.00
48.00	5.14	2.56	0.00
50.00	5.14	2.56	0.00
52.00	5.14	2.56	0.00
54.00	5.14	2.56	0.00
56.00	5.14	2.56	0.00
58.00	5.14	2.56	0.00
60.00	5.14	2.56	0.00
62.00	5.14	2.56	0.00
64.00	5.14	2.56	0.00
66.00	5.14	2.56	0.00
68.00	5.14	2.56	0.00
70.00	5.14	2.56	0.00
72.00	5.14	2.56	0.00
74.00	5.14	2.56	0.00
76.00	5.14	2.56	0.00
78.00	5.14	2.56	0.00
80.00	5.14	2.56	0.00
82.00	5.14	2.56	0.00
84.00	5.14	2.56	0.00
86.00	5.14	2.56	0.00
88.00	5.14	2.56	0.00
90.00	5.14	2.56	0.00
92.00	5.14	2.56	0.00
94.00	5.14	2.56	0.00
96.00	5.14	2.56	0.00
98.00	5.14	2.56	0.00
100.00	5.14	2.56	0.00
102.00	5.14	2.56	0.00
104.00	5.14	2.56	0.00
106.00	5.14	2.56	0.00
108.00	5.14	2.56	0.00
110.00	5.14	2.56	0.00
112.00	5.14	2.56	0.00
114.00	5.14	2.56	0.00
116.00	5.14	2.56	0.00
118.00	5.14	2.56	0.00
120.00	5.14	2.56	0.00
122.00	5.14	2.56	0.00
124.00	5.14	2.56	0.00
126.00	5.14	2.56	0.00
128.00	5.14	2.56	0.00
130.00	5.14	2.56	0.00
132.00	5.14	2.56	0.00
134.00	5.14	2.56	0.00
136.00	5.14	2.56	0.00
138.00	5.14	2.56	0.00
140.00	5.14	2.56	0.00
142.00	5.14	2.56	0.00
144.00	5.14	2.56	0.00
146.00	5.14	2.56	0.00
148.00	5.14	2.56	0.00
150.00	5.14	2.56	0.00
152.00	5.14	2.56	0.00
154.00	5.14	2.56	0.00
156.00	5.14	2.56	0.00
158.00	5.14	2.56	0.00
160.00	5.14	2.56	0.00
162.00	5.14	2.56	0.00
164.00	5.14	2.56	0.00
166.00	5.14	2.56	0.00
168.00	5.14	2.56	0.00
170.00	5.14	2.56	0.00
172.00	5.14	2.56	0.00
174.00	5.14	2.56	0.00
176.00	5.14	2.56	0.00
178.00	5.14	2.56	0.00
180.00	5.14	2.56	0.00

Summary for Subcatchment MW:

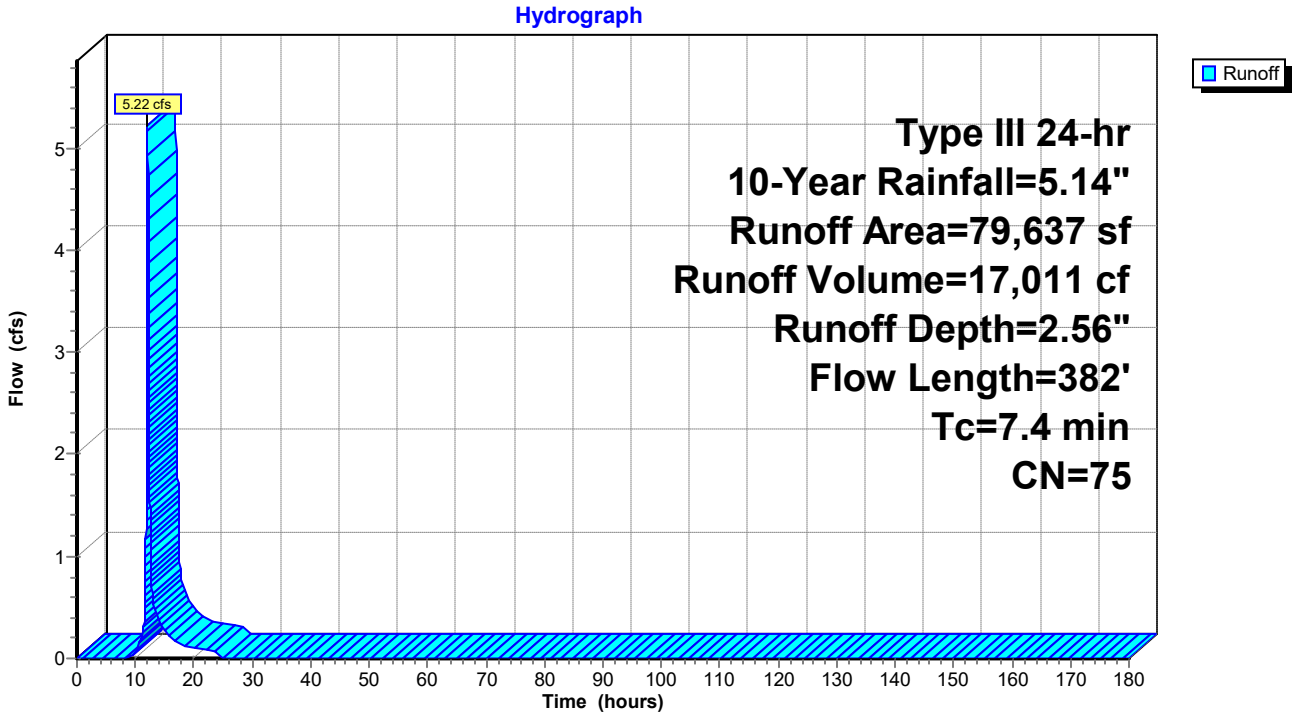
Runoff = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf, Depth= 2.56"
Routed to Reach DP-MW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
63,459	74	Pasture/grassland/range, Good, HSG C
15,207	80	Pasture/grassland/range, Good, HSG D
971	96	Gravel surface, HSG C
79,637	75	Weighted Average
79,637		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0583	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.1	39	0.0793	6.42	7.88	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.030 Earth, grassed & winding
0.1	97	0.1563	14.13	226.11	**Trap/Vee/Rect Channel Flow, EF** Bot.W=6.00' D=1.00' Z= 10.0 '/' Top.W=26.00' n= 0.030 Earth, grassed & winding
7.4	382	Total			

Subcatchment MW:



Hydrograph for Subcatchment MW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.00
10.00	0.97	0.03	0.07
12.00	2.57	0.69	**2.69**
14.00	4.17	1.79	**0.37**
16.00	4.55	2.09	0.20
18.00	4.77	2.26	0.13
20.00	4.92	2.38	0.10
22.00	5.04	2.48	0.08
24.00	**5.14**	**2.56**	0.07
26.00	5.14	2.56	0.00
28.00	5.14	2.56	0.00
30.00	5.14	2.56	0.00
32.00	5.14	2.56	0.00
34.00	5.14	2.56	0.00
36.00	5.14	2.56	0.00
38.00	5.14	2.56	0.00
40.00	5.14	2.56	0.00
42.00	5.14	2.56	0.00
44.00	5.14	2.56	0.00
46.00	5.14	2.56	0.00
48.00	5.14	2.56	0.00
50.00	5.14	2.56	0.00
52.00	5.14	2.56	0.00
54.00	5.14	2.56	0.00
56.00	5.14	2.56	0.00
58.00	5.14	2.56	0.00
60.00	5.14	2.56	0.00
62.00	5.14	2.56	0.00
64.00	5.14	2.56	0.00
66.00	5.14	2.56	0.00
68.00	5.14	2.56	0.00
70.00	5.14	2.56	0.00
72.00	5.14	2.56	0.00
74.00	5.14	2.56	0.00
76.00	5.14	2.56	0.00
78.00	5.14	2.56	0.00
80.00	5.14	2.56	0.00
82.00	5.14	2.56	0.00
84.00	5.14	2.56	0.00
86.00	5.14	2.56	0.00
88.00	5.14	2.56	0.00
90.00	5.14	2.56	0.00
92.00	5.14	2.56	0.00
94.00	5.14	2.56	0.00
96.00	5.14	2.56	0.00
98.00	5.14	2.56	0.00
100.00	5.14	2.56	0.00
102.00	5.14	2.56	0.00
104.00	5.14	2.56	0.00
106.00	5.14	2.56	0.00
108.00	5.14	2.56	0.00
110.00	5.14	2.56	0.00
112.00	5.14	2.56	0.00
114.00	5.14	2.56	0.00
116.00	5.14	2.56	0.00
118.00	5.14	2.56	0.00
120.00	5.14	2.56	0.00
122.00	5.14	2.56	0.00
124.00	5.14	2.56	0.00
126.00	5.14	2.56	0.00
128.00	5.14	2.56	0.00
130.00	5.14	2.56	0.00
132.00	5.14	2.56	0.00
134.00	5.14	2.56	0.00
136.00	5.14	2.56	0.00
138.00	5.14	2.56	0.00
140.00	5.14	2.56	0.00
142.00	5.14	2.56	0.00
144.00	5.14	2.56	0.00
146.00	5.14	2.56	0.00
148.00	5.14	2.56	0.00
150.00	5.14	2.56	0.00
152.00	5.14	2.56	0.00
154.00	5.14	2.56	0.00
156.00	5.14	2.56	0.00
158.00	5.14	2.56	0.00
160.00	5.14	2.56	0.00
162.00	5.14	2.56	0.00
164.00	5.14	2.56	0.00
166.00	5.14	2.56	0.00
168.00	5.14	2.56	0.00
170.00	5.14	2.56	0.00
172.00	5.14	2.56	0.00
174.00	5.14	2.56	0.00
176.00	5.14	2.56	0.00
178.00	5.14	2.56	0.00
180.00	5.14	2.56	0.00

Summary for Subcatchment N:

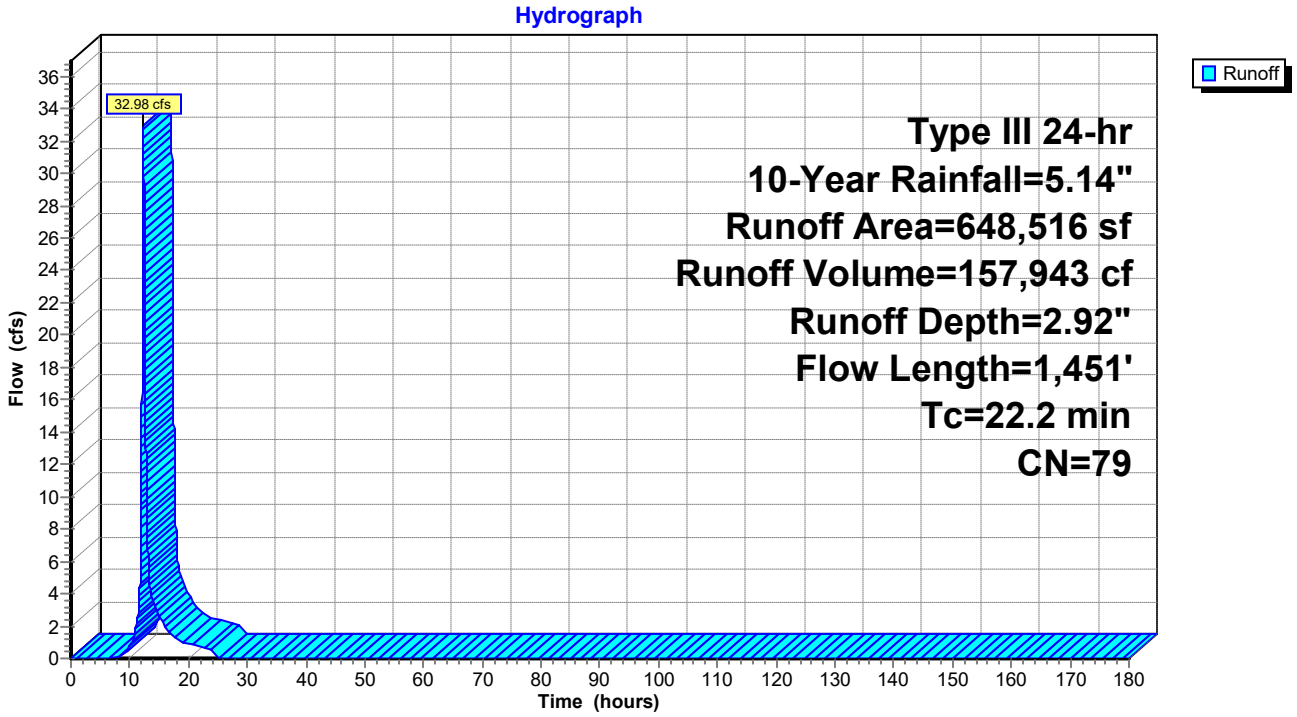
Runoff = 32.98 cfs @ 12.31 hrs, Volume= 157,943 cf, Depth= 2.92"
Routed to Reach DP-N : Culvert towards Wades Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
278,570	80	Pasture/grassland/range, Good, HSG D
77,593	72	Woods/grass comb., Good, HSG C
270,211	79	Woods/grass comb., Good, HSG D
4,456	96	Gravel surface, HSG C
8,912	96	Gravel surface, HSG D
8,774	98	Unconnected pavement, HSG D
648,516	79	Weighted Average
639,742		98.65% Pervious Area
8,774		1.35% Impervious Area
8,774		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0707	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
1.8	144	0.0705	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.4	216	0.0566	8.78	52.70	**Trap/Vee/Rect Channel Flow, CD** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.030 Earth, grassed & winding
6.0	679	0.0721	1.88		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.9	97	0.1409	1.88		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.3	215	0.1254	12.49	62.43	**Trap/Vee/Rect Channel Flow, FG** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
22.2	1,451	Total			

Subcatchment N:



Hydrograph for Subcatchment N:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.02
10.00	0.97	0.06	0.78
12.00	2.57	0.88	**11.57**
14.00	4.17	2.10	**3.60**
16.00	4.55	2.42	1.94
18.00	4.77	2.60	1.16
20.00	4.92	2.73	0.89
22.00	5.04	2.84	0.74
24.00	**5.14**	**2.92**	0.59
26.00	5.14	2.92	0.00
28.00	5.14	2.92	0.00
30.00	5.14	2.92	0.00
32.00	5.14	2.92	0.00
34.00	5.14	2.92	0.00
36.00	5.14	2.92	0.00
38.00	5.14	2.92	0.00
40.00	5.14	2.92	0.00
42.00	5.14	2.92	0.00
44.00	5.14	2.92	0.00
46.00	5.14	2.92	0.00
48.00	5.14	2.92	0.00
50.00	5.14	2.92	0.00
52.00	5.14	2.92	0.00
54.00	5.14	2.92	0.00
56.00	5.14	2.92	0.00
58.00	5.14	2.92	0.00
60.00	5.14	2.92	0.00
62.00	5.14	2.92	0.00
64.00	5.14	2.92	0.00
66.00	5.14	2.92	0.00
68.00	5.14	2.92	0.00
70.00	5.14	2.92	0.00
72.00	5.14	2.92	0.00
74.00	5.14	2.92	0.00
76.00	5.14	2.92	0.00
78.00	5.14	2.92	0.00
80.00	5.14	2.92	0.00
82.00	5.14	2.92	0.00
84.00	5.14	2.92	0.00
86.00	5.14	2.92	0.00
88.00	5.14	2.92	0.00
90.00	5.14	2.92	0.00
92.00	5.14	2.92	0.00
94.00	5.14	2.92	0.00
96.00	5.14	2.92	0.00
98.00	5.14	2.92	0.00
100.00	5.14	2.92	0.00
102.00	5.14	2.92	0.00
104.00	5.14	2.92	0.00
106.00	5.14	2.92	0.00
108.00	5.14	2.92	0.00
110.00	5.14	2.92	0.00
112.00	5.14	2.92	0.00
114.00	5.14	2.92	0.00
116.00	5.14	2.92	0.00
118.00	5.14	2.92	0.00
120.00	5.14	2.92	0.00
122.00	5.14	2.92	0.00
124.00	5.14	2.92	0.00
126.00	5.14	2.92	0.00
128.00	5.14	2.92	0.00
130.00	5.14	2.92	0.00
132.00	5.14	2.92	0.00
134.00	5.14	2.92	0.00
136.00	5.14	2.92	0.00
138.00	5.14	2.92	0.00
140.00	5.14	2.92	0.00
142.00	5.14	2.92	0.00
144.00	5.14	2.92	0.00
146.00	5.14	2.92	0.00
148.00	5.14	2.92	0.00
150.00	5.14	2.92	0.00
152.00	5.14	2.92	0.00
154.00	5.14	2.92	0.00
156.00	5.14	2.92	0.00
158.00	5.14	2.92	0.00
160.00	5.14	2.92	0.00
162.00	5.14	2.92	0.00
164.00	5.14	2.92	0.00
166.00	5.14	2.92	0.00
168.00	5.14	2.92	0.00
170.00	5.14	2.92	0.00
172.00	5.14	2.92	0.00
174.00	5.14	2.92	0.00
176.00	5.14	2.92	0.00
178.00	5.14	2.92	0.00
180.00	5.14	2.92	0.00

Summary for Subcatchment NE:

[47] Hint: Peak is 3295% of capacity of segment #5

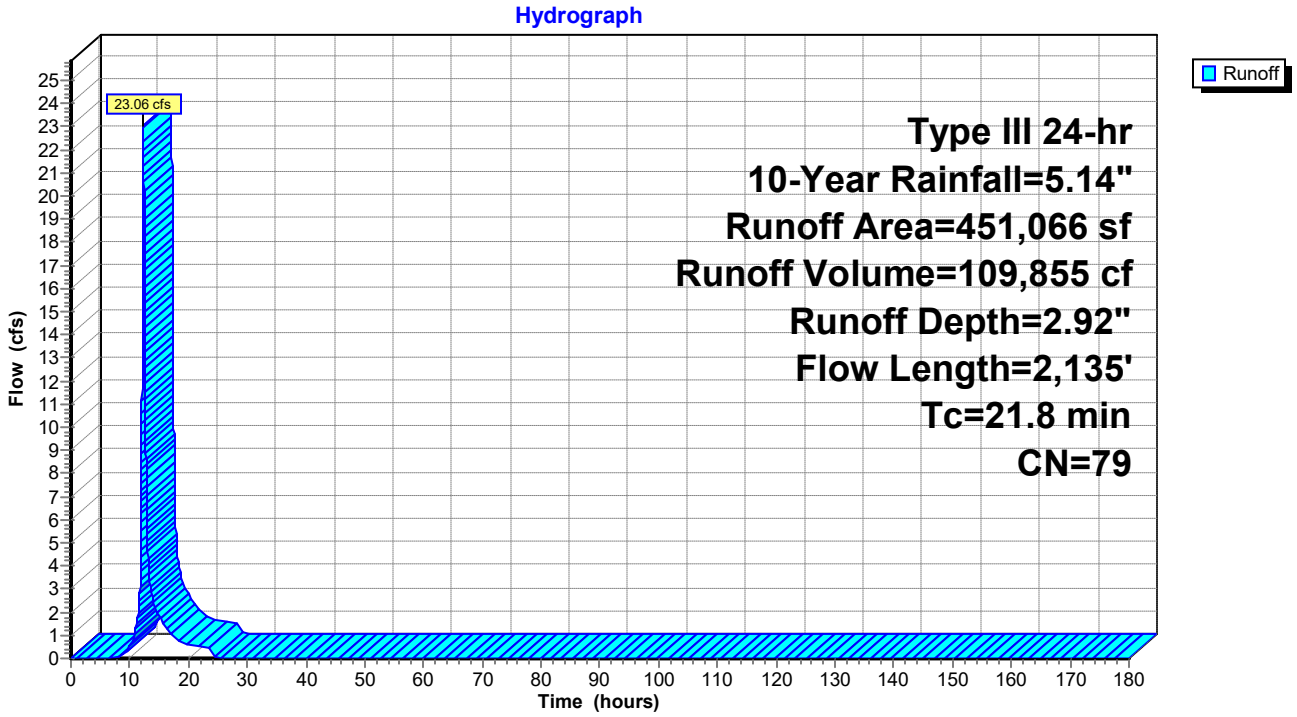
Runoff = 23.06 cfs @ 12.30 hrs, Volume= 109,855 cf, Depth= 2.92"
Routed to Reach DP-NE :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
79,061	74	Pasture/grassland/range, Good, HSG C
345,355	80	Pasture/grassland/range, Good, HSG D
22,632	79	Woods/grass comb., Good, HSG D
603	96	Gravel surface, HSG C
3,415	96	Gravel surface, HSG D
451,066	79	Weighted Average
451,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0675	0.31		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
7.1	705	0.0566	1.67		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
3.1	295	0.0513	1.59		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0393	1.39		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.5	17	0.0001	0.57	0.70	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
3.4	335	0.0540	1.63		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
0.7	543	0.1506	13.10	170.34	**Trap/Vee/Rect Channel Flow, GH** Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.030 Earth, grassed & winding
21.8	2,135	Total			

Subcatchment NE:



Hydrograph for Subcatchment NE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.01
10.00	0.97	0.06	0.54
12.00	2.57	0.88	**8.19**
14.00	4.17	2.10	**2.50**
16.00	4.55	2.42	1.35
18.00	4.77	2.60	0.81
20.00	4.92	2.73	0.62
22.00	5.04	2.84	0.51
24.00	**5.14**	**2.92**	0.41
26.00	5.14	2.92	0.00
28.00	5.14	2.92	0.00
30.00	5.14	2.92	0.00
32.00	5.14	2.92	0.00
34.00	5.14	2.92	0.00
36.00	5.14	2.92	0.00
38.00	5.14	2.92	0.00
40.00	5.14	2.92	0.00
42.00	5.14	2.92	0.00
44.00	5.14	2.92	0.00
46.00	5.14	2.92	0.00
48.00	5.14	2.92	0.00
50.00	5.14	2.92	0.00
52.00	5.14	2.92	0.00
54.00	5.14	2.92	0.00
56.00	5.14	2.92	0.00
58.00	5.14	2.92	0.00
60.00	5.14	2.92	0.00
62.00	5.14	2.92	0.00
64.00	5.14	2.92	0.00
66.00	5.14	2.92	0.00
68.00	5.14	2.92	0.00
70.00	5.14	2.92	0.00
72.00	5.14	2.92	0.00
74.00	5.14	2.92	0.00
76.00	5.14	2.92	0.00
78.00	5.14	2.92	0.00
80.00	5.14	2.92	0.00
82.00	5.14	2.92	0.00
84.00	5.14	2.92	0.00
86.00	5.14	2.92	0.00
88.00	5.14	2.92	0.00
90.00	5.14	2.92	0.00
92.00	5.14	2.92	0.00
94.00	5.14	2.92	0.00
96.00	5.14	2.92	0.00
98.00	5.14	2.92	0.00
100.00	5.14	2.92	0.00
102.00	5.14	2.92	0.00
104.00	5.14	2.92	0.00
106.00	5.14	2.92	0.00
108.00	5.14	2.92	0.00
110.00	5.14	2.92	0.00
112.00	5.14	2.92	0.00
114.00	5.14	2.92	0.00
116.00	5.14	2.92	0.00
118.00	5.14	2.92	0.00
120.00	5.14	2.92	0.00
122.00	5.14	2.92	0.00
124.00	5.14	2.92	0.00
126.00	5.14	2.92	0.00
128.00	5.14	2.92	0.00
130.00	5.14	2.92	0.00
132.00	5.14	2.92	0.00
134.00	5.14	2.92	0.00
136.00	5.14	2.92	0.00
138.00	5.14	2.92	0.00
140.00	5.14	2.92	0.00
142.00	5.14	2.92	0.00
144.00	5.14	2.92	0.00
146.00	5.14	2.92	0.00
148.00	5.14	2.92	0.00
150.00	5.14	2.92	0.00
152.00	5.14	2.92	0.00
154.00	5.14	2.92	0.00
156.00	5.14	2.92	0.00
158.00	5.14	2.92	0.00
160.00	5.14	2.92	0.00
162.00	5.14	2.92	0.00
164.00	5.14	2.92	0.00
166.00	5.14	2.92	0.00
168.00	5.14	2.92	0.00
170.00	5.14	2.92	0.00
172.00	5.14	2.92	0.00
174.00	5.14	2.92	0.00
176.00	5.14	2.92	0.00
178.00	5.14	2.92	0.00
180.00	5.14	2.92	0.00

Summary for Subcatchment NW:

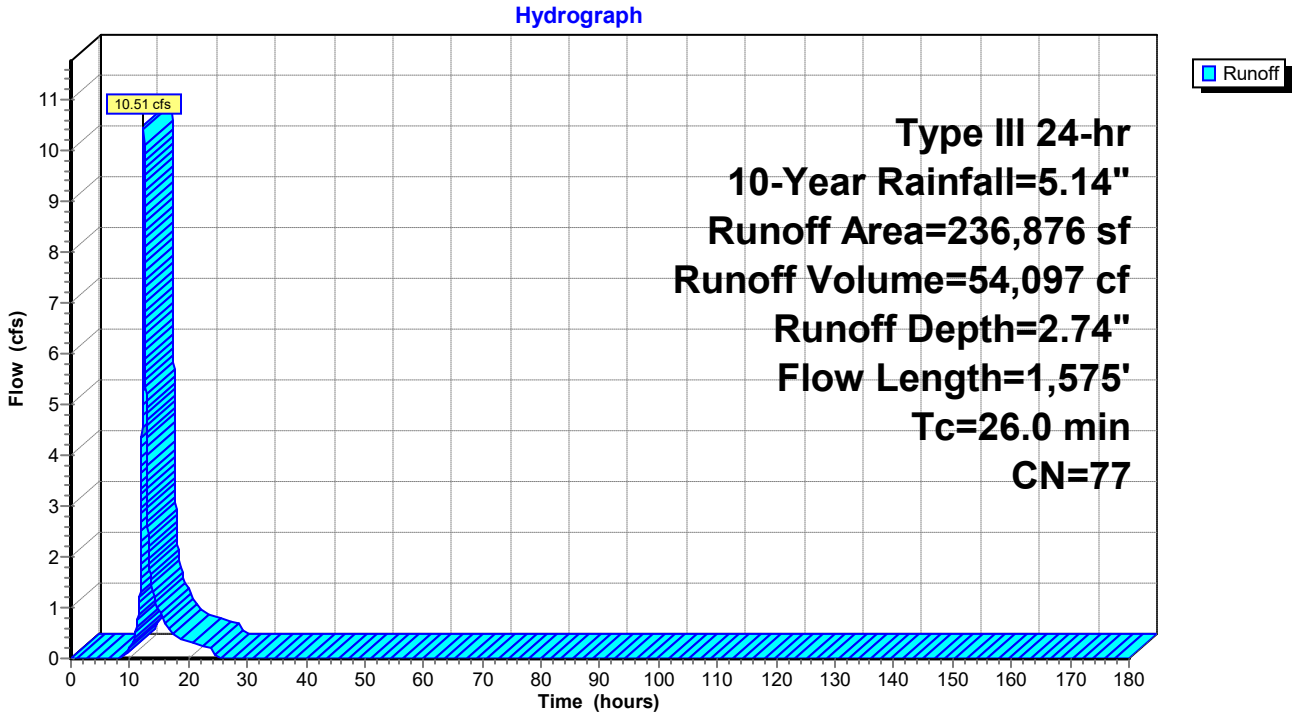
Runoff = 10.51 cfs @ 12.36 hrs, Volume= 54,097 cf, Depth= 2.74"
Routed to Reach DP-NW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
117,984	74	Pasture/grassland/range, Good, HSG C
48,562	80	Pasture/grassland/range, Good, HSG D
9,923	72	Woods/grass comb., Good, HSG C
58,620	79	Woods/grass comb., Good, HSG D
492	96	Gravel surface, HSG C
1,295	98	Unconnected pavement, HSG C
236,876	77	Weighted Average
235,581		99.45% Pervious Area
1,295		0.55% Impervious Area
1,295		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	102	0.0665	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.9	685	0.0763	1.93		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.1	75	0.0926	10.58	137.52	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=1.00' Z= 9.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.4	87	0.3254	3.99		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
1.7	174	0.1201	1.73		**Shallow Concentrated Flow, GH** Woodland Kv= 5.0 fps
2.9	202	0.0555	1.18		**Shallow Concentrated Flow, HI** Woodland Kv= 5.0 fps
0.1	104	0.1222	26.85	1,852.49	**Trap/Vee/Rect Channel Flow, IJ** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
26.0	1,575	Total			

Subcatchment NW:



Hydrograph for Subcatchment NW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.00
10.00	0.97	0.04	0.21
12.00	2.57	0.78	**3.23**
14.00	4.17	1.94	**1.30**
16.00	4.55	2.25	0.70
18.00	4.77	2.43	0.42
20.00	4.92	2.56	0.32
22.00	5.04	2.66	0.26
24.00	**5.14**	**2.74**	0.21
26.00	5.14	2.74	0.00
28.00	5.14	2.74	0.00
30.00	5.14	2.74	0.00
32.00	5.14	2.74	0.00
34.00	5.14	2.74	0.00
36.00	5.14	2.74	0.00
38.00	5.14	2.74	0.00
40.00	5.14	2.74	0.00
42.00	5.14	2.74	0.00
44.00	5.14	2.74	0.00
46.00	5.14	2.74	0.00
48.00	5.14	2.74	0.00
50.00	5.14	2.74	0.00
52.00	5.14	2.74	0.00
54.00	5.14	2.74	0.00
56.00	5.14	2.74	0.00
58.00	5.14	2.74	0.00
60.00	5.14	2.74	0.00
62.00	5.14	2.74	0.00
64.00	5.14	2.74	0.00
66.00	5.14	2.74	0.00
68.00	5.14	2.74	0.00
70.00	5.14	2.74	0.00
72.00	5.14	2.74	0.00
74.00	5.14	2.74	0.00
76.00	5.14	2.74	0.00
78.00	5.14	2.74	0.00
80.00	5.14	2.74	0.00
82.00	5.14	2.74	0.00
84.00	5.14	2.74	0.00
86.00	5.14	2.74	0.00
88.00	5.14	2.74	0.00
90.00	5.14	2.74	0.00
92.00	5.14	2.74	0.00
94.00	5.14	2.74	0.00
96.00	5.14	2.74	0.00
98.00	5.14	2.74	0.00
100.00	5.14	2.74	0.00
102.00	5.14	2.74	0.00
104.00	5.14	2.74	0.00
106.00	5.14	2.74	0.00
108.00	5.14	2.74	0.00
110.00	5.14	2.74	0.00
112.00	5.14	2.74	0.00
114.00	5.14	2.74	0.00
116.00	5.14	2.74	0.00
118.00	5.14	2.74	0.00
120.00	5.14	2.74	0.00
122.00	5.14	2.74	0.00
124.00	5.14	2.74	0.00
126.00	5.14	2.74	0.00
128.00	5.14	2.74	0.00
130.00	5.14	2.74	0.00
132.00	5.14	2.74	0.00
134.00	5.14	2.74	0.00
136.00	5.14	2.74	0.00
138.00	5.14	2.74	0.00
140.00	5.14	2.74	0.00
142.00	5.14	2.74	0.00
144.00	5.14	2.74	0.00
146.00	5.14	2.74	0.00
148.00	5.14	2.74	0.00
150.00	5.14	2.74	0.00
152.00	5.14	2.74	0.00
154.00	5.14	2.74	0.00
156.00	5.14	2.74	0.00
158.00	5.14	2.74	0.00
160.00	5.14	2.74	0.00
162.00	5.14	2.74	0.00
164.00	5.14	2.74	0.00
166.00	5.14	2.74	0.00
168.00	5.14	2.74	0.00
170.00	5.14	2.74	0.00
172.00	5.14	2.74	0.00
174.00	5.14	2.74	0.00
176.00	5.14	2.74	0.00
178.00	5.14	2.74	0.00
180.00	5.14	2.74	0.00

Summary for Subcatchment SE:

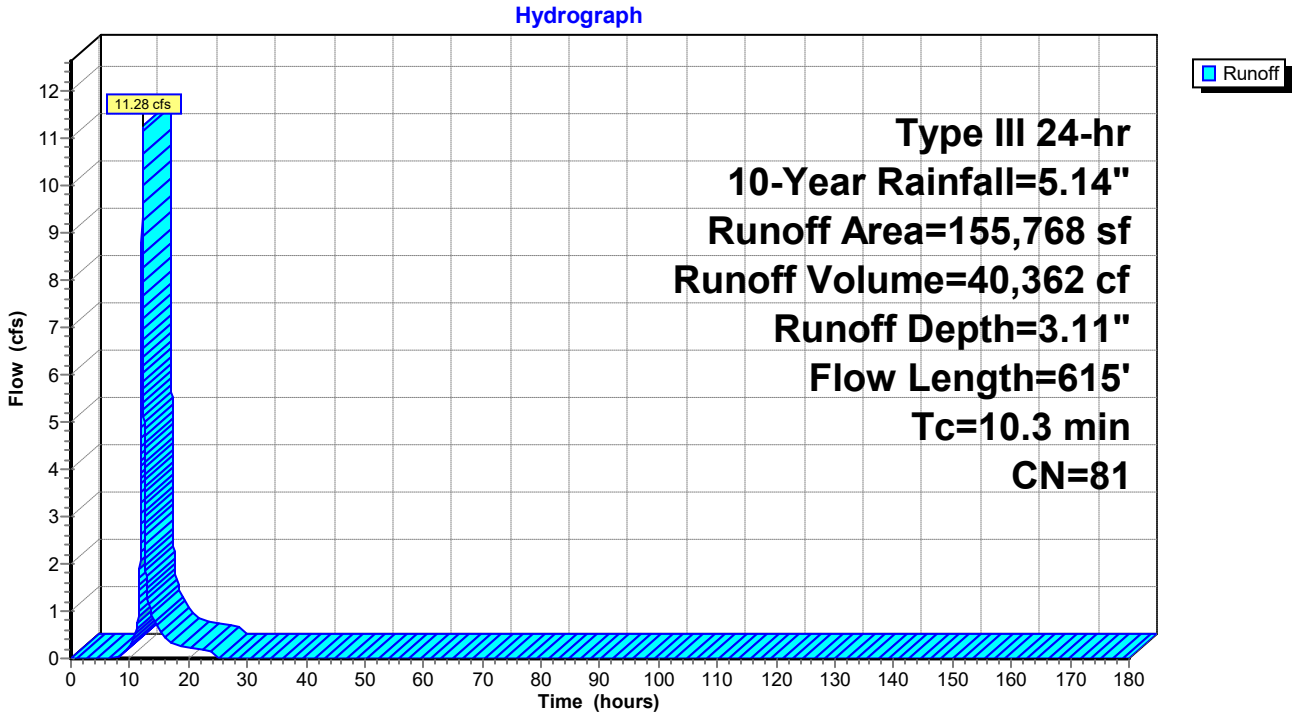
Runoff = 11.28 cfs @ 12.14 hrs, Volume= 40,362 cf, Depth= 3.11"
Routed to Reach DP-SE : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
130,248	80	Pasture/grassland/range, Good, HSG D
12,734	79	Woods/grass comb., Good, HSG D
276	96	Gravel surface, HSG D
12,510	98	Unconnected pavement, HSG D
155,768	81	Weighted Average
143,258		91.97% Pervious Area
12,510		8.03% Impervious Area
12,510		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	47	0.0304	0.20		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.1	521	0.0416	1.43		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.2	47	0.0304	4.04	18.19	**Trap/Vee/Rect Channel Flow, CD** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
10.3	615	Total			

Subcatchment SE:



Hydrograph for Subcatchment SE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.01	0.04
10.00	0.97	0.09	0.26
12.00	2.57	0.99	**5.40**
14.00	4.17	2.26	**0.83**
16.00	4.55	2.59	0.45
18.00	4.77	2.78	0.27
20.00	4.92	2.91	0.22
22.00	5.04	3.02	0.18
24.00	**5.14**	**3.11**	0.14
26.00	5.14	3.11	0.00
28.00	5.14	3.11	0.00
30.00	5.14	3.11	0.00
32.00	5.14	3.11	0.00
34.00	5.14	3.11	0.00
36.00	5.14	3.11	0.00
38.00	5.14	3.11	0.00
40.00	5.14	3.11	0.00
42.00	5.14	3.11	0.00
44.00	5.14	3.11	0.00
46.00	5.14	3.11	0.00
48.00	5.14	3.11	0.00
50.00	5.14	3.11	0.00
52.00	5.14	3.11	0.00
54.00	5.14	3.11	0.00
56.00	5.14	3.11	0.00
58.00	5.14	3.11	0.00
60.00	5.14	3.11	0.00
62.00	5.14	3.11	0.00
64.00	5.14	3.11	0.00
66.00	5.14	3.11	0.00
68.00	5.14	3.11	0.00
70.00	5.14	3.11	0.00
72.00	5.14	3.11	0.00
74.00	5.14	3.11	0.00
76.00	5.14	3.11	0.00
78.00	5.14	3.11	0.00
80.00	5.14	3.11	0.00
82.00	5.14	3.11	0.00
84.00	5.14	3.11	0.00
86.00	5.14	3.11	0.00
88.00	5.14	3.11	0.00
90.00	5.14	3.11	0.00
92.00	5.14	3.11	0.00
94.00	5.14	3.11	0.00
96.00	5.14	3.11	0.00
98.00	5.14	3.11	0.00
100.00	5.14	3.11	0.00
102.00	5.14	3.11	0.00
104.00	5.14	3.11	0.00
106.00	5.14	3.11	0.00
108.00	5.14	3.11	0.00
110.00	5.14	3.11	0.00
112.00	5.14	3.11	0.00
114.00	5.14	3.11	0.00
116.00	5.14	3.11	0.00
118.00	5.14	3.11	0.00
120.00	5.14	3.11	0.00
122.00	5.14	3.11	0.00
124.00	5.14	3.11	0.00
126.00	5.14	3.11	0.00
128.00	5.14	3.11	0.00
130.00	5.14	3.11	0.00
132.00	5.14	3.11	0.00
134.00	5.14	3.11	0.00
136.00	5.14	3.11	0.00
138.00	5.14	3.11	0.00
140.00	5.14	3.11	0.00
142.00	5.14	3.11	0.00
144.00	5.14	3.11	0.00
146.00	5.14	3.11	0.00
148.00	5.14	3.11	0.00
150.00	5.14	3.11	0.00
152.00	5.14	3.11	0.00
154.00	5.14	3.11	0.00
156.00	5.14	3.11	0.00
158.00	5.14	3.11	0.00
160.00	5.14	3.11	0.00
162.00	5.14	3.11	0.00
164.00	5.14	3.11	0.00
166.00	5.14	3.11	0.00
168.00	5.14	3.11	0.00
170.00	5.14	3.11	0.00
172.00	5.14	3.11	0.00
174.00	5.14	3.11	0.00
176.00	5.14	3.11	0.00
178.00	5.14	3.11	0.00
180.00	5.14	3.11	0.00

Summary for Subcatchment SW:

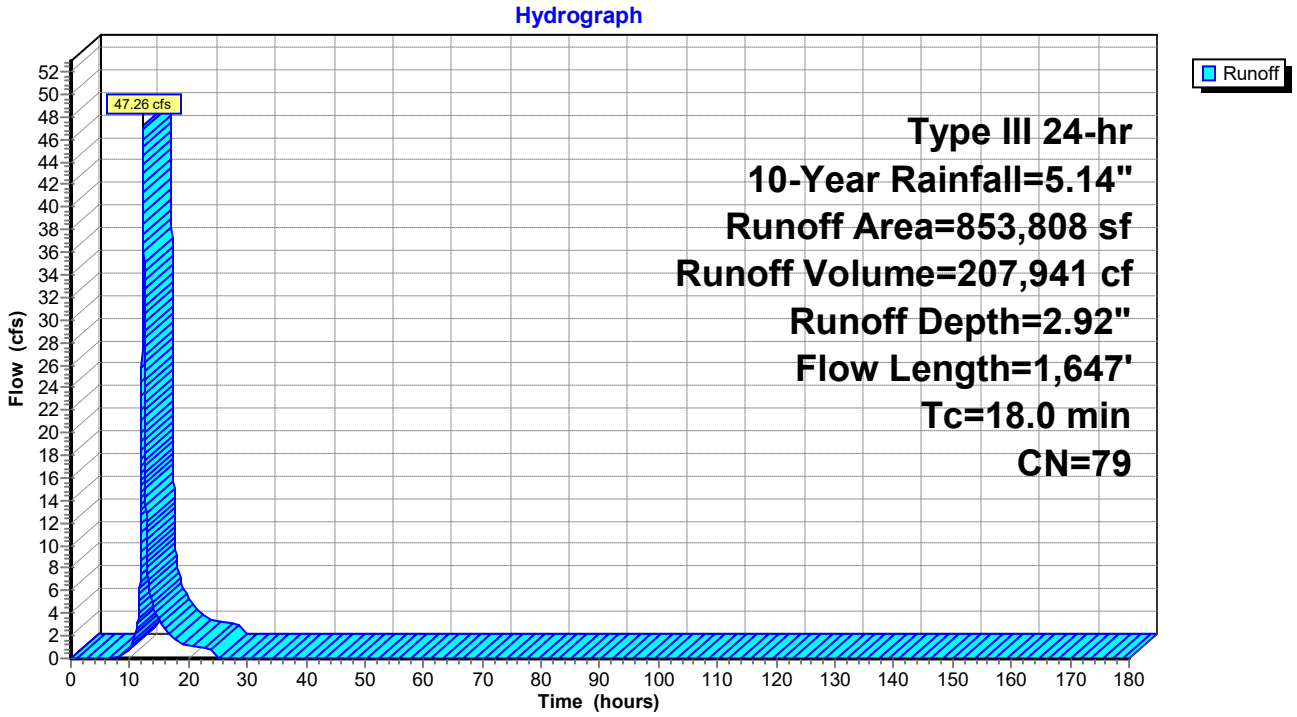
Runoff = 47.26 cfs @ 12.25 hrs, Volume= 207,941 cf, Depth= 2.92"
Routed to Reach DP-SW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
250,115	80	Pasture/grassland/range, Good, HSG D
603,267	79	Woods/grass comb., Good, HSG D
54	96	Gravel surface, HSG D
372	98	Unconnected pavement, HSG D
853,808	79	Weighted Average
853,436		99.96% Pervious Area
372		0.04% Impervious Area
372		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0398	0.25		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
4.0	442	0.0697	1.85		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
4.4	387	0.0848	1.46		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
0.3	51	0.3946	3.14		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
2.2	149	0.0530	1.15		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.6	518	0.0304	13.39	923.97	**Trap/Vee/Rect Channel Flow, FG** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
18.0	1,647	Total			

Subcatchment SW:



Hydrograph for Subcatchment SW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.04
10.00	0.97	0.06	1.07
12.00	2.57	0.88	**18.44**
14.00	4.17	2.10	**4.62**
16.00	4.55	2.42	2.49
18.00	4.77	2.60	1.50
20.00	4.92	2.73	1.17
22.00	5.04	2.84	0.97
24.00	**5.14**	**2.92**	0.77
26.00	5.14	2.92	0.00
28.00	5.14	2.92	0.00
30.00	5.14	2.92	0.00
32.00	5.14	2.92	0.00
34.00	5.14	2.92	0.00
36.00	5.14	2.92	0.00
38.00	5.14	2.92	0.00
40.00	5.14	2.92	0.00
42.00	5.14	2.92	0.00
44.00	5.14	2.92	0.00
46.00	5.14	2.92	0.00
48.00	5.14	2.92	0.00
50.00	5.14	2.92	0.00
52.00	5.14	2.92	0.00
54.00	5.14	2.92	0.00
56.00	5.14	2.92	0.00
58.00	5.14	2.92	0.00
60.00	5.14	2.92	0.00
62.00	5.14	2.92	0.00
64.00	5.14	2.92	0.00
66.00	5.14	2.92	0.00
68.00	5.14	2.92	0.00
70.00	5.14	2.92	0.00
72.00	5.14	2.92	0.00
74.00	5.14	2.92	0.00
76.00	5.14	2.92	0.00
78.00	5.14	2.92	0.00
80.00	5.14	2.92	0.00
82.00	5.14	2.92	0.00
84.00	5.14	2.92	0.00
86.00	5.14	2.92	0.00
88.00	5.14	2.92	0.00
90.00	5.14	2.92	0.00
92.00	5.14	2.92	0.00
94.00	5.14	2.92	0.00
96.00	5.14	2.92	0.00
98.00	5.14	2.92	0.00
100.00	5.14	2.92	0.00
102.00	5.14	2.92	0.00
104.00	5.14	2.92	0.00
106.00	5.14	2.92	0.00
108.00	5.14	2.92	0.00
110.00	5.14	2.92	0.00
112.00	5.14	2.92	0.00
114.00	5.14	2.92	0.00
116.00	5.14	2.92	0.00
118.00	5.14	2.92	0.00
120.00	5.14	2.92	0.00
122.00	5.14	2.92	0.00
124.00	5.14	2.92	0.00
126.00	5.14	2.92	0.00
128.00	5.14	2.92	0.00
130.00	5.14	2.92	0.00
132.00	5.14	2.92	0.00
134.00	5.14	2.92	0.00
136.00	5.14	2.92	0.00
138.00	5.14	2.92	0.00
140.00	5.14	2.92	0.00
142.00	5.14	2.92	0.00
144.00	5.14	2.92	0.00
146.00	5.14	2.92	0.00
148.00	5.14	2.92	0.00
150.00	5.14	2.92	0.00
152.00	5.14	2.92	0.00
154.00	5.14	2.92	0.00
156.00	5.14	2.92	0.00
158.00	5.14	2.92	0.00
160.00	5.14	2.92	0.00
162.00	5.14	2.92	0.00
164.00	5.14	2.92	0.00
166.00	5.14	2.92	0.00
168.00	5.14	2.92	0.00
170.00	5.14	2.92	0.00
172.00	5.14	2.92	0.00
174.00	5.14	2.92	0.00
176.00	5.14	2.92	0.00
178.00	5.14	2.92	0.00
180.00	5.14	2.92	0.00

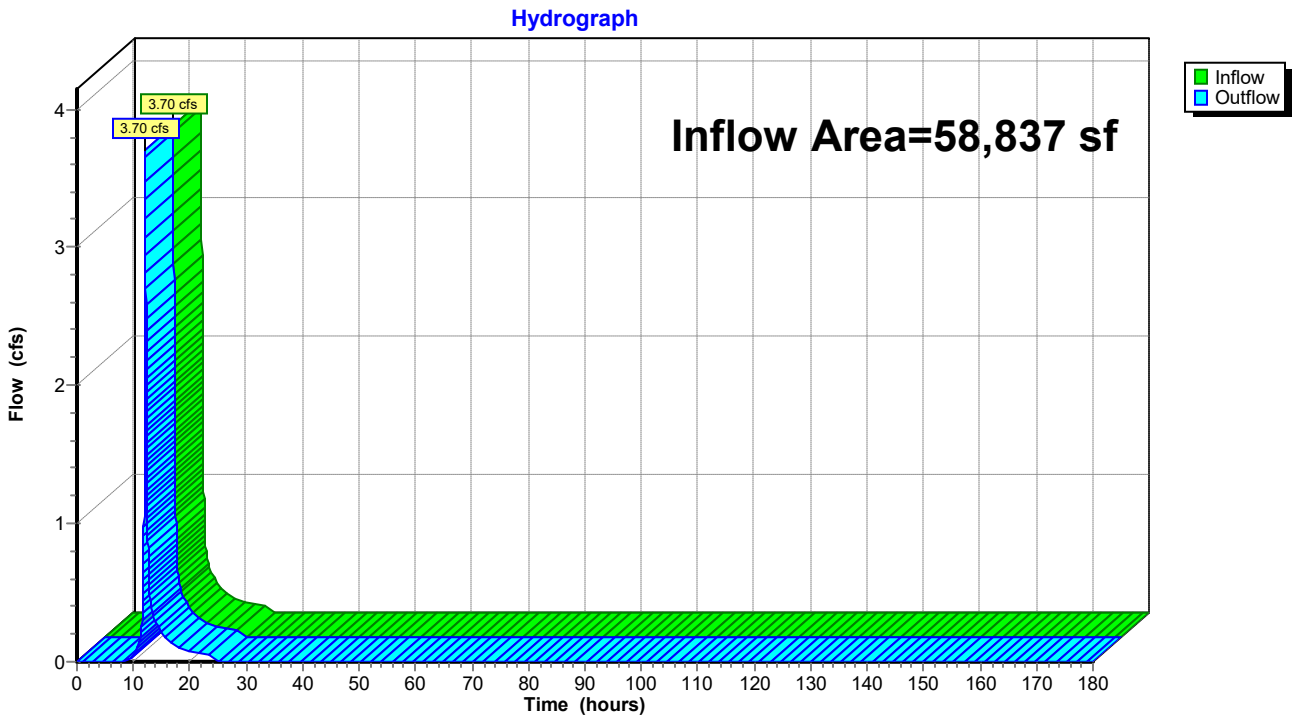
Summary for Reach DP-M:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 58,837 sf, 0.00% Impervious, Inflow Depth = 2.56" for 10-Year event
Inflow = 3.70 cfs @ 12.12 hrs, Volume= 12,568 cf
Outflow = 3.70 cfs @ 12.12 hrs, Volume= 12,568 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-M:



Hydrograph for Reach DP-M:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.05		0.05	114.00	0.00		0.00
12.00	**1.79**		**1.79**	116.00	0.00		0.00
14.00	**0.28**		**0.28**	118.00	0.00		0.00
16.00	0.15		0.15	120.00	0.00		0.00
18.00	0.09		0.09	122.00	0.00		0.00
20.00	0.07		0.07	124.00	0.00		0.00
22.00	0.06		0.06	126.00	0.00		0.00
24.00	0.05		0.05	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

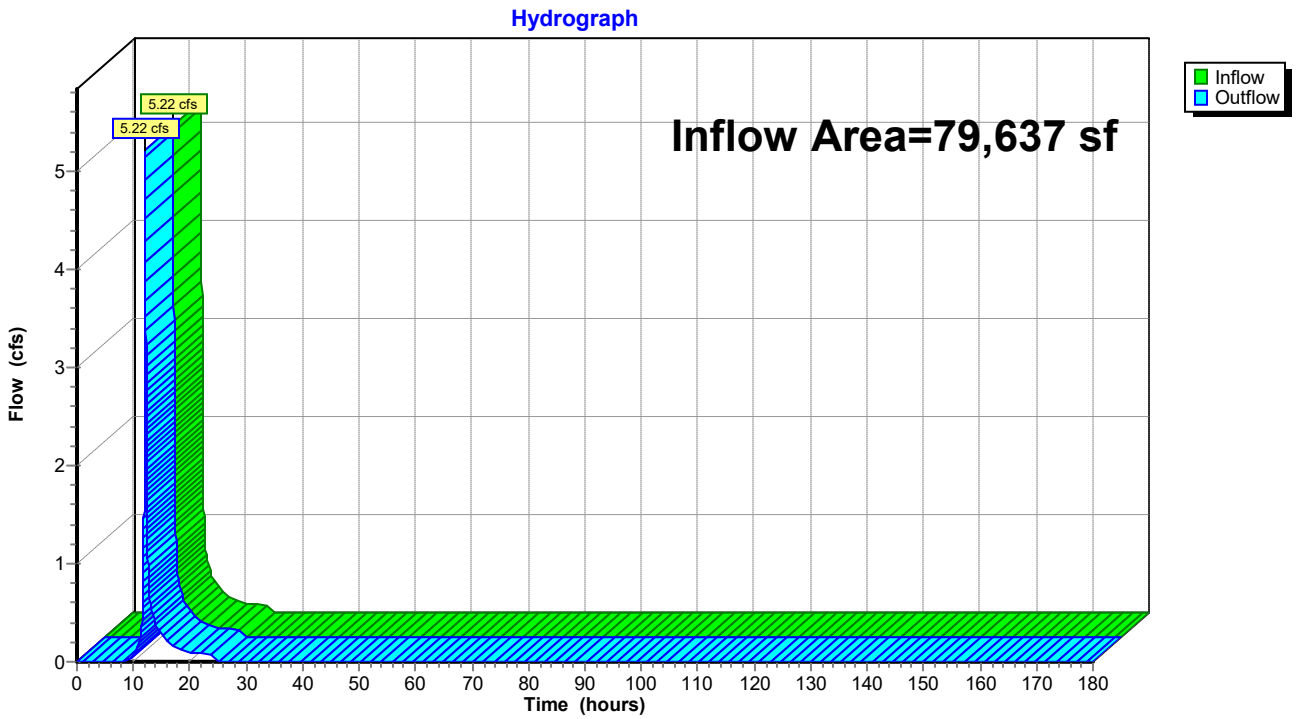
Summary for Reach DP-MW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79,637 sf, 0.00% Impervious, Inflow Depth = 2.56" for 10-Year event
Inflow = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf
Outflow = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-MW:



Hydrograph for Reach DP-MW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.07		0.07	114.00	0.00		0.00
12.00	**2.69**		**2.69**	116.00	0.00		0.00
14.00	**0.37**		**0.37**	118.00	0.00		0.00
16.00	0.20		0.20	120.00	0.00		0.00
18.00	0.13		0.13	122.00	0.00		0.00
20.00	0.10		0.10	124.00	0.00		0.00
22.00	0.08		0.08	126.00	0.00		0.00
24.00	0.07		0.07	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

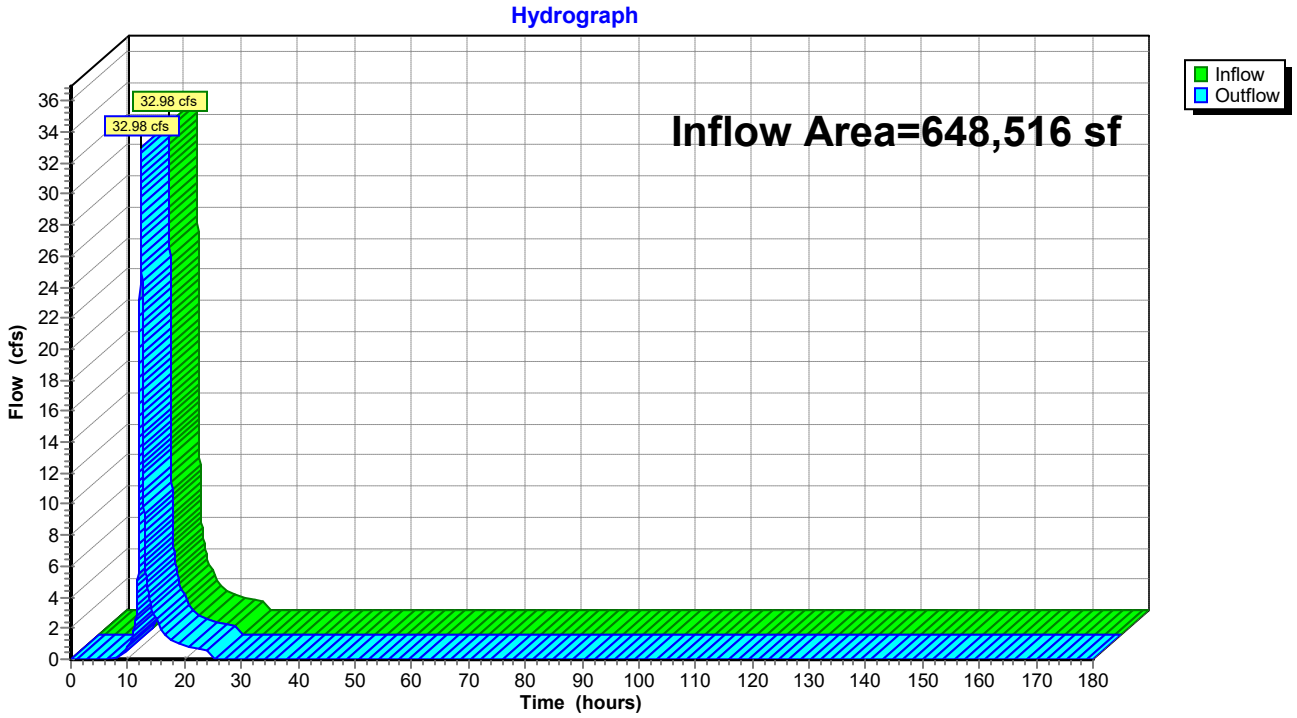
Summary for Reach DP-N: Culvert towards Wades Stream

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 648,516 sf, 1.35% Impervious, Inflow Depth = 2.92" for 10-Year event
Inflow = 32.98 cfs @ 12.31 hrs, Volume= 157,943 cf
Outflow = 32.98 cfs @ 12.31 hrs, Volume= 157,943 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-N: Culvert towards Wades Stream



Hydrograph for Reach DP-N: Culvert towards Wades Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.02		0.02	112.00	0.00		0.00
10.00	0.78		0.78	114.00	0.00		0.00
12.00	**11.57**		**11.57**	116.00	0.00		0.00
14.00	**3.60**		**3.60**	118.00	0.00		0.00
16.00	1.94		1.94	120.00	0.00		0.00
18.00	1.16		1.16	122.00	0.00		0.00
20.00	0.89		0.89	124.00	0.00		0.00
22.00	0.74		0.74	126.00	0.00		0.00
24.00	0.59		0.59	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

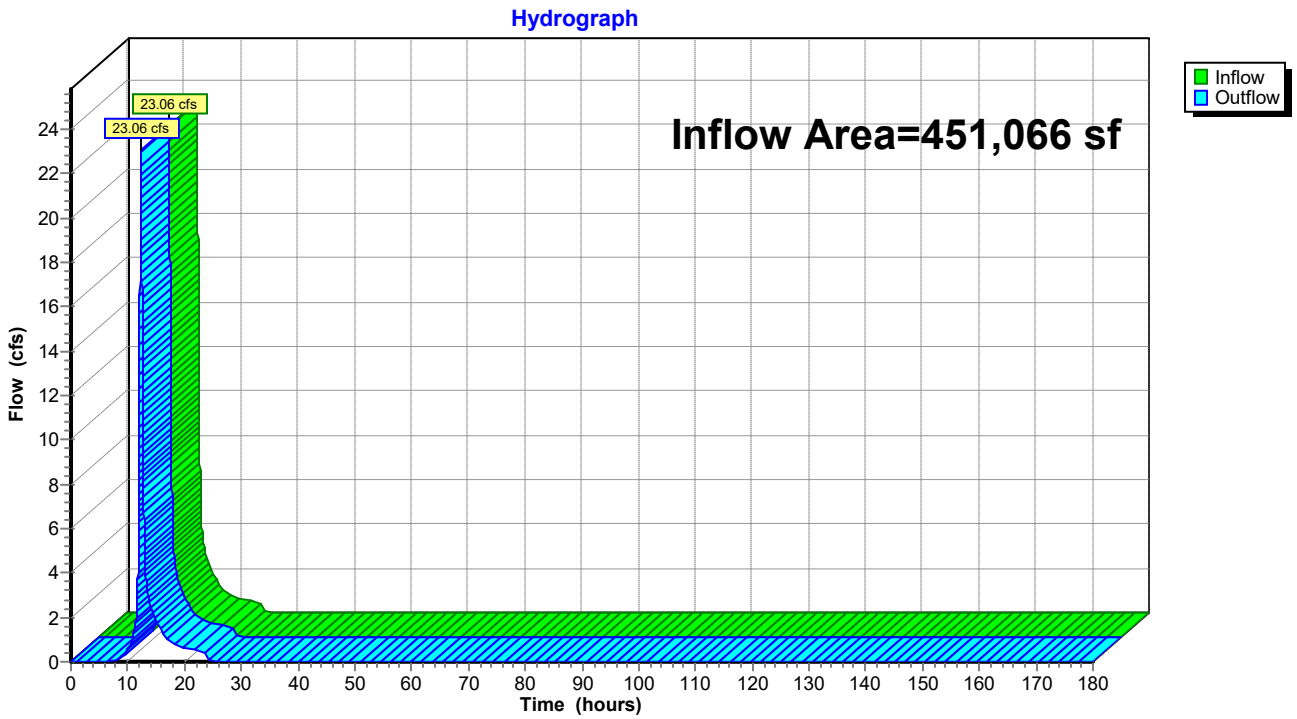
Summary for Reach DP-NE:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 451,066 sf, 0.00% Impervious, Inflow Depth = 2.92" for 10-Year event
Inflow = 23.06 cfs @ 12.30 hrs, Volume= 109,855 cf
Outflow = 23.06 cfs @ 12.30 hrs, Volume= 109,855 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-NE:



Hydrograph for Reach DP-NE:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.01		0.01	112.00	0.00		0.00
10.00	0.54		0.54	114.00	0.00		0.00
12.00	**8.19**		**8.19**	116.00	0.00		0.00
14.00	**2.50**		**2.50**	118.00	0.00		0.00
16.00	1.35		1.35	120.00	0.00		0.00
18.00	0.81		0.81	122.00	0.00		0.00
20.00	0.62		0.62	124.00	0.00		0.00
22.00	0.51		0.51	126.00	0.00		0.00
24.00	0.41		0.41	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

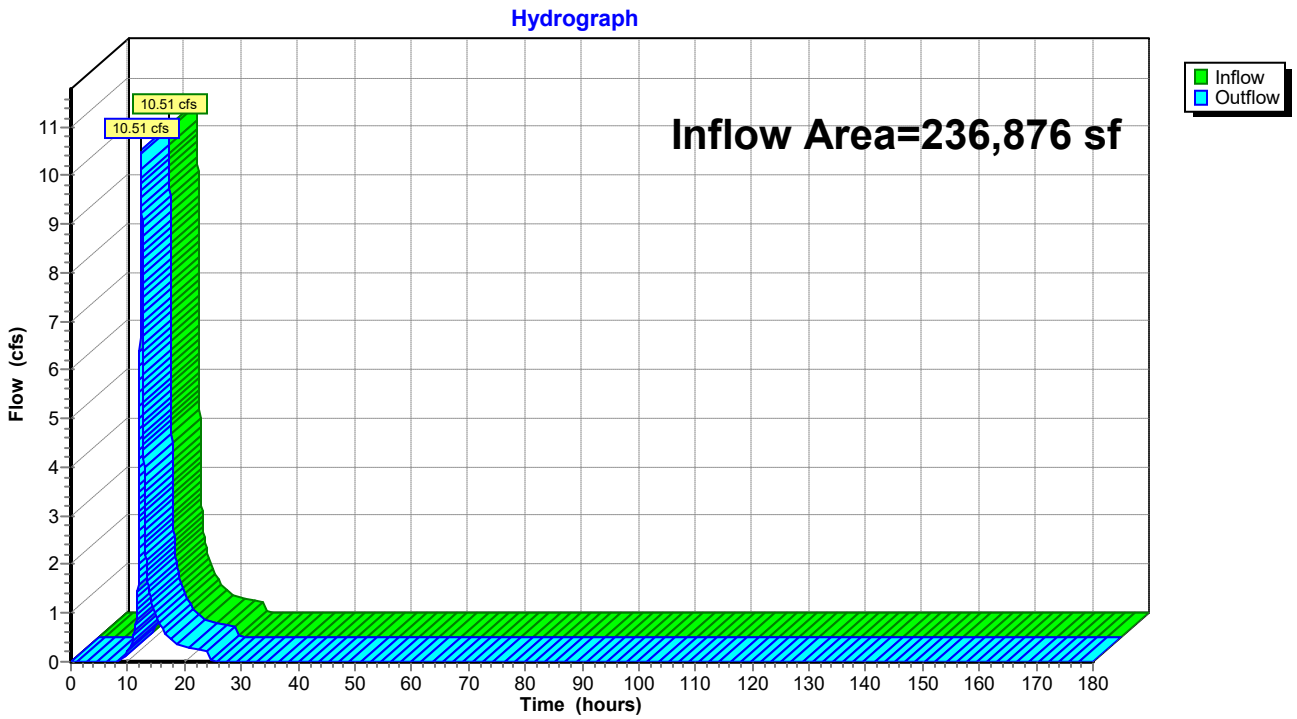
Summary for Reach DP-NW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 236,876 sf, 0.55% Impervious, Inflow Depth = 2.74" for 10-Year event
Inflow = 10.51 cfs @ 12.36 hrs, Volume= 54,097 cf
Outflow = 10.51 cfs @ 12.36 hrs, Volume= 54,097 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 1L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-NW:



Hydrograph for Reach DP-NW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.21		0.21	114.00	0.00		0.00
12.00	**3.23**		**3.23**	116.00	0.00		0.00
14.00	**1.30**		**1.30**	118.00	0.00		0.00
16.00	0.70		0.70	120.00	0.00		0.00
18.00	0.42		0.42	122.00	0.00		0.00
20.00	0.32		0.32	124.00	0.00		0.00
22.00	0.26		0.26	126.00	0.00		0.00
24.00	0.21		0.21	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Reach DP-SE: Culvert

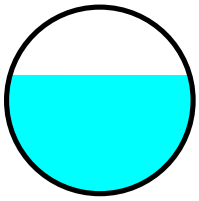
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 155,768 sf, 8.03% Impervious, Inflow Depth = 3.11" for 10-Year event
Inflow = 11.28 cfs @ 12.14 hrs, Volume= 40,362 cf
Outflow = 11.27 cfs @ 12.14 hrs, Volume= 40,362 cf, Atten= 0%, Lag= 0.1 min
Routed to Link 4L : Lag

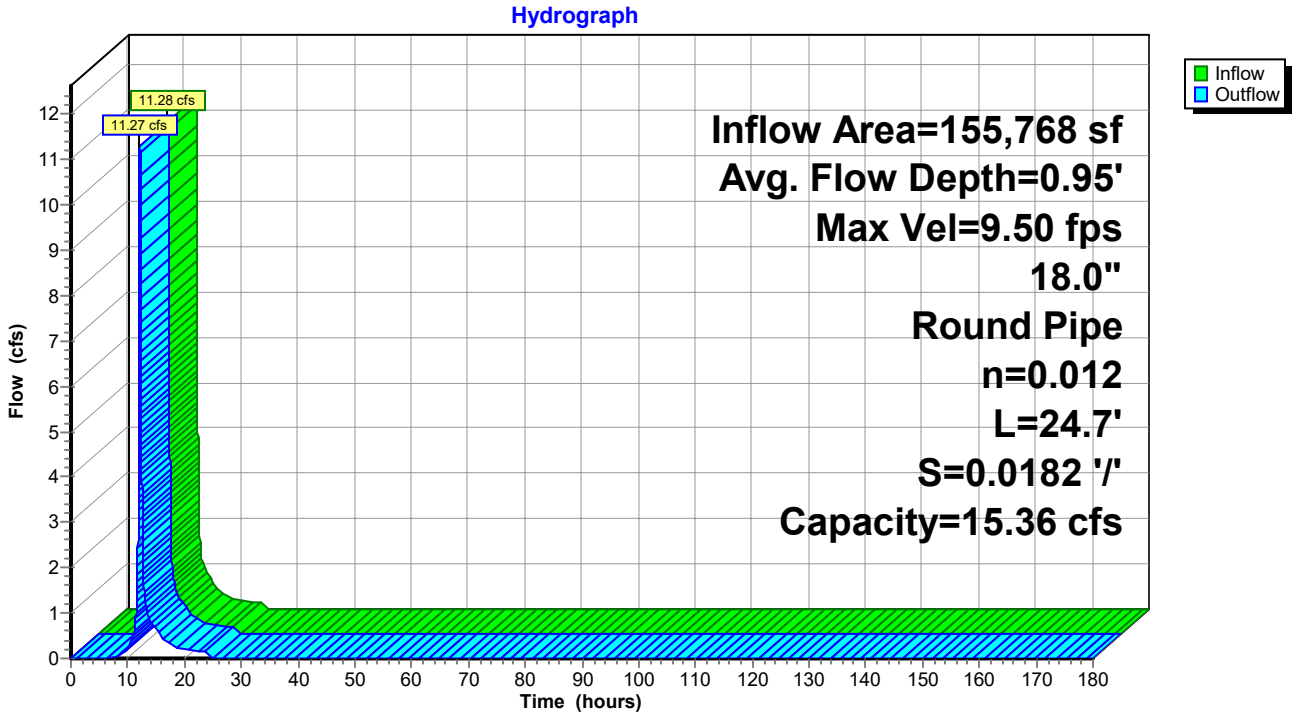
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.50 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.56 fps, Avg. Travel Time= 0.1 min

Peak Storage= 29 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.95' , Surface Width= 1.44'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.36 cfs

18.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 24.7' Slope= 0.0182 '/'
Inlet Invert= 1,620.00', Outlet Invert= 1,619.55'



Reach DP-SE: Culvert



Hydrograph for Reach DP-SE: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,620.00	0.00
5.00	0.00	0	1,620.00	0.00
10.00	**0.26**	**2**	**1,620.14**	**0.26**
15.00	**0.63**	**4**	**1,620.21**	**0.63**
20.00	0.22	2	1,620.12	0.22
25.00	0.00	0	1,620.00	0.00
30.00	0.00	0	1,620.00	0.00
35.00	0.00	0	1,620.00	0.00
40.00	0.00	0	1,620.00	0.00
45.00	0.00	0	1,620.00	0.00
50.00	0.00	0	1,620.00	0.00
55.00	0.00	0	1,620.00	0.00
60.00	0.00	0	1,620.00	0.00
65.00	0.00	0	1,620.00	0.00
70.00	0.00	0	1,620.00	0.00
75.00	0.00	0	1,620.00	0.00
80.00	0.00	0	1,620.00	0.00
85.00	0.00	0	1,620.00	0.00
90.00	0.00	0	1,620.00	0.00
95.00	0.00	0	1,620.00	0.00
100.00	0.00	0	1,620.00	0.00
105.00	0.00	0	1,620.00	0.00
110.00	0.00	0	1,620.00	0.00
115.00	0.00	0	1,620.00	0.00
120.00	0.00	0	1,620.00	0.00
125.00	0.00	0	1,620.00	0.00
130.00	0.00	0	1,620.00	0.00
135.00	0.00	0	1,620.00	0.00
140.00	0.00	0	1,620.00	0.00
145.00	0.00	0	1,620.00	0.00
150.00	0.00	0	1,620.00	0.00
155.00	0.00	0	1,620.00	0.00
160.00	0.00	0	1,620.00	0.00
165.00	0.00	0	1,620.00	0.00
170.00	0.00	0	1,620.00	0.00
175.00	0.00	0	1,620.00	0.00
180.00	0.00	0	1,620.00	0.00

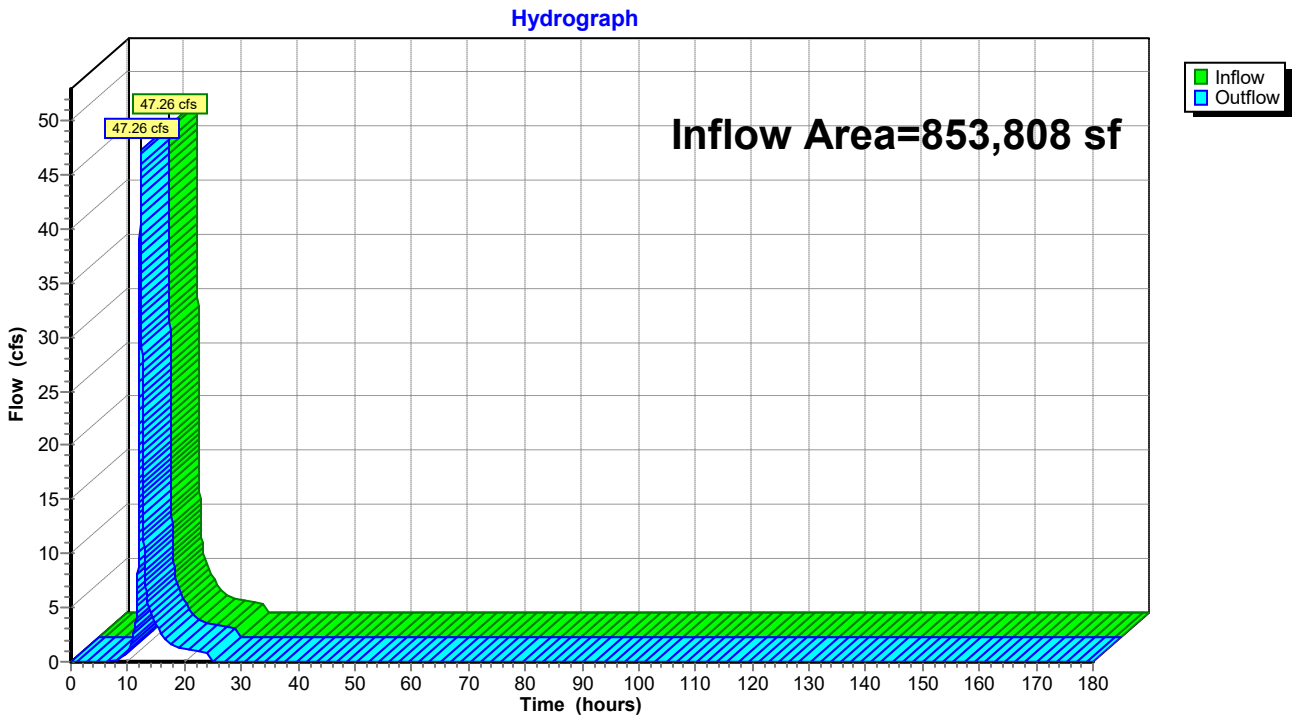
Summary for Reach DP-SW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 853,808 sf, 0.04% Impervious, Inflow Depth = 2.92" for 10-Year event
Inflow = 47.26 cfs @ 12.25 hrs, Volume= 207,941 cf
Outflow = 47.26 cfs @ 12.25 hrs, Volume= 207,941 cf, Atten= 0%, Lag= 0.0 min
Routed to Link DP-S : Watts Stream

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-SW:



Hydrograph for Reach DP-SW:

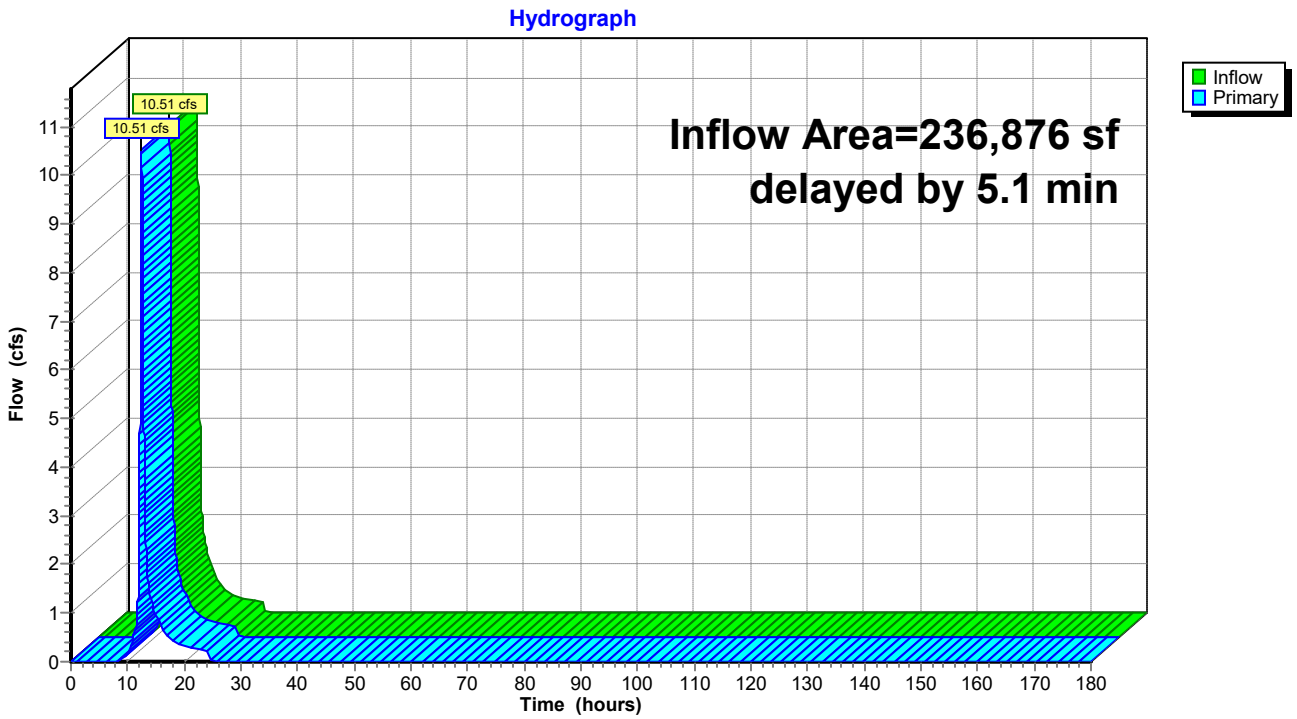
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.04		0.04	112.00	0.00		0.00
10.00	1.07		1.07	114.00	0.00		0.00
12.00	**18.44**		**18.44**	116.00	0.00		0.00
14.00	**4.62**		**4.62**	118.00	0.00		0.00
16.00	2.49		2.49	120.00	0.00		0.00
18.00	1.50		1.50	122.00	0.00		0.00
20.00	1.17		1.17	124.00	0.00		0.00
22.00	0.97		0.97	126.00	0.00		0.00
24.00	0.77		0.77	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Link 1L: Lag

Inflow Area = 236,876 sf, 0.55% Impervious, Inflow Depth = 2.74" for 10-Year event
Inflow = 10.51 cfs @ 12.36 hrs, Volume= 54,097 cf
Primary = 10.51 cfs @ 12.45 hrs, Volume= 54,097 cf, Atten= 0%, Lag= 5.1 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 5.1 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 1L: Lag



Hydrograph for Link 1L: Lag

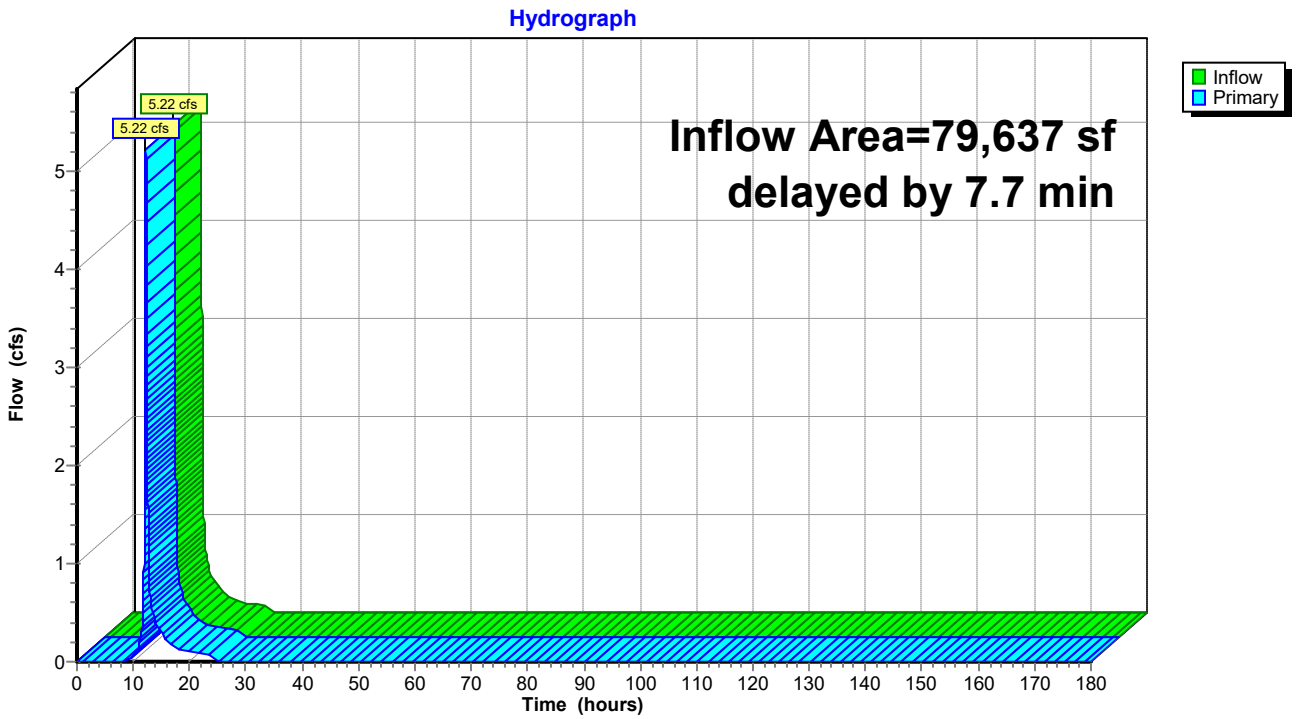
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.21	0.00	0.19	114.00	0.00	0.00	0.00
12.00	**3.23**	0.00	**2.33**	116.00	0.00	0.00	0.00
14.00	**1.30**	0.00	**1.34**	118.00	0.00	0.00	0.00
16.00	0.70	0.00	0.72	120.00	0.00	0.00	0.00
18.00	0.42	0.00	0.43	122.00	0.00	0.00	0.00
20.00	0.32	0.00	0.32	124.00	0.00	0.00	0.00
22.00	0.26	0.00	0.27	126.00	0.00	0.00	0.00
24.00	0.21	0.00	0.21	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 2L: Lag

Inflow Area = 79,637 sf, 0.00% Impervious, Inflow Depth = 2.56" for 10-Year event
Inflow = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf
Primary = 5.22 cfs @ 12.24 hrs, Volume= 17,011 cf, Atten= 0%, Lag= 7.7 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 7.7 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 2L: Lag



Hydrograph for Link 2L: Lag

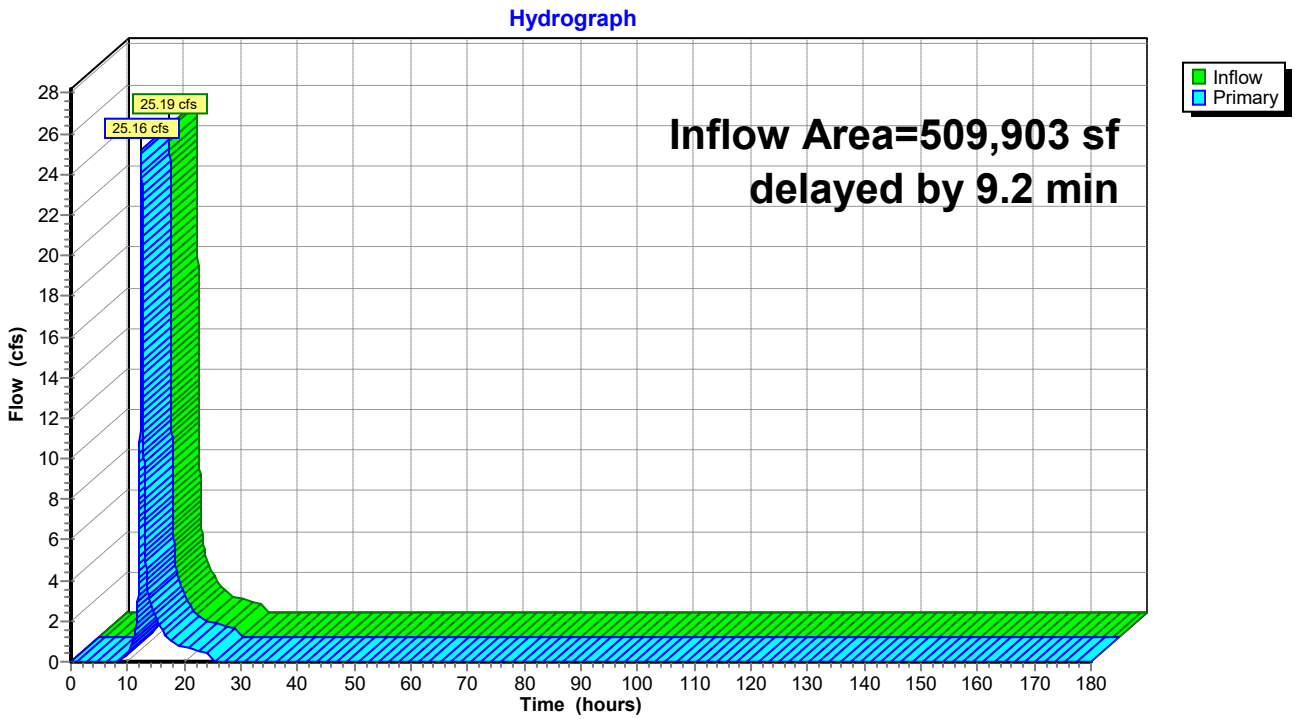
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
2.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
10.00	0.07	0.00	0.06
12.00	**2.69**	0.00	**1.49**
14.00	**0.37**	0.00	**0.39**
16.00	0.20	0.00	0.21
18.00	0.13	0.00	0.13
20.00	0.10	0.00	0.10
22.00	0.08	0.00	0.08
24.00	0.07	0.00	0.07
26.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00
80.00	0.00	0.00	0.00
82.00	0.00	0.00	0.00
84.00	0.00	0.00	0.00
86.00	0.00	0.00	0.00
88.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00
92.00	0.00	0.00	0.00
94.00	0.00	0.00	0.00
96.00	0.00	0.00	0.00
98.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00
102.00	0.00	0.00	0.00
104.00	0.00	0.00	0.00
106.00	0.00	0.00	0.00
108.00	0.00	0.00	0.00
110.00	0.00	0.00	0.00
112.00	0.00	0.00	0.00
114.00	0.00	0.00	0.00
116.00	0.00	0.00	0.00
118.00	0.00	0.00	0.00
120.00	0.00	0.00	0.00
122.00	0.00	0.00	0.00
124.00	0.00	0.00	0.00
126.00	0.00	0.00	0.00
128.00	0.00	0.00	0.00
130.00	0.00	0.00	0.00
132.00	0.00	0.00	0.00
134.00	0.00	0.00	0.00
136.00	0.00	0.00	0.00
138.00	0.00	0.00	0.00
140.00	0.00	0.00	0.00
142.00	0.00	0.00	0.00
144.00	0.00	0.00	0.00
146.00	0.00	0.00	0.00
148.00	0.00	0.00	0.00
150.00	0.00	0.00	0.00
152.00	0.00	0.00	0.00
154.00	0.00	0.00	0.00
156.00	0.00	0.00	0.00
158.00	0.00	0.00	0.00
160.00	0.00	0.00	0.00
162.00	0.00	0.00	0.00
164.00	0.00	0.00	0.00
166.00	0.00	0.00	0.00
168.00	0.00	0.00	0.00
170.00	0.00	0.00	0.00
172.00	0.00	0.00	0.00
174.00	0.00	0.00	0.00
176.00	0.00	0.00	0.00
178.00	0.00	0.00	0.00
180.00	0.00	0.00	0.00

Summary for Link 3L: Lag

Inflow Area = 509,903 sf, 0.00% Impervious, Inflow Depth = 2.88" for 10-Year event
Inflow = 25.19 cfs @ 12.28 hrs, Volume= 122,423 cf
Primary = 25.16 cfs @ 12.44 hrs, Volume= 122,423 cf, Atten= 0%, Lag= 9.4 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.2 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 3L: Lag



Hydrograph for Link 3L: Lag

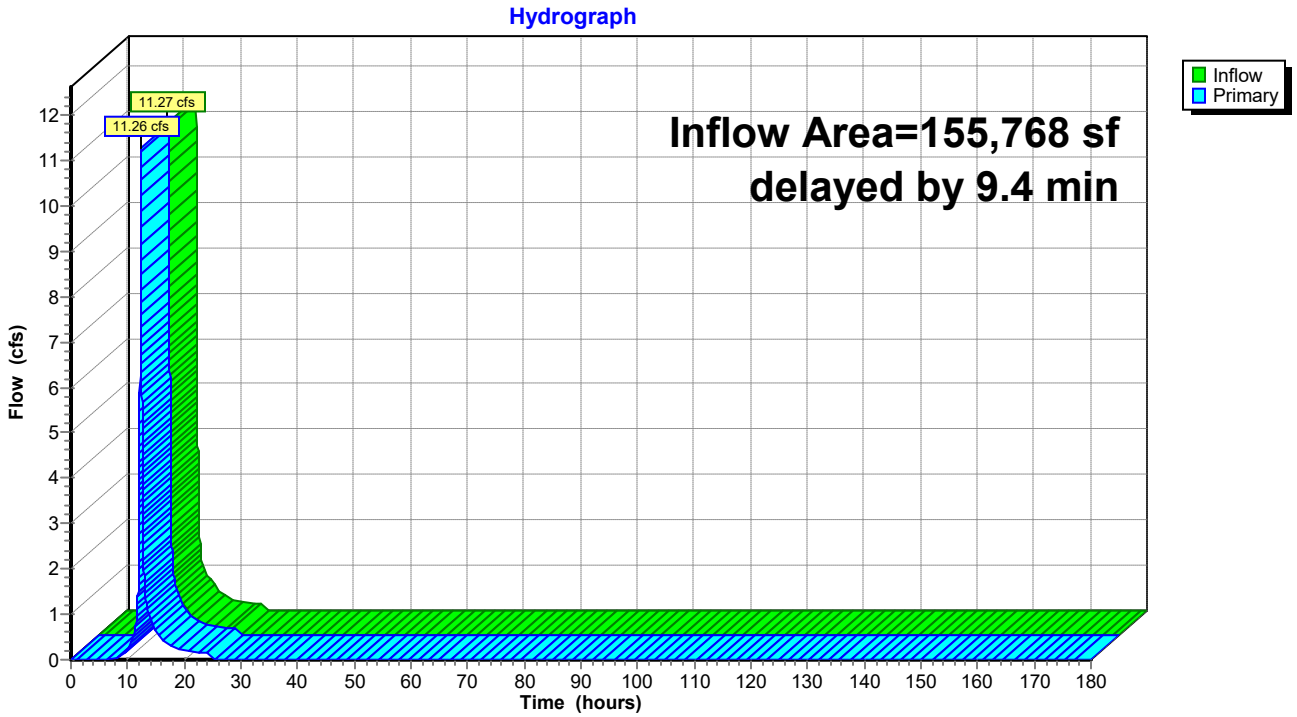
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.01	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.59	0.00	0.52	114.00	0.00	0.00	0.00
12.00	**9.98**	0.00	**5.51**	116.00	0.00	0.00	0.00
14.00	**2.78**	0.00	**2.95**	118.00	0.00	0.00	0.00
16.00	1.50	0.00	1.58	120.00	0.00	0.00	0.00
18.00	0.90	0.00	0.94	122.00	0.00	0.00	0.00
20.00	0.70	0.00	0.71	124.00	0.00	0.00	0.00
22.00	0.58	0.00	0.59	126.00	0.00	0.00	0.00
24.00	0.46	0.00	0.47	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 4L: Lag

Inflow Area = 155,768 sf, 8.03% Impervious, Inflow Depth = 3.11" for 10-Year event
Inflow = 11.27 cfs @ 12.14 hrs, Volume= 40,362 cf
Primary = 11.26 cfs @ 12.30 hrs, Volume= 40,362 cf, Atten= 0%, Lag= 9.4 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.4 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 4L: Lag



Hydrograph for Link 4L: Lag

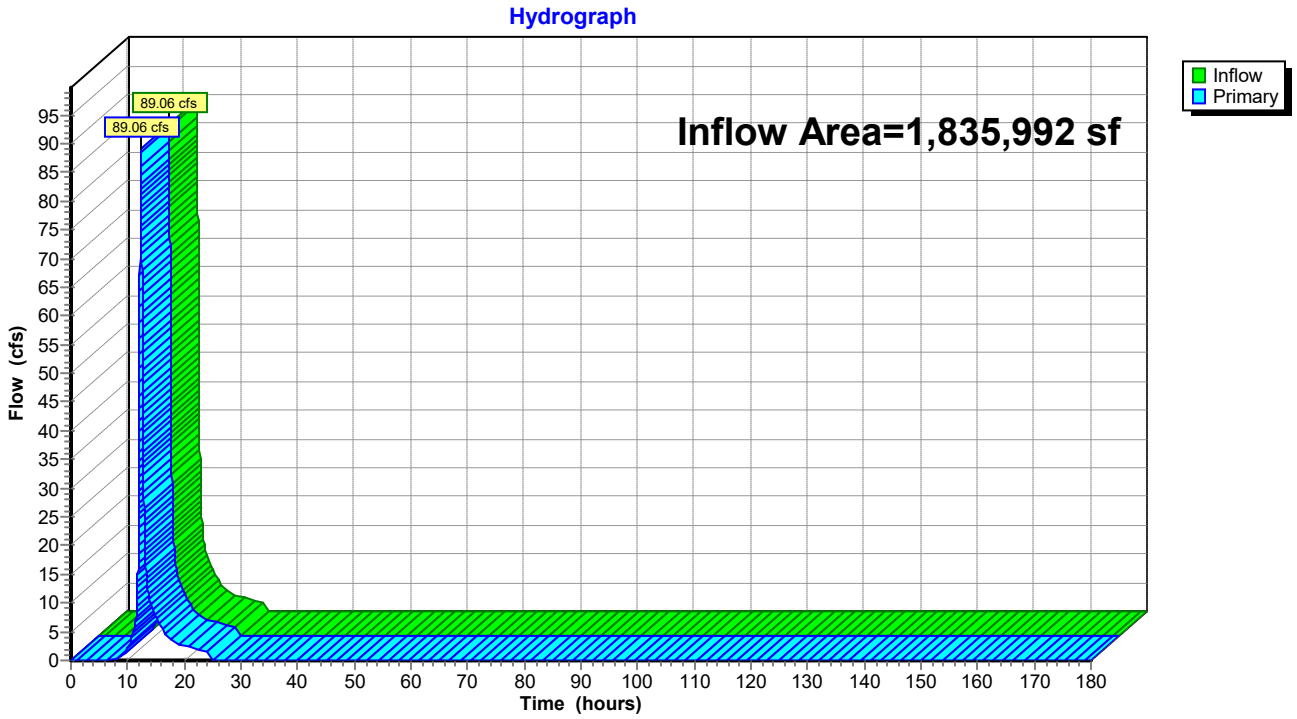
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.04	0.00	0.03	112.00	0.00	0.00	0.00
10.00	0.26	0.00	0.24	114.00	0.00	0.00	0.00
12.00	**5.38**	0.00	**3.04**	116.00	0.00	0.00	0.00
14.00	**0.83**	0.00	**0.89**	118.00	0.00	0.00	0.00
16.00	0.45	0.00	0.48	120.00	0.00	0.00	0.00
18.00	0.27	0.00	0.29	122.00	0.00	0.00	0.00
20.00	0.22	0.00	0.22	124.00	0.00	0.00	0.00
22.00	0.18	0.00	0.18	126.00	0.00	0.00	0.00
24.00	0.14	0.00	0.15	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link DP-S: Watts Stream

Inflow Area = 1,835,992 sf, 0.77% Impervious, Inflow Depth = 2.89" for 10-Year event
Inflow = 89.06 cfs @ 12.30 hrs, Volume= 441,834 cf
Primary = 89.06 cfs @ 12.30 hrs, Volume= 441,834 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link DP-S: Watts Stream



Hydrograph for Link DP-S: Watts Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.07	0.00	0.07	112.00	0.00	0.00	0.00
10.00	2.08	0.00	2.08	114.00	0.00	0.00	0.00
12.00	**30.81**	0.00	**30.81**	116.00	0.00	0.00	0.00
14.00	**10.19**	0.00	**10.19**	118.00	0.00	0.00	0.00
16.00	5.48	0.00	5.48	120.00	0.00	0.00	0.00
18.00	3.28	0.00	3.28	122.00	0.00	0.00	0.00
20.00	2.52	0.00	2.52	124.00	0.00	0.00	0.00
22.00	2.09	0.00	2.09	126.00	0.00	0.00	0.00
24.00	1.67	0.00	1.67	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Subcatchment M:

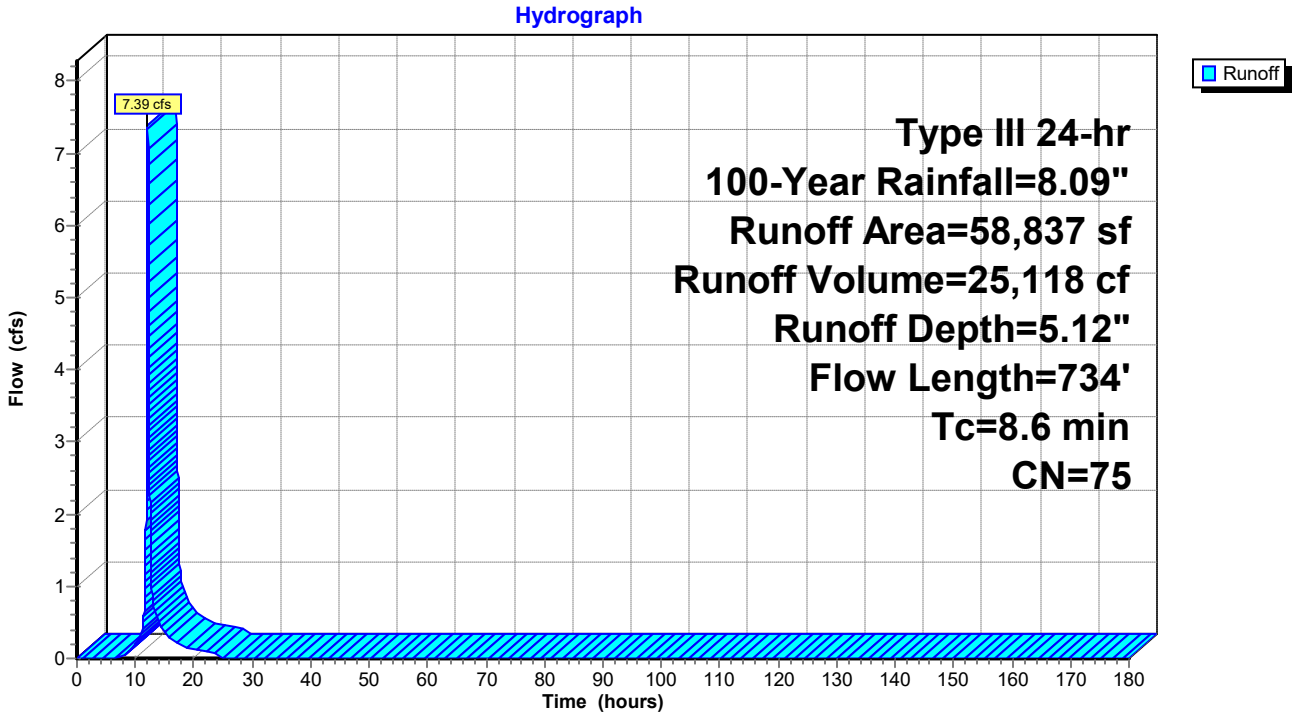
Runoff = 7.39 cfs @ 12.12 hrs, Volume= 25,118 cf, Depth= 5.12"
Routed to Reach DP-M :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
56,266	74	Pasture/grassland/range, Good, HSG C
2,571	96	Gravel surface, HSG C
58,837	75	Weighted Average
58,837		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	95	0.0625	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
2.3	214	0.0510	1.58		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.4	42	0.0587	1.70		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.0	18	0.0597	13.93	17.10	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.3	64	0.1973	3.11		**Shallow Concentrated Flow, EF** Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0846	11.68	105.15	**Trap/Vee/Rect Channel Flow, FG** Bot.W=6.00' D=1.00' Z= 3.0 '/' Top.W=12.00' n= 0.030 Earth, grassed & winding
8.6	734	Total			

Subcatchment M:



Hydrograph for Subcatchment M:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.00
8.00	0.92	0.02	0.03
10.00	1.53	0.18	0.18
12.00	4.04	1.70	**3.80**
14.00	6.56	3.77	**0.50**
16.00	7.17	4.30	0.27
18.00	7.51	4.60	0.16
20.00	7.74	4.81	0.13
22.00	7.93	4.98	0.11
24.00	**8.09**	**5.12**	0.09
26.00	8.09	5.12	0.00
28.00	8.09	5.12	0.00
30.00	8.09	5.12	0.00
32.00	8.09	5.12	0.00
34.00	8.09	5.12	0.00
36.00	8.09	5.12	0.00
38.00	8.09	5.12	0.00
40.00	8.09	5.12	0.00
42.00	8.09	5.12	0.00
44.00	8.09	5.12	0.00
46.00	8.09	5.12	0.00
48.00	8.09	5.12	0.00
50.00	8.09	5.12	0.00
52.00	8.09	5.12	0.00
54.00	8.09	5.12	0.00
56.00	8.09	5.12	0.00
58.00	8.09	5.12	0.00
60.00	8.09	5.12	0.00
62.00	8.09	5.12	0.00
64.00	8.09	5.12	0.00
66.00	8.09	5.12	0.00
68.00	8.09	5.12	0.00
70.00	8.09	5.12	0.00
72.00	8.09	5.12	0.00
74.00	8.09	5.12	0.00
76.00	8.09	5.12	0.00
78.00	8.09	5.12	0.00
80.00	8.09	5.12	0.00
82.00	8.09	5.12	0.00
84.00	8.09	5.12	0.00
86.00	8.09	5.12	0.00
88.00	8.09	5.12	0.00
90.00	8.09	5.12	0.00
92.00	8.09	5.12	0.00
94.00	8.09	5.12	0.00
96.00	8.09	5.12	0.00
98.00	8.09	5.12	0.00
100.00	8.09	5.12	0.00
102.00	8.09	5.12	0.00
104.00	8.09	5.12	0.00
106.00	8.09	5.12	0.00
108.00	8.09	5.12	0.00
110.00	8.09	5.12	0.00
112.00	8.09	5.12	0.00
114.00	8.09	5.12	0.00
116.00	8.09	5.12	0.00
118.00	8.09	5.12	0.00
120.00	8.09	5.12	0.00
122.00	8.09	5.12	0.00
124.00	8.09	5.12	0.00
126.00	8.09	5.12	0.00
128.00	8.09	5.12	0.00
130.00	8.09	5.12	0.00
132.00	8.09	5.12	0.00
134.00	8.09	5.12	0.00
136.00	8.09	5.12	0.00
138.00	8.09	5.12	0.00
140.00	8.09	5.12	0.00
142.00	8.09	5.12	0.00
144.00	8.09	5.12	0.00
146.00	8.09	5.12	0.00
148.00	8.09	5.12	0.00
150.00	8.09	5.12	0.00
152.00	8.09	5.12	0.00
154.00	8.09	5.12	0.00
156.00	8.09	5.12	0.00
158.00	8.09	5.12	0.00
160.00	8.09	5.12	0.00
162.00	8.09	5.12	0.00
164.00	8.09	5.12	0.00
166.00	8.09	5.12	0.00
168.00	8.09	5.12	0.00
170.00	8.09	5.12	0.00
172.00	8.09	5.12	0.00
174.00	8.09	5.12	0.00
176.00	8.09	5.12	0.00
178.00	8.09	5.12	0.00
180.00	8.09	5.12	0.00

Summary for Subcatchment MW:

[47] Hint: Peak is 132% of capacity of segment #4

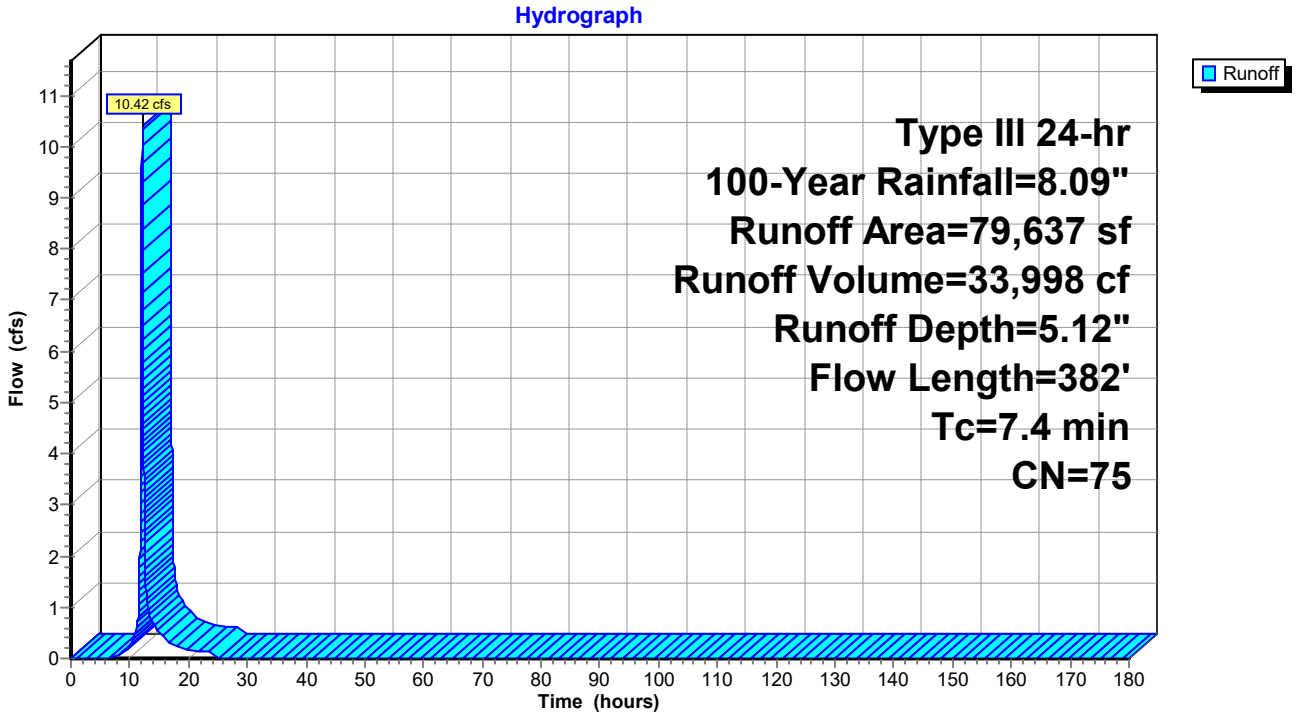
Runoff = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf, Depth= 5.12"
Routed to Reach DP-MW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
63,459	74	Pasture/grassland/range, Good, HSG C
15,207	80	Pasture/grassland/range, Good, HSG D
971	96	Gravel surface, HSG C
79,637	75	Weighted Average
79,637		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0583	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.1	39	0.0793	6.42	7.88	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.030 Earth, grassed & winding
0.1	97	0.1563	14.13	226.11	**Trap/Vee/Rect Channel Flow, EF** Bot.W=6.00' D=1.00' Z= 10.0 '/' Top.W=26.00' n= 0.030 Earth, grassed & winding
7.4	382	Total			

Subcatchment MW:



Hydrograph for Subcatchment MW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.00
8.00	0.92	0.02	0.05
10.00	1.53	0.18	0.25
12.00	4.04	1.70	**5.65**
14.00	6.56	3.77	**0.67**
16.00	7.17	4.30	0.36
18.00	7.51	4.60	0.22
20.00	7.74	4.81	0.18
22.00	7.93	4.98	0.15
24.00	**8.09**	**5.12**	0.12
26.00	8.09	5.12	0.00
28.00	8.09	5.12	0.00
30.00	8.09	5.12	0.00
32.00	8.09	5.12	0.00
34.00	8.09	5.12	0.00
36.00	8.09	5.12	0.00
38.00	8.09	5.12	0.00
40.00	8.09	5.12	0.00
42.00	8.09	5.12	0.00
44.00	8.09	5.12	0.00
46.00	8.09	5.12	0.00
48.00	8.09	5.12	0.00
50.00	8.09	5.12	0.00
52.00	8.09	5.12	0.00
54.00	8.09	5.12	0.00
56.00	8.09	5.12	0.00
58.00	8.09	5.12	0.00
60.00	8.09	5.12	0.00
62.00	8.09	5.12	0.00
64.00	8.09	5.12	0.00
66.00	8.09	5.12	0.00
68.00	8.09	5.12	0.00
70.00	8.09	5.12	0.00
72.00	8.09	5.12	0.00
74.00	8.09	5.12	0.00
76.00	8.09	5.12	0.00
78.00	8.09	5.12	0.00
80.00	8.09	5.12	0.00
82.00	8.09	5.12	0.00
84.00	8.09	5.12	0.00
86.00	8.09	5.12	0.00
88.00	8.09	5.12	0.00
90.00	8.09	5.12	0.00
92.00	8.09	5.12	0.00
94.00	8.09	5.12	0.00
96.00	8.09	5.12	0.00
98.00	8.09	5.12	0.00
100.00	8.09	5.12	0.00
102.00	8.09	5.12	0.00
104.00	8.09	5.12	0.00
106.00	8.09	5.12	0.00
108.00	8.09	5.12	0.00
110.00	8.09	5.12	0.00
112.00	8.09	5.12	0.00
114.00	8.09	5.12	0.00
116.00	8.09	5.12	0.00
118.00	8.09	5.12	0.00
120.00	8.09	5.12	0.00
122.00	8.09	5.12	0.00
124.00	8.09	5.12	0.00
126.00	8.09	5.12	0.00
128.00	8.09	5.12	0.00
130.00	8.09	5.12	0.00
132.00	8.09	5.12	0.00
134.00	8.09	5.12	0.00
136.00	8.09	5.12	0.00
138.00	8.09	5.12	0.00
140.00	8.09	5.12	0.00
142.00	8.09	5.12	0.00
144.00	8.09	5.12	0.00
146.00	8.09	5.12	0.00
148.00	8.09	5.12	0.00
150.00	8.09	5.12	0.00
152.00	8.09	5.12	0.00
154.00	8.09	5.12	0.00
156.00	8.09	5.12	0.00
158.00	8.09	5.12	0.00
160.00	8.09	5.12	0.00
162.00	8.09	5.12	0.00
164.00	8.09	5.12	0.00
166.00	8.09	5.12	0.00
168.00	8.09	5.12	0.00
170.00	8.09	5.12	0.00
172.00	8.09	5.12	0.00
174.00	8.09	5.12	0.00
176.00	8.09	5.12	0.00
178.00	8.09	5.12	0.00
180.00	8.09	5.12	0.00

Summary for Subcatchment N:

[47] Hint: Peak is 119% of capacity of segment #3

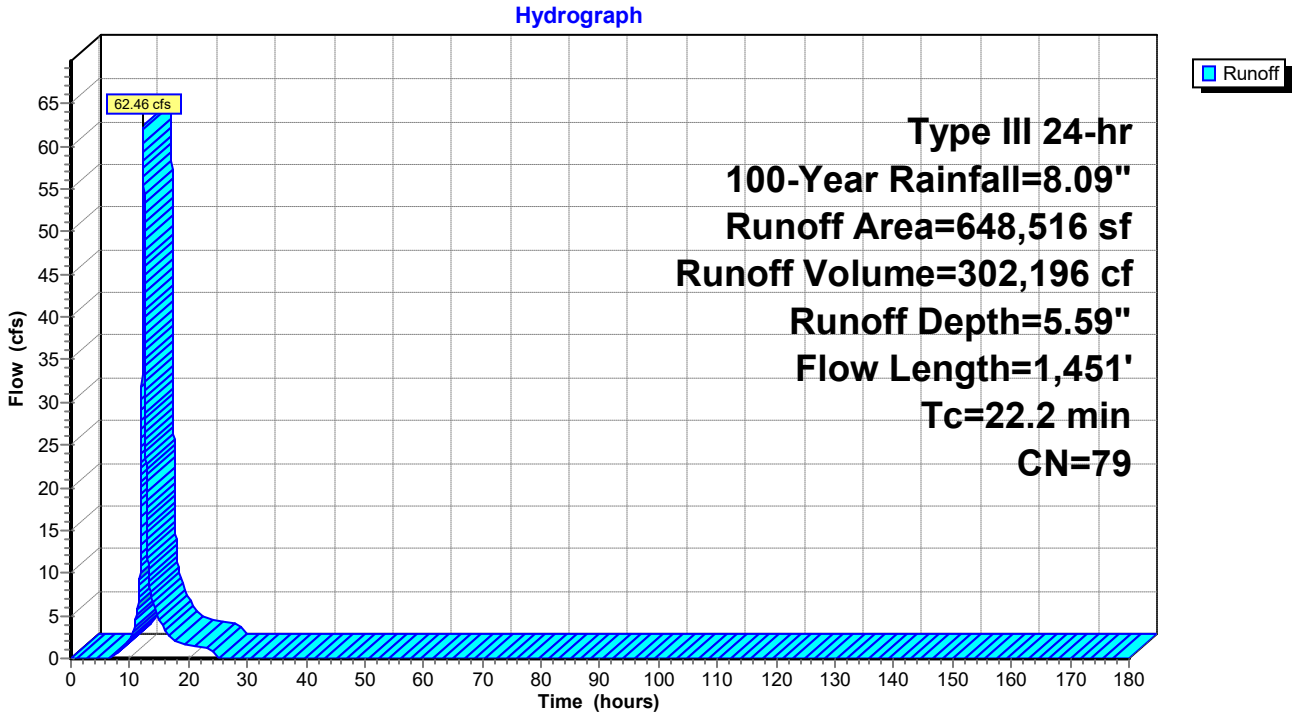
Runoff = 62.46 cfs @ 12.31 hrs, Volume= 302,196 cf, Depth= 5.59"
Routed to Reach DP-N : Culvert towards Wades Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
278,570	80	Pasture/grassland/range, Good, HSG D
77,593	72	Woods/grass comb., Good, HSG C
270,211	79	Woods/grass comb., Good, HSG D
4,456	96	Gravel surface, HSG C
8,912	96	Gravel surface, HSG D
8,774	98	Unconnected pavement, HSG D
648,516	79	Weighted Average
639,742		98.65% Pervious Area
8,774		1.35% Impervious Area
8,774		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0707	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
1.8	144	0.0705	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.4	216	0.0566	8.78	52.70	**Trap/Vee/Rect Channel Flow, CD** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.030 Earth, grassed & winding
6.0	679	0.0721	1.88		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.9	97	0.1409	1.88		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.3	215	0.1254	12.49	62.43	**Trap/Vee/Rect Channel Flow, FG** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
22.2	1,451	Total			

Subcatchment N:



Hydrograph for Subcatchment N:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.02
8.00	0.92	0.05	0.60
10.00	1.53	0.27	2.36
12.00	4.04	2.00	**23.94**
14.00	6.56	4.18	**6.28**
16.00	7.17	4.74	3.33
18.00	7.51	5.05	1.99
20.00	7.74	5.27	1.52
22.00	7.93	5.45	1.26
24.00	**8.09**	**5.59**	1.01
26.00	8.09	5.59	0.00
28.00	8.09	5.59	0.00
30.00	8.09	5.59	0.00
32.00	8.09	5.59	0.00
34.00	8.09	5.59	0.00
36.00	8.09	5.59	0.00
38.00	8.09	5.59	0.00
40.00	8.09	5.59	0.00
42.00	8.09	5.59	0.00
44.00	8.09	5.59	0.00
46.00	8.09	5.59	0.00
48.00	8.09	5.59	0.00
50.00	8.09	5.59	0.00
52.00	8.09	5.59	0.00
54.00	8.09	5.59	0.00
56.00	8.09	5.59	0.00
58.00	8.09	5.59	0.00
60.00	8.09	5.59	0.00
62.00	8.09	5.59	0.00
64.00	8.09	5.59	0.00
66.00	8.09	5.59	0.00
68.00	8.09	5.59	0.00
70.00	8.09	5.59	0.00
72.00	8.09	5.59	0.00
74.00	8.09	5.59	0.00
76.00	8.09	5.59	0.00
78.00	8.09	5.59	0.00
80.00	8.09	5.59	0.00
82.00	8.09	5.59	0.00
84.00	8.09	5.59	0.00
86.00	8.09	5.59	0.00
88.00	8.09	5.59	0.00
90.00	8.09	5.59	0.00
92.00	8.09	5.59	0.00
94.00	8.09	5.59	0.00
96.00	8.09	5.59	0.00
98.00	8.09	5.59	0.00
100.00	8.09	5.59	0.00
102.00	8.09	5.59	0.00
104.00	8.09	5.59	0.00
106.00	8.09	5.59	0.00
108.00	8.09	5.59	0.00
110.00	8.09	5.59	0.00
112.00	8.09	5.59	0.00
114.00	8.09	5.59	0.00
116.00	8.09	5.59	0.00
118.00	8.09	5.59	0.00
120.00	8.09	5.59	0.00
122.00	8.09	5.59	0.00
124.00	8.09	5.59	0.00
126.00	8.09	5.59	0.00
128.00	8.09	5.59	0.00
130.00	8.09	5.59	0.00
132.00	8.09	5.59	0.00
134.00	8.09	5.59	0.00
136.00	8.09	5.59	0.00
138.00	8.09	5.59	0.00
140.00	8.09	5.59	0.00
142.00	8.09	5.59	0.00
144.00	8.09	5.59	0.00
146.00	8.09	5.59	0.00
148.00	8.09	5.59	0.00
150.00	8.09	5.59	0.00
152.00	8.09	5.59	0.00
154.00	8.09	5.59	0.00
156.00	8.09	5.59	0.00
158.00	8.09	5.59	0.00
160.00	8.09	5.59	0.00
162.00	8.09	5.59	0.00
164.00	8.09	5.59	0.00
166.00	8.09	5.59	0.00
168.00	8.09	5.59	0.00
170.00	8.09	5.59	0.00
172.00	8.09	5.59	0.00
174.00	8.09	5.59	0.00
176.00	8.09	5.59	0.00
178.00	8.09	5.59	0.00
180.00	8.09	5.59	0.00

Summary for Subcatchment NE:

[47] Hint: Peak is 6249% of capacity of segment #5

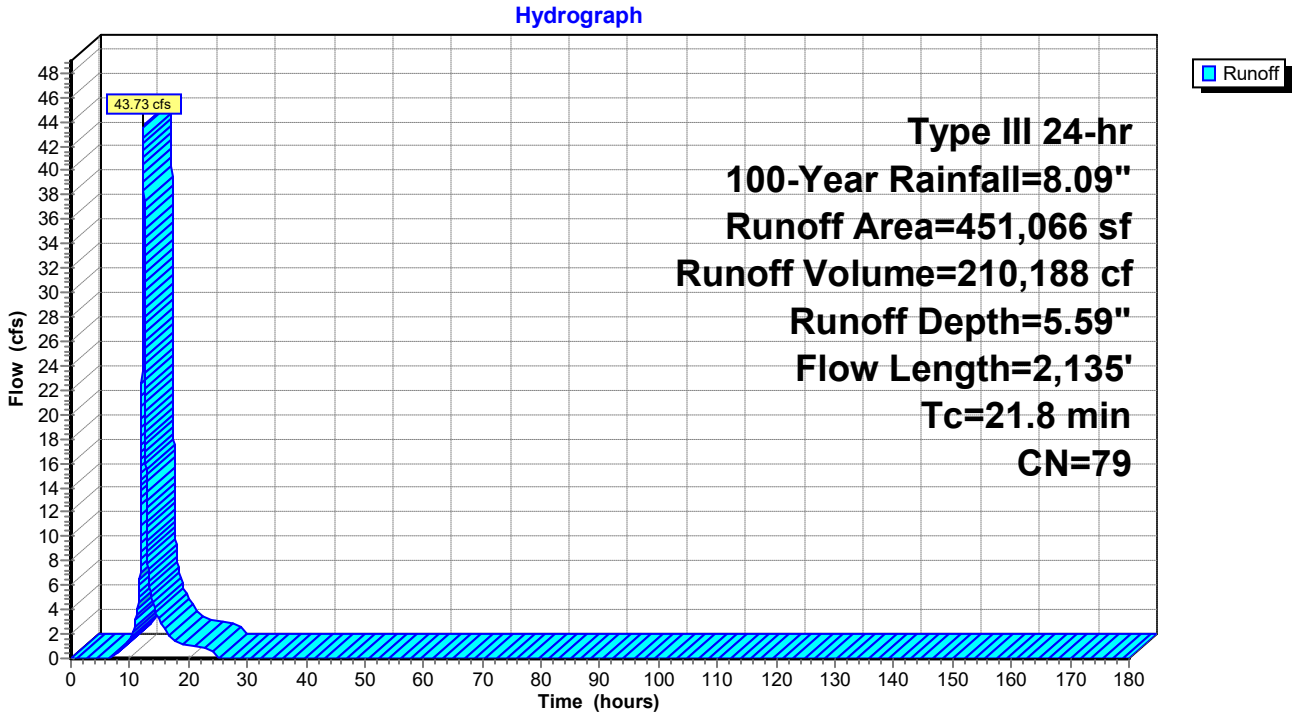
Runoff = 43.73 cfs @ 12.29 hrs, Volume= 210,188 cf, Depth= 5.59"
Routed to Reach DP-NE :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
79,061	74	Pasture/grassland/range, Good, HSG C
345,355	80	Pasture/grassland/range, Good, HSG D
22,632	79	Woods/grass comb., Good, HSG D
603	96	Gravel surface, HSG C
3,415	96	Gravel surface, HSG D
451,066	79	Weighted Average
451,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0675	0.31		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
7.1	705	0.0566	1.67		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
3.1	295	0.0513	1.59		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0393	1.39		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.5	17	0.0001	0.57	0.70	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
3.4	335	0.0540	1.63		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
0.7	543	0.1506	13.10	170.34	**Trap/Vee/Rect Channel Flow, GH** Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.030 Earth, grassed & winding
21.8	2,135	Total			

Subcatchment NE:



Hydrograph for Subcatchment NE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.01
8.00	0.92	0.05	0.42
10.00	1.53	0.27	1.65
12.00	4.04	2.00	**16.93**
14.00	6.56	4.18	**4.35**
16.00	7.17	4.74	2.31
18.00	7.51	5.05	1.38
20.00	7.74	5.27	1.06
22.00	7.93	5.45	0.87
24.00	**8.09**	**5.59**	0.70
26.00	8.09	5.59	0.00
28.00	8.09	5.59	0.00
30.00	8.09	5.59	0.00
32.00	8.09	5.59	0.00
34.00	8.09	5.59	0.00
36.00	8.09	5.59	0.00
38.00	8.09	5.59	0.00
40.00	8.09	5.59	0.00
42.00	8.09	5.59	0.00
44.00	8.09	5.59	0.00
46.00	8.09	5.59	0.00
48.00	8.09	5.59	0.00
50.00	8.09	5.59	0.00
52.00	8.09	5.59	0.00
54.00	8.09	5.59	0.00
56.00	8.09	5.59	0.00
58.00	8.09	5.59	0.00
60.00	8.09	5.59	0.00
62.00	8.09	5.59	0.00
64.00	8.09	5.59	0.00
66.00	8.09	5.59	0.00
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72.00	8.09	5.59	0.00
74.00	8.09	5.59	0.00
76.00	8.09	5.59	0.00
78.00	8.09	5.59	0.00
80.00	8.09	5.59	0.00
82.00	8.09	5.59	0.00
84.00	8.09	5.59	0.00
86.00	8.09	5.59	0.00
88.00	8.09	5.59	0.00
90.00	8.09	5.59	0.00
92.00	8.09	5.59	0.00
94.00	8.09	5.59	0.00
96.00	8.09	5.59	0.00
98.00	8.09	5.59	0.00
100.00	8.09	5.59	0.00
102.00	8.09	5.59	0.00
104.00	8.09	5.59	0.00
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112.00	8.09	5.59	0.00
114.00	8.09	5.59	0.00
116.00	8.09	5.59	0.00
118.00	8.09	5.59	0.00
120.00	8.09	5.59	0.00
122.00	8.09	5.59	0.00
124.00	8.09	5.59	0.00
126.00	8.09	5.59	0.00
128.00	8.09	5.59	0.00
130.00	8.09	5.59	0.00
132.00	8.09	5.59	0.00
134.00	8.09	5.59	0.00
136.00	8.09	5.59	0.00
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140.00	8.09	5.59	0.00
142.00	8.09	5.59	0.00
144.00	8.09	5.59	0.00
146.00	8.09	5.59	0.00
148.00	8.09	5.59	0.00
150.00	8.09	5.59	0.00
152.00	8.09	5.59	0.00
154.00	8.09	5.59	0.00
156.00	8.09	5.59	0.00
158.00	8.09	5.59	0.00
160.00	8.09	5.59	0.00
162.00	8.09	5.59	0.00
164.00	8.09	5.59	0.00
166.00	8.09	5.59	0.00
168.00	8.09	5.59	0.00
170.00	8.09	5.59	0.00
172.00	8.09	5.59	0.00
174.00	8.09	5.59	0.00
176.00	8.09	5.59	0.00
178.00	8.09	5.59	0.00
180.00	8.09	5.59	0.00

Summary for Subcatchment NW:

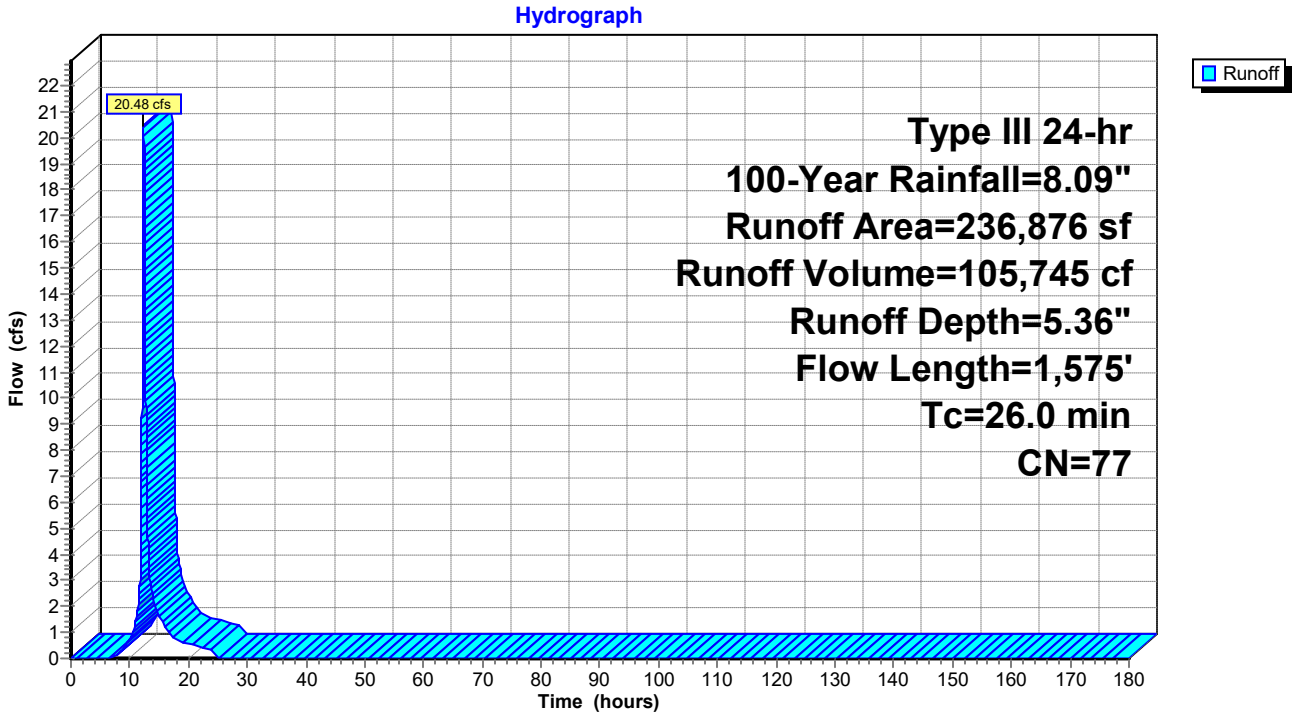
Runoff = 20.48 cfs @ 12.34 hrs, Volume= 105,745 cf, Depth= 5.36"
Routed to Reach DP-NW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
117,984	74	Pasture/grassland/range, Good, HSG C
48,562	80	Pasture/grassland/range, Good, HSG D
9,923	72	Woods/grass comb., Good, HSG C
58,620	79	Woods/grass comb., Good, HSG D
492	96	Gravel surface, HSG C
1,295	98	Unconnected pavement, HSG C
236,876	77	Weighted Average
235,581		99.45% Pervious Area
1,295		0.55% Impervious Area
1,295		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	102	0.0665	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.9	685	0.0763	1.93		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.1	75	0.0926	10.58	137.52	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=1.00' Z= 9.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.4	87	0.3254	3.99		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
1.7	174	0.1201	1.73		**Shallow Concentrated Flow, GH** Woodland Kv= 5.0 fps
2.9	202	0.0555	1.18		**Shallow Concentrated Flow, HI** Woodland Kv= 5.0 fps
0.1	104	0.1222	26.85	1,852.49	**Trap/Vee/Rect Channel Flow, IJ** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
26.0	1,575	Total			

Subcatchment NW:



Hydrograph for Subcatchment NW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.00
8.00	0.92	0.03	0.16
10.00	1.53	0.22	0.73
12.00	4.04	1.85	**7.03**
14.00	6.56	3.97	**2.30**
16.00	7.17	4.52	1.22
18.00	7.51	4.82	0.73
20.00	7.74	5.04	0.55
22.00	7.93	5.21	0.45
24.00	**8.09**	**5.36**	0.36
26.00	8.09	5.36	0.00
28.00	8.09	5.36	0.00
30.00	8.09	5.36	0.00
32.00	8.09	5.36	0.00
34.00	8.09	5.36	0.00
36.00	8.09	5.36	0.00
38.00	8.09	5.36	0.00
40.00	8.09	5.36	0.00
42.00	8.09	5.36	0.00
44.00	8.09	5.36	0.00
46.00	8.09	5.36	0.00
48.00	8.09	5.36	0.00
50.00	8.09	5.36	0.00
52.00	8.09	5.36	0.00
54.00	8.09	5.36	0.00
56.00	8.09	5.36	0.00
58.00	8.09	5.36	0.00
60.00	8.09	5.36	0.00
62.00	8.09	5.36	0.00
64.00	8.09	5.36	0.00
66.00	8.09	5.36	0.00
68.00	8.09	5.36	0.00
70.00	8.09	5.36	0.00
72.00	8.09	5.36	0.00
74.00	8.09	5.36	0.00
76.00	8.09	5.36	0.00
78.00	8.09	5.36	0.00
80.00	8.09	5.36	0.00
82.00	8.09	5.36	0.00
84.00	8.09	5.36	0.00
86.00	8.09	5.36	0.00
88.00	8.09	5.36	0.00
90.00	8.09	5.36	0.00
92.00	8.09	5.36	0.00
94.00	8.09	5.36	0.00
96.00	8.09	5.36	0.00
98.00	8.09	5.36	0.00
100.00	8.09	5.36	0.00
102.00	8.09	5.36	0.00
104.00	8.09	5.36	0.00
106.00	8.09	5.36	0.00
108.00	8.09	5.36	0.00
110.00	8.09	5.36	0.00
112.00	8.09	5.36	0.00
114.00	8.09	5.36	0.00
116.00	8.09	5.36	0.00
118.00	8.09	5.36	0.00
120.00	8.09	5.36	0.00
122.00	8.09	5.36	0.00
124.00	8.09	5.36	0.00
126.00	8.09	5.36	0.00
128.00	8.09	5.36	0.00
130.00	8.09	5.36	0.00
132.00	8.09	5.36	0.00
134.00	8.09	5.36	0.00
136.00	8.09	5.36	0.00
138.00	8.09	5.36	0.00
140.00	8.09	5.36	0.00
142.00	8.09	5.36	0.00
144.00	8.09	5.36	0.00
146.00	8.09	5.36	0.00
148.00	8.09	5.36	0.00
150.00	8.09	5.36	0.00
152.00	8.09	5.36	0.00
154.00	8.09	5.36	0.00
156.00	8.09	5.36	0.00
158.00	8.09	5.36	0.00
160.00	8.09	5.36	0.00
162.00	8.09	5.36	0.00
164.00	8.09	5.36	0.00
166.00	8.09	5.36	0.00
168.00	8.09	5.36	0.00
170.00	8.09	5.36	0.00
172.00	8.09	5.36	0.00
174.00	8.09	5.36	0.00
176.00	8.09	5.36	0.00
178.00	8.09	5.36	0.00
180.00	8.09	5.36	0.00

Summary for Subcatchment SE:

[47] Hint: Peak is 114% of capacity of segment #3

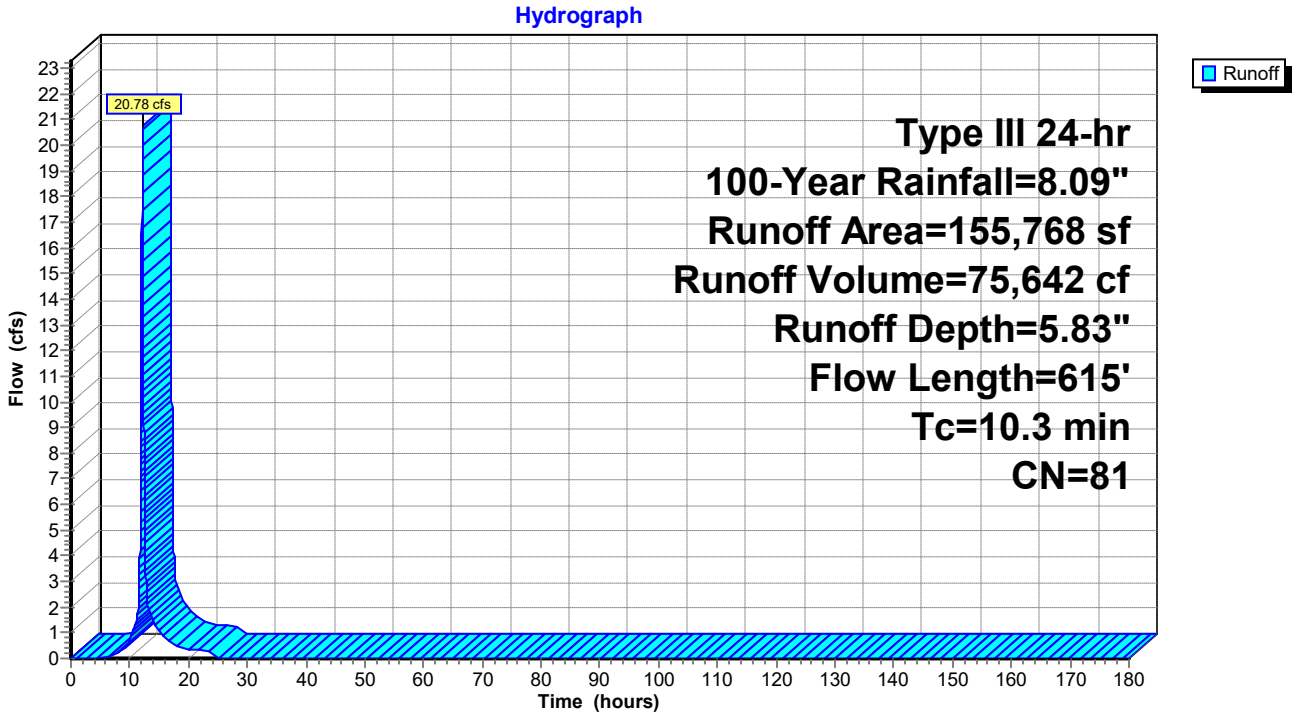
Runoff = 20.78 cfs @ 12.14 hrs, Volume= 75,642 cf, Depth= 5.83"
Routed to Reach DP-SE : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
130,248	80	Pasture/grassland/range, Good, HSG D
12,734	79	Woods/grass comb., Good, HSG D
276	96	Gravel surface, HSG D
12,510	98	Unconnected pavement, HSG D
155,768	81	Weighted Average
143,258		91.97% Pervious Area
12,510		8.03% Impervious Area
12,510		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	47	0.0304	0.20		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.1	521	0.0416	1.43		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.2	47	0.0304	4.04	18.19	**Trap/Vee/Rect Channel Flow, CD** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
10.3	615	Total			

Subcatchment SE:



Hydrograph for Subcatchment SE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.01	0.03
8.00	0.92	0.07	0.21
10.00	1.53	0.33	0.70
12.00	4.04	2.16	**10.42**
14.00	6.56	4.40	**1.42**
16.00	7.17	4.96	0.76
18.00	7.51	5.28	0.46
20.00	7.74	5.50	0.36
22.00	7.93	5.68	0.30
24.00	**8.09**	**5.83**	0.24
26.00	8.09	5.83	0.00
28.00	8.09	5.83	0.00
30.00	8.09	5.83	0.00
32.00	8.09	5.83	0.00
34.00	8.09	5.83	0.00
36.00	8.09	5.83	0.00
38.00	8.09	5.83	0.00
40.00	8.09	5.83	0.00
42.00	8.09	5.83	0.00
44.00	8.09	5.83	0.00
46.00	8.09	5.83	0.00
48.00	8.09	5.83	0.00
50.00	8.09	5.83	0.00
52.00	8.09	5.83	0.00
54.00	8.09	5.83	0.00
56.00	8.09	5.83	0.00
58.00	8.09	5.83	0.00
60.00	8.09	5.83	0.00
62.00	8.09	5.83	0.00
64.00	8.09	5.83	0.00
66.00	8.09	5.83	0.00
68.00	8.09	5.83	0.00
70.00	8.09	5.83	0.00
72.00	8.09	5.83	0.00
74.00	8.09	5.83	0.00
76.00	8.09	5.83	0.00
78.00	8.09	5.83	0.00
80.00	8.09	5.83	0.00
82.00	8.09	5.83	0.00
84.00	8.09	5.83	0.00
86.00	8.09	5.83	0.00
88.00	8.09	5.83	0.00
90.00	8.09	5.83	0.00
92.00	8.09	5.83	0.00
94.00	8.09	5.83	0.00
96.00	8.09	5.83	0.00
98.00	8.09	5.83	0.00
100.00	8.09	5.83	0.00
102.00	8.09	5.83	0.00
104.00	8.09	5.83	0.00
106.00	8.09	5.83	0.00
108.00	8.09	5.83	0.00
110.00	8.09	5.83	0.00
112.00	8.09	5.83	0.00
114.00	8.09	5.83	0.00
116.00	8.09	5.83	0.00
118.00	8.09	5.83	0.00
120.00	8.09	5.83	0.00
122.00	8.09	5.83	0.00
124.00	8.09	5.83	0.00
126.00	8.09	5.83	0.00
128.00	8.09	5.83	0.00
130.00	8.09	5.83	0.00
132.00	8.09	5.83	0.00
134.00	8.09	5.83	0.00
136.00	8.09	5.83	0.00
138.00	8.09	5.83	0.00
140.00	8.09	5.83	0.00
142.00	8.09	5.83	0.00
144.00	8.09	5.83	0.00
146.00	8.09	5.83	0.00
148.00	8.09	5.83	0.00
150.00	8.09	5.83	0.00
152.00	8.09	5.83	0.00
154.00	8.09	5.83	0.00
156.00	8.09	5.83	0.00
158.00	8.09	5.83	0.00
160.00	8.09	5.83	0.00
162.00	8.09	5.83	0.00
164.00	8.09	5.83	0.00
166.00	8.09	5.83	0.00
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172.00	8.09	5.83	0.00
174.00	8.09	5.83	0.00
176.00	8.09	5.83	0.00
178.00	8.09	5.83	0.00
180.00	8.09	5.83	0.00

Summary for Subcatchment SW:

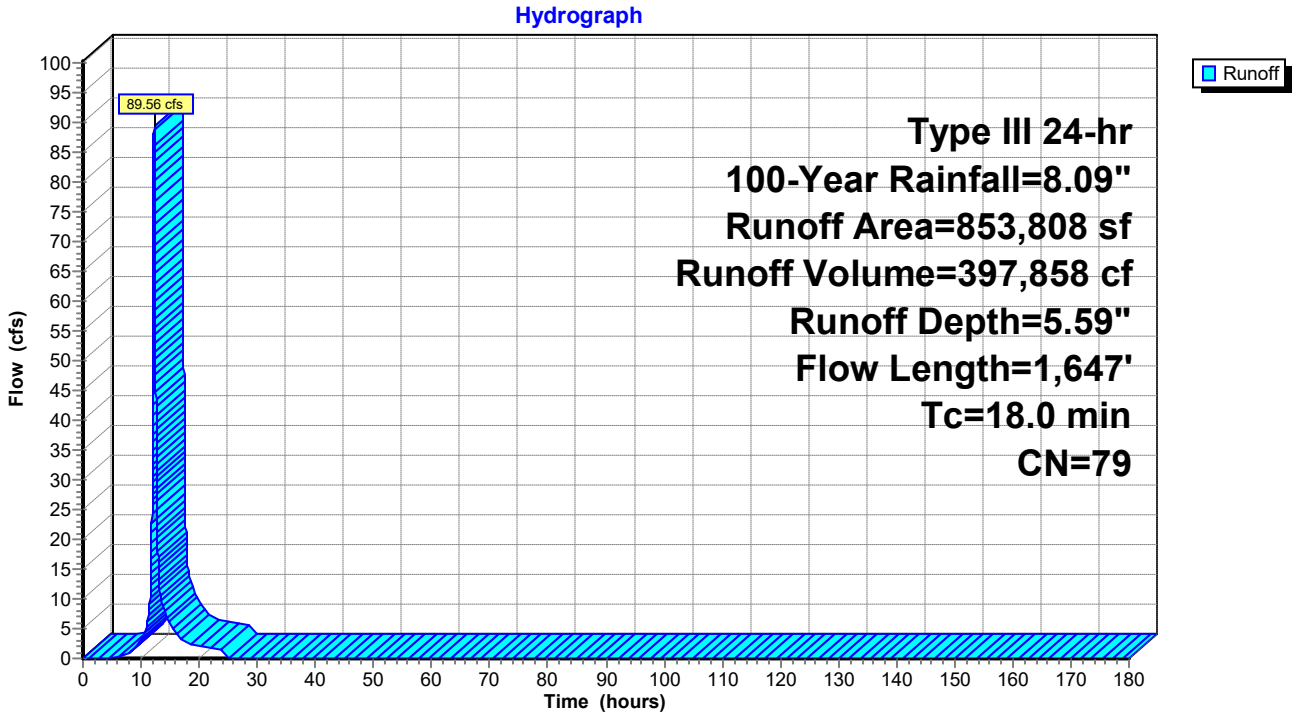
Runoff = 89.56 cfs @ 12.24 hrs, Volume= 397,858 cf, Depth= 5.59"
Routed to Reach DP-SW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
250,115	80	Pasture/grassland/range, Good, HSG D
603,267	79	Woods/grass comb., Good, HSG D
54	96	Gravel surface, HSG D
372	98	Unconnected pavement, HSG D
853,808	79	Weighted Average
853,436		99.96% Pervious Area
372		0.04% Impervious Area
372		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0398	0.25		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
4.0	442	0.0697	1.85		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
4.4	387	0.0848	1.46		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
0.3	51	0.3946	3.14		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
2.2	149	0.0530	1.15		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.6	518	0.0304	13.39	923.97	**Trap/Vee/Rect Channel Flow, FG** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
18.0	1,647	Total			

Subcatchment SW:



Hydrograph for Subcatchment SW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.03
8.00	0.92	0.05	0.83
10.00	1.53	0.27	3.22
12.00	4.04	2.00	**37.71**
14.00	6.56	4.18	**8.04**
16.00	7.17	4.74	4.28
18.00	7.51	5.05	2.57
20.00	7.74	5.27	1.99
22.00	7.93	5.45	1.64
24.00	**8.09**	**5.59**	1.31
26.00	8.09	5.59	0.00
28.00	8.09	5.59	0.00
30.00	8.09	5.59	0.00
32.00	8.09	5.59	0.00
34.00	8.09	5.59	0.00
36.00	8.09	5.59	0.00
38.00	8.09	5.59	0.00
40.00	8.09	5.59	0.00
42.00	8.09	5.59	0.00
44.00	8.09	5.59	0.00
46.00	8.09	5.59	0.00
48.00	8.09	5.59	0.00
50.00	8.09	5.59	0.00
52.00	8.09	5.59	0.00
54.00	8.09	5.59	0.00
56.00	8.09	5.59	0.00
58.00	8.09	5.59	0.00
60.00	8.09	5.59	0.00
62.00	8.09	5.59	0.00
64.00	8.09	5.59	0.00
66.00	8.09	5.59	0.00
68.00	8.09	5.59	0.00
70.00	8.09	5.59	0.00
72.00	8.09	5.59	0.00
74.00	8.09	5.59	0.00
76.00	8.09	5.59	0.00
78.00	8.09	5.59	0.00
80.00	8.09	5.59	0.00
82.00	8.09	5.59	0.00
84.00	8.09	5.59	0.00
86.00	8.09	5.59	0.00
88.00	8.09	5.59	0.00
90.00	8.09	5.59	0.00
92.00	8.09	5.59	0.00
94.00	8.09	5.59	0.00
96.00	8.09	5.59	0.00
98.00	8.09	5.59	0.00
100.00	8.09	5.59	0.00
102.00	8.09	5.59	0.00
104.00	8.09	5.59	0.00
106.00	8.09	5.59	0.00
108.00	8.09	5.59	0.00
110.00	8.09	5.59	0.00
112.00	8.09	5.59	0.00
114.00	8.09	5.59	0.00
116.00	8.09	5.59	0.00
118.00	8.09	5.59	0.00
120.00	8.09	5.59	0.00
122.00	8.09	5.59	0.00
124.00	8.09	5.59	0.00
126.00	8.09	5.59	0.00
128.00	8.09	5.59	0.00
130.00	8.09	5.59	0.00
132.00	8.09	5.59	0.00
134.00	8.09	5.59	0.00
136.00	8.09	5.59	0.00
138.00	8.09	5.59	0.00
140.00	8.09	5.59	0.00
142.00	8.09	5.59	0.00
144.00	8.09	5.59	0.00
146.00	8.09	5.59	0.00
148.00	8.09	5.59	0.00
150.00	8.09	5.59	0.00
152.00	8.09	5.59	0.00
154.00	8.09	5.59	0.00
156.00	8.09	5.59	0.00
158.00	8.09	5.59	0.00
160.00	8.09	5.59	0.00
162.00	8.09	5.59	0.00
164.00	8.09	5.59	0.00
166.00	8.09	5.59	0.00
168.00	8.09	5.59	0.00
170.00	8.09	5.59	0.00
172.00	8.09	5.59	0.00
174.00	8.09	5.59	0.00
176.00	8.09	5.59	0.00
178.00	8.09	5.59	0.00
180.00	8.09	5.59	0.00

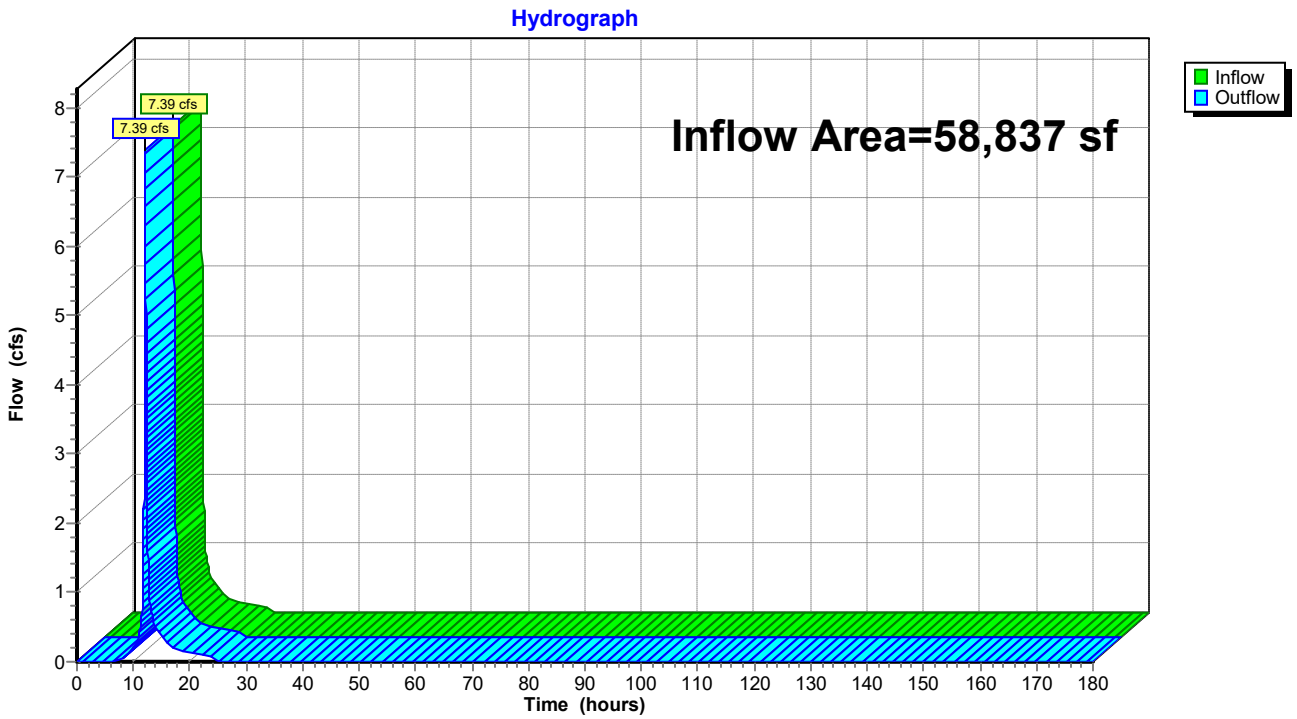
Summary for Reach DP-M:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 58,837 sf, 0.00% Impervious, Inflow Depth = 5.12" for 100-Year event
Inflow = 7.39 cfs @ 12.12 hrs, Volume= 25,118 cf
Outflow = 7.39 cfs @ 12.12 hrs, Volume= 25,118 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-M:



Hydrograph for Reach DP-M:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.03		0.03	112.00	0.00		0.00
10.00	0.18		0.18	114.00	0.00		0.00
12.00	**3.80**		**3.80**	116.00	0.00		0.00
14.00	**0.50**		**0.50**	118.00	0.00		0.00
16.00	0.27		0.27	120.00	0.00		0.00
18.00	0.16		0.16	122.00	0.00		0.00
20.00	0.13		0.13	124.00	0.00		0.00
22.00	0.11		0.11	126.00	0.00		0.00
24.00	0.09		0.09	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

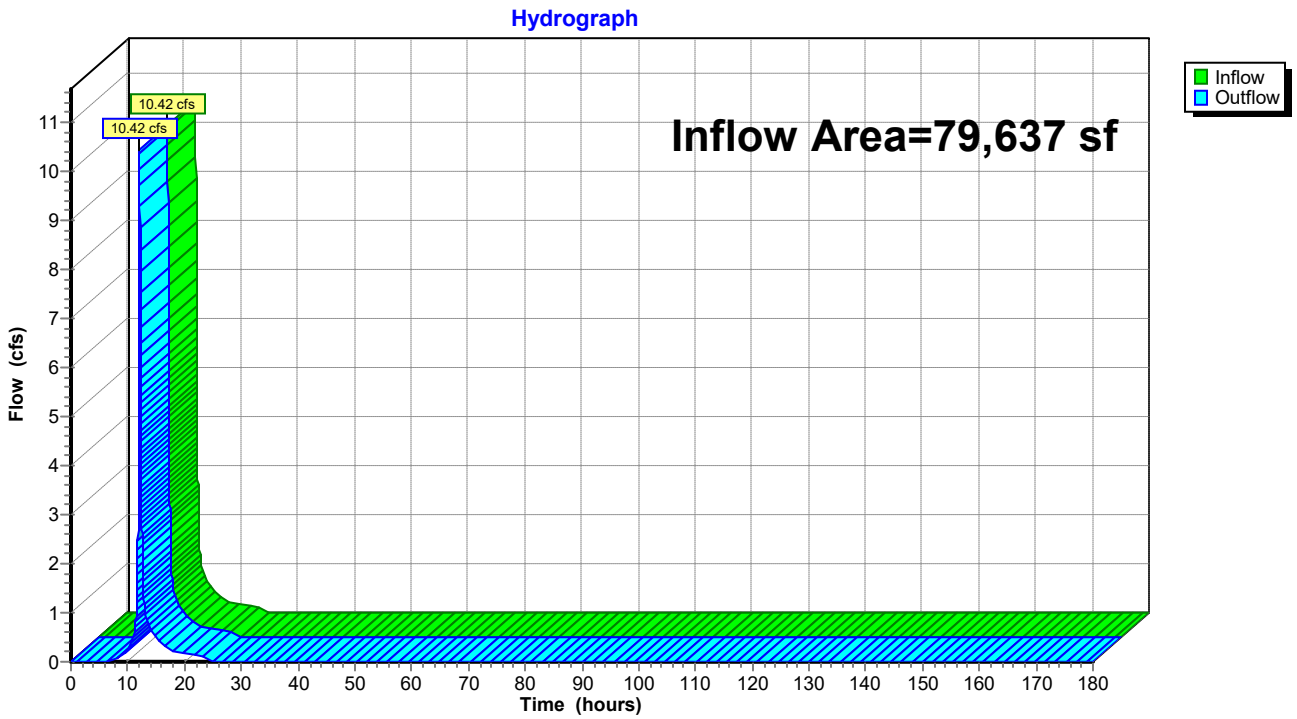
Summary for Reach DP-MW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79,637 sf, 0.00% Impervious, Inflow Depth = 5.12" for 100-Year event
Inflow = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf
Outflow = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 2L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-MW:



Hydrograph for Reach DP-MW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.05		0.05	112.00	0.00		0.00
10.00	0.25		0.25	114.00	0.00		0.00
12.00	**5.65**		**5.65**	116.00	0.00		0.00
14.00	**0.67**		**0.67**	118.00	0.00		0.00
16.00	0.36		0.36	120.00	0.00		0.00
18.00	0.22		0.22	122.00	0.00		0.00
20.00	0.18		0.18	124.00	0.00		0.00
22.00	0.15		0.15	126.00	0.00		0.00
24.00	0.12		0.12	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

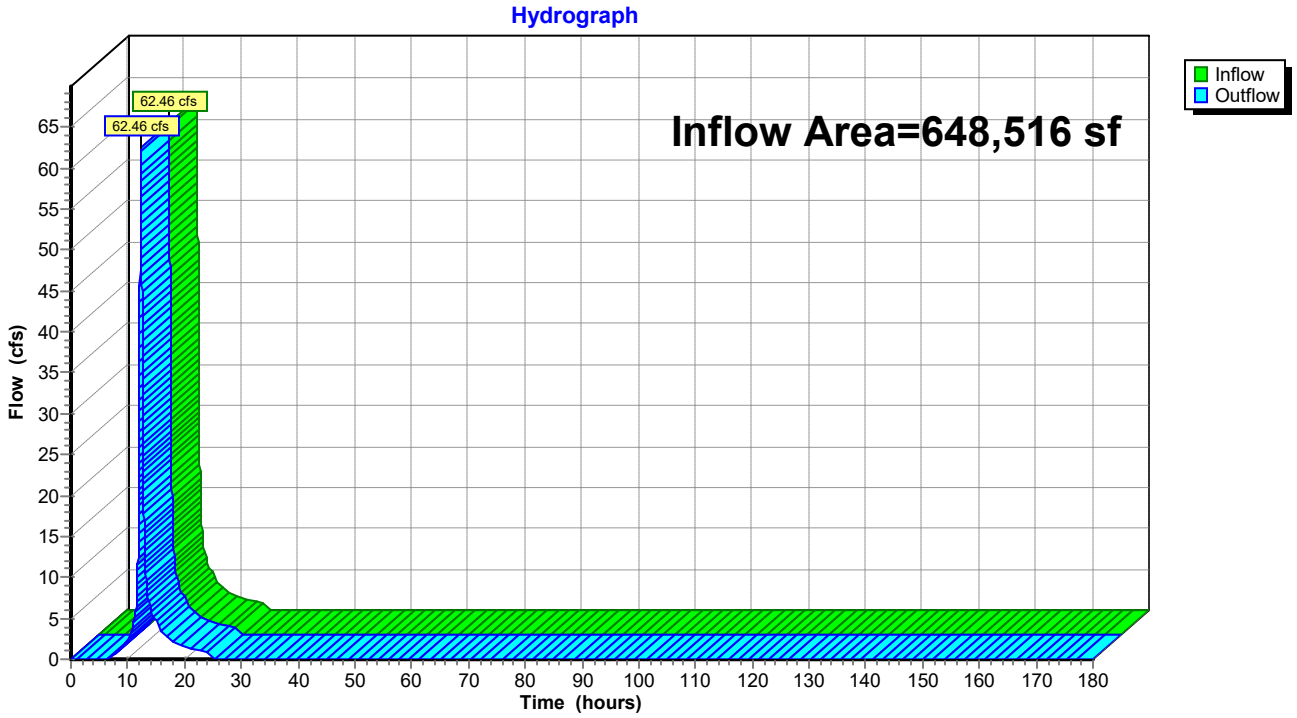
Summary for Reach DP-N: Culvert towards Wades Stream

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 648,516 sf, 1.35% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 62.46 cfs @ 12.31 hrs, Volume= 302,196 cf
Outflow = 62.46 cfs @ 12.31 hrs, Volume= 302,196 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-N: Culvert towards Wades Stream



Hydrograph for Reach DP-N: Culvert towards Wades Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.02		0.02	110.00	0.00		0.00
8.00	0.60		0.60	112.00	0.00		0.00
10.00	2.36		2.36	114.00	0.00		0.00
12.00	**23.94**		**23.94**	116.00	0.00		0.00
14.00	**6.28**		**6.28**	118.00	0.00		0.00
16.00	3.33		3.33	120.00	0.00		0.00
18.00	1.99		1.99	122.00	0.00		0.00
20.00	1.52		1.52	124.00	0.00		0.00
22.00	1.26		1.26	126.00	0.00		0.00
24.00	1.01		1.01	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

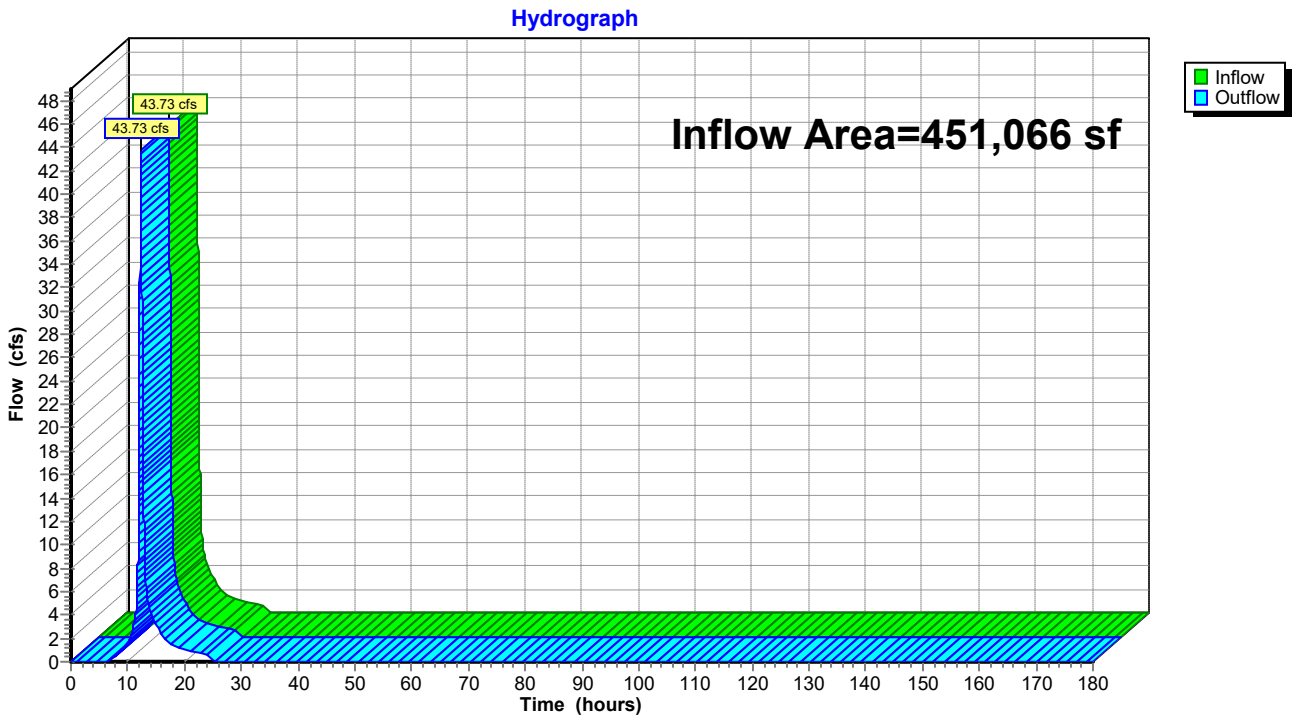
Summary for Reach DP-NE:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 451,066 sf, 0.00% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 43.73 cfs @ 12.29 hrs, Volume= 210,188 cf
Outflow = 43.73 cfs @ 12.29 hrs, Volume= 210,188 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-NE:



Hydrograph for Reach DP-NE:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.01		0.01	110.00	0.00		0.00
8.00	0.42		0.42	112.00	0.00		0.00
10.00	1.65		1.65	114.00	0.00		0.00
12.00	**16.93**		**16.93**	116.00	0.00		0.00
14.00	**4.35**		**4.35**	118.00	0.00		0.00
16.00	2.31		2.31	120.00	0.00		0.00
18.00	1.38		1.38	122.00	0.00		0.00
20.00	1.06		1.06	124.00	0.00		0.00
22.00	0.87		0.87	126.00	0.00		0.00
24.00	0.70		0.70	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

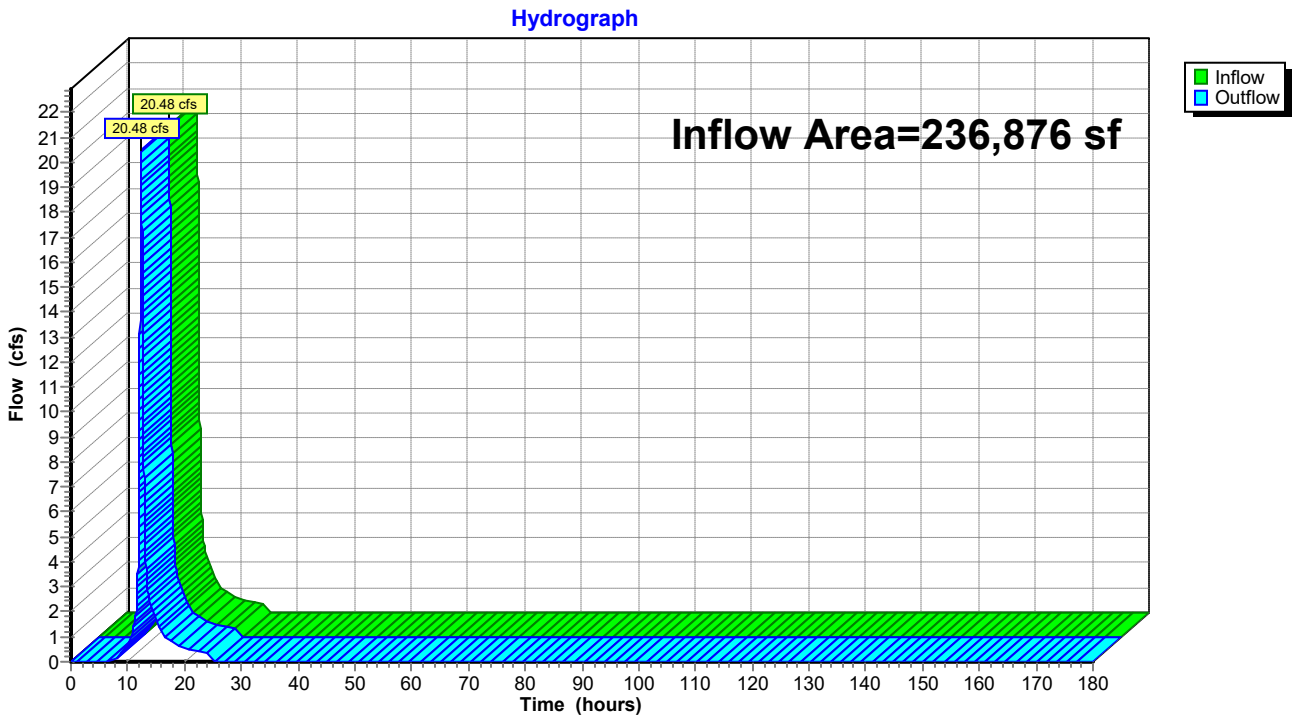
Summary for Reach DP-NW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 236,876 sf, 0.55% Impervious, Inflow Depth = 5.36" for 100-Year event
Inflow = 20.48 cfs @ 12.34 hrs, Volume= 105,745 cf
Outflow = 20.48 cfs @ 12.34 hrs, Volume= 105,745 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 1L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-NW:



Hydrograph for Reach DP-NW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.16		0.16	112.00	0.00		0.00
10.00	0.73		0.73	114.00	0.00		0.00
12.00	**7.03**		**7.03**	116.00	0.00		0.00
14.00	**2.30**		**2.30**	118.00	0.00		0.00
16.00	1.22		1.22	120.00	0.00		0.00
18.00	0.73		0.73	122.00	0.00		0.00
20.00	0.55		0.55	124.00	0.00		0.00
22.00	0.45		0.45	126.00	0.00		0.00
24.00	0.36		0.36	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Reach DP-SE: Culvert

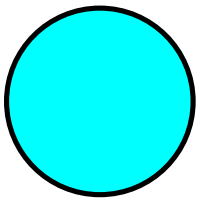
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 135% of Manning's capacity
[76] Warning: Detained 2,137 cf (Pond w/culvert advised)

Inflow Area = 155,768 sf, 8.03% Impervious, Inflow Depth = 5.83" for 100-Year event
Inflow = 20.78 cfs @ 12.14 hrs, Volume= 75,642 cf
Outflow = 16.40 cfs @ 12.07 hrs, Volume= 75,642 cf, Atten= 21%, Lag= 0.0 min
Routed to Link 4L : Lag

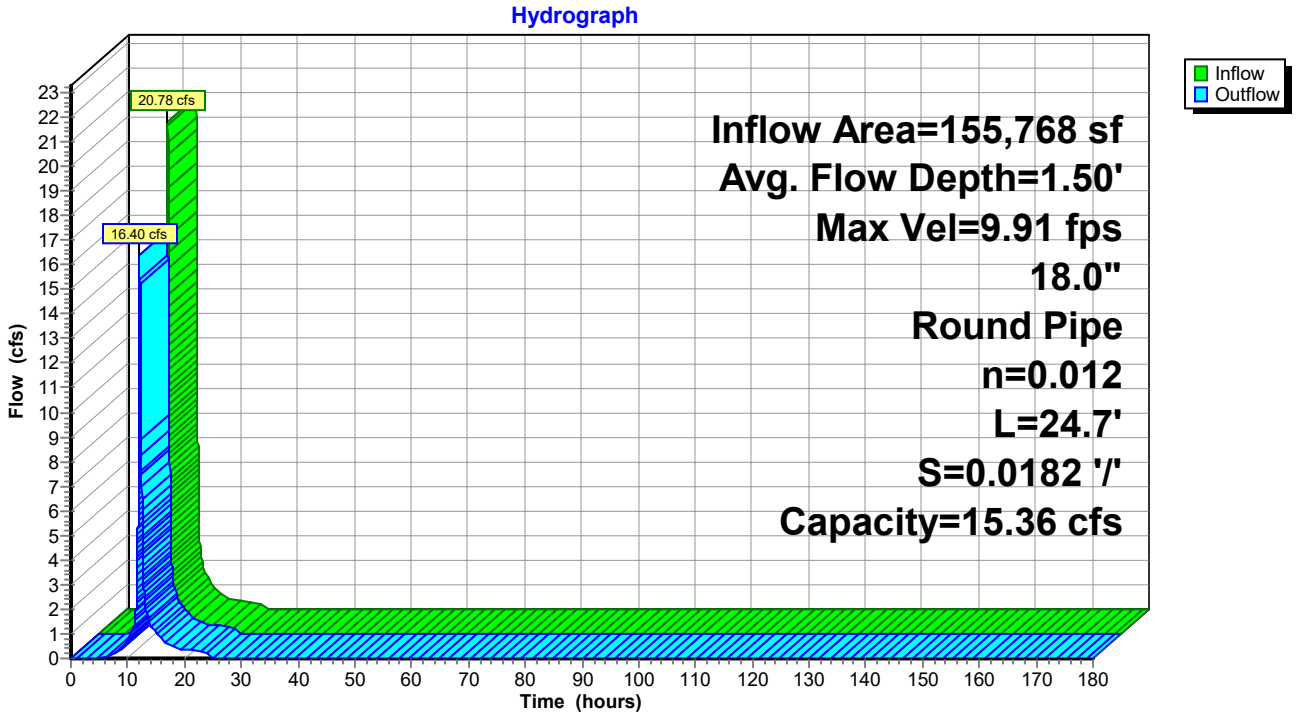
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.91 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.07 fps, Avg. Travel Time= 0.1 min

Peak Storage= 44 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.36 cfs

18.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 24.7' Slope= 0.0182 '/'
Inlet Invert= 1,620.00', Outlet Invert= 1,619.55'



Reach DP-SE: Culvert



Hydrograph for Reach DP-SE: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,620.00	0.00
5.00	0.00	0	1,620.00	0.00
10.00	**0.70**	**4**	**1,620.22**	**0.70**
15.00	**1.06**	**5**	**1,620.27**	**1.06**
20.00	0.36	2	1,620.16	0.36
25.00	0.00	0	1,620.00	0.00
30.00	0.00	0	1,620.00	0.00
35.00	0.00	0	1,620.00	0.00
40.00	0.00	0	1,620.00	0.00
45.00	0.00	0	1,620.00	0.00
50.00	0.00	0	1,620.00	0.00
55.00	0.00	0	1,620.00	0.00
60.00	0.00	0	1,620.00	0.00
65.00	0.00	0	1,620.00	0.00
70.00	0.00	0	1,620.00	0.00
75.00	0.00	0	1,620.00	0.00
80.00	0.00	0	1,620.00	0.00
85.00	0.00	0	1,620.00	0.00
90.00	0.00	0	1,620.00	0.00
95.00	0.00	0	1,620.00	0.00
100.00	0.00	0	1,620.00	0.00
105.00	0.00	0	1,620.00	0.00
110.00	0.00	0	1,620.00	0.00
115.00	0.00	0	1,620.00	0.00
120.00	0.00	0	1,620.00	0.00
125.00	0.00	0	1,620.00	0.00
130.00	0.00	0	1,620.00	0.00
135.00	0.00	0	1,620.00	0.00
140.00	0.00	0	1,620.00	0.00
145.00	0.00	0	1,620.00	0.00
150.00	0.00	0	1,620.00	0.00
155.00	0.00	0	1,620.00	0.00
160.00	0.00	0	1,620.00	0.00
165.00	0.00	0	1,620.00	0.00
170.00	0.00	0	1,620.00	0.00
175.00	0.00	0	1,620.00	0.00
180.00	0.00	0	1,620.00	0.00

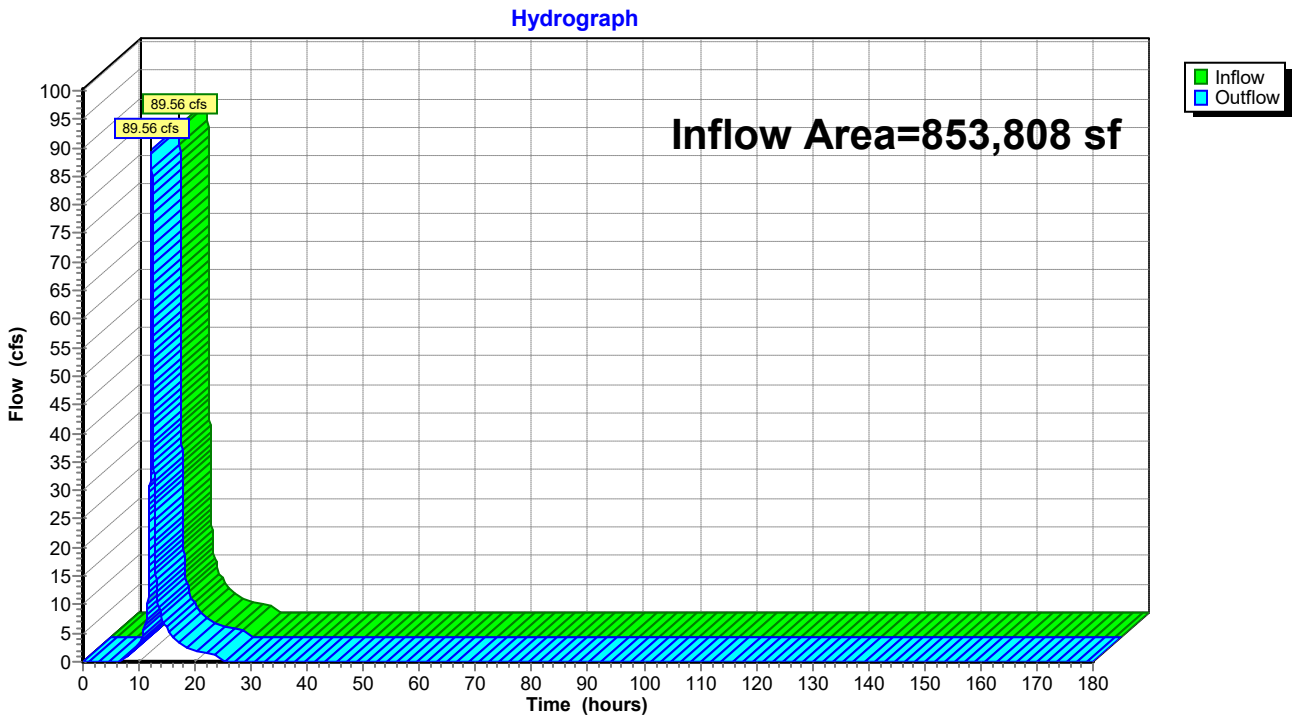
Summary for Reach DP-SW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 853,808 sf, 0.04% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 89.56 cfs @ 12.24 hrs, Volume= 397,858 cf
Outflow = 89.56 cfs @ 12.24 hrs, Volume= 397,858 cf, Atten= 0%, Lag= 0.0 min
Routed to Link DP-S : Watts Stream

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach DP-SW:



Hydrograph for Reach DP-SW:

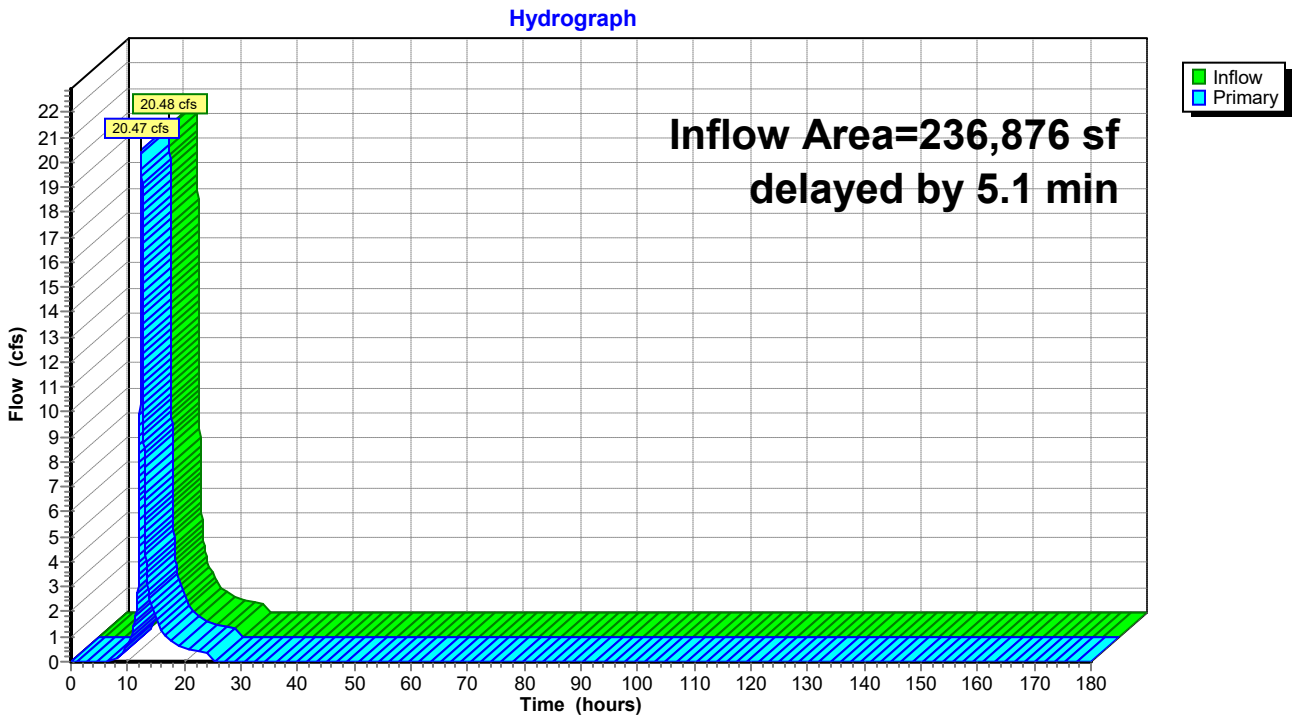
Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.03		0.03	110.00	0.00		0.00
8.00	0.83		0.83	112.00	0.00		0.00
10.00	3.22		3.22	114.00	0.00		0.00
12.00	**37.71**		**37.71**	116.00	0.00		0.00
14.00	**8.04**		**8.04**	118.00	0.00		0.00
16.00	4.28		4.28	120.00	0.00		0.00
18.00	2.57		2.57	122.00	0.00		0.00
20.00	1.99		1.99	124.00	0.00		0.00
22.00	1.64		1.64	126.00	0.00		0.00
24.00	1.31		1.31	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Link 1L: Lag

Inflow Area = 236,876 sf, 0.55% Impervious, Inflow Depth = 5.36" for 100-Year event
Inflow = 20.48 cfs @ 12.34 hrs, Volume= 105,745 cf
Primary = 20.47 cfs @ 12.43 hrs, Volume= 105,745 cf, Atten= 0%, Lag= 5.3 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 5.1 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 1L: Lag



Hydrograph for Link 1L: Lag

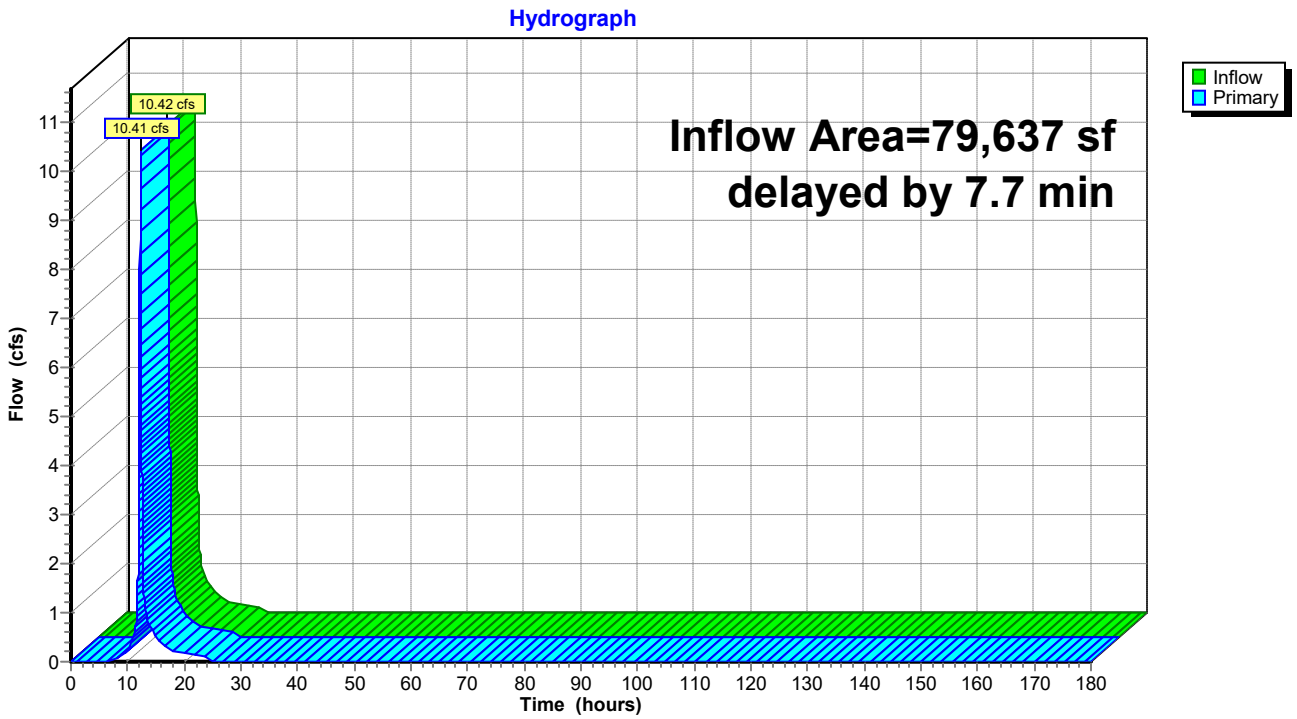
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.16	0.00	0.14	112.00	0.00	0.00	0.00
10.00	0.73	0.00	0.70	114.00	0.00	0.00	0.00
12.00	**7.03**	0.00	**5.20**	116.00	0.00	0.00	0.00
14.00	**2.30**	0.00	**2.38**	118.00	0.00	0.00	0.00
16.00	1.22	0.00	1.26	120.00	0.00	0.00	0.00
18.00	0.73	0.00	0.74	122.00	0.00	0.00	0.00
20.00	0.55	0.00	0.56	124.00	0.00	0.00	0.00
22.00	0.45	0.00	0.46	126.00	0.00	0.00	0.00
24.00	0.36	0.00	0.37	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 2L: Lag

Inflow Area = 79,637 sf, 0.00% Impervious, Inflow Depth = 5.12" for 100-Year event
Inflow = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf
Primary = 10.41 cfs @ 12.23 hrs, Volume= 33,998 cf, Atten= 0%, Lag= 7.7 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 7.7 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 2L: Lag



Hydrograph for Link 2L: Lag

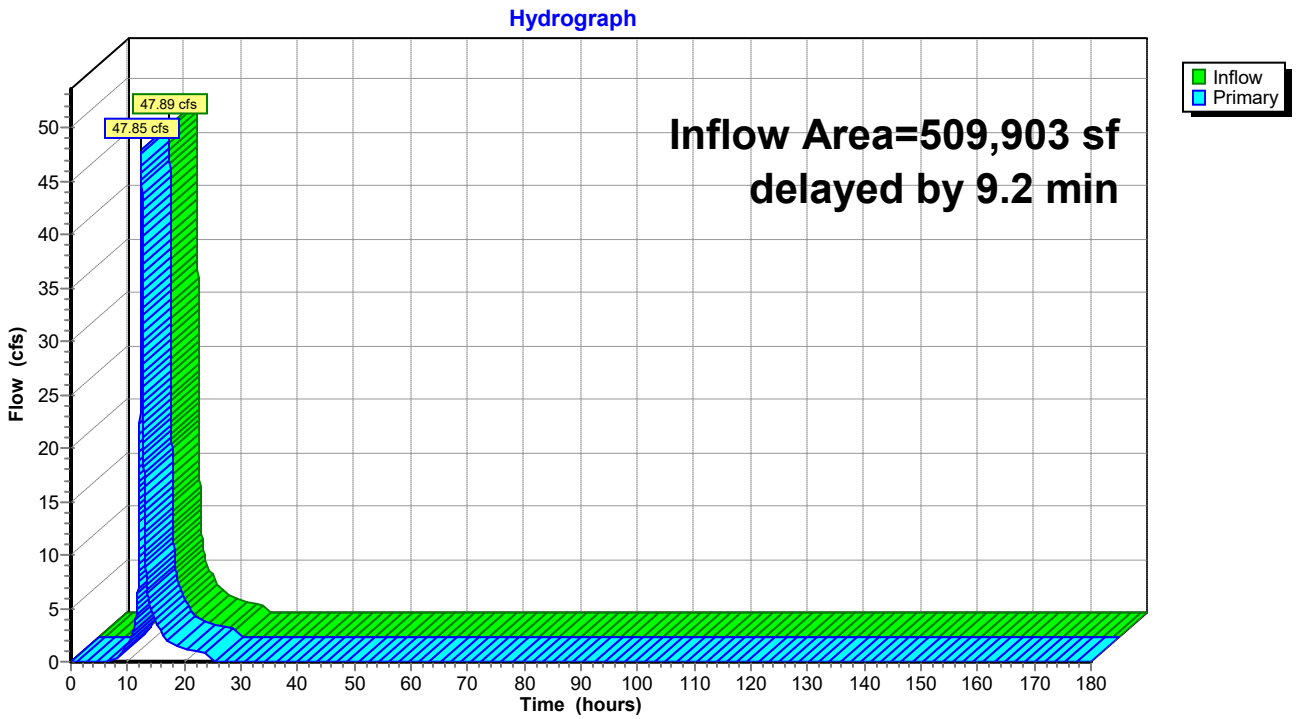
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.05	0.00	0.04	112.00	0.00	0.00	0.00
10.00	0.25	0.00	0.23	114.00	0.00	0.00	0.00
12.00	**5.65**	0.00	**3.32**	116.00	0.00	0.00	0.00
14.00	**0.67**	0.00	**0.71**	118.00	0.00	0.00	0.00
16.00	0.36	0.00	0.38	120.00	0.00	0.00	0.00
18.00	0.22	0.00	0.23	122.00	0.00	0.00	0.00
20.00	0.18	0.00	0.18	124.00	0.00	0.00	0.00
22.00	0.15	0.00	0.15	126.00	0.00	0.00	0.00
24.00	0.12	0.00	0.12	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 3L: Lag

Inflow Area = 509,903 sf, 0.00% Impervious, Inflow Depth = 5.54" for 100-Year event
Inflow = 47.89 cfs @ 12.28 hrs, Volume= 235,306 cf
Primary = 47.85 cfs @ 12.43 hrs, Volume= 235,306 cf, Atten= 0%, Lag= 9.2 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.2 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 3L: Lag



Hydrograph for Link 3L: Lag

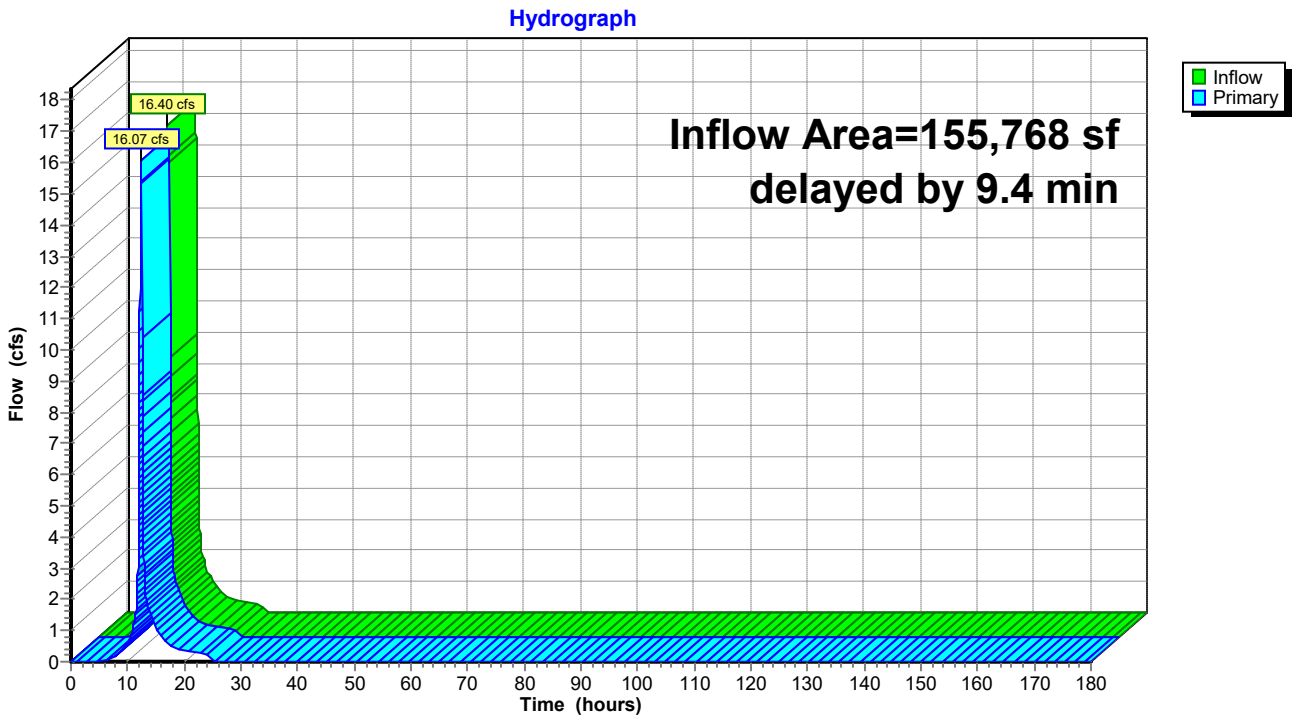
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.01	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.46	0.00	0.41	112.00	0.00	0.00	0.00
10.00	1.84	0.00	1.69	114.00	0.00	0.00	0.00
12.00	**20.73**	0.00	**11.95**	116.00	0.00	0.00	0.00
14.00	**4.85**	0.00	**5.17**	118.00	0.00	0.00	0.00
16.00	2.58	0.00	2.73	120.00	0.00	0.00	0.00
18.00	1.54	0.00	1.61	122.00	0.00	0.00	0.00
20.00	1.19	0.00	1.21	124.00	0.00	0.00	0.00
22.00	0.98	0.00	1.00	126.00	0.00	0.00	0.00
24.00	0.79	0.00	0.80	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link 4L: Lag

Inflow Area = 155,768 sf, 8.03% Impervious, Inflow Depth = 5.83" for 100-Year event
Inflow = 16.40 cfs @ 12.07 hrs, Volume= 75,642 cf
Primary = 16.07 cfs @ 12.23 hrs, Volume= 75,642 cf, Atten= 2%, Lag= 9.5 min
Routed to Link DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.4 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link 4L: Lag



Hydrograph for Link 4L: Lag

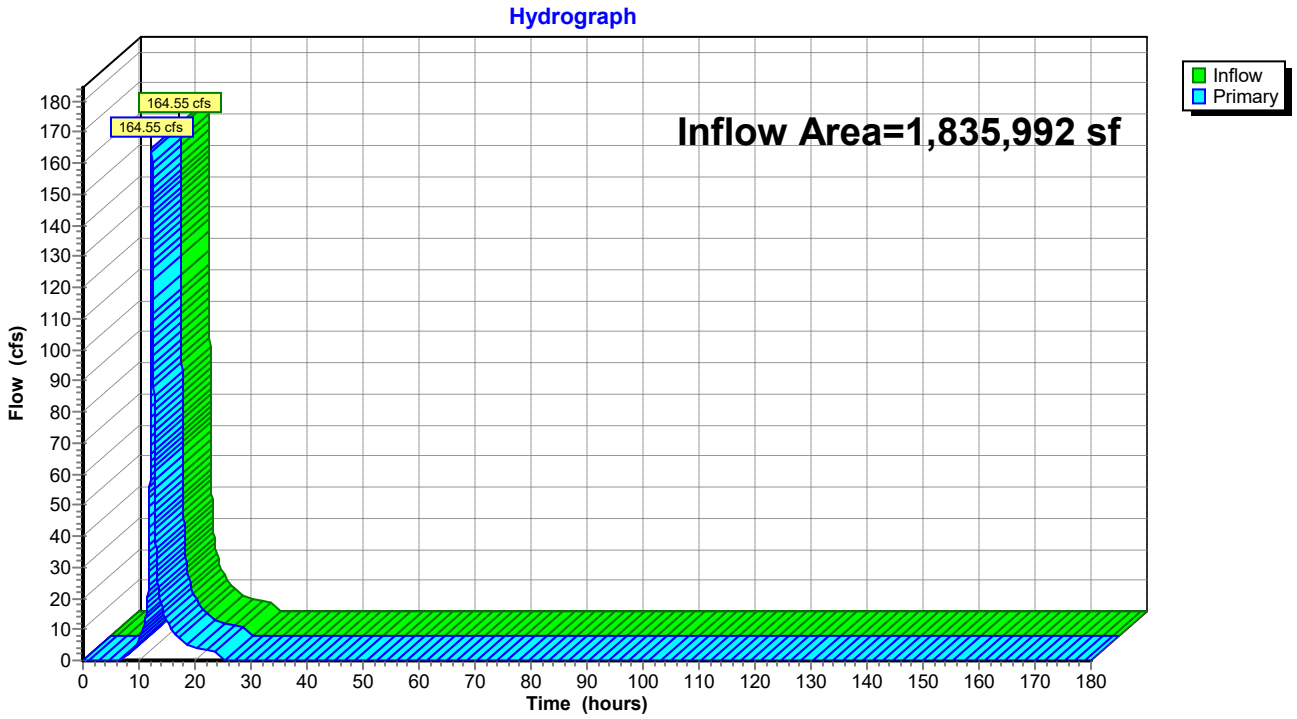
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.03	0.00	0.03	110.00	0.00	0.00	0.00
8.00	0.21	0.00	0.19	112.00	0.00	0.00	0.00
10.00	0.70	0.00	0.65	114.00	0.00	0.00	0.00
12.00	**10.39**	0.00	**6.11**	116.00	0.00	0.00	0.00
14.00	**1.42**	0.00	**1.52**	118.00	0.00	0.00	0.00
16.00	0.76	0.00	0.81	120.00	0.00	0.00	0.00
18.00	0.46	0.00	0.48	122.00	0.00	0.00	0.00
20.00	0.36	0.00	0.37	124.00	0.00	0.00	0.00
22.00	0.30	0.00	0.31	126.00	0.00	0.00	0.00
24.00	0.24	0.00	0.24	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link DP-S: Watts Stream

Inflow Area = 1,835,992 sf, 0.77% Impervious, Inflow Depth = 5.55" for 100-Year event
Inflow = 164.55 cfs @ 12.30 hrs, Volume= 848,549 cf
Primary = 164.55 cfs @ 12.30 hrs, Volume= 848,549 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

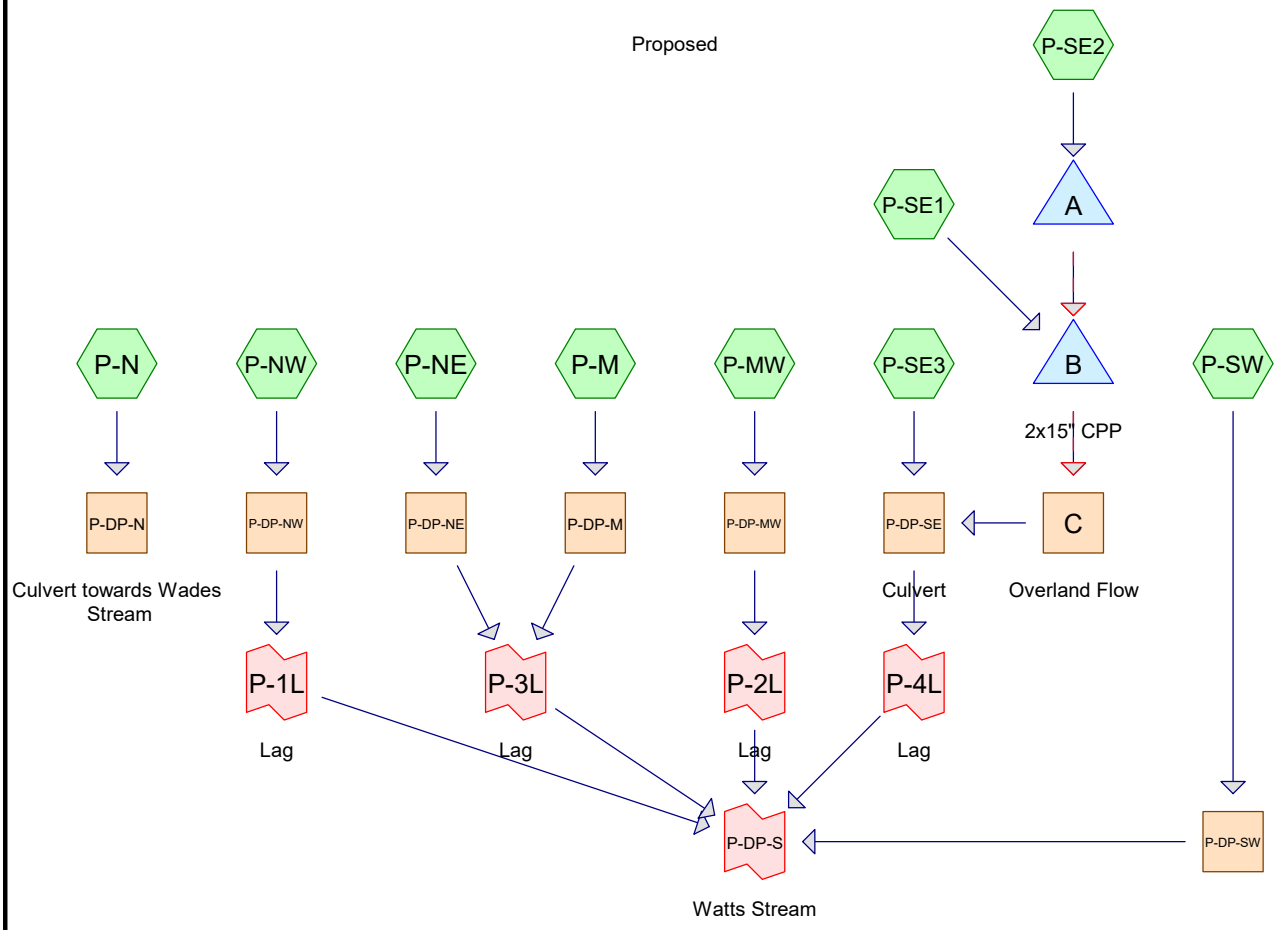
Link DP-S: Watts Stream

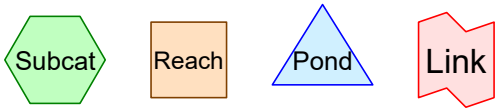


Hydrograph for Link DP-S: Watts Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.06	0.00	0.06	110.00	0.00	0.00	0.00
8.00	1.61	0.00	1.61	112.00	0.00	0.00	0.00
10.00	6.48	0.00	6.48	114.00	0.00	0.00	0.00
12.00	**64.30**	0.00	**64.30**	116.00	0.00	0.00	0.00
14.00	**17.82**	0.00	**17.82**	118.00	0.00	0.00	0.00
16.00	9.46	0.00	9.46	120.00	0.00	0.00	0.00
18.00	5.63	0.00	5.63	122.00	0.00	0.00	0.00
20.00	4.30	0.00	4.30	124.00	0.00	0.00	0.00
22.00	3.55	0.00	3.55	126.00	0.00	0.00	0.00
24.00	2.84	0.00	2.84	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Proposed Conditions HydroCAD





Routing Diagram for HydroCAD Ridge Rd
Prepared by WSP USA, Printed 7/7/2026
HydroCAD® 10.20-6a s/n 01336 © 2024 HydroCAD Software Solutions LLC

Summary for Subcatchment P-M:

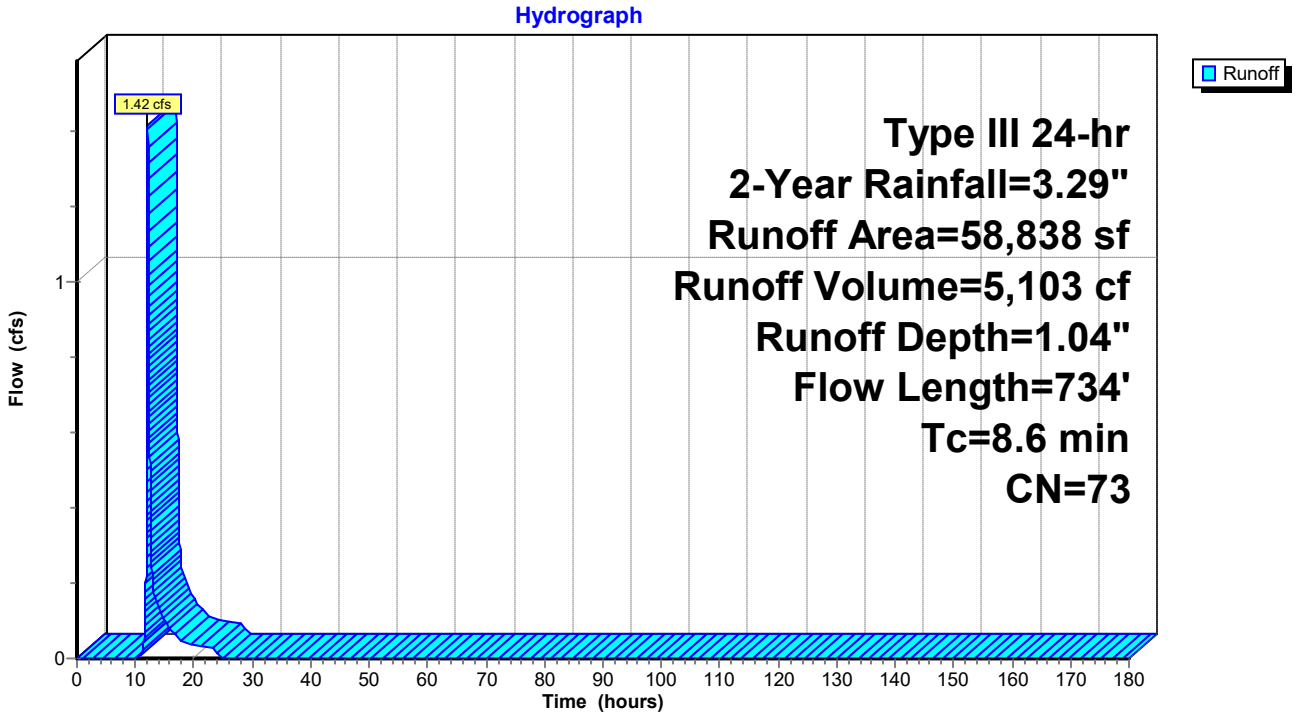
Runoff = 1.42 cfs @ 12.13 hrs, Volume= 5,103 cf, Depth= 1.04"
Routed to Reach P-DP-M :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
17,766	74	Pasture/grassland/range, Good, HSG C
2,573	96	Gravel surface, HSG C
57	98	Unconnected pavement, HSG C
38,442	71	Meadow, non-grazed, HSG C
58,838	73	Weighted Average
58,781		99.90% Pervious Area
57		0.10% Impervious Area
57		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	95	0.0625	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
2.3	214	0.0510	1.58		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.4	42	0.0587	1.70		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.0	18	0.0597	13.93	17.10	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.3	64	0.1973	3.11		**Shallow Concentrated Flow, EF** Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0846	11.68	105.15	**Trap/Vee/Rect Channel Flow, FG** Bot.W=6.00' D=1.00' Z= 3.0 '/' Top.W=12.00' n= 0.030 Earth, grassed & winding
8.6	734	Total			

Subcatchment P-M:



Hydrograph for Subcatchment P-M:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.00
12.00	1.64	0.18	**0.59**
14.00	2.67	0.66	**0.13**
16.00	2.91	0.81	0.07
18.00	3.05	0.89	0.05
20.00	3.15	0.95	0.04
22.00	3.23	1.00	0.03
24.00	**3.29**	**1.04**	0.03
26.00	3.29	1.04	0.00
28.00	3.29	1.04	0.00
30.00	3.29	1.04	0.00
32.00	3.29	1.04	0.00
34.00	3.29	1.04	0.00
36.00	3.29	1.04	0.00
38.00	3.29	1.04	0.00
40.00	3.29	1.04	0.00
42.00	3.29	1.04	0.00
44.00	3.29	1.04	0.00
46.00	3.29	1.04	0.00
48.00	3.29	1.04	0.00
50.00	3.29	1.04	0.00
52.00	3.29	1.04	0.00
54.00	3.29	1.04	0.00
56.00	3.29	1.04	0.00
58.00	3.29	1.04	0.00
60.00	3.29	1.04	0.00
62.00	3.29	1.04	0.00
64.00	3.29	1.04	0.00
66.00	3.29	1.04	0.00
68.00	3.29	1.04	0.00
70.00	3.29	1.04	0.00
72.00	3.29	1.04	0.00
74.00	3.29	1.04	0.00
76.00	3.29	1.04	0.00
78.00	3.29	1.04	0.00
80.00	3.29	1.04	0.00
82.00	3.29	1.04	0.00
84.00	3.29	1.04	0.00
86.00	3.29	1.04	0.00
88.00	3.29	1.04	0.00
90.00	3.29	1.04	0.00
92.00	3.29	1.04	0.00
94.00	3.29	1.04	0.00
96.00	3.29	1.04	0.00
98.00	3.29	1.04	0.00
100.00	3.29	1.04	0.00
102.00	3.29	1.04	0.00
104.00	3.29	1.04	0.00
106.00	3.29	1.04	0.00
108.00	3.29	1.04	0.00
110.00	3.29	1.04	0.00
112.00	3.29	1.04	0.00
114.00	3.29	1.04	0.00
116.00	3.29	1.04	0.00
118.00	3.29	1.04	0.00
120.00	3.29	1.04	0.00
122.00	3.29	1.04	0.00
124.00	3.29	1.04	0.00
126.00	3.29	1.04	0.00
128.00	3.29	1.04	0.00
130.00	3.29	1.04	0.00
132.00	3.29	1.04	0.00
134.00	3.29	1.04	0.00
136.00	3.29	1.04	0.00
138.00	3.29	1.04	0.00
140.00	3.29	1.04	0.00
142.00	3.29	1.04	0.00
144.00	3.29	1.04	0.00
146.00	3.29	1.04	0.00
148.00	3.29	1.04	0.00
150.00	3.29	1.04	0.00
152.00	3.29	1.04	0.00
154.00	3.29	1.04	0.00
156.00	3.29	1.04	0.00
158.00	3.29	1.04	0.00
160.00	3.29	1.04	0.00
162.00	3.29	1.04	0.00
164.00	3.29	1.04	0.00
166.00	3.29	1.04	0.00
168.00	3.29	1.04	0.00
170.00	3.29	1.04	0.00
172.00	3.29	1.04	0.00
174.00	3.29	1.04	0.00
176.00	3.29	1.04	0.00
178.00	3.29	1.04	0.00
180.00	3.29	1.04	0.00

Summary for Subcatchment P-MW:

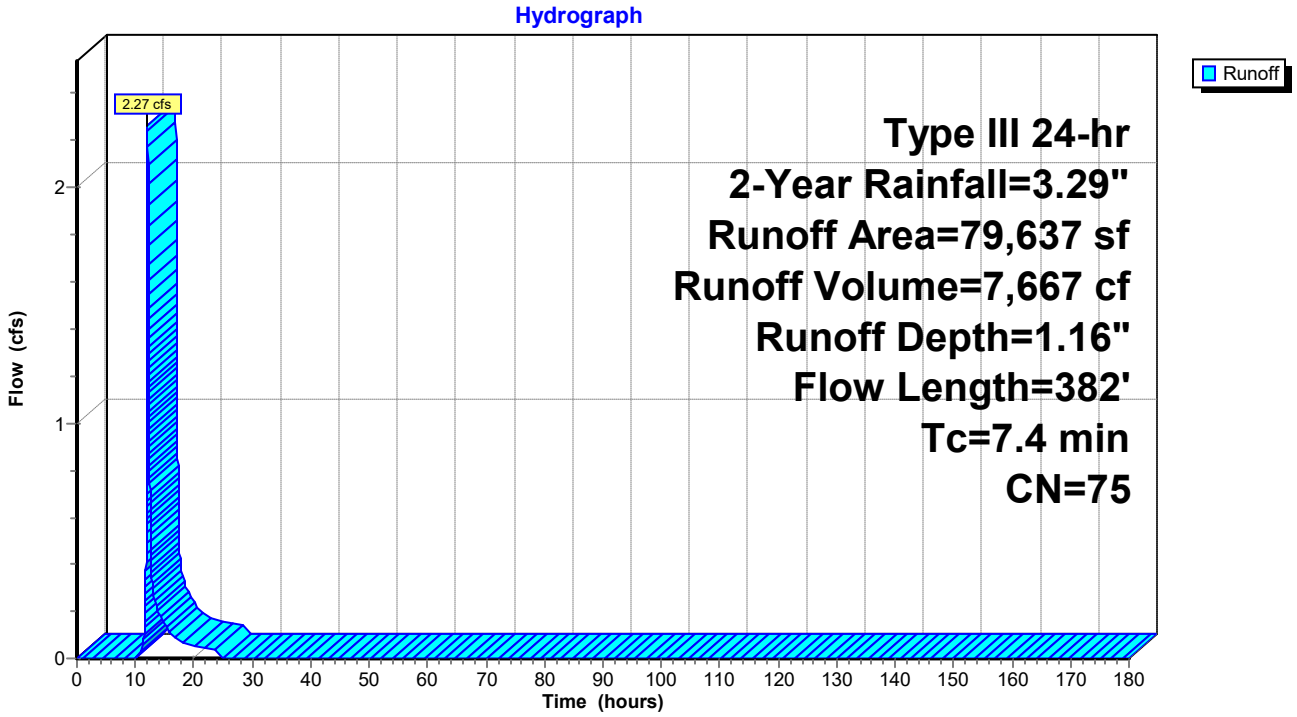
Runoff = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf, Depth= 1.16"
Routed to Reach P-DP-MW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
43,126	74	Pasture/grassland/range, Good, HSG C
15,129	80	Pasture/grassland/range, Good, HSG D
971	96	Gravel surface, HSG C
109	98	Unconnected pavement, HSG C
78	98	Unconnected pavement, HSG D
20,224	71	Meadow, non-grazed, HSG C
79,637	75	Weighted Average
79,450		99.77% Pervious Area
187		0.23% Impervious Area
187		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0583	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.1	39	0.0793	6.42	7.88	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.030 Earth, grassed & winding
0.1	97	0.1563	14.13	226.11	**Trap/Vee/Rect Channel Flow, EF** Bot.W=6.00' D=1.00' Z= 10.0 '/' Top.W=26.00' n= 0.030 Earth, grassed & winding
7.4	382	Total			

Subcatchment P-MW:



Hydrograph for Subcatchment P-MW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.00
12.00	1.64	0.22	**1.06**
14.00	2.67	0.75	**0.19**
16.00	2.91	0.91	0.11
18.00	3.05	1.00	0.07
20.00	3.15	1.06	0.05
22.00	3.23	1.11	0.04
24.00	**3.29**	**1.16**	0.04
26.00	3.29	1.16	0.00
28.00	3.29	1.16	0.00
30.00	3.29	1.16	0.00
32.00	3.29	1.16	0.00
34.00	3.29	1.16	0.00
36.00	3.29	1.16	0.00
38.00	3.29	1.16	0.00
40.00	3.29	1.16	0.00
42.00	3.29	1.16	0.00
44.00	3.29	1.16	0.00
46.00	3.29	1.16	0.00
48.00	3.29	1.16	0.00
50.00	3.29	1.16	0.00
52.00	3.29	1.16	0.00
54.00	3.29	1.16	0.00
56.00	3.29	1.16	0.00
58.00	3.29	1.16	0.00
60.00	3.29	1.16	0.00
62.00	3.29	1.16	0.00
64.00	3.29	1.16	0.00
66.00	3.29	1.16	0.00
68.00	3.29	1.16	0.00
70.00	3.29	1.16	0.00
72.00	3.29	1.16	0.00
74.00	3.29	1.16	0.00
76.00	3.29	1.16	0.00
78.00	3.29	1.16	0.00
80.00	3.29	1.16	0.00
82.00	3.29	1.16	0.00
84.00	3.29	1.16	0.00
86.00	3.29	1.16	0.00
88.00	3.29	1.16	0.00
90.00	3.29	1.16	0.00
92.00	3.29	1.16	0.00
94.00	3.29	1.16	0.00
96.00	3.29	1.16	0.00
98.00	3.29	1.16	0.00
100.00	3.29	1.16	0.00
102.00	3.29	1.16	0.00
104.00	3.29	1.16	0.00
106.00	3.29	1.16	0.00
108.00	3.29	1.16	0.00
110.00	3.29	1.16	0.00
112.00	3.29	1.16	0.00
114.00	3.29	1.16	0.00
116.00	3.29	1.16	0.00
118.00	3.29	1.16	0.00
120.00	3.29	1.16	0.00
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126.00	3.29	1.16	0.00
128.00	3.29	1.16	0.00
130.00	3.29	1.16	0.00
132.00	3.29	1.16	0.00
134.00	3.29	1.16	0.00
136.00	3.29	1.16	0.00
138.00	3.29	1.16	0.00
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144.00	3.29	1.16	0.00
146.00	3.29	1.16	0.00
148.00	3.29	1.16	0.00
150.00	3.29	1.16	0.00
152.00	3.29	1.16	0.00
154.00	3.29	1.16	0.00
156.00	3.29	1.16	0.00
158.00	3.29	1.16	0.00
160.00	3.29	1.16	0.00
162.00	3.29	1.16	0.00
164.00	3.29	1.16	0.00
166.00	3.29	1.16	0.00
168.00	3.29	1.16	0.00
170.00	3.29	1.16	0.00
172.00	3.29	1.16	0.00
174.00	3.29	1.16	0.00
176.00	3.29	1.16	0.00
178.00	3.29	1.16	0.00
180.00	3.29	1.16	0.00

Summary for Subcatchment P-N:

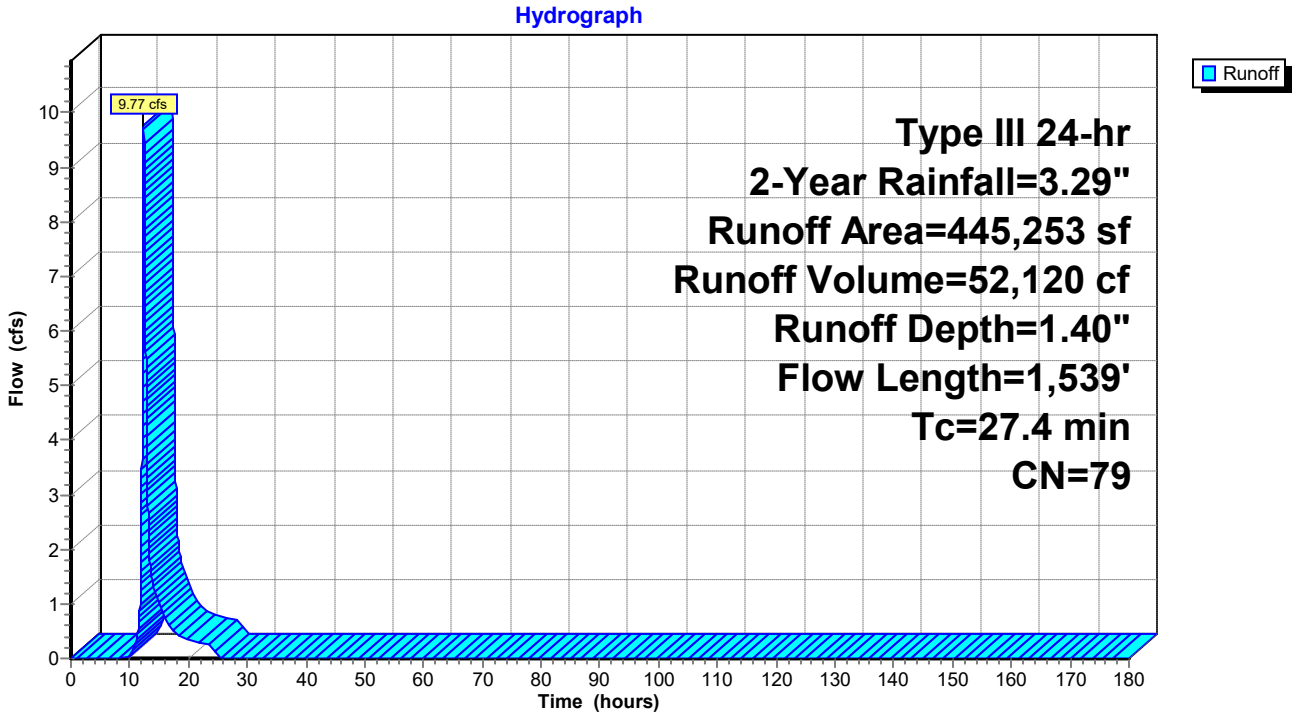
Runoff = 9.77 cfs @ 12.39 hrs, Volume= 52,120 cf, Depth= 1.40"
Routed to Reach P-DP-N : Culvert towards Wades Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
105,630	80	Pasture/grassland/range, Good, HSG D
77,593	72	Woods/grass comb., Good, HSG C
236,123	79	Woods/grass comb., Good, HSG D
4,456	96	Gravel surface, HSG C
8,912	96	Gravel surface, HSG D
9,012	98	Unconnected pavement, HSG D
3,527	78	Meadow, non-grazed, HSG D
445,253	79	Weighted Average
436,241		97.98% Pervious Area
9,012		2.02% Impervious Area
9,012		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	101	0.0383	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
5.8	464	0.0710	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
1.7	209	0.0846	2.04		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
2.6	288	0.0702	1.85		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.8	477	0.0765	9.75	48.76	**Trap/Vee/Rect Channel Flow, EF** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
27.4	1,539	Total			

Subcatchment P-N:



Hydrograph for Subcatchment P-N:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.03
12.00	1.64	0.33	**2.50**
14.00	2.67	0.95	**1.37**
16.00	2.91	1.13	0.75
18.00	3.05	1.23	0.45
20.00	3.15	1.30	0.34
22.00	3.23	1.36	0.29
24.00	**3.29**	**1.40**	0.23
26.00	3.29	1.40	0.00
28.00	3.29	1.40	0.00
30.00	3.29	1.40	0.00
32.00	3.29	1.40	0.00
34.00	3.29	1.40	0.00
36.00	3.29	1.40	0.00
38.00	3.29	1.40	0.00
40.00	3.29	1.40	0.00
42.00	3.29	1.40	0.00
44.00	3.29	1.40	0.00
46.00	3.29	1.40	0.00
48.00	3.29	1.40	0.00
50.00	3.29	1.40	0.00
52.00	3.29	1.40	0.00
54.00	3.29	1.40	0.00
56.00	3.29	1.40	0.00
58.00	3.29	1.40	0.00
60.00	3.29	1.40	0.00
62.00	3.29	1.40	0.00
64.00	3.29	1.40	0.00
66.00	3.29	1.40	0.00
68.00	3.29	1.40	0.00
70.00	3.29	1.40	0.00
72.00	3.29	1.40	0.00
74.00	3.29	1.40	0.00
76.00	3.29	1.40	0.00
78.00	3.29	1.40	0.00
80.00	3.29	1.40	0.00
82.00	3.29	1.40	0.00
84.00	3.29	1.40	0.00
86.00	3.29	1.40	0.00
88.00	3.29	1.40	0.00
90.00	3.29	1.40	0.00
92.00	3.29	1.40	0.00
94.00	3.29	1.40	0.00
96.00	3.29	1.40	0.00
98.00	3.29	1.40	0.00
100.00	3.29	1.40	0.00
102.00	3.29	1.40	0.00
104.00	3.29	1.40	0.00
106.00	3.29	1.40	0.00
108.00	3.29	1.40	0.00
110.00	3.29	1.40	0.00
112.00	3.29	1.40	0.00
114.00	3.29	1.40	0.00
116.00	3.29	1.40	0.00
118.00	3.29	1.40	0.00
120.00	3.29	1.40	0.00
122.00	3.29	1.40	0.00
124.00	3.29	1.40	0.00
126.00	3.29	1.40	0.00
128.00	3.29	1.40	0.00
130.00	3.29	1.40	0.00
132.00	3.29	1.40	0.00
134.00	3.29	1.40	0.00
136.00	3.29	1.40	0.00
138.00	3.29	1.40	0.00
140.00	3.29	1.40	0.00
142.00	3.29	1.40	0.00
144.00	3.29	1.40	0.00
146.00	3.29	1.40	0.00
148.00	3.29	1.40	0.00
150.00	3.29	1.40	0.00
152.00	3.29	1.40	0.00
154.00	3.29	1.40	0.00
156.00	3.29	1.40	0.00
158.00	3.29	1.40	0.00
160.00	3.29	1.40	0.00
162.00	3.29	1.40	0.00
164.00	3.29	1.40	0.00
166.00	3.29	1.40	0.00
168.00	3.29	1.40	0.00
170.00	3.29	1.40	0.00
172.00	3.29	1.40	0.00
174.00	3.29	1.40	0.00
176.00	3.29	1.40	0.00
178.00	3.29	1.40	0.00
180.00	3.29	1.40	0.00

Summary for Subcatchment P-NE:

[47] Hint: Peak is 1006% of capacity of segment #5

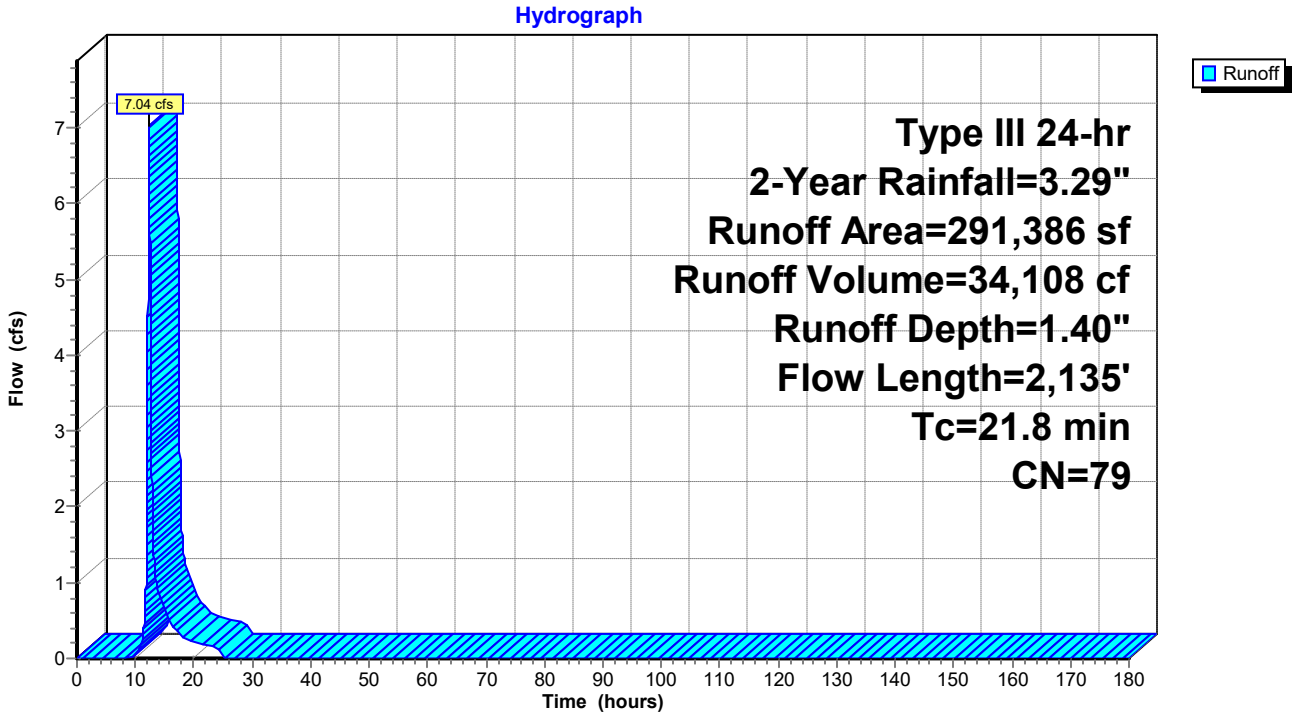
Runoff = 7.04 cfs @ 12.32 hrs, Volume= 34,108 cf, Depth= 1.40"
Routed to Reach P-DP-NE :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
61,428	74	Pasture/grassland/range, Good, HSG C
190,451	80	Pasture/grassland/range, Good, HSG D
4,653	96	Gravel surface, HSG C
6,269	96	Gravel surface, HSG D
830	98	Unconnected pavement, HSG D
187	98	Unconnected pavement, HSG C
1,558	98	Unconnected pavement, HSG D
13,397	71	Meadow, non-grazed, HSG C
12,613	78	Meadow, non-grazed, HSG D
291,386	79	Weighted Average
288,811		99.12% Pervious Area
2,575		0.88% Impervious Area
2,575		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0675	0.31		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
7.1	705	0.0566	1.67		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
3.1	295	0.0513	1.59		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0393	1.39		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.5	17	0.0001	0.57	0.70	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
3.4	335	0.0540	1.63		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
0.7	543	0.1506	13.10	170.34	**Trap/Vee/Rect Channel Flow, GH** Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.030 Earth, grassed & winding
21.8	2,135	Total			

Subcatchment P-NE:



Hydrograph for Subcatchment P-NE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.03
12.00	1.64	0.33	**2.15**
14.00	2.67	0.95	**0.87**
16.00	2.91	1.13	0.48
18.00	3.05	1.23	0.29
20.00	3.15	1.30	0.22
22.00	3.23	1.36	0.19
24.00	**3.29**	**1.40**	0.15
26.00	3.29	1.40	0.00
28.00	3.29	1.40	0.00
30.00	3.29	1.40	0.00
32.00	3.29	1.40	0.00
34.00	3.29	1.40	0.00
36.00	3.29	1.40	0.00
38.00	3.29	1.40	0.00
40.00	3.29	1.40	0.00
42.00	3.29	1.40	0.00
44.00	3.29	1.40	0.00
46.00	3.29	1.40	0.00
48.00	3.29	1.40	0.00
50.00	3.29	1.40	0.00
52.00	3.29	1.40	0.00
54.00	3.29	1.40	0.00
56.00	3.29	1.40	0.00
58.00	3.29	1.40	0.00
60.00	3.29	1.40	0.00
62.00	3.29	1.40	0.00
64.00	3.29	1.40	0.00
66.00	3.29	1.40	0.00
68.00	3.29	1.40	0.00
70.00	3.29	1.40	0.00
72.00	3.29	1.40	0.00
74.00	3.29	1.40	0.00
76.00	3.29	1.40	0.00
78.00	3.29	1.40	0.00
80.00	3.29	1.40	0.00
82.00	3.29	1.40	0.00
84.00	3.29	1.40	0.00
86.00	3.29	1.40	0.00
88.00	3.29	1.40	0.00
90.00	3.29	1.40	0.00
92.00	3.29	1.40	0.00
94.00	3.29	1.40	0.00
96.00	3.29	1.40	0.00
98.00	3.29	1.40	0.00
100.00	3.29	1.40	0.00
102.00	3.29	1.40	0.00
104.00	3.29	1.40	0.00
106.00	3.29	1.40	0.00
108.00	3.29	1.40	0.00
110.00	3.29	1.40	0.00
112.00	3.29	1.40	0.00
114.00	3.29	1.40	0.00
116.00	3.29	1.40	0.00
118.00	3.29	1.40	0.00
120.00	3.29	1.40	0.00
122.00	3.29	1.40	0.00
124.00	3.29	1.40	0.00
126.00	3.29	1.40	0.00
128.00	3.29	1.40	0.00
130.00	3.29	1.40	0.00
132.00	3.29	1.40	0.00
134.00	3.29	1.40	0.00
136.00	3.29	1.40	0.00
138.00	3.29	1.40	0.00
140.00	3.29	1.40	0.00
142.00	3.29	1.40	0.00
144.00	3.29	1.40	0.00
146.00	3.29	1.40	0.00
148.00	3.29	1.40	0.00
150.00	3.29	1.40	0.00
152.00	3.29	1.40	0.00
154.00	3.29	1.40	0.00
156.00	3.29	1.40	0.00
158.00	3.29	1.40	0.00
160.00	3.29	1.40	0.00
162.00	3.29	1.40	0.00
164.00	3.29	1.40	0.00
166.00	3.29	1.40	0.00
168.00	3.29	1.40	0.00
170.00	3.29	1.40	0.00
172.00	3.29	1.40	0.00
174.00	3.29	1.40	0.00
176.00	3.29	1.40	0.00
178.00	3.29	1.40	0.00
180.00	3.29	1.40	0.00

Summary for Subcatchment P-NW:

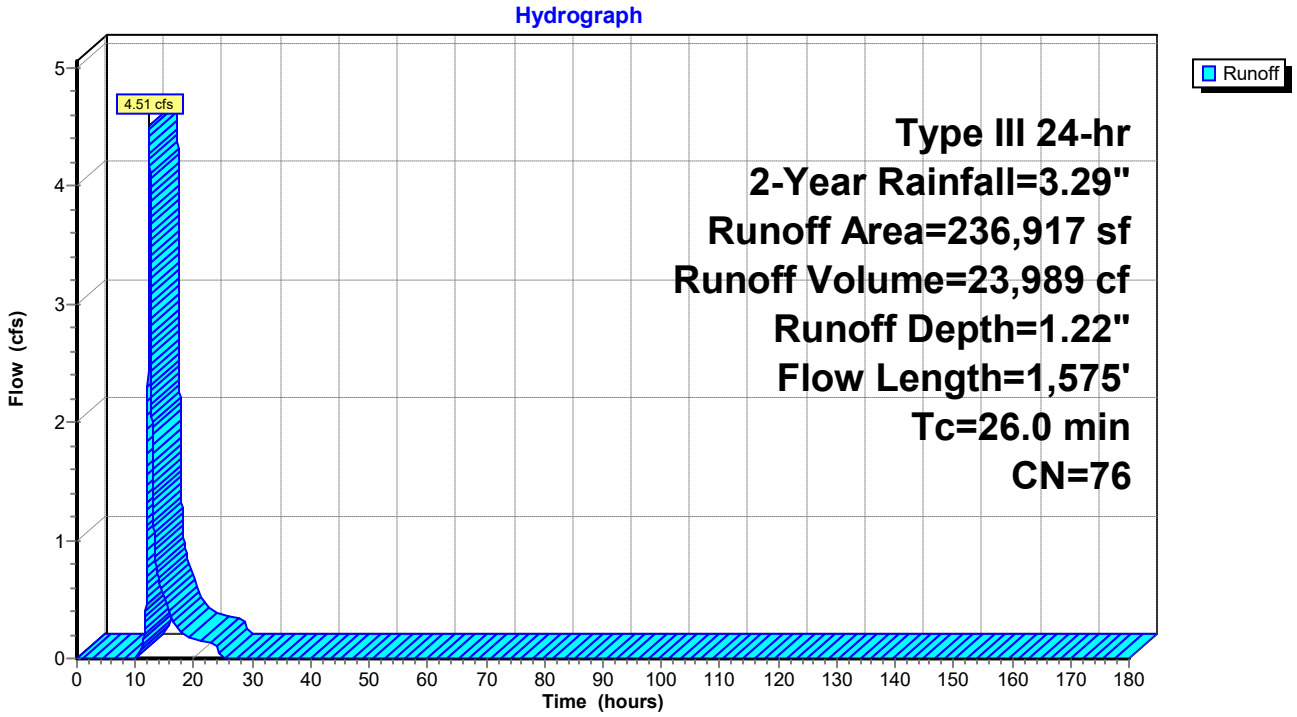
Runoff = 4.51 cfs @ 12.39 hrs, Volume= 23,989 cf, Depth= 1.22"
Routed to Reach P-DP-NW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
92,786	74	Pasture/grassland/range, Good, HSG C
45,051	80	Pasture/grassland/range, Good, HSG D
9,923	72	Woods/grass comb., Good, HSG C
58,620	79	Woods/grass comb., Good, HSG D
492	96	Gravel surface, HSG C
1,562	98	Unconnected pavement, HSG C
199	98	Unconnected pavement, HSG D
24,972	71	Meadow, non-grazed, HSG C
3,312	78	Meadow, non-grazed, HSG D
236,917	76	Weighted Average
235,156		99.26% Pervious Area
1,761		0.74% Impervious Area
1,761		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	102	0.0665	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.9	685	0.0763	1.93		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.1	75	0.0926	10.58	137.52	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=1.00' Z= 9.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.4	87	0.3254	3.99		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
1.7	174	0.1201	1.73		**Shallow Concentrated Flow, GH** Woodland Kv= 5.0 fps
2.9	202	0.0555	1.18		**Shallow Concentrated Flow, HI** Woodland Kv= 5.0 fps
0.1	104	0.1222	26.85	1,852.49	**Trap/Vee/Rect Channel Flow, IJ** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
26.0	1,575	Total			

Subcatchment P-NW:



Hydrograph for Subcatchment P-NW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.00
12.00	1.64	0.25	**1.08**
14.00	2.67	0.80	**0.66**
16.00	2.91	0.96	0.36
18.00	3.05	1.05	0.22
20.00	3.15	1.12	0.17
22.00	3.23	1.17	0.14
24.00	**3.29**	**1.22**	0.11
26.00	3.29	1.22	0.00
28.00	3.29	1.22	0.00
30.00	3.29	1.22	0.00
32.00	3.29	1.22	0.00
34.00	3.29	1.22	0.00
36.00	3.29	1.22	0.00
38.00	3.29	1.22	0.00
40.00	3.29	1.22	0.00
42.00	3.29	1.22	0.00
44.00	3.29	1.22	0.00
46.00	3.29	1.22	0.00
48.00	3.29	1.22	0.00
50.00	3.29	1.22	0.00
52.00	3.29	1.22	0.00
54.00	3.29	1.22	0.00
56.00	3.29	1.22	0.00
58.00	3.29	1.22	0.00
60.00	3.29	1.22	0.00
62.00	3.29	1.22	0.00
64.00	3.29	1.22	0.00
66.00	3.29	1.22	0.00
68.00	3.29	1.22	0.00
70.00	3.29	1.22	0.00
72.00	3.29	1.22	0.00
74.00	3.29	1.22	0.00
76.00	3.29	1.22	0.00
78.00	3.29	1.22	0.00
80.00	3.29	1.22	0.00
82.00	3.29	1.22	0.00
84.00	3.29	1.22	0.00
86.00	3.29	1.22	0.00
88.00	3.29	1.22	0.00
90.00	3.29	1.22	0.00
92.00	3.29	1.22	0.00
94.00	3.29	1.22	0.00
96.00	3.29	1.22	0.00
98.00	3.29	1.22	0.00
100.00	3.29	1.22	0.00
102.00	3.29	1.22	0.00
104.00	3.29	1.22	0.00
106.00	3.29	1.22	0.00
108.00	3.29	1.22	0.00
110.00	3.29	1.22	0.00
112.00	3.29	1.22	0.00
114.00	3.29	1.22	0.00
116.00	3.29	1.22	0.00
118.00	3.29	1.22	0.00
120.00	3.29	1.22	0.00
122.00	3.29	1.22	0.00
124.00	3.29	1.22	0.00
126.00	3.29	1.22	0.00
128.00	3.29	1.22	0.00
130.00	3.29	1.22	0.00
132.00	3.29	1.22	0.00
134.00	3.29	1.22	0.00
136.00	3.29	1.22	0.00
138.00	3.29	1.22	0.00
140.00	3.29	1.22	0.00
142.00	3.29	1.22	0.00
144.00	3.29	1.22	0.00
146.00	3.29	1.22	0.00
148.00	3.29	1.22	0.00
150.00	3.29	1.22	0.00
152.00	3.29	1.22	0.00
154.00	3.29	1.22	0.00
156.00	3.29	1.22	0.00
158.00	3.29	1.22	0.00
160.00	3.29	1.22	0.00
162.00	3.29	1.22	0.00
164.00	3.29	1.22	0.00
166.00	3.29	1.22	0.00
168.00	3.29	1.22	0.00
170.00	3.29	1.22	0.00
172.00	3.29	1.22	0.00
174.00	3.29	1.22	0.00
176.00	3.29	1.22	0.00
178.00	3.29	1.22	0.00
180.00	3.29	1.22	0.00

Summary for Subcatchment P-SE1:

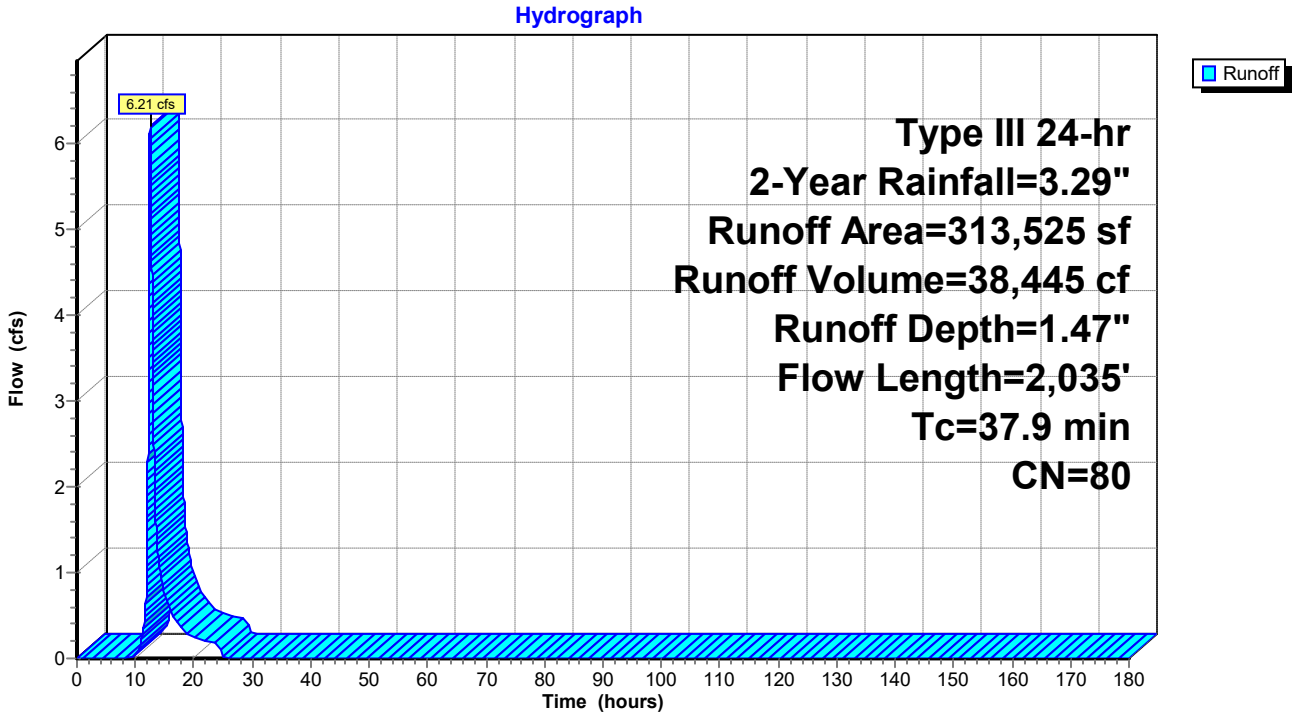
Runoff = 6.21 cfs @ 12.55 hrs, Volume= 38,445 cf, Depth= 1.47"
Routed to Pond B : 2x15" CPP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
243,357	80	Pasture/grassland/range, Good, HSG D
64,315	79	Woods/grass comb., Good, HSG D
4,257	98	Unconnected pavement, HSG D
1,596	78	Meadow, non-grazed, HSG D
313,525	80	Weighted Average
309,268		98.64% Pervious Area
4,257		1.36% Impervious Area
4,257		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0707	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
1.8	144	0.0705	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
2.2	216	0.0566	1.67		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.7	645	0.0722	1.88		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
2.8	367	0.0091	2.21	9.95	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
5.5	100	0.0606	0.30		**Sheet Flow, FG** Range n= 0.130 P2= 3.29"
0.7	82	0.0703	1.86		**Shallow Concentrated Flow, GH** Short Grass Pasture Kv= 7.0 fps
2.6	42	0.0707	0.27		**Sheet Flow, HI** Range n= 0.130 P2= 3.29"
3.8	339	0.0442	1.47		**Shallow Concentrated Flow, IJ** Short Grass Pasture Kv= 7.0 fps
37.9	2,035	Total			

Subcatchment P-SE1:



Hydrograph for Subcatchment P-SE1:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.01	0.03
12.00	1.64	0.36	**1.24**
14.00	2.67	1.01	**1.10**
16.00	2.91	1.19	0.57
18.00	3.05	1.29	0.34
20.00	3.15	1.36	0.25
22.00	3.23	1.42	0.21
24.00	**3.29**	**1.47**	0.17
26.00	3.29	1.47	0.00
28.00	3.29	1.47	0.00
30.00	3.29	1.47	0.00
32.00	3.29	1.47	0.00
34.00	3.29	1.47	0.00
36.00	3.29	1.47	0.00
38.00	3.29	1.47	0.00
40.00	3.29	1.47	0.00
42.00	3.29	1.47	0.00
44.00	3.29	1.47	0.00
46.00	3.29	1.47	0.00
48.00	3.29	1.47	0.00
50.00	3.29	1.47	0.00
52.00	3.29	1.47	0.00
54.00	3.29	1.47	0.00
56.00	3.29	1.47	0.00
58.00	3.29	1.47	0.00
60.00	3.29	1.47	0.00
62.00	3.29	1.47	0.00
64.00	3.29	1.47	0.00
66.00	3.29	1.47	0.00
68.00	3.29	1.47	0.00
70.00	3.29	1.47	0.00
72.00	3.29	1.47	0.00
74.00	3.29	1.47	0.00
76.00	3.29	1.47	0.00
78.00	3.29	1.47	0.00
80.00	3.29	1.47	0.00
82.00	3.29	1.47	0.00
84.00	3.29	1.47	0.00
86.00	3.29	1.47	0.00
88.00	3.29	1.47	0.00
90.00	3.29	1.47	0.00
92.00	3.29	1.47	0.00
94.00	3.29	1.47	0.00
96.00	3.29	1.47	0.00
98.00	3.29	1.47	0.00
100.00	3.29	1.47	0.00
102.00	3.29	1.47	0.00
104.00	3.29	1.47	0.00
106.00	3.29	1.47	0.00
108.00	3.29	1.47	0.00
110.00	3.29	1.47	0.00
112.00	3.29	1.47	0.00
114.00	3.29	1.47	0.00
116.00	3.29	1.47	0.00
118.00	3.29	1.47	0.00
120.00	3.29	1.47	0.00
122.00	3.29	1.47	0.00
124.00	3.29	1.47	0.00
126.00	3.29	1.47	0.00
128.00	3.29	1.47	0.00
130.00	3.29	1.47	0.00
132.00	3.29	1.47	0.00
134.00	3.29	1.47	0.00
136.00	3.29	1.47	0.00
138.00	3.29	1.47	0.00
140.00	3.29	1.47	0.00
142.00	3.29	1.47	0.00
144.00	3.29	1.47	0.00
146.00	3.29	1.47	0.00
148.00	3.29	1.47	0.00
150.00	3.29	1.47	0.00
152.00	3.29	1.47	0.00
154.00	3.29	1.47	0.00
156.00	3.29	1.47	0.00
158.00	3.29	1.47	0.00
160.00	3.29	1.47	0.00
162.00	3.29	1.47	0.00
164.00	3.29	1.47	0.00
166.00	3.29	1.47	0.00
168.00	3.29	1.47	0.00
170.00	3.29	1.47	0.00
172.00	3.29	1.47	0.00
174.00	3.29	1.47	0.00
176.00	3.29	1.47	0.00
178.00	3.29	1.47	0.00
180.00	3.29	1.47	0.00

Summary for Subcatchment P-SE2:

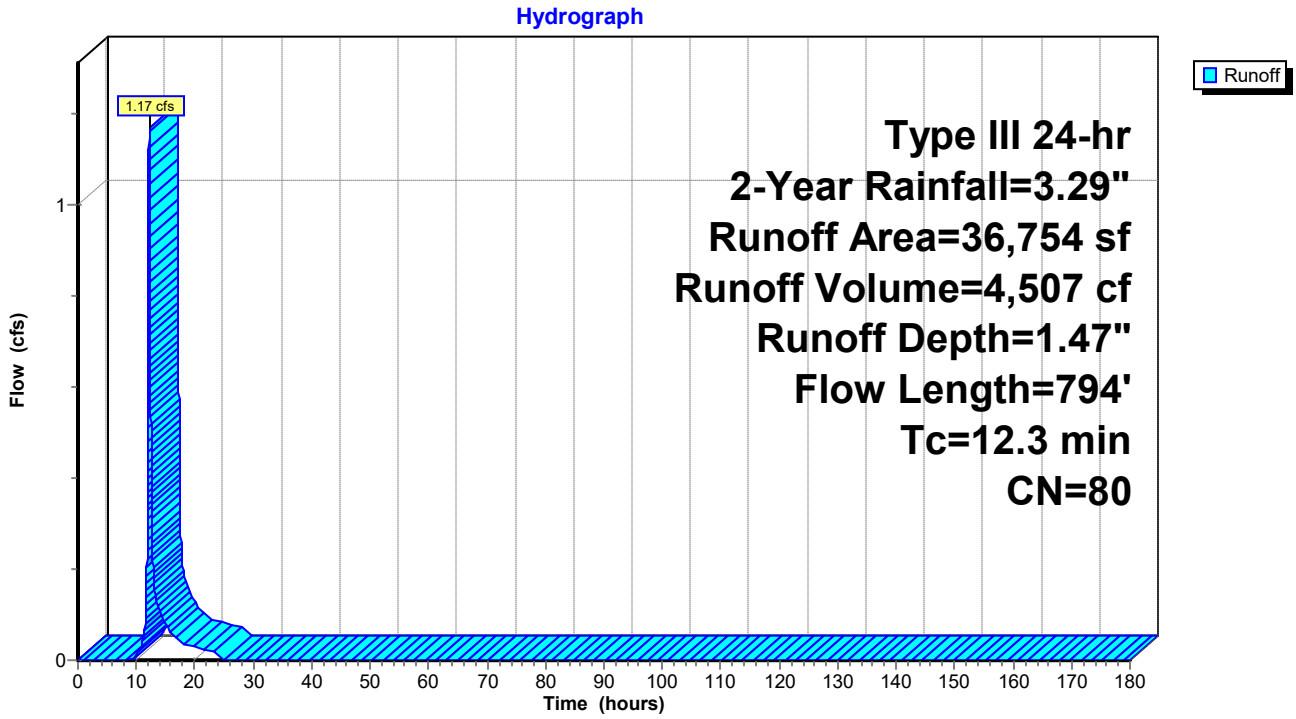
Runoff = 1.17 cfs @ 12.18 hrs, Volume= 4,507 cf, Depth= 1.47"
Routed to Pond A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
34,270	80	Pasture/grassland/range, Good, HSG D
160	98	Unconnected pavement, HSG D
2,324	78	Meadow, non-grazed, HSG D
36,754	80	Weighted Average
36,594		99.56% Pervious Area
160		0.44% Impervious Area
160		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0552	0.29		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.6	694	0.0626	1.75		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
12.3	794	Total			

Subcatchment P-SE2:



Hydrograph for Subcatchment P-SE2:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.01	0.01
12.00	1.64	0.36	**0.48**
14.00	2.67	1.01	**0.11**
16.00	2.91	1.19	0.06
18.00	3.05	1.29	0.04
20.00	3.15	1.36	0.03
22.00	3.23	1.42	0.02
24.00	**3.29**	**1.47**	0.02
26.00	3.29	1.47	0.00
28.00	3.29	1.47	0.00
30.00	3.29	1.47	0.00
32.00	3.29	1.47	0.00
34.00	3.29	1.47	0.00
36.00	3.29	1.47	0.00
38.00	3.29	1.47	0.00
40.00	3.29	1.47	0.00
42.00	3.29	1.47	0.00
44.00	3.29	1.47	0.00
46.00	3.29	1.47	0.00
48.00	3.29	1.47	0.00
50.00	3.29	1.47	0.00
52.00	3.29	1.47	0.00
54.00	3.29	1.47	0.00
56.00	3.29	1.47	0.00
58.00	3.29	1.47	0.00
60.00	3.29	1.47	0.00
62.00	3.29	1.47	0.00
64.00	3.29	1.47	0.00
66.00	3.29	1.47	0.00
68.00	3.29	1.47	0.00
70.00	3.29	1.47	0.00
72.00	3.29	1.47	0.00
74.00	3.29	1.47	0.00
76.00	3.29	1.47	0.00
78.00	3.29	1.47	0.00
80.00	3.29	1.47	0.00
82.00	3.29	1.47	0.00
84.00	3.29	1.47	0.00
86.00	3.29	1.47	0.00
88.00	3.29	1.47	0.00
90.00	3.29	1.47	0.00
92.00	3.29	1.47	0.00
94.00	3.29	1.47	0.00
96.00	3.29	1.47	0.00
98.00	3.29	1.47	0.00
100.00	3.29	1.47	0.00
102.00	3.29	1.47	0.00
104.00	3.29	1.47	0.00
106.00	3.29	1.47	0.00
108.00	3.29	1.47	0.00
110.00	3.29	1.47	0.00
112.00	3.29	1.47	0.00
114.00	3.29	1.47	0.00
116.00	3.29	1.47	0.00
118.00	3.29	1.47	0.00
120.00	3.29	1.47	0.00
122.00	3.29	1.47	0.00
124.00	3.29	1.47	0.00
126.00	3.29	1.47	0.00
128.00	3.29	1.47	0.00
130.00	3.29	1.47	0.00
132.00	3.29	1.47	0.00
134.00	3.29	1.47	0.00
136.00	3.29	1.47	0.00
138.00	3.29	1.47	0.00
140.00	3.29	1.47	0.00
142.00	3.29	1.47	0.00
144.00	3.29	1.47	0.00
146.00	3.29	1.47	0.00
148.00	3.29	1.47	0.00
150.00	3.29	1.47	0.00
152.00	3.29	1.47	0.00
154.00	3.29	1.47	0.00
156.00	3.29	1.47	0.00
158.00	3.29	1.47	0.00
160.00	3.29	1.47	0.00
162.00	3.29	1.47	0.00
164.00	3.29	1.47	0.00
166.00	3.29	1.47	0.00
168.00	3.29	1.47	0.00
170.00	3.29	1.47	0.00
172.00	3.29	1.47	0.00
174.00	3.29	1.47	0.00
176.00	3.29	1.47	0.00
178.00	3.29	1.47	0.00
180.00	3.29	1.47	0.00

Summary for Subcatchment P-SE3:

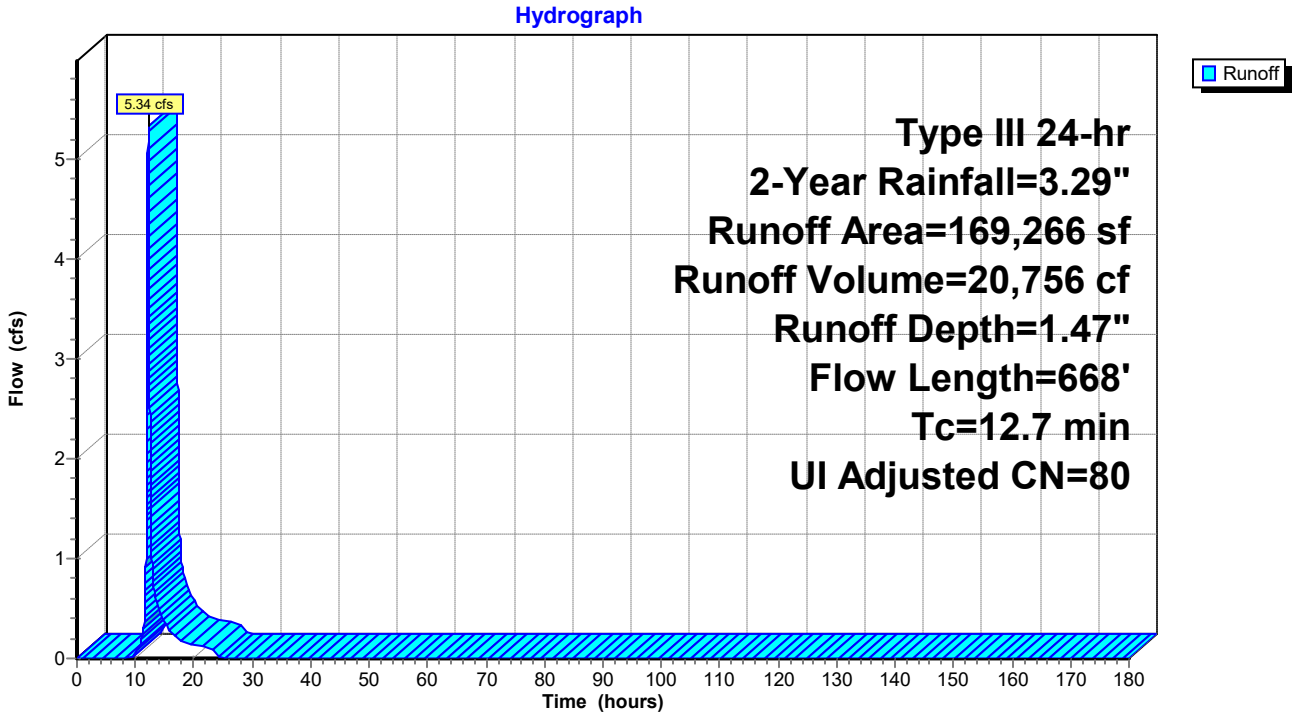
Runoff = 5.34 cfs @ 12.18 hrs, Volume= 20,756 cf, Depth= 1.47"
Routed to Reach P-DP-SE : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Adj	Description
106,589	80		Pasture/grassland/range, Good, HSG D
4,800	79		Woods/grass comb., Good, HSG D
4,840	96		Gravel surface, HSG D
9,465	98		Unconnected pavement, HSG D
43,572	78		Meadow, non-grazed, HSG D
169,266	81	80	Weighted Average, UI Adjusted
159,801			94.41% Pervious Area
9,465			5.59% Impervious Area
9,465			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0425	0.26		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.1	521	0.0416	1.43		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.2	47	0.0304	4.04	18.19	**Trap/Vee/Rect Channel Flow, CD** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
12.7	668	Total			

Subcatchment P-SE3:



Hydrograph for Subcatchment P-SE3:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.01	0.04
12.00	1.64	0.36	**2.17**
14.00	2.67	1.01	**0.49**
16.00	2.91	1.19	0.27
18.00	3.05	1.29	0.17
20.00	3.15	1.36	0.13
22.00	3.23	1.42	0.11
24.00	**3.29**	**1.47**	0.09
26.00	3.29	1.47	0.00
28.00	3.29	1.47	0.00
30.00	3.29	1.47	0.00
32.00	3.29	1.47	0.00
34.00	3.29	1.47	0.00
36.00	3.29	1.47	0.00
38.00	3.29	1.47	0.00
40.00	3.29	1.47	0.00
42.00	3.29	1.47	0.00
44.00	3.29	1.47	0.00
46.00	3.29	1.47	0.00
48.00	3.29	1.47	0.00
50.00	3.29	1.47	0.00
52.00	3.29	1.47	0.00
54.00	3.29	1.47	0.00
56.00	3.29	1.47	0.00
58.00	3.29	1.47	0.00
60.00	3.29	1.47	0.00
62.00	3.29	1.47	0.00
64.00	3.29	1.47	0.00
66.00	3.29	1.47	0.00
68.00	3.29	1.47	0.00
70.00	3.29	1.47	0.00
72.00	3.29	1.47	0.00
74.00	3.29	1.47	0.00
76.00	3.29	1.47	0.00
78.00	3.29	1.47	0.00
80.00	3.29	1.47	0.00
82.00	3.29	1.47	0.00
84.00	3.29	1.47	0.00
86.00	3.29	1.47	0.00
88.00	3.29	1.47	0.00
90.00	3.29	1.47	0.00
92.00	3.29	1.47	0.00
94.00	3.29	1.47	0.00
96.00	3.29	1.47	0.00
98.00	3.29	1.47	0.00
100.00	3.29	1.47	0.00
102.00	3.29	1.47	0.00
104.00	3.29	1.47	0.00
106.00	3.29	1.47	0.00
108.00	3.29	1.47	0.00
110.00	3.29	1.47	0.00
112.00	3.29	1.47	0.00
114.00	3.29	1.47	0.00
116.00	3.29	1.47	0.00
118.00	3.29	1.47	0.00
120.00	3.29	1.47	0.00
122.00	3.29	1.47	0.00
124.00	3.29	1.47	0.00
126.00	3.29	1.47	0.00
128.00	3.29	1.47	0.00
130.00	3.29	1.47	0.00
132.00	3.29	1.47	0.00
134.00	3.29	1.47	0.00
136.00	3.29	1.47	0.00
138.00	3.29	1.47	0.00
140.00	3.29	1.47	0.00
142.00	3.29	1.47	0.00
144.00	3.29	1.47	0.00
146.00	3.29	1.47	0.00
148.00	3.29	1.47	0.00
150.00	3.29	1.47	0.00
152.00	3.29	1.47	0.00
154.00	3.29	1.47	0.00
156.00	3.29	1.47	0.00
158.00	3.29	1.47	0.00
160.00	3.29	1.47	0.00
162.00	3.29	1.47	0.00
164.00	3.29	1.47	0.00
166.00	3.29	1.47	0.00
168.00	3.29	1.47	0.00
170.00	3.29	1.47	0.00
172.00	3.29	1.47	0.00
174.00	3.29	1.47	0.00
176.00	3.29	1.47	0.00
178.00	3.29	1.47	0.00
180.00	3.29	1.47	0.00

Summary for Subcatchment P-SW:

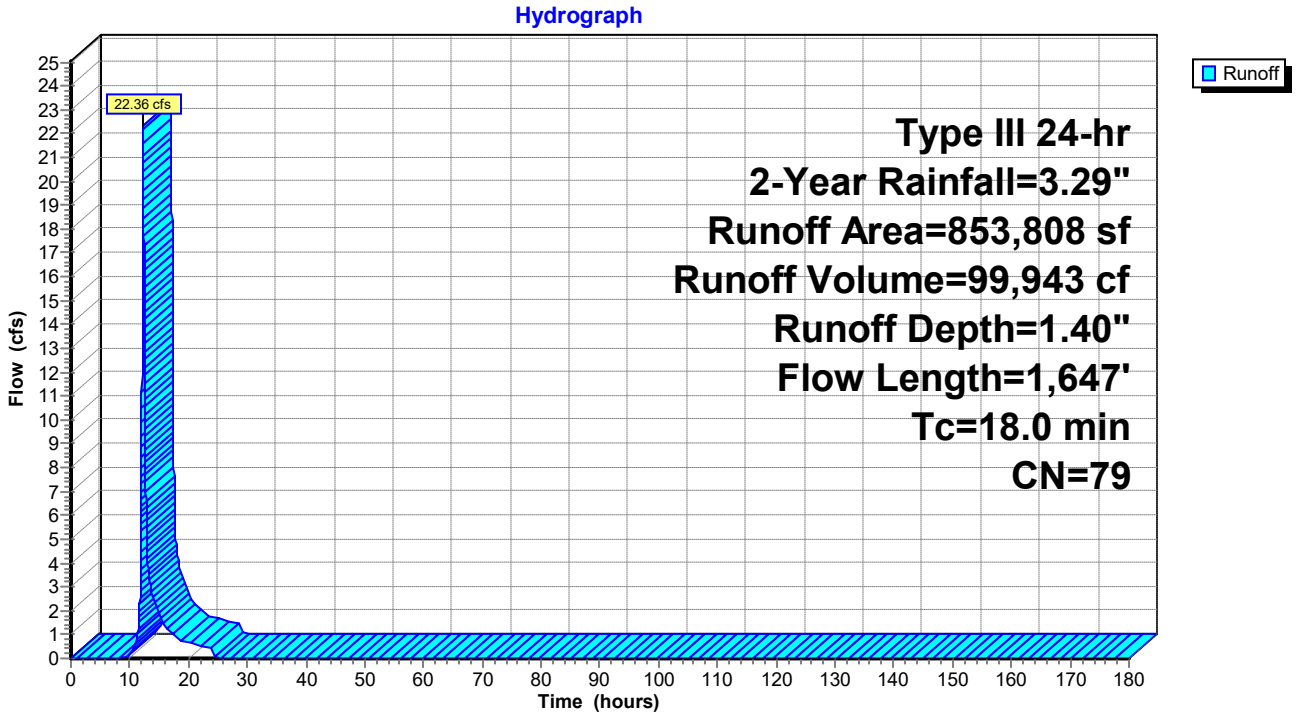
Runoff = 22.36 cfs @ 12.26 hrs, Volume= 99,943 cf, Depth= 1.40"
Routed to Reach P-DP-SW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.29"

Area (sf)	CN	Description
153,422	80	Pasture/grassland/range, Good, HSG D
603,267	79	Woods/grass comb., Good, HSG D
54	96	Gravel surface, HSG D
787	98	Unconnected pavement, HSG D
96,278	78	Meadow, non-grazed, HSG D
853,808	79	Weighted Average
853,021		99.91% Pervious Area
787		0.09% Impervious Area
787		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0398	0.25		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
4.0	442	0.0697	1.85		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
4.4	387	0.0848	1.46		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
0.3	51	0.3946	3.14		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
2.2	149	0.0530	1.15		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.6	518	0.0304	13.39	923.97	**Trap/Vee/Rect Channel Flow, FG** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
18.0	1,647	Total			

Subcatchment P-SW:



Hydrograph for Subcatchment P-SW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.07	0.00	0.00
4.00	0.14	0.00	0.00
6.00	0.24	0.00	0.00
8.00	0.38	0.00	0.00
10.00	0.62	0.00	0.10
12.00	1.64	0.33	**7.64**
14.00	2.67	0.95	**2.48**
16.00	2.91	1.13	1.36
18.00	3.05	1.23	0.83
20.00	3.15	1.30	0.65
22.00	3.23	1.36	0.54
24.00	**3.29**	**1.40**	0.43
26.00	3.29	1.40	0.00
28.00	3.29	1.40	0.00
30.00	3.29	1.40	0.00
32.00	3.29	1.40	0.00
34.00	3.29	1.40	0.00
36.00	3.29	1.40	0.00
38.00	3.29	1.40	0.00
40.00	3.29	1.40	0.00
42.00	3.29	1.40	0.00
44.00	3.29	1.40	0.00
46.00	3.29	1.40	0.00
48.00	3.29	1.40	0.00
50.00	3.29	1.40	0.00
52.00	3.29	1.40	0.00
54.00	3.29	1.40	0.00
56.00	3.29	1.40	0.00
58.00	3.29	1.40	0.00
60.00	3.29	1.40	0.00
62.00	3.29	1.40	0.00
64.00	3.29	1.40	0.00
66.00	3.29	1.40	0.00
68.00	3.29	1.40	0.00
70.00	3.29	1.40	0.00
72.00	3.29	1.40	0.00
74.00	3.29	1.40	0.00
76.00	3.29	1.40	0.00
78.00	3.29	1.40	0.00
80.00	3.29	1.40	0.00
82.00	3.29	1.40	0.00
84.00	3.29	1.40	0.00
86.00	3.29	1.40	0.00
88.00	3.29	1.40	0.00
90.00	3.29	1.40	0.00
92.00	3.29	1.40	0.00
94.00	3.29	1.40	0.00
96.00	3.29	1.40	0.00
98.00	3.29	1.40	0.00
100.00	3.29	1.40	0.00
102.00	3.29	1.40	0.00
104.00	3.29	1.40	0.00
106.00	3.29	1.40	0.00
108.00	3.29	1.40	0.00
110.00	3.29	1.40	0.00
112.00	3.29	1.40	0.00
114.00	3.29	1.40	0.00
116.00	3.29	1.40	0.00
118.00	3.29	1.40	0.00
120.00	3.29	1.40	0.00
122.00	3.29	1.40	0.00
124.00	3.29	1.40	0.00
126.00	3.29	1.40	0.00
128.00	3.29	1.40	0.00
130.00	3.29	1.40	0.00
132.00	3.29	1.40	0.00
134.00	3.29	1.40	0.00
136.00	3.29	1.40	0.00
138.00	3.29	1.40	0.00
140.00	3.29	1.40	0.00
142.00	3.29	1.40	0.00
144.00	3.29	1.40	0.00
146.00	3.29	1.40	0.00
148.00	3.29	1.40	0.00
150.00	3.29	1.40	0.00
152.00	3.29	1.40	0.00
154.00	3.29	1.40	0.00
156.00	3.29	1.40	0.00
158.00	3.29	1.40	0.00
160.00	3.29	1.40	0.00
162.00	3.29	1.40	0.00
164.00	3.29	1.40	0.00
166.00	3.29	1.40	0.00
168.00	3.29	1.40	0.00
170.00	3.29	1.40	0.00
172.00	3.29	1.40	0.00
174.00	3.29	1.40	0.00
176.00	3.29	1.40	0.00
178.00	3.29	1.40	0.00
180.00	3.29	1.40	0.00

Summary for Reach C: Overland Flow

Inflow Area = 350,279 sf, 1.26% Impervious, Inflow Depth = 1.47" for 2-Year event
Inflow = 6.88 cfs @ 12.52 hrs, Volume= 42,900 cf
Outflow = 6.73 cfs @ 12.60 hrs, Volume= 42,900 cf, Atten= 2%, Lag= 4.4 min
Routed to Reach P-DP-SE : Culvert

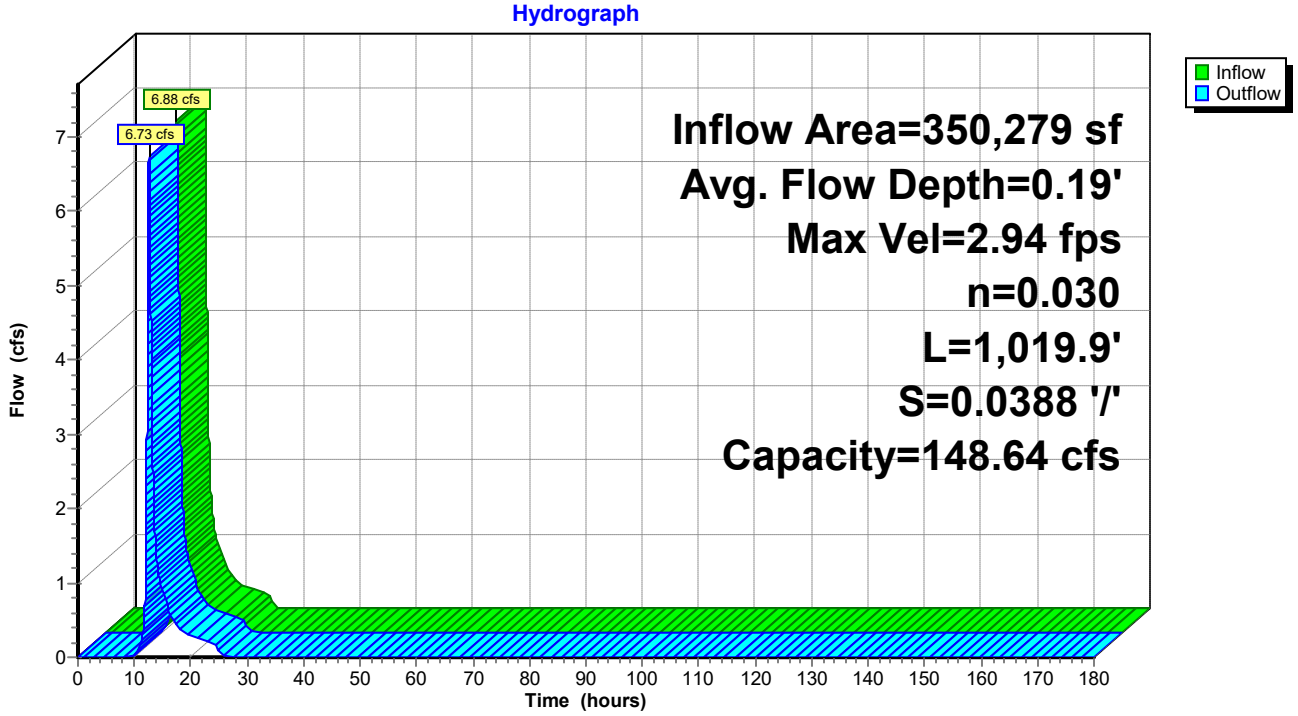
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.94 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 17.3 min

Peak Storage= 2,336 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 13.84'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 148.64 cfs

10.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 1,019.9' Slope= 0.0388 '/'
Inlet Invert= 1,659.60', Outlet Invert= 1,620.00'

‡

Reach C: Overland Flow



Hydrograph for Reach C: Overland Flow

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,659.60	0.00
5.00	0.00	0	1,659.60	0.00
10.00	**0.04**	**21**	**1,659.60**	**0.01**
15.00	**0.85**	**630**	**1,659.66**	**0.88**
20.00	0.28	315	1,659.63	0.29
25.00	0.02	112	1,659.61	0.05
30.00	0.00	0	1,659.60	0.00
35.00	0.00	0	1,659.60	0.00
40.00	0.00	0	1,659.60	0.00
45.00	0.00	0	1,659.60	0.00
50.00	0.00	0	1,659.60	0.00
55.00	0.00	0	1,659.60	0.00
60.00	0.00	0	1,659.60	0.00
65.00	0.00	0	1,659.60	0.00
70.00	0.00	0	1,659.60	0.00
75.00	0.00	0	1,659.60	0.00
80.00	0.00	0	1,659.60	0.00
85.00	0.00	0	1,659.60	0.00
90.00	0.00	0	1,659.60	0.00
95.00	0.00	0	1,659.60	0.00
100.00	0.00	0	1,659.60	0.00
105.00	0.00	0	1,659.60	0.00
110.00	0.00	0	1,659.60	0.00
115.00	0.00	0	1,659.60	0.00
120.00	0.00	0	1,659.60	0.00
125.00	0.00	0	1,659.60	0.00
130.00	0.00	0	1,659.60	0.00
135.00	0.00	0	1,659.60	0.00
140.00	0.00	0	1,659.60	0.00
145.00	0.00	0	1,659.60	0.00
150.00	0.00	0	1,659.60	0.00
155.00	0.00	0	1,659.60	0.00
160.00	0.00	0	1,659.60	0.00
165.00	0.00	0	1,659.60	0.00
170.00	0.00	0	1,659.60	0.00
175.00	0.00	0	1,659.60	0.00
180.00	0.00	0	1,659.60	0.00

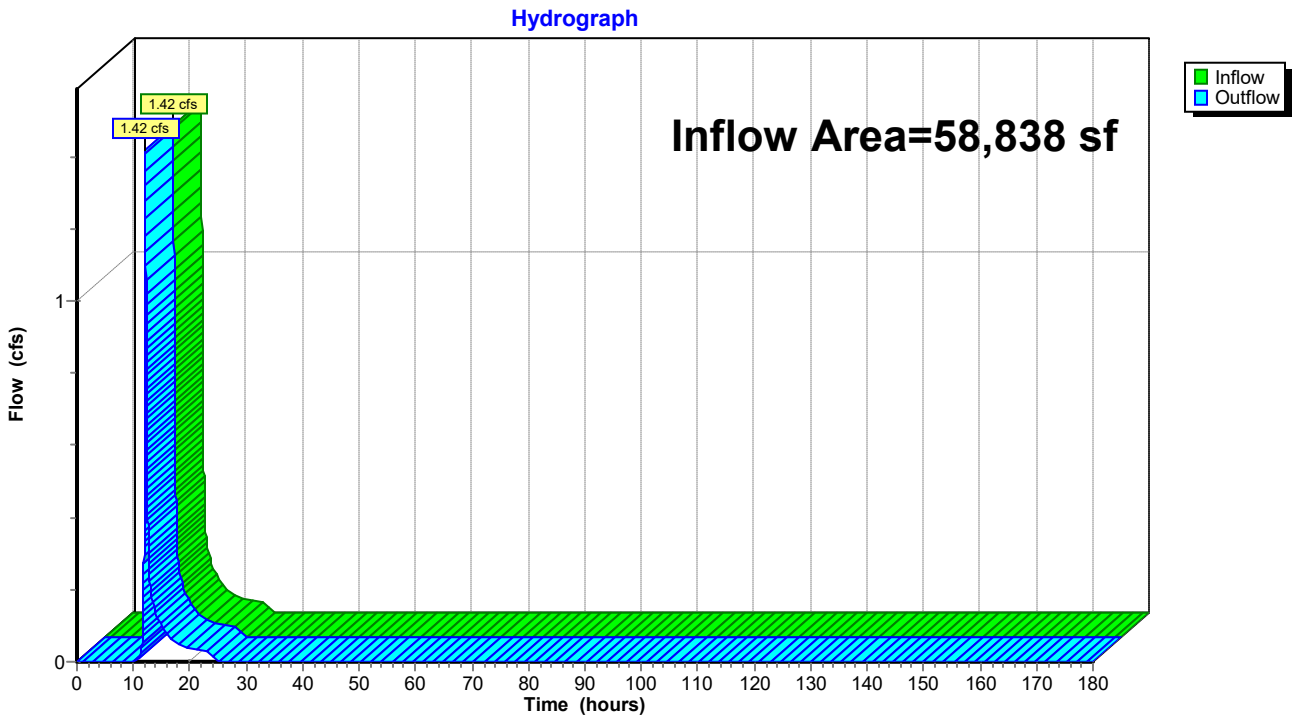
Summary for Reach P-DP-M:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 58,838 sf, 0.10% Impervious, Inflow Depth = 1.04" for 2-Year event
Inflow = 1.42 cfs @ 12.13 hrs, Volume= 5,103 cf
Outflow = 1.42 cfs @ 12.13 hrs, Volume= 5,103 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-M:



Hydrograph for Reach P-DP-M:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.00		0.00	114.00	0.00		0.00
12.00	**0.59**		**0.59**	116.00	0.00		0.00
14.00	**0.13**		**0.13**	118.00	0.00		0.00
16.00	0.07		0.07	120.00	0.00		0.00
18.00	0.05		0.05	122.00	0.00		0.00
20.00	0.04		0.04	124.00	0.00		0.00
22.00	0.03		0.03	126.00	0.00		0.00
24.00	0.03		0.03	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

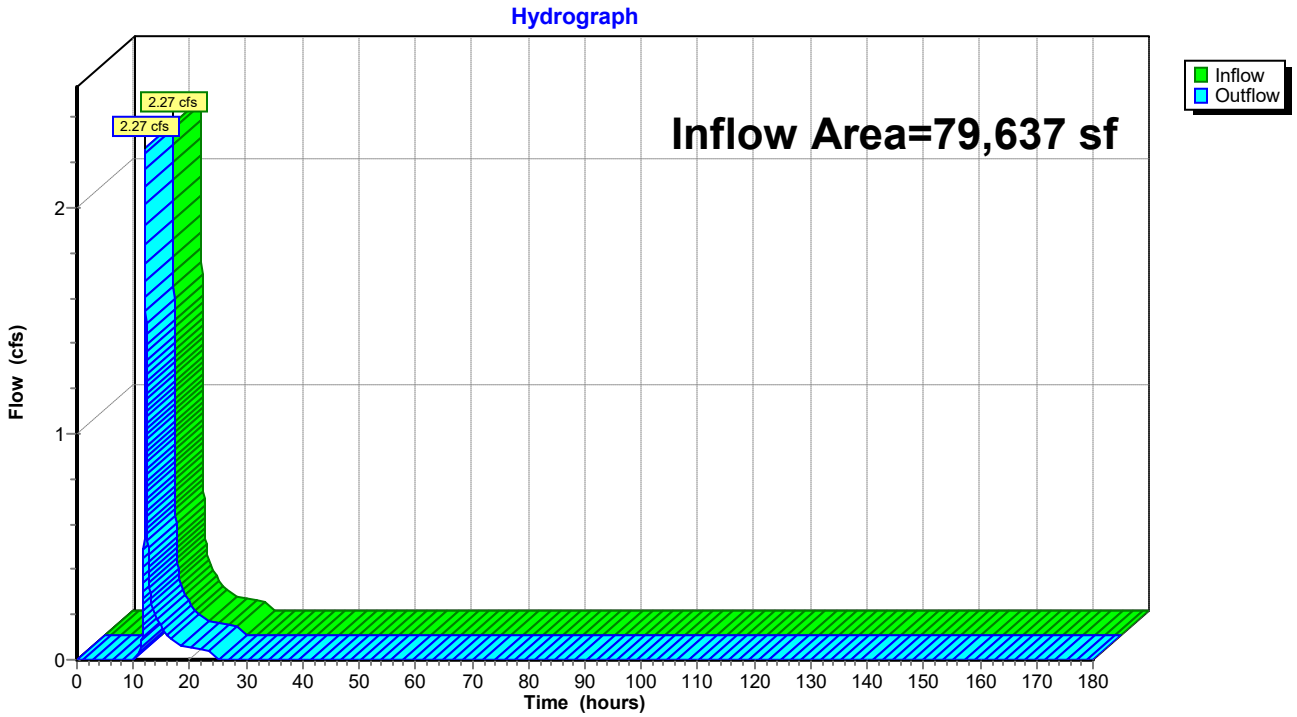
Summary for Reach P-DP-MW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79,637 sf, 0.23% Impervious, Inflow Depth = 1.16" for 2-Year event
Inflow = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf
Outflow = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-2L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-MW:



Hydrograph for Reach P-DP-MW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.00		0.00	114.00	0.00		0.00
12.00	**1.06**		**1.06**	116.00	0.00		0.00
14.00	**0.19**		**0.19**	118.00	0.00		0.00
16.00	0.11		0.11	120.00	0.00		0.00
18.00	0.07		0.07	122.00	0.00		0.00
20.00	0.05		0.05	124.00	0.00		0.00
22.00	0.04		0.04	126.00	0.00		0.00
24.00	0.04		0.04	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

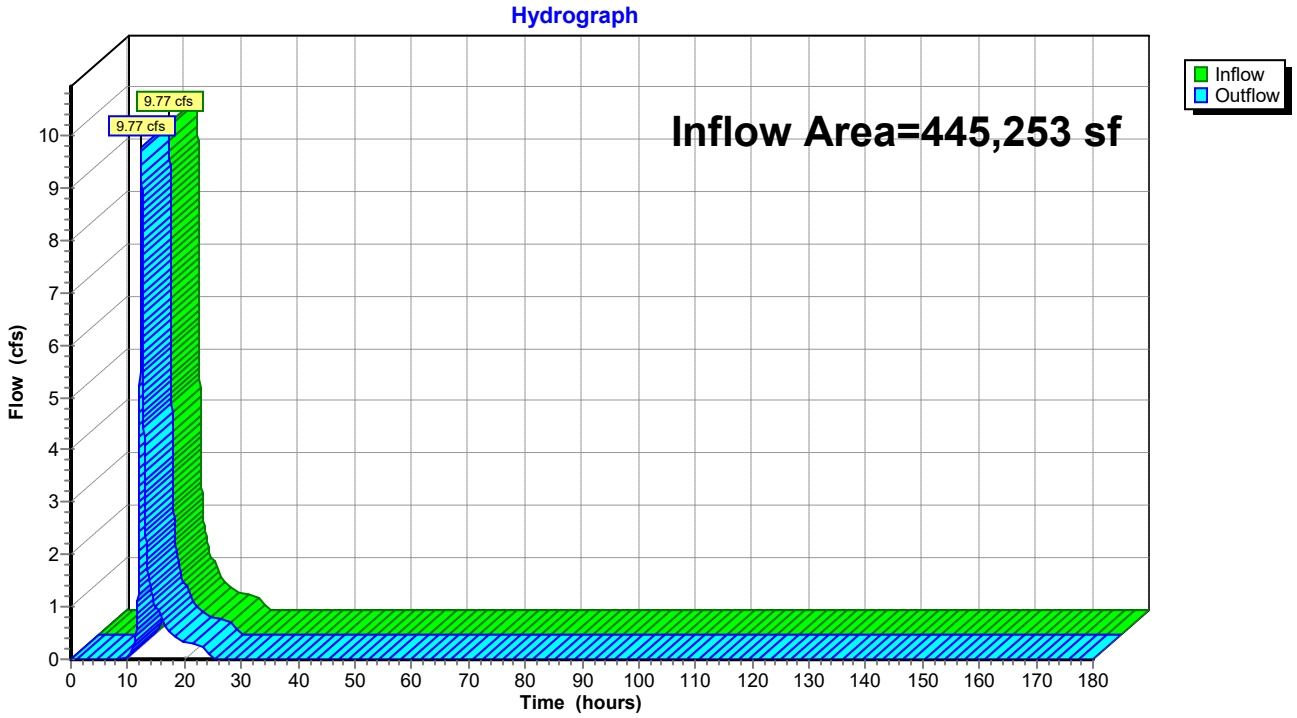
Summary for Reach P-DP-N: Culvert towards Wades Stream

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 445,253 sf, 2.02% Impervious, Inflow Depth = 1.40" for 2-Year event
Inflow = 9.77 cfs @ 12.39 hrs, Volume= 52,120 cf
Outflow = 9.77 cfs @ 12.39 hrs, Volume= 52,120 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-N: Culvert towards Wades Stream



Hydrograph for Reach P-DP-N: Culvert towards Wades Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.03		0.03	114.00	0.00		0.00
12.00	**2.50**		**2.50**	116.00	0.00		0.00
14.00	**1.37**		**1.37**	118.00	0.00		0.00
16.00	0.75		0.75	120.00	0.00		0.00
18.00	0.45		0.45	122.00	0.00		0.00
20.00	0.34		0.34	124.00	0.00		0.00
22.00	0.29		0.29	126.00	0.00		0.00
24.00	0.23		0.23	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

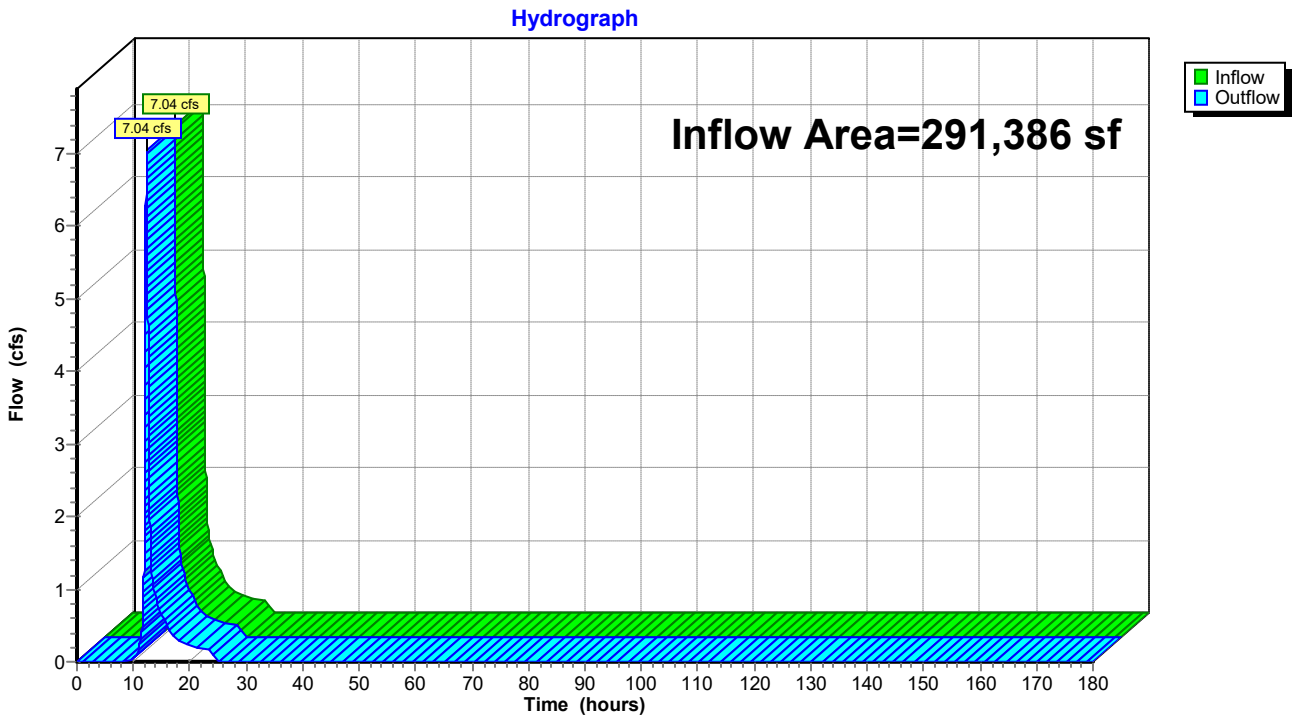
Summary for Reach P-DP-NE:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 291,386 sf, 0.88% Impervious, Inflow Depth = 1.40" for 2-Year event
Inflow = 7.04 cfs @ 12.32 hrs, Volume= 34,108 cf
Outflow = 7.04 cfs @ 12.32 hrs, Volume= 34,108 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-NE:



Hydrograph for Reach P-DP-NE:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.03		0.03	114.00	0.00		0.00
12.00	**2.15**		**2.15**	116.00	0.00		0.00
14.00	**0.87**		**0.87**	118.00	0.00		0.00
16.00	0.48		0.48	120.00	0.00		0.00
18.00	0.29		0.29	122.00	0.00		0.00
20.00	0.22		0.22	124.00	0.00		0.00
22.00	0.19		0.19	126.00	0.00		0.00
24.00	0.15		0.15	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

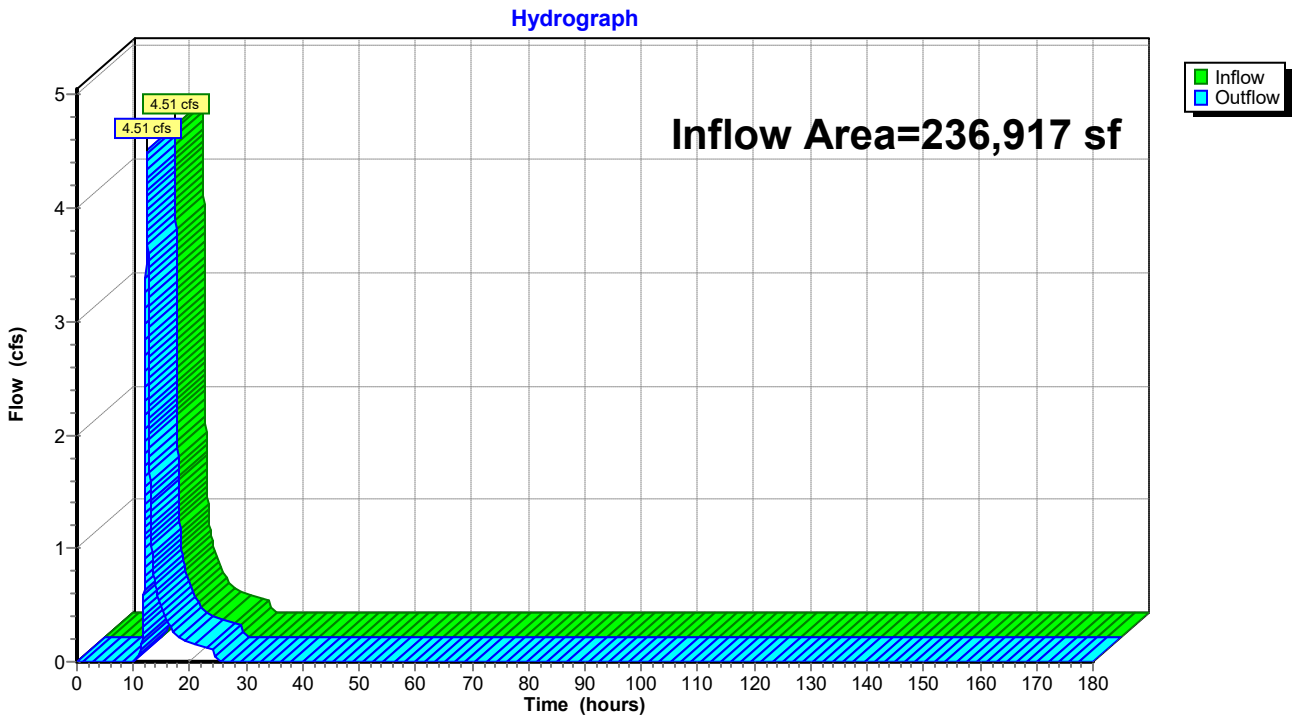
Summary for Reach P-DP-NW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 236,917 sf, 0.74% Impervious, Inflow Depth = 1.22" for 2-Year event
Inflow = 4.51 cfs @ 12.39 hrs, Volume= 23,989 cf
Outflow = 4.51 cfs @ 12.39 hrs, Volume= 23,989 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-1L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-NW:



Hydrograph for Reach P-DP-NW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.00		0.00	114.00	0.00		0.00
12.00	**1.08**		**1.08**	116.00	0.00		0.00
14.00	**0.66**		**0.66**	118.00	0.00		0.00
16.00	0.36		0.36	120.00	0.00		0.00
18.00	0.22		0.22	122.00	0.00		0.00
20.00	0.17		0.17	124.00	0.00		0.00
22.00	0.14		0.14	126.00	0.00		0.00
24.00	0.11		0.11	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Reach P-DP-SE: Culvert

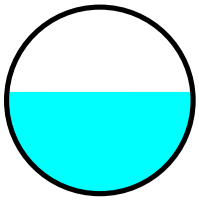
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach C OUTLET depth by 0.65' @ 12.21 hrs

Inflow Area = 519,545 sf, 2.67% Impervious, Inflow Depth = 1.47" for 2-Year event
Inflow = 8.89 cfs @ 12.49 hrs, Volume= 63,656 cf
Outflow = 8.89 cfs @ 12.49 hrs, Volume= 63,656 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-4L : Lag

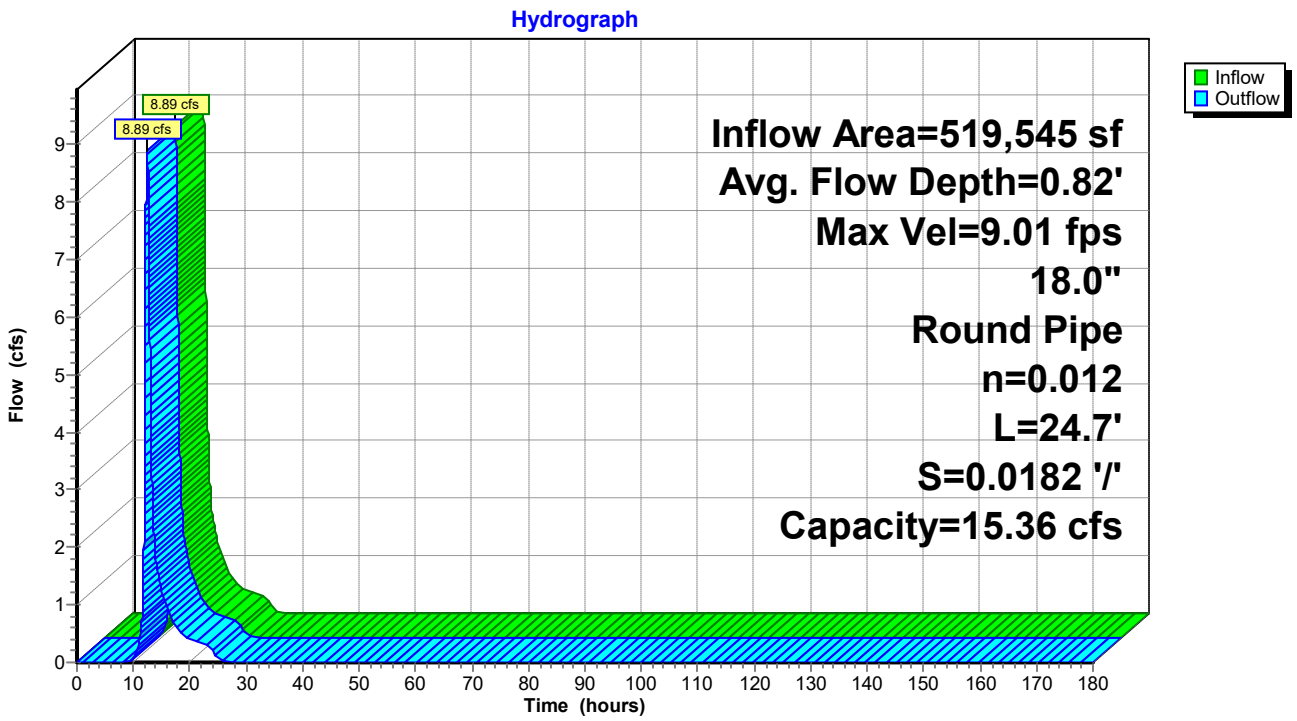
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.01 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.62 fps, Avg. Travel Time= 0.1 min

Peak Storage= 24 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.82' , Surface Width= 1.49'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.36 cfs

18.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 24.7' Slope= 0.0182 '/'
Inlet Invert= 1,620.00', Outlet Invert= 1,619.55'



Reach P-DP-SE: Culvert



Hydrograph for Reach P-DP-SE: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,620.00	0.00
5.00	0.00	0	1,620.00	0.00
10.00	**0.05**	**1**	**1,620.06**	**0.05**
15.00	**1.25**	**6**	**1,620.29**	**1.25**
20.00	0.42	3	1,620.17	0.42
25.00	0.05	1	1,620.06	0.05
30.00	0.00	0	1,620.00	0.00
35.00	0.00	0	1,620.00	0.00
40.00	0.00	0	1,620.00	0.00
45.00	0.00	0	1,620.00	0.00
50.00	0.00	0	1,620.00	0.00
55.00	0.00	0	1,620.00	0.00
60.00	0.00	0	1,620.00	0.00
65.00	0.00	0	1,620.00	0.00
70.00	0.00	0	1,620.00	0.00
75.00	0.00	0	1,620.00	0.00
80.00	0.00	0	1,620.00	0.00
85.00	0.00	0	1,620.00	0.00
90.00	0.00	0	1,620.00	0.00
95.00	0.00	0	1,620.00	0.00
100.00	0.00	0	1,620.00	0.00
105.00	0.00	0	1,620.00	0.00
110.00	0.00	0	1,620.00	0.00
115.00	0.00	0	1,620.00	0.00
120.00	0.00	0	1,620.00	0.00
125.00	0.00	0	1,620.00	0.00
130.00	0.00	0	1,620.00	0.00
135.00	0.00	0	1,620.00	0.00
140.00	0.00	0	1,620.00	0.00
145.00	0.00	0	1,620.00	0.00
150.00	0.00	0	1,620.00	0.00
155.00	0.00	0	1,620.00	0.00
160.00	0.00	0	1,620.00	0.00
165.00	0.00	0	1,620.00	0.00
170.00	0.00	0	1,620.00	0.00
175.00	0.00	0	1,620.00	0.00
180.00	0.00	0	1,620.00	0.00

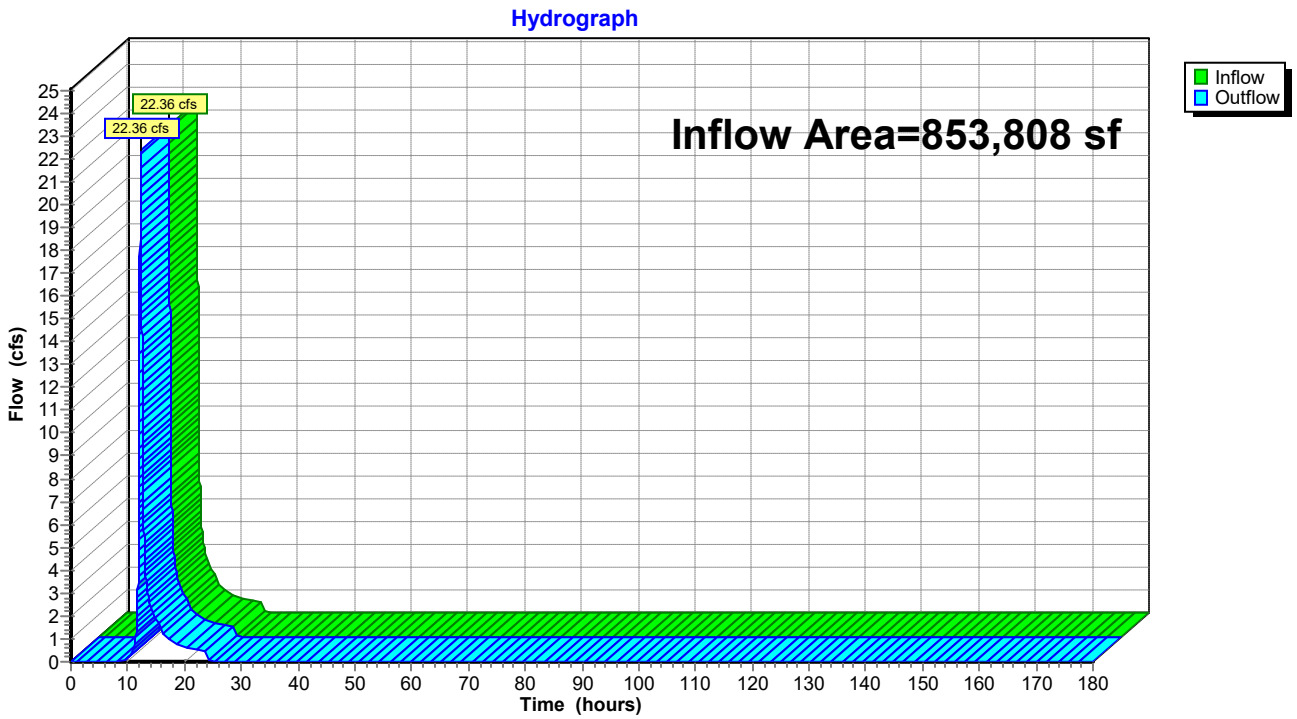
Summary for Reach P-DP-SW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 853,808 sf, 0.09% Impervious, Inflow Depth = 1.40" for 2-Year event
Inflow = 22.36 cfs @ 12.26 hrs, Volume= 99,943 cf
Outflow = 22.36 cfs @ 12.26 hrs, Volume= 99,943 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-DP-S : Watts Stream

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-SW:



Hydrograph for Reach P-DP-SW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.10		0.10	114.00	0.00		0.00
12.00	**7.64**		**7.64**	116.00	0.00		0.00
14.00	**2.48**		**2.48**	118.00	0.00		0.00
16.00	1.36		1.36	120.00	0.00		0.00
18.00	0.83		0.83	122.00	0.00		0.00
20.00	0.65		0.65	124.00	0.00		0.00
22.00	0.54		0.54	126.00	0.00		0.00
24.00	0.43		0.43	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Pond A:

Inflow Area = 36,754 sf, 0.44% Impervious, Inflow Depth = 1.47" for 2-Year event
Inflow = 1.17 cfs @ 12.18 hrs, Volume= 4,507 cf
Outflow = 0.95 cfs @ 12.28 hrs, Volume= 4,507 cf, Atten= 19%, Lag= 6.5 min
Discarded = 0.00 cfs @ 12.28 hrs, Volume= 21 cf
Primary = 0.94 cfs @ 12.28 hrs, Volume= 4,486 cf
Routed to Pond B : 2x15" CPP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond B : 2x15" CPP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Peak Elev= 1,662.22' @ 12.28 hrs Surf.Area= 480 sf Storage= 328 cf
Flood Elev= 1,663.00' Surf.Area= 791 sf Storage= 823 cf

Plug-Flow detention time= 3.1 min calculated for 4,507 cf (100% of inflow)
Center-of-Mass det. time= 3.1 min (850.3 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,660.50'	1,782 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,660.50	7	10.9	0	0	7
1,661.00	72	38.7	17	17	117
1,662.00	400	120.2	214	231	1,151
1,662.75	698	139.4	407	637	1,559
1,663.00	791	143.9	186	823	1,667
1,664.00	1,136	158.3	958	1,782	2,045

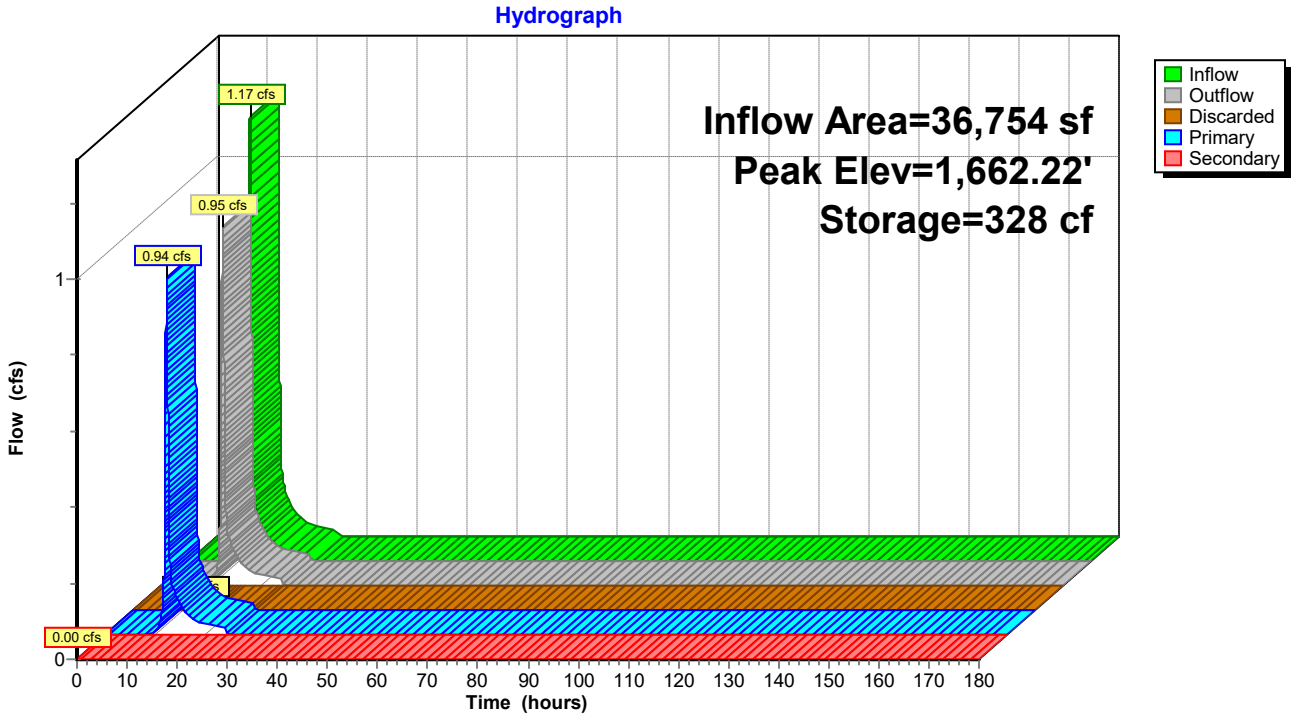
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,660.50'	**0.170 in/hr Exfiltration over Wetted area**
#2	Secondary	1,663.00'	**Road Overflow, C= 3.27** Offset (feet) 0.00 30.23 30.23 Height (feet) 1.00 0.00 1.00
#3	Primary	1,660.50'	**4.00' long x 14.50' breadth x 2.25' high Rock Fill** Rock Diam.= 5.000", S.D.= 2.500", Voids= 40.0%
#4	Primary	1,662.75'	**17.4' long + 3.0 '/' SideZ x 1.0' breadth Check Dam** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.00 cfs @ 12.28 hrs HW=1,662.22' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.94 cfs @ 12.28 hrs HW=1,662.22' TW=1,660.92' (Dynamic Tailwater)
├─**3=Rock Fill** (Rockfill Controls 0.94 cfs @ 0.22 fps)
└─**4=Check Dam** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,660.50' TW=1,660.00' (Dynamic Tailwater)
└─**2=Road Overflow** (Controls 0.00 cfs)

Pond A:



Hydrograph for Pond A:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	1,660.50	0.00	0.00	0.00	**0.00**
5.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
10.00	**0.01**	**1**	**1,660.58**	**0.01**	**0.00**	**0.01**	0.00
15.00	**0.08**	**9**	**1,660.86**	**0.08**	**0.00**	**0.08**	0.00
20.00	0.03	3	1,660.68	0.03	0.00	0.03	0.00
25.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
30.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
35.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
40.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
45.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
50.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
55.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
60.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
65.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
70.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
75.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
80.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
85.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
90.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
95.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
100.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
105.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
110.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
115.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
120.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
125.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
130.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
135.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
140.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
145.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
150.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
155.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
160.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
165.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
170.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
175.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
180.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00

Summary for Pond B: 2x15" CPP

Inflow Area = 350,279 sf, 1.26% Impervious, Inflow Depth = 1.47" for 2-Year event
Inflow = 6.89 cfs @ 12.51 hrs, Volume= 42,931 cf
Outflow = 6.88 cfs @ 12.52 hrs, Volume= 42,931 cf, Atten= 0%, Lag= 0.7 min
Discarded = 0.00 cfs @ 12.52 hrs, Volume= 32 cf
Primary = 6.88 cfs @ 12.52 hrs, Volume= 42,900 cf
Routed to Reach C : Overland Flow
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach C : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Peak Elev= 1,661.16' @ 12.52 hrs Surf.Area= 278 sf Storage= 203 cf
Flood Elev= 1,662.50' Surf.Area= 592 sf Storage= 782 cf

Plug-Flow detention time= 0.7 min calculated for 42,929 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (869.5 - 868.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,660.00'	1,109 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,660.00	88	41.6	0	0	88
1,661.00	247	64.3	161	161	286
1,662.00	475	87.0	355	516	570
1,663.00	721	107.4	594	1,109	900

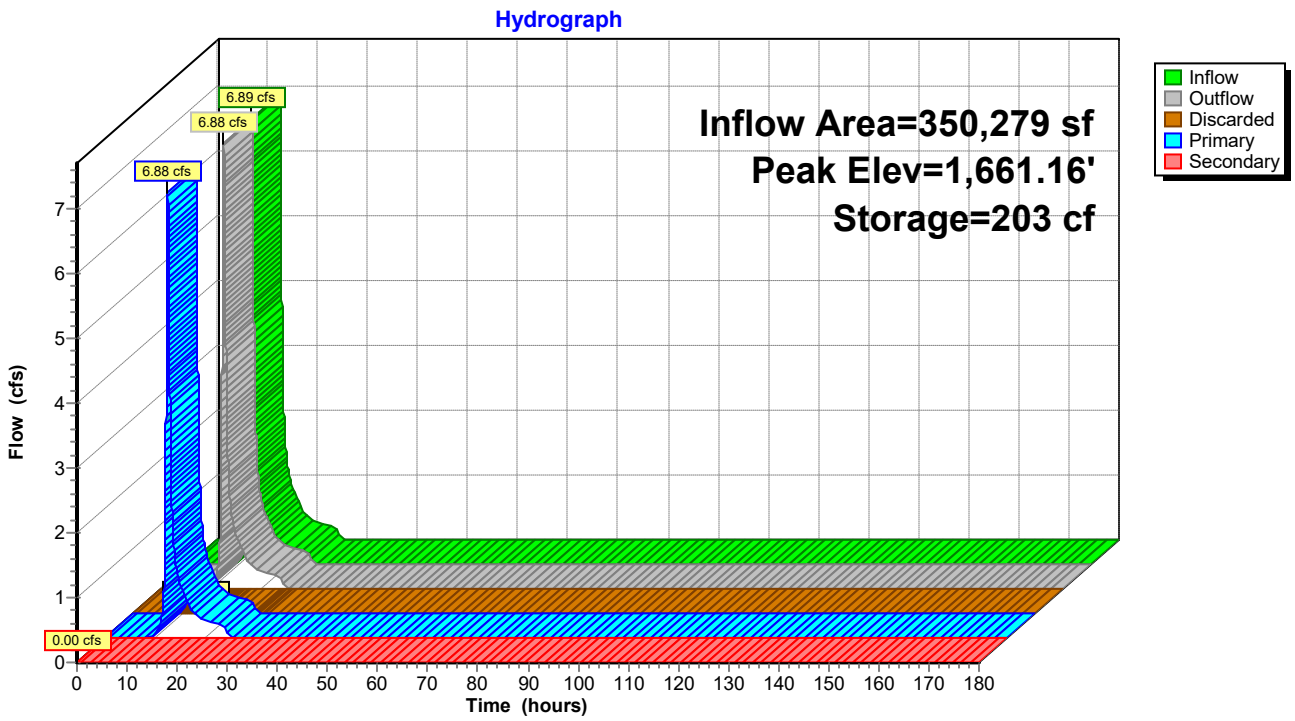
Device	Routing	Invert	Outlet Devices
#1	Primary	1,660.00'	**15.0" Round Culvert X 2.00** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,660.00' / 1,659.60' S= 0.0089 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Discarded	1,660.00'	**0.170 in/hr Exfiltration over Wetted area**
#3	Secondary	1,662.50'	**Road Overflow, C= 3.27** Offset (feet) 0.00 18.61 20.86 35.05 Height (feet) 0.50 0.00 0.00 0.50

Discarded OutFlow Max=0.00 cfs @ 12.52 hrs HW=1,661.16' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=6.87 cfs @ 12.52 hrs HW=1,661.16' TW=1,659.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.87 cfs @ 2.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,660.00' TW=1,659.60' (Dynamic Tailwater)
└─**3=Road Overflow** (Controls 0.00 cfs)

Pond B: 2x15" CPP



Hydrograph for Pond B: 2x15" CPP

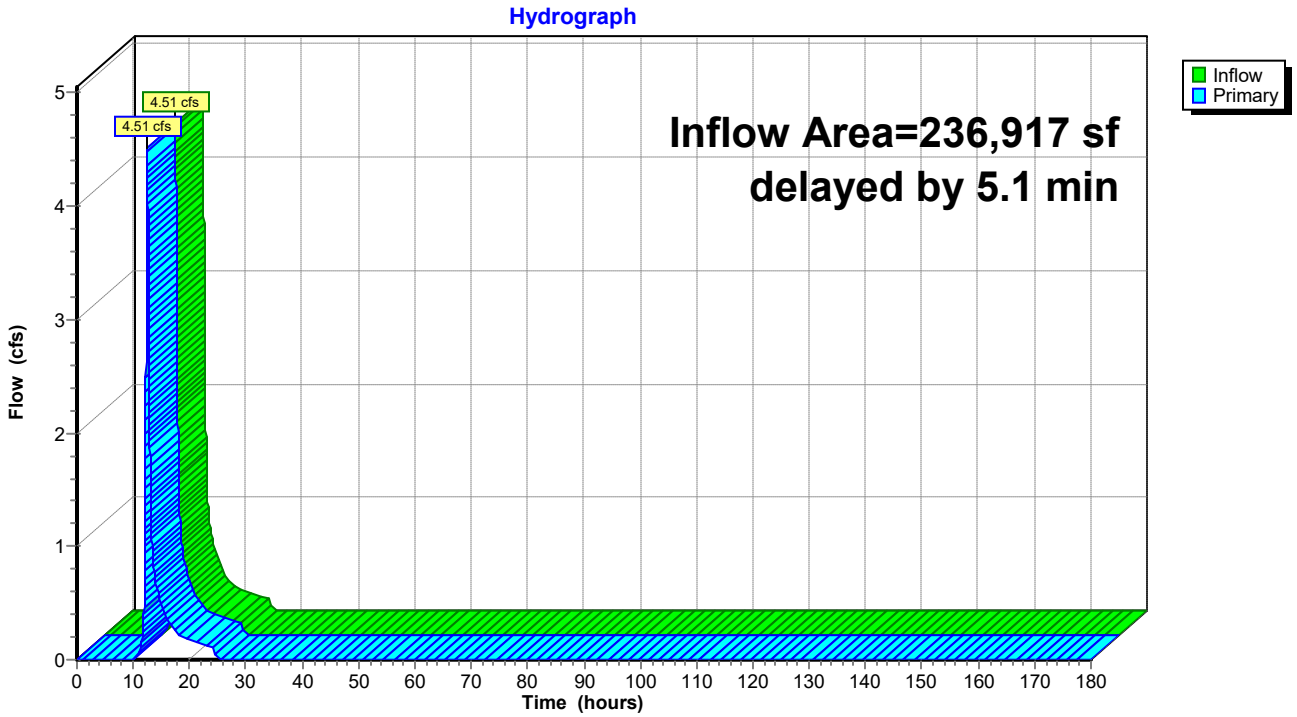
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	1,660.00	0.00	0.00	0.00	**0.00**
5.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
10.00	**0.04**	**6**	**1,660.07**	**0.04**	**0.00**	**0.04**	0.00
15.00	**0.85**	**37**	**1,660.34**	**0.85**	**0.00**	**0.85**	0.00
20.00	0.28	19	1,660.19	0.28	0.00	0.28	0.00
25.00	0.01	4	1,660.04	0.02	0.00	0.02	0.00
30.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
35.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
40.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
45.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
50.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
55.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
60.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
65.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
70.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
75.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
80.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
85.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
90.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
95.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
100.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
105.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
110.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
115.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
120.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
125.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
130.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
135.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
140.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
145.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
150.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
155.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
160.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
165.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
170.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
175.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
180.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00

Summary for Link P-1L: Lag

Inflow Area = 236,917 sf, 0.74% Impervious, Inflow Depth = 1.22" for 2-Year event
Inflow = 4.51 cfs @ 12.39 hrs, Volume= 23,989 cf
Primary = 4.51 cfs @ 12.47 hrs, Volume= 23,989 cf, Atten= 0%, Lag= 5.1 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 5.1 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-1L: Lag



Hydrograph for Link P-1L: Lag

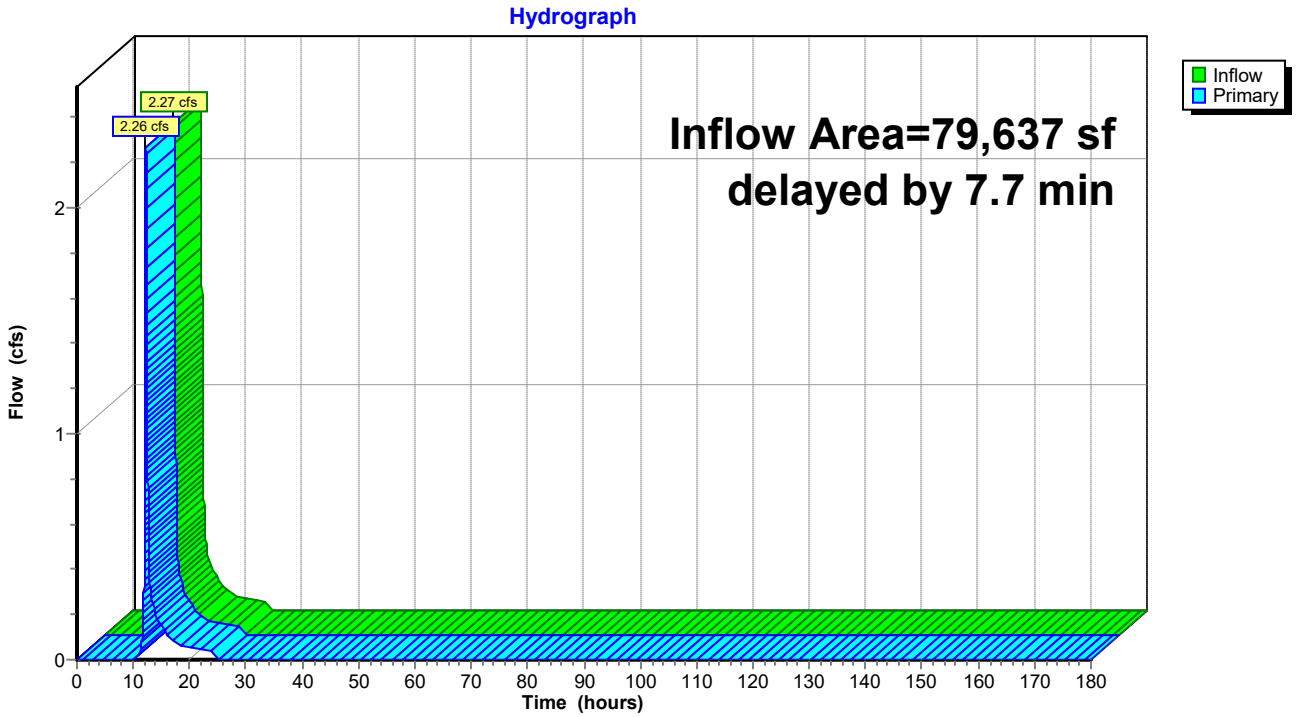
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	114.00	0.00	0.00	0.00
12.00	**1.08**	0.00	**0.73**	116.00	0.00	0.00	0.00
14.00	**0.66**	0.00	**0.68**	118.00	0.00	0.00	0.00
16.00	0.36	0.00	0.37	120.00	0.00	0.00	0.00
18.00	0.22	0.00	0.22	122.00	0.00	0.00	0.00
20.00	0.17	0.00	0.17	124.00	0.00	0.00	0.00
22.00	0.14	0.00	0.14	126.00	0.00	0.00	0.00
24.00	0.11	0.00	0.11	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-2L: Lag

Inflow Area = 79,637 sf, 0.23% Impervious, Inflow Depth = 1.16" for 2-Year event
Inflow = 2.27 cfs @ 12.11 hrs, Volume= 7,667 cf
Primary = 2.26 cfs @ 12.24 hrs, Volume= 7,667 cf, Atten= 0%, Lag= 7.7 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 7.7 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-2L: Lag



Hydrograph for Link P-2L: Lag

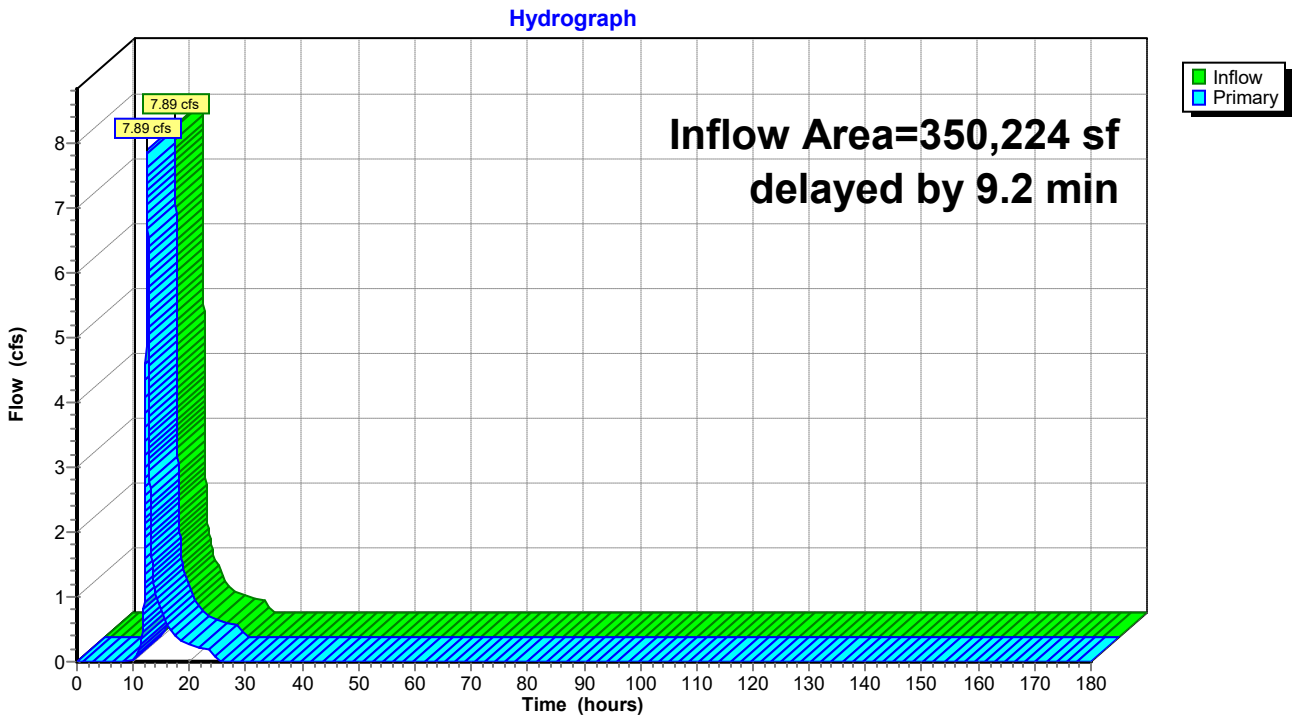
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	114.00	0.00	0.00	0.00
12.00	**1.06**	0.00	**0.53**	116.00	0.00	0.00	0.00
14.00	**0.19**	0.00	**0.20**	118.00	0.00	0.00	0.00
16.00	0.11	0.00	0.11	120.00	0.00	0.00	0.00
18.00	0.07	0.00	0.07	122.00	0.00	0.00	0.00
20.00	0.05	0.00	0.05	124.00	0.00	0.00	0.00
22.00	0.04	0.00	0.05	126.00	0.00	0.00	0.00
24.00	0.04	0.00	0.04	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-3L: Lag

Inflow Area = 350,224 sf, 0.75% Impervious, Inflow Depth = 1.34" for 2-Year event
Inflow = 7.89 cfs @ 12.30 hrs, Volume= 39,212 cf
Primary = 7.89 cfs @ 12.45 hrs, Volume= 39,212 cf, Atten= 0%, Lag= 9.2 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.2 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-3L: Lag



Hydrograph for Link P-3L: Lag

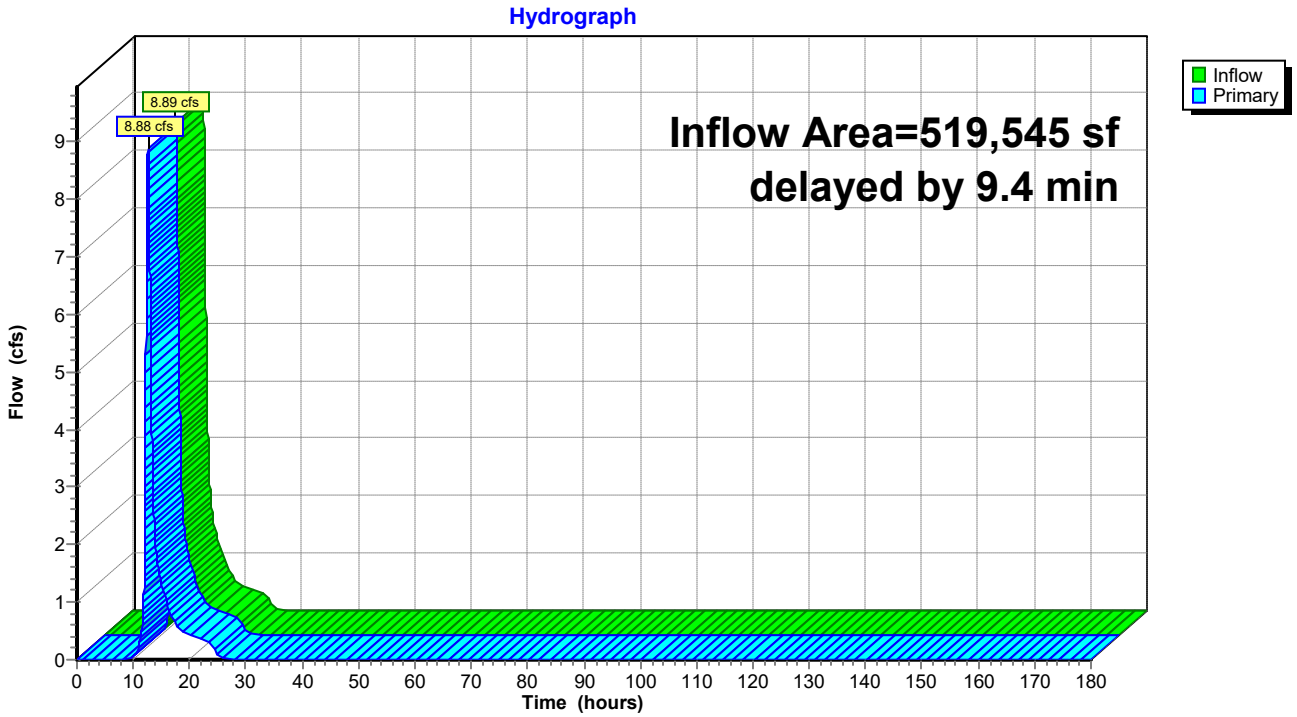
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.03	0.00	0.01	114.00	0.00	0.00	0.00
12.00	**2.74**	0.00	**1.37**	116.00	0.00	0.00	0.00
14.00	**1.00**	0.00	**1.06**	118.00	0.00	0.00	0.00
16.00	0.55	0.00	0.58	120.00	0.00	0.00	0.00
18.00	0.33	0.00	0.35	122.00	0.00	0.00	0.00
20.00	0.26	0.00	0.26	124.00	0.00	0.00	0.00
22.00	0.22	0.00	0.22	126.00	0.00	0.00	0.00
24.00	0.17	0.00	0.18	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-4L: Lag

Inflow Area = 519,545 sf, 2.67% Impervious, Inflow Depth = 1.47" for 2-Year event
Inflow = 8.89 cfs @ 12.49 hrs, Volume= 63,656 cf
Primary = 8.88 cfs @ 12.64 hrs, Volume= 63,656 cf, Atten= 0%, Lag= 9.4 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.4 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-4L: Lag



Hydrograph for Link P-4L: Lag

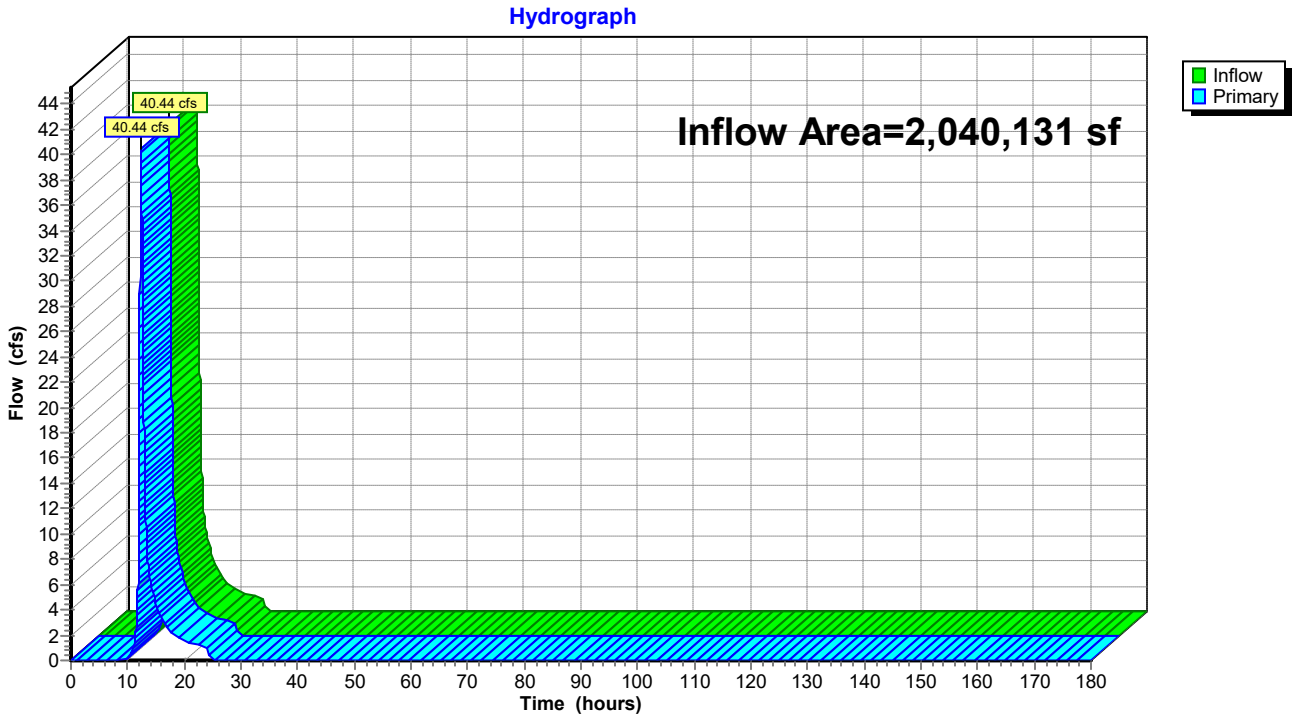
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.05	0.00	0.03	114.00	0.00	0.00	0.00
12.00	**3.25**	0.00	**1.79**	116.00	0.00	0.00	0.00
14.00	**1.78**	0.00	**1.94**	118.00	0.00	0.00	0.00
16.00	0.93	0.00	0.98	120.00	0.00	0.00	0.00
18.00	0.56	0.00	0.58	122.00	0.00	0.00	0.00
20.00	0.42	0.00	0.42	124.00	0.00	0.00	0.00
22.00	0.35	0.00	0.35	126.00	0.00	0.00	0.00
24.00	0.28	0.00	0.29	128.00	0.00	0.00	0.00
26.00	0.01	0.00	0.02	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-DP-S: Watts Stream

Inflow Area = 2,040,131 sf, 0.94% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 40.44 cfs @ 12.33 hrs, Volume= 234,467 cf
Primary = 40.44 cfs @ 12.33 hrs, Volume= 234,467 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-DP-S: Watts Stream



Hydrograph for Link P-DP-S: Watts Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.15	0.00	0.15	114.00	0.00	0.00	0.00
12.00	**12.06**	0.00	**12.06**	116.00	0.00	0.00	0.00
14.00	**6.36**	0.00	**6.36**	118.00	0.00	0.00	0.00
16.00	3.41	0.00	3.41	120.00	0.00	0.00	0.00
18.00	2.05	0.00	2.05	122.00	0.00	0.00	0.00
20.00	1.56	0.00	1.56	124.00	0.00	0.00	0.00
22.00	1.30	0.00	1.30	126.00	0.00	0.00	0.00
24.00	1.05	0.00	1.05	128.00	0.00	0.00	0.00
26.00	0.02	0.00	0.02	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Subcatchment P-M:

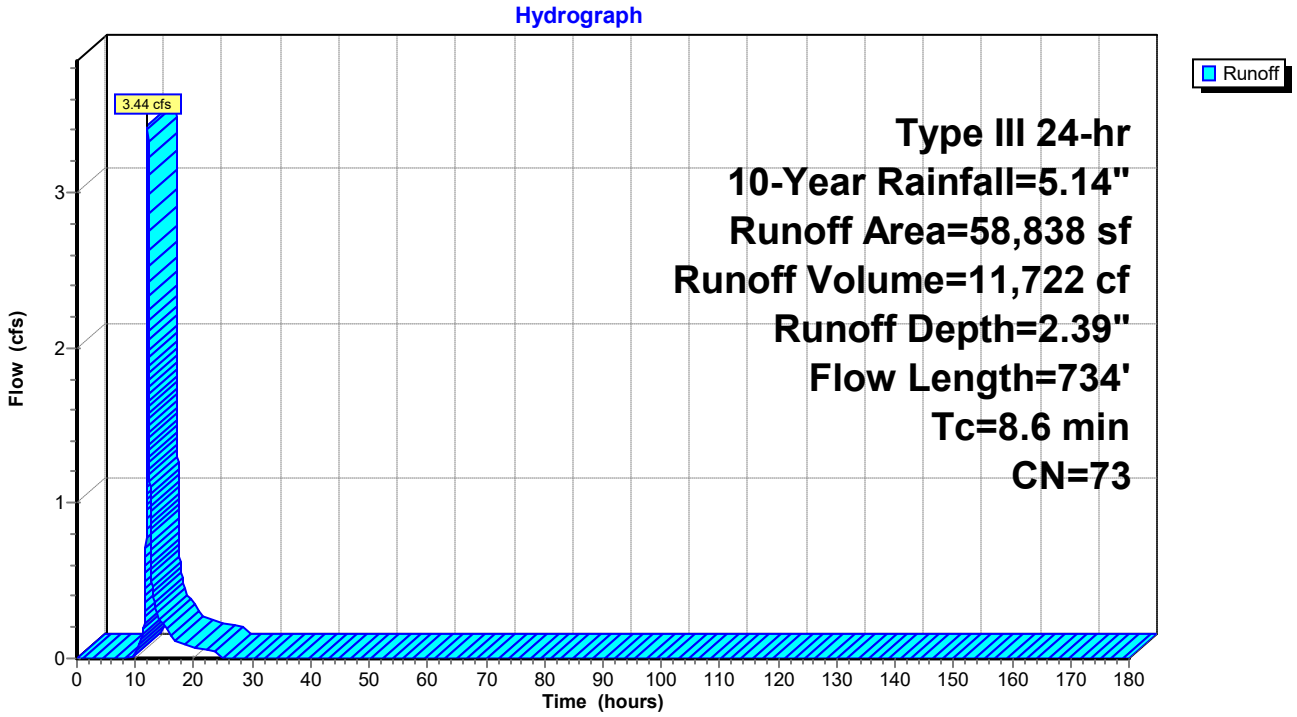
Runoff = 3.44 cfs @ 12.13 hrs, Volume= 11,722 cf, Depth= 2.39"
Routed to Reach P-DP-M :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
17,766	74	Pasture/grassland/range, Good, HSG C
2,573	96	Gravel surface, HSG C
57	98	Unconnected pavement, HSG C
38,442	71	Meadow, non-grazed, HSG C
58,838	73	Weighted Average
58,781		99.90% Pervious Area
57		0.10% Impervious Area
57		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	95	0.0625	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
2.3	214	0.0510	1.58		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.4	42	0.0587	1.70		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.0	18	0.0597	13.93	17.10	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.3	64	0.1973	3.11		**Shallow Concentrated Flow, EF** Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0846	11.68	105.15	**Trap/Vee/Rect Channel Flow, FG** Bot.W=6.00' D=1.00' Z= 3.0 '/' Top.W=12.00' n= 0.030 Earth, grassed & winding
8.6	734	Total			

Subcatchment P-M:



Hydrograph for Subcatchment P-M:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.00
10.00	0.97	0.01	0.03
12.00	2.57	0.61	**1.63**
14.00	4.17	1.65	**0.27**
16.00	4.55	1.94	0.15
18.00	4.77	2.10	0.09
20.00	4.92	2.22	0.07
22.00	5.04	2.31	0.06
24.00	**5.14**	**2.39**	0.05
26.00	5.14	2.39	0.00
28.00	5.14	2.39	0.00
30.00	5.14	2.39	0.00
32.00	5.14	2.39	0.00
34.00	5.14	2.39	0.00
36.00	5.14	2.39	0.00
38.00	5.14	2.39	0.00
40.00	5.14	2.39	0.00
42.00	5.14	2.39	0.00
44.00	5.14	2.39	0.00
46.00	5.14	2.39	0.00
48.00	5.14	2.39	0.00
50.00	5.14	2.39	0.00
52.00	5.14	2.39	0.00
54.00	5.14	2.39	0.00
56.00	5.14	2.39	0.00
58.00	5.14	2.39	0.00
60.00	5.14	2.39	0.00
62.00	5.14	2.39	0.00
64.00	5.14	2.39	0.00
66.00	5.14	2.39	0.00
68.00	5.14	2.39	0.00
70.00	5.14	2.39	0.00
72.00	5.14	2.39	0.00
74.00	5.14	2.39	0.00
76.00	5.14	2.39	0.00
78.00	5.14	2.39	0.00
80.00	5.14	2.39	0.00
82.00	5.14	2.39	0.00
84.00	5.14	2.39	0.00
86.00	5.14	2.39	0.00
88.00	5.14	2.39	0.00
90.00	5.14	2.39	0.00
92.00	5.14	2.39	0.00
94.00	5.14	2.39	0.00
96.00	5.14	2.39	0.00
98.00	5.14	2.39	0.00
100.00	5.14	2.39	0.00
102.00	5.14	2.39	0.00
104.00	5.14	2.39	0.00
106.00	5.14	2.39	0.00
108.00	5.14	2.39	0.00
110.00	5.14	2.39	0.00
112.00	5.14	2.39	0.00
114.00	5.14	2.39	0.00
116.00	5.14	2.39	0.00
118.00	5.14	2.39	0.00
120.00	5.14	2.39	0.00
122.00	5.14	2.39	0.00
124.00	5.14	2.39	0.00
126.00	5.14	2.39	0.00
128.00	5.14	2.39	0.00
130.00	5.14	2.39	0.00
132.00	5.14	2.39	0.00
134.00	5.14	2.39	0.00
136.00	5.14	2.39	0.00
138.00	5.14	2.39	0.00
140.00	5.14	2.39	0.00
142.00	5.14	2.39	0.00
144.00	5.14	2.39	0.00
146.00	5.14	2.39	0.00
148.00	5.14	2.39	0.00
150.00	5.14	2.39	0.00
152.00	5.14	2.39	0.00
154.00	5.14	2.39	0.00
156.00	5.14	2.39	0.00
158.00	5.14	2.39	0.00
160.00	5.14	2.39	0.00
162.00	5.14	2.39	0.00
164.00	5.14	2.39	0.00
166.00	5.14	2.39	0.00
168.00	5.14	2.39	0.00
170.00	5.14	2.39	0.00
172.00	5.14	2.39	0.00
174.00	5.14	2.39	0.00
176.00	5.14	2.39	0.00
178.00	5.14	2.39	0.00
180.00	5.14	2.39	0.00

Summary for Subcatchment P-MW:

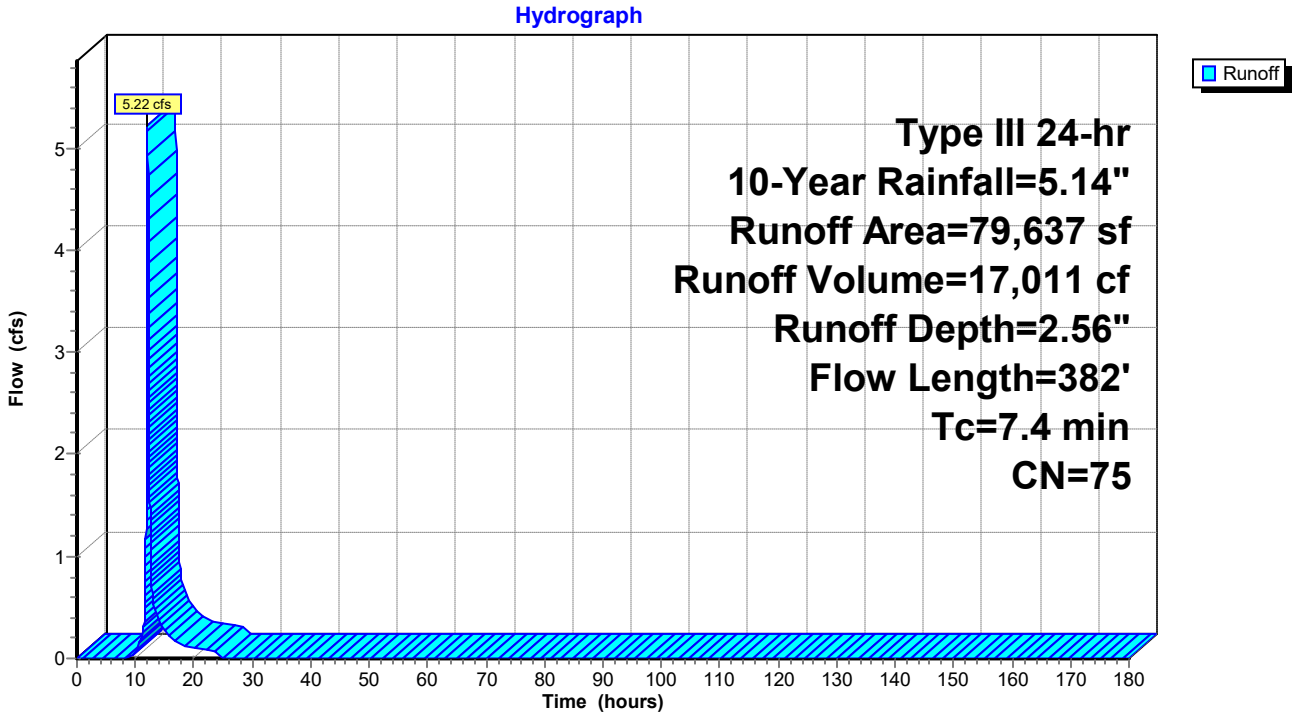
Runoff = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf, Depth= 2.56"
Routed to Reach P-DP-MW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
43,126	74	Pasture/grassland/range, Good, HSG C
15,129	80	Pasture/grassland/range, Good, HSG D
971	96	Gravel surface, HSG C
109	98	Unconnected pavement, HSG C
78	98	Unconnected pavement, HSG D
20,224	71	Meadow, non-grazed, HSG C
79,637	75	Weighted Average
79,450		99.77% Pervious Area
187		0.23% Impervious Area
187		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0583	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.1	39	0.0793	6.42	7.88	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.030 Earth, grassed & winding
0.1	97	0.1563	14.13	226.11	**Trap/Vee/Rect Channel Flow, EF** Bot.W=6.00' D=1.00' Z= 10.0 '/' Top.W=26.00' n= 0.030 Earth, grassed & winding
7.4	382	Total			

Subcatchment P-MW:



Hydrograph for Subcatchment P-MW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.00
10.00	0.97	0.03	0.07
12.00	2.57	0.69	**2.69**
14.00	4.17	1.79	**0.37**
16.00	4.55	2.09	0.20
18.00	4.77	2.26	0.13
20.00	4.92	2.38	0.10
22.00	5.04	2.48	0.08
24.00	**5.14**	**2.56**	0.07
26.00	5.14	2.56	0.00
28.00	5.14	2.56	0.00
30.00	5.14	2.56	0.00
32.00	5.14	2.56	0.00
34.00	5.14	2.56	0.00
36.00	5.14	2.56	0.00
38.00	5.14	2.56	0.00
40.00	5.14	2.56	0.00
42.00	5.14	2.56	0.00
44.00	5.14	2.56	0.00
46.00	5.14	2.56	0.00
48.00	5.14	2.56	0.00
50.00	5.14	2.56	0.00
52.00	5.14	2.56	0.00
54.00	5.14	2.56	0.00
56.00	5.14	2.56	0.00
58.00	5.14	2.56	0.00
60.00	5.14	2.56	0.00
62.00	5.14	2.56	0.00
64.00	5.14	2.56	0.00
66.00	5.14	2.56	0.00
68.00	5.14	2.56	0.00
70.00	5.14	2.56	0.00
72.00	5.14	2.56	0.00
74.00	5.14	2.56	0.00
76.00	5.14	2.56	0.00
78.00	5.14	2.56	0.00
80.00	5.14	2.56	0.00
82.00	5.14	2.56	0.00
84.00	5.14	2.56	0.00
86.00	5.14	2.56	0.00
88.00	5.14	2.56	0.00
90.00	5.14	2.56	0.00
92.00	5.14	2.56	0.00
94.00	5.14	2.56	0.00
96.00	5.14	2.56	0.00
98.00	5.14	2.56	0.00
100.00	5.14	2.56	0.00
102.00	5.14	2.56	0.00
104.00	5.14	2.56	0.00
106.00	5.14	2.56	0.00
108.00	5.14	2.56	0.00
110.00	5.14	2.56	0.00
112.00	5.14	2.56	0.00
114.00	5.14	2.56	0.00
116.00	5.14	2.56	0.00
118.00	5.14	2.56	0.00
120.00	5.14	2.56	0.00
122.00	5.14	2.56	0.00
124.00	5.14	2.56	0.00
126.00	5.14	2.56	0.00
128.00	5.14	2.56	0.00
130.00	5.14	2.56	0.00
132.00	5.14	2.56	0.00
134.00	5.14	2.56	0.00
136.00	5.14	2.56	0.00
138.00	5.14	2.56	0.00
140.00	5.14	2.56	0.00
142.00	5.14	2.56	0.00
144.00	5.14	2.56	0.00
146.00	5.14	2.56	0.00
148.00	5.14	2.56	0.00
150.00	5.14	2.56	0.00
152.00	5.14	2.56	0.00
154.00	5.14	2.56	0.00
156.00	5.14	2.56	0.00
158.00	5.14	2.56	0.00
160.00	5.14	2.56	0.00
162.00	5.14	2.56	0.00
164.00	5.14	2.56	0.00
166.00	5.14	2.56	0.00
168.00	5.14	2.56	0.00
170.00	5.14	2.56	0.00
172.00	5.14	2.56	0.00
174.00	5.14	2.56	0.00
176.00	5.14	2.56	0.00
178.00	5.14	2.56	0.00
180.00	5.14	2.56	0.00

Summary for Subcatchment P-N:

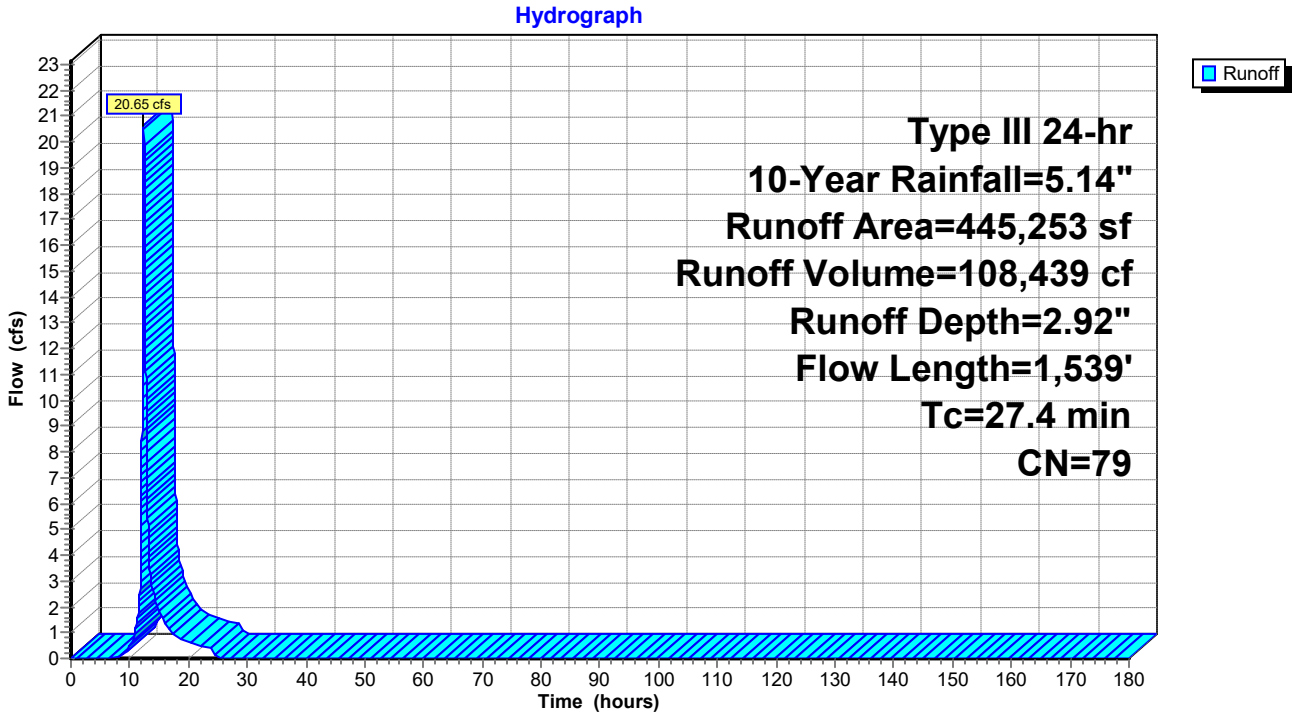
Runoff = 20.65 cfs @ 12.39 hrs, Volume= 108,439 cf, Depth= 2.92"
Routed to Reach P-DP-N : Culvert towards Wades Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
105,630	80	Pasture/grassland/range, Good, HSG D
77,593	72	Woods/grass comb., Good, HSG C
236,123	79	Woods/grass comb., Good, HSG D
4,456	96	Gravel surface, HSG C
8,912	96	Gravel surface, HSG D
9,012	98	Unconnected pavement, HSG D
3,527	78	Meadow, non-grazed, HSG D
445,253	79	Weighted Average
436,241		97.98% Pervious Area
9,012		2.02% Impervious Area
9,012		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	101	0.0383	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
5.8	464	0.0710	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
1.7	209	0.0846	2.04		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
2.6	288	0.0702	1.85		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.8	477	0.0765	9.75	48.76	**Trap/Vee/Rect Channel Flow, EF** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
27.4	1,539	Total			

Subcatchment P-N:



Hydrograph for Subcatchment P-N:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.01
10.00	0.97	0.06	0.50
12.00	2.57	0.88	**6.31**
14.00	4.17	2.10	**2.56**
16.00	4.55	2.42	1.37
18.00	4.77	2.60	0.82
20.00	4.92	2.73	0.62
22.00	5.04	2.84	0.51
24.00	**5.14**	**2.92**	0.41
26.00	5.14	2.92	0.00
28.00	5.14	2.92	0.00
30.00	5.14	2.92	0.00
32.00	5.14	2.92	0.00
34.00	5.14	2.92	0.00
36.00	5.14	2.92	0.00
38.00	5.14	2.92	0.00
40.00	5.14	2.92	0.00
42.00	5.14	2.92	0.00
44.00	5.14	2.92	0.00
46.00	5.14	2.92	0.00
48.00	5.14	2.92	0.00
50.00	5.14	2.92	0.00
52.00	5.14	2.92	0.00
54.00	5.14	2.92	0.00
56.00	5.14	2.92	0.00
58.00	5.14	2.92	0.00
60.00	5.14	2.92	0.00
62.00	5.14	2.92	0.00
64.00	5.14	2.92	0.00
66.00	5.14	2.92	0.00
68.00	5.14	2.92	0.00
70.00	5.14	2.92	0.00
72.00	5.14	2.92	0.00
74.00	5.14	2.92	0.00
76.00	5.14	2.92	0.00
78.00	5.14	2.92	0.00
80.00	5.14	2.92	0.00
82.00	5.14	2.92	0.00
84.00	5.14	2.92	0.00
86.00	5.14	2.92	0.00
88.00	5.14	2.92	0.00
90.00	5.14	2.92	0.00
92.00	5.14	2.92	0.00
94.00	5.14	2.92	0.00
96.00	5.14	2.92	0.00
98.00	5.14	2.92	0.00
100.00	5.14	2.92	0.00
102.00	5.14	2.92	0.00
104.00	5.14	2.92	0.00
106.00	5.14	2.92	0.00
108.00	5.14	2.92	0.00
110.00	5.14	2.92	0.00
112.00	5.14	2.92	0.00
114.00	5.14	2.92	0.00
116.00	5.14	2.92	0.00
118.00	5.14	2.92	0.00
120.00	5.14	2.92	0.00
122.00	5.14	2.92	0.00
124.00	5.14	2.92	0.00
126.00	5.14	2.92	0.00
128.00	5.14	2.92	0.00
130.00	5.14	2.92	0.00
132.00	5.14	2.92	0.00
134.00	5.14	2.92	0.00
136.00	5.14	2.92	0.00
138.00	5.14	2.92	0.00
140.00	5.14	2.92	0.00
142.00	5.14	2.92	0.00
144.00	5.14	2.92	0.00
146.00	5.14	2.92	0.00
148.00	5.14	2.92	0.00
150.00	5.14	2.92	0.00
152.00	5.14	2.92	0.00
154.00	5.14	2.92	0.00
156.00	5.14	2.92	0.00
158.00	5.14	2.92	0.00
160.00	5.14	2.92	0.00
162.00	5.14	2.92	0.00
164.00	5.14	2.92	0.00
166.00	5.14	2.92	0.00
168.00	5.14	2.92	0.00
170.00	5.14	2.92	0.00
172.00	5.14	2.92	0.00
174.00	5.14	2.92	0.00
176.00	5.14	2.92	0.00
178.00	5.14	2.92	0.00
180.00	5.14	2.92	0.00

Summary for Subcatchment P-NE:

[47] Hint: Peak is 2128% of capacity of segment #5

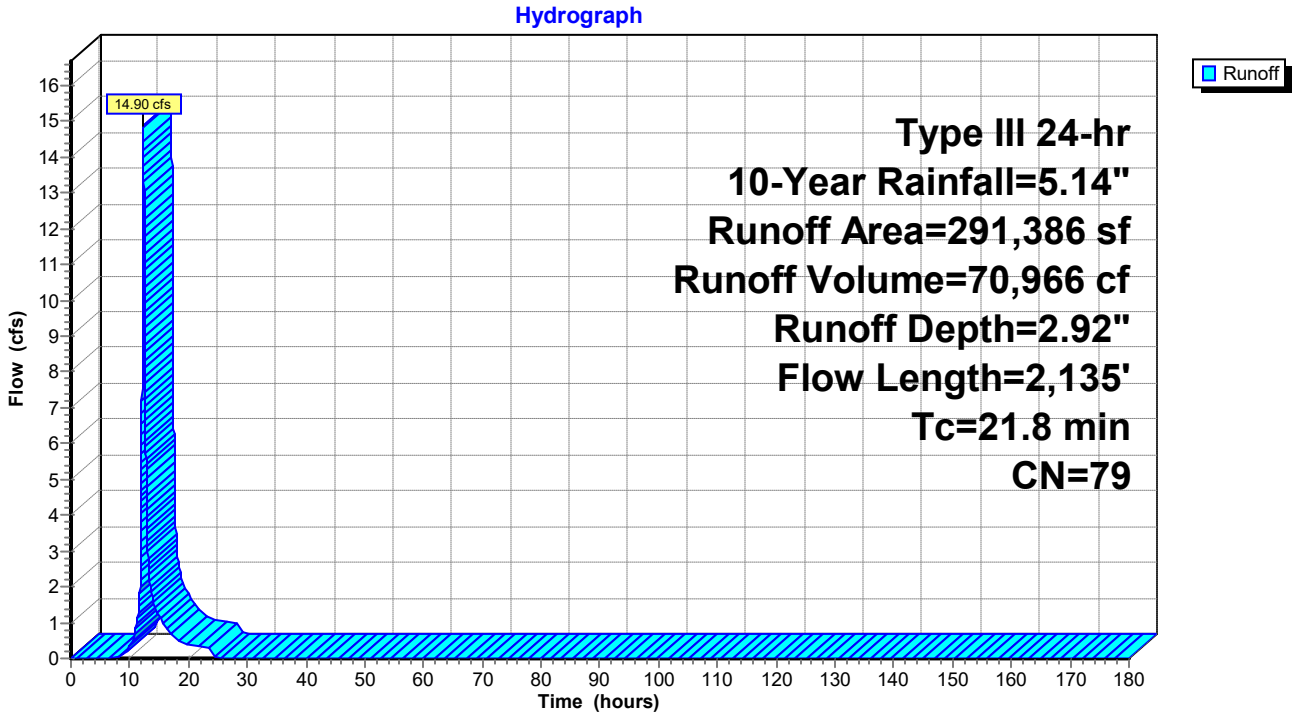
Runoff = 14.90 cfs @ 12.30 hrs, Volume= 70,966 cf, Depth= 2.92"
Routed to Reach P-DP-NE :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
61,428	74	Pasture/grassland/range, Good, HSG C
190,451	80	Pasture/grassland/range, Good, HSG D
4,653	96	Gravel surface, HSG C
6,269	96	Gravel surface, HSG D
830	98	Unconnected pavement, HSG D
187	98	Unconnected pavement, HSG C
1,558	98	Unconnected pavement, HSG D
13,397	71	Meadow, non-grazed, HSG C
12,613	78	Meadow, non-grazed, HSG D
291,386	79	Weighted Average
288,811		99.12% Pervious Area
2,575		0.88% Impervious Area
2,575		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0675	0.31		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
7.1	705	0.0566	1.67		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
3.1	295	0.0513	1.59		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0393	1.39		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.5	17	0.0001	0.57	0.70	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
3.4	335	0.0540	1.63		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
0.7	543	0.1506	13.10	170.34	**Trap/Vee/Rect Channel Flow, GH** Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.030 Earth, grassed & winding
21.8	2,135	Total			

Subcatchment P-NE:



Hydrograph for Subcatchment P-NE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.01
10.00	0.97	0.06	0.35
12.00	2.57	0.88	**5.29**
14.00	4.17	2.10	**1.61**
16.00	4.55	2.42	0.87
18.00	4.77	2.60	0.52
20.00	4.92	2.73	0.40
22.00	5.04	2.84	0.33
24.00	**5.14**	**2.92**	0.27
26.00	5.14	2.92	0.00
28.00	5.14	2.92	0.00
30.00	5.14	2.92	0.00
32.00	5.14	2.92	0.00
34.00	5.14	2.92	0.00
36.00	5.14	2.92	0.00
38.00	5.14	2.92	0.00
40.00	5.14	2.92	0.00
42.00	5.14	2.92	0.00
44.00	5.14	2.92	0.00
46.00	5.14	2.92	0.00
48.00	5.14	2.92	0.00
50.00	5.14	2.92	0.00
52.00	5.14	2.92	0.00
54.00	5.14	2.92	0.00
56.00	5.14	2.92	0.00
58.00	5.14	2.92	0.00
60.00	5.14	2.92	0.00
62.00	5.14	2.92	0.00
64.00	5.14	2.92	0.00
66.00	5.14	2.92	0.00
68.00	5.14	2.92	0.00
70.00	5.14	2.92	0.00
72.00	5.14	2.92	0.00
74.00	5.14	2.92	0.00
76.00	5.14	2.92	0.00
78.00	5.14	2.92	0.00
80.00	5.14	2.92	0.00
82.00	5.14	2.92	0.00
84.00	5.14	2.92	0.00
86.00	5.14	2.92	0.00
88.00	5.14	2.92	0.00
90.00	5.14	2.92	0.00
92.00	5.14	2.92	0.00
94.00	5.14	2.92	0.00
96.00	5.14	2.92	0.00
98.00	5.14	2.92	0.00
100.00	5.14	2.92	0.00
102.00	5.14	2.92	0.00
104.00	5.14	2.92	0.00
106.00	5.14	2.92	0.00
108.00	5.14	2.92	0.00
110.00	5.14	2.92	0.00
112.00	5.14	2.92	0.00
114.00	5.14	2.92	0.00
116.00	5.14	2.92	0.00
118.00	5.14	2.92	0.00
120.00	5.14	2.92	0.00
122.00	5.14	2.92	0.00
124.00	5.14	2.92	0.00
126.00	5.14	2.92	0.00
128.00	5.14	2.92	0.00
130.00	5.14	2.92	0.00
132.00	5.14	2.92	0.00
134.00	5.14	2.92	0.00
136.00	5.14	2.92	0.00
138.00	5.14	2.92	0.00
140.00	5.14	2.92	0.00
142.00	5.14	2.92	0.00
144.00	5.14	2.92	0.00
146.00	5.14	2.92	0.00
148.00	5.14	2.92	0.00
150.00	5.14	2.92	0.00
152.00	5.14	2.92	0.00
154.00	5.14	2.92	0.00
156.00	5.14	2.92	0.00
158.00	5.14	2.92	0.00
160.00	5.14	2.92	0.00
162.00	5.14	2.92	0.00
164.00	5.14	2.92	0.00
166.00	5.14	2.92	0.00
168.00	5.14	2.92	0.00
170.00	5.14	2.92	0.00
172.00	5.14	2.92	0.00
174.00	5.14	2.92	0.00
176.00	5.14	2.92	0.00
178.00	5.14	2.92	0.00
180.00	5.14	2.92	0.00

Summary for Subcatchment P-NW:

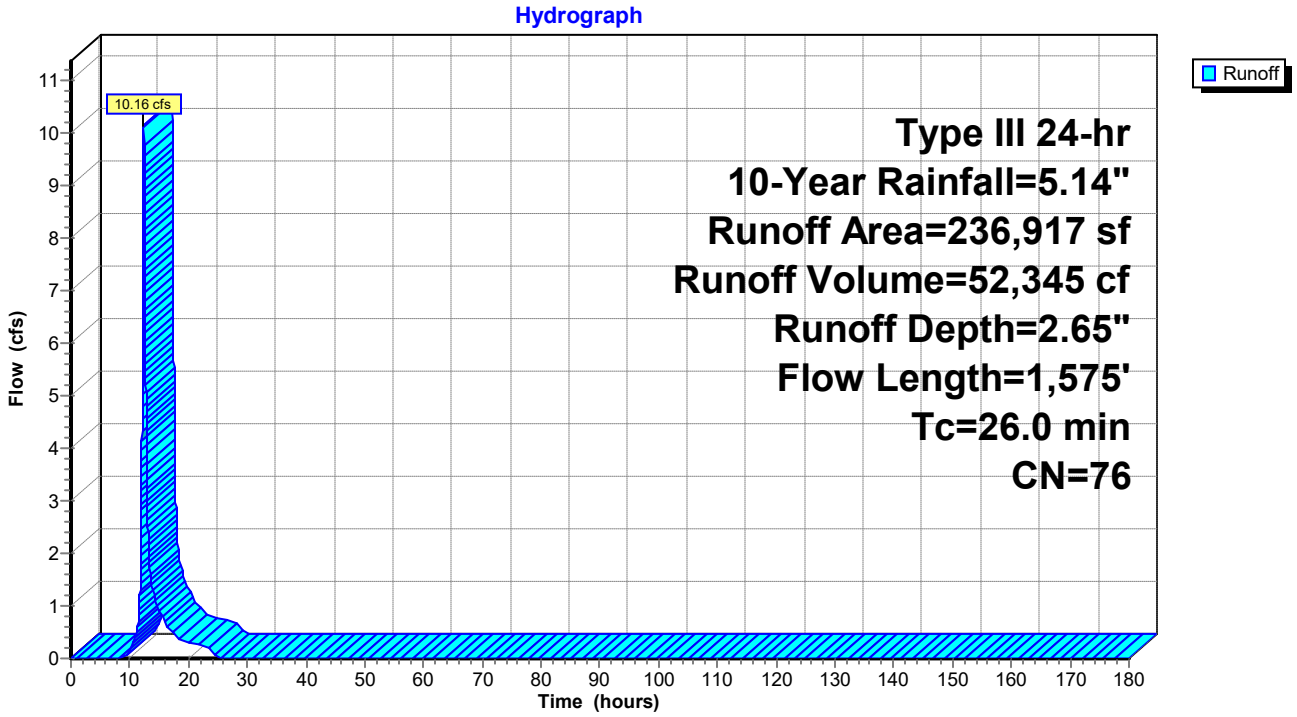
Runoff = 10.16 cfs @ 12.36 hrs, Volume= 52,345 cf, Depth= 2.65"
Routed to Reach P-DP-NW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
92,786	74	Pasture/grassland/range, Good, HSG C
45,051	80	Pasture/grassland/range, Good, HSG D
9,923	72	Woods/grass comb., Good, HSG C
58,620	79	Woods/grass comb., Good, HSG D
492	96	Gravel surface, HSG C
1,562	98	Unconnected pavement, HSG C
199	98	Unconnected pavement, HSG D
24,972	71	Meadow, non-grazed, HSG C
3,312	78	Meadow, non-grazed, HSG D
236,917	76	Weighted Average
235,156		99.26% Pervious Area
1,761		0.74% Impervious Area
1,761		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	102	0.0665	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.9	685	0.0763	1.93		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.1	75	0.0926	10.58	137.52	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=1.00' Z= 9.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.4	87	0.3254	3.99		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
1.7	174	0.1201	1.73		**Shallow Concentrated Flow, GH** Woodland Kv= 5.0 fps
2.9	202	0.0555	1.18		**Shallow Concentrated Flow, HI** Woodland Kv= 5.0 fps
0.1	104	0.1222	26.85	1,852.49	**Trap/Vee/Rect Channel Flow, IJ** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
26.0	1,575	Total			

Subcatchment P-NW:



Hydrograph for Subcatchment P-NW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.00
10.00	0.97	0.03	0.17
12.00	2.57	0.74	**3.07**
14.00	4.17	1.87	**1.27**
16.00	4.55	2.17	0.69
18.00	4.77	2.35	0.41
20.00	4.92	2.47	0.31
22.00	5.04	2.57	0.26
24.00	**5.14**	**2.65**	0.21
26.00	5.14	2.65	0.00
28.00	5.14	2.65	0.00
30.00	5.14	2.65	0.00
32.00	5.14	2.65	0.00
34.00	5.14	2.65	0.00
36.00	5.14	2.65	0.00
38.00	5.14	2.65	0.00
40.00	5.14	2.65	0.00
42.00	5.14	2.65	0.00
44.00	5.14	2.65	0.00
46.00	5.14	2.65	0.00
48.00	5.14	2.65	0.00
50.00	5.14	2.65	0.00
52.00	5.14	2.65	0.00
54.00	5.14	2.65	0.00
56.00	5.14	2.65	0.00
58.00	5.14	2.65	0.00
60.00	5.14	2.65	0.00
62.00	5.14	2.65	0.00
64.00	5.14	2.65	0.00
66.00	5.14	2.65	0.00
68.00	5.14	2.65	0.00
70.00	5.14	2.65	0.00
72.00	5.14	2.65	0.00
74.00	5.14	2.65	0.00
76.00	5.14	2.65	0.00
78.00	5.14	2.65	0.00
80.00	5.14	2.65	0.00
82.00	5.14	2.65	0.00
84.00	5.14	2.65	0.00
86.00	5.14	2.65	0.00
88.00	5.14	2.65	0.00
90.00	5.14	2.65	0.00
92.00	5.14	2.65	0.00
94.00	5.14	2.65	0.00
96.00	5.14	2.65	0.00
98.00	5.14	2.65	0.00
100.00	5.14	2.65	0.00
102.00	5.14	2.65	0.00
104.00	5.14	2.65	0.00
106.00	5.14	2.65	0.00
108.00	5.14	2.65	0.00
110.00	5.14	2.65	0.00
112.00	5.14	2.65	0.00
114.00	5.14	2.65	0.00
116.00	5.14	2.65	0.00
118.00	5.14	2.65	0.00
120.00	5.14	2.65	0.00
122.00	5.14	2.65	0.00
124.00	5.14	2.65	0.00
126.00	5.14	2.65	0.00
128.00	5.14	2.65	0.00
130.00	5.14	2.65	0.00
132.00	5.14	2.65	0.00
134.00	5.14	2.65	0.00
136.00	5.14	2.65	0.00
138.00	5.14	2.65	0.00
140.00	5.14	2.65	0.00
142.00	5.14	2.65	0.00
144.00	5.14	2.65	0.00
146.00	5.14	2.65	0.00
148.00	5.14	2.65	0.00
150.00	5.14	2.65	0.00
152.00	5.14	2.65	0.00
154.00	5.14	2.65	0.00
156.00	5.14	2.65	0.00
158.00	5.14	2.65	0.00
160.00	5.14	2.65	0.00
162.00	5.14	2.65	0.00
164.00	5.14	2.65	0.00
166.00	5.14	2.65	0.00
168.00	5.14	2.65	0.00
170.00	5.14	2.65	0.00
172.00	5.14	2.65	0.00
174.00	5.14	2.65	0.00
176.00	5.14	2.65	0.00
178.00	5.14	2.65	0.00
180.00	5.14	2.65	0.00

Summary for Subcatchment P-SE1:

[47] Hint: Peak is 130% of capacity of segment #5

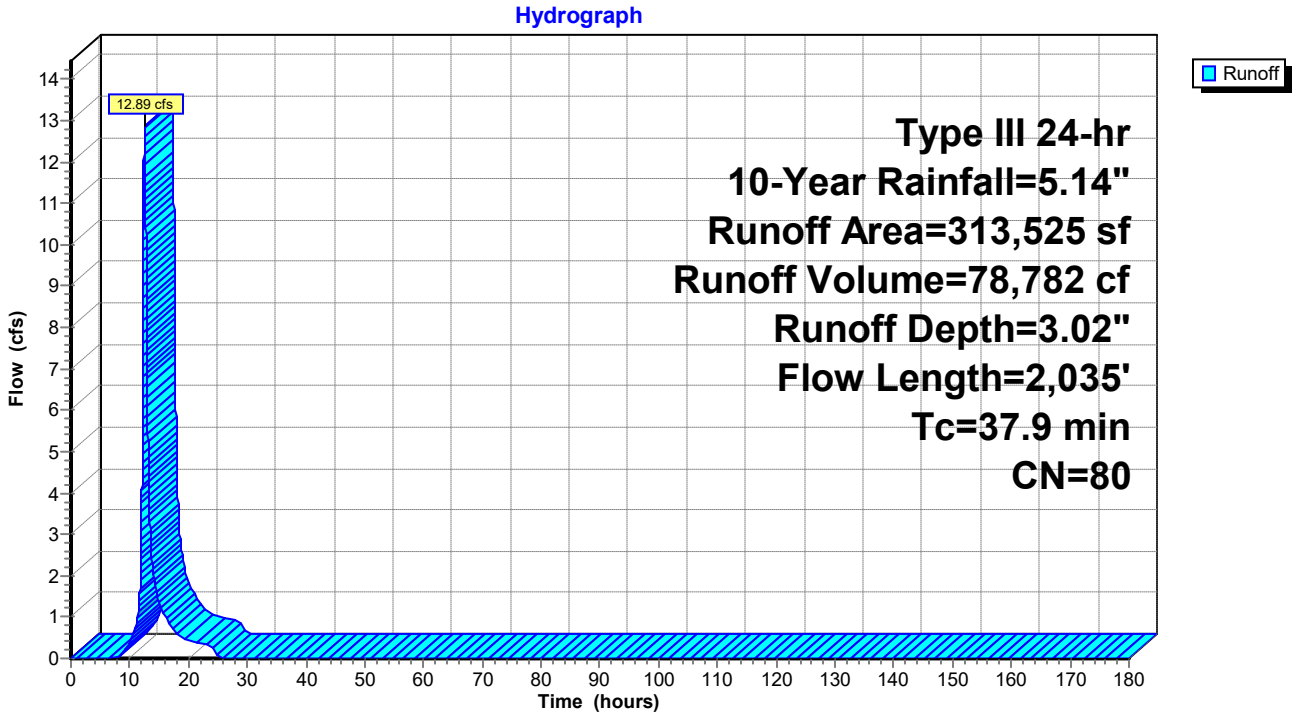
Runoff = 12.89 cfs @ 12.51 hrs, Volume= 78,782 cf, Depth= 3.02"
Routed to Pond B : 2x15" CPP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
243,357	80	Pasture/grassland/range, Good, HSG D
64,315	79	Woods/grass comb., Good, HSG D
4,257	98	Unconnected pavement, HSG D
1,596	78	Meadow, non-grazed, HSG D
313,525	80	Weighted Average
309,268		98.64% Pervious Area
4,257		1.36% Impervious Area
4,257		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0707	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
1.8	144	0.0705	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
2.2	216	0.0566	1.67		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.7	645	0.0722	1.88		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
2.8	367	0.0091	2.21	9.95	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
5.5	100	0.0606	0.30		**Sheet Flow, FG** Range n= 0.130 P2= 3.29"
0.7	82	0.0703	1.86		**Shallow Concentrated Flow, GH** Short Grass Pasture Kv= 7.0 fps
2.6	42	0.0707	0.27		**Sheet Flow, HI** Range n= 0.130 P2= 3.29"
3.8	339	0.0442	1.47		**Shallow Concentrated Flow, IJ** Short Grass Pasture Kv= 7.0 fps
37.9	2,035	Total			

Subcatchment P-SE1:



Hydrograph for Subcatchment P-SE1:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.01
10.00	0.97	0.07	0.35
12.00	2.57	0.94	**3.14**
14.00	4.17	2.18	**2.04**
16.00	4.55	2.51	1.04
18.00	4.77	2.69	0.61
20.00	4.92	2.82	0.45
22.00	5.04	2.93	0.37
24.00	**5.14**	**3.02**	0.30
26.00	5.14	3.02	0.00
28.00	5.14	3.02	0.00
30.00	5.14	3.02	0.00
32.00	5.14	3.02	0.00
34.00	5.14	3.02	0.00
36.00	5.14	3.02	0.00
38.00	5.14	3.02	0.00
40.00	5.14	3.02	0.00
42.00	5.14	3.02	0.00
44.00	5.14	3.02	0.00
46.00	5.14	3.02	0.00
48.00	5.14	3.02	0.00
50.00	5.14	3.02	0.00
52.00	5.14	3.02	0.00
54.00	5.14	3.02	0.00
56.00	5.14	3.02	0.00
58.00	5.14	3.02	0.00
60.00	5.14	3.02	0.00
62.00	5.14	3.02	0.00
64.00	5.14	3.02	0.00
66.00	5.14	3.02	0.00
68.00	5.14	3.02	0.00
70.00	5.14	3.02	0.00
72.00	5.14	3.02	0.00
74.00	5.14	3.02	0.00
76.00	5.14	3.02	0.00
78.00	5.14	3.02	0.00
80.00	5.14	3.02	0.00
82.00	5.14	3.02	0.00
84.00	5.14	3.02	0.00
86.00	5.14	3.02	0.00
88.00	5.14	3.02	0.00
90.00	5.14	3.02	0.00
92.00	5.14	3.02	0.00
94.00	5.14	3.02	0.00
96.00	5.14	3.02	0.00
98.00	5.14	3.02	0.00
100.00	5.14	3.02	0.00
102.00	5.14	3.02	0.00
104.00	5.14	3.02	0.00
106.00	5.14	3.02	0.00
108.00	5.14	3.02	0.00
110.00	5.14	3.02	0.00
112.00	5.14	3.02	0.00
114.00	5.14	3.02	0.00
116.00	5.14	3.02	0.00
118.00	5.14	3.02	0.00
120.00	5.14	3.02	0.00
122.00	5.14	3.02	0.00
124.00	5.14	3.02	0.00
126.00	5.14	3.02	0.00
128.00	5.14	3.02	0.00
130.00	5.14	3.02	0.00
132.00	5.14	3.02	0.00
134.00	5.14	3.02	0.00
136.00	5.14	3.02	0.00
138.00	5.14	3.02	0.00
140.00	5.14	3.02	0.00
142.00	5.14	3.02	0.00
144.00	5.14	3.02	0.00
146.00	5.14	3.02	0.00
148.00	5.14	3.02	0.00
150.00	5.14	3.02	0.00
152.00	5.14	3.02	0.00
154.00	5.14	3.02	0.00
156.00	5.14	3.02	0.00
158.00	5.14	3.02	0.00
160.00	5.14	3.02	0.00
162.00	5.14	3.02	0.00
164.00	5.14	3.02	0.00
166.00	5.14	3.02	0.00
168.00	5.14	3.02	0.00
170.00	5.14	3.02	0.00
172.00	5.14	3.02	0.00
174.00	5.14	3.02	0.00
176.00	5.14	3.02	0.00
178.00	5.14	3.02	0.00
180.00	5.14	3.02	0.00

Summary for Subcatchment P-SE2:

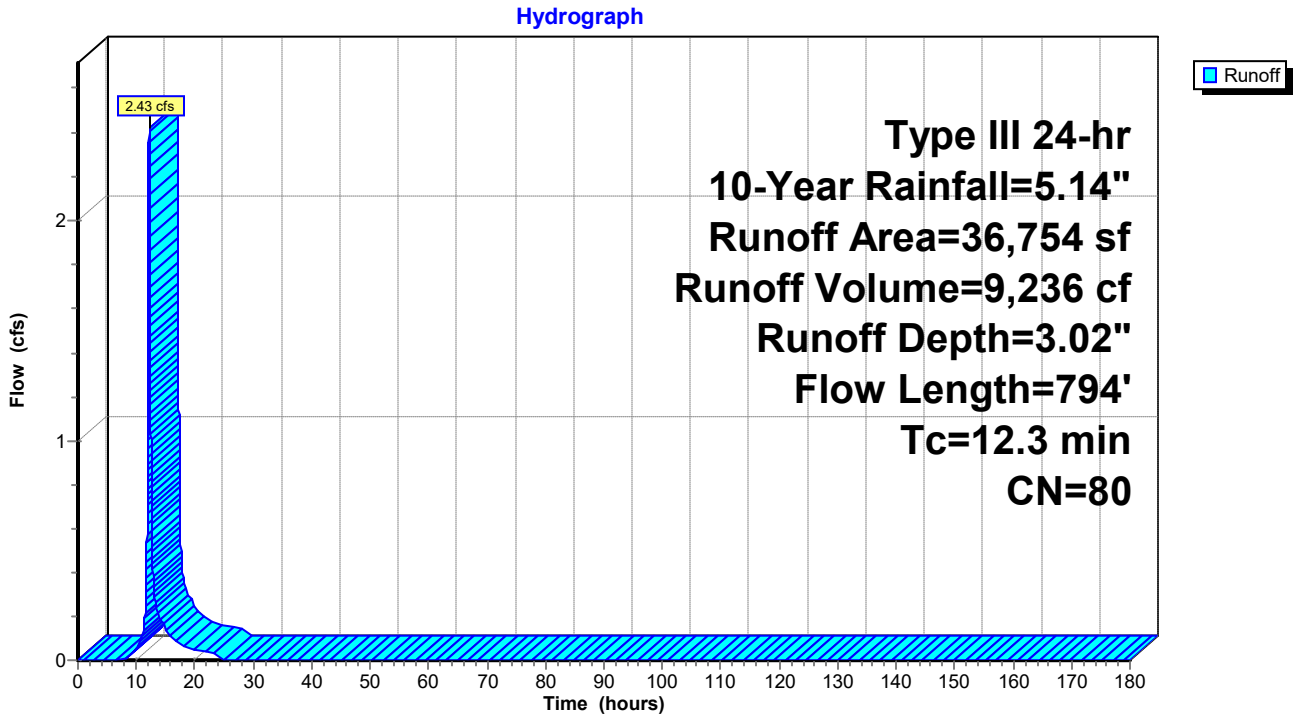
Runoff = 2.43 cfs @ 12.17 hrs, Volume= 9,236 cf, Depth= 3.02"
Routed to Pond A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
34,270	80	Pasture/grassland/range, Good, HSG D
160	98	Unconnected pavement, HSG D
2,324	78	Meadow, non-grazed, HSG D
36,754	80	Weighted Average
36,594		99.56% Pervious Area
160		0.44% Impervious Area
160		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0552	0.29		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.6	694	0.0626	1.75		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
12.3	794	Total			

Subcatchment P-SE2:



Hydrograph for Subcatchment P-SE2:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.01
10.00	0.97	0.07	0.06
12.00	2.57	0.94	**1.09**
14.00	4.17	2.18	**0.20**
16.00	4.55	2.51	0.11
18.00	4.77	2.69	0.06
20.00	4.92	2.82	0.05
22.00	5.04	2.93	0.04
24.00	**5.14**	**3.02**	0.03
26.00	5.14	3.02	0.00
28.00	5.14	3.02	0.00
30.00	5.14	3.02	0.00
32.00	5.14	3.02	0.00
34.00	5.14	3.02	0.00
36.00	5.14	3.02	0.00
38.00	5.14	3.02	0.00
40.00	5.14	3.02	0.00
42.00	5.14	3.02	0.00
44.00	5.14	3.02	0.00
46.00	5.14	3.02	0.00
48.00	5.14	3.02	0.00
50.00	5.14	3.02	0.00
52.00	5.14	3.02	0.00
54.00	5.14	3.02	0.00
56.00	5.14	3.02	0.00
58.00	5.14	3.02	0.00
60.00	5.14	3.02	0.00
62.00	5.14	3.02	0.00
64.00	5.14	3.02	0.00
66.00	5.14	3.02	0.00
68.00	5.14	3.02	0.00
70.00	5.14	3.02	0.00
72.00	5.14	3.02	0.00
74.00	5.14	3.02	0.00
76.00	5.14	3.02	0.00
78.00	5.14	3.02	0.00
80.00	5.14	3.02	0.00
82.00	5.14	3.02	0.00
84.00	5.14	3.02	0.00
86.00	5.14	3.02	0.00
88.00	5.14	3.02	0.00
90.00	5.14	3.02	0.00
92.00	5.14	3.02	0.00
94.00	5.14	3.02	0.00
96.00	5.14	3.02	0.00
98.00	5.14	3.02	0.00
100.00	5.14	3.02	0.00
102.00	5.14	3.02	0.00
104.00	5.14	3.02	0.00
106.00	5.14	3.02	0.00
108.00	5.14	3.02	0.00
110.00	5.14	3.02	0.00
112.00	5.14	3.02	0.00
114.00	5.14	3.02	0.00
116.00	5.14	3.02	0.00
118.00	5.14	3.02	0.00
120.00	5.14	3.02	0.00
122.00	5.14	3.02	0.00
124.00	5.14	3.02	0.00
126.00	5.14	3.02	0.00
128.00	5.14	3.02	0.00
130.00	5.14	3.02	0.00
132.00	5.14	3.02	0.00
134.00	5.14	3.02	0.00
136.00	5.14	3.02	0.00
138.00	5.14	3.02	0.00
140.00	5.14	3.02	0.00
142.00	5.14	3.02	0.00
144.00	5.14	3.02	0.00
146.00	5.14	3.02	0.00
148.00	5.14	3.02	0.00
150.00	5.14	3.02	0.00
152.00	5.14	3.02	0.00
154.00	5.14	3.02	0.00
156.00	5.14	3.02	0.00
158.00	5.14	3.02	0.00
160.00	5.14	3.02	0.00
162.00	5.14	3.02	0.00
164.00	5.14	3.02	0.00
166.00	5.14	3.02	0.00
168.00	5.14	3.02	0.00
170.00	5.14	3.02	0.00
172.00	5.14	3.02	0.00
174.00	5.14	3.02	0.00
176.00	5.14	3.02	0.00
178.00	5.14	3.02	0.00
180.00	5.14	3.02	0.00

Summary for Subcatchment P-SE3:

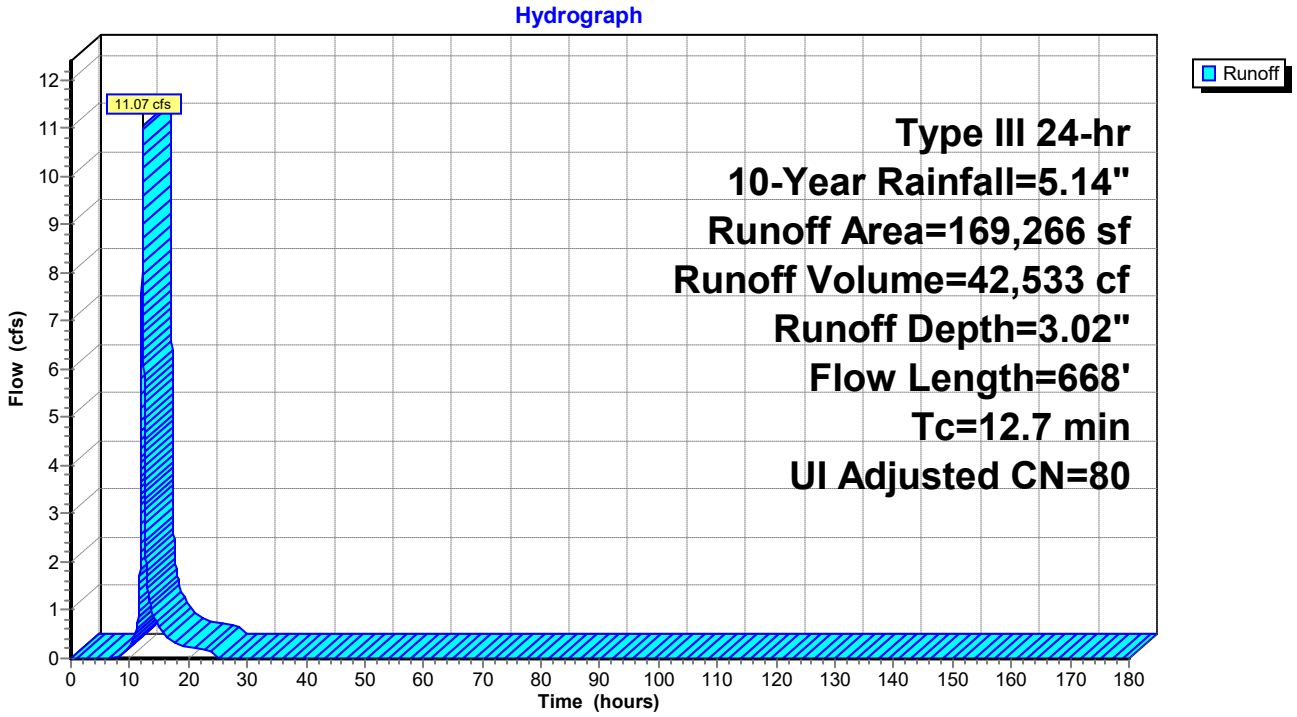
Runoff = 11.07 cfs @ 12.18 hrs, Volume= 42,533 cf, Depth= 3.02"
Routed to Reach P-DP-SE : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Adj	Description
106,589	80		Pasture/grassland/range, Good, HSG D
4,800	79		Woods/grass comb., Good, HSG D
4,840	96		Gravel surface, HSG D
9,465	98		Unconnected pavement, HSG D
43,572	78		Meadow, non-grazed, HSG D
169,266	81	80	Weighted Average, UI Adjusted
159,801			94.41% Pervious Area
9,465			5.59% Impervious Area
9,465			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0425	0.26		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.1	521	0.0416	1.43		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.2	47	0.0304	4.04	18.19	**Trap/Vee/Rect Channel Flow, CD** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
12.7	668	Total			

Subcatchment P-SE3:



Hydrograph for Subcatchment P-SE3:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.02
10.00	0.97	0.07	0.25
12.00	2.57	0.94	**4.94**
14.00	4.17	2.18	**0.90**
16.00	4.55	2.51	0.49
18.00	4.77	2.69	0.30
20.00	4.92	2.82	0.23
22.00	5.04	2.93	0.19
24.00	**5.14**	**3.02**	0.15
26.00	5.14	3.02	0.00
28.00	5.14	3.02	0.00
30.00	5.14	3.02	0.00
32.00	5.14	3.02	0.00
34.00	5.14	3.02	0.00
36.00	5.14	3.02	0.00
38.00	5.14	3.02	0.00
40.00	5.14	3.02	0.00
42.00	5.14	3.02	0.00
44.00	5.14	3.02	0.00
46.00	5.14	3.02	0.00
48.00	5.14	3.02	0.00
50.00	5.14	3.02	0.00
52.00	5.14	3.02	0.00
54.00	5.14	3.02	0.00
56.00	5.14	3.02	0.00
58.00	5.14	3.02	0.00
60.00	5.14	3.02	0.00
62.00	5.14	3.02	0.00
64.00	5.14	3.02	0.00
66.00	5.14	3.02	0.00
68.00	5.14	3.02	0.00
70.00	5.14	3.02	0.00
72.00	5.14	3.02	0.00
74.00	5.14	3.02	0.00
76.00	5.14	3.02	0.00
78.00	5.14	3.02	0.00
80.00	5.14	3.02	0.00
82.00	5.14	3.02	0.00
84.00	5.14	3.02	0.00
86.00	5.14	3.02	0.00
88.00	5.14	3.02	0.00
90.00	5.14	3.02	0.00
92.00	5.14	3.02	0.00
94.00	5.14	3.02	0.00
96.00	5.14	3.02	0.00
98.00	5.14	3.02	0.00
100.00	5.14	3.02	0.00
102.00	5.14	3.02	0.00
104.00	5.14	3.02	0.00
106.00	5.14	3.02	0.00
108.00	5.14	3.02	0.00
110.00	5.14	3.02	0.00
112.00	5.14	3.02	0.00
114.00	5.14	3.02	0.00
116.00	5.14	3.02	0.00
118.00	5.14	3.02	0.00
120.00	5.14	3.02	0.00
122.00	5.14	3.02	0.00
124.00	5.14	3.02	0.00
126.00	5.14	3.02	0.00
128.00	5.14	3.02	0.00
130.00	5.14	3.02	0.00
132.00	5.14	3.02	0.00
134.00	5.14	3.02	0.00
136.00	5.14	3.02	0.00
138.00	5.14	3.02	0.00
140.00	5.14	3.02	0.00
142.00	5.14	3.02	0.00
144.00	5.14	3.02	0.00
146.00	5.14	3.02	0.00
148.00	5.14	3.02	0.00
150.00	5.14	3.02	0.00
152.00	5.14	3.02	0.00
154.00	5.14	3.02	0.00
156.00	5.14	3.02	0.00
158.00	5.14	3.02	0.00
160.00	5.14	3.02	0.00
162.00	5.14	3.02	0.00
164.00	5.14	3.02	0.00
166.00	5.14	3.02	0.00
168.00	5.14	3.02	0.00
170.00	5.14	3.02	0.00
172.00	5.14	3.02	0.00
174.00	5.14	3.02	0.00
176.00	5.14	3.02	0.00
178.00	5.14	3.02	0.00
180.00	5.14	3.02	0.00

Summary for Subcatchment P-SW:

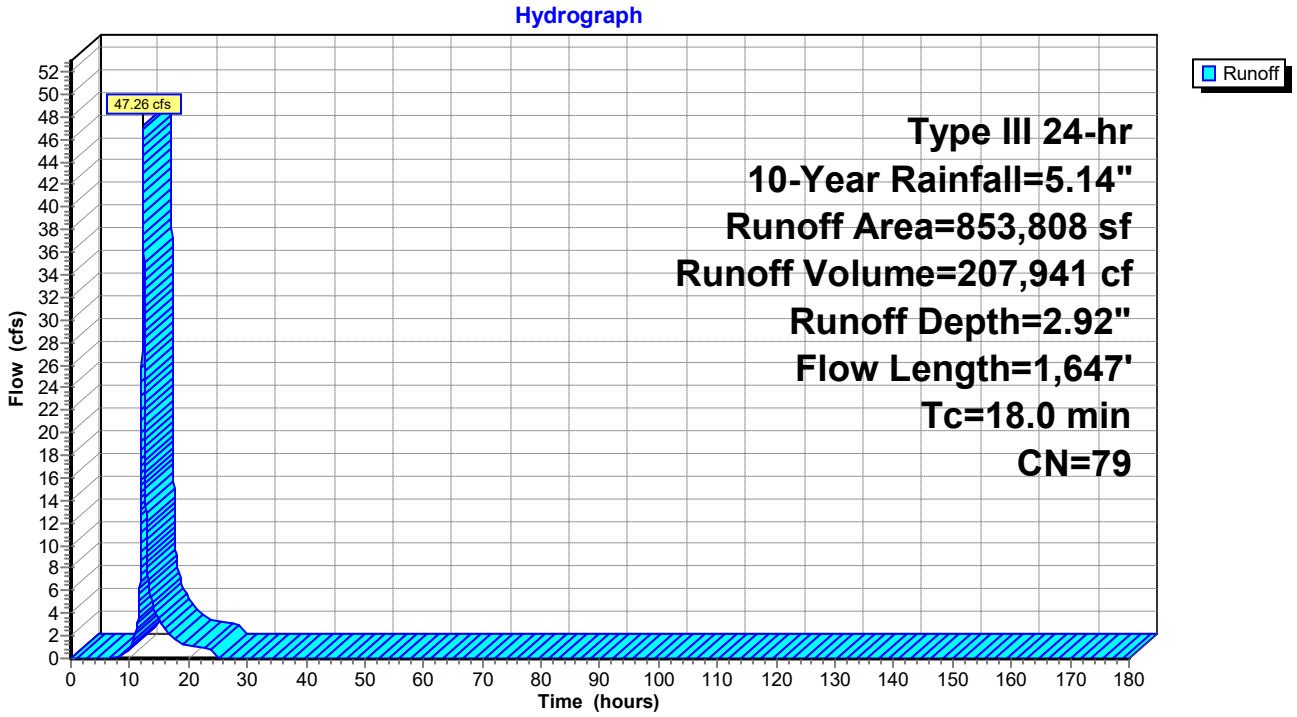
Runoff = 47.26 cfs @ 12.25 hrs, Volume= 207,941 cf, Depth= 2.92"
Routed to Reach P-DP-SW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

Area (sf)	CN	Description
153,422	80	Pasture/grassland/range, Good, HSG D
603,267	79	Woods/grass comb., Good, HSG D
54	96	Gravel surface, HSG D
787	98	Unconnected pavement, HSG D
96,278	78	Meadow, non-grazed, HSG D
853,808	79	Weighted Average
853,021		99.91% Pervious Area
787		0.09% Impervious Area
787		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0398	0.25		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
4.0	442	0.0697	1.85		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
4.4	387	0.0848	1.46		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
0.3	51	0.3946	3.14		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
2.2	149	0.0530	1.15		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.6	518	0.0304	13.39	923.97	**Trap/Vee/Rect Channel Flow, FG** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
18.0	1,647	Total			

Subcatchment P-SW:



Hydrograph for Subcatchment P-SW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.10	0.00	0.00
4.00	0.22	0.00	0.00
6.00	0.37	0.00	0.00
8.00	0.59	0.00	0.04
10.00	0.97	0.06	1.07
12.00	2.57	0.88	**18.44**
14.00	4.17	2.10	**4.62**
16.00	4.55	2.42	2.49
18.00	4.77	2.60	1.50
20.00	4.92	2.73	1.17
22.00	5.04	2.84	0.97
24.00	**5.14**	**2.92**	0.77
26.00	5.14	2.92	0.00
28.00	5.14	2.92	0.00
30.00	5.14	2.92	0.00
32.00	5.14	2.92	0.00
34.00	5.14	2.92	0.00
36.00	5.14	2.92	0.00
38.00	5.14	2.92	0.00
40.00	5.14	2.92	0.00
42.00	5.14	2.92	0.00
44.00	5.14	2.92	0.00
46.00	5.14	2.92	0.00
48.00	5.14	2.92	0.00
50.00	5.14	2.92	0.00
52.00	5.14	2.92	0.00
54.00	5.14	2.92	0.00
56.00	5.14	2.92	0.00
58.00	5.14	2.92	0.00
60.00	5.14	2.92	0.00
62.00	5.14	2.92	0.00
64.00	5.14	2.92	0.00
66.00	5.14	2.92	0.00
68.00	5.14	2.92	0.00
70.00	5.14	2.92	0.00
72.00	5.14	2.92	0.00
74.00	5.14	2.92	0.00
76.00	5.14	2.92	0.00
78.00	5.14	2.92	0.00
80.00	5.14	2.92	0.00
82.00	5.14	2.92	0.00
84.00	5.14	2.92	0.00
86.00	5.14	2.92	0.00
88.00	5.14	2.92	0.00
90.00	5.14	2.92	0.00
92.00	5.14	2.92	0.00
94.00	5.14	2.92	0.00
96.00	5.14	2.92	0.00
98.00	5.14	2.92	0.00
100.00	5.14	2.92	0.00
102.00	5.14	2.92	0.00
104.00	5.14	2.92	0.00
106.00	5.14	2.92	0.00
108.00	5.14	2.92	0.00
110.00	5.14	2.92	0.00
112.00	5.14	2.92	0.00
114.00	5.14	2.92	0.00
116.00	5.14	2.92	0.00
118.00	5.14	2.92	0.00
120.00	5.14	2.92	0.00
122.00	5.14	2.92	0.00
124.00	5.14	2.92	0.00
126.00	5.14	2.92	0.00
128.00	5.14	2.92	0.00
130.00	5.14	2.92	0.00
132.00	5.14	2.92	0.00
134.00	5.14	2.92	0.00
136.00	5.14	2.92	0.00
138.00	5.14	2.92	0.00
140.00	5.14	2.92	0.00
142.00	5.14	2.92	0.00
144.00	5.14	2.92	0.00
146.00	5.14	2.92	0.00
148.00	5.14	2.92	0.00
150.00	5.14	2.92	0.00
152.00	5.14	2.92	0.00
154.00	5.14	2.92	0.00
156.00	5.14	2.92	0.00
158.00	5.14	2.92	0.00
160.00	5.14	2.92	0.00
162.00	5.14	2.92	0.00
164.00	5.14	2.92	0.00
166.00	5.14	2.92	0.00
168.00	5.14	2.92	0.00
170.00	5.14	2.92	0.00
172.00	5.14	2.92	0.00
174.00	5.14	2.92	0.00
176.00	5.14	2.92	0.00
178.00	5.14	2.92	0.00
180.00	5.14	2.92	0.00

Summary for Reach C: Overland Flow

Inflow Area = 350,279 sf, 1.26% Impervious, Inflow Depth = 3.01" for 10-Year event
Inflow = 13.86 cfs @ 12.51 hrs, Volume= 87,934 cf
Outflow = 13.62 cfs @ 12.57 hrs, Volume= 87,934 cf, Atten= 2%, Lag= 3.5 min
Routed to Reach P-DP-SE : Culvert

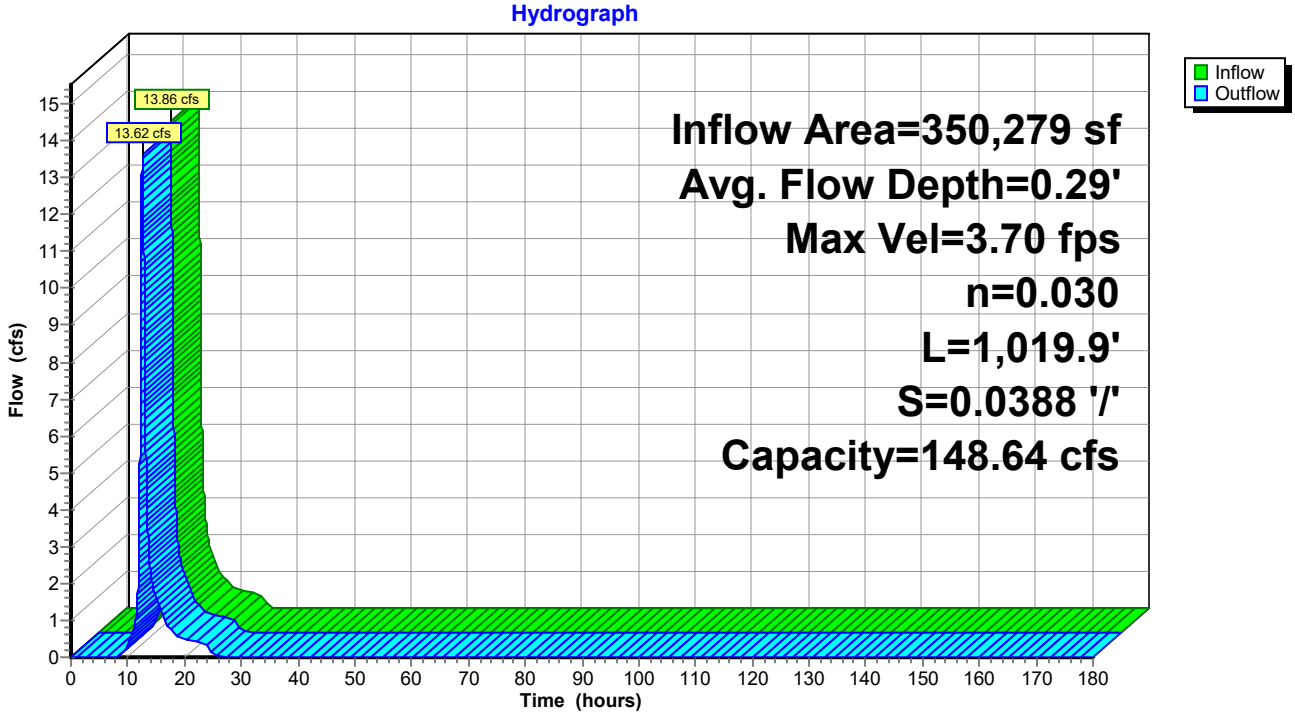
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 14.3 min

Peak Storage= 3,752 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 15.72'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 148.64 cfs

10.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 1,019.9' Slope= 0.0388 '/'
Inlet Invert= 1,659.60', Outlet Invert= 1,620.00'

‡

Reach C: Overland Flow



Hydrograph for Reach C: Overland Flow

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,659.60	0.00
5.00	0.00	0	1,659.60	0.00
10.00	**0.40**	**355**	**1,659.63**	**0.35**
15.00	**1.54**	**916**	**1,659.68**	**1.59**
20.00	0.50	448	1,659.64	0.51
25.00	0.03	145	1,659.61	0.09
30.00	0.00	0	1,659.60	0.00
35.00	0.00	0	1,659.60	0.00
40.00	0.00	0	1,659.60	0.00
45.00	0.00	0	1,659.60	0.00
50.00	0.00	0	1,659.60	0.00
55.00	0.00	0	1,659.60	0.00
60.00	0.00	0	1,659.60	0.00
65.00	0.00	0	1,659.60	0.00
70.00	0.00	0	1,659.60	0.00
75.00	0.00	0	1,659.60	0.00
80.00	0.00	0	1,659.60	0.00
85.00	0.00	0	1,659.60	0.00
90.00	0.00	0	1,659.60	0.00
95.00	0.00	0	1,659.60	0.00
100.00	0.00	0	1,659.60	0.00
105.00	0.00	0	1,659.60	0.00
110.00	0.00	0	1,659.60	0.00
115.00	0.00	0	1,659.60	0.00
120.00	0.00	0	1,659.60	0.00
125.00	0.00	0	1,659.60	0.00
130.00	0.00	0	1,659.60	0.00
135.00	0.00	0	1,659.60	0.00
140.00	0.00	0	1,659.60	0.00
145.00	0.00	0	1,659.60	0.00
150.00	0.00	0	1,659.60	0.00
155.00	0.00	0	1,659.60	0.00
160.00	0.00	0	1,659.60	0.00
165.00	0.00	0	1,659.60	0.00
170.00	0.00	0	1,659.60	0.00
175.00	0.00	0	1,659.60	0.00
180.00	0.00	0	1,659.60	0.00

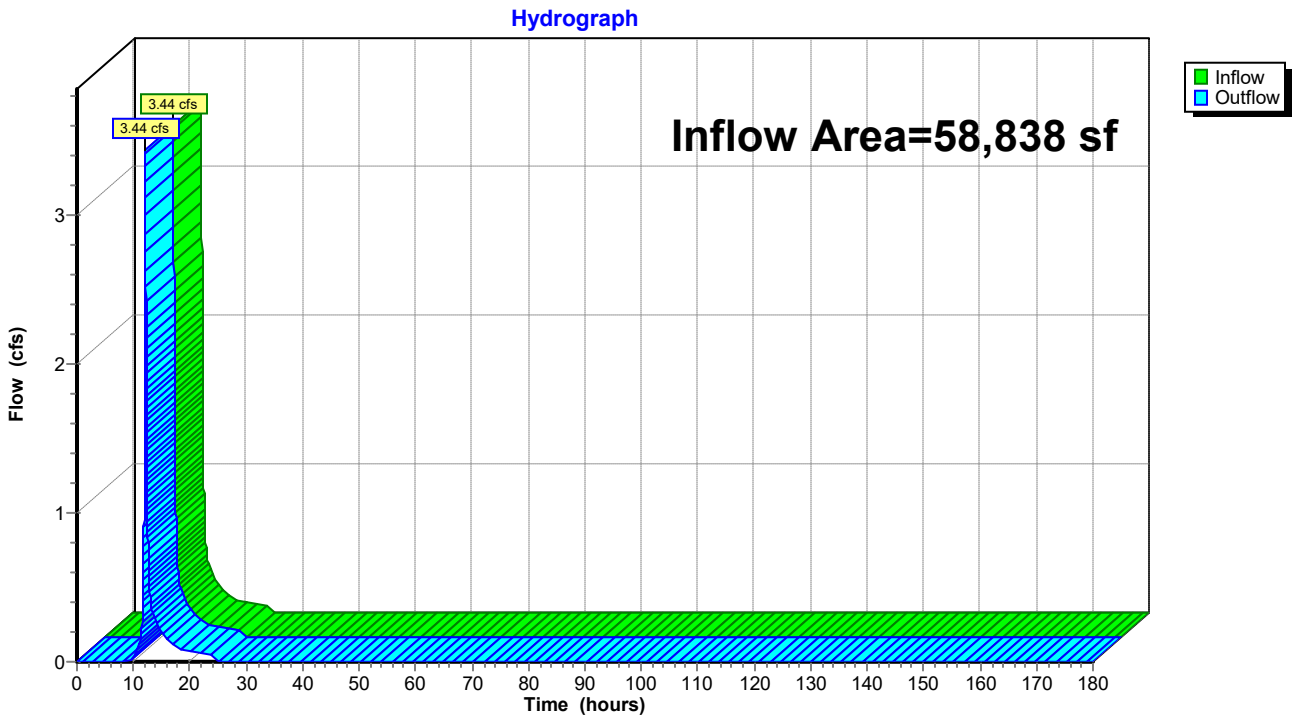
Summary for Reach P-DP-M:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 58,838 sf, 0.10% Impervious, Inflow Depth = 2.39" for 10-Year event
Inflow = 3.44 cfs @ 12.13 hrs, Volume= 11,722 cf
Outflow = 3.44 cfs @ 12.13 hrs, Volume= 11,722 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-M:



Hydrograph for Reach P-DP-M:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.03		0.03	114.00	0.00		0.00
12.00	**1.63**		**1.63**	116.00	0.00		0.00
14.00	**0.27**		**0.27**	118.00	0.00		0.00
16.00	0.15		0.15	120.00	0.00		0.00
18.00	0.09		0.09	122.00	0.00		0.00
20.00	0.07		0.07	124.00	0.00		0.00
22.00	0.06		0.06	126.00	0.00		0.00
24.00	0.05		0.05	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

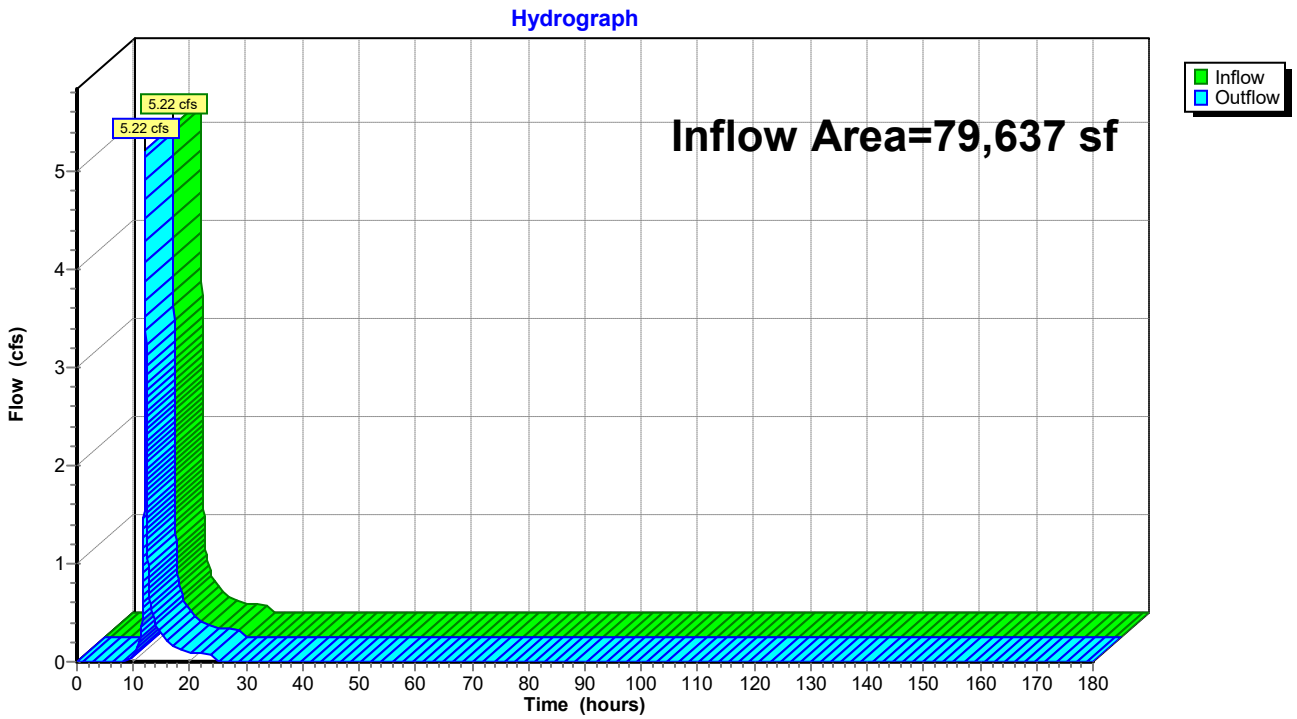
Summary for Reach P-DP-MW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79,637 sf, 0.23% Impervious, Inflow Depth = 2.56" for 10-Year event
Inflow = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf
Outflow = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-2L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-MW:



Hydrograph for Reach P-DP-MW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.07		0.07	114.00	0.00		0.00
12.00	**2.69**		**2.69**	116.00	0.00		0.00
14.00	**0.37**		**0.37**	118.00	0.00		0.00
16.00	0.20		0.20	120.00	0.00		0.00
18.00	0.13		0.13	122.00	0.00		0.00
20.00	0.10		0.10	124.00	0.00		0.00
22.00	0.08		0.08	126.00	0.00		0.00
24.00	0.07		0.07	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

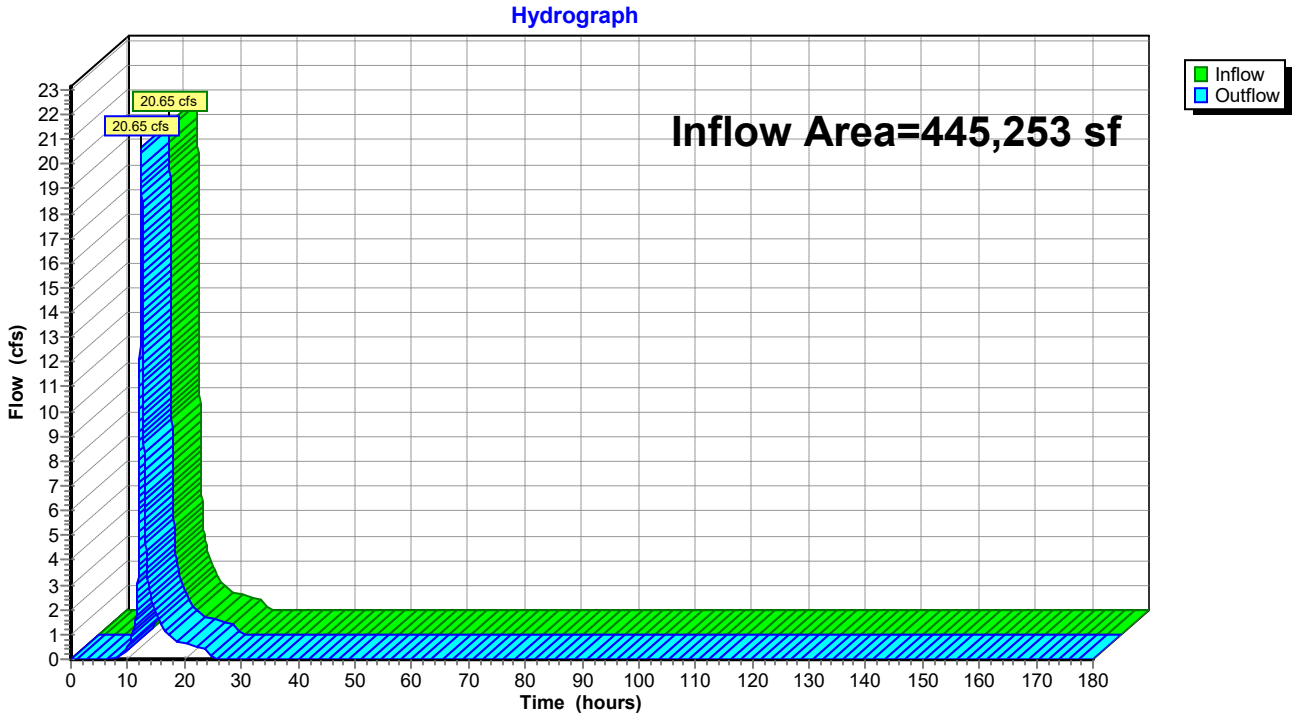
Summary for Reach P-DP-N: Culvert towards Wades Stream

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 445,253 sf, 2.02% Impervious, Inflow Depth = 2.92" for 10-Year event
Inflow = 20.65 cfs @ 12.39 hrs, Volume= 108,439 cf
Outflow = 20.65 cfs @ 12.39 hrs, Volume= 108,439 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-N: Culvert towards Wades Stream



Hydrograph for Reach P-DP-N: Culvert towards Wades Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.01		0.01	112.00	0.00		0.00
10.00	0.50		0.50	114.00	0.00		0.00
12.00	**6.31**		**6.31**	116.00	0.00		0.00
14.00	**2.56**		**2.56**	118.00	0.00		0.00
16.00	1.37		1.37	120.00	0.00		0.00
18.00	0.82		0.82	122.00	0.00		0.00
20.00	0.62		0.62	124.00	0.00		0.00
22.00	0.51		0.51	126.00	0.00		0.00
24.00	0.41		0.41	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

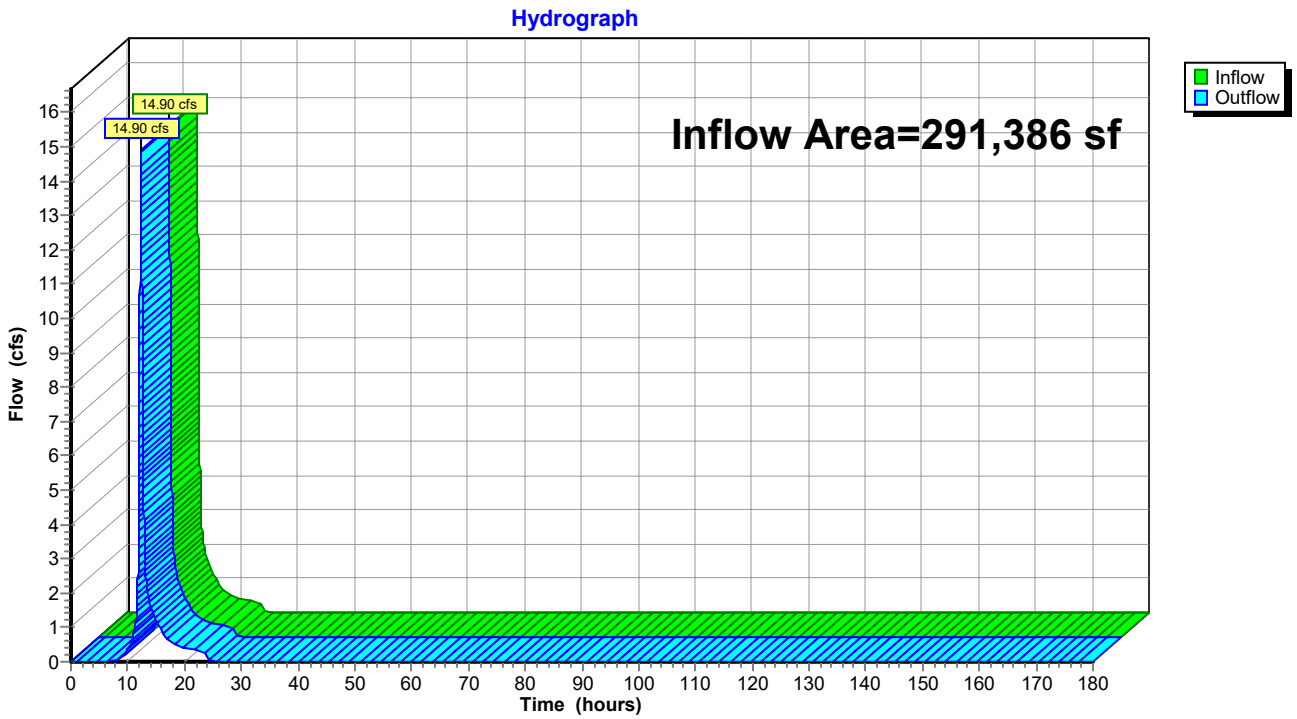
Summary for Reach P-DP-NE:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 291,386 sf, 0.88% Impervious, Inflow Depth = 2.92" for 10-Year event
Inflow = 14.90 cfs @ 12.30 hrs, Volume= 70,966 cf
Outflow = 14.90 cfs @ 12.30 hrs, Volume= 70,966 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-NE:



Hydrograph for Reach P-DP-NE:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.01		0.01	112.00	0.00		0.00
10.00	0.35		0.35	114.00	0.00		0.00
12.00	**5.29**		**5.29**	116.00	0.00		0.00
14.00	**1.61**		**1.61**	118.00	0.00		0.00
16.00	0.87		0.87	120.00	0.00		0.00
18.00	0.52		0.52	122.00	0.00		0.00
20.00	0.40		0.40	124.00	0.00		0.00
22.00	0.33		0.33	126.00	0.00		0.00
24.00	0.27		0.27	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

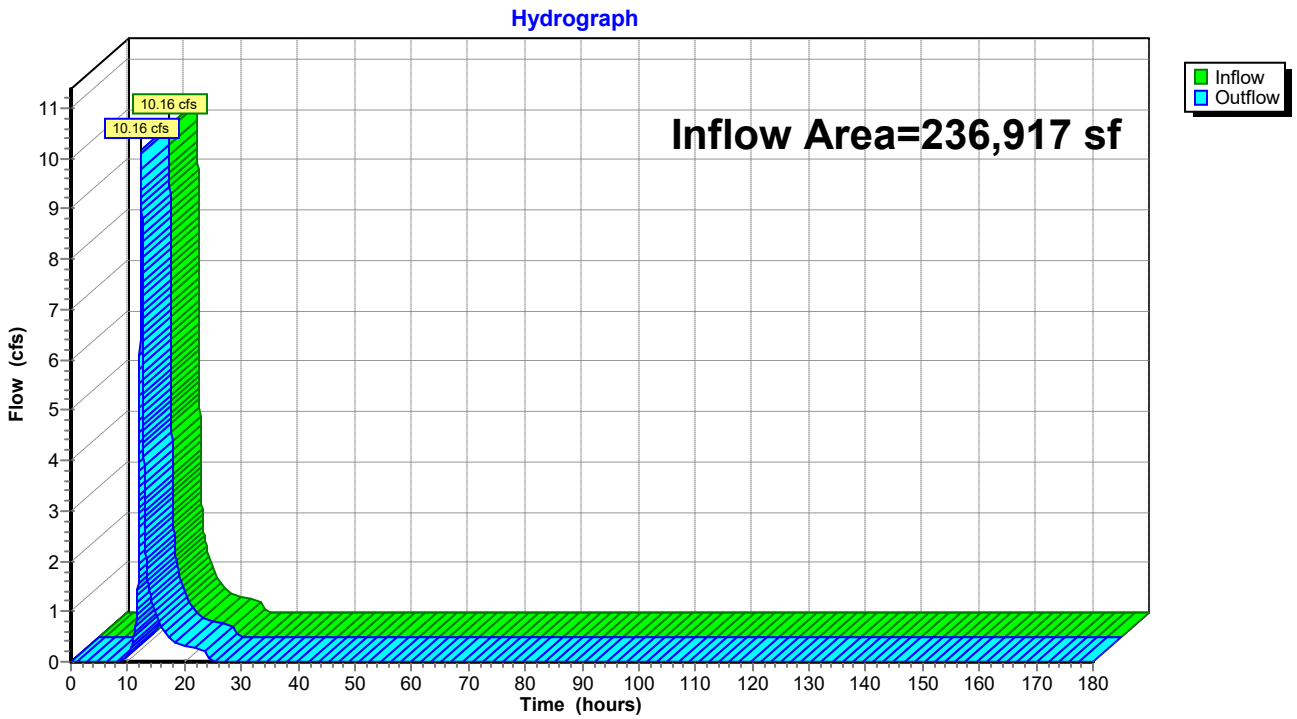
Summary for Reach P-DP-NW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 236,917 sf, 0.74% Impervious, Inflow Depth = 2.65" for 10-Year event
Inflow = 10.16 cfs @ 12.36 hrs, Volume= 52,345 cf
Outflow = 10.16 cfs @ 12.36 hrs, Volume= 52,345 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-1L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-NW:



Hydrograph for Reach P-DP-NW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.00		0.00	112.00	0.00		0.00
10.00	0.17		0.17	114.00	0.00		0.00
12.00	**3.07**		**3.07**	116.00	0.00		0.00
14.00	**1.27**		**1.27**	118.00	0.00		0.00
16.00	0.69		0.69	120.00	0.00		0.00
18.00	0.41		0.41	122.00	0.00		0.00
20.00	0.31		0.31	124.00	0.00		0.00
22.00	0.26		0.26	126.00	0.00		0.00
24.00	0.21		0.21	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Reach P-DP-SE: Culvert

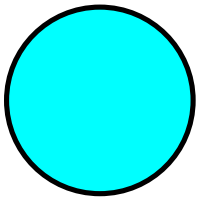
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 117% of Manning's capacity
[76] Warning: Detained 3,762 cf (Pond w/culvert advised)
[62] Hint: Exceeded Reach C OUTLET depth by 1.33' @ 12.17 hrs
[64] Warning: Exceeded Reach C outlet bank by 0.50' @ 12.17 hrs

Inflow Area = 519,545 sf, 2.67% Impervious, Inflow Depth = 3.01" for 10-Year event
Inflow = 17.92 cfs @ 12.49 hrs, Volume= 130,467 cf
Outflow = 16.44 cfs @ 12.16 hrs, Volume= 130,467 cf, Atten= 8%, Lag= 0.0 min
Routed to Link P-4L : Lag

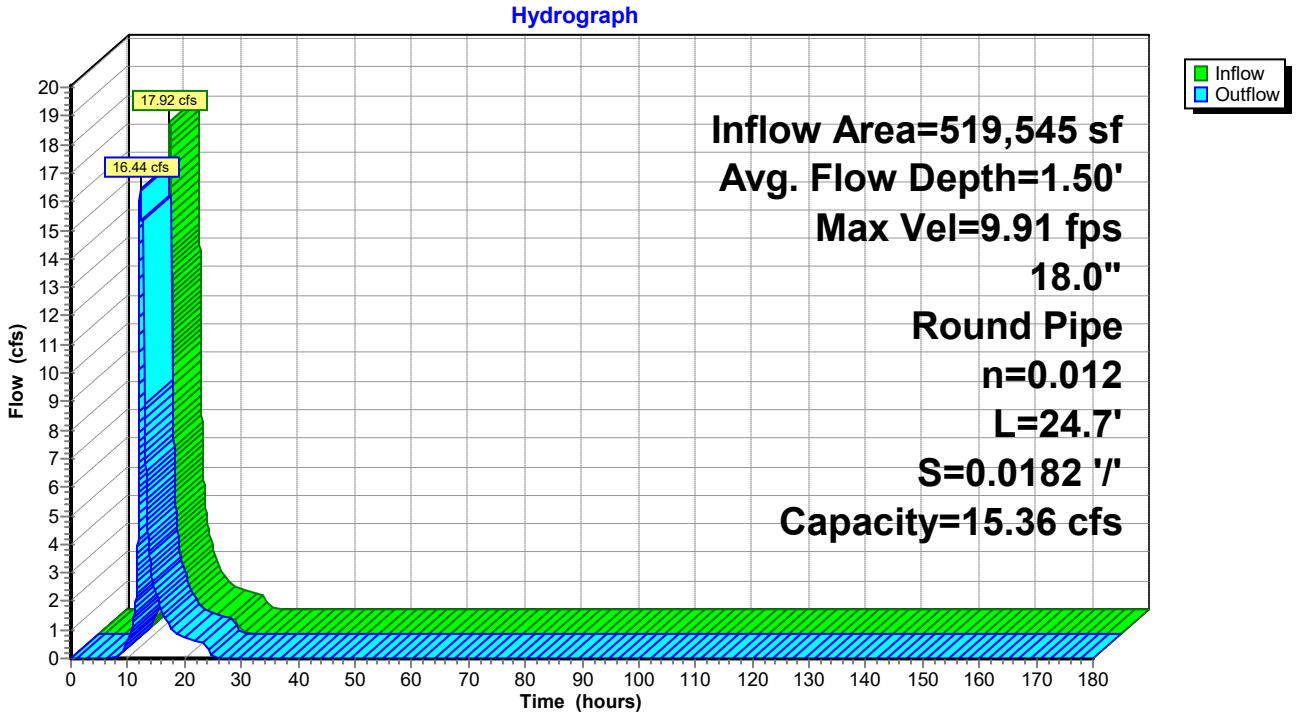
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.91 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.18 fps, Avg. Travel Time= 0.1 min

Peak Storage= 44 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.36 cfs

18.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 24.7' Slope= 0.0182 '/'
Inlet Invert= 1,620.00', Outlet Invert= 1,619.55'



Reach P-DP-SE: Culvert



Hydrograph for Reach P-DP-SE: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,620.00	0.00
5.00	0.00	0	1,620.00	0.00
10.00	**0.60**	**4**	**1,620.20**	**0.60**
15.00	**2.27**	**9**	**1,620.39**	**2.27**
20.00	0.74	4	1,620.22	0.74
25.00	0.09	1	1,620.08	0.09
30.00	0.00	0	1,620.00	0.00
35.00	0.00	0	1,620.00	0.00
40.00	0.00	0	1,620.00	0.00
45.00	0.00	0	1,620.00	0.00
50.00	0.00	0	1,620.00	0.00
55.00	0.00	0	1,620.00	0.00
60.00	0.00	0	1,620.00	0.00
65.00	0.00	0	1,620.00	0.00
70.00	0.00	0	1,620.00	0.00
75.00	0.00	0	1,620.00	0.00
80.00	0.00	0	1,620.00	0.00
85.00	0.00	0	1,620.00	0.00
90.00	0.00	0	1,620.00	0.00
95.00	0.00	0	1,620.00	0.00
100.00	0.00	0	1,620.00	0.00
105.00	0.00	0	1,620.00	0.00
110.00	0.00	0	1,620.00	0.00
115.00	0.00	0	1,620.00	0.00
120.00	0.00	0	1,620.00	0.00
125.00	0.00	0	1,620.00	0.00
130.00	0.00	0	1,620.00	0.00
135.00	0.00	0	1,620.00	0.00
140.00	0.00	0	1,620.00	0.00
145.00	0.00	0	1,620.00	0.00
150.00	0.00	0	1,620.00	0.00
155.00	0.00	0	1,620.00	0.00
160.00	0.00	0	1,620.00	0.00
165.00	0.00	0	1,620.00	0.00
170.00	0.00	0	1,620.00	0.00
175.00	0.00	0	1,620.00	0.00
180.00	0.00	0	1,620.00	0.00

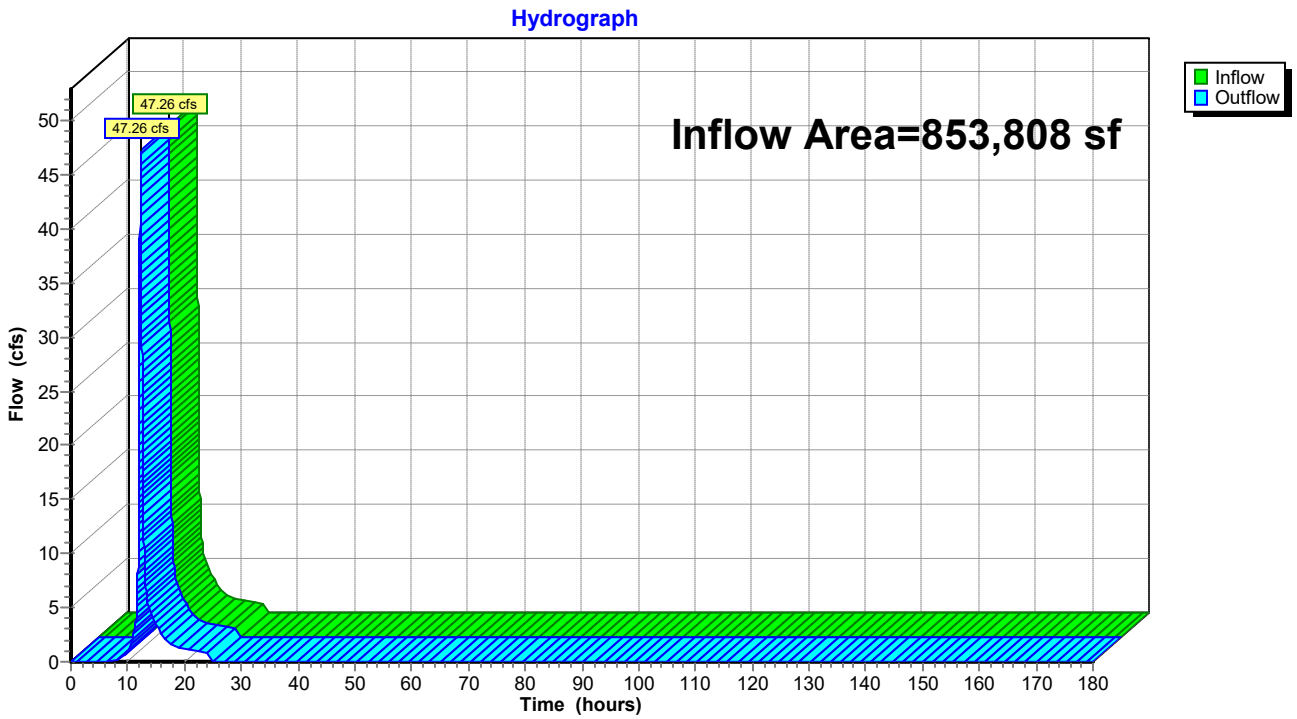
Summary for Reach P-DP-SW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 853,808 sf, 0.09% Impervious, Inflow Depth = 2.92" for 10-Year event
Inflow = 47.26 cfs @ 12.25 hrs, Volume= 207,941 cf
Outflow = 47.26 cfs @ 12.25 hrs, Volume= 207,941 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-DP-S : Watts Stream

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-SW:



Hydrograph for Reach P-DP-SW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.04		0.04	112.00	0.00		0.00
10.00	1.07		1.07	114.00	0.00		0.00
12.00	**18.44**		**18.44**	116.00	0.00		0.00
14.00	**4.62**		**4.62**	118.00	0.00		0.00
16.00	2.49		2.49	120.00	0.00		0.00
18.00	1.50		1.50	122.00	0.00		0.00
20.00	1.17		1.17	124.00	0.00		0.00
22.00	0.97		0.97	126.00	0.00		0.00
24.00	0.77		0.77	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Pond A:

Inflow Area = 36,754 sf, 0.44% Impervious, Inflow Depth = 3.02" for 10-Year event
Inflow = 2.43 cfs @ 12.17 hrs, Volume= 9,236 cf
Outflow = 2.37 cfs @ 12.20 hrs, Volume= 9,236 cf, Atten= 2%, Lag= 1.7 min
Discarded = 0.01 cfs @ 12.20 hrs, Volume= 41 cf
Primary = 2.36 cfs @ 12.20 hrs, Volume= 9,194 cf
Routed to Pond B : 2x15" CPP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond B : 2x15" CPP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Peak Elev= 1,662.82' @ 12.20 hrs Surf.Area= 724 sf Storage= 689 cf
Flood Elev= 1,663.00' Surf.Area= 791 sf Storage= 823 cf

Plug-Flow detention time= 4.8 min calculated for 9,235 cf (100% of inflow)
Center-of-Mass det. time= 4.8 min (831.2 - 826.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,660.50'	1,782 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,660.50	7	10.9	0	0	7
1,661.00	72	38.7	17	17	117
1,662.00	400	120.2	214	231	1,151
1,662.75	698	139.4	407	637	1,559
1,663.00	791	143.9	186	823	1,667
1,664.00	1,136	158.3	958	1,782	2,045

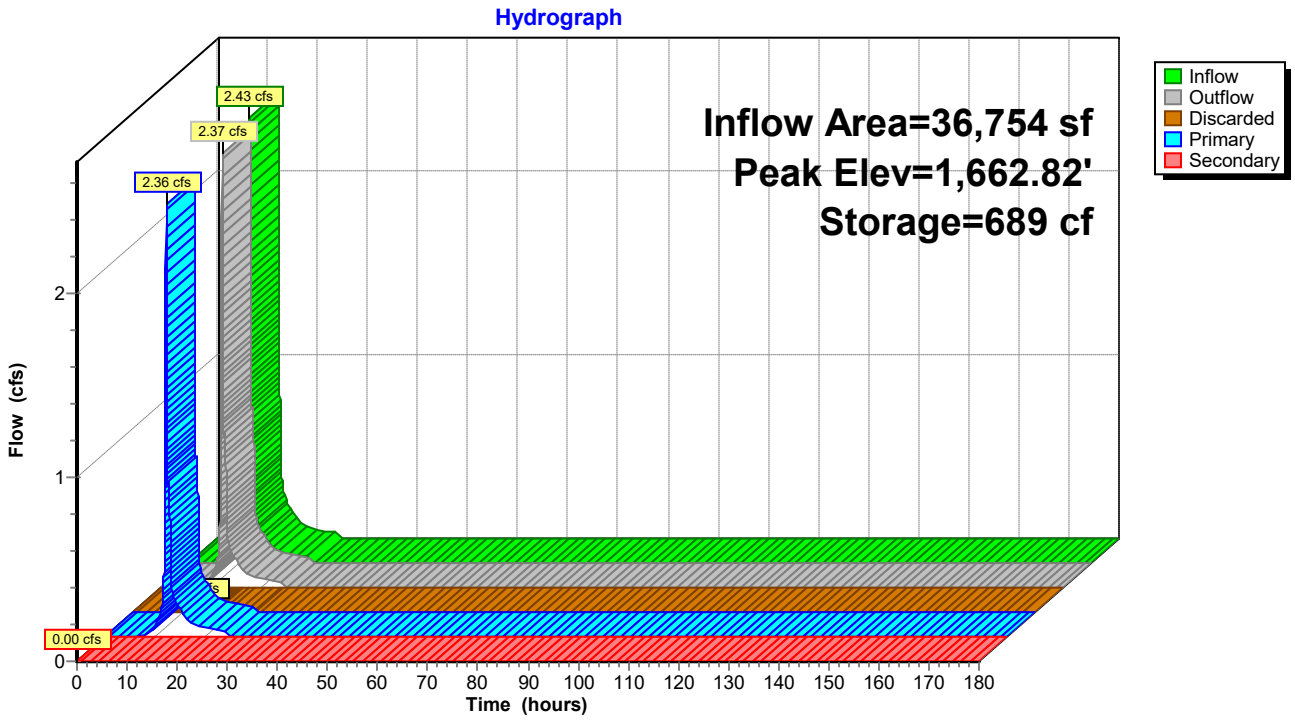
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,660.50'	**0.170 in/hr Exfiltration over Wetted area**
#2	Secondary	1,663.00'	**Road Overflow, C= 3.27** Offset (feet) 0.00 30.23 30.23 Height (feet) 1.00 0.00 1.00
#3	Primary	1,660.50'	**4.00' long x 14.50' breadth x 2.25' high Rock Fill** Rock Diam.= 5.000", S.D.= 2.500", Voids= 40.0%
#4	Primary	1,662.75'	**17.4' long + 3.0 '/' SideZ x 1.0' breadth Check Dam** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.01 cfs @ 12.20 hrs HW=1,662.82' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=2.35 cfs @ 12.20 hrs HW=1,662.82' TW=1,661.46' (Dynamic Tailwater)
├─**3=Rock Fill** (Rockfill Controls 1.45 cfs @ 0.23 fps)
└─**4=Check Dam** (Weir Controls 0.91 cfs @ 0.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,660.50' TW=1,660.00' (Dynamic Tailwater)
└─**2=Road Overflow** (Controls 0.00 cfs)

Pond A:



Hydrograph for Pond A:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	1,660.50	0.00	0.00	0.00	**0.00**
5.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
10.00	**0.06**	**5**	**1,660.77**	**0.05**	**0.00**	**0.05**	0.00
15.00	**0.15**	**19**	**1,661.03**	**0.15**	**0.00**	**0.15**	0.00
20.00	0.05	5	1,660.76	0.05	0.00	0.05	0.00
25.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
30.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
35.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
40.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
45.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
50.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
55.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
60.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
65.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
70.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
75.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
80.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
85.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
90.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
95.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
100.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
105.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
110.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
115.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
120.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
125.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
130.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
135.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
140.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
145.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
150.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
155.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
160.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
165.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
170.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
175.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
180.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00

Summary for Pond B: 2x15" CPP

[58] Hint: Peaked 0.12' above defined flood level

Inflow Area = 350,279 sf, 1.26% Impervious, Inflow Depth = 3.01" for 10-Year event
Inflow = 13.89 cfs @ 12.51 hrs, Volume= 87,976 cf
Outflow = 13.87 cfs @ 12.51 hrs, Volume= 87,976 cf, Atten= 0%, Lag= 0.5 min
Discarded = 0.00 cfs @ 12.51 hrs, Volume= 43 cf
Primary = 13.17 cfs @ 12.51 hrs, Volume= 87,571 cf
Routed to Reach C : Overland Flow
Secondary = 0.70 cfs @ 12.51 hrs, Volume= 363 cf
Routed to Reach C : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Peak Elev= 1,662.62' @ 12.51 hrs Surf.Area= 621 sf Storage= 853 cf
Flood Elev= 1,662.50' Surf.Area= 592 sf Storage= 782 cf

Plug-Flow detention time= 0.7 min calculated for 87,972 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (849.0 - 848.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,660.00'	1,109 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,660.00	88	41.6	0	0	88
1,661.00	247	64.3	161	161	286
1,662.00	475	87.0	355	516	570
1,663.00	721	107.4	594	1,109	900

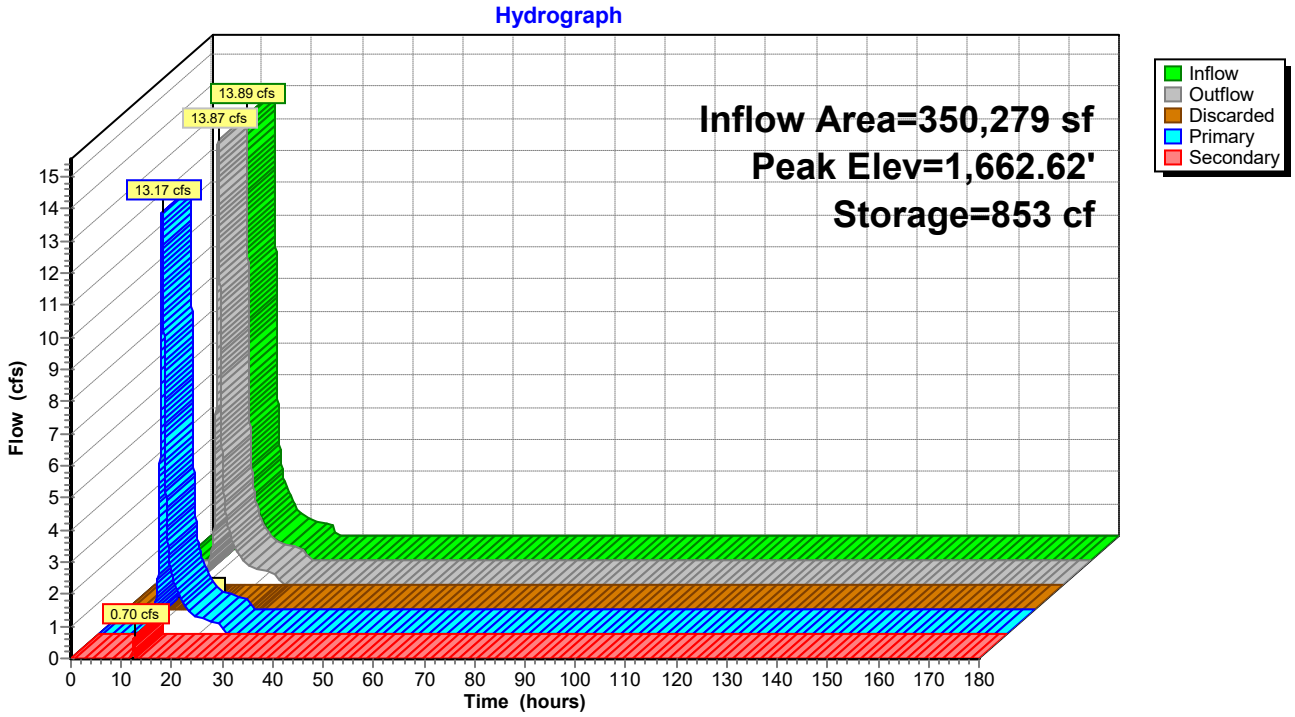
Device	Routing	Invert	Outlet Devices
#1	Primary	1,660.00'	**15.0" Round Culvert X 2.00** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,660.00' / 1,659.60' S= 0.0089 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Discarded	1,660.00'	**0.170 in/hr Exfiltration over Wetted area**
#3	Secondary	1,662.50'	**Road Overflow, C= 3.27** Offset (feet) 0.00 18.61 20.86 35.05 Height (feet) 0.50 0.00 0.00 0.50

Discarded OutFlow Max=0.00 cfs @ 12.51 hrs HW=1,662.62' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=13.17 cfs @ 12.51 hrs HW=1,662.62' TW=1,659.88' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 13.17 cfs @ 5.36 fps)

Secondary OutFlow Max=0.69 cfs @ 12.51 hrs HW=1,662.62' TW=1,659.88' (Dynamic Tailwater)
└**3=Road Overflow** (Weir Controls 0.69 cfs @ 0.60 fps)

Pond B: 2x15" CPP



Hydrograph for Pond B: 2x15" CPP

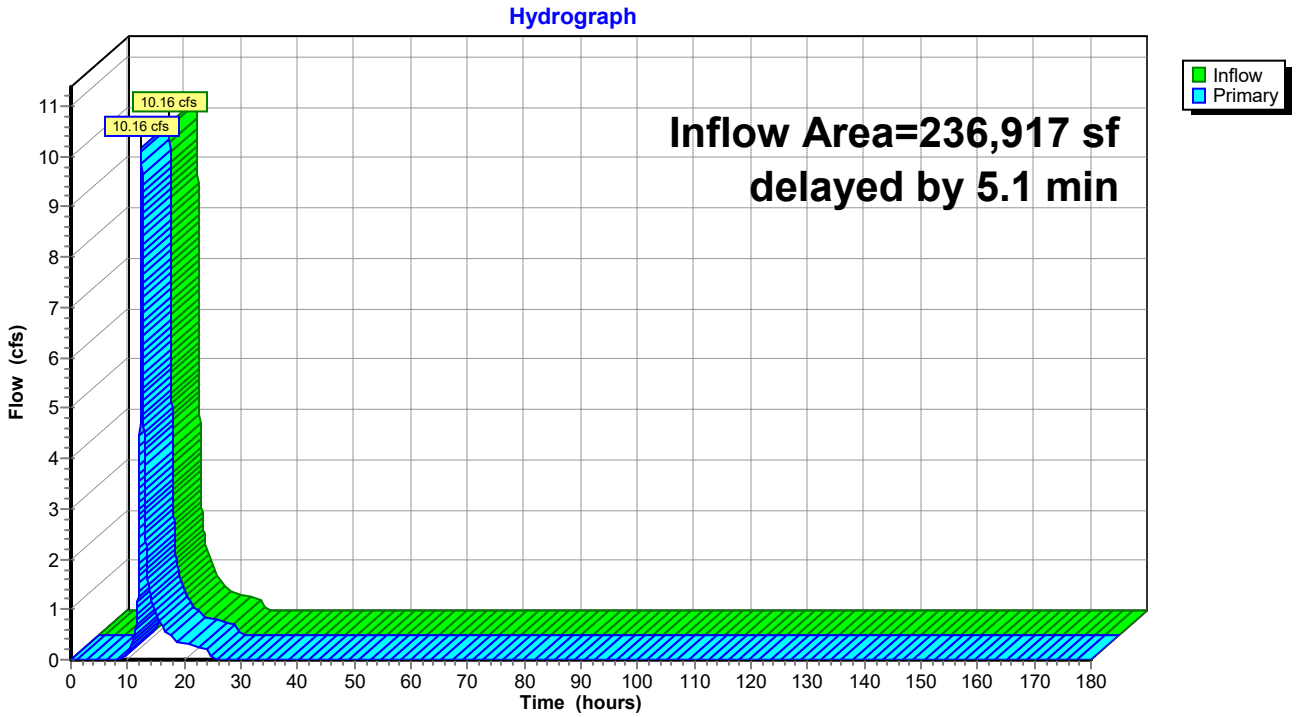
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
5.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
10.00	**0.41**	**24**	**1,660.23**	**0.40**	**0.00**	**0.40**	**0.00**
15.00	**1.54**	**56**	**1,660.47**	**1.54**	**0.00**	**1.54**	**0.00**
20.00	0.50	27	1,660.26	0.50	0.00	0.50	0.00
25.00	0.02	5	1,660.06	0.03	0.00	0.03	0.00
30.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
35.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
40.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
45.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
50.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
55.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
60.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
65.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
70.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
75.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
80.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
85.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
90.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
95.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
100.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
105.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
110.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
115.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
120.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
125.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
130.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
135.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
140.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
145.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
150.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
155.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
160.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
165.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
170.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
175.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
180.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00

Summary for Link P-1L: Lag

Inflow Area = 236,917 sf, 0.74% Impervious, Inflow Depth = 2.65" for 10-Year event
Inflow = 10.16 cfs @ 12.36 hrs, Volume= 52,345 cf
Primary = 10.16 cfs @ 12.45 hrs, Volume= 52,345 cf, Atten= 0%, Lag= 5.1 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 5.1 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-1L: Lag



Hydrograph for Link P-1L: Lag

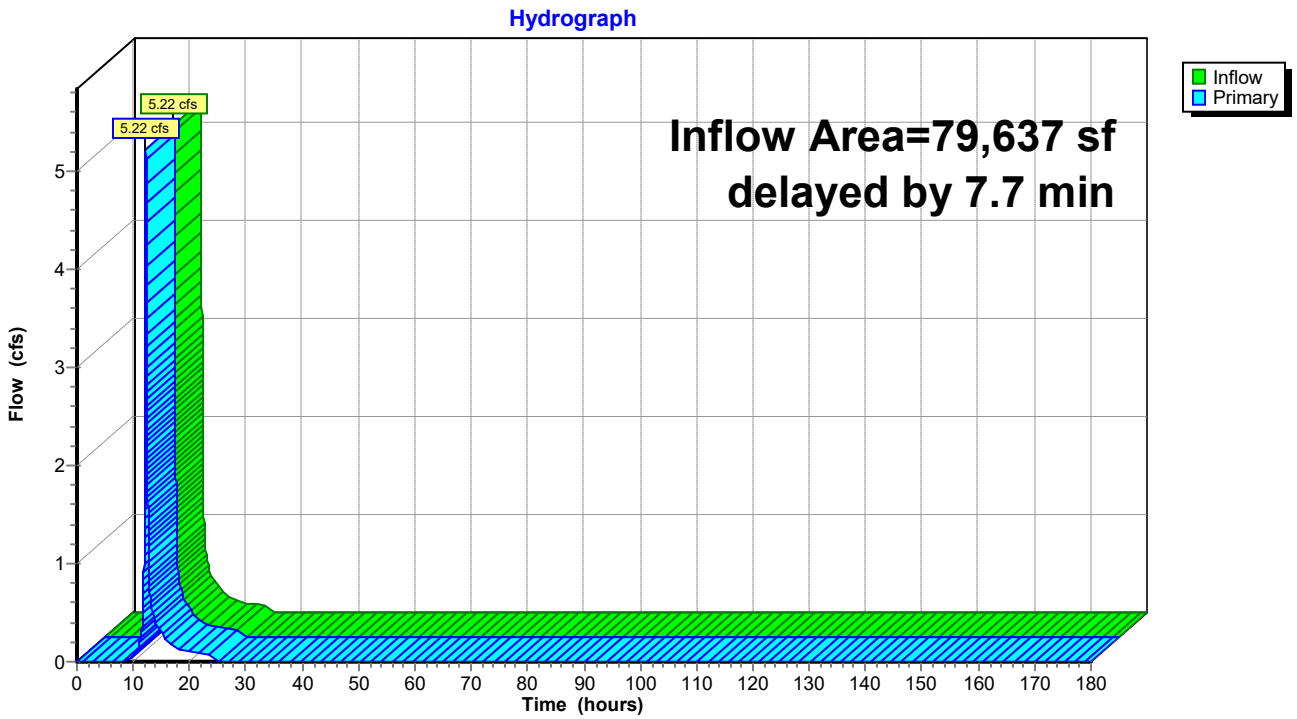
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.17	0.00	0.16	114.00	0.00	0.00	0.00
12.00	**3.07**	0.00	**2.20**	116.00	0.00	0.00	0.00
14.00	**1.27**	0.00	**1.32**	118.00	0.00	0.00	0.00
16.00	0.69	0.00	0.71	120.00	0.00	0.00	0.00
18.00	0.41	0.00	0.42	122.00	0.00	0.00	0.00
20.00	0.31	0.00	0.32	124.00	0.00	0.00	0.00
22.00	0.26	0.00	0.26	126.00	0.00	0.00	0.00
24.00	0.21	0.00	0.21	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-2L: Lag

Inflow Area = 79,637 sf, 0.23% Impervious, Inflow Depth = 2.56" for 10-Year event
Inflow = 5.22 cfs @ 12.11 hrs, Volume= 17,011 cf
Primary = 5.22 cfs @ 12.24 hrs, Volume= 17,011 cf, Atten= 0%, Lag= 7.7 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 7.7 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-2L: Lag



Hydrograph for Link P-2L: Lag

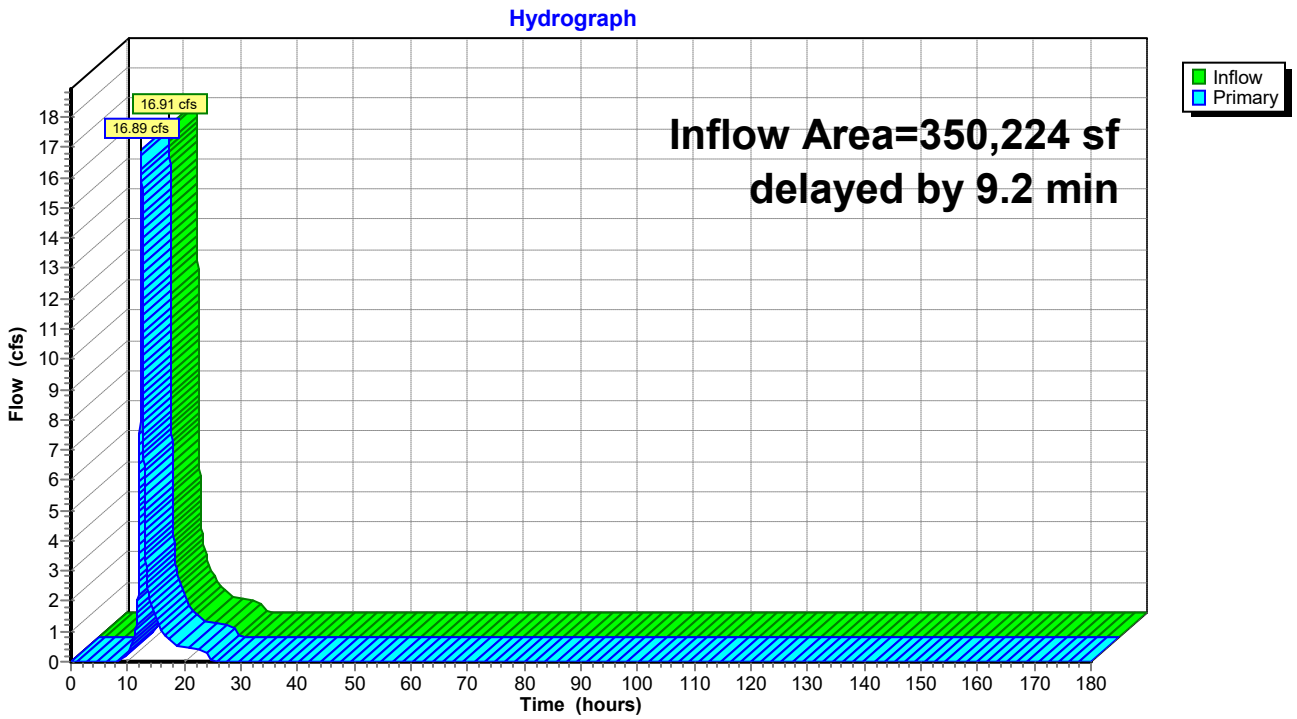
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.07	0.00	0.06	114.00	0.00	0.00	0.00
12.00	**2.69**	0.00	**1.49**	116.00	0.00	0.00	0.00
14.00	**0.37**	0.00	**0.39**	118.00	0.00	0.00	0.00
16.00	0.20	0.00	0.21	120.00	0.00	0.00	0.00
18.00	0.13	0.00	0.13	122.00	0.00	0.00	0.00
20.00	0.10	0.00	0.10	124.00	0.00	0.00	0.00
22.00	0.08	0.00	0.08	126.00	0.00	0.00	0.00
24.00	0.07	0.00	0.07	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-3L: Lag

Inflow Area = 350,224 sf, 0.75% Impervious, Inflow Depth = 2.83" for 10-Year event
Inflow = 16.91 cfs @ 12.28 hrs, Volume= 82,688 cf
Primary = 16.89 cfs @ 12.44 hrs, Volume= 82,688 cf, Atten= 0%, Lag= 9.2 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.2 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-3L: Lag



Hydrograph for Link P-3L: Lag

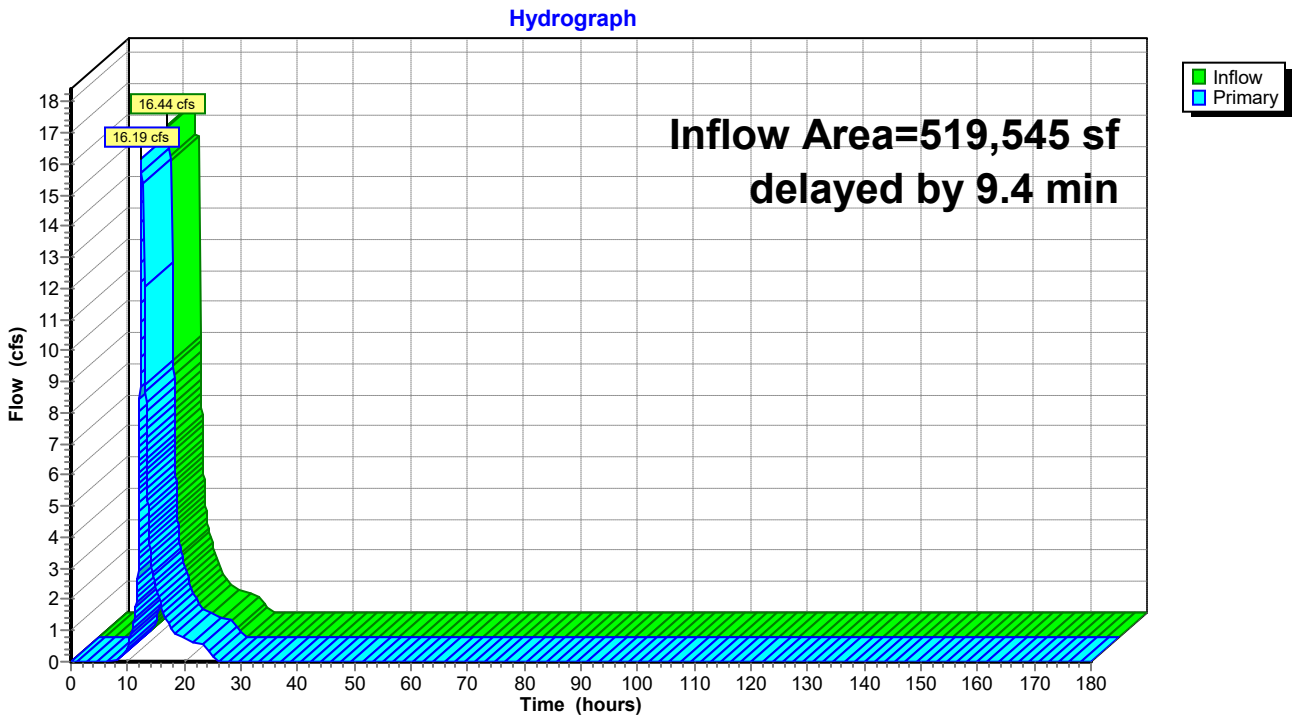
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.01	0.00	0.00	112.00	0.00	0.00	0.00
10.00	0.38	0.00	0.34	114.00	0.00	0.00	0.00
12.00	**6.93**	0.00	**3.79**	116.00	0.00	0.00	0.00
14.00	**1.88**	0.00	**2.00**	118.00	0.00	0.00	0.00
16.00	1.02	0.00	1.07	120.00	0.00	0.00	0.00
18.00	0.61	0.00	0.64	122.00	0.00	0.00	0.00
20.00	0.47	0.00	0.48	124.00	0.00	0.00	0.00
22.00	0.39	0.00	0.40	126.00	0.00	0.00	0.00
24.00	0.31	0.00	0.32	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-4L: Lag

Inflow Area = 519,545 sf, 2.67% Impervious, Inflow Depth = 3.01" for 10-Year event
Inflow = 16.44 cfs @ 12.16 hrs, Volume= 130,467 cf
Primary = 16.19 cfs @ 12.31 hrs, Volume= 130,467 cf, Atten= 2%, Lag= 9.3 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.4 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-4L: Lag



Hydrograph for Link P-4L: Lag

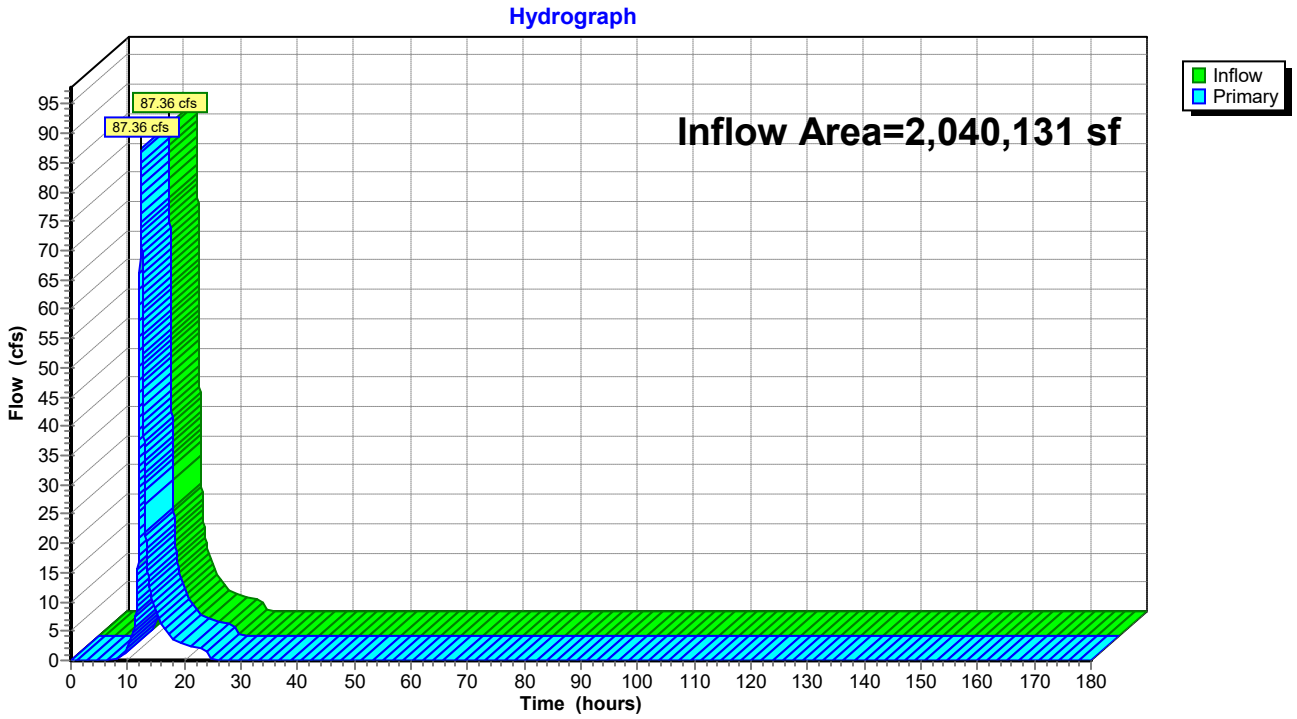
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.03	0.00	0.02	112.00	0.00	0.00	0.00
10.00	0.60	0.00	0.52	114.00	0.00	0.00	0.00
12.00	**7.94**	0.00	**4.75**	116.00	0.00	0.00	0.00
14.00	**3.27**	0.00	**3.57**	118.00	0.00	0.00	0.00
16.00	1.68	0.00	1.77	120.00	0.00	0.00	0.00
18.00	0.99	0.00	1.03	122.00	0.00	0.00	0.00
20.00	0.74	0.00	0.75	124.00	0.00	0.00	0.00
22.00	0.61	0.00	0.62	126.00	0.00	0.00	0.00
24.00	0.49	0.00	0.50	128.00	0.00	0.00	0.00
26.00	0.02	0.00	0.02	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-DP-S: Watts Stream

Inflow Area = 2,040,131 sf, 0.94% Impervious, Inflow Depth = 2.88" for 10-Year event
Inflow = 87.36 cfs @ 12.31 hrs, Volume= 490,452 cf
Primary = 87.36 cfs @ 12.31 hrs, Volume= 490,452 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-DP-S: Watts Stream



Hydrograph for Link P-DP-S: Watts Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.06	0.00	0.06	112.00	0.00	0.00	0.00
10.00	2.15	0.00	2.15	114.00	0.00	0.00	0.00
12.00	**30.67**	0.00	**30.67**	116.00	0.00	0.00	0.00
14.00	**11.90**	0.00	**11.90**	118.00	0.00	0.00	0.00
16.00	6.26	0.00	6.26	120.00	0.00	0.00	0.00
18.00	3.72	0.00	3.72	122.00	0.00	0.00	0.00
20.00	2.82	0.00	2.82	124.00	0.00	0.00	0.00
22.00	2.34	0.00	2.34	126.00	0.00	0.00	0.00
24.00	1.88	0.00	1.88	128.00	0.00	0.00	0.00
26.00	0.02	0.00	0.02	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Subcatchment P-M:

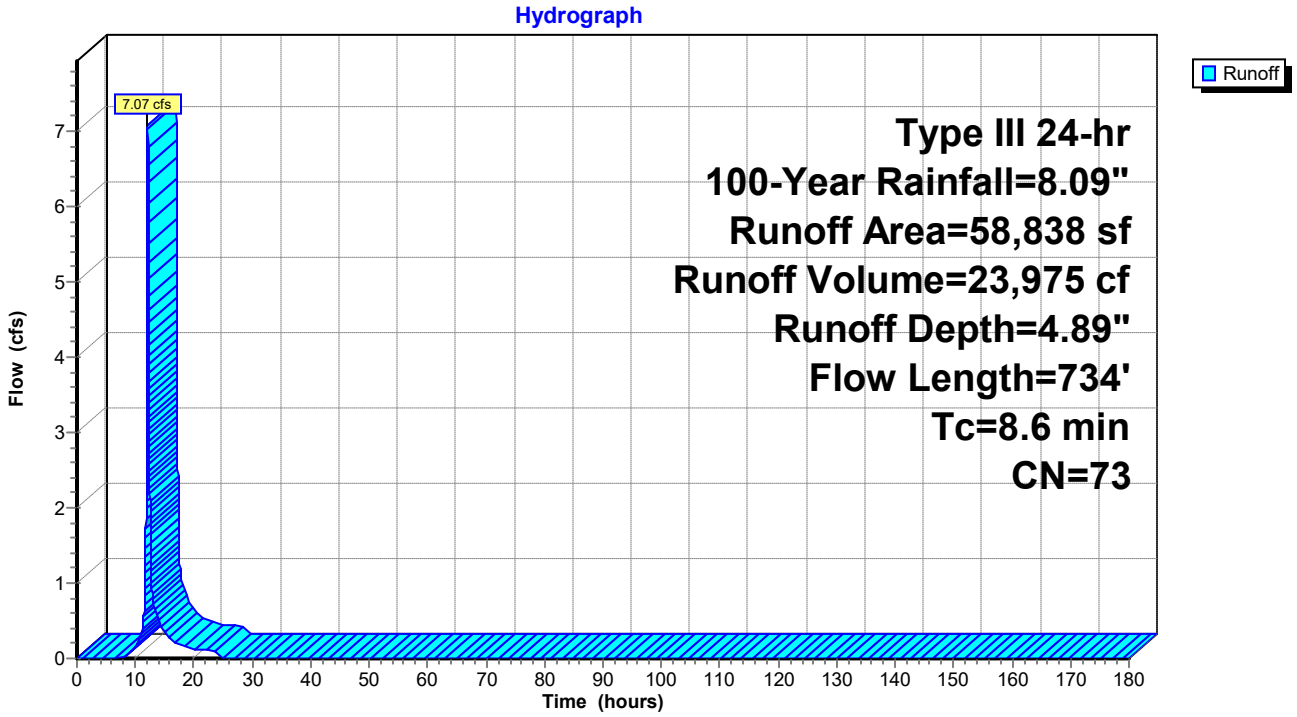
Runoff = 7.07 cfs @ 12.12 hrs, Volume= 23,975 cf, Depth= 4.89"
Routed to Reach P-DP-M :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
17,766	74	Pasture/grassland/range, Good, HSG C
2,573	96	Gravel surface, HSG C
57	98	Unconnected pavement, HSG C
38,442	71	Meadow, non-grazed, HSG C
58,838	73	Weighted Average
58,781		99.90% Pervious Area
57		0.10% Impervious Area
57		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	95	0.0625	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
2.3	214	0.0510	1.58		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.4	42	0.0587	1.70		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.0	18	0.0597	13.93	17.10	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.3	64	0.1973	3.11		**Shallow Concentrated Flow, EF** Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0846	11.68	105.15	**Trap/Vee/Rect Channel Flow, FG** Bot.W=6.00' D=1.00' Z= 3.0 '/' Top.W=12.00' n= 0.030 Earth, grassed & winding
8.6	734	Total			

Subcatchment P-M:



Hydrograph for Subcatchment P-M:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.00
8.00	0.92	0.01	0.02
10.00	1.53	0.14	0.16
12.00	4.04	1.56	**3.59**
14.00	6.56	3.56	**0.49**
16.00	7.17	4.08	0.26
18.00	7.51	4.38	0.16
20.00	7.74	4.58	0.13
22.00	7.93	4.75	0.11
24.00	**8.09**	**4.89**	0.08
26.00	8.09	4.89	0.00
28.00	8.09	4.89	0.00
30.00	8.09	4.89	0.00
32.00	8.09	4.89	0.00
34.00	8.09	4.89	0.00
36.00	8.09	4.89	0.00
38.00	8.09	4.89	0.00
40.00	8.09	4.89	0.00
42.00	8.09	4.89	0.00
44.00	8.09	4.89	0.00
46.00	8.09	4.89	0.00
48.00	8.09	4.89	0.00
50.00	8.09	4.89	0.00
52.00	8.09	4.89	0.00
54.00	8.09	4.89	0.00
56.00	8.09	4.89	0.00
58.00	8.09	4.89	0.00
60.00	8.09	4.89	0.00
62.00	8.09	4.89	0.00
64.00	8.09	4.89	0.00
66.00	8.09	4.89	0.00
68.00	8.09	4.89	0.00
70.00	8.09	4.89	0.00
72.00	8.09	4.89	0.00
74.00	8.09	4.89	0.00
76.00	8.09	4.89	0.00
78.00	8.09	4.89	0.00
80.00	8.09	4.89	0.00
82.00	8.09	4.89	0.00
84.00	8.09	4.89	0.00
86.00	8.09	4.89	0.00
88.00	8.09	4.89	0.00
90.00	8.09	4.89	0.00
92.00	8.09	4.89	0.00
94.00	8.09	4.89	0.00
96.00	8.09	4.89	0.00
98.00	8.09	4.89	0.00
100.00	8.09	4.89	0.00
102.00	8.09	4.89	0.00
104.00	8.09	4.89	0.00
106.00	8.09	4.89	0.00
108.00	8.09	4.89	0.00
110.00	8.09	4.89	0.00
112.00	8.09	4.89	0.00
114.00	8.09	4.89	0.00
116.00	8.09	4.89	0.00
118.00	8.09	4.89	0.00
120.00	8.09	4.89	0.00
122.00	8.09	4.89	0.00
124.00	8.09	4.89	0.00
126.00	8.09	4.89	0.00
128.00	8.09	4.89	0.00
130.00	8.09	4.89	0.00
132.00	8.09	4.89	0.00
134.00	8.09	4.89	0.00
136.00	8.09	4.89	0.00
138.00	8.09	4.89	0.00
140.00	8.09	4.89	0.00
142.00	8.09	4.89	0.00
144.00	8.09	4.89	0.00
146.00	8.09	4.89	0.00
148.00	8.09	4.89	0.00
150.00	8.09	4.89	0.00
152.00	8.09	4.89	0.00
154.00	8.09	4.89	0.00
156.00	8.09	4.89	0.00
158.00	8.09	4.89	0.00
160.00	8.09	4.89	0.00
162.00	8.09	4.89	0.00
164.00	8.09	4.89	0.00
166.00	8.09	4.89	0.00
168.00	8.09	4.89	0.00
170.00	8.09	4.89	0.00
172.00	8.09	4.89	0.00
174.00	8.09	4.89	0.00
176.00	8.09	4.89	0.00
178.00	8.09	4.89	0.00
180.00	8.09	4.89	0.00

Summary for Subcatchment P-MW:

[47] Hint: Peak is 132% of capacity of segment #4

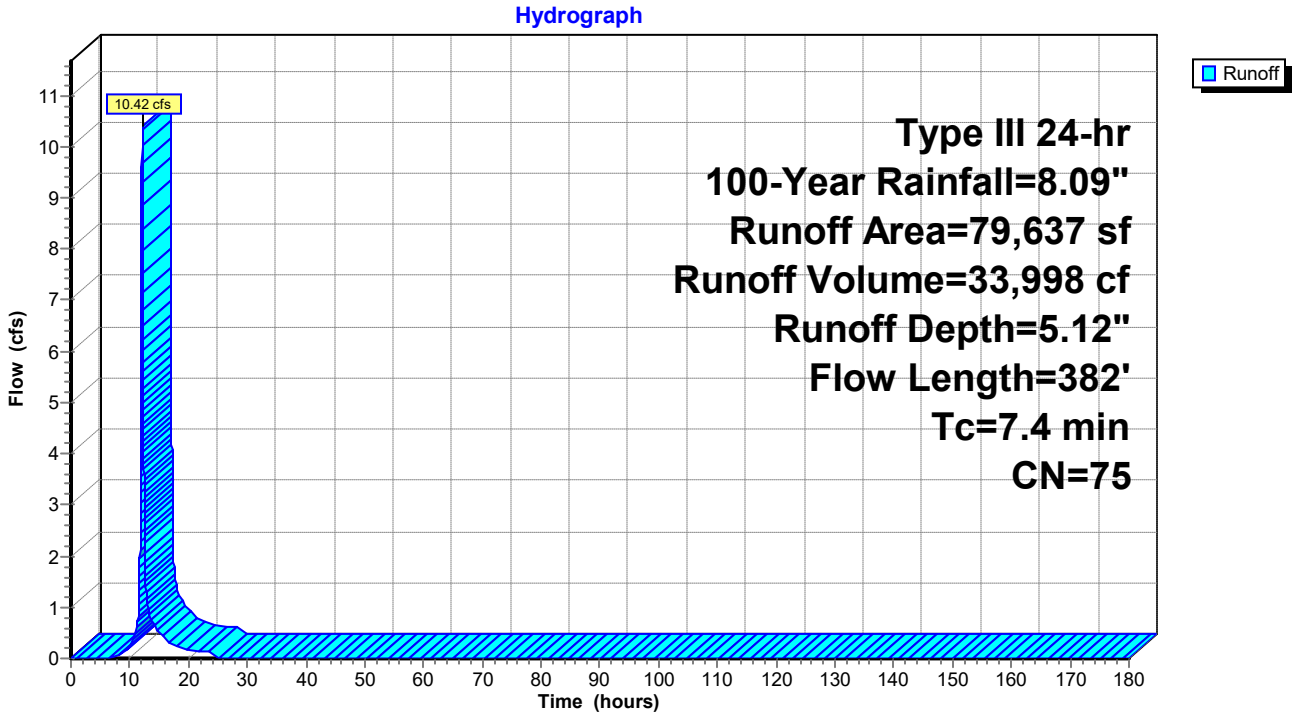
Runoff = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf, Depth= 5.12"
Routed to Reach P-DP-MW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
43,126	74	Pasture/grassland/range, Good, HSG C
15,129	80	Pasture/grassland/range, Good, HSG D
971	96	Gravel surface, HSG C
109	98	Unconnected pavement, HSG C
78	98	Unconnected pavement, HSG D
20,224	71	Meadow, non-grazed, HSG C
79,637	75	Weighted Average
79,450		99.77% Pervious Area
187		0.23% Impervious Area
187		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0583	0.30		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
0.1	39	0.0793	6.42	7.88	**Pipe Channel, DE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.030 Earth, grassed & winding
0.1	97	0.1563	14.13	226.11	**Trap/Vee/Rect Channel Flow, EF** Bot.W=6.00' D=1.00' Z= 10.0 '/' Top.W=26.00' n= 0.030 Earth, grassed & winding
7.4	382	Total			

Subcatchment P-MW:



Hydrograph for Subcatchment P-MW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.00
8.00	0.92	0.02	0.05
10.00	1.53	0.18	0.25
12.00	4.04	1.70	**5.65**
14.00	6.56	3.77	**0.67**
16.00	7.17	4.30	0.36
18.00	7.51	4.60	0.22
20.00	7.74	4.81	0.18
22.00	7.93	4.98	0.15
24.00	**8.09**	**5.12**	0.12
26.00	8.09	5.12	0.00
28.00	8.09	5.12	0.00
30.00	8.09	5.12	0.00
32.00	8.09	5.12	0.00
34.00	8.09	5.12	0.00
36.00	8.09	5.12	0.00
38.00	8.09	5.12	0.00
40.00	8.09	5.12	0.00
42.00	8.09	5.12	0.00
44.00	8.09	5.12	0.00
46.00	8.09	5.12	0.00
48.00	8.09	5.12	0.00
50.00	8.09	5.12	0.00
52.00	8.09	5.12	0.00
54.00	8.09	5.12	0.00
56.00	8.09	5.12	0.00
58.00	8.09	5.12	0.00
60.00	8.09	5.12	0.00
62.00	8.09	5.12	0.00
64.00	8.09	5.12	0.00
66.00	8.09	5.12	0.00
68.00	8.09	5.12	0.00
70.00	8.09	5.12	0.00
72.00	8.09	5.12	0.00
74.00	8.09	5.12	0.00
76.00	8.09	5.12	0.00
78.00	8.09	5.12	0.00
80.00	8.09	5.12	0.00
82.00	8.09	5.12	0.00
84.00	8.09	5.12	0.00
86.00	8.09	5.12	0.00
88.00	8.09	5.12	0.00
90.00	8.09	5.12	0.00
92.00	8.09	5.12	0.00
94.00	8.09	5.12	0.00
96.00	8.09	5.12	0.00
98.00	8.09	5.12	0.00
100.00	8.09	5.12	0.00
102.00	8.09	5.12	0.00
104.00	8.09	5.12	0.00
106.00	8.09	5.12	0.00
108.00	8.09	5.12	0.00
110.00	8.09	5.12	0.00
112.00	8.09	5.12	0.00
114.00	8.09	5.12	0.00
116.00	8.09	5.12	0.00
118.00	8.09	5.12	0.00
120.00	8.09	5.12	0.00
122.00	8.09	5.12	0.00
124.00	8.09	5.12	0.00
126.00	8.09	5.12	0.00
128.00	8.09	5.12	0.00
130.00	8.09	5.12	0.00
132.00	8.09	5.12	0.00
134.00	8.09	5.12	0.00
136.00	8.09	5.12	0.00
138.00	8.09	5.12	0.00
140.00	8.09	5.12	0.00
142.00	8.09	5.12	0.00
144.00	8.09	5.12	0.00
146.00	8.09	5.12	0.00
148.00	8.09	5.12	0.00
150.00	8.09	5.12	0.00
152.00	8.09	5.12	0.00
154.00	8.09	5.12	0.00
156.00	8.09	5.12	0.00
158.00	8.09	5.12	0.00
160.00	8.09	5.12	0.00
162.00	8.09	5.12	0.00
164.00	8.09	5.12	0.00
166.00	8.09	5.12	0.00
168.00	8.09	5.12	0.00
170.00	8.09	5.12	0.00
172.00	8.09	5.12	0.00
174.00	8.09	5.12	0.00
176.00	8.09	5.12	0.00
178.00	8.09	5.12	0.00
180.00	8.09	5.12	0.00

Summary for Subcatchment P-N:

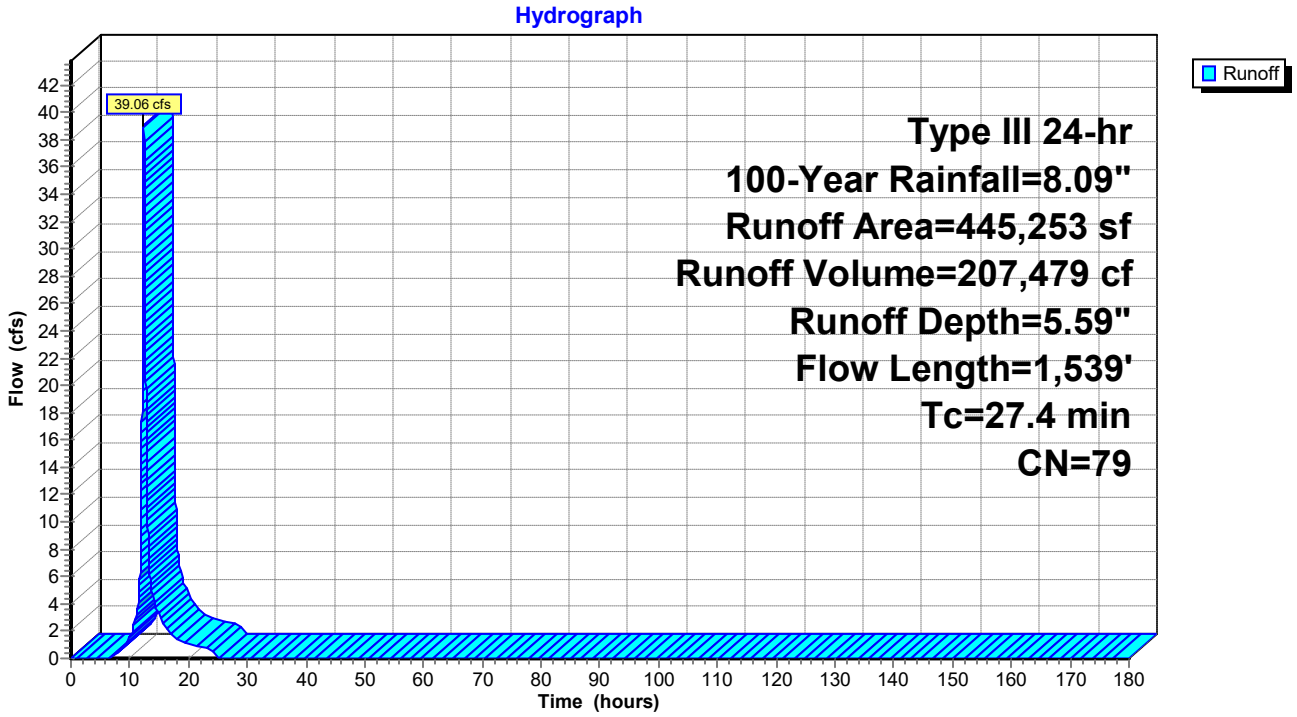
Runoff = 39.06 cfs @ 12.38 hrs, Volume= 207,479 cf, Depth= 5.59"
Routed to Reach P-DP-N : Culvert towards Wades Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
105,630	80	Pasture/grassland/range, Good, HSG D
77,593	72	Woods/grass comb., Good, HSG C
236,123	79	Woods/grass comb., Good, HSG D
4,456	96	Gravel surface, HSG C
8,912	96	Gravel surface, HSG D
9,012	98	Unconnected pavement, HSG D
3,527	78	Meadow, non-grazed, HSG D
445,253	79	Weighted Average
436,241		97.98% Pervious Area
9,012		2.02% Impervious Area
9,012		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	101	0.0383	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
5.8	464	0.0710	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
1.7	209	0.0846	2.04		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
2.6	288	0.0702	1.85		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.8	477	0.0765	9.75	48.76	**Trap/Vee/Rect Channel Flow, EF** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
27.4	1,539	Total			

Subcatchment P-N:



Hydrograph for Subcatchment P-N:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.01
8.00	0.92	0.05	0.39
10.00	1.53	0.27	1.56
12.00	4.04	2.00	**13.24**
14.00	6.56	4.18	**4.46**
16.00	7.17	4.74	2.36
18.00	7.51	5.05	1.39
20.00	7.74	5.27	1.05
22.00	7.93	5.45	0.87
24.00	**8.09**	**5.59**	0.70
26.00	8.09	5.59	0.00
28.00	8.09	5.59	0.00
30.00	8.09	5.59	0.00
32.00	8.09	5.59	0.00
34.00	8.09	5.59	0.00
36.00	8.09	5.59	0.00
38.00	8.09	5.59	0.00
40.00	8.09	5.59	0.00
42.00	8.09	5.59	0.00
44.00	8.09	5.59	0.00
46.00	8.09	5.59	0.00
48.00	8.09	5.59	0.00
50.00	8.09	5.59	0.00
52.00	8.09	5.59	0.00
54.00	8.09	5.59	0.00
56.00	8.09	5.59	0.00
58.00	8.09	5.59	0.00
60.00	8.09	5.59	0.00
62.00	8.09	5.59	0.00
64.00	8.09	5.59	0.00
66.00	8.09	5.59	0.00
68.00	8.09	5.59	0.00
70.00	8.09	5.59	0.00
72.00	8.09	5.59	0.00
74.00	8.09	5.59	0.00
76.00	8.09	5.59	0.00
78.00	8.09	5.59	0.00
80.00	8.09	5.59	0.00
82.00	8.09	5.59	0.00
84.00	8.09	5.59	0.00
86.00	8.09	5.59	0.00
88.00	8.09	5.59	0.00
90.00	8.09	5.59	0.00
92.00	8.09	5.59	0.00
94.00	8.09	5.59	0.00
96.00	8.09	5.59	0.00
98.00	8.09	5.59	0.00
100.00	8.09	5.59	0.00
102.00	8.09	5.59	0.00
104.00	8.09	5.59	0.00
106.00	8.09	5.59	0.00
108.00	8.09	5.59	0.00
110.00	8.09	5.59	0.00
112.00	8.09	5.59	0.00
114.00	8.09	5.59	0.00
116.00	8.09	5.59	0.00
118.00	8.09	5.59	0.00
120.00	8.09	5.59	0.00
122.00	8.09	5.59	0.00
124.00	8.09	5.59	0.00
126.00	8.09	5.59	0.00
128.00	8.09	5.59	0.00
130.00	8.09	5.59	0.00
132.00	8.09	5.59	0.00
134.00	8.09	5.59	0.00
136.00	8.09	5.59	0.00
138.00	8.09	5.59	0.00
140.00	8.09	5.59	0.00
142.00	8.09	5.59	0.00
144.00	8.09	5.59	0.00
146.00	8.09	5.59	0.00
148.00	8.09	5.59	0.00
150.00	8.09	5.59	0.00
152.00	8.09	5.59	0.00
154.00	8.09	5.59	0.00
156.00	8.09	5.59	0.00
158.00	8.09	5.59	0.00
160.00	8.09	5.59	0.00
162.00	8.09	5.59	0.00
164.00	8.09	5.59	0.00
166.00	8.09	5.59	0.00
168.00	8.09	5.59	0.00
170.00	8.09	5.59	0.00
172.00	8.09	5.59	0.00
174.00	8.09	5.59	0.00
176.00	8.09	5.59	0.00
178.00	8.09	5.59	0.00
180.00	8.09	5.59	0.00

Summary for Subcatchment P-NE:

[47] Hint: Peak is 4037% of capacity of segment #5

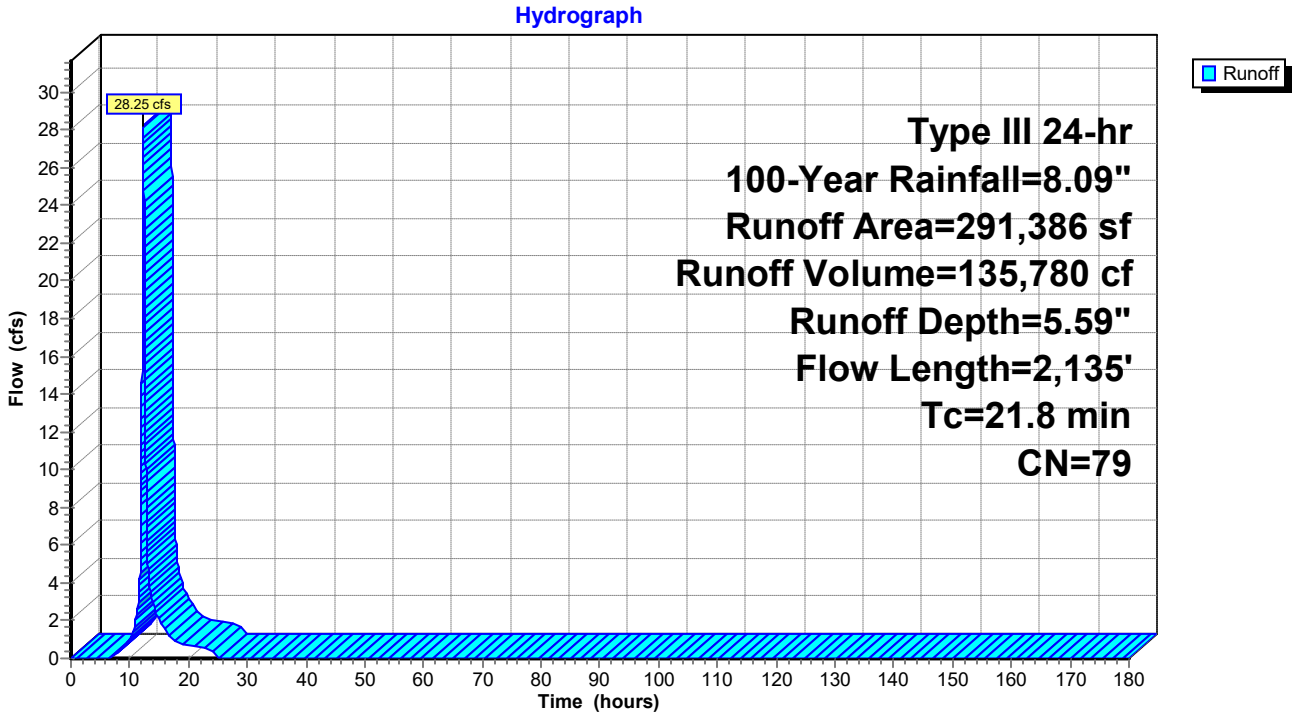
Runoff = 28.25 cfs @ 12.29 hrs, Volume= 135,780 cf, Depth= 5.59"
Routed to Reach P-DP-NE :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
61,428	74	Pasture/grassland/range, Good, HSG C
190,451	80	Pasture/grassland/range, Good, HSG D
4,653	96	Gravel surface, HSG C
6,269	96	Gravel surface, HSG D
830	98	Unconnected pavement, HSG D
187	98	Unconnected pavement, HSG C
1,558	98	Unconnected pavement, HSG D
13,397	71	Meadow, non-grazed, HSG C
12,613	78	Meadow, non-grazed, HSG D
291,386	79	Weighted Average
288,811		99.12% Pervious Area
2,575		0.88% Impervious Area
2,575		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0675	0.31		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
7.1	705	0.0566	1.67		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
3.1	295	0.0513	1.59		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
1.7	140	0.0393	1.39		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.5	17	0.0001	0.57	0.70	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
3.4	335	0.0540	1.63		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
0.7	543	0.1506	13.10	170.34	**Trap/Vee/Rect Channel Flow, GH** Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.030 Earth, grassed & winding
21.8	2,135	Total			

Subcatchment P-NE:



Hydrograph for Subcatchment P-NE:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.01
8.00	0.92	0.05	0.27
10.00	1.53	0.27	1.07
12.00	4.04	2.00	**10.94**
14.00	6.56	4.18	**2.81**
16.00	7.17	4.74	1.49
18.00	7.51	5.05	0.89
20.00	7.74	5.27	0.68
22.00	7.93	5.45	0.56
24.00	**8.09**	**5.59**	0.45
26.00	8.09	5.59	0.00
28.00	8.09	5.59	0.00
30.00	8.09	5.59	0.00
32.00	8.09	5.59	0.00
34.00	8.09	5.59	0.00
36.00	8.09	5.59	0.00
38.00	8.09	5.59	0.00
40.00	8.09	5.59	0.00
42.00	8.09	5.59	0.00
44.00	8.09	5.59	0.00
46.00	8.09	5.59	0.00
48.00	8.09	5.59	0.00
50.00	8.09	5.59	0.00
52.00	8.09	5.59	0.00
54.00	8.09	5.59	0.00
56.00	8.09	5.59	0.00
58.00	8.09	5.59	0.00
60.00	8.09	5.59	0.00
62.00	8.09	5.59	0.00
64.00	8.09	5.59	0.00
66.00	8.09	5.59	0.00
68.00	8.09	5.59	0.00
70.00	8.09	5.59	0.00
72.00	8.09	5.59	0.00
74.00	8.09	5.59	0.00
76.00	8.09	5.59	0.00
78.00	8.09	5.59	0.00
80.00	8.09	5.59	0.00
82.00	8.09	5.59	0.00
84.00	8.09	5.59	0.00
86.00	8.09	5.59	0.00
88.00	8.09	5.59	0.00
90.00	8.09	5.59	0.00
92.00	8.09	5.59	0.00
94.00	8.09	5.59	0.00
96.00	8.09	5.59	0.00
98.00	8.09	5.59	0.00
100.00	8.09	5.59	0.00
102.00	8.09	5.59	0.00
104.00	8.09	5.59	0.00
106.00	8.09	5.59	0.00
108.00	8.09	5.59	0.00
110.00	8.09	5.59	0.00
112.00	8.09	5.59	0.00
114.00	8.09	5.59	0.00
116.00	8.09	5.59	0.00
118.00	8.09	5.59	0.00
120.00	8.09	5.59	0.00
122.00	8.09	5.59	0.00
124.00	8.09	5.59	0.00
126.00	8.09	5.59	0.00
128.00	8.09	5.59	0.00
130.00	8.09	5.59	0.00
132.00	8.09	5.59	0.00
134.00	8.09	5.59	0.00
136.00	8.09	5.59	0.00
138.00	8.09	5.59	0.00
140.00	8.09	5.59	0.00
142.00	8.09	5.59	0.00
144.00	8.09	5.59	0.00
146.00	8.09	5.59	0.00
148.00	8.09	5.59	0.00
150.00	8.09	5.59	0.00
152.00	8.09	5.59	0.00
154.00	8.09	5.59	0.00
156.00	8.09	5.59	0.00
158.00	8.09	5.59	0.00
160.00	8.09	5.59	0.00
162.00	8.09	5.59	0.00
164.00	8.09	5.59	0.00
166.00	8.09	5.59	0.00
168.00	8.09	5.59	0.00
170.00	8.09	5.59	0.00
172.00	8.09	5.59	0.00
174.00	8.09	5.59	0.00
176.00	8.09	5.59	0.00
178.00	8.09	5.59	0.00
180.00	8.09	5.59	0.00

Summary for Subcatchment P-NW:

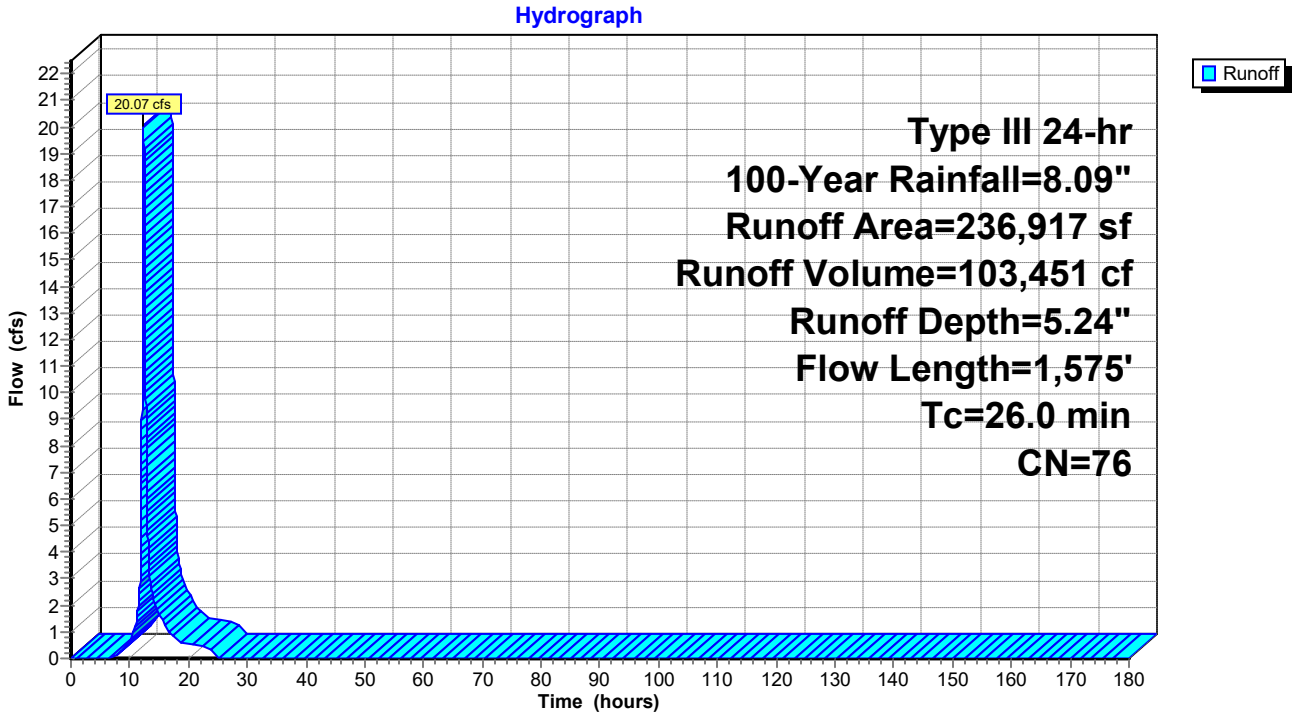
Runoff = 20.07 cfs @ 12.34 hrs, Volume= 103,451 cf, Depth= 5.24"
Routed to Reach P-DP-NW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
92,786	74	Pasture/grassland/range, Good, HSG C
45,051	80	Pasture/grassland/range, Good, HSG D
9,923	72	Woods/grass comb., Good, HSG C
58,620	79	Woods/grass comb., Good, HSG D
492	96	Gravel surface, HSG C
1,562	98	Unconnected pavement, HSG C
199	98	Unconnected pavement, HSG D
24,972	71	Meadow, non-grazed, HSG C
3,312	78	Meadow, non-grazed, HSG D
236,917	76	Weighted Average
235,156		99.26% Pervious Area
1,761		0.74% Impervious Area
1,761		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	102	0.0665	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
0.8	63	0.0750	1.37		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.8	83	0.0627	1.75		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.9	685	0.0763	1.93		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
0.1	75	0.0926	10.58	137.52	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=1.00' Z= 9.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.4	87	0.3254	3.99		**Shallow Concentrated Flow, FG** Short Grass Pasture Kv= 7.0 fps
1.7	174	0.1201	1.73		**Shallow Concentrated Flow, GH** Woodland Kv= 5.0 fps
2.9	202	0.0555	1.18		**Shallow Concentrated Flow, HI** Woodland Kv= 5.0 fps
0.1	104	0.1222	26.85	1,852.49	**Trap/Vee/Rect Channel Flow, IJ** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
26.0	1,575	Total			

Subcatchment P-NW:



Hydrograph for Subcatchment P-NW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.00
8.00	0.92	0.02	0.13
10.00	1.53	0.20	0.68
12.00	4.04	1.77	**6.81**
14.00	6.56	3.87	**2.28**
16.00	7.17	4.41	1.21
18.00	7.51	4.71	0.72
20.00	7.74	4.92	0.55
22.00	7.93	5.10	0.45
24.00	**8.09**	**5.24**	0.36
26.00	8.09	5.24	0.00
28.00	8.09	5.24	0.00
30.00	8.09	5.24	0.00
32.00	8.09	5.24	0.00
34.00	8.09	5.24	0.00
36.00	8.09	5.24	0.00
38.00	8.09	5.24	0.00
40.00	8.09	5.24	0.00
42.00	8.09	5.24	0.00
44.00	8.09	5.24	0.00
46.00	8.09	5.24	0.00
48.00	8.09	5.24	0.00
50.00	8.09	5.24	0.00
52.00	8.09	5.24	0.00
54.00	8.09	5.24	0.00
56.00	8.09	5.24	0.00
58.00	8.09	5.24	0.00
60.00	8.09	5.24	0.00
62.00	8.09	5.24	0.00
64.00	8.09	5.24	0.00
66.00	8.09	5.24	0.00
68.00	8.09	5.24	0.00
70.00	8.09	5.24	0.00
72.00	8.09	5.24	0.00
74.00	8.09	5.24	0.00
76.00	8.09	5.24	0.00
78.00	8.09	5.24	0.00
80.00	8.09	5.24	0.00
82.00	8.09	5.24	0.00
84.00	8.09	5.24	0.00
86.00	8.09	5.24	0.00
88.00	8.09	5.24	0.00
90.00	8.09	5.24	0.00
92.00	8.09	5.24	0.00
94.00	8.09	5.24	0.00
96.00	8.09	5.24	0.00
98.00	8.09	5.24	0.00
100.00	8.09	5.24	0.00
102.00	8.09	5.24	0.00
104.00	8.09	5.24	0.00
106.00	8.09	5.24	0.00
108.00	8.09	5.24	0.00
110.00	8.09	5.24	0.00
112.00	8.09	5.24	0.00
114.00	8.09	5.24	0.00
116.00	8.09	5.24	0.00
118.00	8.09	5.24	0.00
120.00	8.09	5.24	0.00
122.00	8.09	5.24	0.00
124.00	8.09	5.24	0.00
126.00	8.09	5.24	0.00
128.00	8.09	5.24	0.00
130.00	8.09	5.24	0.00
132.00	8.09	5.24	0.00
134.00	8.09	5.24	0.00
136.00	8.09	5.24	0.00
138.00	8.09	5.24	0.00
140.00	8.09	5.24	0.00
142.00	8.09	5.24	0.00
144.00	8.09	5.24	0.00
146.00	8.09	5.24	0.00
148.00	8.09	5.24	0.00
150.00	8.09	5.24	0.00
152.00	8.09	5.24	0.00
154.00	8.09	5.24	0.00
156.00	8.09	5.24	0.00
158.00	8.09	5.24	0.00
160.00	8.09	5.24	0.00
162.00	8.09	5.24	0.00
164.00	8.09	5.24	0.00
166.00	8.09	5.24	0.00
168.00	8.09	5.24	0.00
170.00	8.09	5.24	0.00
172.00	8.09	5.24	0.00
174.00	8.09	5.24	0.00
176.00	8.09	5.24	0.00
178.00	8.09	5.24	0.00
180.00	8.09	5.24	0.00

Summary for Subcatchment P-SE1:

[47] Hint: Peak is 243% of capacity of segment #5

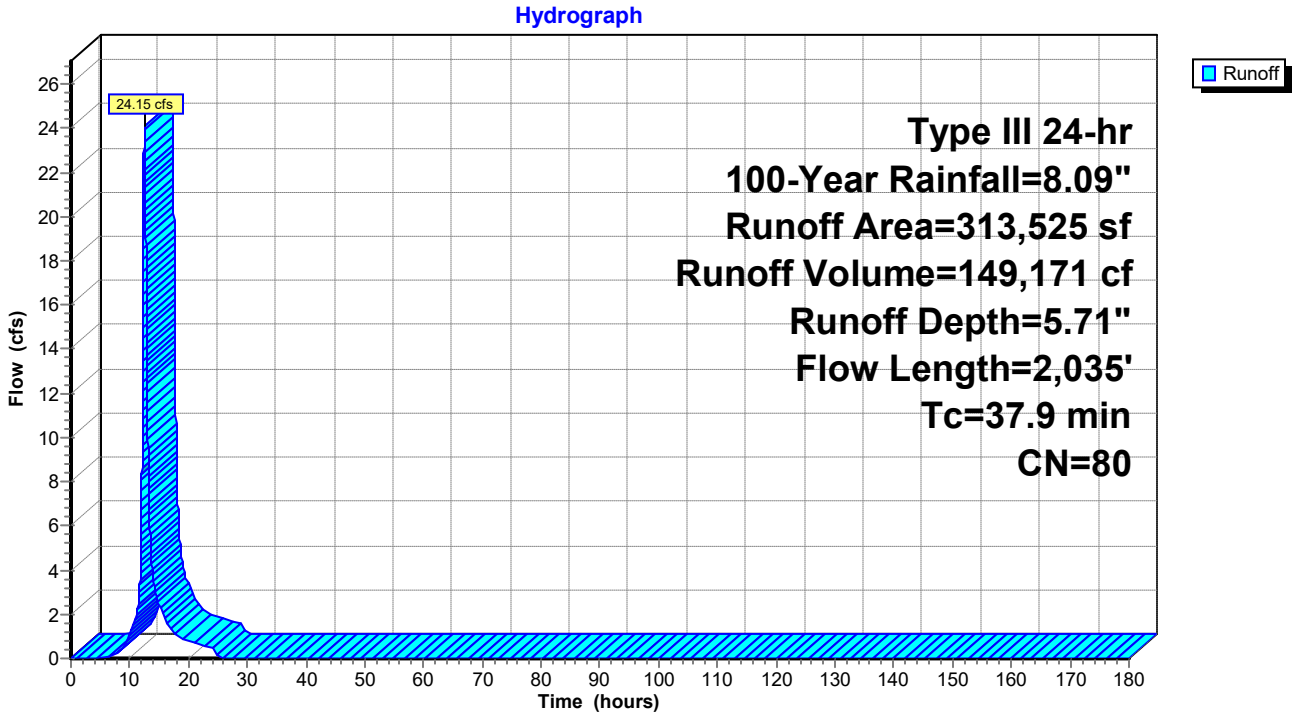
Runoff = 24.15 cfs @ 12.51 hrs, Volume= 149,171 cf, Depth= 5.71"
Routed to Pond B : 2x15" CPP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
243,357	80	Pasture/grassland/range, Good, HSG D
64,315	79	Woods/grass comb., Good, HSG D
4,257	98	Unconnected pavement, HSG D
1,596	78	Meadow, non-grazed, HSG D
313,525	80	Weighted Average
309,268		98.64% Pervious Area
4,257		1.36% Impervious Area
4,257		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0707	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.29"
1.8	144	0.0705	1.33		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
2.2	216	0.0566	1.67		**Shallow Concentrated Flow, CD** Short Grass Pasture Kv= 7.0 fps
5.7	645	0.0722	1.88		**Shallow Concentrated Flow, DE** Short Grass Pasture Kv= 7.0 fps
2.8	367	0.0091	2.21	9.95	**Trap/Vee/Rect Channel Flow, EF** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
5.5	100	0.0606	0.30		**Sheet Flow, FG** Range n= 0.130 P2= 3.29"
0.7	82	0.0703	1.86		**Shallow Concentrated Flow, GH** Short Grass Pasture Kv= 7.0 fps
2.6	42	0.0707	0.27		**Sheet Flow, HI** Range n= 0.130 P2= 3.29"
3.8	339	0.0442	1.47		**Shallow Concentrated Flow, IJ** Short Grass Pasture Kv= 7.0 fps
37.9	2,035	Total			

Subcatchment P-SE1:



Hydrograph for Subcatchment P-SE1:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.01
8.00	0.92	0.06	0.28
10.00	1.53	0.30	1.07
12.00	4.04	2.08	**6.60**
14.00	6.56	4.29	**3.54**
16.00	7.17	4.85	1.77
18.00	7.51	5.16	1.03
20.00	7.74	5.38	0.76
22.00	7.93	5.56	0.63
24.00	**8.09**	**5.71**	0.50
26.00	8.09	5.71	0.00
28.00	8.09	5.71	0.00
30.00	8.09	5.71	0.00
32.00	8.09	5.71	0.00
34.00	8.09	5.71	0.00
36.00	8.09	5.71	0.00
38.00	8.09	5.71	0.00
40.00	8.09	5.71	0.00
42.00	8.09	5.71	0.00
44.00	8.09	5.71	0.00
46.00	8.09	5.71	0.00
48.00	8.09	5.71	0.00
50.00	8.09	5.71	0.00
52.00	8.09	5.71	0.00
54.00	8.09	5.71	0.00
56.00	8.09	5.71	0.00
58.00	8.09	5.71	0.00
60.00	8.09	5.71	0.00
62.00	8.09	5.71	0.00
64.00	8.09	5.71	0.00
66.00	8.09	5.71	0.00
68.00	8.09	5.71	0.00
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72.00	8.09	5.71	0.00
74.00	8.09	5.71	0.00
76.00	8.09	5.71	0.00
78.00	8.09	5.71	0.00
80.00	8.09	5.71	0.00
82.00	8.09	5.71	0.00
84.00	8.09	5.71	0.00
86.00	8.09	5.71	0.00
88.00	8.09	5.71	0.00
90.00	8.09	5.71	0.00
92.00	8.09	5.71	0.00
94.00	8.09	5.71	0.00
96.00	8.09	5.71	0.00
98.00	8.09	5.71	0.00
100.00	8.09	5.71	0.00
102.00	8.09	5.71	0.00
104.00	8.09	5.71	0.00
106.00	8.09	5.71	0.00
108.00	8.09	5.71	0.00
110.00	8.09	5.71	0.00
112.00	8.09	5.71	0.00
114.00	8.09	5.71	0.00
116.00	8.09	5.71	0.00
118.00	8.09	5.71	0.00
120.00	8.09	5.71	0.00
122.00	8.09	5.71	0.00
124.00	8.09	5.71	0.00
126.00	8.09	5.71	0.00
128.00	8.09	5.71	0.00
130.00	8.09	5.71	0.00
132.00	8.09	5.71	0.00
134.00	8.09	5.71	0.00
136.00	8.09	5.71	0.00
138.00	8.09	5.71	0.00
140.00	8.09	5.71	0.00
142.00	8.09	5.71	0.00
144.00	8.09	5.71	0.00
146.00	8.09	5.71	0.00
148.00	8.09	5.71	0.00
150.00	8.09	5.71	0.00
152.00	8.09	5.71	0.00
154.00	8.09	5.71	0.00
156.00	8.09	5.71	0.00
158.00	8.09	5.71	0.00
160.00	8.09	5.71	0.00
162.00	8.09	5.71	0.00
164.00	8.09	5.71	0.00
166.00	8.09	5.71	0.00
168.00	8.09	5.71	0.00
170.00	8.09	5.71	0.00
172.00	8.09	5.71	0.00
174.00	8.09	5.71	0.00
176.00	8.09	5.71	0.00
178.00	8.09	5.71	0.00
180.00	8.09	5.71	0.00

Summary for Subcatchment P-SE2:

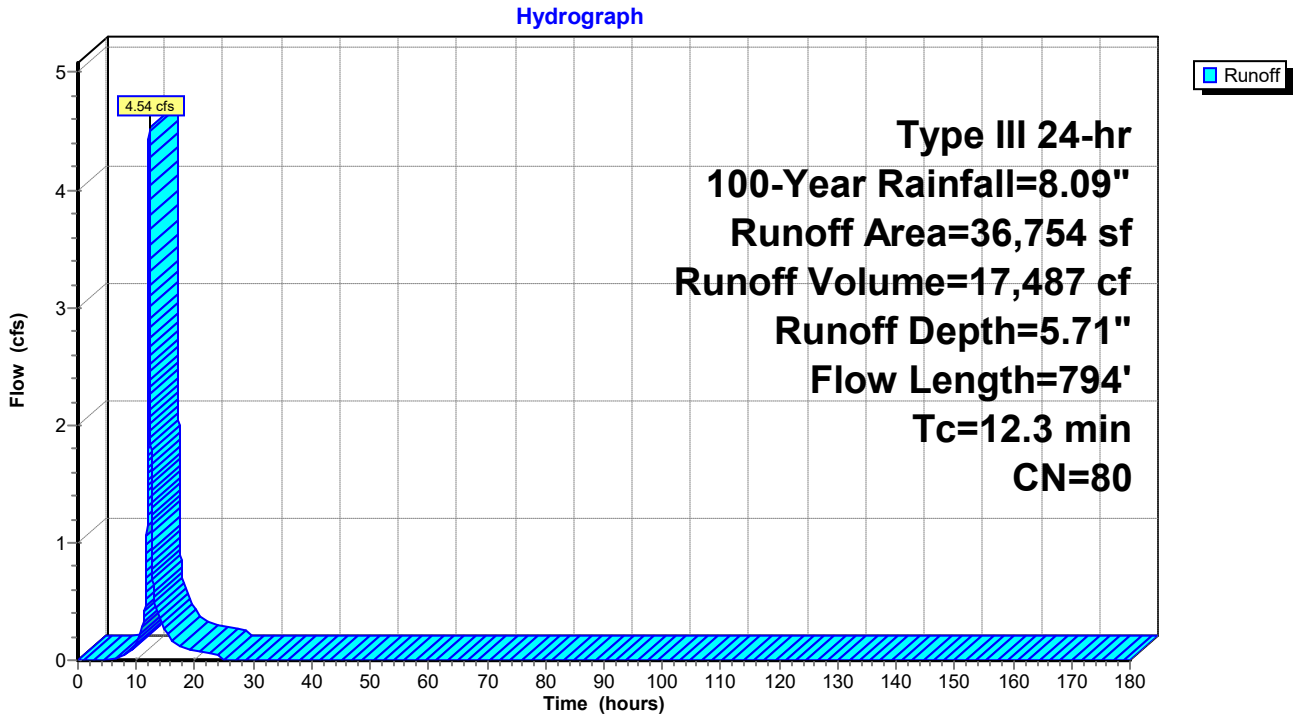
Runoff = 4.54 cfs @ 12.17 hrs, Volume= 17,487 cf, Depth= 5.71"
Routed to Pond A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
34,270	80	Pasture/grassland/range, Good, HSG D
160	98	Unconnected pavement, HSG D
2,324	78	Meadow, non-grazed, HSG D
36,754	80	Weighted Average
36,594		99.56% Pervious Area
160		0.44% Impervious Area
160		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0552	0.29		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.6	694	0.0626	1.75		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
12.3	794	Total			

Subcatchment P-SE2:



Hydrograph for Subcatchment P-SE2:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.00
8.00	0.92	0.06	0.04
10.00	1.53	0.30	0.15
12.00	4.04	2.08	**2.16**
14.00	6.56	4.29	**0.34**
16.00	7.17	4.85	0.18
18.00	7.51	5.16	0.11
20.00	7.74	5.38	0.09
22.00	7.93	5.56	0.07
24.00	**8.09**	**5.71**	0.06
26.00	8.09	5.71	0.00
28.00	8.09	5.71	0.00
30.00	8.09	5.71	0.00
32.00	8.09	5.71	0.00
34.00	8.09	5.71	0.00
36.00	8.09	5.71	0.00
38.00	8.09	5.71	0.00
40.00	8.09	5.71	0.00
42.00	8.09	5.71	0.00
44.00	8.09	5.71	0.00
46.00	8.09	5.71	0.00
48.00	8.09	5.71	0.00
50.00	8.09	5.71	0.00
52.00	8.09	5.71	0.00
54.00	8.09	5.71	0.00
56.00	8.09	5.71	0.00
58.00	8.09	5.71	0.00
60.00	8.09	5.71	0.00
62.00	8.09	5.71	0.00
64.00	8.09	5.71	0.00
66.00	8.09	5.71	0.00
68.00	8.09	5.71	0.00
70.00	8.09	5.71	0.00
72.00	8.09	5.71	0.00
74.00	8.09	5.71	0.00
76.00	8.09	5.71	0.00
78.00	8.09	5.71	0.00
80.00	8.09	5.71	0.00
82.00	8.09	5.71	0.00
84.00	8.09	5.71	0.00
86.00	8.09	5.71	0.00
88.00	8.09	5.71	0.00
90.00	8.09	5.71	0.00
92.00	8.09	5.71	0.00
94.00	8.09	5.71	0.00
96.00	8.09	5.71	0.00
98.00	8.09	5.71	0.00
100.00	8.09	5.71	0.00
102.00	8.09	5.71	0.00
104.00	8.09	5.71	0.00
106.00	8.09	5.71	0.00
108.00	8.09	5.71	0.00
110.00	8.09	5.71	0.00
112.00	8.09	5.71	0.00
114.00	8.09	5.71	0.00
116.00	8.09	5.71	0.00
118.00	8.09	5.71	0.00
120.00	8.09	5.71	0.00
122.00	8.09	5.71	0.00
124.00	8.09	5.71	0.00
126.00	8.09	5.71	0.00
128.00	8.09	5.71	0.00
130.00	8.09	5.71	0.00
132.00	8.09	5.71	0.00
134.00	8.09	5.71	0.00
136.00	8.09	5.71	0.00
138.00	8.09	5.71	0.00
140.00	8.09	5.71	0.00
142.00	8.09	5.71	0.00
144.00	8.09	5.71	0.00
146.00	8.09	5.71	0.00
148.00	8.09	5.71	0.00
150.00	8.09	5.71	0.00
152.00	8.09	5.71	0.00
154.00	8.09	5.71	0.00
156.00	8.09	5.71	0.00
158.00	8.09	5.71	0.00
160.00	8.09	5.71	0.00
162.00	8.09	5.71	0.00
164.00	8.09	5.71	0.00
166.00	8.09	5.71	0.00
168.00	8.09	5.71	0.00
170.00	8.09	5.71	0.00
172.00	8.09	5.71	0.00
174.00	8.09	5.71	0.00
176.00	8.09	5.71	0.00
178.00	8.09	5.71	0.00
180.00	8.09	5.71	0.00

Summary for Subcatchment P-SE3:

[47] Hint: Peak is 114% of capacity of segment #3

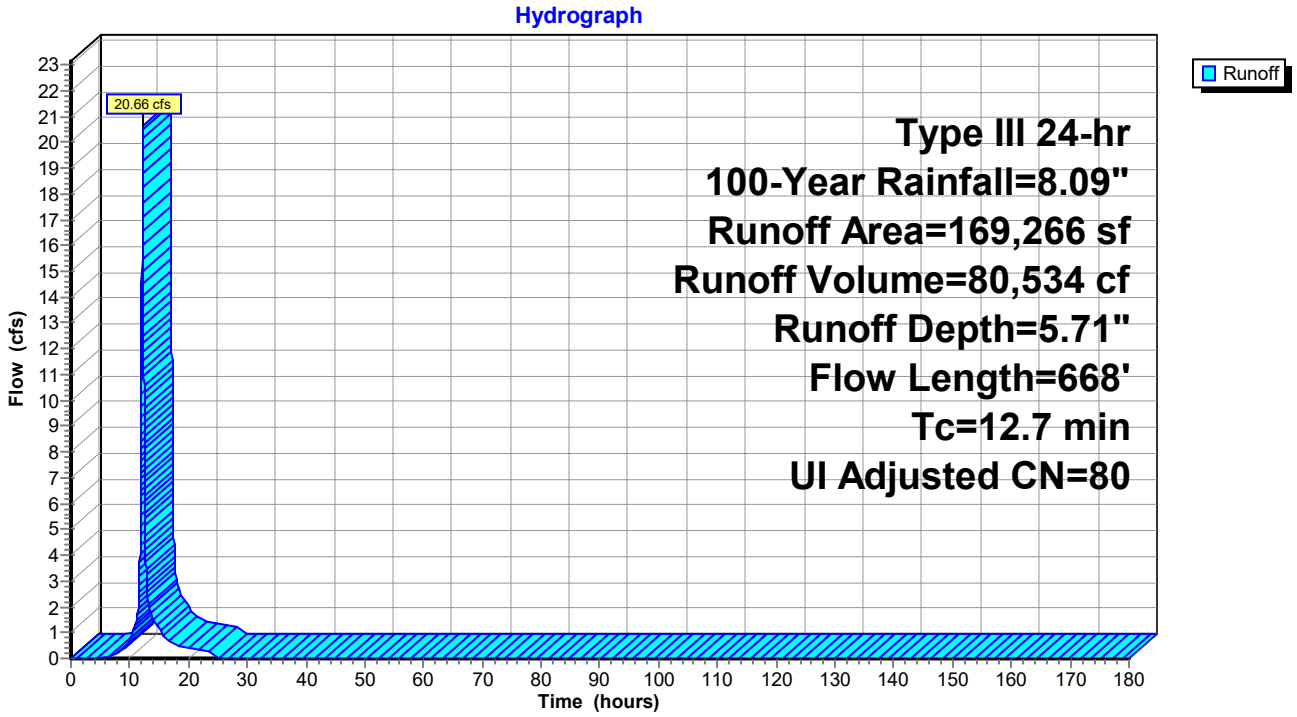
Runoff = 20.66 cfs @ 12.17 hrs, Volume= 80,534 cf, Depth= 5.71"
Routed to Reach P-DP-SE : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Adj	Description
106,589	80		Pasture/grassland/range, Good, HSG D
4,800	79		Woods/grass comb., Good, HSG D
4,840	96		Gravel surface, HSG D
9,465	98		Unconnected pavement, HSG D
43,572	78		Meadow, non-grazed, HSG D
169,266	81	80	Weighted Average, UI Adjusted
159,801			94.41% Pervious Area
9,465			5.59% Impervious Area
9,465			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0425	0.26		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
6.1	521	0.0416	1.43		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
0.2	47	0.0304	4.04	18.19	**Trap/Vee/Rect Channel Flow, CD** Bot.W=4.00' D=0.50' Z= 10.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
12.7	668	Total			

Subcatchment P-SE3:



Hydrograph for Subcatchment P-SE3:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.02
8.00	0.92	0.06	0.20
10.00	1.53	0.30	0.71
12.00	4.04	2.08	**9.76**
14.00	6.56	4.29	**1.55**
16.00	7.17	4.85	0.83
18.00	7.51	5.16	0.50
20.00	7.74	5.38	0.39
22.00	7.93	5.56	0.33
24.00	**8.09**	**5.71**	0.26
26.00	8.09	5.71	0.00
28.00	8.09	5.71	0.00
30.00	8.09	5.71	0.00
32.00	8.09	5.71	0.00
34.00	8.09	5.71	0.00
36.00	8.09	5.71	0.00
38.00	8.09	5.71	0.00
40.00	8.09	5.71	0.00
42.00	8.09	5.71	0.00
44.00	8.09	5.71	0.00
46.00	8.09	5.71	0.00
48.00	8.09	5.71	0.00
50.00	8.09	5.71	0.00
52.00	8.09	5.71	0.00
54.00	8.09	5.71	0.00
56.00	8.09	5.71	0.00
58.00	8.09	5.71	0.00
60.00	8.09	5.71	0.00
62.00	8.09	5.71	0.00
64.00	8.09	5.71	0.00
66.00	8.09	5.71	0.00
68.00	8.09	5.71	0.00
70.00	8.09	5.71	0.00
72.00	8.09	5.71	0.00
74.00	8.09	5.71	0.00
76.00	8.09	5.71	0.00
78.00	8.09	5.71	0.00
80.00	8.09	5.71	0.00
82.00	8.09	5.71	0.00
84.00	8.09	5.71	0.00
86.00	8.09	5.71	0.00
88.00	8.09	5.71	0.00
90.00	8.09	5.71	0.00
92.00	8.09	5.71	0.00
94.00	8.09	5.71	0.00
96.00	8.09	5.71	0.00
98.00	8.09	5.71	0.00
100.00	8.09	5.71	0.00
102.00	8.09	5.71	0.00
104.00	8.09	5.71	0.00
106.00	8.09	5.71	0.00
108.00	8.09	5.71	0.00
110.00	8.09	5.71	0.00
112.00	8.09	5.71	0.00
114.00	8.09	5.71	0.00
116.00	8.09	5.71	0.00
118.00	8.09	5.71	0.00
120.00	8.09	5.71	0.00
122.00	8.09	5.71	0.00
124.00	8.09	5.71	0.00
126.00	8.09	5.71	0.00
128.00	8.09	5.71	0.00
130.00	8.09	5.71	0.00
132.00	8.09	5.71	0.00
134.00	8.09	5.71	0.00
136.00	8.09	5.71	0.00
138.00	8.09	5.71	0.00
140.00	8.09	5.71	0.00
142.00	8.09	5.71	0.00
144.00	8.09	5.71	0.00
146.00	8.09	5.71	0.00
148.00	8.09	5.71	0.00
150.00	8.09	5.71	0.00
152.00	8.09	5.71	0.00
154.00	8.09	5.71	0.00
156.00	8.09	5.71	0.00
158.00	8.09	5.71	0.00
160.00	8.09	5.71	0.00
162.00	8.09	5.71	0.00
164.00	8.09	5.71	0.00
166.00	8.09	5.71	0.00
168.00	8.09	5.71	0.00
170.00	8.09	5.71	0.00
172.00	8.09	5.71	0.00
174.00	8.09	5.71	0.00
176.00	8.09	5.71	0.00
178.00	8.09	5.71	0.00
180.00	8.09	5.71	0.00

Summary for Subcatchment P-SW:

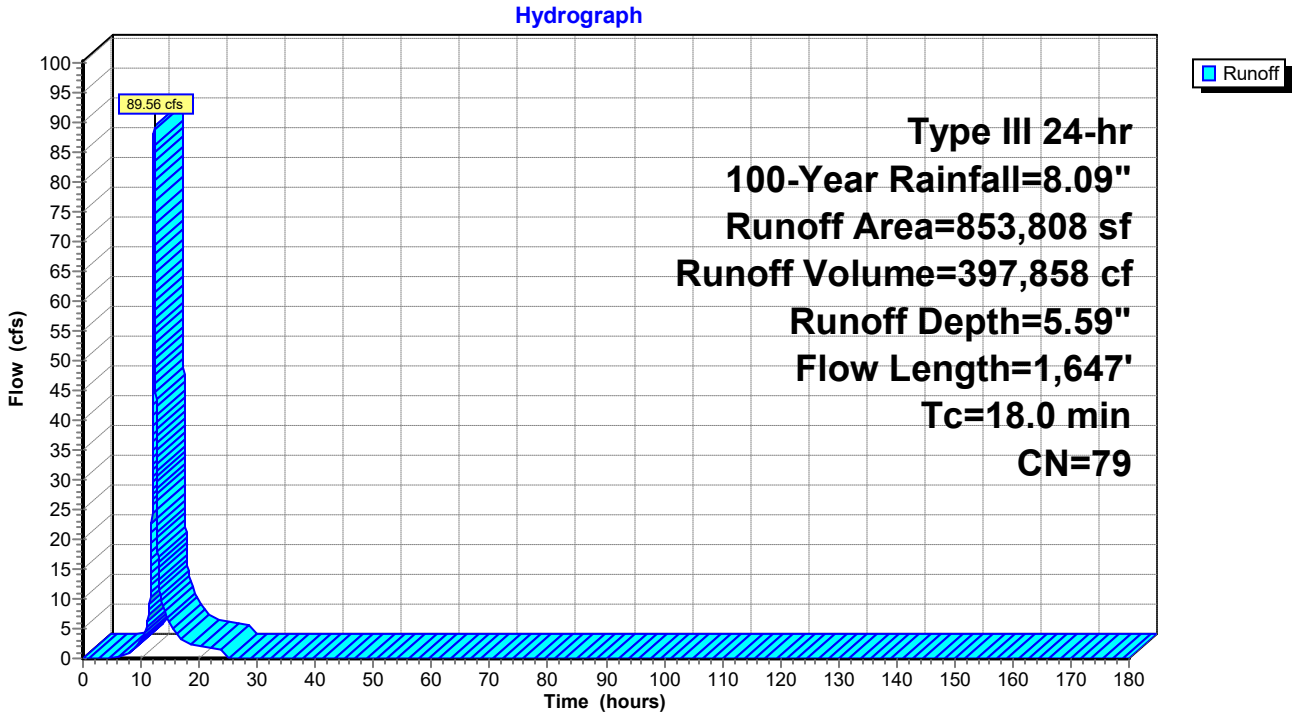
Runoff = 89.56 cfs @ 12.24 hrs, Volume= 397,858 cf, Depth= 5.59"
Routed to Reach P-DP-SW :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.09"

Area (sf)	CN	Description
153,422	80	Pasture/grassland/range, Good, HSG D
603,267	79	Woods/grass comb., Good, HSG D
54	96	Gravel surface, HSG D
787	98	Unconnected pavement, HSG D
96,278	78	Meadow, non-grazed, HSG D
853,808	79	Weighted Average
853,021		99.91% Pervious Area
787		0.09% Impervious Area
787		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0398	0.25		**Sheet Flow, AB** Range n= 0.130 P2= 3.29"
4.0	442	0.0697	1.85		**Shallow Concentrated Flow, BC** Short Grass Pasture Kv= 7.0 fps
4.4	387	0.0848	1.46		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
0.3	51	0.3946	3.14		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
2.2	149	0.0530	1.15		**Shallow Concentrated Flow, EF** Woodland Kv= 5.0 fps
0.6	518	0.0304	13.39	923.97	**Trap/Vee/Rect Channel Flow, FG** Bot.W=11.00' D=3.00' Z= 4.0 '/' Top.W=35.00' n= 0.030 Earth, grassed & winding
18.0	1,647	Total			

Subcatchment P-SW:



Hydrograph for Subcatchment P-SW:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
2.00	0.16	0.00	0.00
4.00	0.35	0.00	0.00
6.00	0.58	0.00	0.03
8.00	0.92	0.05	0.83
10.00	1.53	0.27	3.22
12.00	4.04	2.00	**37.71**
14.00	6.56	4.18	**8.04**
16.00	7.17	4.74	4.28
18.00	7.51	5.05	2.57
20.00	7.74	5.27	1.99
22.00	7.93	5.45	1.64
24.00	**8.09**	**5.59**	1.31
26.00	8.09	5.59	0.00
28.00	8.09	5.59	0.00
30.00	8.09	5.59	0.00
32.00	8.09	5.59	0.00
34.00	8.09	5.59	0.00
36.00	8.09	5.59	0.00
38.00	8.09	5.59	0.00
40.00	8.09	5.59	0.00
42.00	8.09	5.59	0.00
44.00	8.09	5.59	0.00
46.00	8.09	5.59	0.00
48.00	8.09	5.59	0.00
50.00	8.09	5.59	0.00
52.00	8.09	5.59	0.00
54.00	8.09	5.59	0.00
56.00	8.09	5.59	0.00
58.00	8.09	5.59	0.00
60.00	8.09	5.59	0.00
62.00	8.09	5.59	0.00
64.00	8.09	5.59	0.00
66.00	8.09	5.59	0.00
68.00	8.09	5.59	0.00
70.00	8.09	5.59	0.00
72.00	8.09	5.59	0.00
74.00	8.09	5.59	0.00
76.00	8.09	5.59	0.00
78.00	8.09	5.59	0.00
80.00	8.09	5.59	0.00
82.00	8.09	5.59	0.00
84.00	8.09	5.59	0.00
86.00	8.09	5.59	0.00
88.00	8.09	5.59	0.00
90.00	8.09	5.59	0.00
92.00	8.09	5.59	0.00
94.00	8.09	5.59	0.00
96.00	8.09	5.59	0.00
98.00	8.09	5.59	0.00
100.00	8.09	5.59	0.00
102.00	8.09	5.59	0.00
104.00	8.09	5.59	0.00
106.00	8.09	5.59	0.00
108.00	8.09	5.59	0.00
110.00	8.09	5.59	0.00
112.00	8.09	5.59	0.00
114.00	8.09	5.59	0.00
116.00	8.09	5.59	0.00
118.00	8.09	5.59	0.00
120.00	8.09	5.59	0.00
122.00	8.09	5.59	0.00
124.00	8.09	5.59	0.00
126.00	8.09	5.59	0.00
128.00	8.09	5.59	0.00
130.00	8.09	5.59	0.00
132.00	8.09	5.59	0.00
134.00	8.09	5.59	0.00
136.00	8.09	5.59	0.00
138.00	8.09	5.59	0.00
140.00	8.09	5.59	0.00
142.00	8.09	5.59	0.00
144.00	8.09	5.59	0.00
146.00	8.09	5.59	0.00
148.00	8.09	5.59	0.00
150.00	8.09	5.59	0.00
152.00	8.09	5.59	0.00
154.00	8.09	5.59	0.00
156.00	8.09	5.59	0.00
158.00	8.09	5.59	0.00
160.00	8.09	5.59	0.00
162.00	8.09	5.59	0.00
164.00	8.09	5.59	0.00
166.00	8.09	5.59	0.00
168.00	8.09	5.59	0.00
170.00	8.09	5.59	0.00
172.00	8.09	5.59	0.00
174.00	8.09	5.59	0.00
176.00	8.09	5.59	0.00
178.00	8.09	5.59	0.00
180.00	8.09	5.59	0.00

Summary for Reach C: Overland Flow

Inflow Area = 350,279 sf, 1.26% Impervious, Inflow Depth = 5.71" for 100-Year event
Inflow = 25.89 cfs @ 12.50 hrs, Volume= 166,534 cf
Outflow = 25.65 cfs @ 12.54 hrs, Volume= 166,534 cf, Atten= 1%, Lag= 1.9 min
Routed to Reach P-DP-SE : Culvert

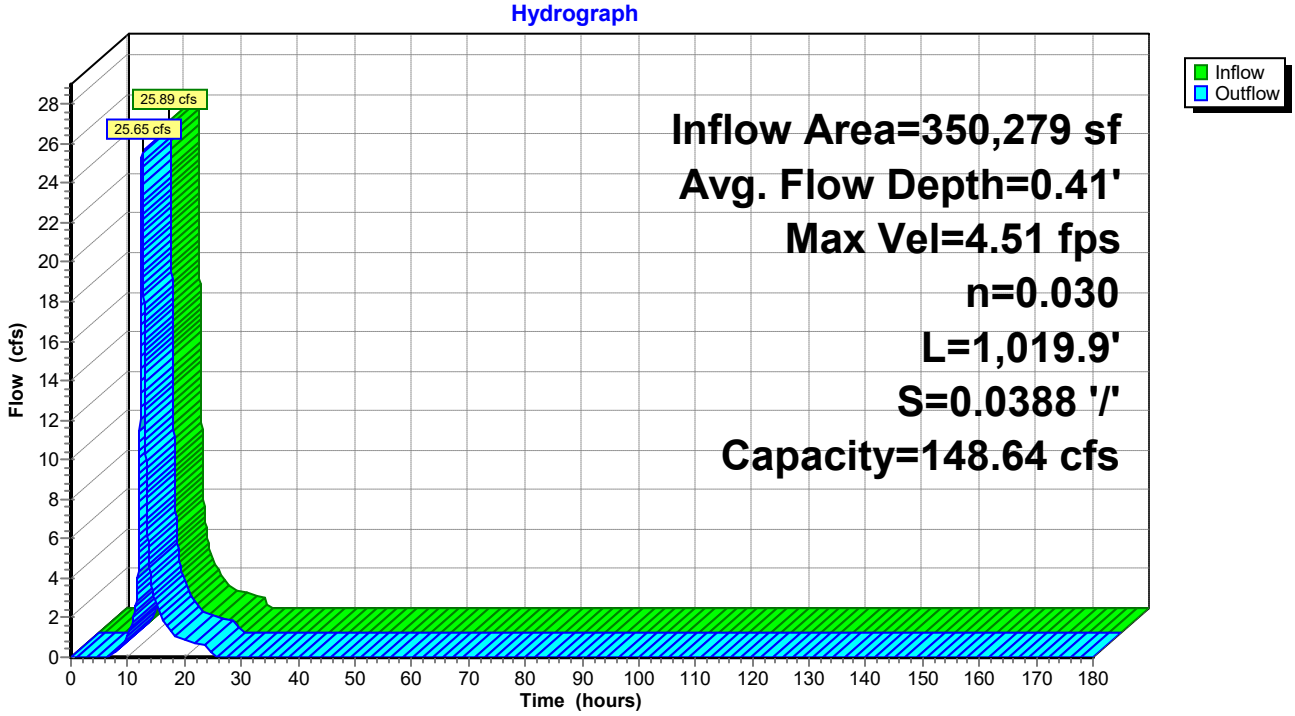
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.51 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 1.41 fps, Avg. Travel Time= 12.0 min

Peak Storage= 5,805 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 18.10'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 148.64 cfs

10.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 1,019.9' Slope= 0.0388 '/'
Inlet Invert= 1,659.60', Outlet Invert= 1,620.00'

‡

Reach C: Overland Flow



Hydrograph for Reach C: Overland Flow

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,659.60	0.00
5.00	0.00	0	1,659.60	0.00
10.00	**1.22**	**744**	**1,659.67**	**1.14**
15.00	**2.65**	**1,291**	**1,659.71**	**2.72**
20.00	0.85	621	1,659.66	0.86
25.00	0.04	185	1,659.62	0.12
30.00	0.00	0	1,659.60	0.00
35.00	0.00	0	1,659.60	0.00
40.00	0.00	0	1,659.60	0.00
45.00	0.00	0	1,659.60	0.00
50.00	0.00	0	1,659.60	0.00
55.00	0.00	0	1,659.60	0.00
60.00	0.00	0	1,659.60	0.00
65.00	0.00	0	1,659.60	0.00
70.00	0.00	0	1,659.60	0.00
75.00	0.00	0	1,659.60	0.00
80.00	0.00	0	1,659.60	0.00
85.00	0.00	0	1,659.60	0.00
90.00	0.00	0	1,659.60	0.00
95.00	0.00	0	1,659.60	0.00
100.00	0.00	0	1,659.60	0.00
105.00	0.00	0	1,659.60	0.00
110.00	0.00	0	1,659.60	0.00
115.00	0.00	0	1,659.60	0.00
120.00	0.00	0	1,659.60	0.00
125.00	0.00	0	1,659.60	0.00
130.00	0.00	0	1,659.60	0.00
135.00	0.00	0	1,659.60	0.00
140.00	0.00	0	1,659.60	0.00
145.00	0.00	0	1,659.60	0.00
150.00	0.00	0	1,659.60	0.00
155.00	0.00	0	1,659.60	0.00
160.00	0.00	0	1,659.60	0.00
165.00	0.00	0	1,659.60	0.00
170.00	0.00	0	1,659.60	0.00
175.00	0.00	0	1,659.60	0.00
180.00	0.00	0	1,659.60	0.00

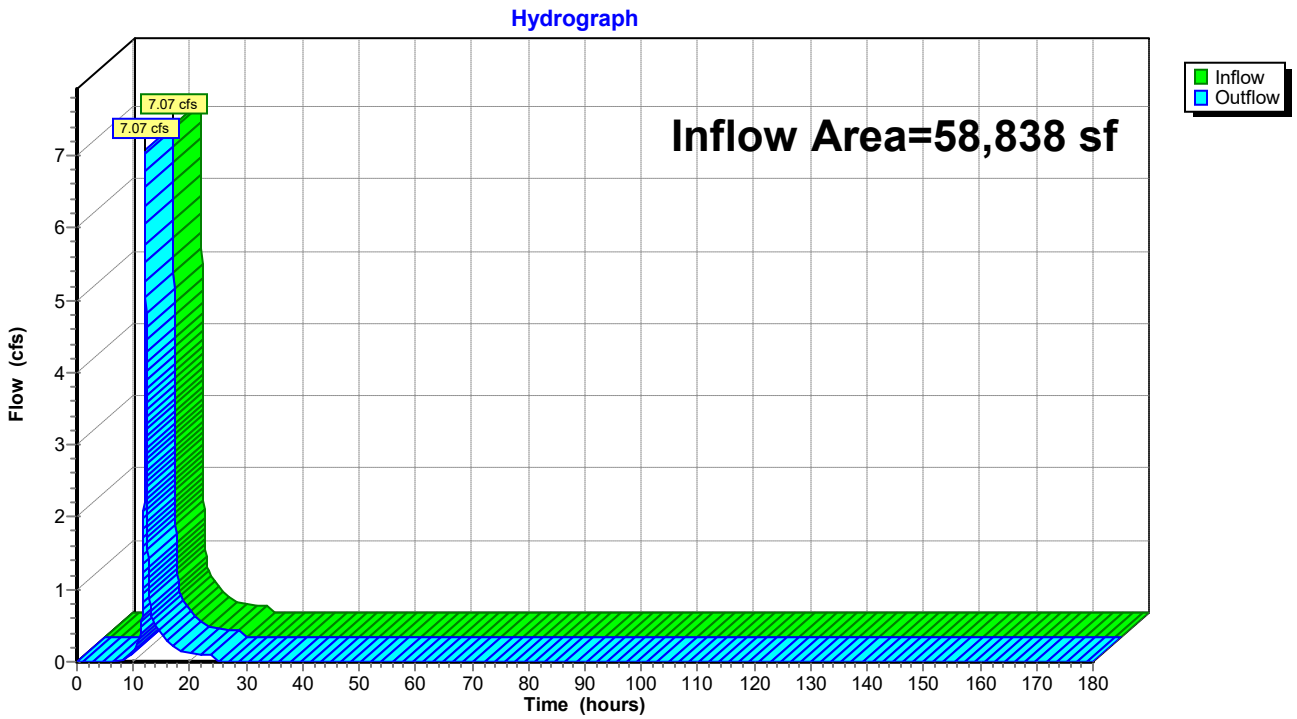
Summary for Reach P-DP-M:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 58,838 sf, 0.10% Impervious, Inflow Depth = 4.89" for 100-Year event
Inflow = 7.07 cfs @ 12.12 hrs, Volume= 23,975 cf
Outflow = 7.07 cfs @ 12.12 hrs, Volume= 23,975 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-M:



Hydrograph for Reach P-DP-M:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.02		0.02	112.00	0.00		0.00
10.00	0.16		0.16	114.00	0.00		0.00
12.00	**3.59**		**3.59**	116.00	0.00		0.00
14.00	**0.49**		**0.49**	118.00	0.00		0.00
16.00	0.26		0.26	120.00	0.00		0.00
18.00	0.16		0.16	122.00	0.00		0.00
20.00	0.13		0.13	124.00	0.00		0.00
22.00	0.11		0.11	126.00	0.00		0.00
24.00	0.08		0.08	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

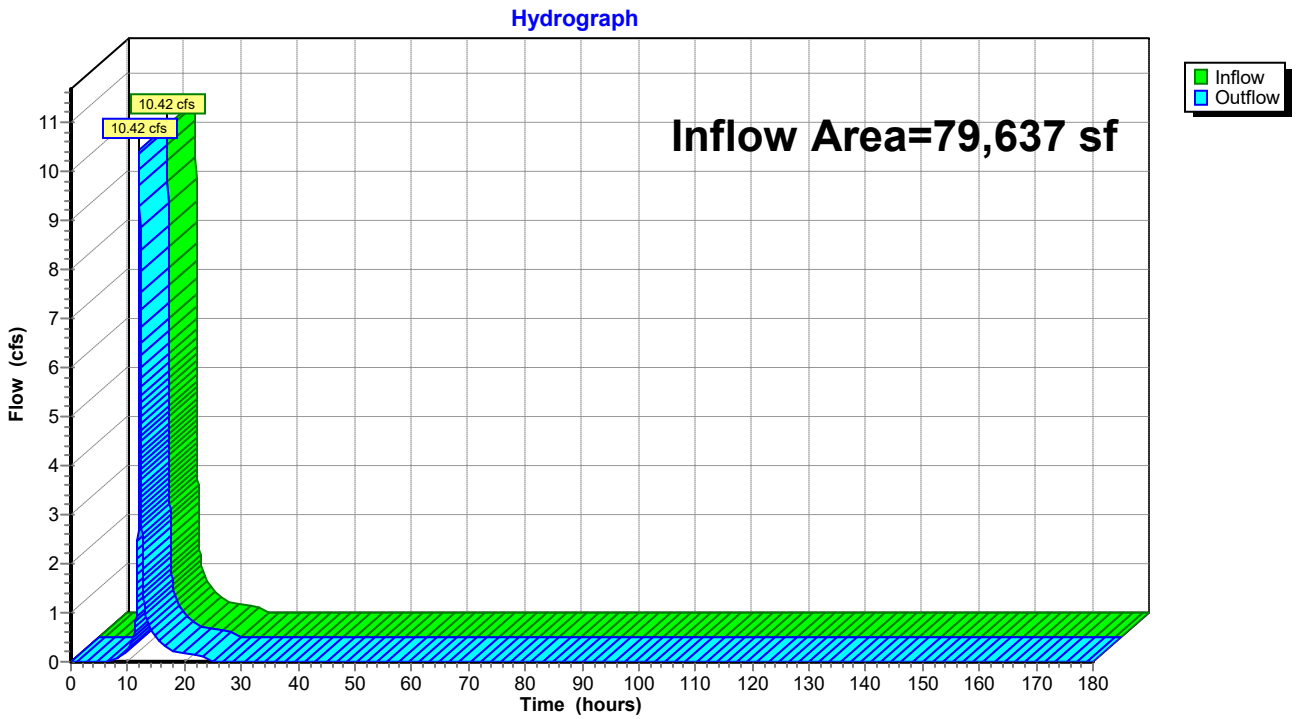
Summary for Reach P-DP-MW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79,637 sf, 0.23% Impervious, Inflow Depth = 5.12" for 100-Year event
Inflow = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf
Outflow = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-2L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-MW:



Hydrograph for Reach P-DP-MW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.05		0.05	112.00	0.00		0.00
10.00	0.25		0.25	114.00	0.00		0.00
12.00	**5.65**		**5.65**	116.00	0.00		0.00
14.00	**0.67**		**0.67**	118.00	0.00		0.00
16.00	0.36		0.36	120.00	0.00		0.00
18.00	0.22		0.22	122.00	0.00		0.00
20.00	0.18		0.18	124.00	0.00		0.00
22.00	0.15		0.15	126.00	0.00		0.00
24.00	0.12		0.12	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

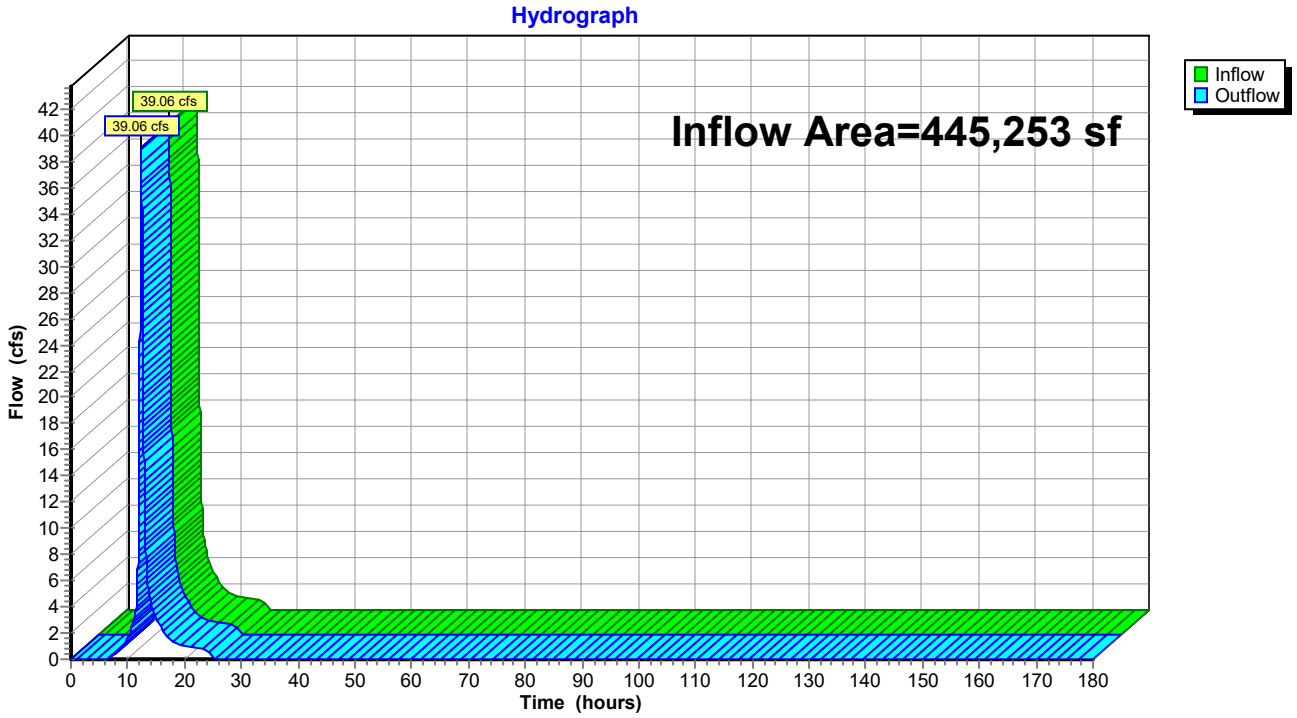
Summary for Reach P-DP-N: Culvert towards Wades Stream

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 445,253 sf, 2.02% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 39.06 cfs @ 12.38 hrs, Volume= 207,479 cf
Outflow = 39.06 cfs @ 12.38 hrs, Volume= 207,479 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-N: Culvert towards Wades Stream



Hydrograph for Reach P-DP-N: Culvert towards Wades Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.01		0.01	110.00	0.00		0.00
8.00	0.39		0.39	112.00	0.00		0.00
10.00	1.56		1.56	114.00	0.00		0.00
12.00	**13.24**		**13.24**	116.00	0.00		0.00
14.00	**4.46**		**4.46**	118.00	0.00		0.00
16.00	2.36		2.36	120.00	0.00		0.00
18.00	1.39		1.39	122.00	0.00		0.00
20.00	1.05		1.05	124.00	0.00		0.00
22.00	0.87		0.87	126.00	0.00		0.00
24.00	0.70		0.70	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

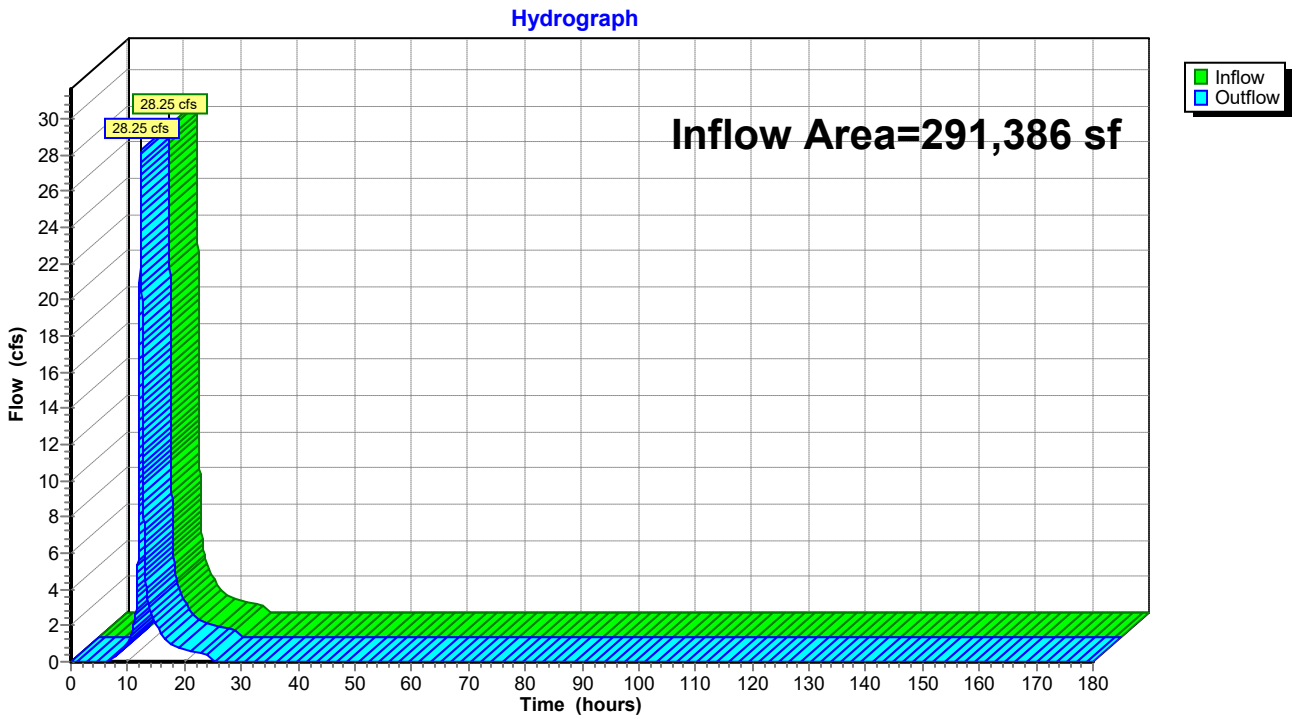
Summary for Reach P-DP-NE:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 291,386 sf, 0.88% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 28.25 cfs @ 12.29 hrs, Volume= 135,780 cf
Outflow = 28.25 cfs @ 12.29 hrs, Volume= 135,780 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-3L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-NE:



Hydrograph for Reach P-DP-NE:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.01		0.01	110.00	0.00		0.00
8.00	0.27		0.27	112.00	0.00		0.00
10.00	1.07		1.07	114.00	0.00		0.00
12.00	**10.94**		**10.94**	116.00	0.00		0.00
14.00	**2.81**		**2.81**	118.00	0.00		0.00
16.00	1.49		1.49	120.00	0.00		0.00
18.00	0.89		0.89	122.00	0.00		0.00
20.00	0.68		0.68	124.00	0.00		0.00
22.00	0.56		0.56	126.00	0.00		0.00
24.00	0.45		0.45	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

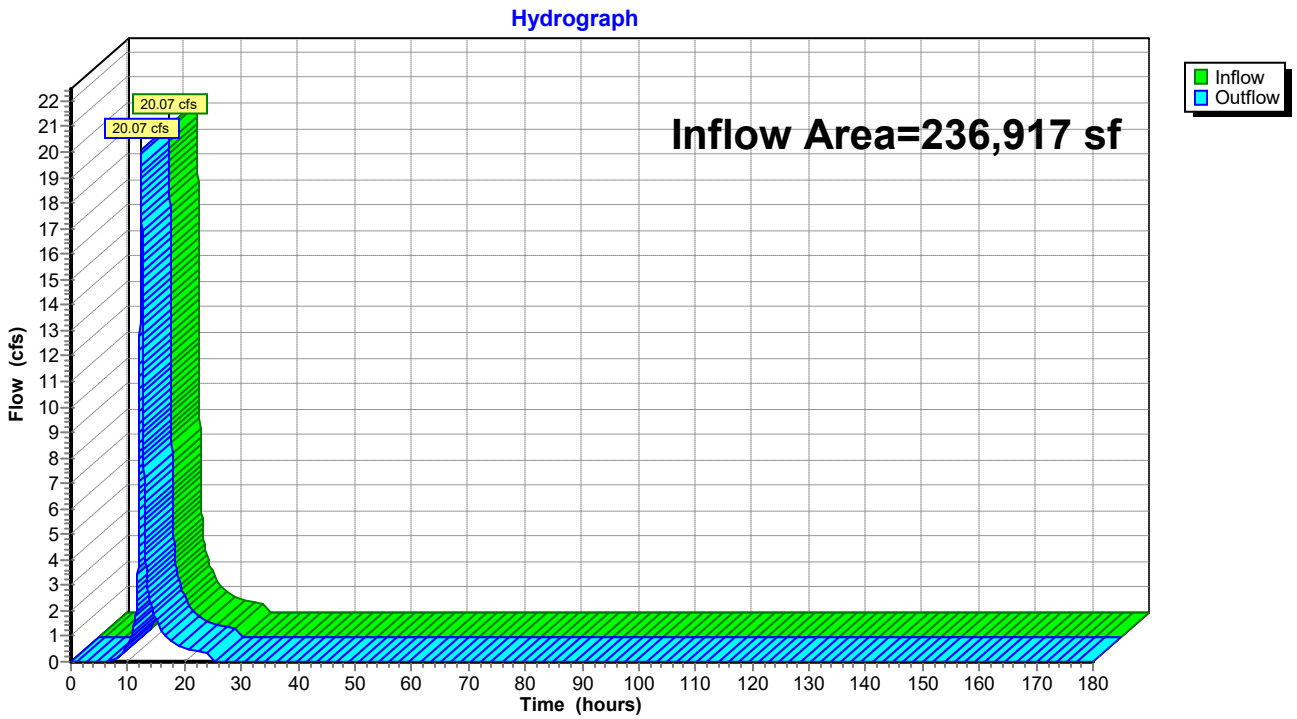
Summary for Reach P-DP-NW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 236,917 sf, 0.74% Impervious, Inflow Depth = 5.24" for 100-Year event
Inflow = 20.07 cfs @ 12.34 hrs, Volume= 103,451 cf
Outflow = 20.07 cfs @ 12.34 hrs, Volume= 103,451 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-1L : Lag

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-NW:



Hydrograph for Reach P-DP-NW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.00		0.00	110.00	0.00		0.00
8.00	0.13		0.13	112.00	0.00		0.00
10.00	0.68		0.68	114.00	0.00		0.00
12.00	**6.81**		**6.81**	116.00	0.00		0.00
14.00	**2.28**		**2.28**	118.00	0.00		0.00
16.00	1.21		1.21	120.00	0.00		0.00
18.00	0.72		0.72	122.00	0.00		0.00
20.00	0.55		0.55	124.00	0.00		0.00
22.00	0.45		0.45	126.00	0.00		0.00
24.00	0.36		0.36	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Reach P-DP-SE: Culvert

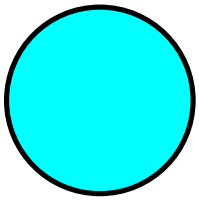
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 228% of Manning's capacity
[76] Warning: Detained 46,485 cf (Pond w/culvert advised)
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)
[62] Hint: Exceeded Reach C OUTLET depth by 1.38' @ 14.64 hrs
[64] Warning: Exceeded Reach C outlet bank by 0.50' @ 12.01 hrs

Inflow Area = 519,545 sf, 2.67% Impervious, Inflow Depth = 5.71" for 100-Year event
Inflow = 35.08 cfs @ 12.23 hrs, Volume= 247,069 cf
Outflow = 16.19 cfs @ 12.00 hrs, Volume= 247,069 cf, Atten= 54%, Lag= 0.0 min
Routed to Link P-4L : Lag

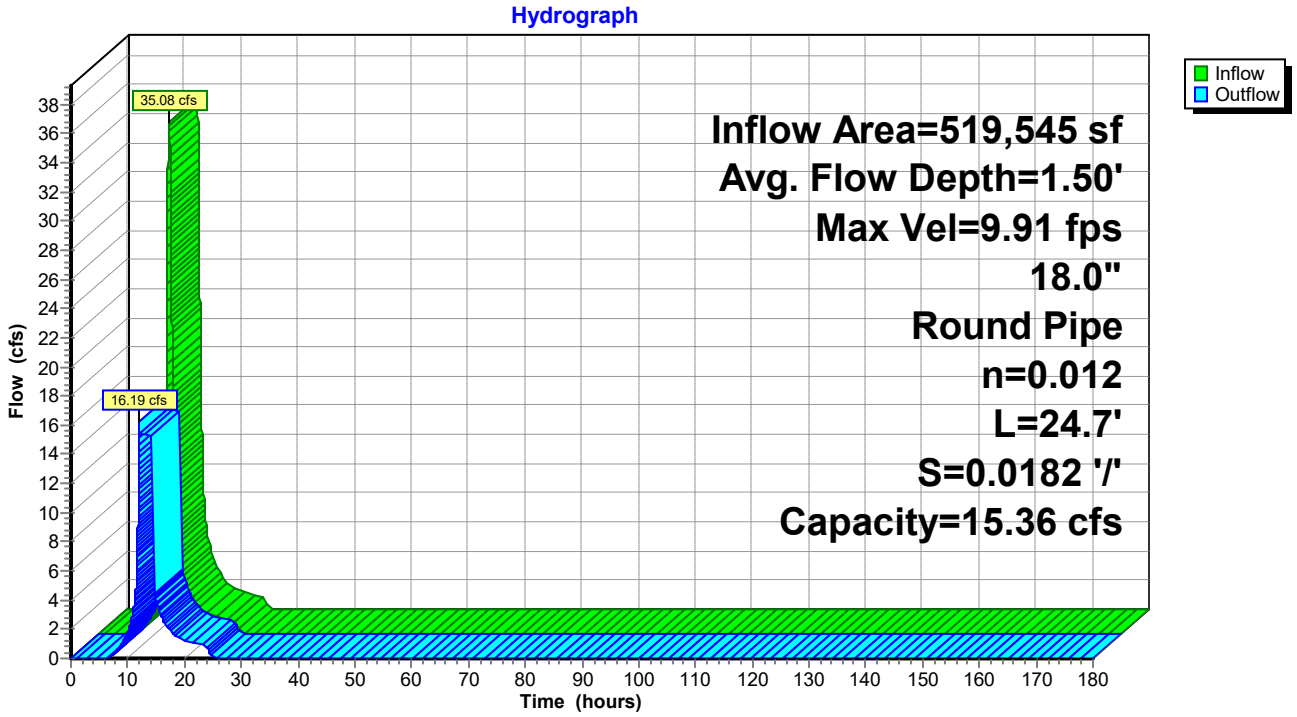
Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.91 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 44 cf @ 12.01 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.36 cfs

18.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 24.7' Slope= 0.0182 '/'
Inlet Invert= 1,620.00', Outlet Invert= 1,619.55'



Reach P-DP-SE: Culvert



Hydrograph for Reach P-DP-SE: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	1,620.00	0.00
5.00	0.00	0	1,620.00	0.00
10.00	**1.85**	**8**	**1,620.35**	**1.85**
15.00	**3.88**	**13**	**1,620.51**	**3.88**
20.00	1.25	6	1,620.29	1.25
25.00	0.12	1	1,620.10	0.12
30.00	0.00	0	1,620.00	0.00
35.00	0.00	0	1,620.00	0.00
40.00	0.00	0	1,620.00	0.00
45.00	0.00	0	1,620.00	0.00
50.00	0.00	0	1,620.00	0.00
55.00	0.00	0	1,620.00	0.00
60.00	0.00	0	1,620.00	0.00
65.00	0.00	0	1,620.00	0.00
70.00	0.00	0	1,620.00	0.00
75.00	0.00	0	1,620.00	0.00
80.00	0.00	0	1,620.00	0.00
85.00	0.00	0	1,620.00	0.00
90.00	0.00	0	1,620.00	0.00
95.00	0.00	0	1,620.00	0.00
100.00	0.00	0	1,620.00	0.00
105.00	0.00	0	1,620.00	0.00
110.00	0.00	0	1,620.00	0.00
115.00	0.00	0	1,620.00	0.00
120.00	0.00	0	1,620.00	0.00
125.00	0.00	0	1,620.00	0.00
130.00	0.00	0	1,620.00	0.00
135.00	0.00	0	1,620.00	0.00
140.00	0.00	0	1,620.00	0.00
145.00	0.00	0	1,620.00	0.00
150.00	0.00	0	1,620.00	0.00
155.00	0.00	0	1,620.00	0.00
160.00	0.00	0	1,620.00	0.00
165.00	0.00	0	1,620.00	0.00
170.00	0.00	0	1,620.00	0.00
175.00	0.00	0	1,620.00	0.00
180.00	0.00	0	1,620.00	0.00

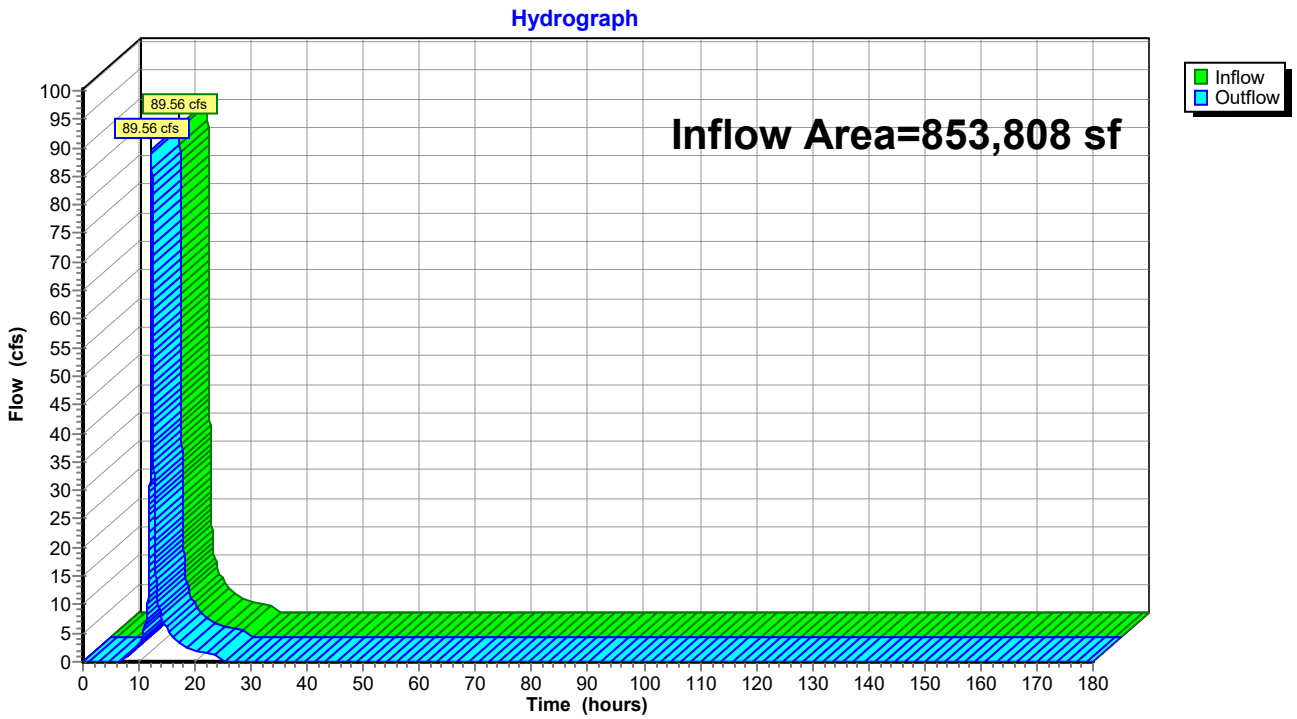
Summary for Reach P-DP-SW:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 853,808 sf, 0.09% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 89.56 cfs @ 12.24 hrs, Volume= 397,858 cf
Outflow = 89.56 cfs @ 12.24 hrs, Volume= 397,858 cf, Atten= 0%, Lag= 0.0 min
Routed to Link P-DP-S : Watts Stream

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Reach P-DP-SW:



Hydrograph for Reach P-DP-SW:

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	104.00	0.00		0.00
2.00	0.00		0.00	106.00	0.00		0.00
4.00	0.00		0.00	108.00	0.00		0.00
6.00	0.03		0.03	110.00	0.00		0.00
8.00	0.83		0.83	112.00	0.00		0.00
10.00	3.22		3.22	114.00	0.00		0.00
12.00	**37.71**		**37.71**	116.00	0.00		0.00
14.00	**8.04**		**8.04**	118.00	0.00		0.00
16.00	4.28		4.28	120.00	0.00		0.00
18.00	2.57		2.57	122.00	0.00		0.00
20.00	1.99		1.99	124.00	0.00		0.00
22.00	1.64		1.64	126.00	0.00		0.00
24.00	1.31		1.31	128.00	0.00		0.00
26.00	0.00		0.00	130.00	0.00		0.00
28.00	0.00		0.00	132.00	0.00		0.00
30.00	0.00		0.00	134.00	0.00		0.00
32.00	0.00		0.00	136.00	0.00		0.00
34.00	0.00		0.00	138.00	0.00		0.00
36.00	0.00		0.00	140.00	0.00		0.00
38.00	0.00		0.00	142.00	0.00		0.00
40.00	0.00		0.00	144.00	0.00		0.00
42.00	0.00		0.00	146.00	0.00		0.00
44.00	0.00		0.00	148.00	0.00		0.00
46.00	0.00		0.00	150.00	0.00		0.00
48.00	0.00		0.00	152.00	0.00		0.00
50.00	0.00		0.00	154.00	0.00		0.00
52.00	0.00		0.00	156.00	0.00		0.00
54.00	0.00		0.00	158.00	0.00		0.00
56.00	0.00		0.00	160.00	0.00		0.00
58.00	0.00		0.00	162.00	0.00		0.00
60.00	0.00		0.00	164.00	0.00		0.00
62.00	0.00		0.00	166.00	0.00		0.00
64.00	0.00		0.00	168.00	0.00		0.00
66.00	0.00		0.00	170.00	0.00		0.00
68.00	0.00		0.00	172.00	0.00		0.00
70.00	0.00		0.00	174.00	0.00		0.00
72.00	0.00		0.00	176.00	0.00		0.00
74.00	0.00		0.00	178.00	0.00		0.00
76.00	0.00		0.00	180.00	0.00		0.00
78.00	0.00		0.00				
80.00	0.00		0.00				
82.00	0.00		0.00				
84.00	0.00		0.00				
86.00	0.00		0.00				
88.00	0.00		0.00				
90.00	0.00		0.00				
92.00	0.00		0.00				
94.00	0.00		0.00				
96.00	0.00		0.00				
98.00	0.00		0.00				
100.00	0.00		0.00				
102.00	0.00		0.00				

Summary for Pond A:

Inflow Area = 36,754 sf, 0.44% Impervious, Inflow Depth = 5.71" for 100-Year event
Inflow = 4.54 cfs @ 12.17 hrs, Volume= 17,487 cf
Outflow = 4.50 cfs @ 12.18 hrs, Volume= 17,487 cf, Atten= 1%, Lag= 0.7 min
Discarded = 0.01 cfs @ 12.47 hrs, Volume= 67 cf
Primary = 4.49 cfs @ 12.18 hrs, Volume= 17,420 cf
Routed to Pond B : 2x15" CPP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond B : 2x15" CPP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Peak Elev= 1,662.93' @ 12.47 hrs Surf.Area= 766 sf Storage= 772 cf
Flood Elev= 1,663.00' Surf.Area= 791 sf Storage= 823 cf

Plug-Flow detention time= 4.4 min calculated for 17,486 cf (100% of inflow)
Center-of-Mass det. time= 4.4 min (812.8 - 808.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,660.50'	1,782 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,660.50	7	10.9	0	0	7
1,661.00	72	38.7	17	17	117
1,662.00	400	120.2	214	231	1,151
1,662.75	698	139.4	407	637	1,559
1,663.00	791	143.9	186	823	1,667
1,664.00	1,136	158.3	958	1,782	2,045

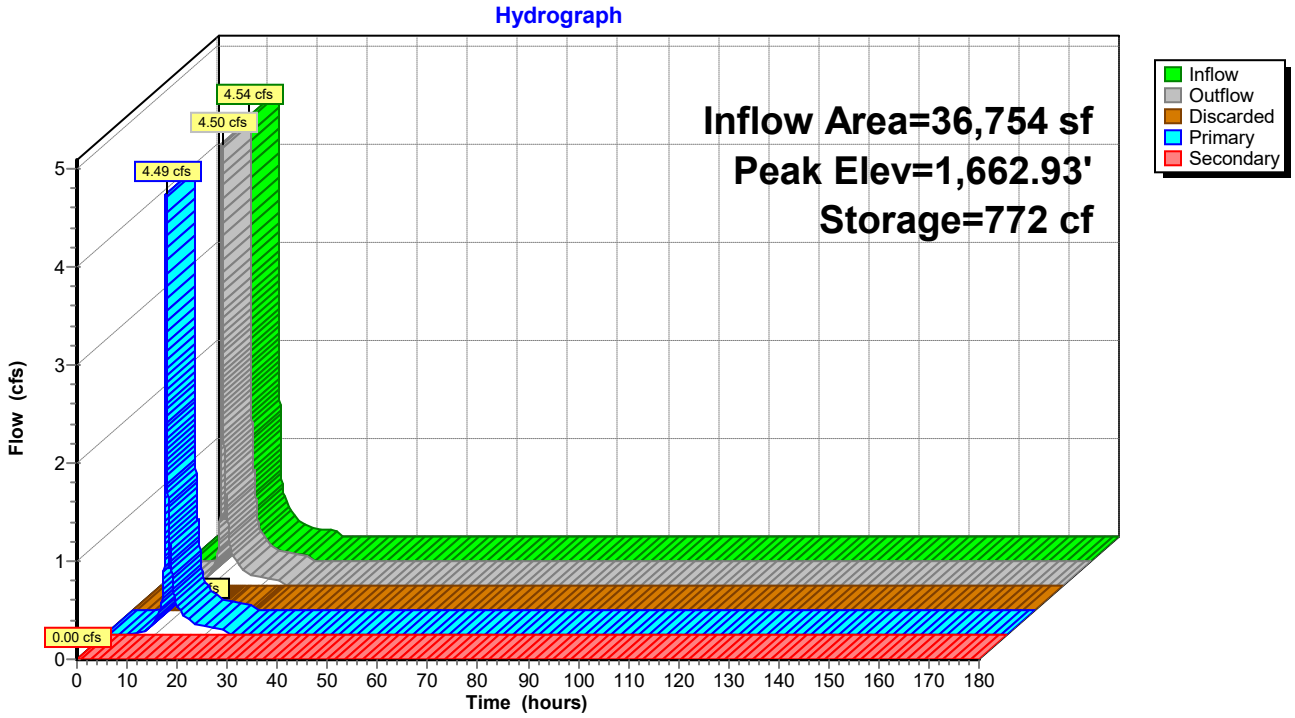
Device	Routing	Invert	Outlet Devices
#1	Discarded	1,660.50'	**0.170 in/hr Exfiltration over Wetted area**
#2	Secondary	1,663.00'	**Road Overflow, C= 3.27** Offset (feet) 0.00 30.23 30.23 Height (feet) 1.00 0.00 1.00
#3	Primary	1,660.50'	**4.00' long x 14.50' breadth x 2.25' high Rock Fill** Rock Diam.= 5.000", S.D.= 2.500", Voids= 40.0%
#4	Primary	1,662.75'	**17.4' long + 3.0 '/' SideZ x 1.0' breadth Check Dam** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.01 cfs @ 12.47 hrs HW=1,662.93' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=4.46 cfs @ 12.18 hrs HW=1,662.93' TW=1,662.73' (Dynamic Tailwater)
├─**3=Rock Fill** (Rockfill Controls 0.75 cfs @ 0.08 fps)
└─**4=Check Dam** (Weir Controls 3.71 cfs @ 1.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,660.50' TW=1,660.00' (Dynamic Tailwater)
└─**2=Road Overflow** (Controls 0.00 cfs)

Pond A:



Hydrograph for Pond A:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	1,660.50	0.00	0.00	0.00	**0.00**
5.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
10.00	**0.15**	**20**	**1,661.03**	**0.15**	**0.00**	**0.15**	0.00
15.00	**0.25**	**39**	**1,661.23**	**0.26**	**0.00**	**0.25**	0.00
20.00	0.09	9	1,660.87	0.09	0.00	0.09	0.00
25.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
30.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
35.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
40.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
45.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
50.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
55.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
60.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
65.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
70.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
75.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
80.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
85.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
90.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
95.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
100.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
105.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
110.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
115.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
120.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
125.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
130.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
135.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
140.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
145.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
150.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
155.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
160.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
165.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
170.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
175.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00
180.00	0.00	0	1,660.50	0.00	0.00	0.00	0.00

Summary for Pond B: 2x15" CPP

[58] Hint: Peaked 0.42' above defined flood level

Inflow Area = 350,279 sf, 1.26% Impervious, Inflow Depth = 5.71" for 100-Year event
Inflow = 25.90 cfs @ 12.50 hrs, Volume= 166,590 cf
Outflow = 25.90 cfs @ 12.50 hrs, Volume= 166,590 cf, Atten= 0%, Lag= 0.2 min
Discarded = 0.00 cfs @ 12.50 hrs, Volume= 56 cf
Primary = 14.13 cfs @ 12.50 hrs, Volume= 145,302 cf
Routed to Reach C : Overland Flow
Secondary = 11.76 cfs @ 12.50 hrs, Volume= 21,232 cf
Routed to Reach C : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs
Peak Elev= 1,662.92' @ 12.50 hrs Surf.Area= 699 sf Storage= 1,052 cf
Flood Elev= 1,662.50' Surf.Area= 592 sf Storage= 782 cf

Plug-Flow detention time= 0.7 min calculated for 166,581 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (830.7 - 830.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,660.00'	1,109 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,660.00	88	41.6	0	0	88
1,661.00	247	64.3	161	161	286
1,662.00	475	87.0	355	516	570
1,663.00	721	107.4	594	1,109	900

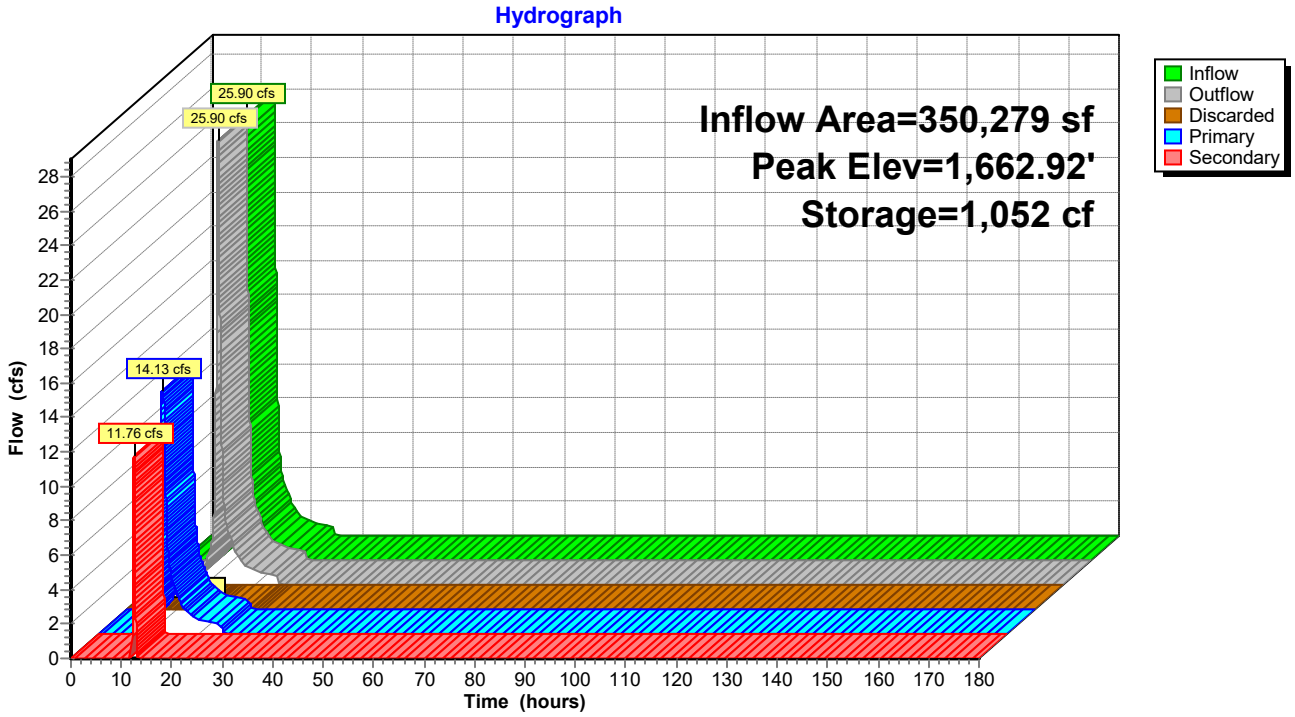
Device	Routing	Invert	Outlet Devices
#1	Primary	1,660.00'	**15.0" Round Culvert X 2.00** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,660.00' / 1,659.60' S= 0.0089 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Discarded	1,660.00'	**0.170 in/hr Exfiltration over Wetted area**
#3	Secondary	1,662.50'	**Road Overflow, C= 3.27** Offset (feet) 0.00 18.61 20.86 35.05 Height (feet) 0.50 0.00 0.00 0.50

Discarded OutFlow Max=0.00 cfs @ 12.50 hrs HW=1,662.92' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=14.13 cfs @ 12.50 hrs HW=1,662.92' TW=1,660.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 14.13 cfs @ 5.76 fps)

Secondary OutFlow Max=11.76 cfs @ 12.50 hrs HW=1,662.92' TW=1,660.00' (Dynamic Tailwater)
└**3=Road Overflow** (Weir Controls 11.76 cfs @ 0.94 fps)

Pond B: 2x15" CPP



Hydrograph for Pond B: 2x15" CPP

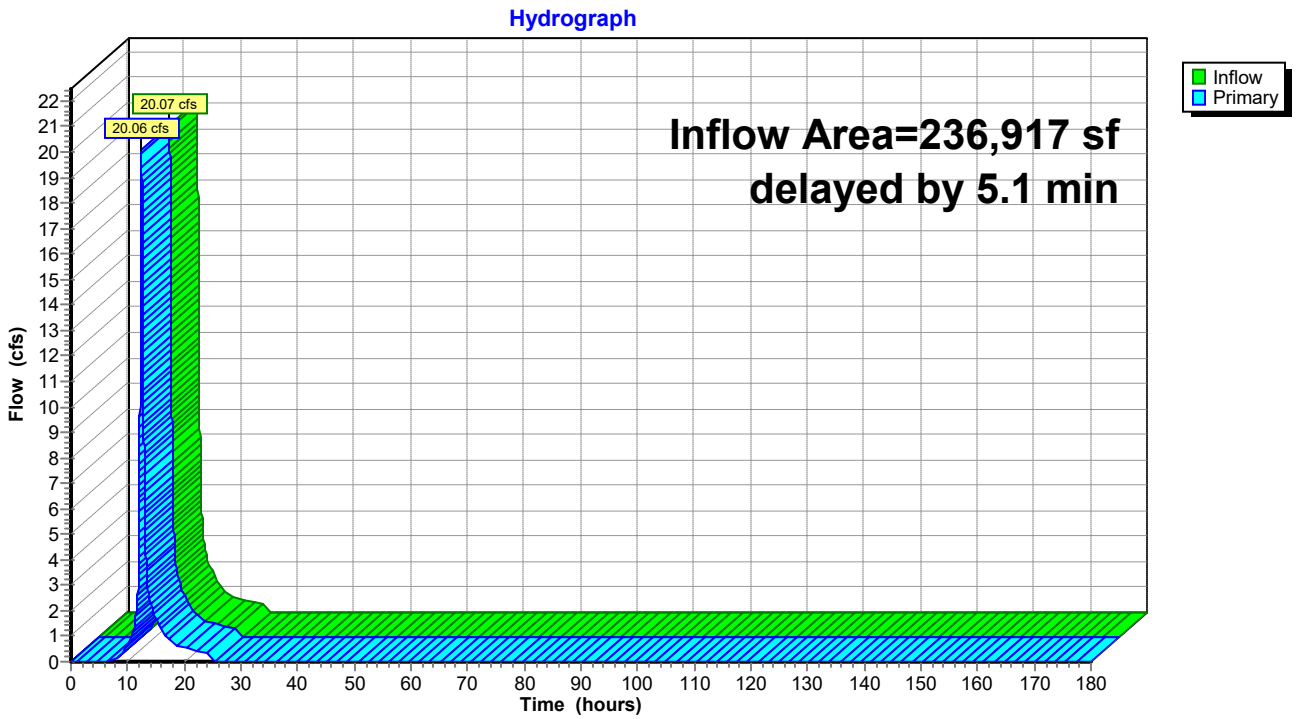
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
5.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
10.00	**1.22**	**47**	**1,660.41**	**1.22**	**0.00**	**1.22**	**0.00**
15.00	**2.65**	**83**	**1,660.63**	**2.65**	**0.00**	**2.65**	**0.00**
20.00	0.85	37	1,660.34	0.85	0.00	0.85	0.00
25.00	0.04	7	1,660.07	0.04	0.00	0.04	0.00
30.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
35.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
40.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
45.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
50.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
55.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
60.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
65.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
70.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
75.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
80.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
85.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
90.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
95.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
100.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
105.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
110.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
115.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
120.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
125.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
130.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
135.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
140.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
145.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
150.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
155.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
160.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
165.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
170.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
175.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00
180.00	0.00	0	1,660.00	0.00	0.00	0.00	0.00

Summary for Link P-1L: Lag

Inflow Area = 236,917 sf, 0.74% Impervious, Inflow Depth = 5.24" for 100-Year event
Inflow = 20.07 cfs @ 12.34 hrs, Volume= 103,451 cf
Primary = 20.06 cfs @ 12.43 hrs, Volume= 103,451 cf, Atten= 0%, Lag= 5.3 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 5.1 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-1L: Lag



Hydrograph for Link P-1L: Lag

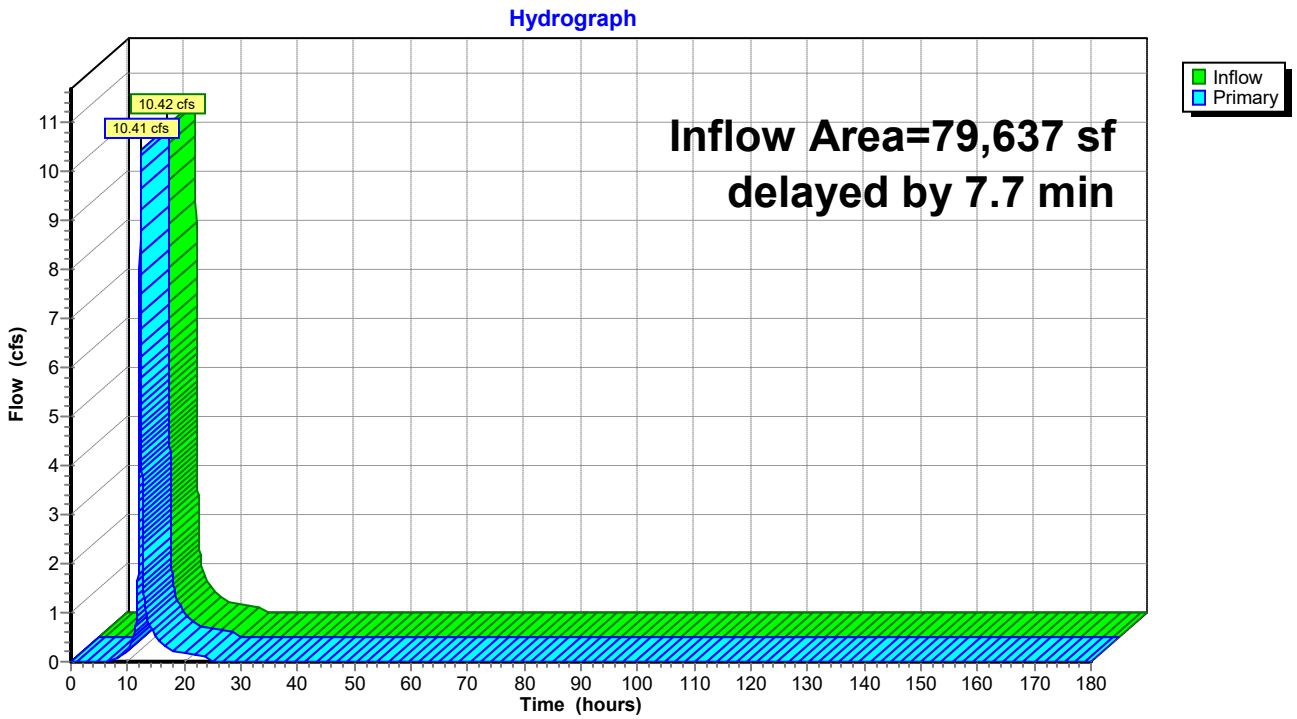
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.13	0.00	0.12	112.00	0.00	0.00	0.00
10.00	0.68	0.00	0.65	114.00	0.00	0.00	0.00
12.00	**6.81**	0.00	**5.03**	116.00	0.00	0.00	0.00
14.00	**2.28**	0.00	**2.36**	118.00	0.00	0.00	0.00
16.00	1.21	0.00	1.25	120.00	0.00	0.00	0.00
18.00	0.72	0.00	0.74	122.00	0.00	0.00	0.00
20.00	0.55	0.00	0.55	124.00	0.00	0.00	0.00
22.00	0.45	0.00	0.46	126.00	0.00	0.00	0.00
24.00	0.36	0.00	0.37	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-2L: Lag

Inflow Area = 79,637 sf, 0.23% Impervious, Inflow Depth = 5.12" for 100-Year event
Inflow = 10.42 cfs @ 12.11 hrs, Volume= 33,998 cf
Primary = 10.41 cfs @ 12.23 hrs, Volume= 33,998 cf, Atten= 0%, Lag= 7.7 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 7.7 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-2L: Lag



Hydrograph for Link P-2L: Lag

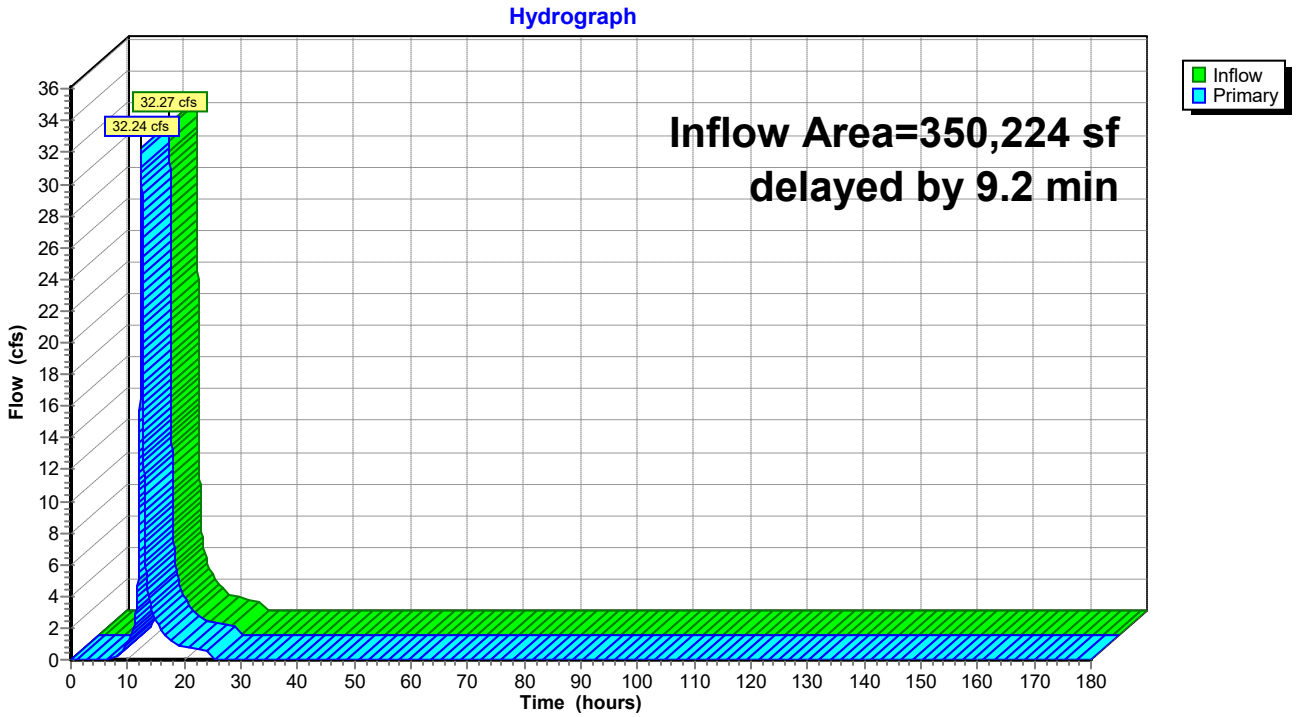
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.05	0.00	0.04	112.00	0.00	0.00	0.00
10.00	0.25	0.00	0.23	114.00	0.00	0.00	0.00
12.00	**5.65**	0.00	**3.32**	116.00	0.00	0.00	0.00
14.00	**0.67**	0.00	**0.71**	118.00	0.00	0.00	0.00
16.00	0.36	0.00	0.38	120.00	0.00	0.00	0.00
18.00	0.22	0.00	0.23	122.00	0.00	0.00	0.00
20.00	0.18	0.00	0.18	124.00	0.00	0.00	0.00
22.00	0.15	0.00	0.15	126.00	0.00	0.00	0.00
24.00	0.12	0.00	0.12	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-3L: Lag

Inflow Area = 350,224 sf, 0.75% Impervious, Inflow Depth = 5.47" for 100-Year event
Inflow = 32.27 cfs @ 12.28 hrs, Volume= 159,755 cf
Primary = 32.24 cfs @ 12.43 hrs, Volume= 159,755 cf, Atten= 0%, Lag= 9.1 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.2 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-3L: Lag



Hydrograph for Link P-3L: Lag

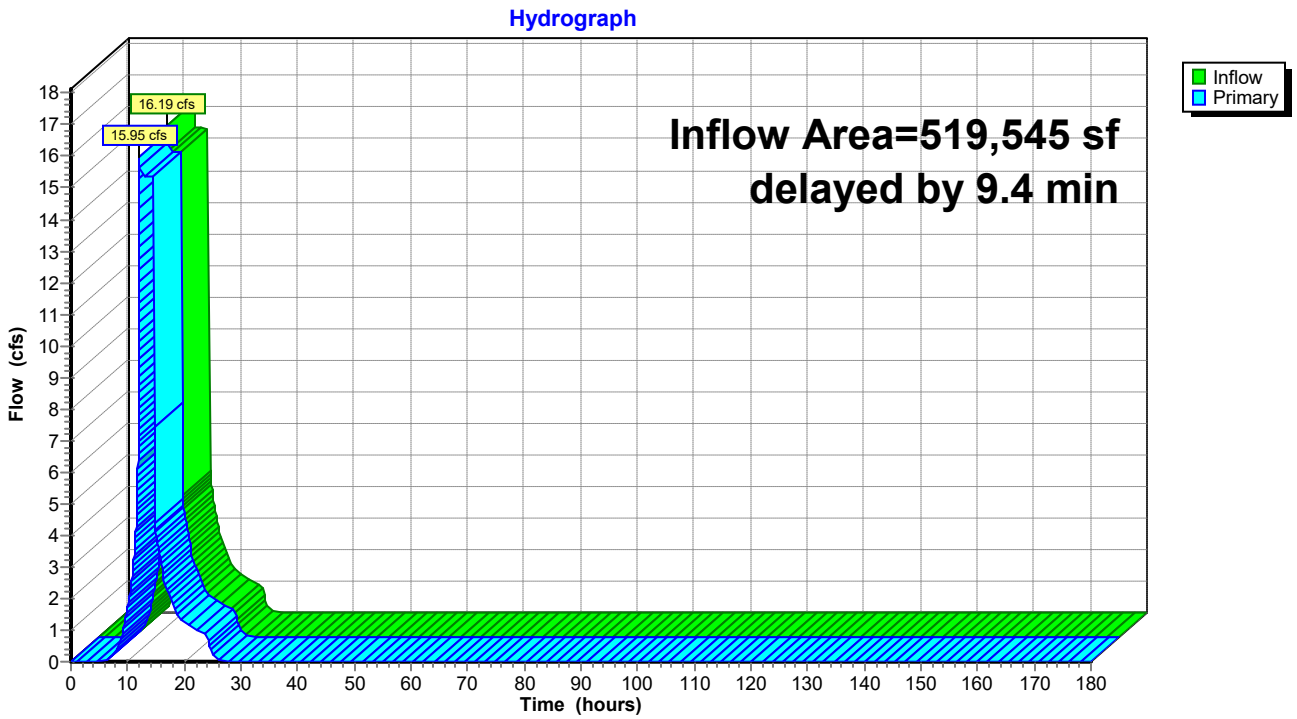
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.01	0.00	0.00	110.00	0.00	0.00	0.00
8.00	0.29	0.00	0.26	112.00	0.00	0.00	0.00
10.00	1.23	0.00	1.13	114.00	0.00	0.00	0.00
12.00	**14.53**	0.00	**8.34**	116.00	0.00	0.00	0.00
14.00	**3.30**	0.00	**3.51**	118.00	0.00	0.00	0.00
16.00	1.76	0.00	1.86	120.00	0.00	0.00	0.00
18.00	1.05	0.00	1.10	122.00	0.00	0.00	0.00
20.00	0.81	0.00	0.82	124.00	0.00	0.00	0.00
22.00	0.67	0.00	0.68	126.00	0.00	0.00	0.00
24.00	0.54	0.00	0.55	128.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-4L: Lag

Inflow Area = 519,545 sf, 2.67% Impervious, Inflow Depth = 5.71" for 100-Year event
Inflow = 16.19 cfs @ 12.00 hrs, Volume= 247,069 cf
Primary = 15.95 cfs @ 12.16 hrs, Volume= 247,069 cf, Atten= 1%, Lag= 9.5 min
Routed to Link P-DP-S : Watts Stream

Primary outflow = Inflow delayed by 9.4 min, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-4L: Lag



Hydrograph for Link P-4L: Lag

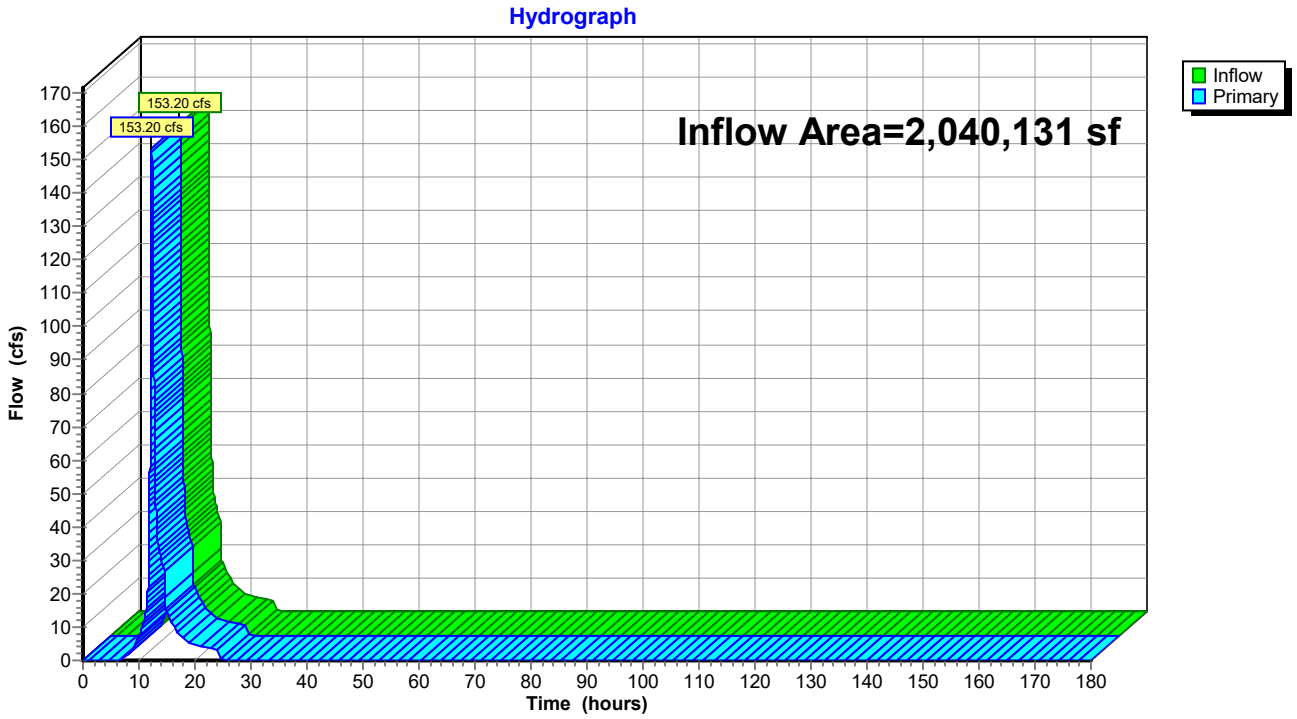
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.02	0.00	0.01	110.00	0.00	0.00	0.00
8.00	0.47	0.00	0.42	112.00	0.00	0.00	0.00
10.00	1.85	0.00	1.70	114.00	0.00	0.00	0.00
12.00	**16.18**	0.00	**10.14**	116.00	0.00	0.00	0.00
14.00	15.36	0.00	**15.36**	118.00	0.00	0.00	0.00
16.00	2.85	0.00	3.01	120.00	0.00	0.00	0.00
18.00	1.68	0.00	1.75	122.00	0.00	0.00	0.00
20.00	1.25	0.00	1.27	124.00	0.00	0.00	0.00
22.00	1.03	0.00	1.05	126.00	0.00	0.00	0.00
24.00	0.83	0.00	0.85	128.00	0.00	0.00	0.00
26.00	0.02	0.00	0.02	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

Summary for Link P-DP-S: Watts Stream

Inflow Area = 2,040,131 sf, 0.94% Impervious, Inflow Depth = 5.54" for 100-Year event
Inflow = 153.20 cfs @ 12.28 hrs, Volume= 942,131 cf
Primary = 153.20 cfs @ 12.28 hrs, Volume= 942,131 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-180.00 hrs, dt= 0.01 hrs

Link P-DP-S: Watts Stream



Hydrograph for Link P-DP-S: Watts Stream

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	104.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	106.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
6.00	0.05	0.00	0.05	110.00	0.00	0.00	0.00
8.00	1.67	0.00	1.67	112.00	0.00	0.00	0.00
10.00	6.92	0.00	6.92	114.00	0.00	0.00	0.00
12.00	**64.54**	0.00	**64.54**	116.00	0.00	0.00	0.00
14.00	**29.98**	0.00	**29.98**	118.00	0.00	0.00	0.00
16.00	10.78	0.00	10.78	120.00	0.00	0.00	0.00
18.00	6.38	0.00	6.38	122.00	0.00	0.00	0.00
20.00	4.81	0.00	4.81	124.00	0.00	0.00	0.00
22.00	3.98	0.00	3.98	126.00	0.00	0.00	0.00
24.00	3.19	0.00	3.19	128.00	0.00	0.00	0.00
26.00	0.02	0.00	0.02	130.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	132.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	134.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	136.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	138.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	142.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	144.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	146.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	154.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	156.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	158.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	160.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	162.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	164.00	0.00	0.00	0.00
62.00	0.00	0.00	0.00	166.00	0.00	0.00	0.00
64.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00
66.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00
68.00	0.00	0.00	0.00	172.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00
72.00	0.00	0.00	0.00	176.00	0.00	0.00	0.00
74.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00
76.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
78.00	0.00	0.00	0.00				
80.00	0.00	0.00	0.00				
82.00	0.00	0.00	0.00				
84.00	0.00	0.00	0.00				
86.00	0.00	0.00	0.00				
88.00	0.00	0.00	0.00				
90.00	0.00	0.00	0.00				
92.00	0.00	0.00	0.00				
94.00	0.00	0.00	0.00				
96.00	0.00	0.00	0.00				
98.00	0.00	0.00	0.00				
100.00	0.00	0.00	0.00				
102.00	0.00	0.00	0.00				

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