

Regan Solar, LLC

Detailed Project Description

In 2016, Governor Cuomo established the Clean Energy Standard which now requires New York State to generate 70% of its electricity needs from renewable energy sources by the year 2030, making New York State a national leader in our country's transition to clean energy. The Clean Energy Standard is designed to fight climate change, reduce harmful air pollution, and ensure a diverse and reliable low carbon energy supply. As part of this initiative, the New York State Energy Research and Development Authority (NYSERDA) initiated and expanded incentive programs to encourage renewable energy development. One such program is the annual competitive procurement process for renewable energy credits (RECs) generated by Large Scale Renewable electric generating facilities. The Grissom Solar project was bid into this competitive procurement process and received a contract award in 2017.

The Puckett Solar project is a 20-Megawatt (MW) AC solar electric generating facility proposed in the town of Greene, Chenango County, New York. The project will be located off Willard road in Greene, NY 13778. The project will be interconnecting directly to the NYSEG-owned Chenango Forks substation by crossing Willard Road, and will sell electricity directly into the wholesale market via the transmission system.

The project is being designed specifically to avoid any significant adverse impacts to the environment. The project is not impacting any state regulated freshwater wetlands, is avoiding impacts to threatened and endangered species, is sited to minimize any public viewshed concerns, and is minimizing soil disturbance. Additionally, the project will not negatively impact erosion or stormwater runoff.

Importantly, the project will not permanently change the existing use of the site. At the end of the project life, the solar system will be completely removed, and the site will be restored to a meadow condition, effectively opening potentially agriculturally productive land in the way that another development (like a residential subdivision or other commercial development) would not.

The project as proposed will consist of galvanized steel posts, driven or screwed into the ground, galvanized steel racking, solar photovoltaic modules, inverters, transformers, gravel access roads, concrete equipment pads, and appurtenant equipment, conductors, and security fencing. Based on the location of the project, there will be no significant viewshed impacts on the general public or project neighbors. See **Exhibit 1** for the Visual Assessment Report that has been prepared for this project.

The proposed development has a footprint of approximately 122 acres. The project involves leasing one parcel from one landowner and purchasing a subdivided portion of another parcel from a second landowner. The second landowner will be able to continue their existing use of the parcel areas outside the lease boundaries.

Environmental Impact Mitigation

The project area has been assessed using the NY DEC's EAF Mapper. According to the EAF Mapper, the project is within the vicinity of certain threatened or endangered species and one species of special concern. However, based on the natural habitat of the identified species, and the design of the project, the project is not likely to impact any of these species. The project is also outside the

vicinity of any state identified Significant Natural Communities. The desktop review of these resources and the plan to avoid impacts to these species is described more particularly in **Exhibit 2**.

The project is being designed specifically to encourage the long-term feasibility of the underlying natural resource. Up to 15% of the project site will be planted with local flowering plant species and the remainder of the site will be planted with low-growth native plant species. These deep-rooted plants improve soil with organic matter and provide habitat for various birds, mammals and other species. While the site is currently primarily forested, the improvements to site access and soil stability may allow for future agricultural or some other form of commercial use.

The project layout is optimized to minimize impacts to wetland areas. Approximately 1 acre of wetlands were identified within the proposed project area, all of which have been classified as either unregulated/non-jurisdictional or regulated by the Army Corps of Engineers after detailed field wetland delineations. Less than 1/10th of an acre of permanent disturbance will be taking place within the potentially regulated wetland areas that our wetlands scientist identified near the project. See **Exhibit 4** for further clarification on the project's expected impacts to regulated/unregulated wetlands.

Project Construction

This project requires the clearing of approximately 100 acres of trees from the site, both for the site footprint and to reduce potential sources of shade to the solar panels. Construction best practices will be used during the tree clearing and stump removal process to ensure that the site is stabilized in a timely manner and that no untreated stormwater is allowed to leave the site. Tree clearing on the site is being minimized as much as possible, and the area of the site with the steepest slopes is being left largely untouched to ensure that the existing root structures can maintain a stable slope.

No major grading will be taking place on site, as site work will be limited to the removal of tree stumps, installing/improving gravel access roads, trenching for electric conduit/conductors, installing equipment pads, and installing swales, ponds, and other stormwater controls as determined necessary in our final construction design and our Stormwater Pollution Prevention Plan (SWPPP). See **Exhibit 3**. Due to the slope of the site, the installation of the access road does require some cutting of the existing hillside to allow the road to be designed at a reasonable slope. Here too, we are working to minimize grading by allowing a maximum road grade of 14% as opposed to a standard 10%, as achieving the 10% goal would require significantly more grading and the installation of far more impervious area.

Project construction is expected to be completed in a period of less than one year and most activity should be completed during a three to four-month period of that year. Plans to mitigate dust, traffic and other temporary construction impacts will be employed by the project.

During construction, the community will reap significant benefits from the project. The project will create local construction jobs as well as provide opportunities for local contractors to participate in the project by bidding on certain portions of the project scope that will be subcontracted. Additionally, the local economy, including hospitality businesses, will benefit from the employees of the contractors building the project that will be living in the area while the project is under construction.

Project Operation

During operation, the community will benefit financially from property taxes that the project will be paying to the local taxing jurisdictions. The project will employ up to two full-time employees based in the region to support the ongoing operation of the facility. Local landscaping contractors will

be employed to manage vegetation on the property and mow grasses growing beneath the solar panels as warranted. See **Exhibit 5** for more information on the anticipated project maintenance.

Additionally, the project will improve the potential productivity of the site for the long term. By cutting in a serviceable access road up the hill, and seeding the site with native grasses, a parcel that is currently largely unproductive can be brought into productive use.

Once constructed, the project's anticipated lifetime is 25-35 years based on the continued efficiency of the solar equipment.

Project Removal

The project is designed in a manner that facilitates relatively easy clean-up, removal and recycling of facility components at the end of the project's useful life. The project consists of numerous materials that can be recycled, including steel, aluminum, glass, copper and plastics. At the end of operational life of the project the system will be dismantled using conventional construction equipment and all material will be removed from the site and recycled or disposed of safely. After removal of all equipment from the site, the site will be restored to a meadow condition, enabling the site to contribute to New York's Clean Energy Standard while at the same time promoting long-term preservation of the state's agricultural heritage. See **Exhibit 5** for more information on the planned removal/decommissioning of the project.

Exhibits List

Exhibit 1: Visual Assessment Report

Exhibit 2: Project Impacts to Endangered Species and Significant Natural Communities

Exhibit 3: Project Draft SWPPP

Exhibit 4: Project Impacts to Wetlands

Exhibit 5: Project Maintenance and Decommissioning Plan

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Once constructed, the project's anticipated lifetime is 25-32 years based on the continued efficiency of the solar equipment.

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Puckett Solar – Visual Assessment Report

The Puckett Solar project is a 20MW solar energy generation facility being proposed in the town of Greene, Chenango county, New York. As a supplement to the application for site plan approval, the developer has prepared the following visual assessment report to clarify the extent of the project's visual impact on the surrounding area.

This Report includes the following:

1. A Description of the current visual environment around the project site, including surrounding land uses, view points of concern, and existing vegetation and screening
2. Photos of the project site from key viewpoints, with a description of the landscape mitigation measures

Existing Conditions

The project is proposed to the East of Willard Road and North of Route 12 in Greene, NY. The site is currently primarily forested with a few small agricultural fields. The site is also home to an abandoned summer camp with a number of abandoned structures in disrepair. An aerial view of the approximate site location is shown below.



Figure 1 – Approximate Site Area

A number of land uses exist in the immediate vicinity of the project. The project is proposed on land that is a combination of forested and agricultural use and is consistent the surrounding land. In addition to the forested and agricultural uses, there is land currently in both residential and commercial use in the immediate vicinity of the project (within 0.5 mile of the project boundaries). Some nearby land uses are identified in the figure below.

There are no scenic viewpoints or designated open spaces in the area that have a view of the project. There are existing electrical transmission towers adjacent to the project property and in the area of the project. There is an existing electrical substation directly adjacent to the project site on Willard Road. There is new commercial use development ongoing less than a ¼ mile to the south of the project site on Route 12.



Figure 2 – Surrounding Land Uses



Based on an assessment of the area surrounding the project, we have identified locations of potential concern from which the project may be visible, primarily where neighbors may have a view of the project from their residences or while traveling. The key locations we identified are shown in the figure below. There are residences that may have a view of the project from their homes along Willard Road. Views of the project may also be possible while traveling on Willard road along the southern portion of the project.



Figure 3 – Locations of Concern

This region is hilly and primarily forested, which serves to naturally limit long range views. The natural grade of the site and mature forests both on site and surrounding the site serve to naturally shield the bulk of the project from potential viewers. The key aspects of the project's natural screening are identified in **Figure 4**.



Figure 4 and– Existing Screening (vegetative and topography)

Based on the location of the existing topography and vegetation, we have identified some key areas around the project from which significant views of the project should NOT be visible. These are included in the figure below, and should cover the key locations where a view of the project would otherwise have a significant visual impact, were it not for the siting and design of the project. The residents on the portion of Willard road across from the northern portion of the project, travelers along route 12, and residents and travelers across the river on Route 79 will not be affected by any significant visual impacts.

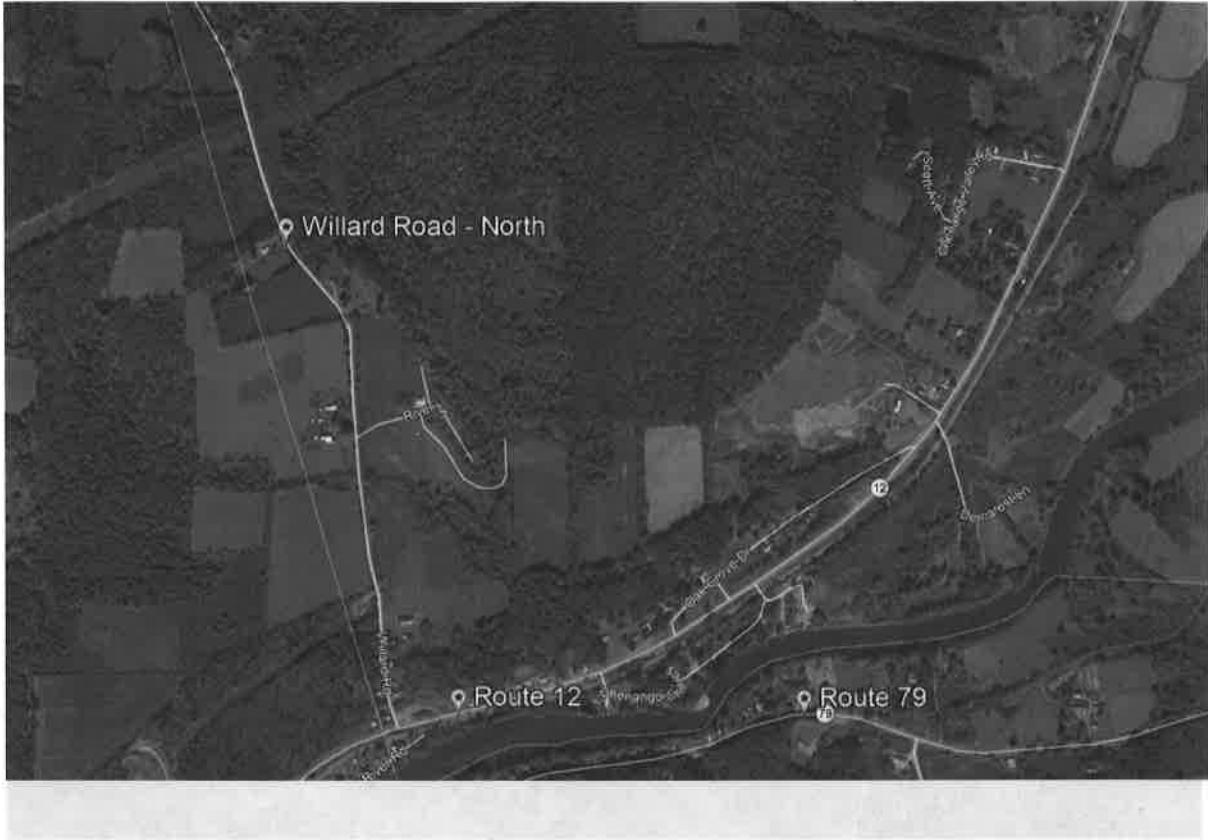


Figure 8 - Proposed Landscape Screening

Based on the combination of the identified areas of concern and the locations of existing screening, we are proposing additional landscaping around the project site to help to shield the project from view. The details of the proposed landscaping are identified more clearly in the overall site plan which was submitted as part of the project's application, but an approximation of the areas where landscaping is being proposed is shown in the figure below. Areas of proposed landscape screening are identified in green.

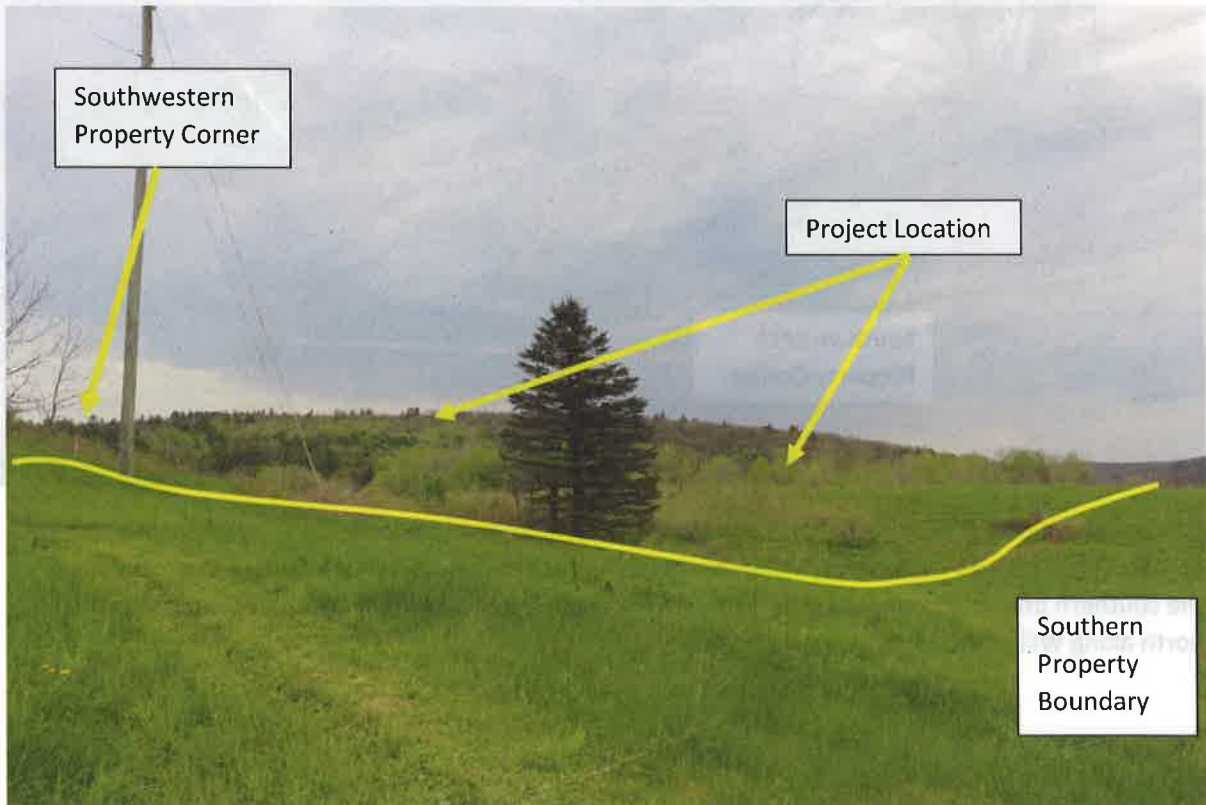


Figure 6 – Proposed Landscape Screening

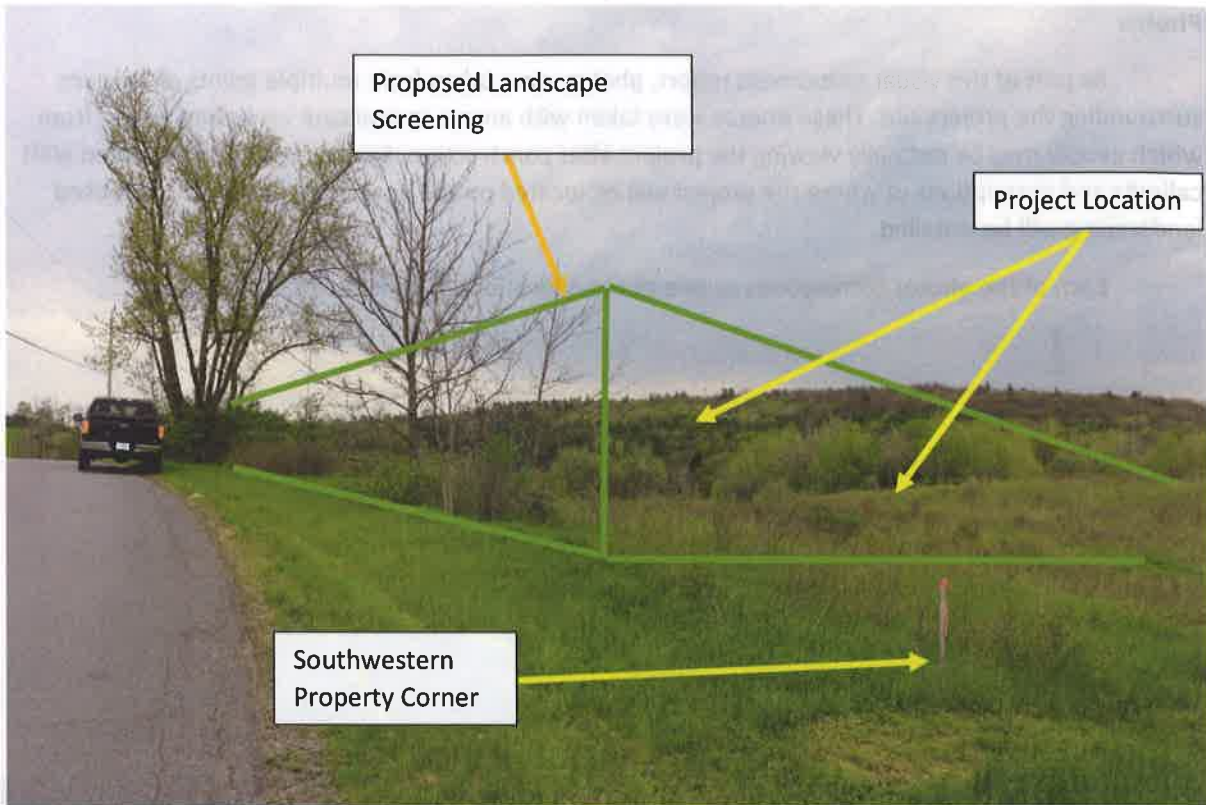
Photos

As part of this visual assessment report, photos were taken from multiple points of concern surrounding the project site. These photos were taken with an eye to replicate views and angles from which people may be normally viewing the project after construction. Each photo is accompanied with callouts and descriptions of where the project will be located on the image and where the proposed landscaping will be installed.

Each of the photos corresponds to one of the 5 locations of concern identified above.

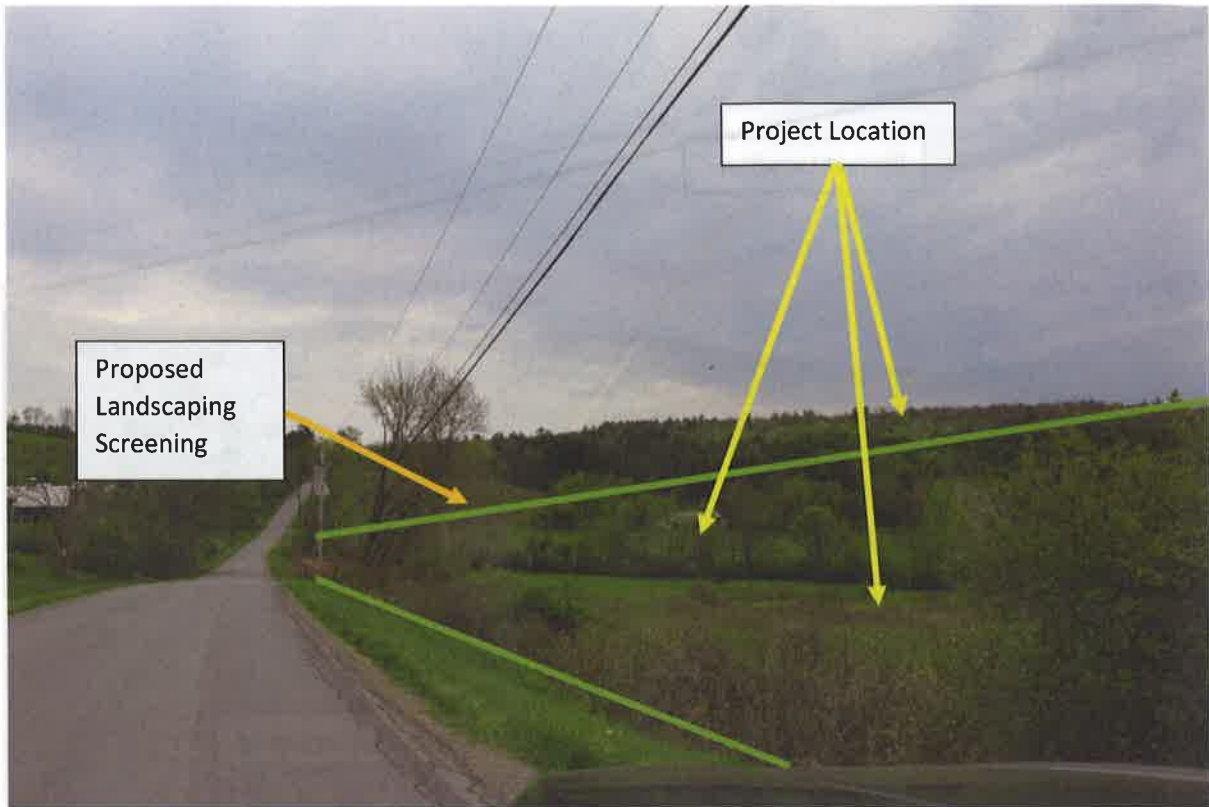


View Point 1: view looking north/northeast at the project from Willard Road just to the south of the project. This will be typical of a view for a motorist traveling past the project and an exaggeration of the nearest view of any residences to the south. Appropriate landscape screening will be planted in an east-west line about 50' north of the southern property boundary which will serve to shield this view.

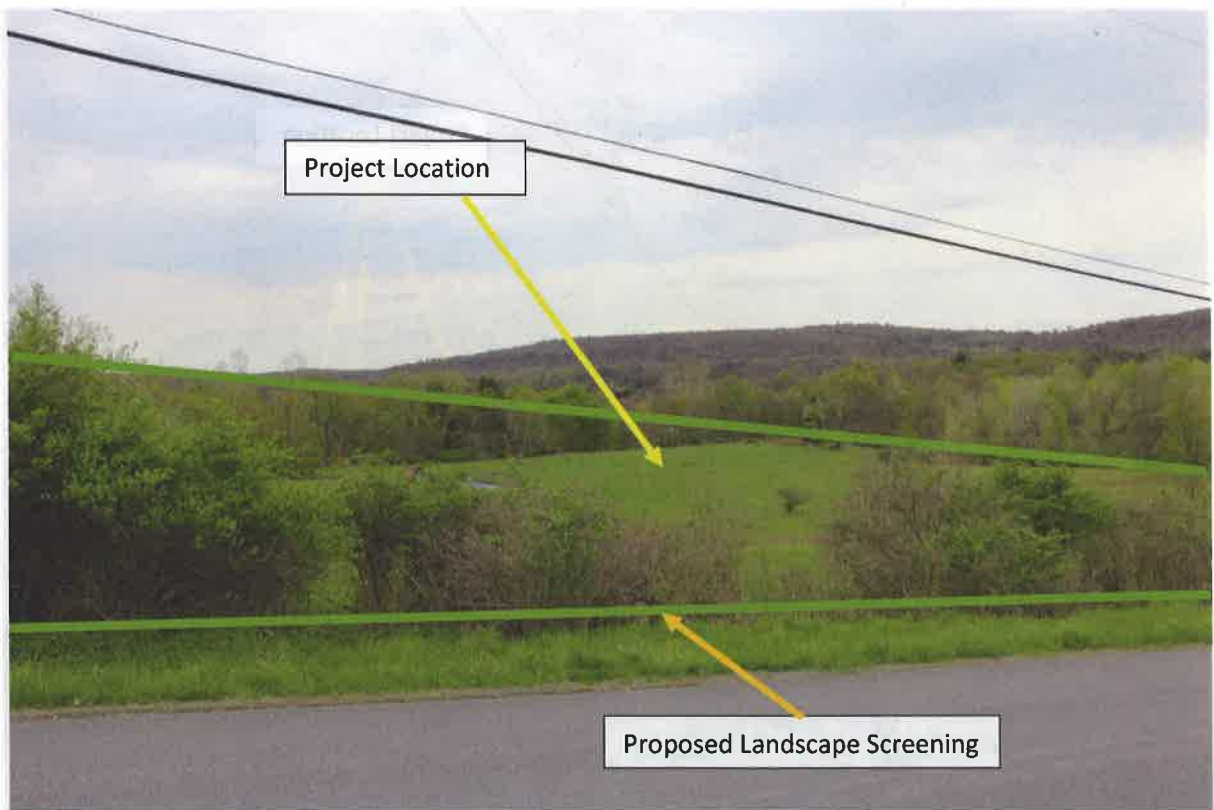


View Point 2: Looking north/northeast at the project location from the southwestern property corner. The proposed landscaping along the western property boundary and running east-west north of the southern property boundary should effectively shield the project from view from motorists traveling north along Willard Road.

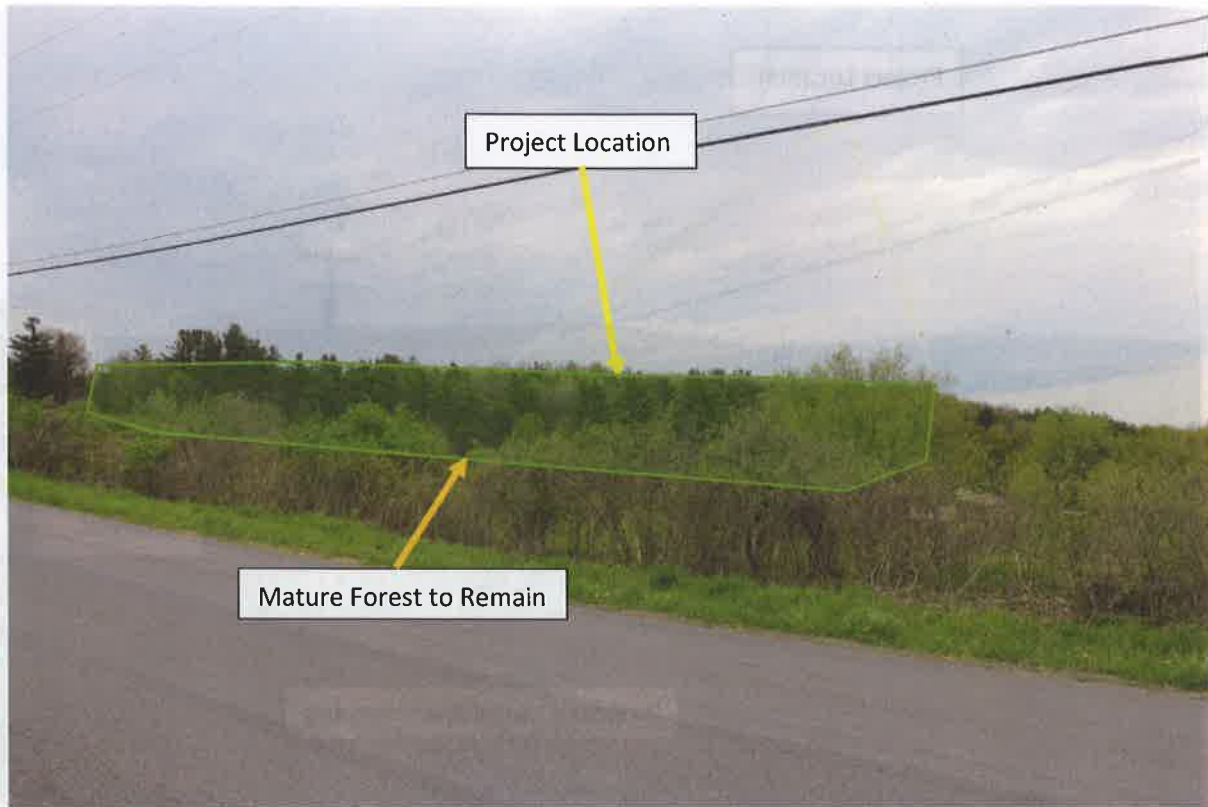
View Point 2: Looking north/northeast at the project location from the southwestern property corner. The proposed landscaping along the western property boundary and running east-west north of the southern property boundary should effectively shield the project from view from motorists traveling north along Willard Road.



View Point 3: Looking north/northeast along Willard Road, at the high point along the southern portion of the project. This view should be typical of what a motorist traveling on Willard road would have. The proposed landscape screening along this portion of the site should completely screen any of the short-range views of the project where the project sits close to the road and should obscure and break up the longer range views of the project.



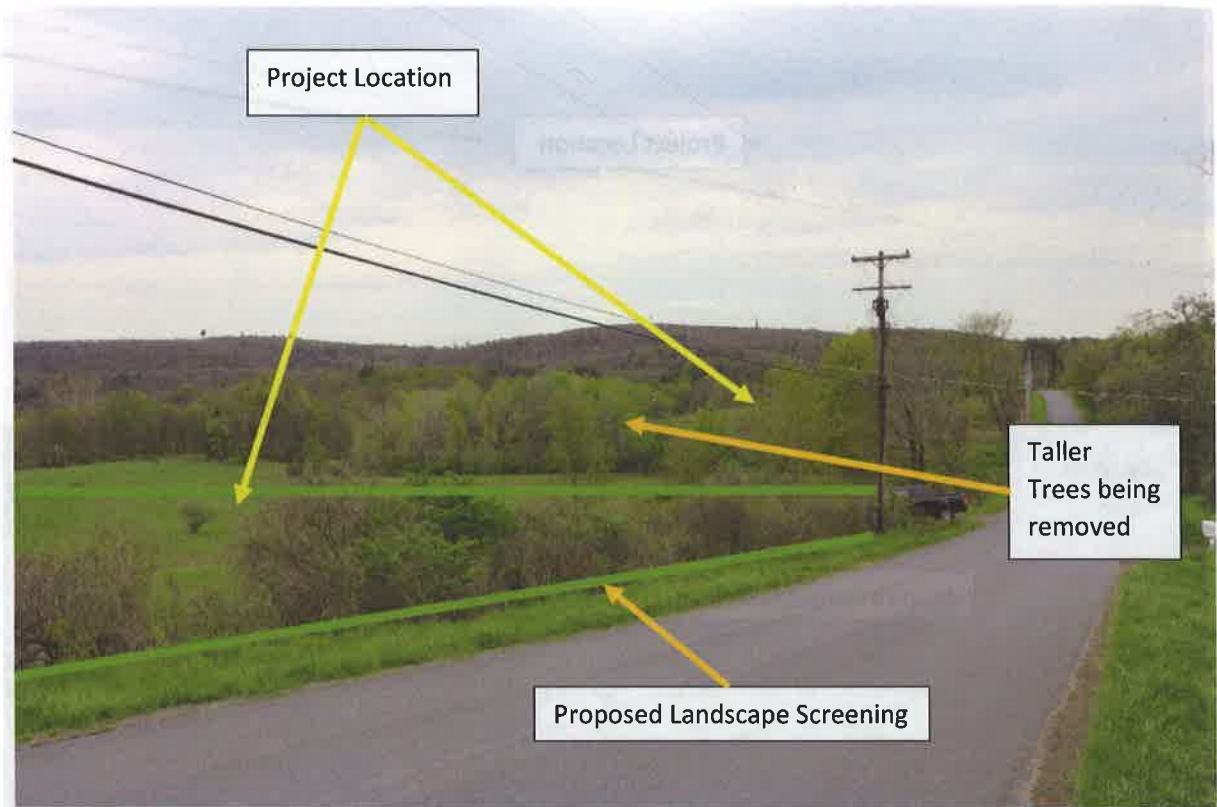
View Point 4(1): Looking east/southeast from the front of the driveway of the residence/farm across the street on Willard Road. The landscape screening proposed along the western edge of the site should obscure any otherwise visible portion of the southern part of the site.



View Point 4(2): Looking east from the driveway of the residence/farm across the street on Willard Road. The portion of the project that is in the line of sight from this view is the northern section of the project on top of the hill. Because so much of the mature forest on the western facing slope of the hill is remaining untouched, the viewer should have no significant view of the project from this view point.

Summary and Conclusions

The proposed project does change the natural landscape of the project site, and will have some visual impact on the neighborhood and travel that travel through the area. Direct impacts to neighbors and communities in the general project area are naturally mitigated by the existing topography and vegetation on the site and in the surrounding area. Direct impacts to residents and motorists along Willard Road are being further mitigated by extensive landscape screening. Due to the optimal siting of the project based on the surrounding terrain, the surrounding electrical infrastructure such as transmission lines and substations, and the landscape screening being proposed, it is safe to conclude that this project will have only minimal impacts to the environment.



View Point 5: Looking south/south-east along Willard Road. This would be the typical view of the project to a motorist traveling south on Willard Road. A small portion of the project may be visible from a distance in this view due to some of the taller trees being removed for shading concerns where noted. However, the proposed landscaping should obscure the closer portions of the project and help to break up the view of the portion of the project further away.

Summary and Conclusions

The proposed project does change the natural landscape of the project site, and will have some visual impact on the neighbors and those that travel through the area. Direct impacts to neighbors and commuters in the general project area are naturally mitigated by the existing topography and vegetation on the site and in the surrounding area. Direct impacts to residents and motorists along Willard Road are being further mitigated by extensive landscape screening. Due to the optimal siting of the project based on the surrounding terrain, the surrounding electrical infrastructure such as transmission lines and substations, and the landscape screening being proposed, it is safe to conclude that this project will have only minor visual impacts to the environment.

Exhibit 2

Project's Impacts to Rare and Endangered Species and Significant Natural Communities

As part of the initial feasibility assessment of any potential solar project, we perform a desktop review using resources developed by the New York State Department of Environmental Conservation (NYSDEC) to determine if the project will have any potential impacts on rare or protected plants or animals, or on significant natural communities.

Using NYSDEC's online Environmental Resource Mapper, we compared our proposed project location to previously identified areas of concern for rare plants or animals, and significant natural communities.

For this project, as you can see from the figure below and on the following page, the project area overlaps with some areas identified as being in the vicinity of some rare plants or animals. When this step of the desktop review reveals this, the next step is to determine which species the project is in the vicinity of. The project is however outside of any Significant Natural Communities as listed by the DEC.

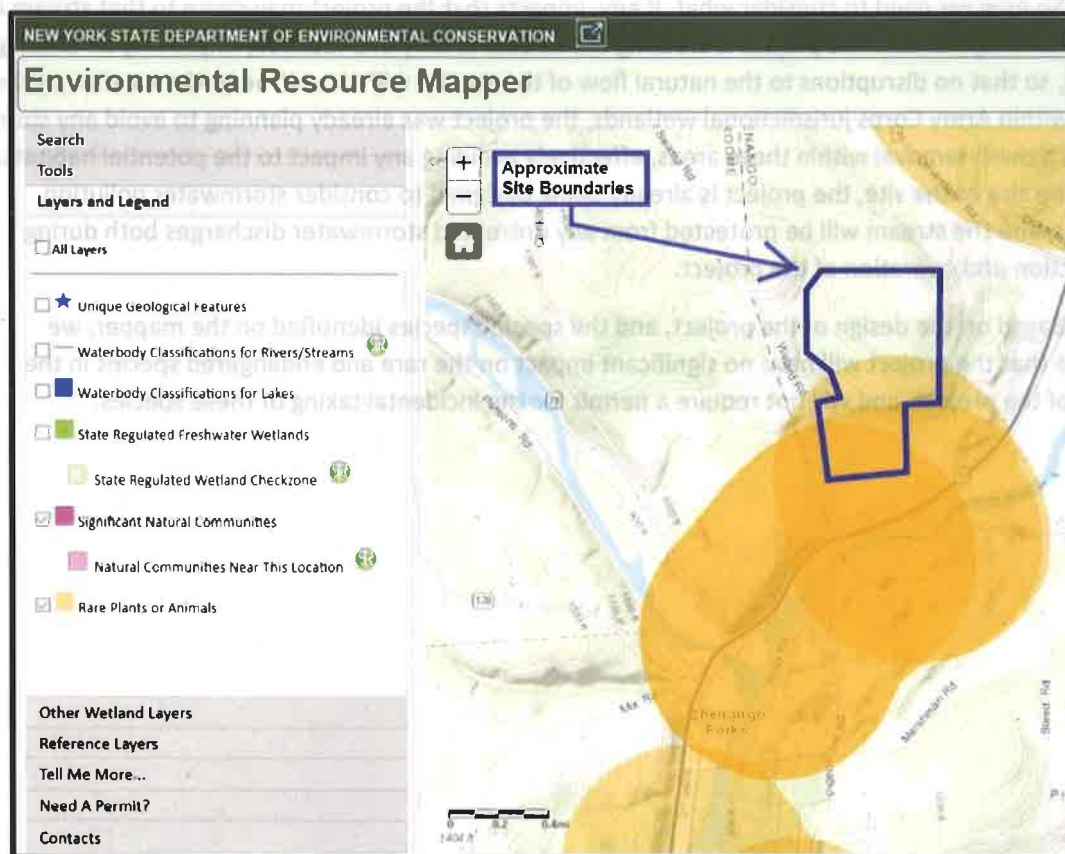


Figure 1: NY Environmental Resource Mapper – Project Site (Rare Plants and Animals shown in Orange)

The next step of the desktop review is to use the state's EAF mapper service to attempt to determine what species are being identified at the project site, as the DEC Environmental Resource Mapper does not always include this information. Using the EAF mapper, we determined that the species identified below are two (2) species of freshwater mussels that are listed as threatened or endangered, and one (1) species of salamander listed as a species of special concern. The mussels identified are the Brook Floater and the Green Floater. The salamander identified is the Eastern Hellbender.

Now that we understand the species the project may be potentially impacting, we need to understand the chances that the project would actually impact the species, or their habitat. Based on the depictions of the vicinities of their habitats on the mapper, it is clear that the Chenango River has been identified as a habitat for these species, and that a buffer has been added in the river's vicinity. Furthermore, the mussel species are completely aquatic, and the salamanders are amphibious, both thriving in stream and river beds.

There is a class C stream (not DEC regulated) that runs through the site which could be considered a tributary of the Chenango river. If the project were to have any impact to these species or potential habitat for these species, it would be in regard to this stream.

So now we need to consider what, if any, impacts that the project may cause to that stream and the surrounding habitat. The project is crossing the stream in only one location, improving an existing crossing, so that no disruptions to the natural flow of the stream will occur. Due to the location of the stream within Army Corps jurisdictional wetlands, the project was already planning to avoid any stump or undergrowth removal within these areas, effectively avoiding any impact to the potential habitats. Due to the size of the site, the project is already being designed to consider stormwater pollution concerns, and the stream will be protected from any untreated stormwater discharges both during construction and operation of the project.

Based on the design of the project, and the specific species identified on the mapper, we conclude that the project will have no significant impact on the rare and endangered species in the vicinity of the project, and will not require a permit for the incidental taking of these species.

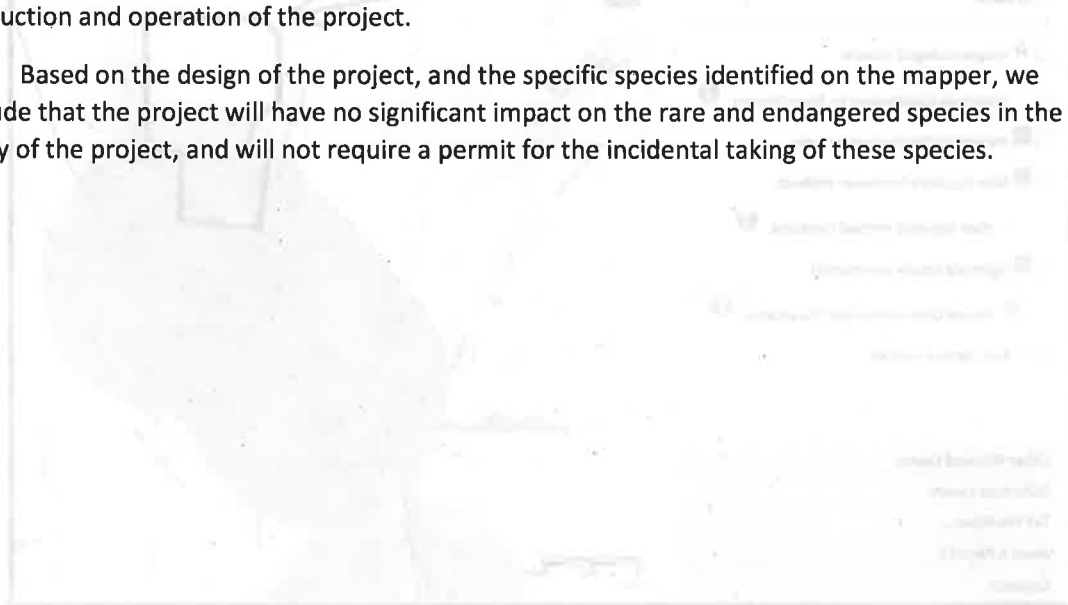


Figure 1: EAF Mapper - Project Site (from EAF and Animal Stream in Google)

LABELLA

Associates, D.P.C.

Engineering
Architecture
Environmental
Planning

PUCKET SOLAR PV ARRAY

STORMWATER POLLUTION PREVENTION PLAN

Prepared for:

Conti Solar
2405 Lincoln Highway
Edison, NJ 08817-3334

Prepared by:

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Ithaca, New York 14850

April 2019
Project #2191103

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SWPPP REFERENCES UNDER SEPARATE COVER

1. **CONTRACT DOCUMENTS** (Plans and Specifications) for Pucket Solar Array dated May 9th last, prepared by Maser Engineering.

SECTION 1: INTRODUCTION

1.1 Site Address, Scope, Type, and Size of Project

Pursuant to Section 402 of the Clean Water Act ("CWA"), storm water discharges from certain construction activities to waters of the United States are unlawful, unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit or by a state permit program. New York's State Pollutant Discharge Elimination System (SPDES) is a NPDES-approved program with permits issued in accordance with the Environmental Conservation Law (ECL). Discharges of pollutants to all "Waters of New York State," such as ground waters, are also unlawful unless they are authorized by a SPDES permit.

Section 402 of the CWA requires permits for storm water discharges from construction activities that will result in disturbance of one or more acres of total land. As a result, the work associated with the 256 Van Etten Road Array is subject to the SPDES regulations for storm water discharges from construction activities.

Part III.C of the SPDES General Permit for Stormwater Discharge from Construction Activity, GP-0-15-002 (General Permit), states that construction activities that disturb more than 1 acre of land, creates minimal impervious surface and does not alter hydrology from Pre- to Post-development conditions, are required to prepare a Stormwater Pollution Prevention Plan (SWPPP) that only includes erosion and sediment control practices.

The proposed project primarily involves construction of ground mount Solar Arrays with Permanent vegetative cover under the solar panels and minimal change in hydrology from pre to post development conditions. **Therefore, the SWPPP for this project only includes erosion and sediment control practices; post-construction stormwater management practices are not required.**

The Project consists of development of 20 Mega Watts AC of Solar PV Electric Generation on two adjoining Parcels on Willard Road in the Town of Greene, New York.

The project entails construction of a 20 MWAC ground mount system. The project will have multiple arrays occupying approximately 81 acres of project area which is located tax parcel T.A. 277.-1-6 and 277.-1-8.1, a 174 acre parcel located on the East side of Willard Road, owned by Southern Tier Real Estate and Glenn and Jean Perry.

The project is not subject to the requirements of a regulated traditional land use control MS4. Refer to A-1 of Appendix A showing the project location related to regulated MS4 areas on the NYSDEC's Stormwater Interactive Map.

1.2 Owner or Operator, and SWPPP Preparer Information

Owner or Operator, and SWPPP Preparer Information			
Owner/Operator	Conti Solar 2405 Lincoln Highway Edison, NJ 08817-3324	Contact	Mitch Quine
		Phone	(732)266-4255
		Email	Mitch.Quine@contisolar.com
SWPPP Preparer	LaBella Associates 105 North Tioga Street Ithaca, New York 14850	Contact	Daniel R. Walker, PE
		Phone	(607)227-1640
		Email	dwalker@labellapc.com
Qualified Inspector	LaBella Associates 105 North Tioga Street Ithaca, New York 14850	Contact	Daniel R. Walker
		Phone	(607)227-1640
		Email	dwalker@labellapc.com

SECTION 2: EXISTING CONDITIONS

2.1 Existing Site

The project is located within privately owned property and a NYSEG power transmission line will be constructed along Willard Road. The Site Plan displays the substation that will be the connection to the NYSEG utility lines along with a Point of Common Coupling (PCC), the location where the electricity-generating project will connect with NYSEG. The PCC may be subject to change, pending NYSEG comments on the Coordinated System Interconnection Review (CESIR).

2.2 Drainage Patterns

The proposed project is located in the Chenango River Watershed which drains to the Susquehanna River. The sub watershed is primarily agriculture and woodland. The general drainage of all the properties is from north to South with one well defined stream located on west side of the property

The site does not discharge to a TMDL or 303d segment stream.

See A-2 of Appendix A for the watershed map generated by USGS Stream Stats.

Refer to Figure 2 for the Existing Drainage Area Map.

Existing runoff rates were modeled utilizing TR-55 with HydroCAD software, version 10.00-19. Refer to Appendix C for hydrograph outputs. The following table summarize the results:

TABLE 1: EXISTING RUNOFF RATES

DRAINAGE AREA	10-YEAR STORM EVENT (cfs)	100-YEAR STORM EVENT (cfs)
A	20.86	93.69
B	335.55	805.82
C	599.54	1445.58
Total wtsd	555.23	1389.31

2.3 Soils

Soils within the project area are as follows:

TABLE 1: HYDROLOGIC SOIL GROUP CLASSIFICATIONS

Symbol	Map Unit Name	Percent of Area	Hydrologic Soil Group
AsB	Arnot Channery Silt Loam(3 to 8% slopes)	2.6	D
At	Atherton silt loam	3.5	B/D
BvD	Bath-Valois complex hilly	15.5	C
ChB	Chenango Gravelly silt loam, (3to 8% slopes)	16.1	A
ChC	Chenango and Howard Gravelly loams, (5 to 15% slopes)	4.8	A
HoC	Howard Gravelly loams, (8 to 15% slopes)	3.5	A
HoE	Howard Gravelly loams, (25 to 35% slopes)	0.01	A
LoB	Lordstown channery silt loam, 3 to 8% slopes	11.7	C
LoC	Lordstown channery silt loam, 8 to 15% slopes	12.3	C
LrF	Lordstown and Oquaga, 35 to 60% slopes	4.3	C
MaC	Mardin Channery Silt Loam, 6 to 15% slopes	22.6	D
MaD	Mardin channery silt loam, 15 to 25% slopes	2.7	D
Tu	Tuller Channery Silt Loam	0.1	D
W	Water	0.2	

Refer to A-3 in Appendix A for a Soils Map generated from the USDA's Web Soil Survey.

Environmental Resources

The NYSDEC's Environmental Resource Mapper indicates no classified water bodies, rare plants, rare animals or significant natural communities within the vicinity of the project. Refer to A-4 of Appendix A for the Environmental Resource map within the project area.

Wetlands

The NYSDEC's Environmental Resource Mapper indicates no state-regulated wetlands or wetland buffers within vicinity of the project. Refer to A-4 of Appendix A for the Environmental Resource map within the project area.

The U.S. Fish and Wildlife Service's National Wetlands Inventory indicates areas of federally-regulated wetlands within the vicinity of the project.

SECTION 4: PROPOSED CONDITIONS

4.1 Proposed Development

The project site has a topography which slopes to the south. There will be no major site grading required for the project. Approximately 90 acres of brush and woods will be cleared and grubbed for panel construction and to prevent shading. Panels will be supported on a racking system supported by a driven or screw pile system, and the only excavation required will be for installation of underground electrical cable and small base slabs for electrical equipment. Disturbed areas of the project site will require preparation of the soil to allow the establishment of a sod covers under the panel installation. An access road through the center of the property will be used for site access and will be improved with a pervious open stone section wearing surface. The solar site will be protected with a chain link fence. The solar panels will be a minimum of 1.5 feet off the ground in front and sloped up to a height of 8 feet at the back. The panel rows will be aligned east to west to allow for a southerly panel orientation. The panel assemblies will be approximately 12' wide and spaced in rows that are 12' apart. This configuration will result in an actual ground contact of less than 1.5 square feet per panel and allow for full vegetative cover of the soil under the structure.

Refer to the Site Plan, sheet 3 of 11, for a map of the proposed features of the project.

4.2 Drainage Patterns

Proposed runoff rates were modeled utilizing TR-55 with HydroCAD software, version 10.00-19. Refer to Appendix C for hydrograph outputs. The following table summarizes the results:

PROPOSED RUNOFF RATES

DRAINAGE AREA	10-YEAR STORM EVENT (cfs)	100-YEAR STORM EVENT (cfs)
A	18.56	88.55
B	413.95	994.09
C	599.54	1445.58
TOTAL WTSD	562.38	1413.63

SECTION 5: STORMWATER MANAGEMENT

The proposed project primarily involves construction of a ground mount Solar Array with reestablishment of vegetative cover and minimal change in hydrology from pre to post development conditions. Therefore, the SWPPP for this project only includes erosion and sediment control practices; post-construction stormwater management practices are not required.

SECTION 6: EROSION CONTROL

6.1 Temporary Erosion Control Practices

Temporary erosion control practices will be installed prior to construction to limit silt migration to ditches, rivers, wetlands, permanent drainage structures, storm sewer systems and adjacent properties. Erosion and sediment control measures to be employed by the project have been prepared in accordance with the current version of the *New York Standards and Specifications for Erosion and Sediment Control*.

AT EARTHEN MATERIAL STOCKPILES:

- o Provide silt fence surrounding all earthen material stockpiles such as topsoil or trench spoils (washed stone need not be protected).
- o Inspect stockpiles daily and repair silt fence as necessary.

SUBGRADE PROTECTION:

- o Use generally accepted construction practices to minimize areas of subgrade exposed at one time and protect exposed subgrade surfaces from erosion.
- o Divert upgradient storm water where practical.
- o Do not disturb the finished subgrade by traffic or other operations to prevent rutting.
- o In asphalt areas place overlaying granular materials as soon as possible to minimize length of time prepared subgrade is exposed.
- o In grassed areas, provide temporary seeding.
- o Use proper dewatering operations.

AT DISTURBED CROSS SLOPES AND DOWN GRADIENT SITE PERIMETER:

- o Silt fence will be installed at various locations as shown on the plans within the contract work limits.
- o Silt fence will be set, relocated and reset to accommodate the changing grades and slopes during site development.
- o Contractor to inspect silt fence daily. Remove accumulated silt to maintain flow through silt fence. Replace silt fence if bulges occur, and replace straw bales if they do not allow adequate drainage.

AT DRAINAGE STRUCTURES:

- o Provide inlet protection at each existing or proposed drainage structure within the project contract work limits as shown on the Contract Documents.

- o Inspect the inlet protection following each rain event, and repair as necessary.
- o Remove sediment to provide adequate storage volume for subsequent rain events.

DEWATERING OPERATIONS:

- o Contractor shall develop and submit a dewatering operations plan for review and approval by the Architect/Engineer prior to commencement of soil disturbance. Intended methods to treat and discharge dewatering operations water shall be identified.
- o Water pumped from trenches, building excavations or any other excavation can only be discharged if the quality is better than or equal to that of the receiving water course.
- o Where trench water is not better than or equal to the receiving water course the contractor shall perform all work necessary to improve the quality in accordance with the requirements of the agency having jurisdiction.
- o Work shall include, but not be limited to, siltation traps, filtration, screening, and settling meeting the requirements of *New York Standards and Specifications for Erosion and Sediment Control* as necessary to remove sediment prior to final discharge into receiving waters. Water from dewatering operations may also be containerized, treated and properly disposed.

AT SWALES:

- o Contractor shall install sediment logs to reduce hydraulic energy & filter sediment-laden runoff.

TEMPORARY VEGETATIVE COVER:

- o Provide temporary vegetative cover for material stockpiles such as stripped topsoil or work areas where construction activities have temporarily or permanently ceased.
- o Restoration of grassed areas shall be completed as soon as reasonably possible.

Temporary measures shall be maintained until permanent stabilization is established. Size and location of all erosion control practices can be seen on the Grading and Erosion Control Plan, sheet C-401. Construction details of the temporary erosion control practices can be seen on plan sheet C-503.

6.2 Permanent Erosion Control Measures

Permanent erosion and sediment control measures will be employed by the project to minimize erosion and scour after construction is complete. All practices have been prepared in accordance with the current version of the *New York Standards and Specifications for Erosion and Sediment Control*. The following practices are used for this project:

PERMANENT SEEDING WITH MULCHING

- o Establish a uniform erosion-resistant perennial vegetative cover where the surface soil is capable of resisting erosion during runoff events.
- o Seed as soon as ground surfaces are brought to final grade with topsoil unless unfavorable weather conditions exist or seeding would occur outside recommended dates for proper germination. Under these conditions, temporary seeding would be provided until such time as permanent seeding could commence.

- o All areas disturbed during construction and not shown to receive other surface treatments (including, but not limited to, sod) will be restored with topsoil and seeded to provide stabilized vegetative cover.

6.3 Staging

The location of concrete washout areas, waste areas, equipment storage areas, and staging will be coordinated with local reviewing agency/Owner at the pre-construction meeting.

6.4 Construction Sequence

The construction schedule indicates work will begin in start _____ date and continue as necessary through _____ end date.

Construction will occur during all seasons as necessary to complete the project. It is anticipated that site work will not experience a temporary shut down during the winter months. Contractor shall prepare all grass surfaces with temporary vegetation prior to the end of the growing season. All erosion control practices shall be installed and in proper working order prior to the temporary shutdown.

The Contractor shall install erosion control measures in the following sequence unless otherwise authorized by the Engineer or Qualified Inspector:

- o Submit erosion control measures and sequencing for review and approval by the Qualified Inspector.
- o Install stabilized construction entrance.
- o Install construction area and staging area fencing.
- o Clear and grub for water diversions and sediment basins.
- o Construct diversion swales and sediment basins. Stabilize soils of any new channels and banks of sediment basin.
- o Install perimeter sediment controls, including inlet protection on any existing drainage inlets.
- o Protect existing vegetation and other environmental features to be preserved with orange construction fence or tree protection.
- o Clear and grub trees, brush, shrubs, and other debris within designated areas.
- o Remove and properly dispose of asphalt and concrete pavement and other items designated for removal.
- o Install additional erosion and sediment controls according to plan. Inspect, clean, and maintain erosion control measures as necessary and as ordered by the Qualified Inspector. Sweep public or private roadways, drives and parking areas as necessary to maintain clean from debris. Relocate and reset erosion control measures and construction fencing as required to complete work. All appropriate erosion and sediment control measures shall be in place and functional before commencement of construction of any segment of the project that requires such measures.
- o Strip and stockpile topsoil and grade site. Provide silt fence surrounding topsoil stockpiles.
- o Install check dams along graded swales.

- o Stabilize denuded areas and stockpiles within 14 days of last construction activity in each area. (7 days if greater than 5 acres disturbed)
- o Install utilities, storm sewer, and curb. Excess materials not backfilled in utility trenches shall be removed from the site or spoiled in areas approved by the Owner. Erosion control measures are not required around soils (earthen materials) excavated, side cast and backfilled into the trench within the same day.
- o Dewater excavations as necessary. Pumped water shall be treated to remove sediment prior to discharge.
- o Restore to finished grade as trench backfilling progresses. Maintain proper site drainage to protect work area, adjacent properties, swales, and other watercourses.
- o Box out areas for roads, parking areas, and building pads. As utility replacements are complete, prepare the roadway and sidewalk subgrade as required, install geotextiles, stone and curbing.
- o Install concrete washout area. No wet or fresh concrete, washings from concrete trucks, mixers or other devices, or concrete leachate shall be allowed to escape into any wetland or waters.
- o Pour concrete sidewalks, curbs, gutters, foundations, etc. as shown on the Contract Documents.
- o Complete grading, reapply topsoil, install permanent seeding, fertilizer, and mulch.
- o Complete final paving.
- o Capture, remove, and dispose of accumulated silt or sediment from silt fence, check dams, inlet protection, and sediment basins.
- o Clean the site of all incidental construction materials that are not incorporated into the work, and properly dispose offsite.
- o Seed, mulch and fertilize to establish vegetation at disturbed areas not designated for pavement or other surfaces. Where seed does not germinate, or where wash out, erosion, rutting or other damage occurs, repair damage, re-seed and re-fertilize as necessary to achieve 80% germination over 100% of the site.
- o Remove all temporary erosion control practices upon approval of final stabilization by the Qualified Inspector.

No more than 5 acres of soil shall be disturbed at one time without prior written approval from the MS4/NYSDEC Regional Staff. It is/is not expected that more than 5 acres will be disturbed at any one time during the course of the project.

If 5 acres of disturbance IS expected:

A 5-acre waiver has been obtained from/submitted to the MS4/NYSDEC Regional Office allowing/requesting disturbance of X.X acres at once for this project. The waiver will be added to Appendix F upon receipt/is located in Appendix F.

6.5 Inspection and Maintenance

A Trained Contractor shall inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times.

For construction sites where soil disturbance activities are on-going, the Qualified Inspector shall conduct a site inspection at least once every seven (7) calendar days.

If discharging to a 303d segment, replace paragraph above with paragraph below.

The site ultimately discharges to a 303d impaired waterbody. Therefore, the Qualified Inspector shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

If disturbing more than 5 acres at any one time and not discharging to a 303d waterbody, add the following paragraph:

If at any time during construction, the Contractor disturbs more than five (5) acres at any one time, Qualified Inspector shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days for the duration of the disturbance greater than five acres.

For projects that will include a winter shutdown, add the following paragraph:

For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the Qualified Inspector shall conduct a site inspection at least once every thirty (30) calendar days.

In addition to the Trained Contractor and Qualified Inspector inspections, the Town/Village/City of XXXX and the NYSDEC may conduct periodic inspections throughout construction.

The Trained Contractor, Qualified Inspector, the Town/Village/City of XXXX and the NYSDEC shall notify the Contractor in writing of any corrective actions to be made. The Contractor or Subcontractor shall begin implementing the corrective actions within one business day of notification and shall complete the corrective actions in a reasonable timeframe.

6.6 Control of Construction Debris, Chemicals, and Litter

Management practices should be implemented by the Contractor(s) and subcontractors to reduce the risk of contaminated storm runoff. The Contractor should provide training regarding waste management practices and procedures to all onsite employees and subcontractors.

The Contractor should arrange for appropriate waste management services from a licensed solid waste management company. Trash disposal, proper material handling, and daily cleanup at the site will reduce the potential for contaminated stormwater runoff. All recyclable waste (cardboard, wood etc.) shall be collected and recycled. No construction waste materials will be buried on site.

Toilet facilities should be well-maintained with regular inspections, service, and disposal. Facilities should be located away from storm drain inlets and waterways.

The Contractor should establish material storage and staging areas with cover and containment as necessary. See contract documents for locations of material stockpile areas. OR Material stockpile areas are to be coordinated with the Owner at the pre-construction meeting. Building materials such as paint, solvents, pesticides, fuels, and oils should be stored indoors or under cover when possible. Regular inspection of the storage containers is the responsibility of the Contractor.

Paint and concrete washout areas should be located appropriately, at least 50 yards from storm drains and watercourses, where possible. Washout areas should be inspected daily during use to detect leaks or tears. Materials from the washout area must be disposed of properly.

Equipment/vehicle fueling and maintenance should be performed off-site. For grading and excavating equipment, an on-site fueling and maintenance area should be clearly designated. The area should be equipped with a spill kit and a person knowledgeable in the use of the spill kit. Inspect vehicles and equipment daily for leaks, damage, and service problems. If problems are noted, remove the equipment from service and conduct significant maintenance/repair off-site.

Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

Equipment/vehicle washing and other allowable non-stormwater discharges should be controlled; if on-site washing is necessary, use a designated area with appropriate containment. Eliminate discharge to the storm drain or waterways by infiltrating wash water or routing to the sanitary sewer.

Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer and as described in part IV.A. Once applied, fertilizer will be worked into the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed according to manufacturers' instructions or state and local regulations.

All hazardous waste materials will be disposed of in the manner specified by local or State regulation or by the manufacturer.

The Contractor shall provide a site-specific spill prevention and response plan which addresses the following:

- Reducing chance of spills
- Stopping the source of spills
- Containing and cleaning up spills
- Disposing of materials contaminated by spills
- Training personnel responsible for spill prevention/response
- Material handling procedures
- Material storage requirements

TABLE 8 - POTENTIAL CONSTRUCTION SITE POLLUTANTS

Material/Chemical	Physical Description	Stormwater Pollutants	Location*
Pesticides (insecticides, fungicides, herbicides, rodenticides)	Various colored to colorless liquid, powder, pellets, or grains	Chlorinated hydrocarbons, organophosphates, carbamates, arsenic	Herbicides used for noxious weed control
Fertilizer	Liquid or solid grains	Nitrogen, phosphorous	Newly seeded areas
Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	No equipment cleaning allowed in project limits
Asphalt	Black solid	Oil, petroleum distillates	Streets and roofing
Concrete	White solid/grey liquid	Limestone, sand, pH, chromium	Curb and gutter, building construction
Curing compounds	Creamy white liquid	Naphtha	Curb and gutter
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil	Leaks or broken hoses from equipment
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment / staging area
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	Secondary containment / staging area
Kerosene	Pale yellow liquid petroleum hydrocarbon	Coal oil, petroleum distillates	Secondary containment / staging area
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Leaks or broken hoses from equipment
Sanitary toilets	Various colored liquid	Bacteria, parasites, and viruses	Staging area
Construction materials			
Granular fill	Various colored solids	Sediment	Stockpile / fill areas
Subbase course	Gray/brown solid	Sediment, dust	Stockpile
Topsoil	Brown solid	Sediment	Stockpile
Mulch	Various colored solid	Sediment, debris	Staging area
Seed	Brown/yellow solid	Nutrients, debris	Staging area

HDPE Storm Pipe	Black solid		Staging area
SDR-35, SDR-21 PVC Pipe	Various colored solid		Staging area
Metals Frames and Grates	Gray solid		Staging area
Joint Sealant	Light gray viscous solid	Polyurethane	Staging area

*(Area where material/chemical is used on-site)

The following are the management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances listed above to stormwater runoff:

- Products will be kept in original containers unless they are not resealable.
- Original labels and material safety data sheets will be retained; they contain important product information.
- An effort will be made to store only enough product required to do the job.
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure and/or on blacktop.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The site superintendent will inspect daily to ensure the proper use and disposal of materials onsite.
- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dustpans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills, of any size, of toxic or hazardous material will be reported to the appropriate State or local government agency.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from recurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.

6.7 Non-stormwater Discharges

There are no anticipated non-stormwater discharges associated with this project that are not authorized by the SPDES General Permit, Part I.C.3, which includes:

1. Waters used to wash vehicles or equipment, *provided no detergents or chemical additive are used;*
2. Water used to control dust, *provided no chemical additives are used;*
3. Waters, *with no detergents or chemical additives,* used to wash pavements where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed), and where detergents are not used.
4. *Uncontaminated groundwater foundation drains, provided there is no chemical contamination, floating substances, residual oil, solids to cause deposition in receiving waters, or turbidity to cause a visual contrast to receiving water conditions.*

Waters from these sources shall also be directed through erosion control measures prior to discharge to any surface waters, storm sewer system, waterbody, or ditches.

SECTION 7: RECORD KEEPING & CERTIFICATIONS

7.1 Notice of Intent (NOI)

The Notice of Intent (NOI) was prepared electronically on the NYSDEC website. A copy of the NOI is included in Appendix F of this report.

7.2 NOI Acknowledgement Letter

The NOI Acknowledgement Letter will be added to Appendix F upon receipt. Construction may not begin until the NOI Acknowledgement Letter has been received.

7.3 MS4 SWPPP Acceptance Form

The MS4 SWPPP Acceptance Form will be added to Appendix F upon receipt.

Certifications

It shall be a violation of the SPDES General Permit and the ECL for any discharge authorized by the SPDES General Permit to either cause or contributes to a violation of the water quality standards as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York. (SPDES General Permit, Part I.B.)

The Owner or Operator must comply with all conditions of the SPDES General Permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any permit noncompliance constitutes a violation of the CWA and the ECL and is grounds for an enforcement action against the Owner or Operator or the contractor/subcontractor; permit revocation or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with the SPDES General Permit or the SWPPP, the NYSDEC may order an immediate stop to all construction activity at the site until the non-compliance is remedied. (SPDES General Permit, Part VII.A.)

The Owner and its contractors and subcontractors shall take all reasonable steps to minimize or prevent any discharge in violation of the SPDES General Permit which has a reasonable likelihood of adversely affecting human health or the environment. (SPDES General Permit, Part VII.E.)

There are substantial criminal, civil, and administrative penalties associated with violating the provisions of the SPDES General Permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending on the nature and degree of the violation (SPDES General Permit, Part VII.C.).

1. Engineer Certification

The undersigned agrees that this SWPPP has been prepared in accordance with Local, State, and Federal regulations. The undersigned understands that the owner intends to use this SWPPP to support his application for a New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-15-002.

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

Prepared By: _____ Date: _____

SWPPP Preparer Name
LaBella Associates, D.P.C.
300 State Street, Suite 201
Rochester, NY 14617
Preparer Phone No.

2. Owner Certification

I certify that I have read and understand the requirements outlined in this SWPPP report. I understand and agree to comply with the provisions stated herein. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I certify that I intend to employ a Contractor who will follow the recommendations of this SWPPP and any requirements set forth by the New York State SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-15-002.

Owner: _____

Owner's Representative: _____ Date: _____

Title: _____

3. Contractor Certification

The following individuals certify under penalty of law that they understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. They also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

_____ Person responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP:

Name: _____ Title: _____

Signature: _____ Date: _____

Company: _____

Address: _____

E-Mail: _____ Phone No.: _____

Person responsible for constructing the post-construction stormwater management practices:

Name: _____ Title: _____

Signature: _____ Date: _____

Company: _____

Address: _____

E-Mail: _____ Phone No.: _____

7.4 Contractor Stormwater Training Cards

A Trained Contractor from each Contractor's company and Subcontractor's company is responsible for implementation of the SWPPP. At least one Trained Contractor is required to be on site on a daily basis when soil disturbance activities are being performed.

The Trained Contractors for this project are as follows:

Name	Company	Phone No.	Stormwater Training Card No.
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Name	Company	Phone No.	Stormwater Training Card No.
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Name	Company	Phone No.	Stormwater Training Card No.
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Photocopies of the Trained Contractor's Stormwater Training Cards will be added to Appendix F upon receipt.

OR

Photocopies of the Trained Contractor's Stormwater Training Cards have been added to Appendix F.

7.5 Revisions to the SWPPP

The SWPPP is a "living" document and may be updated as the construction process proceeds. Any updates to the SWPPP should be noted and attached to this SWPPP in Appendix G. If any of the following substantive revisions to the SWPPP occur during construction, the NYSDEC must be made aware of the changes:

- a. the scope of the project changes significantly, or
- b. there is an increase in the disturbance area or impervious area

7.6 Corrective Action Log

The Corrective Action Log is located in Appendix G.

7.7 Dedication / As-Builts (Delete this section if not required by local entity)

Dedication and as-builts of the Stormwater Management Facility(ies) will be provided to the local entity upon completion of the project.

7.8 Notice of Termination

A blank Notice of Termination (NOT) is included in Appendix F. A project is eligible to terminate permit coverage by filing the Notice of Termination when one or more of the following criteria have been met:

1. The project is complete. The owner or operator may terminate coverage when all construction activity identified in the SWPPP has been completed; and all areas of disturbance have achieved final stabilization; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational.
2. The project has planned shutdown with partial project completion. The owner operator may terminate coverage when all soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved final stabilization; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
3. A new owner or operator has obtained coverage in conformance with the general permit.

Final stabilization means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

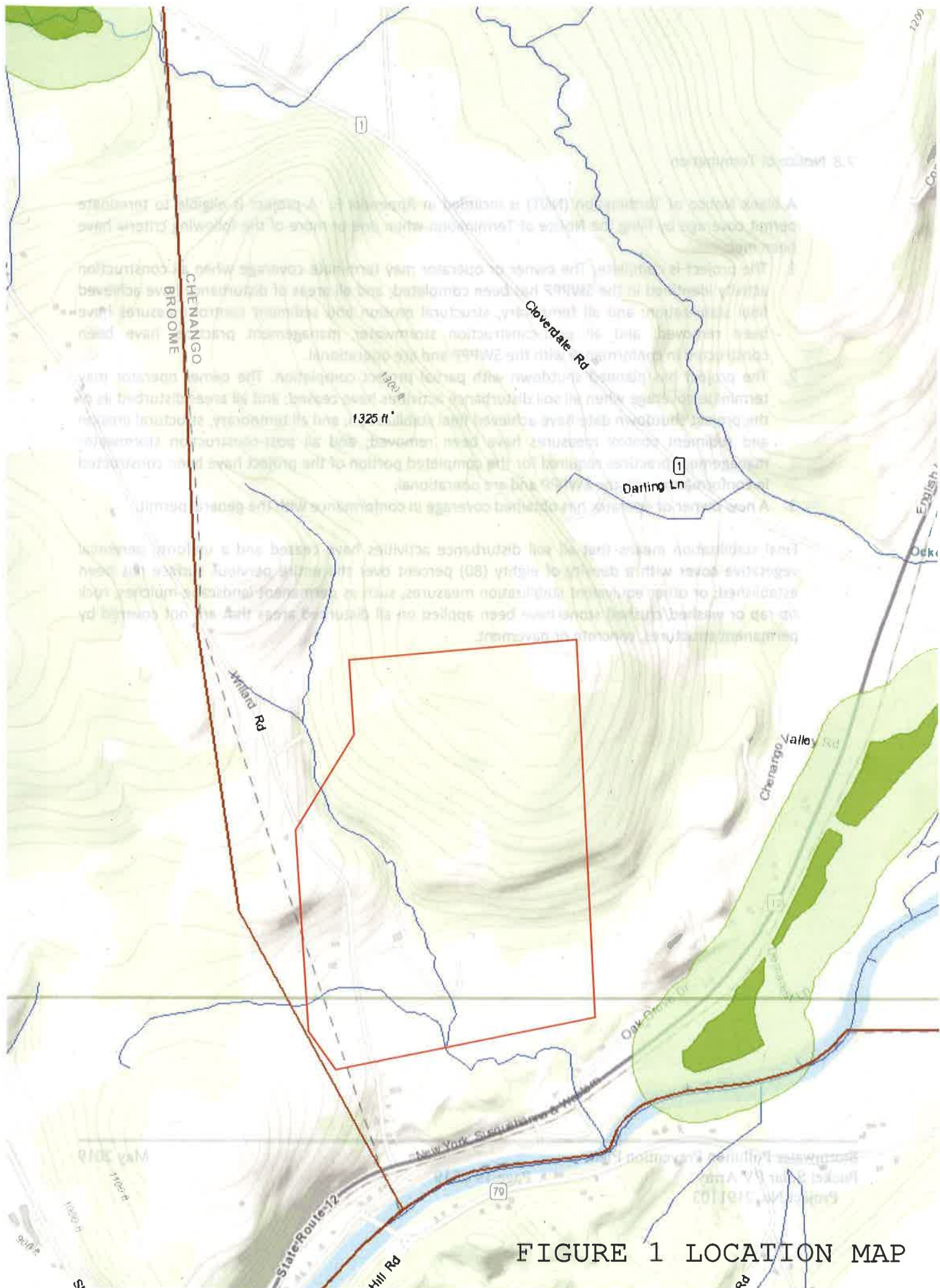
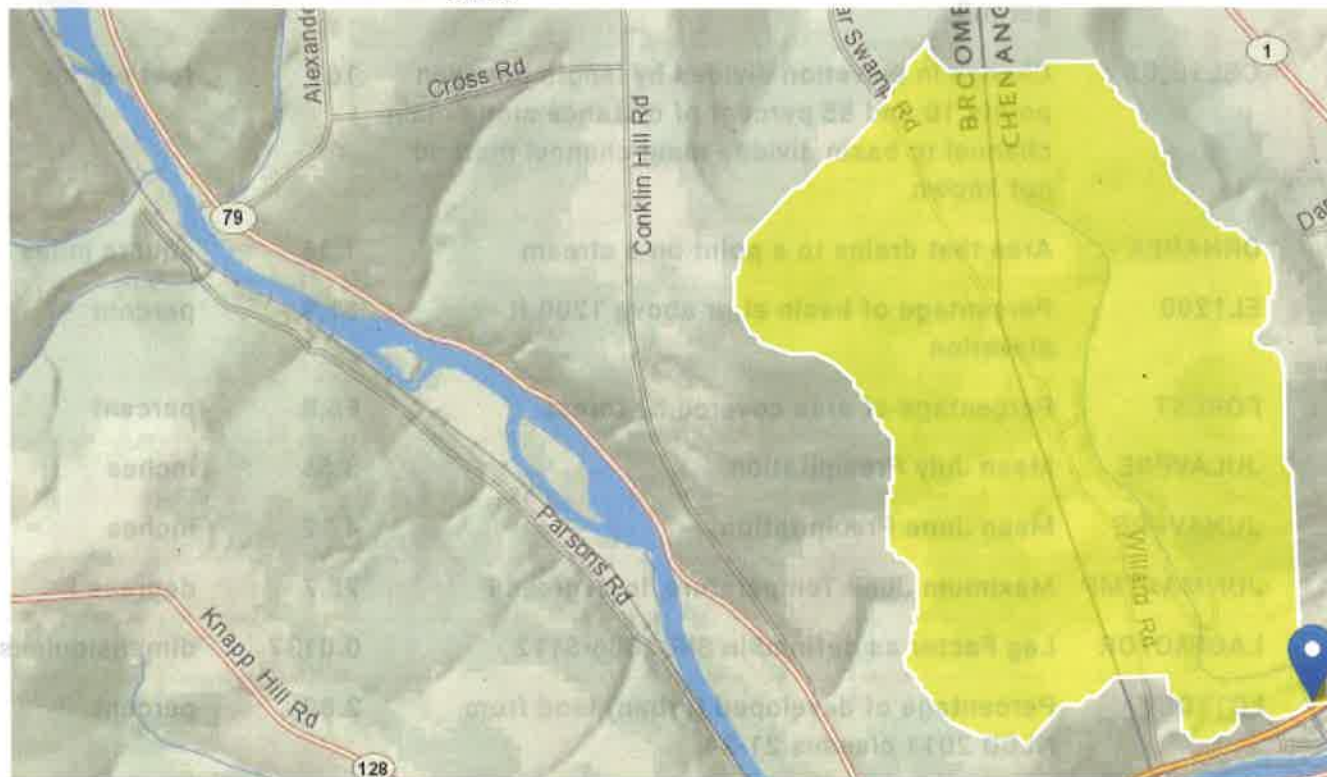


FIGURE 1 LOCATION MAP

StreamStats Report

Region ID: NY
Workspace ID: NY20190325184723764000
Clicked Point (Latitude, Longitude): 42.24755, -75.82995
Time: 2019-03-25 14:47:45 -0400



Basin Characteristics		Value	Unit
Parameter Code	Parameter Description		
BSLOPCM	Mean basin slope determined by summing lengths of all contours in basin multiplying by contour interval and dividing product by drainage area	457	feet per mi
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	430602.3	feet
CENTROIDY	Basin centroid vertical (y) location in state plane units	4678719.7	feet

Parameter Code	Parameter Description	Value	Unit
CONTOUR	Total length of all elevation contours in drainage area in miles	6.21	miles
CSL1085LO	10-85 slope of lower half of main channel in feet per mile.	173	feet per mi
CSL1085UP	10-85 slope of upper half of main channel in feet per mile.	172	feet per mi
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	161	feet per mi
DRNAREA	Area that drains to a point on a stream	1.36	square miles
EL1200	Percentage of basin at or above 1200 ft elevation	51.9	percent
FOREST	Percentage of area covered by forest	66.8	percent
JULAVPRE	Mean July Precipitation	3.56	inches
JUNAVPRE	Mean June Precipitation	4.12	inches
JUNMAXTMP	Maximum June Temperature, in degrees F	75.7	degrees F
LAGFACTOR	Lag Factor as defined in SIR 2006-5112	0.0137	dimensionless
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	2.89	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.19	percent
LENGTH	Length along the main channel from the measuring location extended to the basin divide	2.37	miles
MAR	Mean annual runoff for the period of record in inches	18	inches
MAYAVPRE	Mean May Precipitation	3.61	inches
MXSNO	50th percentile of seasonal maximum snow depth from Northeast Regional Climate Center atlas by Cember and Wilks, 1993	13.9	inches
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	431535	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	4677595	feet
PRECIP	Mean Annual Precipitation	36.9	inches

Parameter Code	Parameter Description	Value	Unit
PRJUNAUG00	Basin average mean precip for June to August from PRISM 1971-2000	11.1	inches
SLOPERATIO	Ratio of main channel slope to basin slope as defined in SIR 2006-5112	0.35	dimensionless
SSURGOA	Percentage of area of Hydrologic Soil Type A from SSURGO	7.27	percent
SSURGOB	Percentage of area of Hydrologic Soil Type B from SSURGO	2.71	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent

Bankfull Statistics Parameters [Bankfull Region 5 SIR2009 5144]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.36	square miles	0.7	332

Bankfull Statistics Flow Report [Bankfull Region 5 SIR2009 5144]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu
Bankfull Area	13.9	ft^2	6.18	31.3
Bankfull Depth	0.92	ft	0.42	2.02
Bankfull Streamflow	58.9	ft^3/s	9.29	374
Bankfull Width	15.5	ft	6.72	35.7

Bankfull Statistics Citations

Mulvihill, C.I., Baldigo, B.P., Miller, S.J. , and DeKoskie, Douglas,2009, Bankfull Discharge and Channel Characteristics of Streams in New York State: U.S. Geological Survey Scientific Investigations Report 2009-5144, 51 p. (<http://pubs.usgs.gov/sir/2009/5144/>)

Peak-Flow Statistics Parameters [2006 Full Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.36	square miles	0.61	3941
SLOPERATIO	Slope Ratio NY	0.35	dimensionless	0.006	0.438
STORAGE	Percent Storage	0	percent	0	7.75
MAR	Mean Annual Runoff in inches	18	inches	19.84	26.09

Peak-Flow Statistics Disclaimers [2006 Full Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [2006 Full Region 4]

Statistic	Value	Unit
1.25 Year Peak Flood	30.9	ft ³ /s
1.5 Year Peak Flood	39.9	ft ³ /s
2 Year Peak Flood	52.3	ft ³ /s
5 Year Peak Flood	91.2	ft ³ /s
10 Year Peak Flood	122	ft ³ /s
25 Year Peak Flood	166	ft ³ /s
50 Year Peak Flood	201	ft ³ /s
100 Year Peak Flood	239	ft ³ /s
200 Year Peak Flood	279	ft ³ /s
500 Year Peak Flood	335	ft ³ /s

Peak-Flow Statistics Citations

Lumia, Richard, Freehafer, D.A., and Smith, M.J., 2006, Magnitude and Frequency of Floods in New York: U.S. Geological Survey Scientific Investigations Report 2006-5112, 152 p. (<http://pubs.usgs.gov/sir/2006/5112/>)

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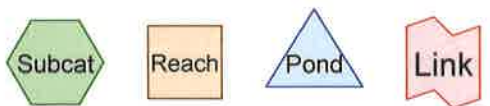
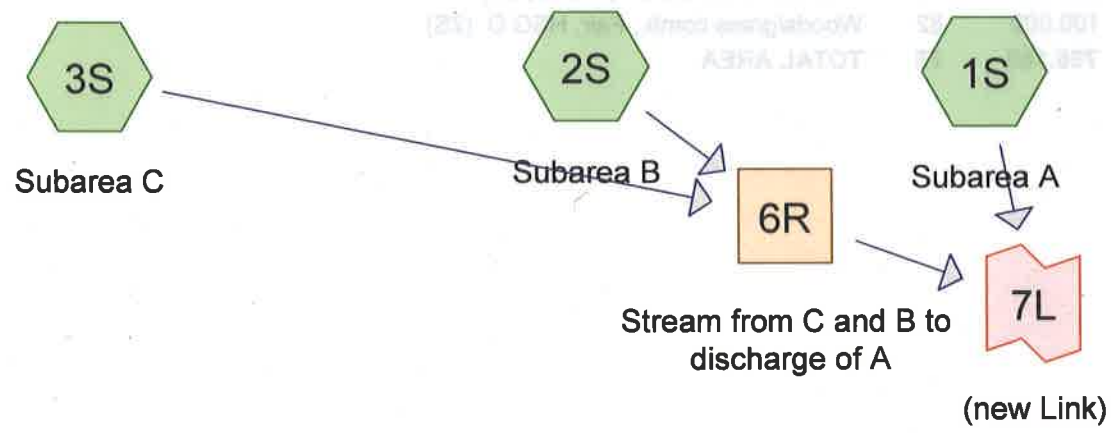
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Application Version: 4.3.0

Area Listing (all nodes)

Area	Description	Area (acres)	Out (cfs)
1S	Wooded/Grass contn. (1S)	100.00	100.00
2S	Wooded/Grass contn. (2S)	100.00	100.00
3S	Wooded/Grass contn. (3S)	100.00	100.00
6R	Reach		
7L	Link		
TOTAL AREA			



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.000	87	Dirt roads, HSG C (3S)
15.000	82	Farmsteads, HSG C (2S, 3S)
1.000	89	Gravel roads, HSG C (2S)
28.800	30	Meadow, non-grazed, HSG A (1S)
190.000	71	Meadow, non-grazed, HSG C (2S, 3S)
2.000	92	Paved roads w/open ditches, 50% imp, HSG C (2S)
0.280	36	Woods, Fair, HSG A (1S)
104.800	73	Woods, Fair, HSG C (1S, 3S)
309.300	79	Woods, Fair, HSG D (1S, 2S, 3S)
100.000	82	Woods/grass comb., Fair, HSG D (2S)
755.180	75	TOTAL AREA



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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers	HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)
29.080	HSG A	1S	0.000	0.000	0.000	0.000	0.000
0.000	HSG B		0.000	0.000	0.000	0.000	0.000
316.800	HSG C	1S, 2S, 3S	0.000	0.000	0.000	0.000	0.000
409.300	HSG D	1S, 2S, 3S	0.000	0.000	0.000	0.000	0.000
0.000	Other		0.000	0.000	0.000	0.000	0.000
755.180		TOTAL AREA					

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatcl Numbers
0.000	0.000	4.000	0.000	0.000	4.000	Dirt roads	
0.000	0.000	15.000	0.000	0.000	15.000	Farmsteads	
0.000	0.000	1.000	0.000	0.000	1.000	Gravel roads	
28.800	0.000	190.000	0.000	0.000	218.800	Meadow, non-grazed	
0.000	0.000	2.000	0.000	0.000	2.000	Paved roads w/open ditches, 50% imp	
0.280	0.000	104.800	309.300	0.000	414.380	Woods, Fair	
0.000	0.000	0.000	100.000	0.000	100.000	Woods/grass comb., Fair	
29.080	0.000	316.800	409.300	0.000	755.180	TOTAL AREA	

Pocket Solar Array Existing

Type II 24-hr 2-Year Rainfall=2.41"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>0.13"
Flow Length=4,126' Tc=56.4 min CN=61 Runoff=3.72 cfs 1.079 af

Subcatchment2S: Subarea B Runoff Area=428.000 ac 0.23% Impervious Runoff Depth>0.64"
Flow Length=7,400' Tc=57.0 min CN=78 Runoff=155.54 cfs 22.817 af

Subcatchment3S: Subarea C Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>0.53"
Tc=0.0 min CN=75 Runoff=275.74 cfs 10.199 af

Reach 6R: Stream from C and B to Avg. Flow Depth=2.39' Max Vel=7.15 fps Inflow=281.76 cfs 33.016 af
n=0.040 L=800.0' S=0.0187 '/' Capacity=394.02 cfs Outflow=242.40 cfs 32.891 af

Link 7L: (new Link) Inflow=242.40 cfs 33.970 af
Primary=242.40 cfs 33.970 af

Total Runoff Area = 755.180 ac Runoff Volume = 34.095 af Average Runoff Depth = 0.54"
99.87% Pervious = 754.180 ac 0.13% Impervious = 1.000 ac

Pocket Solar Array Existing

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Subcatchment 1S: Subarea A

Runoff = 3.72 cfs @ 12.91 hrs, Volume= 1.079 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.41"

Area (ac)	CN	Description
59.800	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
98.180	61	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

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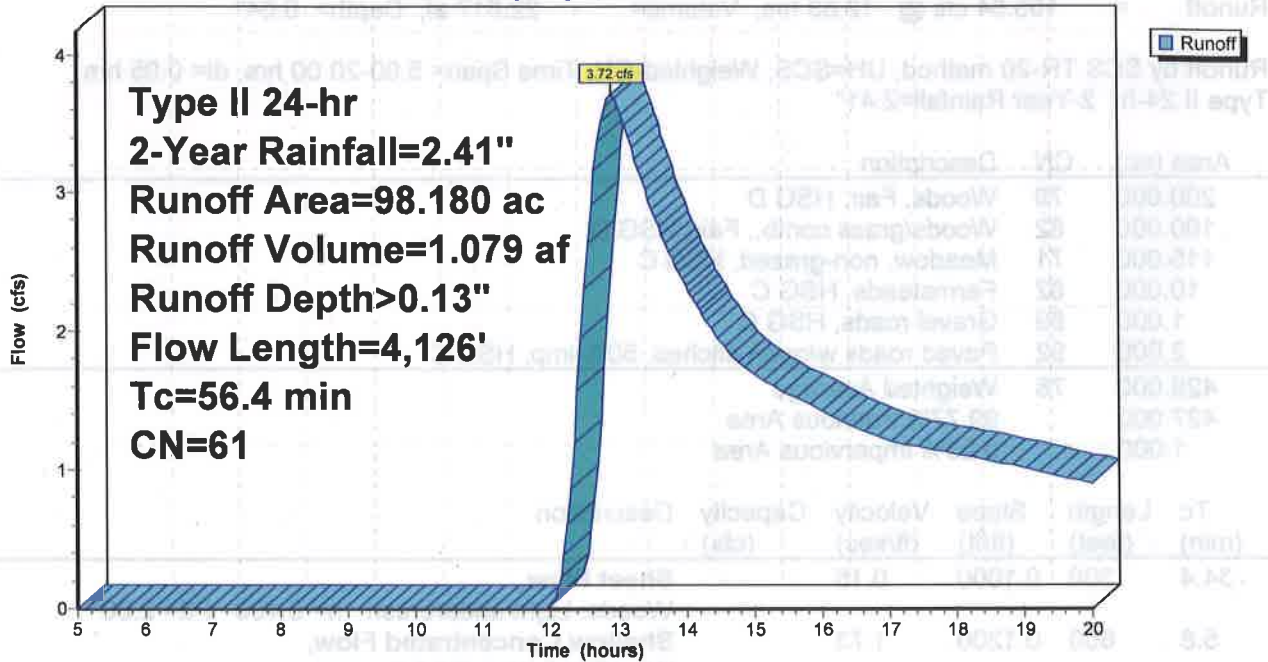
Type II 24-hr 2-Year Rainfall=2.41"

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Subcatchment 1S: Subarea A

Hydrograph



Pucket Solar Array Existing

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Subcatchment 2S: Subarea B

Runoff = 155.54 cfs @ 12.63 hrs, Volume= 22.817 af, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.41"

Area (ac)	CN	Description
200.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
428.000	78	Weighted Average
427.000		99.77% Pervious Area
1.000		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

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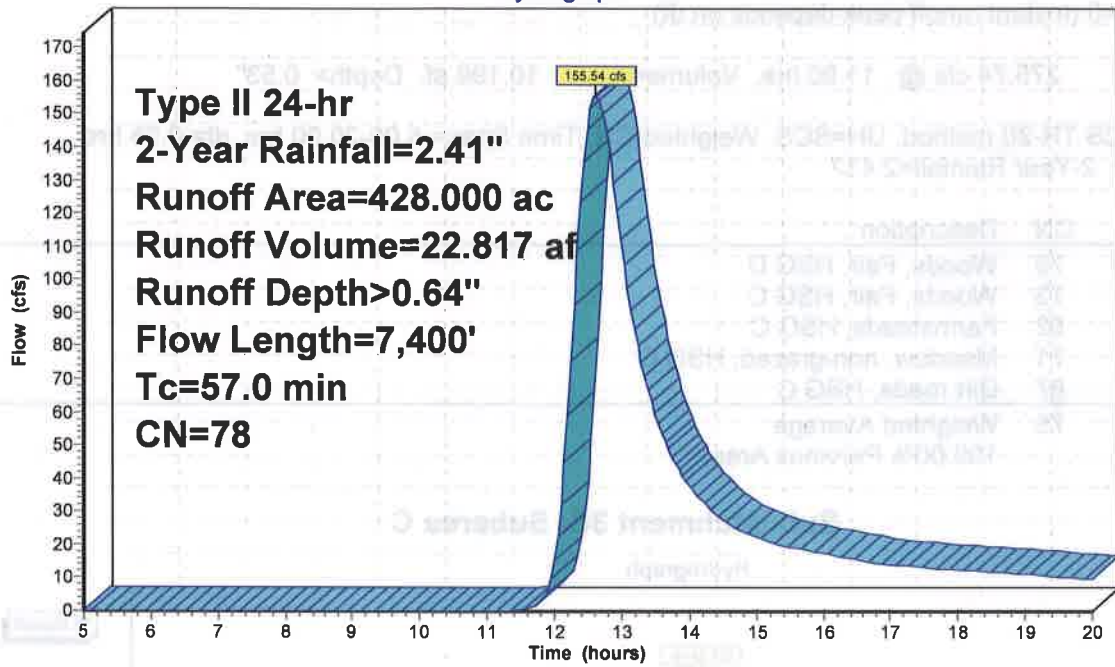
Type II 24-hr 2-Year Rainfall=2.41"

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Subcatchment 2S: Subarea B

Hydrograph



Packet Solar Array Existing

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Subcatchment 3S: Subarea C

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

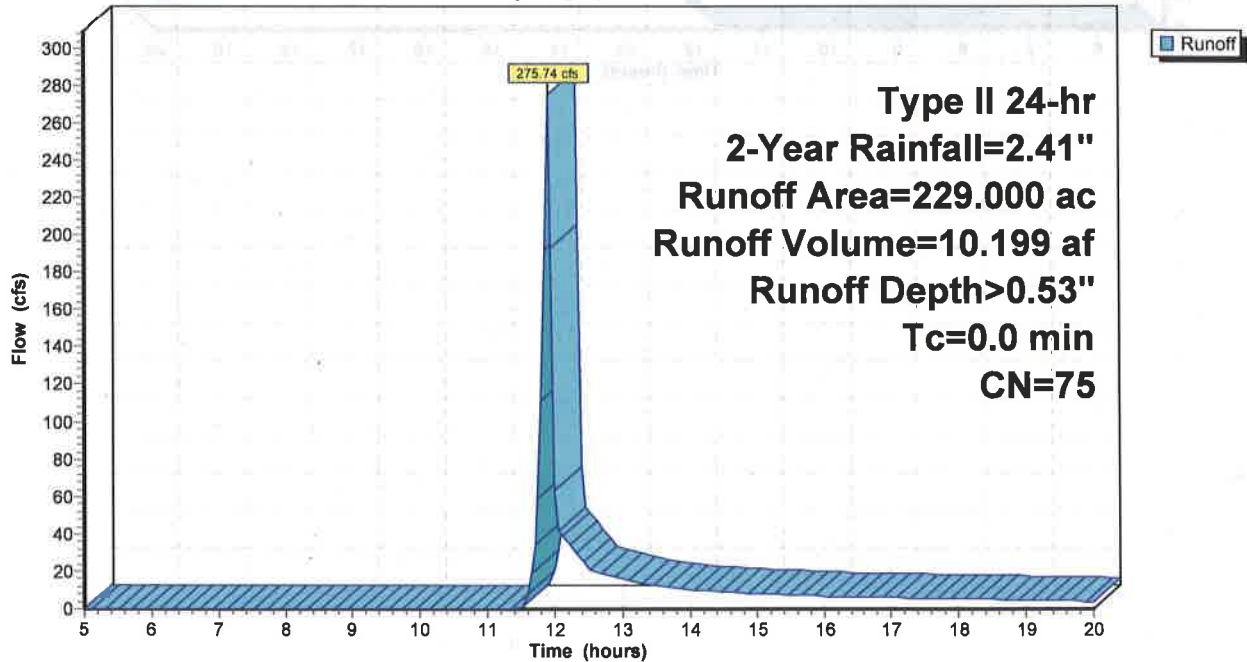
Runoff = 275.74 cfs @ 11.90 hrs, Volume= 10.199 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.41"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C

Hydrograph



Pucket Solar Array Existing

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Reach 6R: Stream from C and B to discharge of A

Inflow Area = 657.000 ac, 0.15% Impervious, Inflow Depth > 0.60" for 2-Year event
Inflow = 281.76 cfs @ 11.90 hrs, Volume= 33.016 af
Outflow = 242.40 cfs @ 11.95 hrs, Volume= 32.891 af, Atten= 14%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.15 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 3.74 fps, Avg. Travel Time= 3.6 min

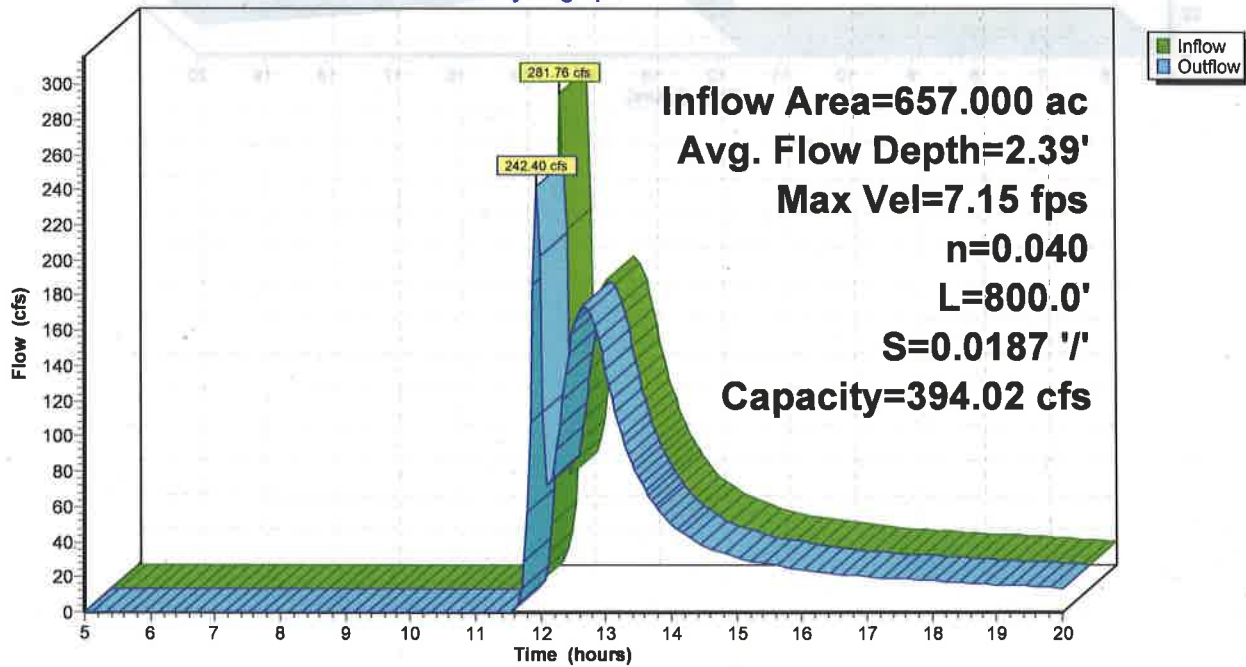
Peak Storage= 28,221 cf @ 11.93 hrs
Average Depth at Peak Storage= 2.39'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 22.00'
Length= 800.0' Slope= 0.0187 '/'
Inlet Invert= 928.00', Outlet Invert= 913.00'



Reach 6R: Stream from C and B to discharge of A

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Link 7L: (new Link)

Inflow Area = 755.180 ac, 0.13% Impervious, Inflow Depth > 0.54" for 2-Year event

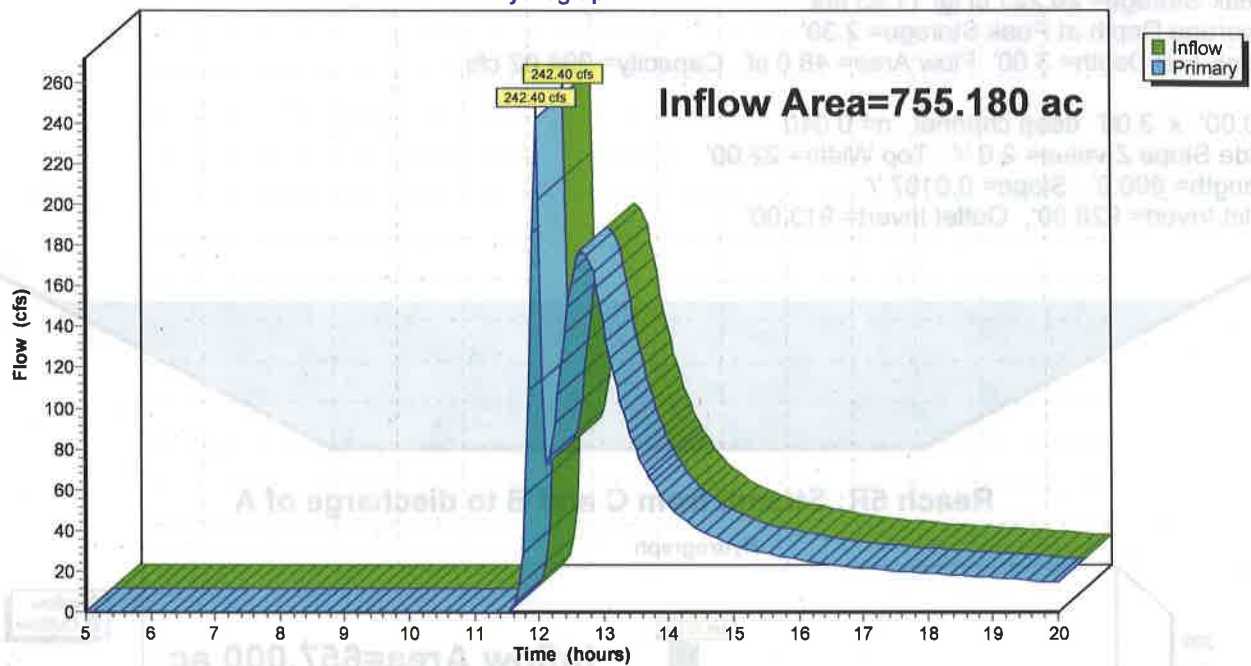
Inflow = 242.40 cfs @ 11.95 hrs, Volume= 33.970 af

Primary = 242.40 cfs @ 11.95 hrs, Volume= 33.970 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

Hydrograph



Packet Solar Array Existing

Type II 24-hr 10-Year Rainfall=3.45"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>0.46"
 Flow Length=4,126' Tc=56.4 min CN=61 Runoff=20.86 cfs 3.776 af

Subcatchment2S: Subarea B Runoff Area=428.000 ac 0.23% Impervious Runoff Depth>1.30"
 Flow Length=7,400' Tc=57.0 min CN=78 Runoff=335.55 cfs 46.520 af

Subcatchment3S: Subarea C Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>1.15"
 Tc=0.0 min CN=75 Runoff=599.54 cfs 21.989 af

Reach 6R: Stream from C and B to Avg. Flow Depth=3.75' Max Vel=8.99 fps Inflow=629.79 cfs 68.509 af
 n=0.040 L=800.0' S=0.0187 '/' Capacity=394.02 cfs Outflow=555.06 cfs 68.331 af

Link 7L: (new Link) Inflow=555.23 cfs 72.107 af
 Primary=555.23 cfs 72.107 af

Total Runoff Area = 755.180 ac Runoff Volume = 72.285 af Average Runoff Depth = 1.15"
99.87% Pervious = 754.180 ac 0.13% Impervious = 1.000 ac

Packet Solar Array Existing

Type II 24-hr 10-Year Rainfall=3.45"

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Summary for Subcatchment 1S: Subarea A

Runoff = 20.86 cfs @ 12.72 hrs, Volume= 3.776 af, Depth> 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.45"

Area (ac)	CN	Description
59.800	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
98.180	61	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

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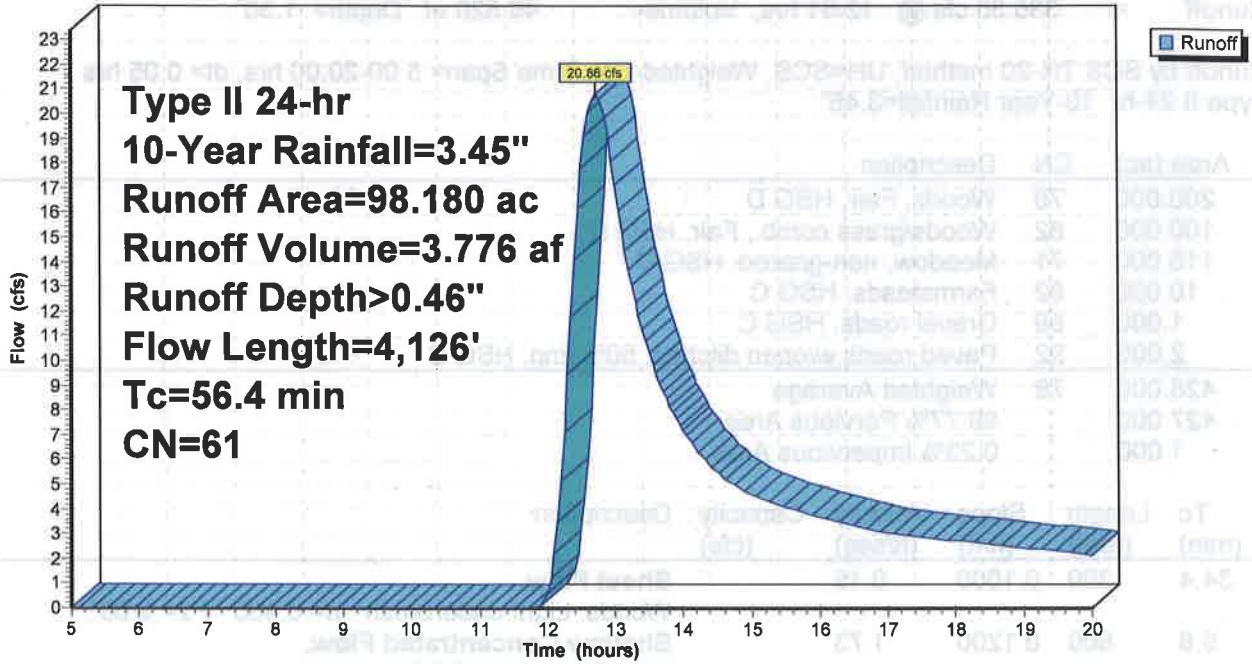
Type II 24-hr 10-Year Rainfall=3.45"

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Subcatchment 1S: Subarea A

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.45"

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Summary for Subcatchment 2S: Subarea B

Runoff = 335.55 cfs @ 12.61 hrs, Volume= 46.520 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.45"

Area (ac)	CN	Description
200.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
428.000	78	Weighted Average
427.000		99.77% Pervious Area
1.000		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

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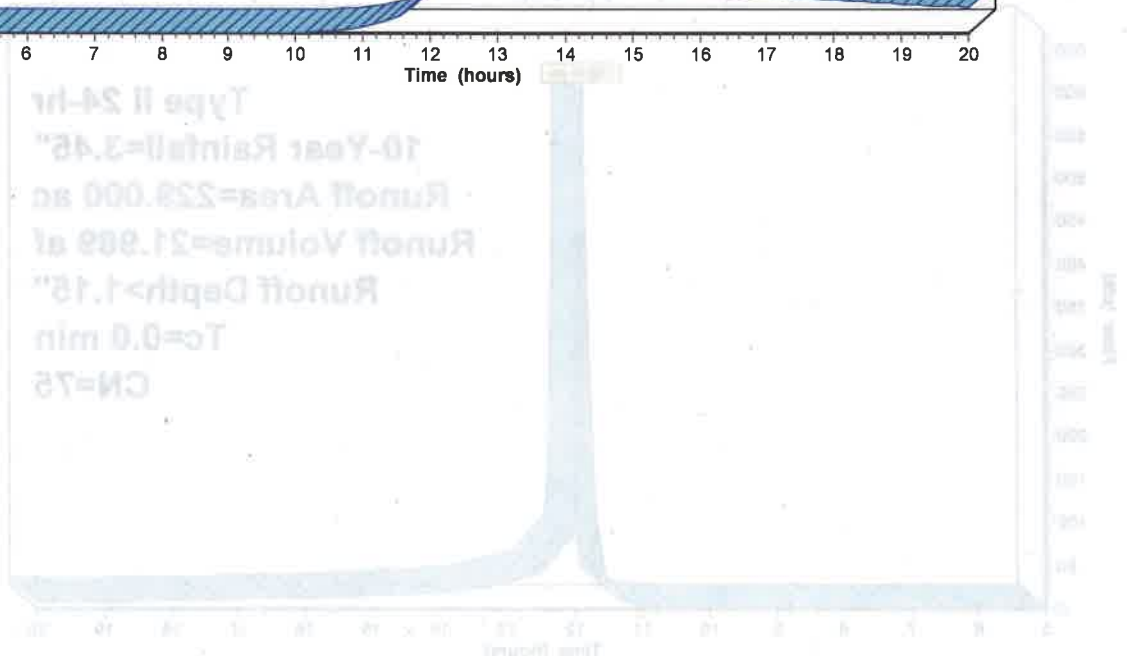
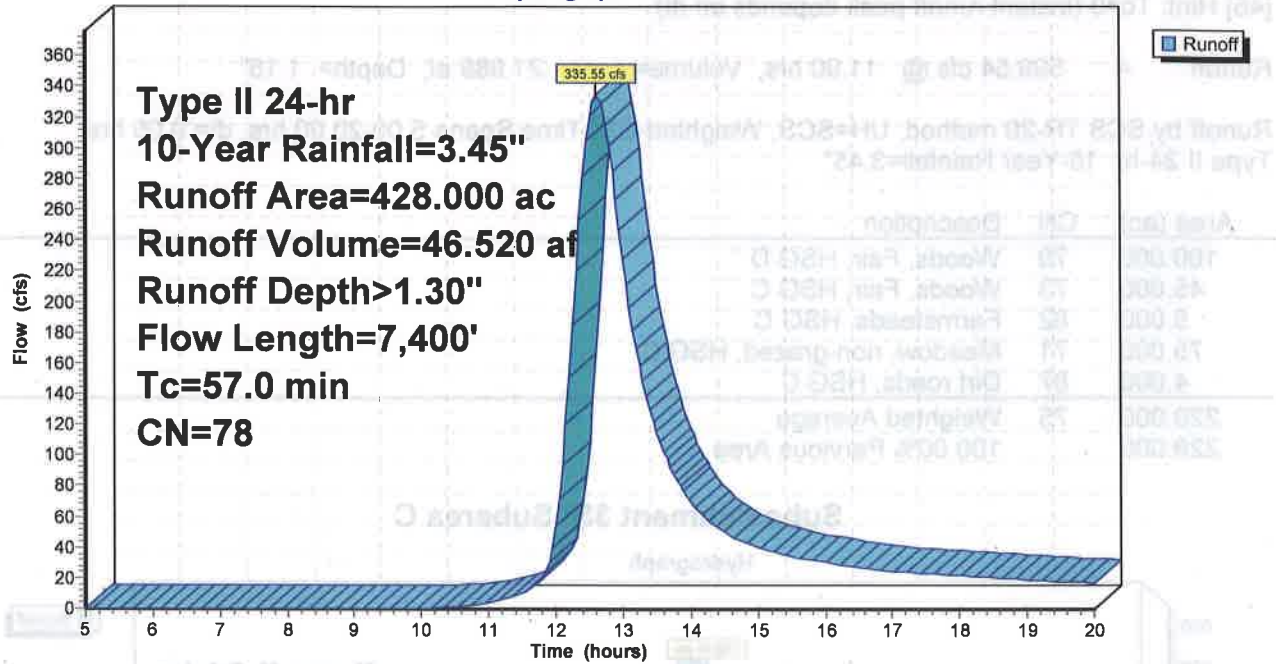
Type II 24-hr 10-Year Rainfall=3.45"

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Subcatchment 2S: Subarea B

Hydrograph



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Summary for Subcatchment 3S: Subarea C

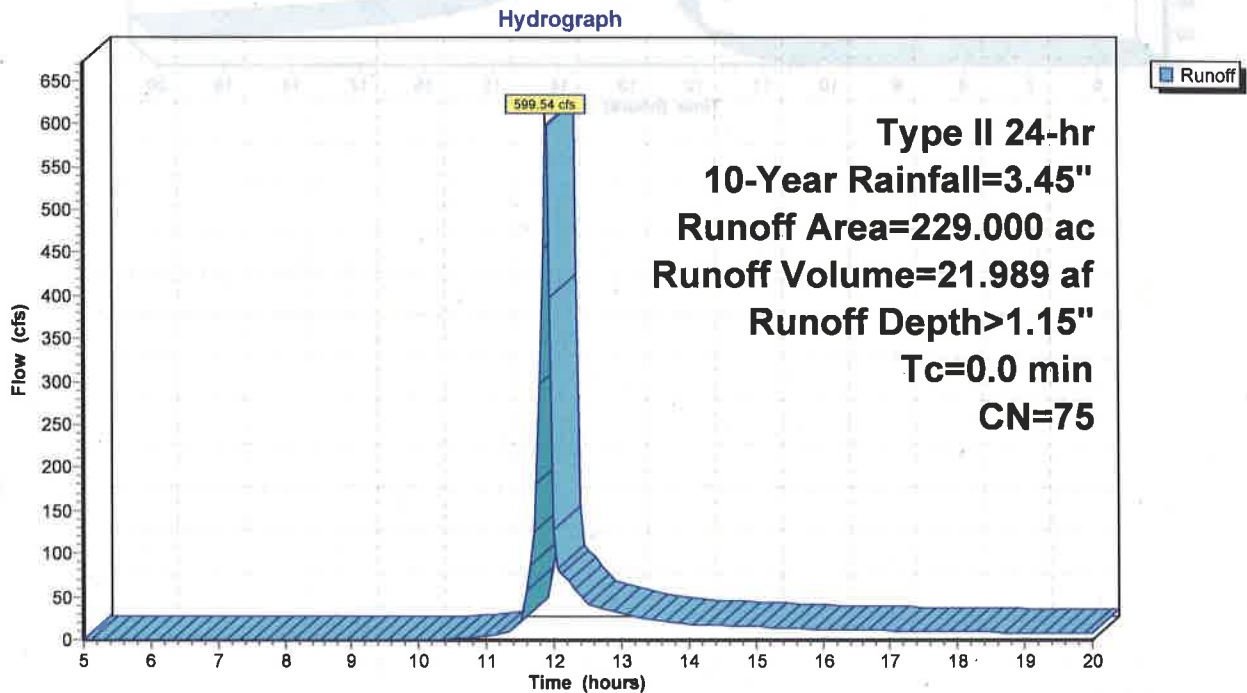
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 599.54 cfs @ 11.90 hrs, Volume= 21.989 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.45"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C



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Type II 24-hr 10-Year Rainfall=3.45"

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Summary for Reach 6R: Stream from C and B to discharge of A

[91] Warning: Storage range exceeded by 0.75'

[55] Hint: Peak inflow is 160% of Manning's capacity

Inflow Area = 657.000 ac, 0.15% Impervious, Inflow Depth > 1.25" for 10-Year event
Inflow = 629.79 cfs @ 11.90 hrs, Volume= 68.509 af
Outflow = 555.06 cfs @ 11.94 hrs, Volume= 68.331 af, Atten= 12%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.99 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 4.25 fps, Avg. Travel Time= 3.1 min

Peak Storage= 51,515 cf @ 11.91 hrs

Average Depth at Peak Storage= 3.75'

Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 22.00'

Length= 800.0' Slope= 0.0187 '/'

Inlet Invert= 928.00', Outlet Invert= 913.00'



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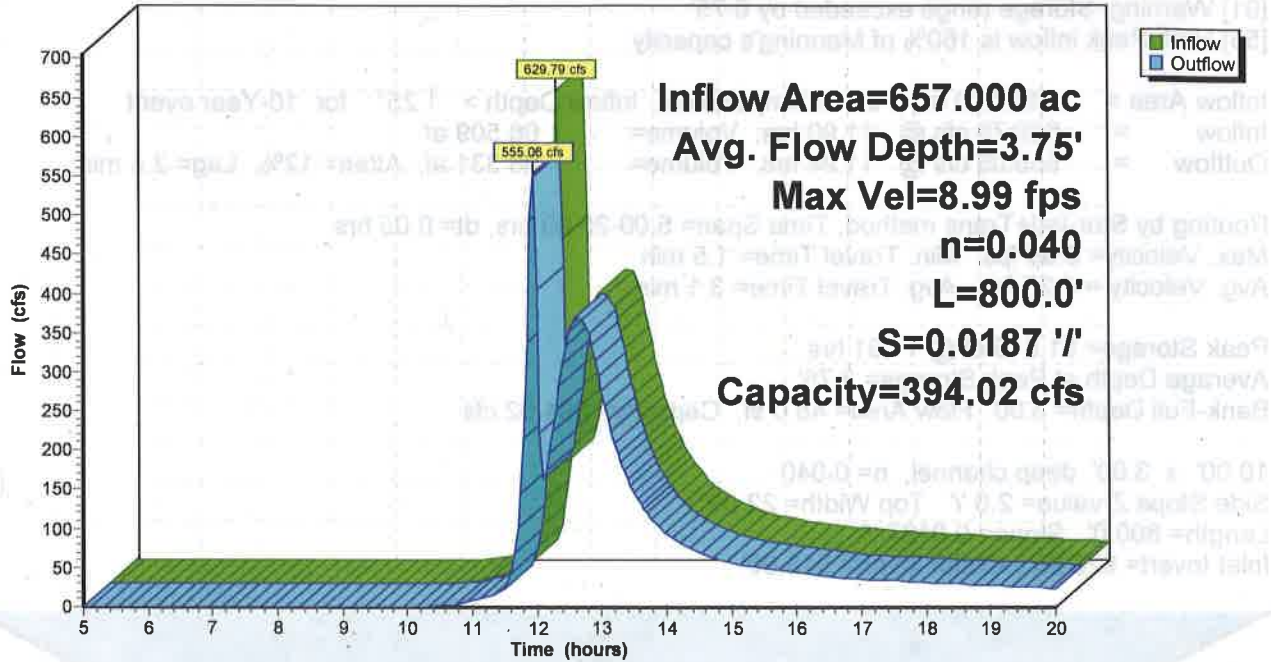
Type II 24-hr 10-Year Rainfall=3.45"

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Reach 6R: Stream from C and B to discharge of A

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.45"

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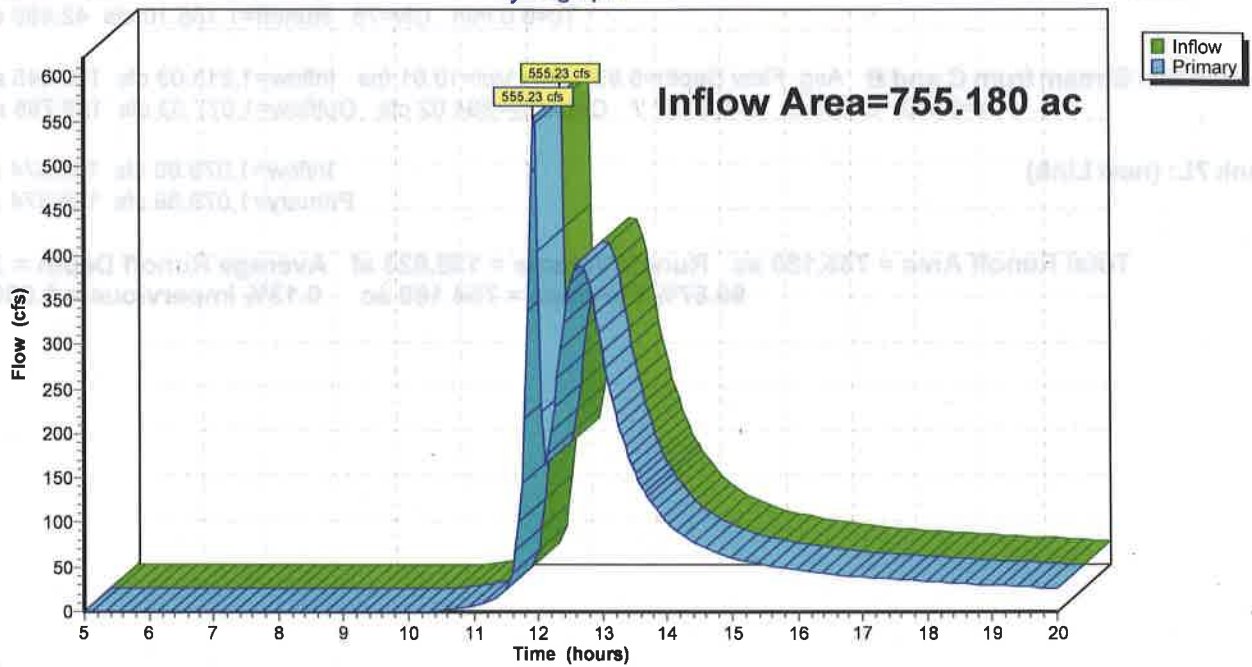
Summary for Link 7L: (new Link)

Inflow Area = 755.180 ac, 0.13% Impervious, Inflow Depth > 1.15" for 10-Year event
Inflow = 555.23 cfs @ 11.94 hrs, Volume= 72.107 af
Primary = 555.23 cfs @ 11.94 hrs, Volume= 72.107 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

Hydrograph



Pucket Solar Array Existing

Type II 24-hr 50-Year Rainfall=4.96"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A

Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>1.17"
Flow Length=4,126' Tc=56.4 min CN=61 Runoff=63.97 cfs 9.579 af

Subcatchment2S: Subarea B

Runoff Area=428.000 ac 0.23% Impervious Runoff Depth>2.43"
Flow Length=7,400' Tc=57.0 min CN=78 Runoff=633.06 cfs 86.546 af

Subcatchment3S: Subarea C

Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>2.23"
Tc=0.0 min CN=75 Runoff=1,135.10 cfs 42.499 af

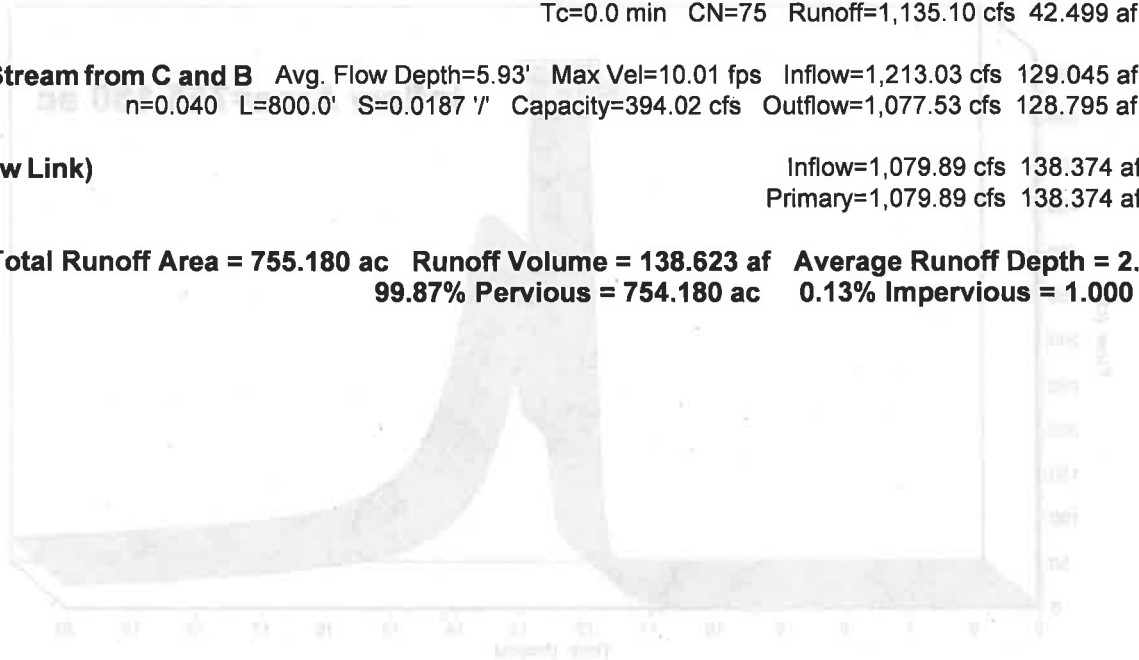
Reach 6R: Stream from C and B

Avg. Flow Depth=5.93' Max Vel=10.01 fps Inflow=1,213.03 cfs 129.045 af
n=0.040 L=800.0' S=0.0187 '/' Capacity=394.02 cfs Outflow=1,077.53 cfs 128.795 af

Link 7L: (new Link)

Inflow=1,079.89 cfs 138.374 af
Primary=1,079.89 cfs 138.374 af

Total Runoff Area = 755.180 ac Runoff Volume = 138.623 af Average Runoff Depth = 2.20"
99.87% Pervious = 754.180 ac 0.13% Impervious = 1.000 ac



Pucket Solar Array Existing

Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Subcatchment 1S: Subarea A

Runoff = 63.97 cfs @ 12.63 hrs, Volume= 9.579 af, Depth> 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.96"

Area (ac)	CN	Description
59.800	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
98.180	61	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

Pucket Solar Array Existing

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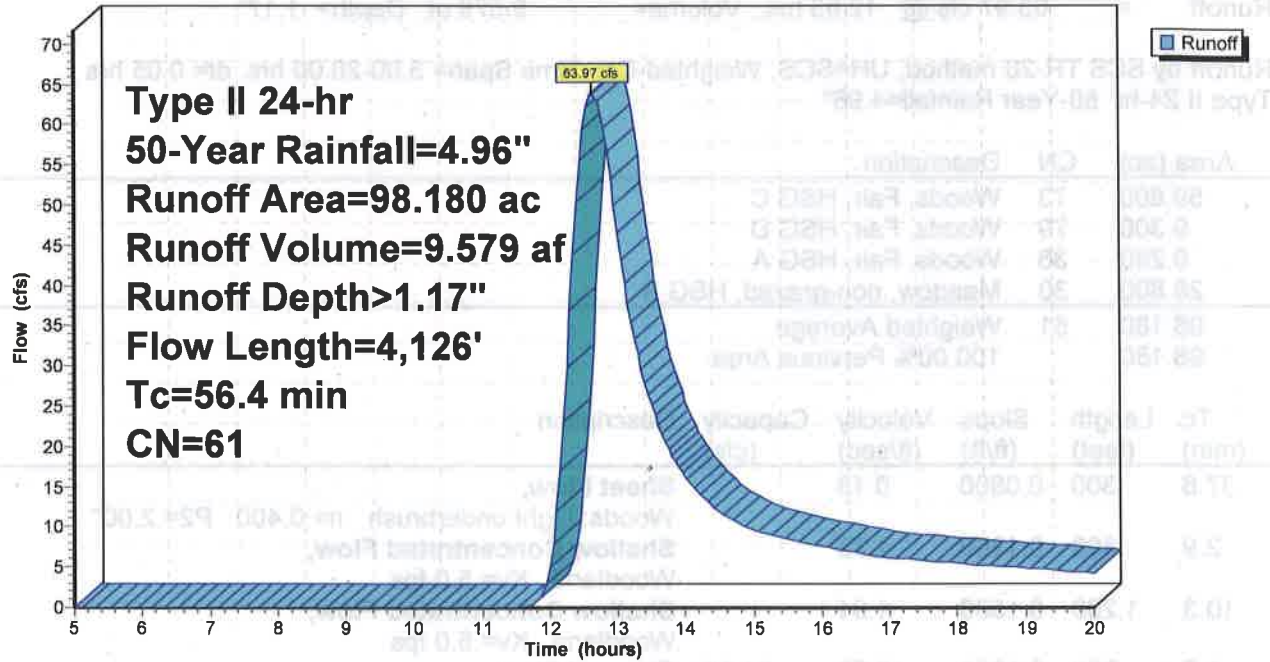
Type II 24-hr 50-Year Rainfall=4.96"

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Subcatchment 1S: Subarea A

Hydrograph



Pucket Solar Array Existing

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Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Subcatchment 2S: Subarea B

Runoff = 633.06 cfs @ 12.59 hrs, Volume= 86.546 af, Depth> 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.96"

Area (ac)	CN	Description
200.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
428.000	78	Weighted Average
427.000		99.77% Pervious Area
1.000		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

Packet Solar Array Existing

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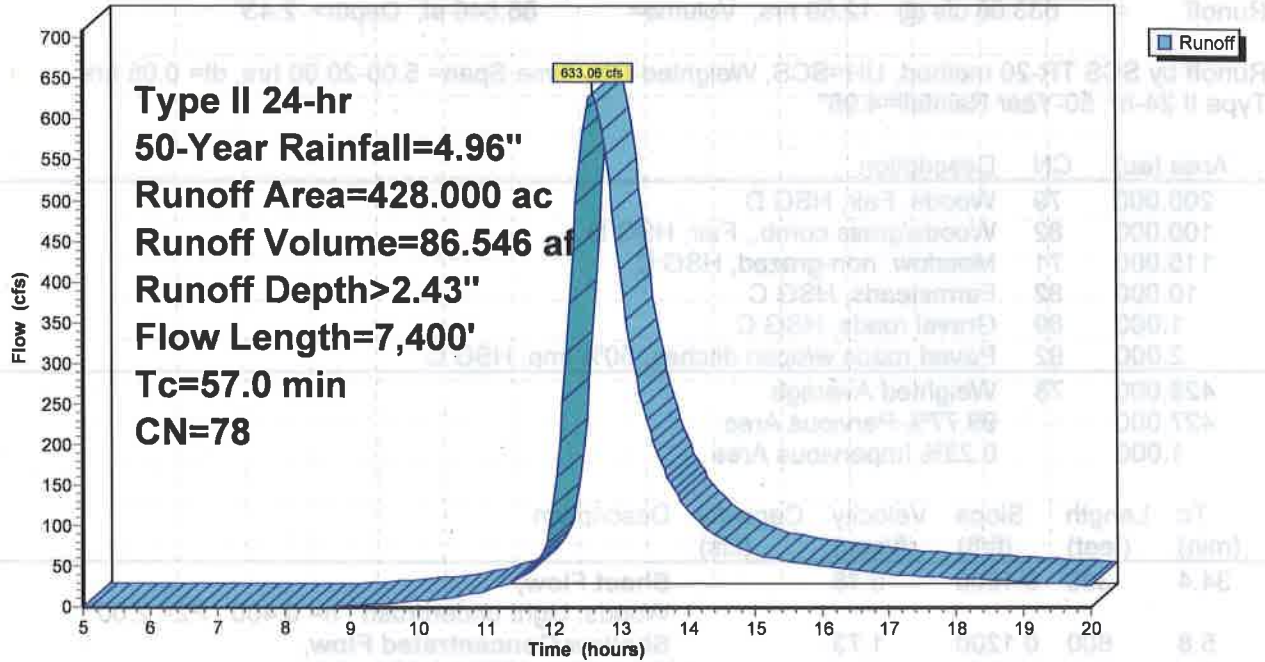
Type II 24-hr 50-Year Rainfall=4.96"

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Subcatchment 2S: Subarea B

Hydrograph



Pucket Solar Array Existing

Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Subcatchment 3S: Subarea C

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

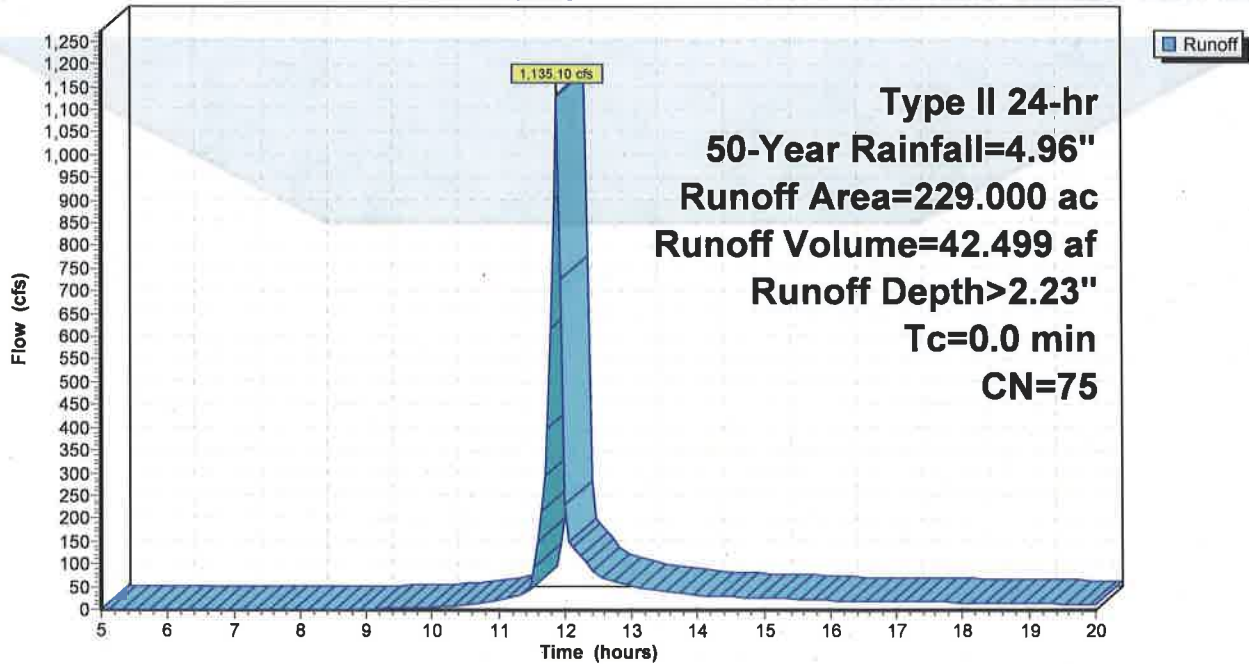
Runoff = 1,135.10 cfs @ 11.89 hrs, Volume= 42.499 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year Rainfall=4.96"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C

Hydrograph



Pucket Solar Array Existing

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Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Reach 6R: Stream from C and B to discharge of A

[91] Warning: Storage range exceeded by 2.93'

[55] Hint: Peak inflow is 308% of Manning's capacity

Inflow Area = 657.000 ac, 0.15% Impervious, Inflow Depth > 2.36" for 50-Year event
Inflow = 1,213.03 cfs @ 11.89 hrs, Volume= 129.045 af
Outflow = 1,077.53 cfs @ 11.93 hrs, Volume= 128.795 af, Atten= 11%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 10.01 fps, Min. Travel Time= 1.3 min

Avg. Velocity = 4.74 fps, Avg. Travel Time= 2.8 min

Peak Storage= 89,866 cf @ 11.91 hrs

Average Depth at Peak Storage= 5.93'

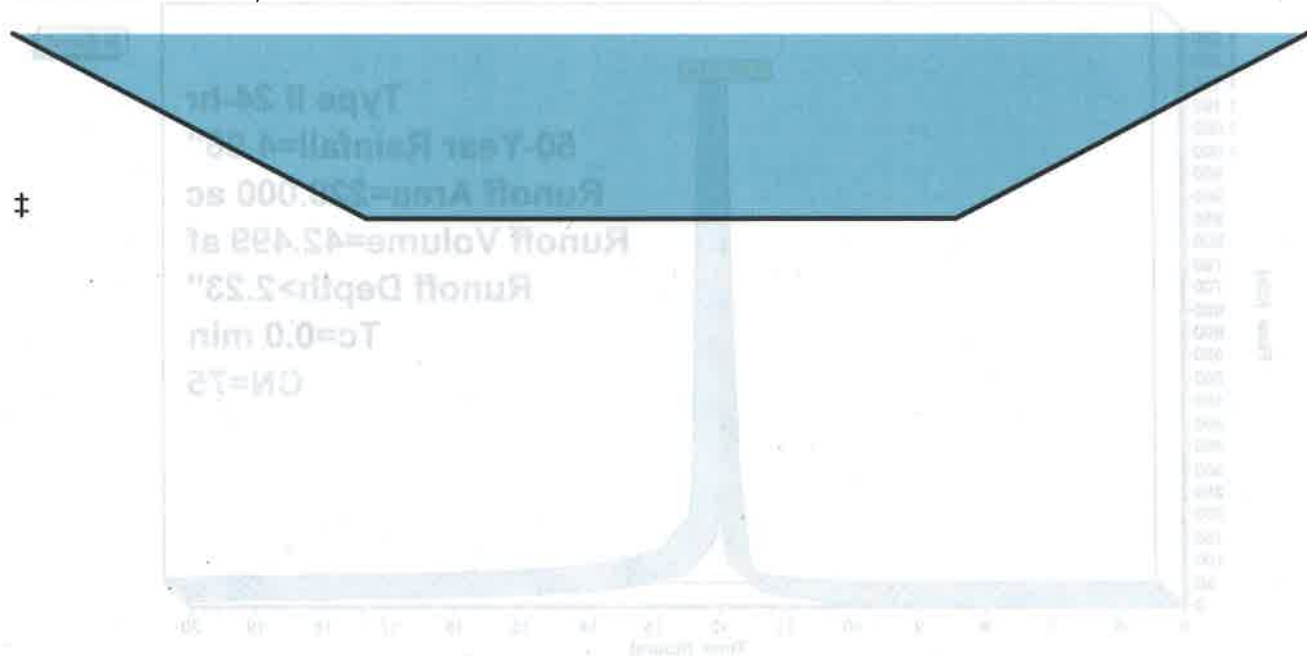
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040

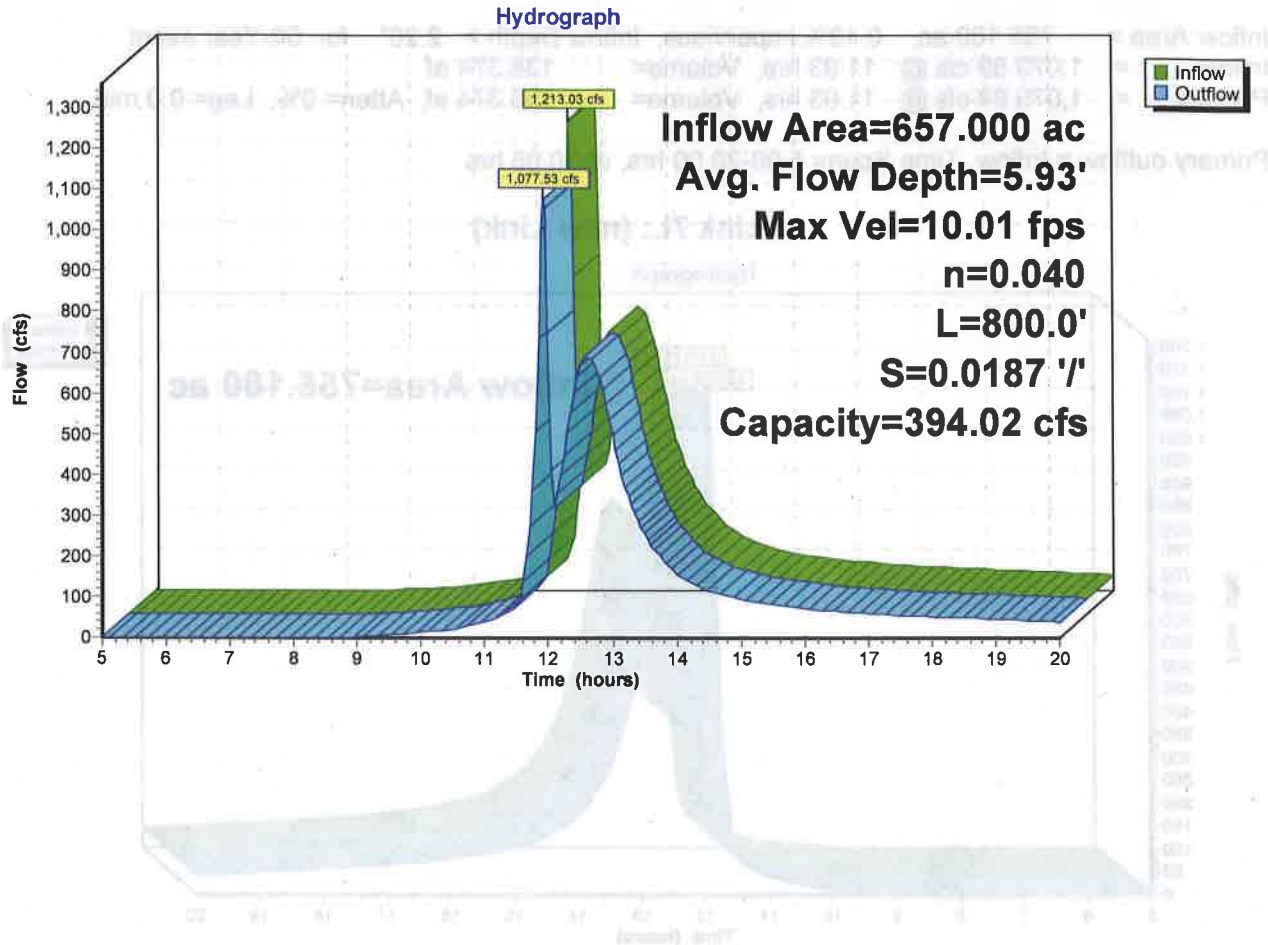
Side Slope Z-value= 2.0 '/' Top Width= 22.00'

Length= 800.0' Slope= 0.0187 '/'

Inlet Invert= 928.00', Outlet Invert= 913.00'



Reach 6R: Stream from C and B to discharge of A



Packet Solar Array Existing

Type II 24-hr 50-Year Rainfall=4.96"

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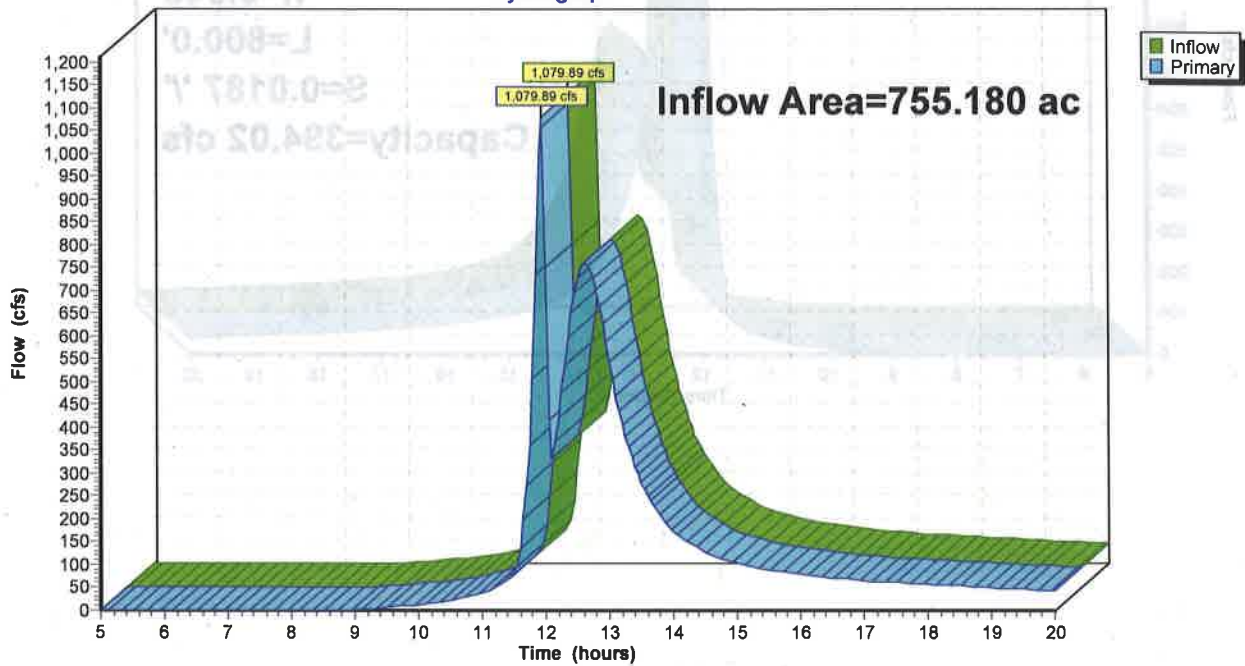
Summary for Link 7L: (new Link)

Inflow Area = 755.180 ac, 0.13% Impervious, Inflow Depth > 2.20" for 50-Year event
Inflow = 1,079.89 cfs @ 11.93 hrs, Volume= 138.374 af
Primary = 1,079.89 cfs @ 11.93 hrs, Volume= 138.374 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

Hydrograph



Pocket Solar Array Existing

Type II 24-hr 100-Year Rainfall=5.79"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>1.64"
Flow Length=4,126' Tc=56.4 min CN=61 Runoff=93.69 cfs 13.433 af

Subcatchment2S: Subarea B Runoff Area=428.000 ac 0.23% Impervious Runoff Depth>3.09"
Flow Length=7,400' Tc=57.0 min CN=78 Runoff=805.82 cfs 110.209 af

Subcatchment3S: Subarea C Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>2.87"
Tc=0.0 min CN=75 Runoff=1,445.58 cfs 54.811 af

Reach 6R: Stream from C and B Avg. Flow Depth=7.21' Max Vel=10.29 fps Inflow=1,553.40 cfs 165.019 af
n=0.040 L=800.0' S=0.0187 '/' Capacity=394.02 cfs Outflow=1,383.41 cfs 164.732 af

Link 7L: (new Link) Inflow=1,389.31 cfs 178.165 af
Primary=1,389.31 cfs 178.165 af

Total Runoff Area = 755.180 ac Runoff Volume = 178.453 af Average Runoff Depth = 2.84"
99.87% Pervious = 754.180 ac 0.13% Impervious = 1.000 ac

Packet Solar Array Existing

Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Subcatchment 1S: Subarea A

Runoff = 93.69 cfs @ 12.62 hrs, Volume= 13.433 af, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.79"

Area (ac)	CN	Description
59.800	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
98.180	61	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

Pucket Solar Array Existing

Type II 24-hr 100-Year Rainfall=5.79"

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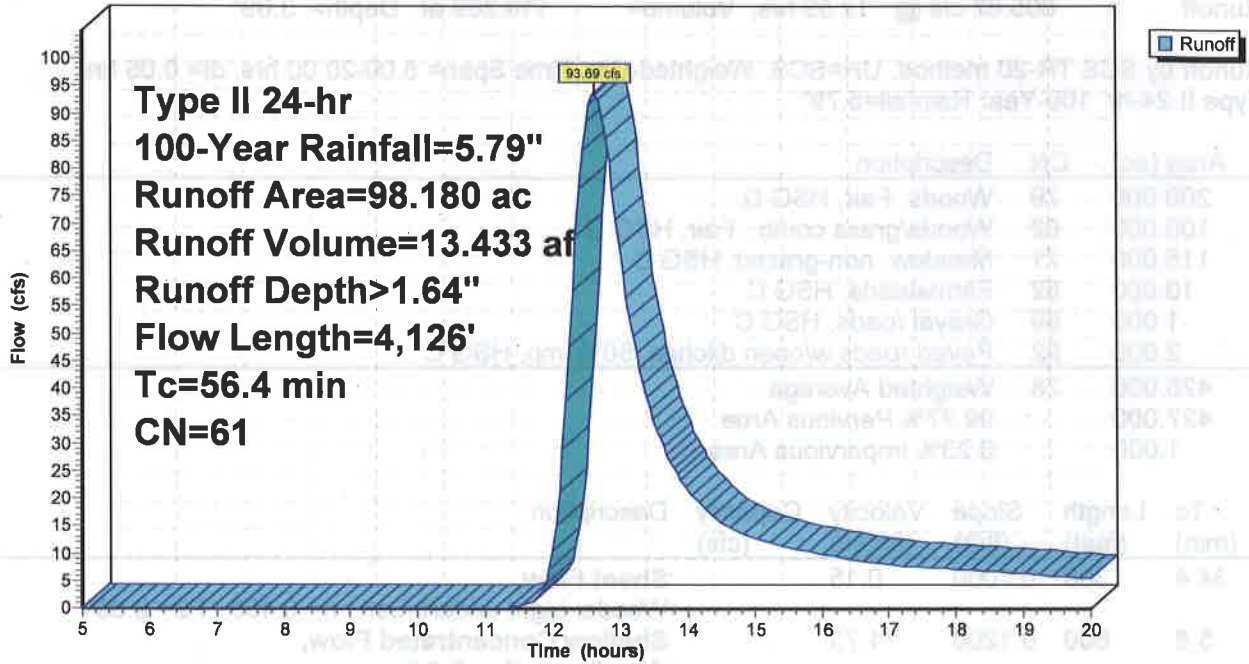
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Subcatchment 1S: Subarea A

Hydrograph



Packet Solar Array Existing

Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Subcatchment 2S: Subarea B

Runoff = 805.82 cfs @ 12.59 hrs, Volume= 110.209 af, Depth> 3.09"

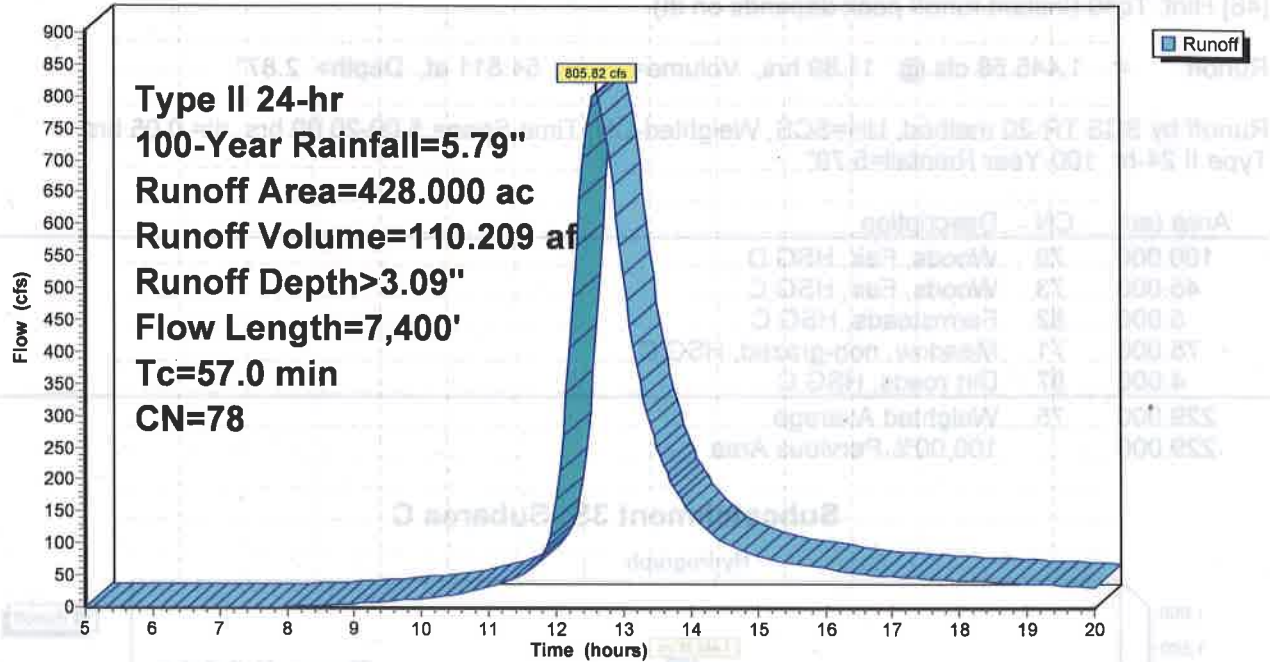
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.79"

Area (ac)	CN	Description
200.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
428.000	78	Weighted Average
427.000		99.77% Pervious Area
1.000		0.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

Subcatchment 2S: Subarea B

Hydrograph



Packet Solar Array Existing

Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Subcatchment 3S: Subarea C

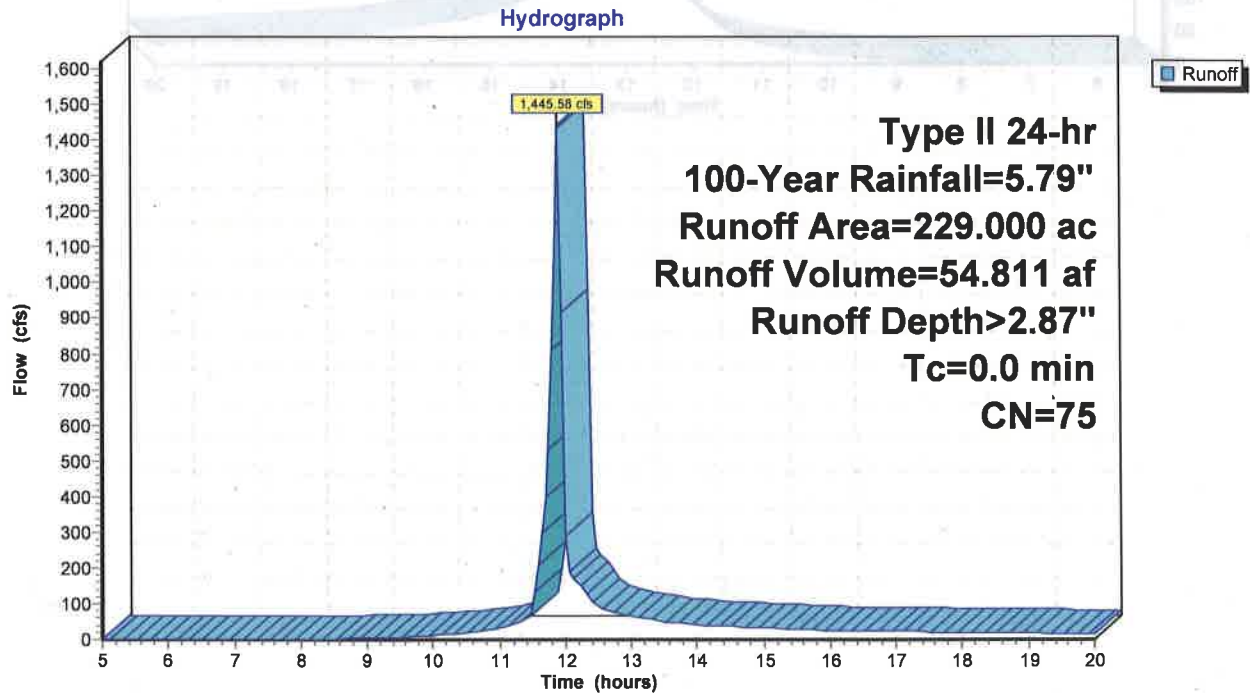
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1,445.58 cfs @ 11.89 hrs, Volume= 54.811 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.79"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C



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Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Reach 6R: Stream from C and B to discharge of A

[91] Warning: Storage range exceeded by 4.21'

[55] Hint: Peak inflow is 394% of Manning's capacity

Inflow Area =	657.000 ac,	0.15% Impervious,	Inflow Depth > 3.01" for 100-Year event
Inflow =	1,553.40 cfs @	11.89 hrs,	Volume= 165.019 af
Outflow =	1,383.41 cfs @	11.93 hrs,	Volume= 164.732 af, Atten= 11%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 10.29 fps, Min. Travel Time= 1.3 min
 Avg. Velocity = 4.94 fps, Avg. Travel Time= 2.7 min

Peak Storage= 112,340 cf @ 11.91 hrs
 Average Depth at Peak Storage= 7.21'
 Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040
 Side Slope Z-value= 2.0 ' / ' Top Width= 22.00'
 Length= 800.0' Slope= 0.0187 ' / '
 Inlet Invert= 928.00', Outlet Invert= 913.00'



Packet Solar Array Existing

Type II 24-hr 100-Year Rainfall=5.79"

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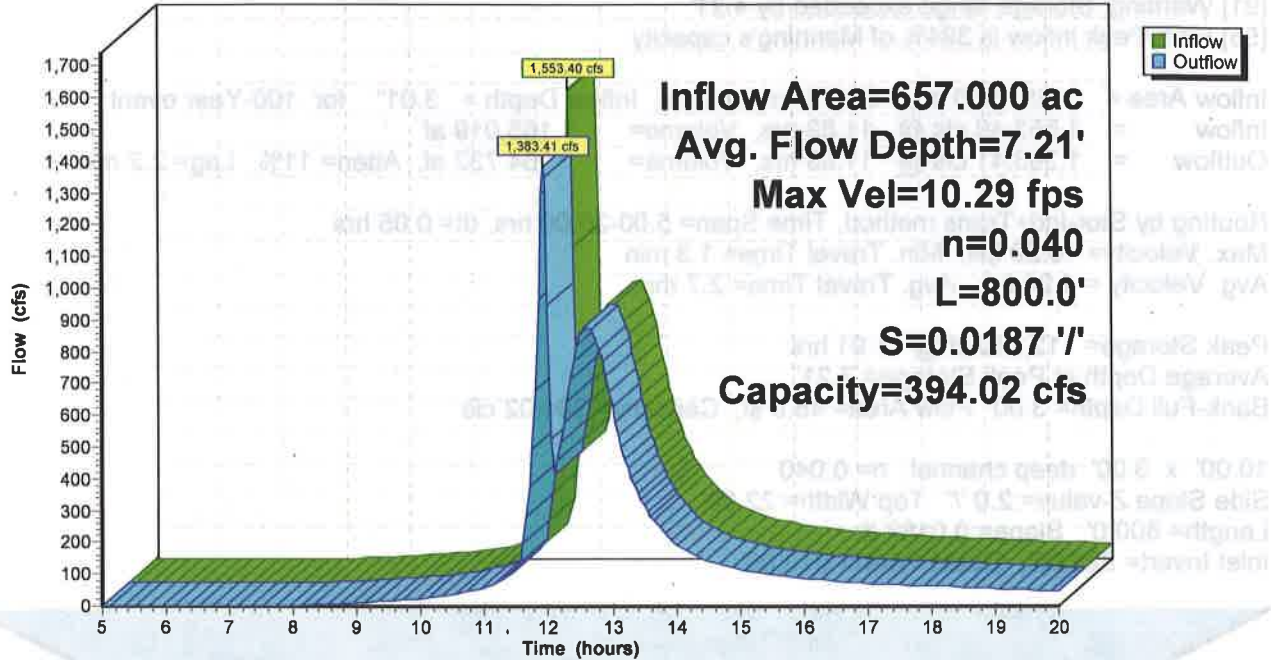
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Reach 6R: Stream from C and B to discharge of A

Hydrograph



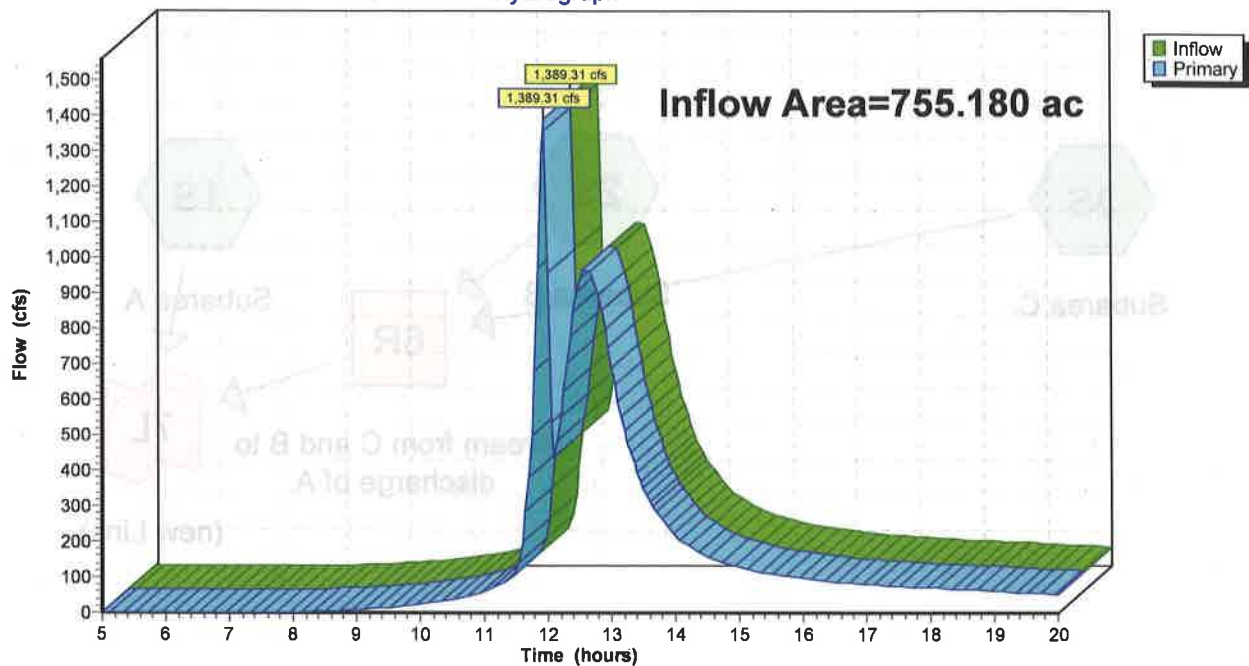
Summary for Link 7L: (new Link)

Inflow Area = 755.180 ac, 0.13% Impervious, Inflow Depth > 2.83" for 100-Year event
Inflow = 1,389.31 cfs @ 11.93 hrs, Volume= 178.165 af
Primary = 1,389.31 cfs @ 11.93 hrs, Volume= 178.165 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

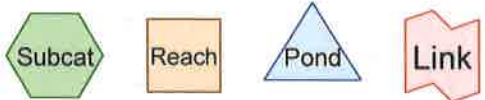
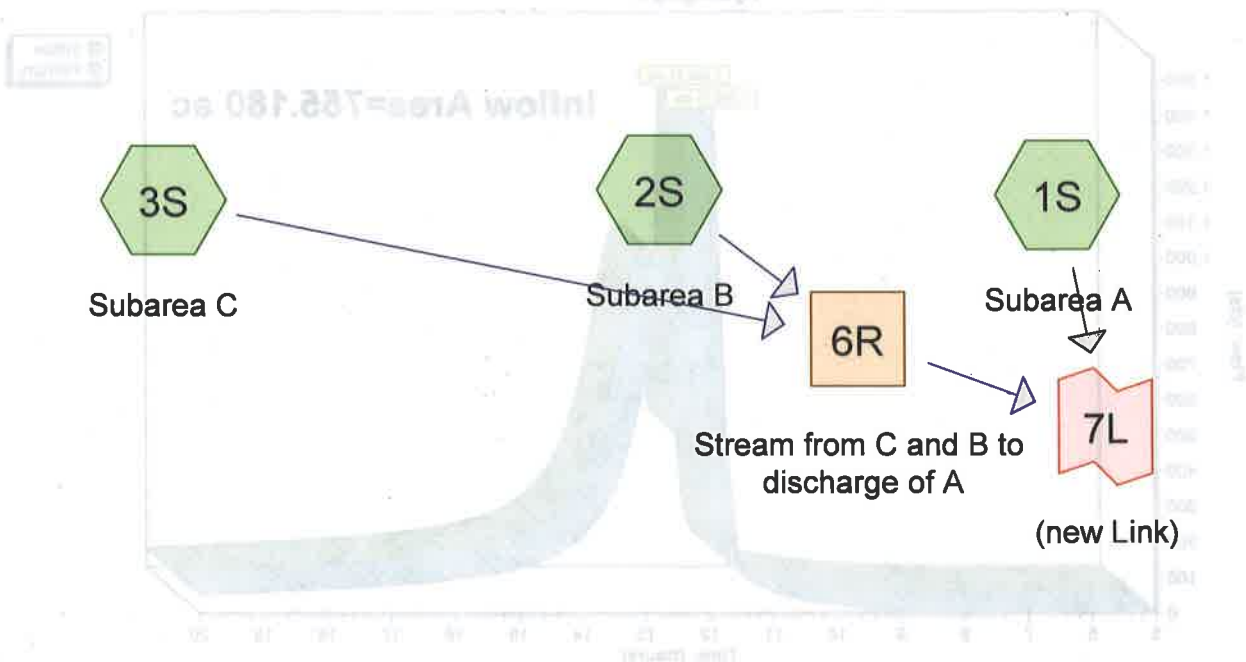
Hydrograph



Summary for Link 7L: (new Link)

Primary outflow = Inflow, Time Span = 2.00-20.00 hrs, Sls = 0.05 hrs
 Primary = 1,389.31 cfs @ 11.82 hrs, Volume = 175,185 cu ft, Area = 0.0 mm
 Inflow = 1,389.31 cfs @ 11.82 hrs, Volume = 175,185 cu ft
 Inflow Area = 755,180 sq ft, Inflow Depth = 2.32, for 100-Year event

Link 7L: (new Link)



Pocket Solar Array Proposed

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)	Subcatchment Number	HSG Group	Area (acres)
4.000	87	Dirt roads, HSG C (3S)	12	HSG A	24.000
15.000	82	Farmsteads, HSG C (2S, 3S)		HSG B	0.000
1.000	89	Gravel roads, HSG C (2S)	12, 25, 26	HSG C	148.000
28.800	30	Meadow, non-grazed, HSG A (1S)	12, 24, 25	HSG D	100.000
241.300	71	Meadow, non-grazed, HSG C (1S, 2S, 3S)		Other	0.000
40.000	78	Meadow, non-grazed, HSG D (2S)	TOTAL AREA		855.180
2.000	92	Paved roads w/open ditches, 50% imp, HSG C (2S)			
0.280	36	Woods, Fair, HSG A (1S)			
53.500	73	Woods, Fair, HSG C (1S, 3S)			
369.300	79	Woods, Fair, HSG D (1S, 2S, 3S)			
100.000	82	Woods/grass comb., Fair, HSG D (2S)			
855.180	75	TOTAL AREA			

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers	Description (subcatchment number)	CM	Area (acres)
29.080	HSG A	1S	1S1 non-irrig HSG C (28)	87	4.000
0.000	HSG B		1S2 non-irrig HSG C (28, 29)	87	0.000
316.800	HSG C	1S, 2S, 3S	1S3 non-irrig HSG C (28)	88	1.000
509.300	HSG D	1S, 2S, 3S	1S4 non-irrig HSG A (18)	88	38.000
0.000	Other		1S5 non-irrig HSG C (18, 28, 29)	77	241.300
855.180		TOTAL AREA	1S6 non-irrig HSG D (28)	78	40.000
			1S7 non-irrig HSG C (28)	82	2.000
			1S8 non-irrig HSG A (18)	88	0.200
			1S9 non-irrig HSG C (18, 28)	73	87.000
			1S10 non-irrig HSG D (18, 28, 29)	78	388.300
			1S11 non-irrig comp. fall HSG D (28)	82	100.000
			TOTAL AREA	78	855.180

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatcl Numbers
0.000	0.000	4.000	0.000	0.000	4.000	Dirt roads	
0.000	0.000	15.000	0.000	0.000	15.000	Farmsteads	
0.000	0.000	1.000	0.000	0.000	1.000	Gravel roads	
28.800	0.000	241.300	40.000	0.000	310.100	Meadow, non-grazed	
0.000	0.000	2.000	0.000	0.000	2.000	Paved roads w/open ditches, 50% imp	
0.280	0.000	53.500	369.300	0.000	423.080	Woods, Fair	
0.000	0.000	0.000	100.000	0.000	100.000	Woods/grass comb., Fair	
29.080	0.000	316.800	509.300	0.000	855.180	TOTAL AREA	

Info=243.91 cfs @ 143 ft
 Power=243.91 cfs @ 143 ft
 Link 31 (new Link)
 Total Runoff Area = 855.180 ac Runoff Volume = 28.582 ac Average Runoff Depth = 0.33"
 99.88% Pervious = 855.180 ac 0.13% Impervious = 1.002 ac

Pocket Solar Array Proposed

Type II 24-hr 2-Year Rainfall=2.41"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A

Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>0.11"
Flow Length=4,126' Tc=56.4 min CN=60 Runoff=2.94 cfs 0.935 af

Subcatchment2S: Subarea B

Runoff Area=528.000 ac 0.19% Impervious Runoff Depth>0.64"
Flow Length=7,400' Tc=57.0 min CN=78 Runoff=191.88 cfs 28.148 af

Subcatchment3S: Subarea C

Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>0.53"
Tc=0.0 min CN=75 Runoff=275.74 cfs 10.199 af

Reach 6R: Stream from C and B to

Avg. Flow Depth=2.40' Max Vel=7.16 fps Inflow=283.18 cfs 38.347 af
n=0.040 L=800.0' S=0.0187 '/ Capacity=394.02 cfs Outflow=243.91 cfs 38.207 af

Link 7L: (new Link)

Inflow=243.91 cfs 39.142 af
Primary=243.91 cfs 39.142 af

Total Runoff Area = 855.180 ac Runoff Volume = 39.282 af Average Runoff Depth = 0.55"
99.88% Pervious = 854.180 ac 0.12% Impervious = 1.000 ac

Pocket Solar Array Proposed

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Subcatchment 1S: Subarea A

Runoff = 2.94 cfs @ 12.95 hrs, Volume= 0.935 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.41"

Area (ac)	CN	Description
8.500	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
51.300	71	Meadow, non-grazed, HSG C
98.180	60	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

Pucket Solar Array Proposed

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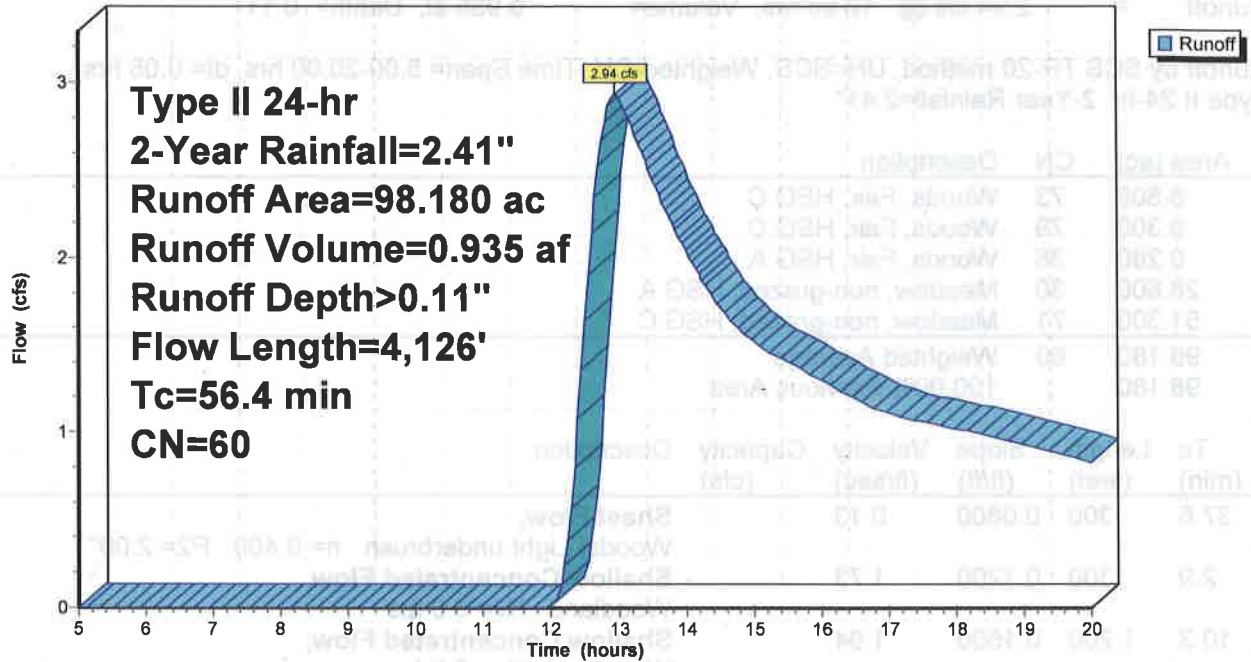
Type II 24-hr 2-Year Rainfall=2.41"

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Subcatchment 1S: Subarea A

Hydrograph



Pocket Solar Array Proposed

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Subcatchment 2S: Subarea B

Runoff = 191.88 cfs @ 12.63 hrs, Volume= 28.148 af, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.41"

Area (ac)	CN	Description
260.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
40.000	78	Meadow, non-grazed, HSG D
528.000	78	Weighted Average
527.000		99.81% Pervious Area
1.000		0.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

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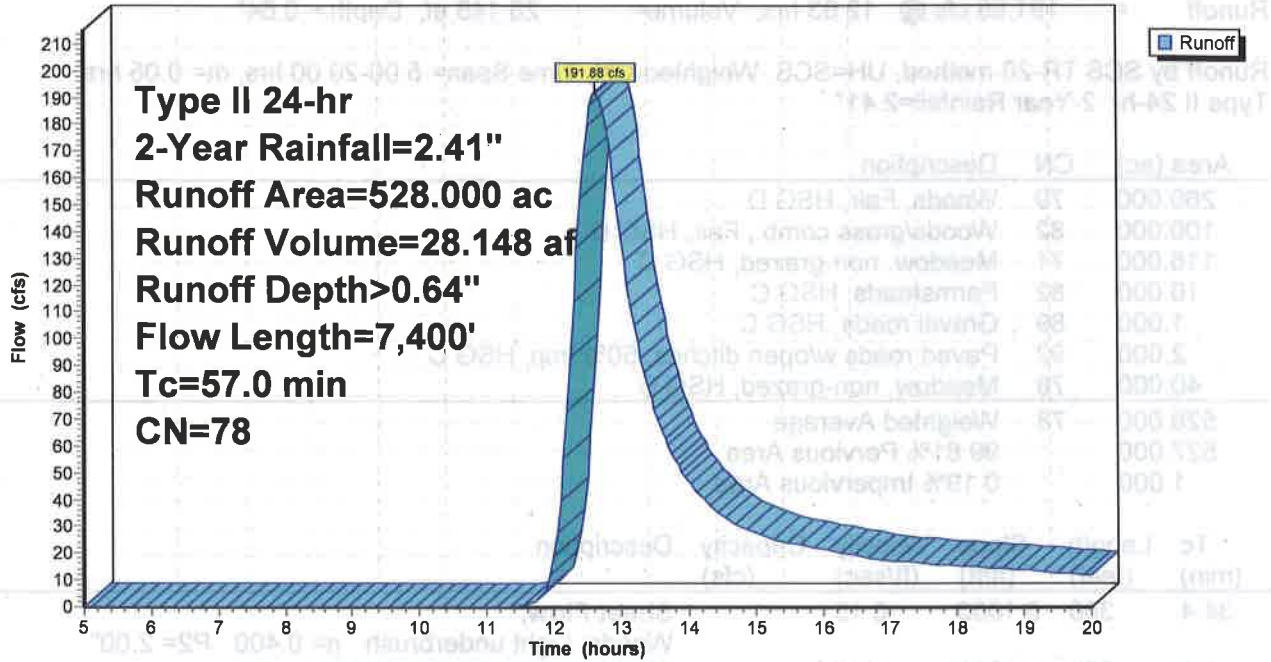
Type II 24-hr 2-Year Rainfall=2.41"

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Subcatchment 2S: Subarea B

Hydrograph



Area	Flow	Volume	Depth	Length	Tc	CN
528.000 ac	191.88 cfs	28.148 af	>0.64"	7,400'	57.0 min	78
Total						

Pucket Solar Array Proposed

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Subcatchment 3S: Subarea C

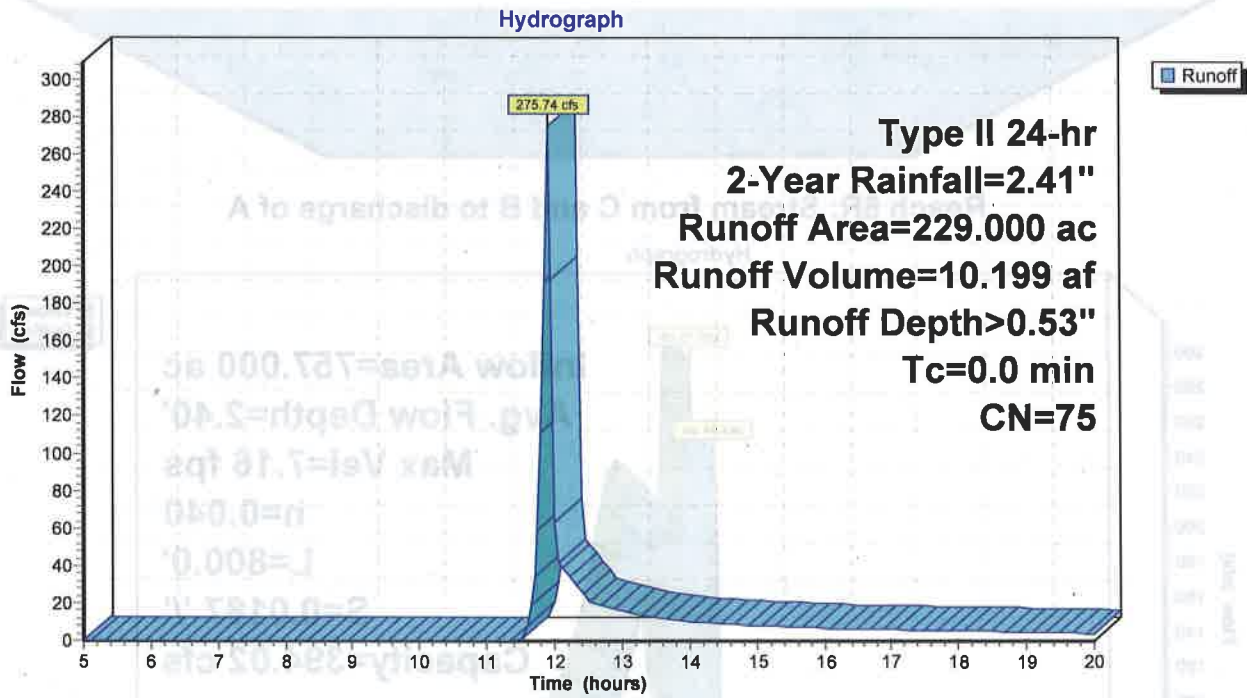
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 275.74 cfs @ 11.90 hrs, Volume= 10.199 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=2.41"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C



Pucket Solar Array Proposed

Type II 24-hr 2-Year Rainfall=2.41"

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Summary for Reach 6R: Stream from C and B to discharge of A

Inflow Area = 757.000 ac, 0.13% Impervious, Inflow Depth > 0.61" for 2-Year event
 Inflow = 283.18 cfs @ 11.90 hrs, Volume= 38.347 af
 Outflow = 243.91 cfs @ 11.95 hrs, Volume= 38.207 af, Atten= 14%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 7.16 fps, Min. Travel Time= 1.9 min
 Avg. Velocity = 3.93 fps, Avg. Travel Time= 3.4 min

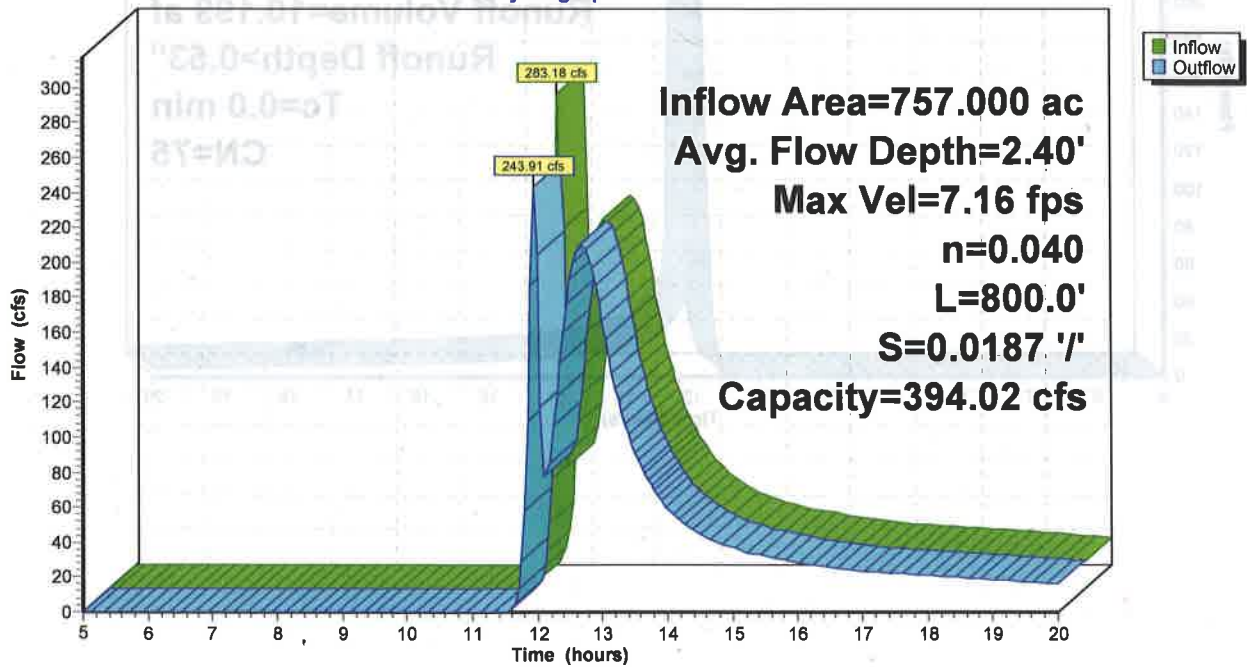
Peak Storage= 28,337 cf @ 11.93 hrs
 Average Depth at Peak Storage= 2.40'
 Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040
 Side Slope Z-value= 2.0 '/' Top Width= 22.00'
 Length= 800.0' Slope= 0.0187 '/'
 Inlet Invert= 928.00', Outlet Invert= 913.00'



Reach 6R: Stream from C and B to discharge of A

Hydrograph



Packet Solar Array Proposed

Type II 24-hr 2-Year Rainfall=2.41"

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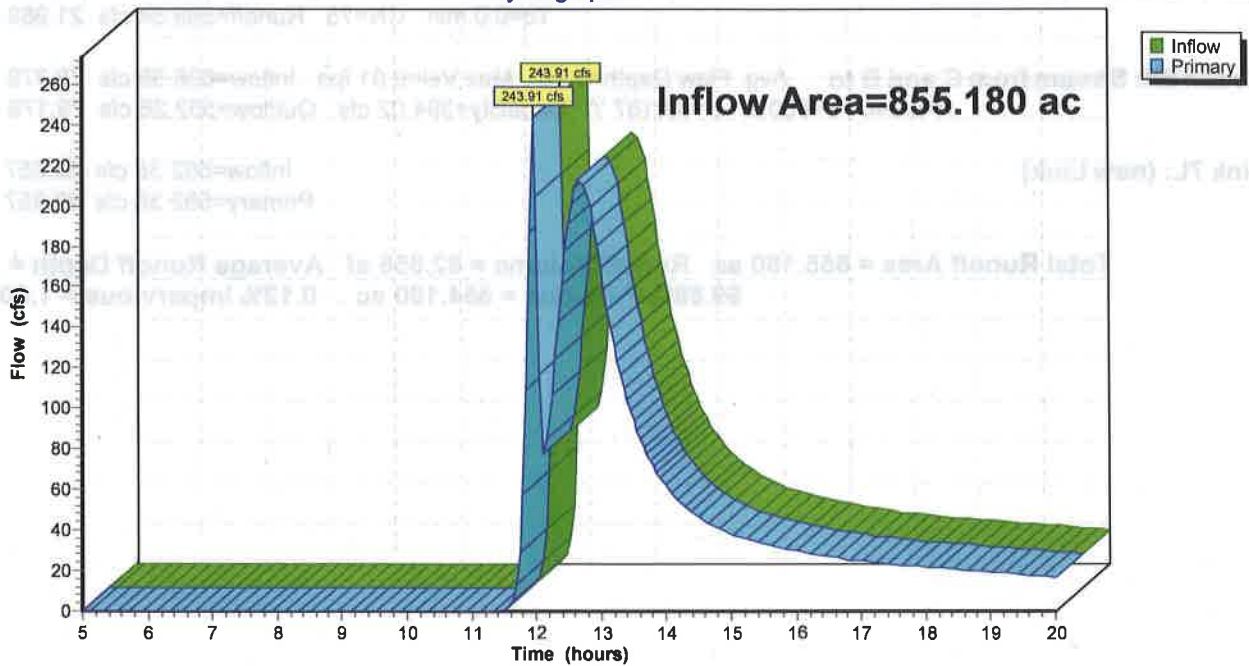
Summary for Link 7L: (new Link)

Inflow Area = 855.180 ac, 0.12% Impervious, Inflow Depth > 0.55" for 2-Year event
Inflow = 243.91 cfs @ 11.95 hrs, Volume= 39.142 af
Primary = 243.91 cfs @ 11.95 hrs, Volume= 39.142 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

Hydrograph



Pucket Solar Array Proposed

Type II 24-hr 10-Year Rainfall=3.45"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A

Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>0.43"
Flow Length=4,126' Tc=56.4 min CN=60 Runoff=18.56 cfs 3.478 af

Subcatchment2S: Subarea B

Runoff Area=528.000 ac 0.19% Impervious Runoff Depth>1.30"
Flow Length=7,400' Tc=57.0 min CN=78 Runoff=413.95 cfs 57.389 af

Subcatchment3S: Subarea C

Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>1.15"
Tc=0.0 min CN=75 Runoff=599.54 cfs 21.989 af

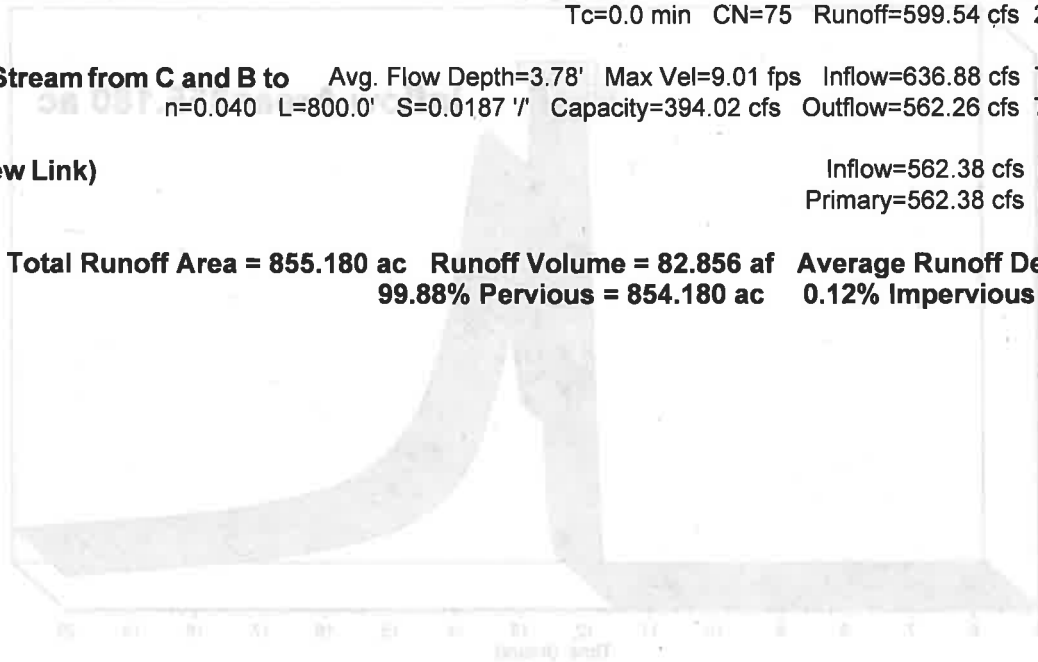
Reach 6R: Stream from C and B to

Avg. Flow Depth=3.78' Max Vel=9.01 fps Inflow=636.88 cfs 79.378 af
n=0.040 L=800.0' S=0.0187 ' Capacity=394.02 cfs Outflow=562.26 cfs 79.179 af

Link 7L: (new Link)

Inflow=562.38 cfs 82.657 af
Primary=562.38 cfs 82.657 af

Total Runoff Area = 855.180 ac Runoff Volume = 82.856 af Average Runoff Depth = 1.16"
99.88% Pervious = 854.180 ac 0.12% Impervious = 1.000 ac



Packet Solar Array Proposed

Type II 24-hr 10-Year Rainfall=3.45"

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Summary for Subcatchment 1S: Subarea A

Runoff = 18.56 cfs @ 12.73 hrs, Volume= 3.478 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.45"

Area (ac)	CN	Description
8.500	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
51.300	71	Meadow, non-grazed, HSG C
98.180	60	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

Pocket Solar Array Proposed

Type II 24-hr 10-Year Rainfall=3.45"

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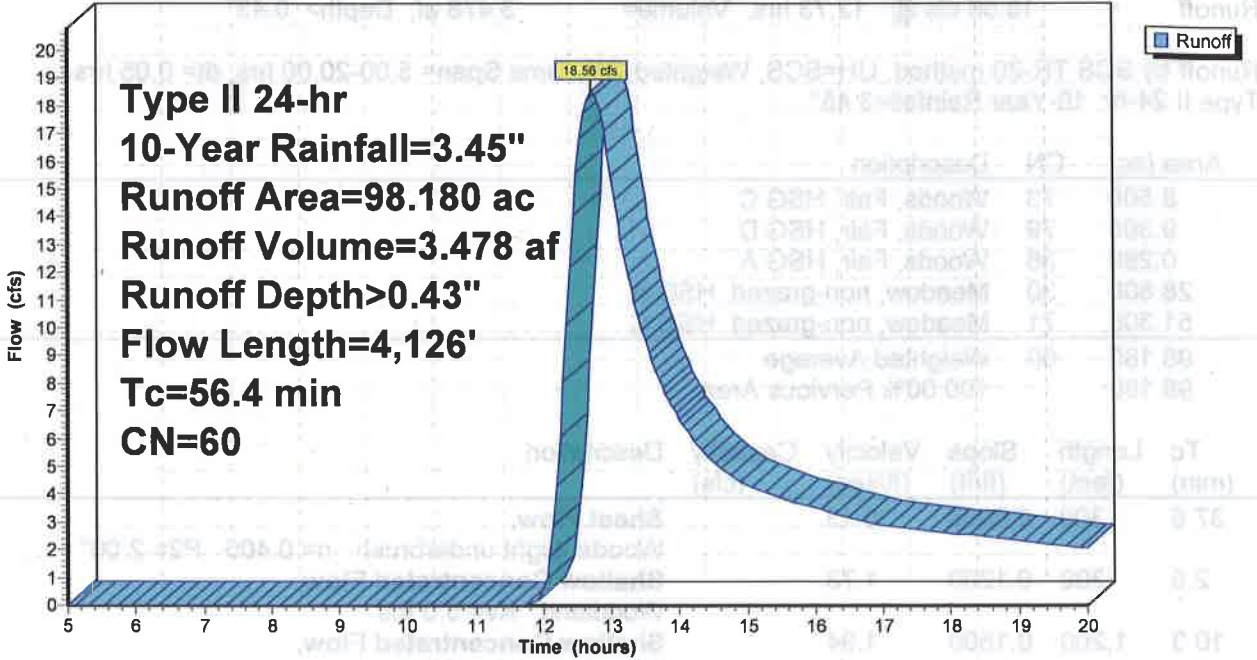
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Subcatchment 1S: Subarea A

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.45"

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Summary for Subcatchment 2S: Subarea B

Runoff = 413.95 cfs @ 12.61 hrs, Volume= 57.389 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.45"

Area (ac)	CN	Description
260.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
40.000	78	Meadow, non-grazed, HSG D
528.000	78	Weighted Average
527.000		99.81% Pervious Area
1.000		0.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

Pocket Solar Array Proposed

Type II 24-hr 10-Year Rainfall=3.45"

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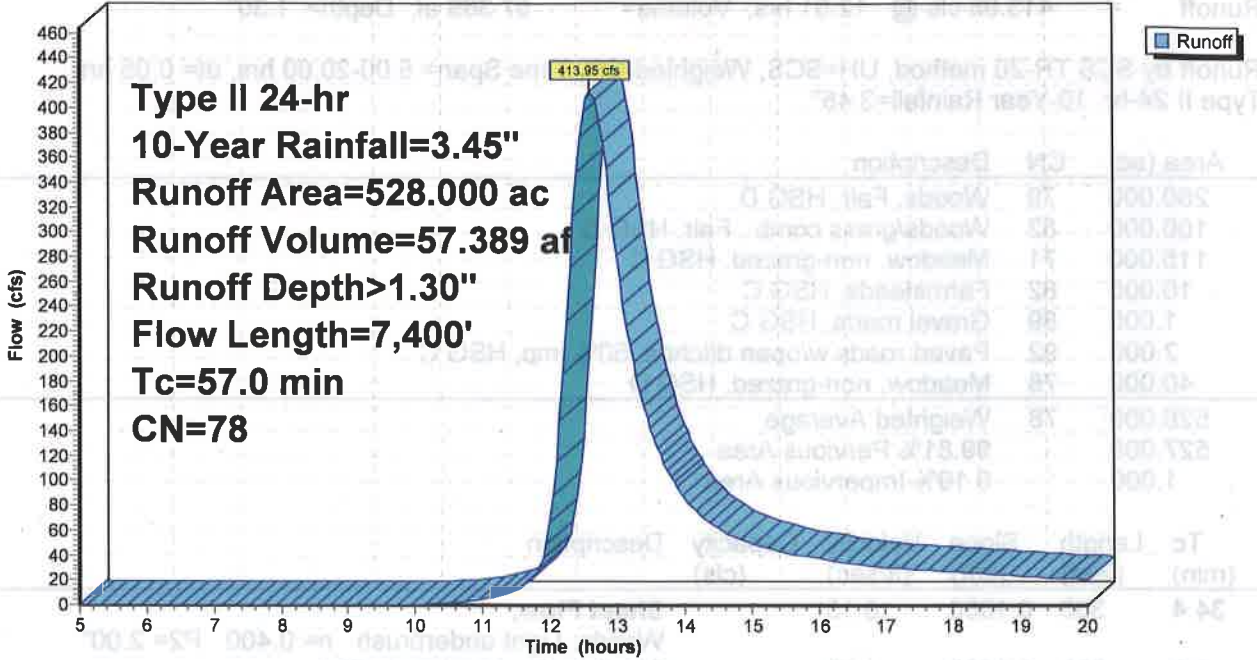
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Subcatchment 2S: Subarea B

Hydrograph



Description	Area (ac)	Weighted Average
Wooded, Fair, HSD D	200.00	78
Woodlands, poor, Fair, HSD	100.00	82
Meadow, non-grass, HSD	110.00	71
Farmstead, HSD C	10.00	82
Gravel, HSD C	1.00	99
Farm, road, w/ open ditch, HSD	2.00	82
Meadow, non-grass, HSD	40.00	78
Weighted Average	528.00	78
99.87% Paved Area	527.00	
0.13% Impervious Area	1.00	
Tc (min)	57.0	
Flow Length (ft)	7400	
Channel Flow	1.800	0.1500
Shallow Concentrated Flow	10.24	0.1500
Channel Flow	2.000	0.0500
Channel Flow	101.43	0.0500
Channel Flow	102.93	0.0000
Total	87.0	7400

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Type II 24-hr 10-Year Rainfall=3.45"

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Summary for Subcatchment 3S: Subarea C

[46] Hint: $T_c=0$ (Instant runoff peak depends on dt)

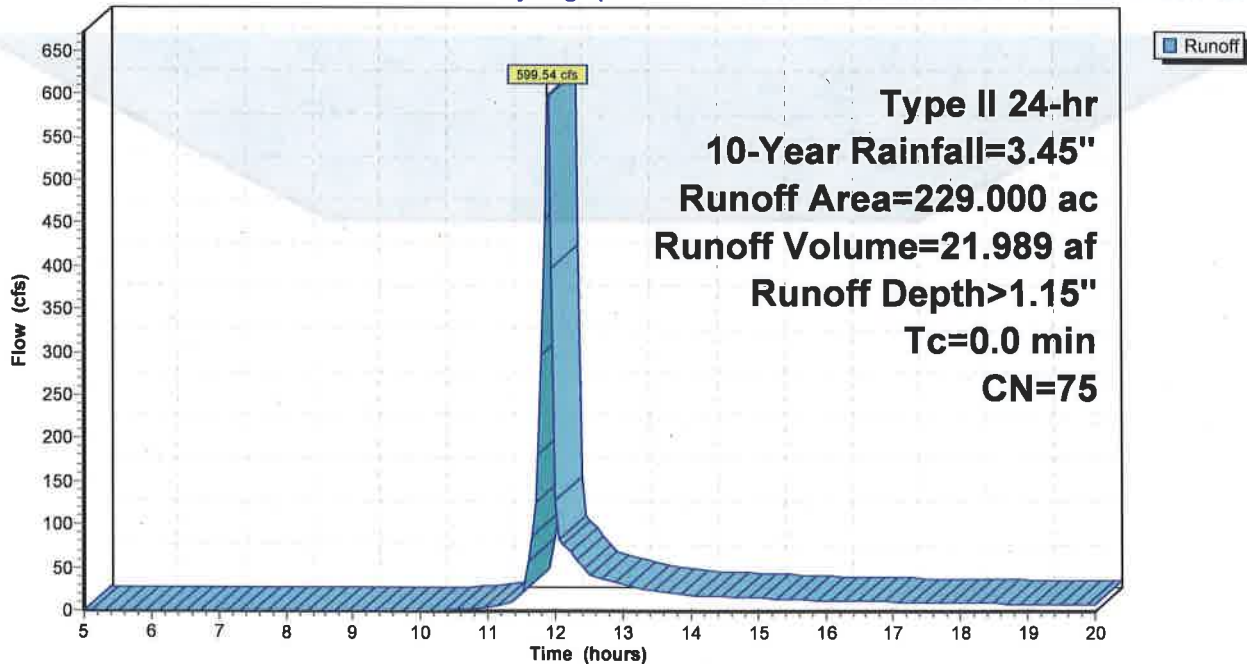
Runoff = 599.54 cfs @ 11.90 hrs, Volume= 21.989 af, Depth > 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.45"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C

Hydrograph



Pucket Solar Array Proposed

Type II 24-hr 10-Year Rainfall=3.45"

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Summary for Reach 6R: Stream from C and B to discharge of A

[91] Warning: Storage range exceeded by 0.78'

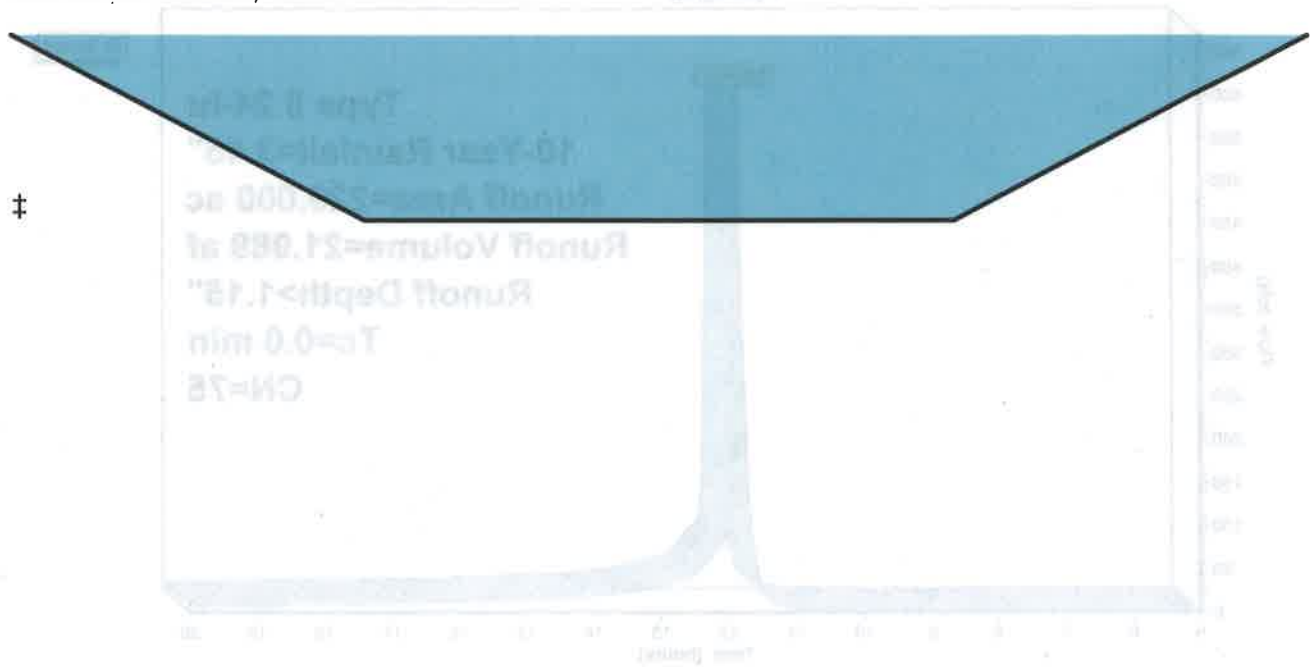
[55] Hint: Peak inflow is 162% of Manning's capacity

Inflow Area = 757.000 ac, 0.13% Impervious, Inflow Depth > 1.26" for 10-Year event
Inflow = 636.88 cfs @ 11.90 hrs, Volume= 79.378 af
Outflow = 562.26 cfs @ 11.94 hrs, Volume= 79.179 af, Atten= 12%, Lag= 2.5 min

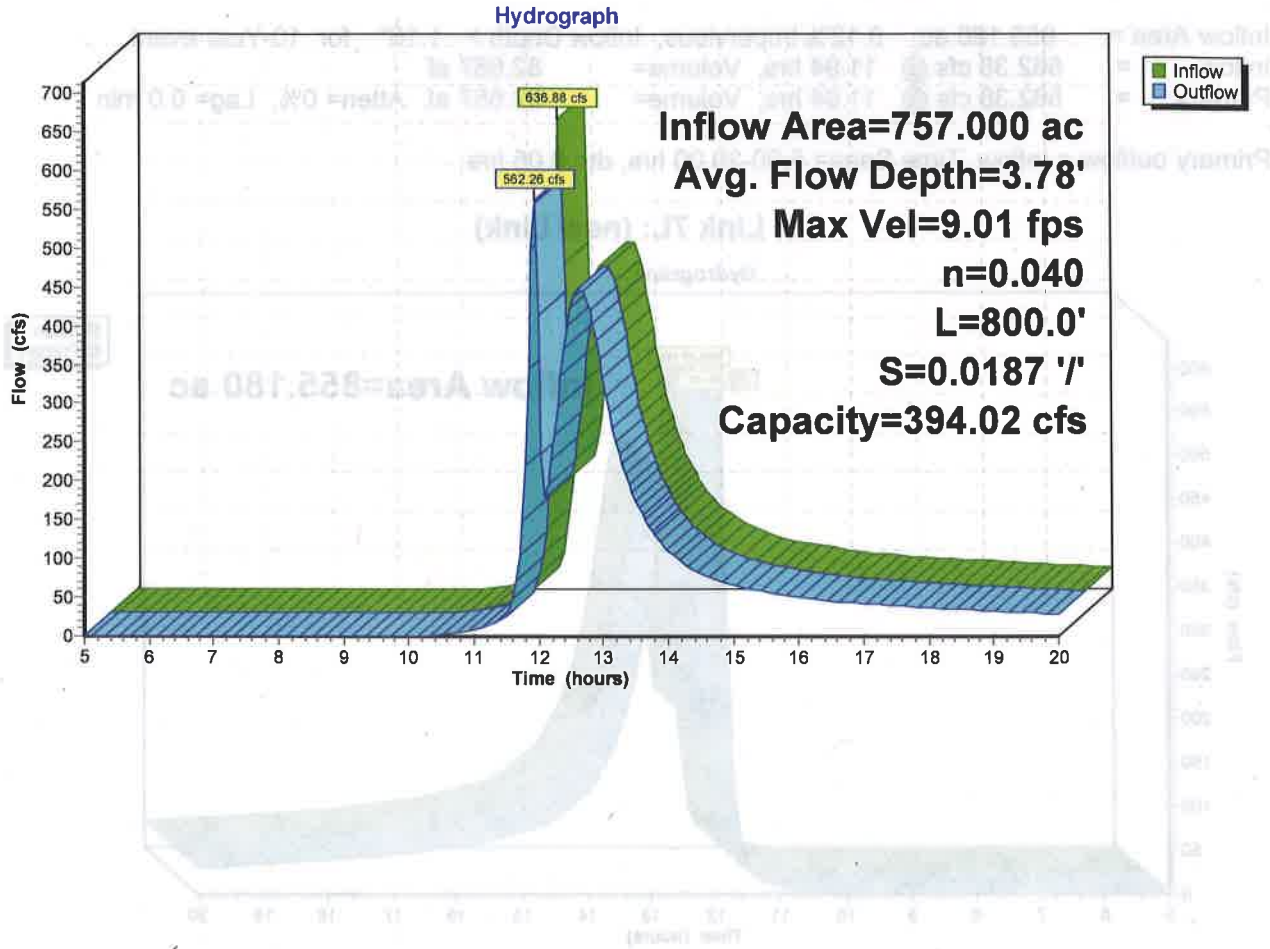
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.01 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 4.46 fps, Avg. Travel Time= 3.0 min

Peak Storage= 52,012 cf @ 11.91 hrs
Average Depth at Peak Storage= 3.78'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040
Side Slope Z-value= 2.0 ' / ' Top Width= 22.00'
Length= 800.0' Slope= 0.0187 ' / '
Inlet Invert= 928.00', Outlet Invert= 913.00'



Reach 6R: Stream from C and B to discharge of A



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Type II 24-hr 10-Year Rainfall=3.45"

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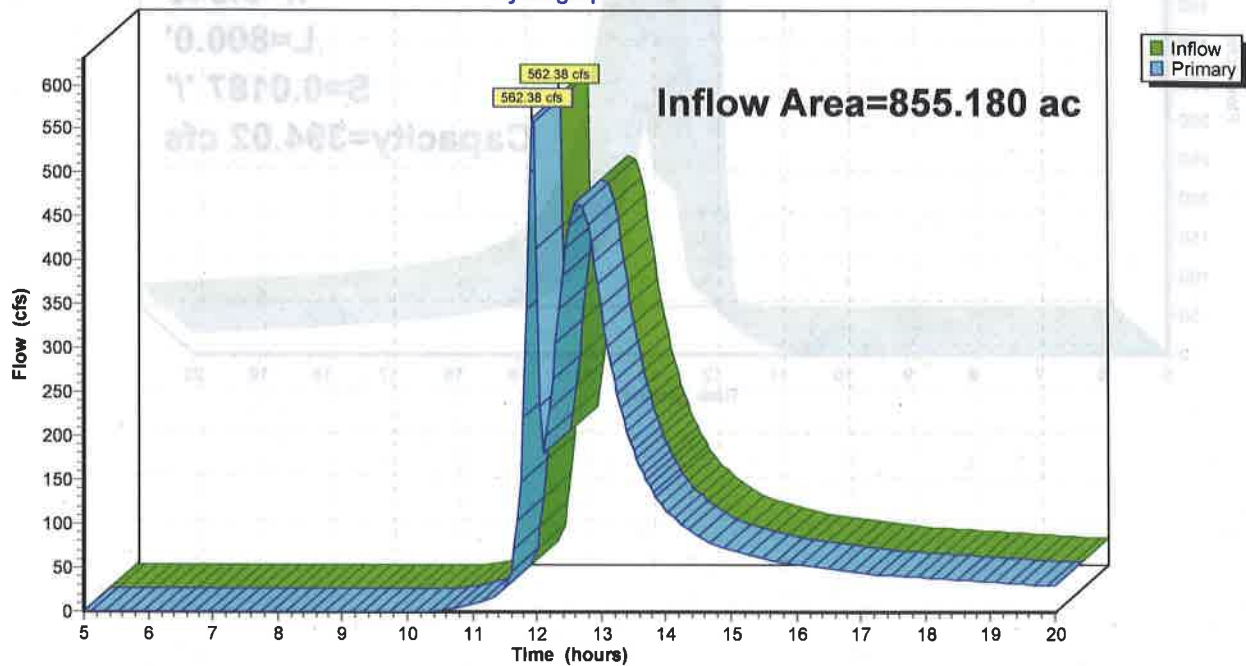
Summary for Link 7L: (new Link)

Inflow Area = 855.180 ac, 0.12% Impervious, Inflow Depth > 1.16" for 10-Year event
Inflow = 562.38 cfs @ 11.94 hrs, Volume= 82.657 af
Primary = 562.38 cfs @ 11.94 hrs, Volume= 82.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

Hydrograph



Pocket Solar Array Proposed

Type II 24-hr 50-Year Rainfall=4.96"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A

Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>1.11"
Flow Length=4,126' Tc=56.4 min CN=60 Runoff=59.68 cfs 9.069 af

Subcatchment2S: Subarea B

Runoff Area=528.000 ac 0.19% Impervious Runoff Depth>2.43"
Flow Length=7,400' Tc=57.0 min CN=78 Runoff=780.97 cfs 106.767 af

Subcatchment3S: Subarea C

Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>2.23"
Tc=0.0 min CN=75 Runoff=1,135.10 cfs 42.499 af

Reach 6R: Stream from C and B

Avg. Flow Depth=6.01' Max Vel=10.03 fps Inflow=1,231.29 cfs 149.266 af
n=0.040 L=800.0' S=0.0187 '/' Capacity=394.02 cfs Outflow=1,095.86 cfs 148.986 af

Link 7L: (new Link)

Inflow=1,097.72 cfs 158.055 af
Primary=1,097.72 cfs 158.055 af

Total Runoff Area = 855.180 ac Runoff Volume = 158.335 af Average Runoff Depth = 2.22"
99.88% Pervious = 854.180 ac 0.12% Impervious = 1.000 ac

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Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Subcatchment 1S: Subarea A

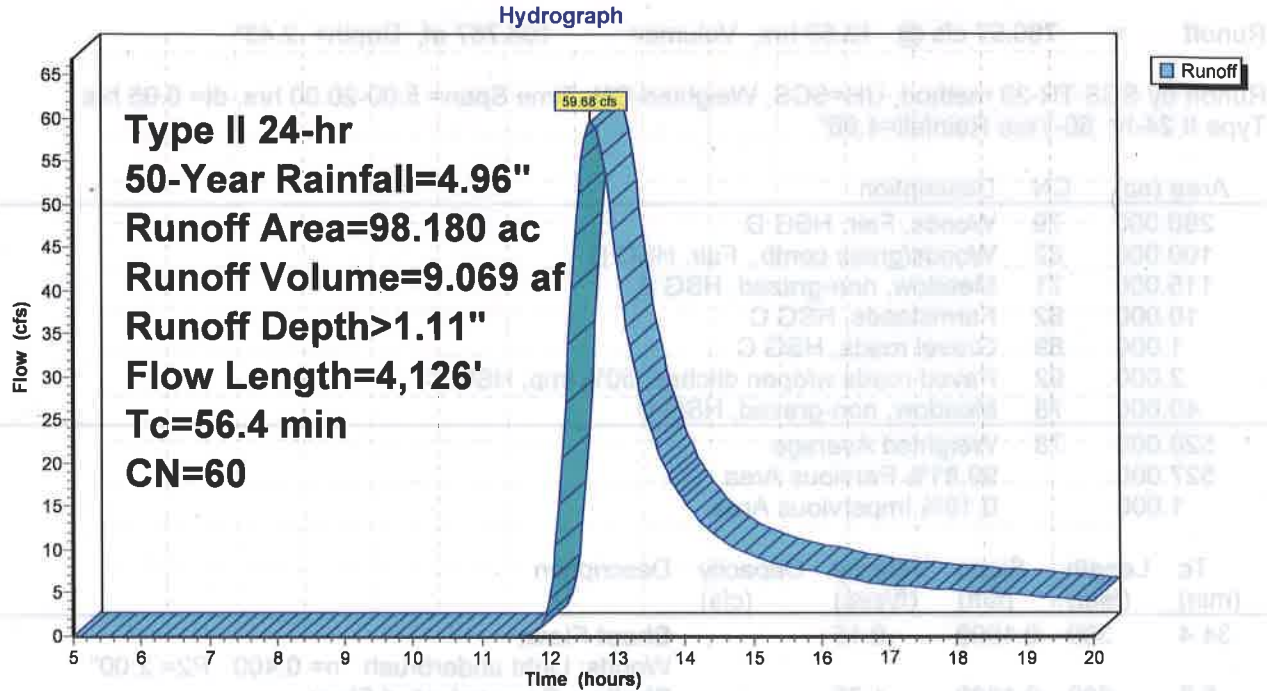
Runoff = 59.68 cfs @ 12.64 hrs, Volume= 9.069 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.96"

Area (ac)	CN	Description
8.500	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
51.300	71	Meadow, non-grazed, HSG C
98.180	60	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

Subcatchment 1S: Subarea A



Packet Solar Array Proposed

Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Subcatchment 2S: Subarea B

Runoff = 780.97 cfs @ 12.59 hrs, Volume= 106.767 af, Depth> 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.96"

Area (ac)	CN	Description
260.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
40.000	78	Meadow, non-grazed, HSG D
528.000	78	Weighted Average
527.000		99.81% Pervious Area
1.000		0.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

Pocket Solar Array Proposed

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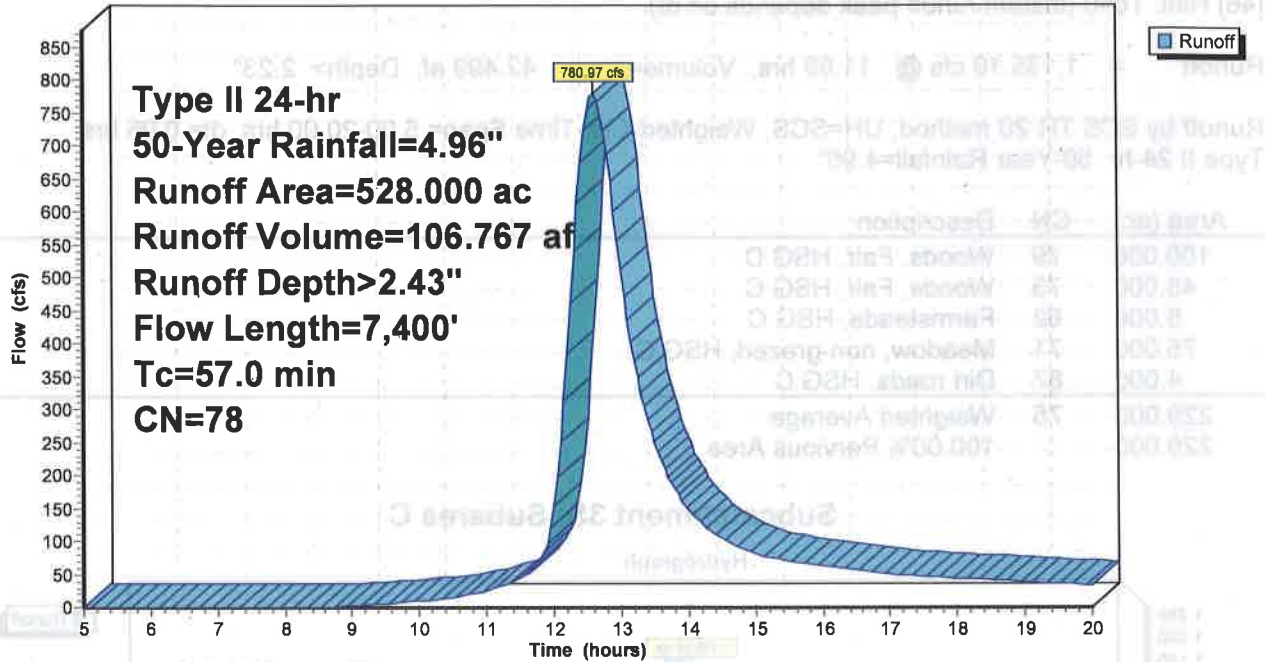
Type II 24-hr 50-Year Rainfall=4.96"

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Subcatchment 2S: Subarea B

Hydrograph



Type II 24-hr
50-Year Rainfall=4.96"
Runoff Area=528.000 ac
Runoff Volume=106.767 af
Runoff Depth>2.43"
Tc=57.0 min
CN=78

Packet Solar Array Proposed

Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Subcatchment 3S: Subarea C

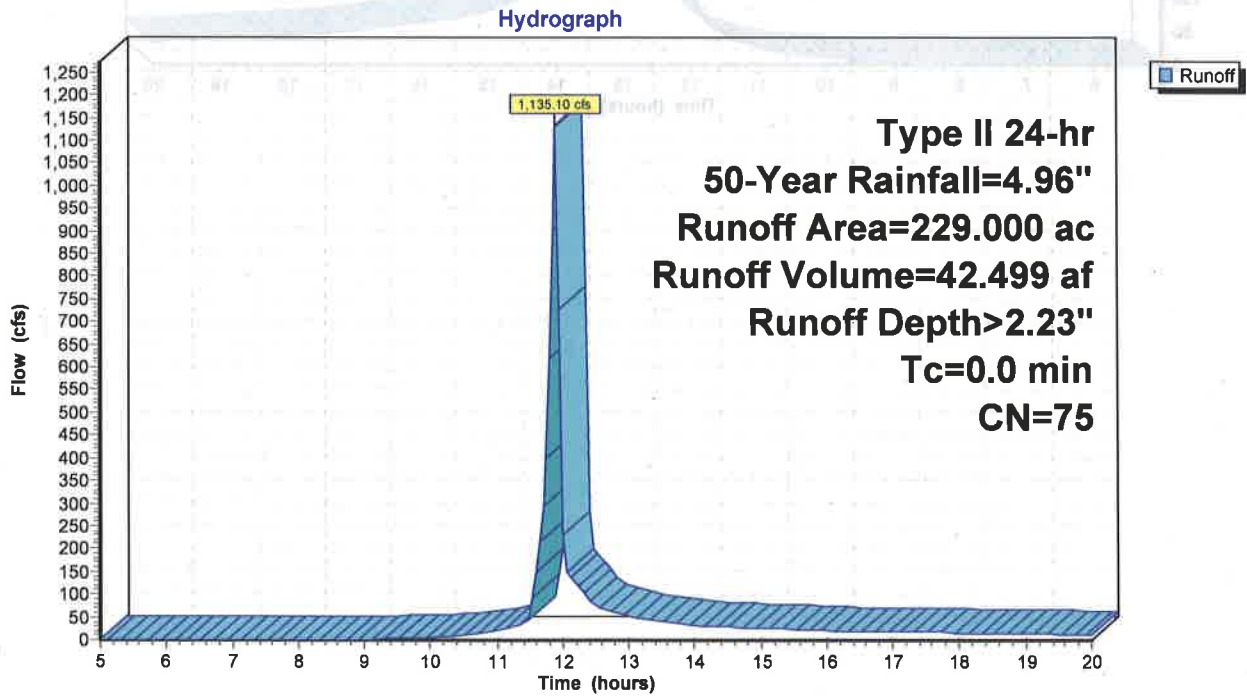
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1,135.10 cfs @ 11.89 hrs, Volume= 42.499 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.96"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C



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Type II 24-hr 50-Year Rainfall=4.96"

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Summary for Reach 6R: Stream from C and B to discharge of A

[91] Warning: Storage range exceeded by 3.01'

[55] Hint: Peak inflow is 312% of Manning's capacity

Inflow Area = 757.000 ac, 0.13% Impervious, Inflow Depth > 2.37" for 50-Year event
Inflow = 1,231.29 cfs @ 11.89 hrs, Volume= 149.266 af
Outflow = 1,095.86 cfs @ 11.93 hrs, Volume= 148.986 af, Atten= 11%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.03 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 4.95 fps, Avg. Travel Time= 2.7 min

Peak Storage= 91,145 cf @ 11.91 hrs
Average Depth at Peak Storage= 6.01'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 22.00'
Length= 800.0' Slope= 0.0187 '/'
Inlet Invert= 928.00', Outlet Invert= 913.00'



Packet Solar Array Proposed

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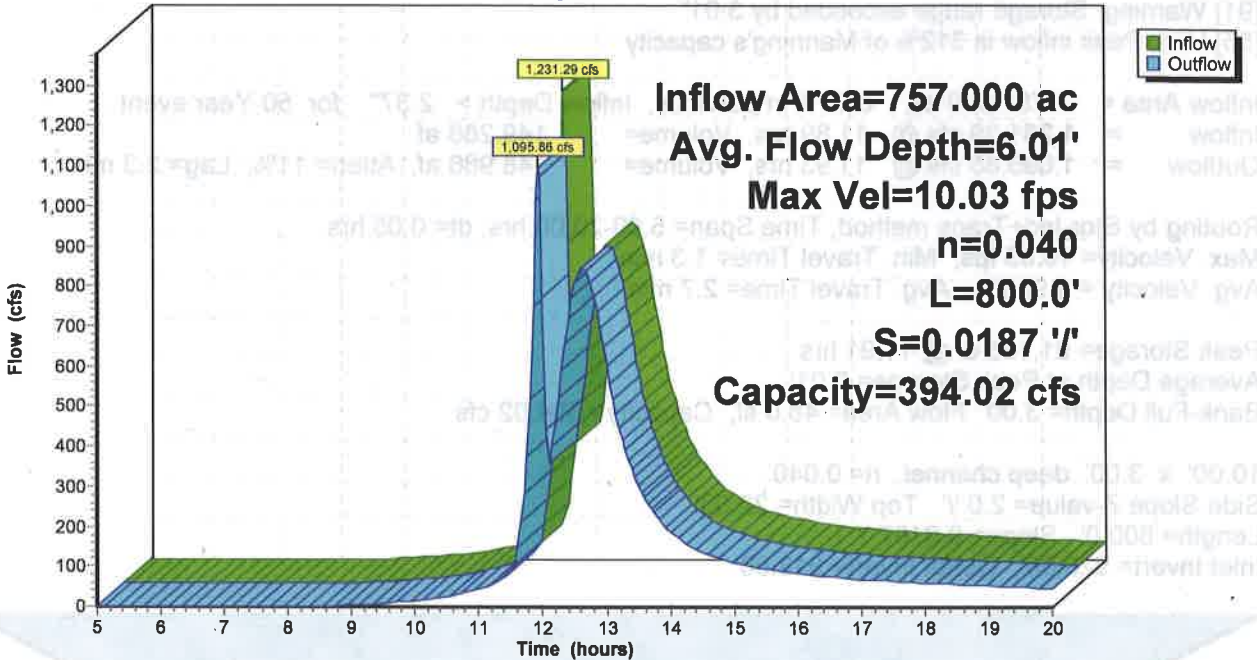
Type II 24-hr 50-Year Rainfall=4.96"

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Reach 6R: Stream from C and B to discharge of A

Hydrograph



Packet Solar Array Proposed

Type II 24-hr 50-Year Rainfall=4.96"

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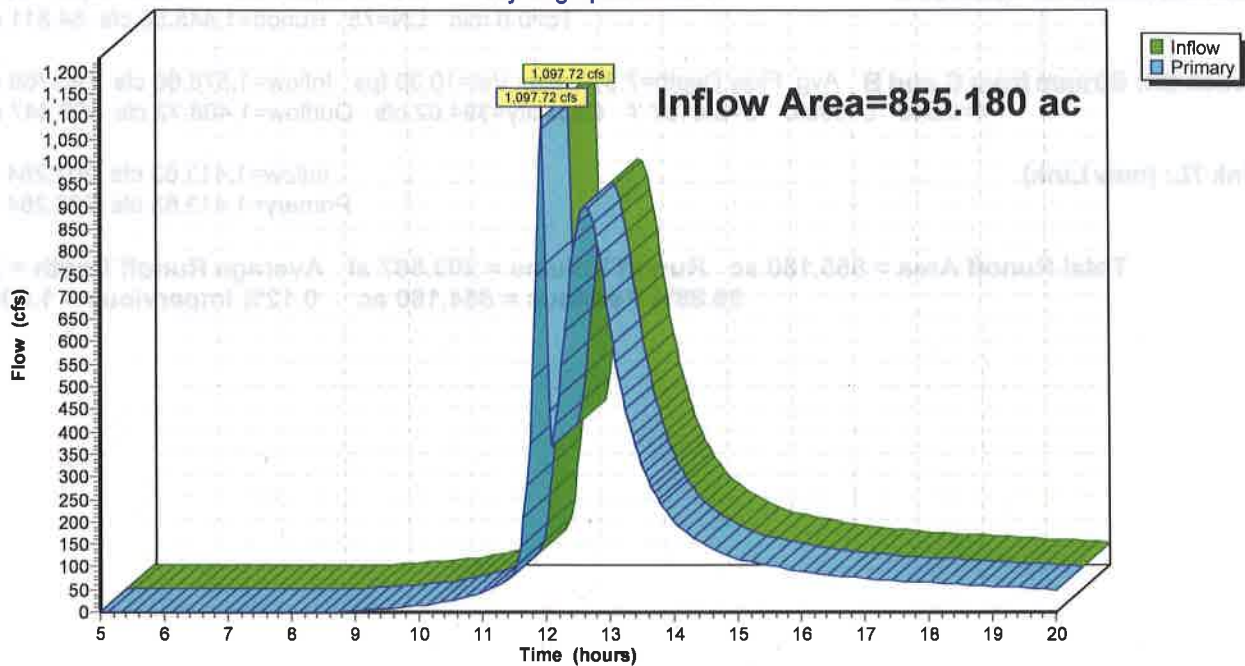
Summary for Link 7L: (new Link)

Inflow Area = 855.180 ac, 0.12% Impervious, Inflow Depth > 2.22" for 50-Year event
Inflow = 1,097.72 cfs @ 11.93 hrs, Volume= 158.055 af
Primary = 1,097.72 cfs @ 11.93 hrs, Volume= 158.055 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

Hydrograph



Packet Solar Array Proposed

Type II 24-hr 100-Year Rainfall=5.79"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subarea A

Runoff Area=98.180 ac 0.00% Impervious Runoff Depth>1.57"
Flow Length=4,126' Tc=56.4 min CN=60 Runoff=88.55 cfs 12.818 af

Subcatchment2S: Subarea B

Runoff Area=528.000 ac 0.19% Impervious Runoff Depth>3.09"
Flow Length=7,400' Tc=57.0 min CN=78 Runoff=994.09 cfs 135.958 af

Subcatchment3S: Subarea C

Runoff Area=229.000 ac 0.00% Impervious Runoff Depth>2.87"
Tc=0.0 min CN=75 Runoff=1,445.58 cfs 54.811 af

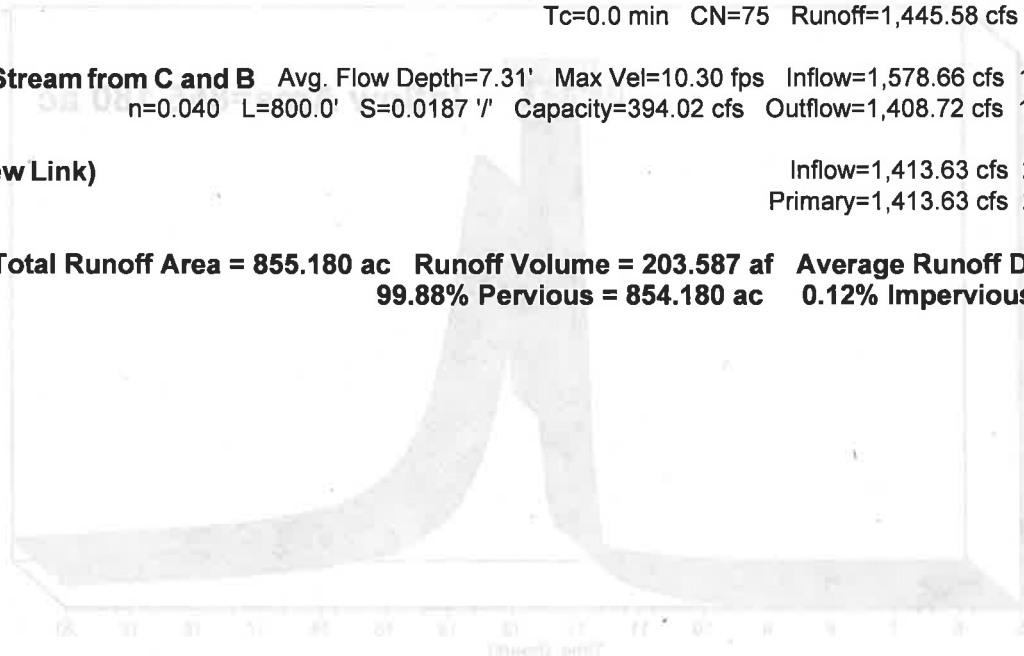
Reach 6R: Stream from C and B

Avg. Flow Depth=7.31' Max Vel=10.30 fps Inflow=1,578.66 cfs 190.769 af
n=0.040 L=800.0' S=0.0187 '/' Capacity=394.02 cfs Outflow=1,408.72 cfs 190.447 af

Link 7L: (new Link)

Inflow=1,413.63 cfs 203.264 af
Primary=1,413.63 cfs 203.264 af

Total Runoff Area = 855.180 ac Runoff Volume = 203.587 af Average Runoff Depth = 2.86"
99.88% Pervious = 854.180 ac 0.12% Impervious = 1.000 ac



Pucket Solar Array Proposed

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Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Subcatchment 1S: Subarea A

Runoff = 88.55 cfs @ 12.62 hrs, Volume= 12.818 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.79"

Area (ac)	CN	Description
8.500	73	Woods, Fair, HSG C
9.300	79	Woods, Fair, HSG D
0.280	36	Woods, Fair, HSG A
28.800	30	Meadow, non-grazed, HSG A
51.300	71	Meadow, non-grazed, HSG C
98.180	60	Weighted Average
98.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	300	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
2.9	300	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.3	1,200	0.1500	1.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	800	0.1600	10.23	81.86	Channel Flow, Area= 8.0 sf Perim= 14.0' r= 0.57' n= 0.040 Earth, cobble bottom, clean sides
4.3	1,526	0.0500	5.91	70.91	Channel Flow, Area= 12.0 sf Perim= 20.0' r= 0.60' n= 0.040
56.4	4,126	Total			

Pocket Solar Array Proposed

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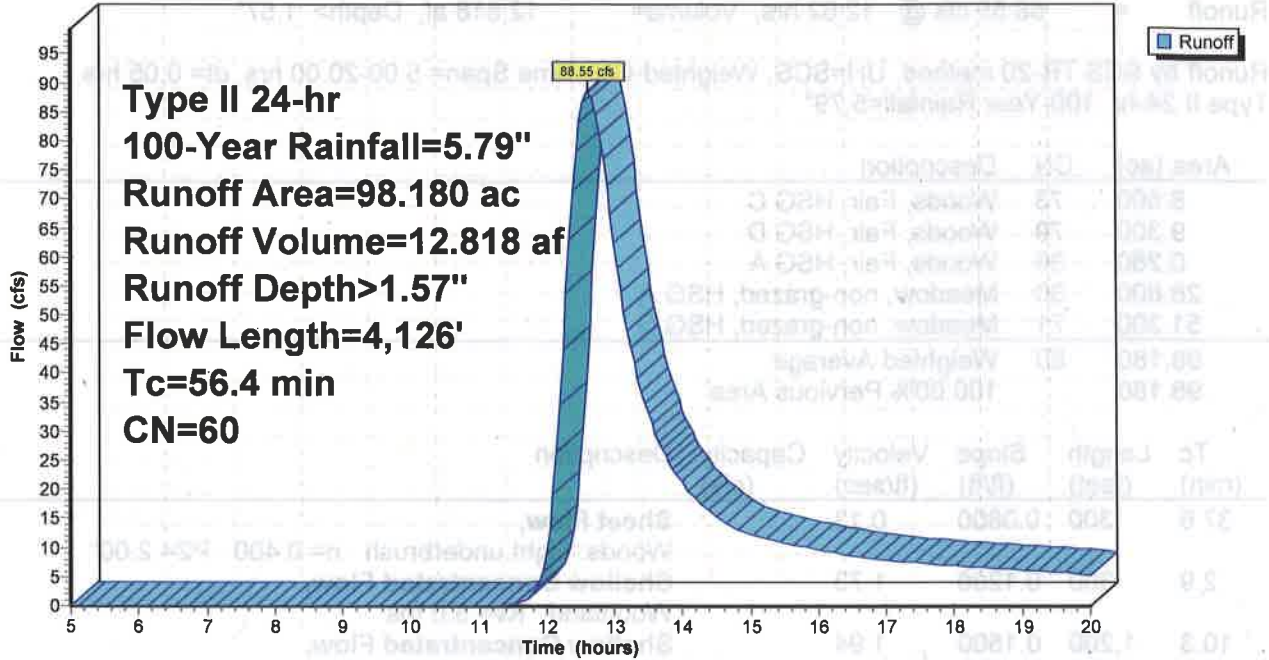
Type II 24-hr 100-Year Rainfall=5.79"

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Subcatchment 1S: Subarea A

Hydrograph



Pucket Solar Array Proposed

Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Subcatchment 2S: Subarea B

Runoff = 994.09 cfs @ 12.59 hrs, Volume= 135.958 af, Depth> 3.09"

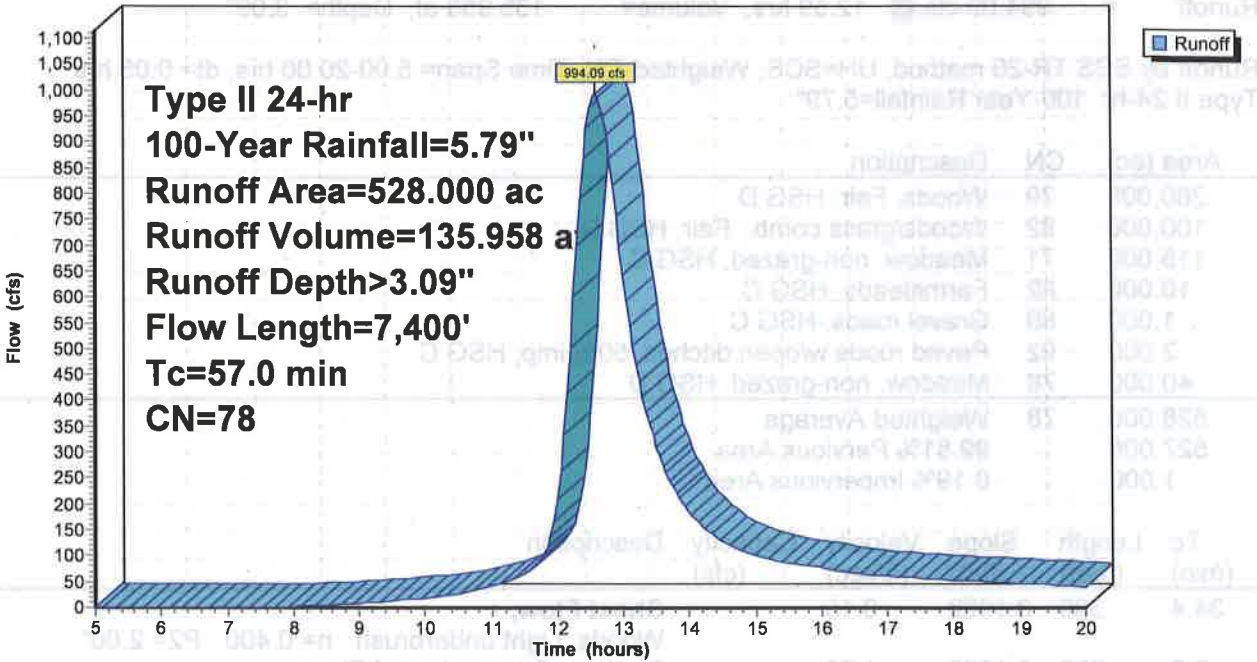
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.79"

Area (ac)	CN	Description
260.000	79	Woods, Fair, HSG D
100.000	82	Woods/grass comb., Fair, HSG D
115.000	71	Meadow, non-grazed, HSG C
10.000	82	Farmsteads, HSG C
1.000	89	Gravel roads, HSG C
2.000	92	Paved roads w/open ditches, 50% imp, HSG C
40.000	78	Meadow, non-grazed, HSG D
528.000	78	Weighted Average
527.000		99.81% Pervious Area
1.000		0.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.4	300	0.1000	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.00"
5.8	600	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	1,500	0.1500	10.24	61.41	Channel Flow, Area= 6.0 sf Perim= 10.0' r= 0.60' n= 0.040
7.9	3,000	0.0500	6.34	101.43	Channel Flow, Area= 16.0 sf Perim= 24.0' r= 0.67' n= 0.040
6.5	2,000	0.0300	5.14	102.83	Channel Flow, Area= 20.0 sf Perim= 28.0' r= 0.71' n= 0.040
57.0	7,400	Total			

Subcatchment 2S: Subarea B

Hydrograph



Area (ac)	Flow (cfs)	Time (hr)	Volume (ac-ft)
528.000	994.09	12.5	135.958
528.000	400	13	52.800
528.000	150	14	20.736
528.000	100	15	14.112
528.000	80	16	11.2896
528.000	70	17	9.8832
528.000	65	18	9.144
528.000	60	19	8.4048
528.000	55	20	7.6656
528.000	50	21	6.9264
528.000	45	22	6.1872
528.000	40	23	5.448
528.000	35	24	4.7088
528.000	30	25	3.9696
528.000	25	26	3.2304
528.000	20	27	2.4912
528.000	15	28	1.752
528.000	10	29	1.0128
528.000	5	30	0.2736
528.000	0	31	0
528.000	0	32	0
528.000	0	33	0
528.000	0	34	0
528.000	0	35	0
528.000	0	36	0
528.000	0	37	0
528.000	0	38	0
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528.000	0	60	0
528.000	0	61	0
528.000	0	62	0
528.000	0	63	0
528.000	0	64	0
528.000	0	65	0
528.000	0	66	0
528.000	0	67	0
528.000	0	68	0
528.000	0	69	0
528.000	0	70	0
528.000	0	71	0
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528.000	0	81	0
528.000	0	82	0
528.000	0	83	0
528.000	0	84	0
528.000	0	85	0
528.000	0	86	0
528.000	0	87	0
528.000	0	88	0
528.000	0	89	0
528.000	0	90	0
528.000	0	91	0
528.000	0	92	0
528.000	0	93	0
528.000	0	94	0
528.000	0	95	0
528.000	0	96	0
528.000	0	97	0
528.000	0	98	0
528.000	0	99	0
528.000	0	100	0

Pucket Solar Array Proposed

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Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Subcatchment 3S: Subarea C

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

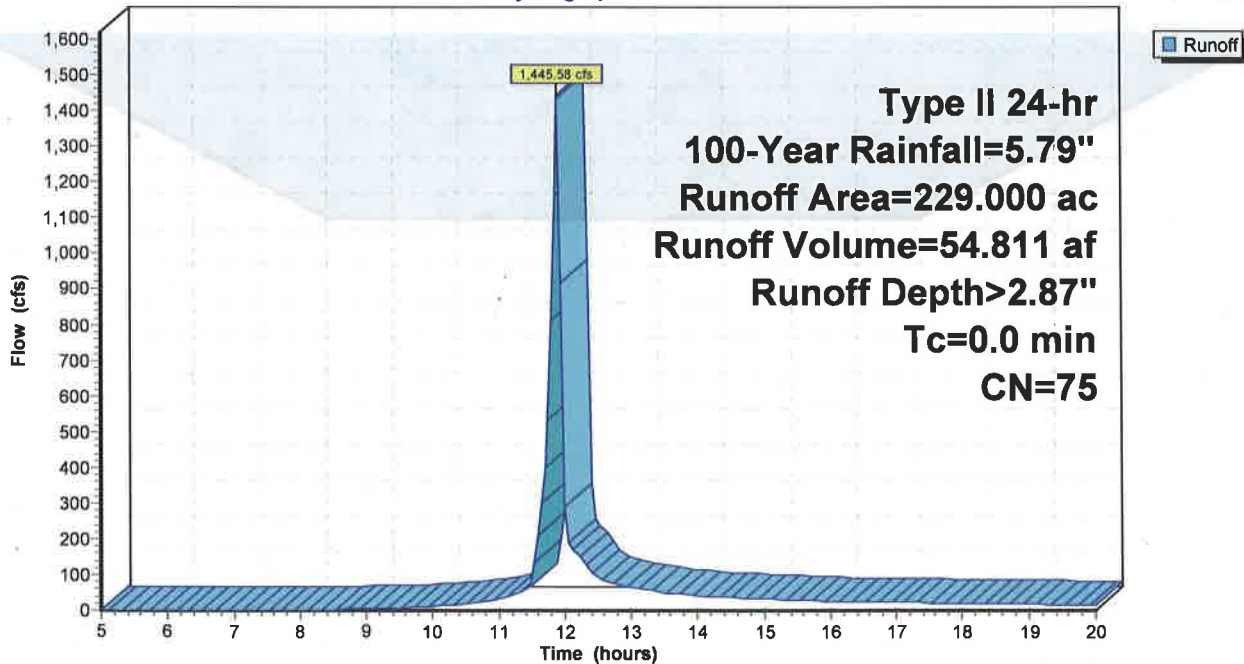
Runoff = 1,445.58 cfs @ 11.89 hrs, Volume= 54.811 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.79"

Area (ac)	CN	Description
100.000	79	Woods, Fair, HSG D
45.000	73	Woods, Fair, HSG C
5.000	82	Farmsteads, HSG C
75.000	71	Meadow, non-grazed, HSG C
4.000	87	Dirt roads, HSG C
229.000	75	Weighted Average
229.000		100.00% Pervious Area

Subcatchment 3S: Subarea C

Hydrograph



Pucket Solar Array Proposed

Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Reach 6R: Stream from C and B to discharge of A

[91] Warning: Storage range exceeded by 4.31'

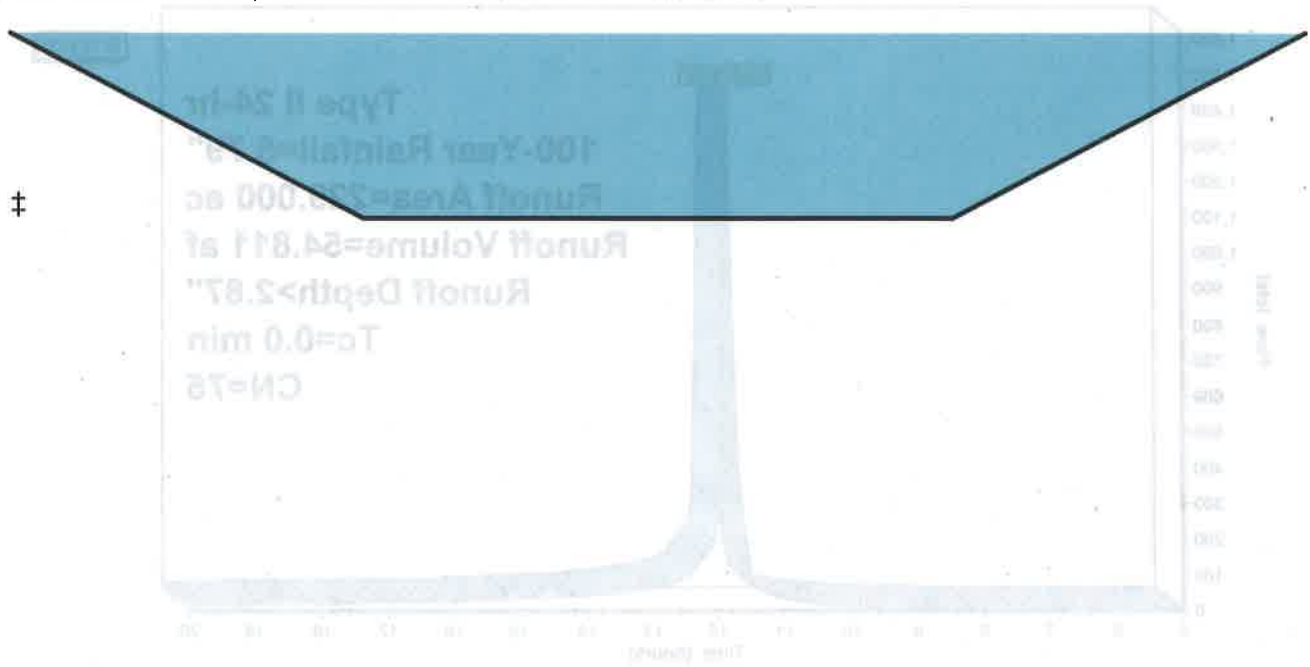
[55] Hint: Peak inflow is 401% of Manning's capacity

Inflow Area = 757.000 ac, 0.13% Impervious, Inflow Depth > 3.02" for 100-Year event
 Inflow = 1,578.66 cfs @ 11.89 hrs, Volume= 190.769 af
 Outflow = 1,408.72 cfs @ 11.93 hrs, Volume= 190.447 af, Atten= 11%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 10.30 fps, Min. Travel Time= 1.3 min
 Avg. Velocity = 5.15 fps, Avg. Travel Time= 2.6 min

Peak Storage= 114,106 cf @ 11.91 hrs
 Average Depth at Peak Storage= 7.31'
 Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 394.02 cfs

10.00' x 3.00' deep channel, n= 0.040
 Side Slope Z-value= 2.0 '/' Top Width= 22.00'
 Length= 800.0' Slope= 0.0187 '/'
 Inlet Invert= 928.00', Outlet Invert= 913.00'



Packet Solar Array Proposed

Type II 24-hr 100-Year Rainfall=5.79"

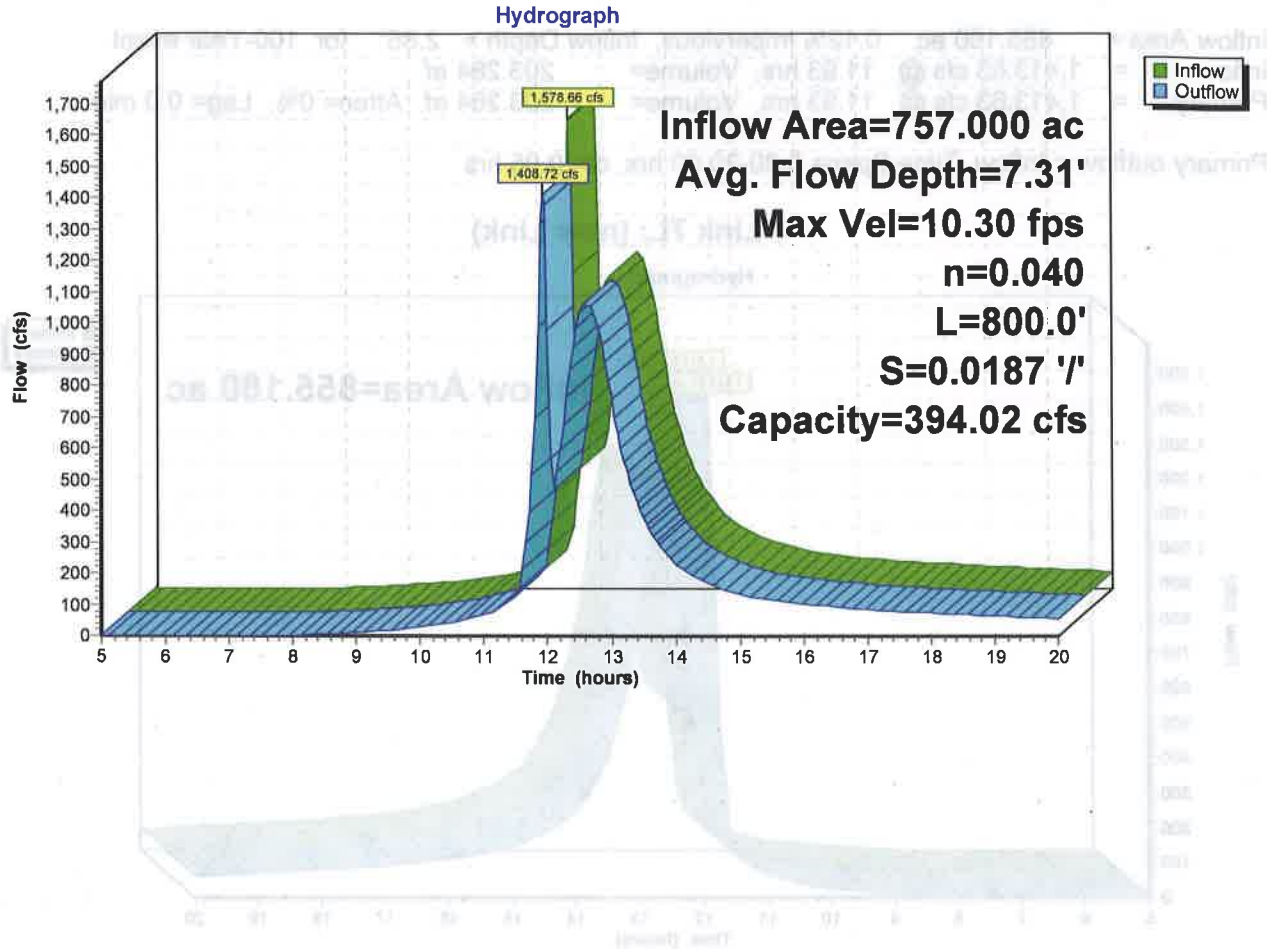
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Reach 6R: Stream from C and B to discharge of A



Packet Solar Array Proposed

Type II 24-hr 100-Year Rainfall=5.79"

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Summary for Link 7L: (new Link)

Inflow Area = 855.180 ac, 0.12% Impervious, Inflow Depth > 2.85" for 100-Year event

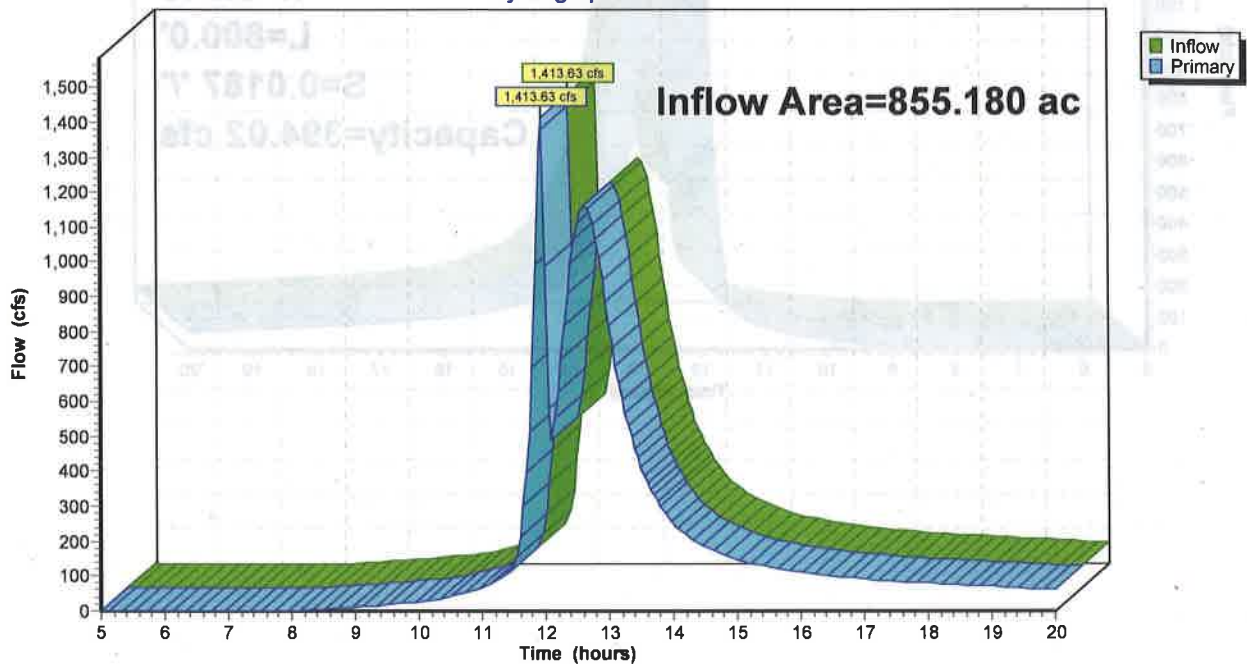
Inflow = 1,413.63 cfs @ 11.93 hrs, Volume= 203.264 af

Primary = 1,413.63 cfs @ 11.93 hrs, Volume= 203.264 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: (new Link)

Hydrograph





Engineers
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Surveyors
Landscape Architects
Environmental Scientists

Corporate Headquarters
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
T: 732.383.1950
F: 732.383.1984
www.maserconsulting.com

MEMORANDUM

To: Mitch Quine, E.I.T., Conti Solar

From: Kevin Jamieson

Date: May 9, 2019

Re: Freshwater Wetland Delineation and Permitting Summary
Proposed Solar Facility – Puckett Site
Town of Greene, Chenango County, NY
MC Project No. 18006470A

On behalf of Conti Solar, Maser Consulting P.A. performed a freshwater wetland investigation and wetlands permitting assessment on the above referenced project site which occupies approximately 177 acres of forest land and field/meadow. The freshwater wetland investigation utilized freshwater wetland delineations performed by Tetra Tech and Maser Consulting for different portions of the site.

The project area consists of both forested land and cleared land consisting of an open field. The investigation included a review of pertinent background information and site inspections to delineate the limits of freshwater wetlands and waters on the project site and to determine potential State and/or Federal regulatory jurisdiction.

According to the investigation performed on site, all the surface waters and the freshwater wetlands that were delineated are expected to be either unregulated or regulated by the U.S. Army Corps of Engineers (USACE), and none are expected to be regulated by the NYSDEC. Based on the current design associated with the proposed activities, and the location of the identified wetlands and surface waters, the project will not need to seek any wetland or stream-related permits from the NYSDEC.

WETLAND DELINEATION

Freshwater wetlands and non-wetland waters were delineated on the project site by Maser Consulting and Tetra Tech. The project site consists of an approximate 58-acre portion of Tax Parcel 227-1-8.1 on which freshwater wetlands and waters were delineated by Maser Consulting P.A. The project site also includes Tax Parcel 227-1-6 which consists of approximately 119 acres and on which freshwater wetlands and waters were delineated by Tetra Tech. A total of approximately 4.35-acres of freshwater wetlands were delineated on the project site. Perennial and intermittent streams were also delineated.





AGENCY JURISDICTION

U.S. Army Corps of Engineers

With the potential exception of isolated wetlands, most of the delineated freshwater wetlands on the site drain to a tributary of the Chenango River and are anticipated to be regulated as “waters of the U.S.” by the USACE pursuant to Section 404 of the Clean Water Act. To obtain regulatory verification regarding the location of waters of the U.S., a request for a Jurisdictional Determination was prepared and submitted to the USACE and is currently under review.

New York Department of Environmental Conservation

The NYSDEC does not depict State-regulated wetlands on or adjacent to the project site. The nearest State-regulated wetlands are located approximately 0.25 mile to the east of the project site, and the Chenango River tributaries located on or adjacent to the site, do not have a standard or classification of C(T) or higher. The tributaries are assigned a Standard of C and a Classification of C. Based on this information, State-regulated wetlands or streams do not occur on the project site and therefore the wetlands and streams on the project site will not be regulated by the NYSDEC pursuant to Article 15 or 24 of the New York State Environmental Conservation Law.

WETLANDS PERMITTING

Proposed activities that do not result in a discharge of dredged or fill material will not be subject to regulation by the USACE. Any proposed activities that will result in a discharge of dredged or fill material will meet the standards, including the disturbance thresholds, of Nationwide Permit 12 and/or 51, which authorize the discharge of dredged or fill material within waters of the U.S. for underground utility lines and land-based renewable energy facilities respectively.

Because there are no NYSDEC regulated wetlands or streams on the site, no NYSDEC permits will be required.

The Nationwide Permits to be utilized (e.g. NWP 12 and/or 51) have received blanket Water Quality Certifications from the NYSDEC. The project is planned and designed in such a way that it is expected to meet all the required conditions for blanket Water Quality Certification. If a particular condition can't be met, an Individual Water quality Certification will be obtained.

- cc: Matt Tripoli
- Eric Millard
- Elizabeth Myers
- Raymond Walker

Maintenance and Decommissioning Plan

acres of land now in a mix of forested and agricultural use. The purpose of the facility is the generation of solar electricity. The facility will be interconnected to the NYSEG operation. Chenango Forks substation across Willard Road from the project.

The project is a ground-mounted solar array. The solar panels are mounted on steel structures. The solar panels will be driven in the ground to a depth of approximately 2-8 feet to anchor the posts. The solar panels will be connected to inverters which will be connected to step-up transformers which will be connected to the power line.

Puckett Solar, LLC

Off Willard Road

Town of Greene, NY

via a gravel access road to be improved over the existing access road that enters the site from Willard Road.

The estimated useful project life time is 35 years. The following list is a summary of the site features:

Puckett Solar, LLC

• 30MW solar panels (modules)

• 2045 Lincoln Highway

• Edison, NJ 08817

- 2 central inverters mounted on concrete pad
- 2 step-up transformers mounted on concrete pad
- Copper and aluminum wire
- Underground conduit at the array location and connecting the array to the point of interconnection.
- Gravel access roads
- Metal security fence and gates at array location.

During the project's operational lifetime, very little hands-on maintenance is required to allow the project to successfully operate. While the project will likely employ up to two full time employees, much of the work required to operate and maintain the project consists of remote monitoring of the project's data collection systems.

Periodically, on-site electrical testing will be performed which will require a number of technicians to enter the site and physically test some of the connections and equipment to

1 Facility Description

Puckett Solar (the "Project") is an approximately 20MW AC solar project proposed off Willard Road in Greene, NY. The Project is to be constructed on approximately 122 acres of land now in a mix of forested and agricultural use. The purpose of the facility is the generation of solar electricity. The facility will be interconnected to the NYSEG operated Chenango Forks substation across Willard Road from the project.

The project is a ground mounted single-axis tracking solar array. The solar panels are mounted on steel structures consisting of posts, beams, rails and bracing. Vertical steel posts will be driven in the ground to a depth of approximately 5-8 feet to anchor the structures. The solar panels will be electrically connected to combiner boxes which will be combined into central inverters which will be mounted on concrete foundation pads. The inverters will be electrically connected to step-up transformers which will transform the voltage to 34.5kV. The transformers will be loop fed together and a single generator tie-line will lead to the Chenango Forks substation. The site will be accessed via a gravel access road to be improved over the existing access road that enters the site from Willard Road.

The estimated useful project life time is 35 years. The following list is a summary of the site features:

- 20MW AC Solar array consisting of silicon based solar panels (modules)
- Driven post steel and aluminum racking system
- Chain link security fence surrounding the array perimeter.
- 5 central inverters mounted on concrete pad
- 5 step-up transformers mounted on concrete pad
- Copper and aluminum wire
- Underground conduit at the array location and connecting the array to the point of interconnection.
- Gravel access roads
- Metal security fence and gates at array location.

2 System Maintenance and Operation

During the project's operational lifetime, very little hands-on maintenance is required to allow the project to successfully operate. While the project will likely employ up to two full time employees, much of the work required to operate and maintain the project consists of remote monitoring of the project's data collection systems.

Periodically, on-site electrical testing will be performed which will require a number of technicians to enter the site and physically test some of the connections and equipment to

verify the accuracy of the remotely collected data.

Several times a year, depending on the rate of vegetation growth, the grass and other vegetation on the project site will be cut as needed to prevent overgrowth, fire hazard, and shading of the panels.

As needed, the landscaping on site will be watered and otherwise maintained by a local landscaping contractor, to ensure that all landscaping intended for visual screening continues to effectively screen the project from view.

Approximately once every 10 years, the inverters will need to be replaced, which will involve temporarily shutting down the facility, removing the existing inverters, and replacing them with new or refurbished inverters. Other major equipment may similarly require replacement during the project's lifetime.

Outside of any solar modules which may be damaged during the project's lifetime, no panels should need replacement during the project's useful life.

3 Decommissioning Plan

The project consists of numerous materials that can be recycled, including steel, aluminum, glass, copper and plastics. At the end of operational life of the project the system will be dismantled using conventional construction equipment. The project material will be removed from the site and recycled or disposed of safely. The project will follow best practices to ensure that the land is properly restored and can return to an agricultural or other commercial use following the project's decommissioning.

3.1 Temporary Erosion Control

Temporary erosion and sedimentation control best management practices will be used during the decommissioning phase of the project. Control features will be regularly inspected during the decommissioning phase and removed at the end of the process. The decommissioning phase will require a SWPPP approved by the NYDEC similar to what is required during the construction phase.

3.2 Material Removal Process

The decommissioning process will consist of the following general steps:

- 3.2.1 Facility shall be disconnected safely from the power grid and all equipment shall be switched to off position.
- 3.2.2 PV modules shall be disconnected, packaged and returned to manufacturer or appropriate facility for recycling
- 3.2.3 Above and underground cabling shall be removed and sent to appropriate recycling facility.

- 3.2.4 Combiner boxes will be disconnected and shipped intact to an approved electrical equipment recycler.
- 3.2.5 Inverters and transformers will be removed from their concrete pads and disposed of at an appropriate recycling facility.
- 3.2.6 Racking materials shall be dismantled, removed, and recycled off- site at an approved recycler.
- 3.2.7 Fencing will be dismantled, removed, and recycled off-site and an approved recycler.
- 3.2.8 Concrete foundation pads will be broken and removed.
- 3.2.9 All remaining electrical and support equipment will be dismantled, and recycled or disposed of.

3.3 PV Module Removal

Solar photovoltaic modules used in the project are manufactured within regulatory requirements for toxicity based on Toxicity Characteristic Leaching Procedure (TCLP). The solar panels are not considered hazardous waste. The panels used in the project will contain silicon, glass, and aluminum which have value for recycling. Modules will be dismantled and packaged per manufacturer or approved recyclers specifications and shipped to an approved off-site approved recycler.

3.4 Electric Wire Removal

Electric wire made from copper or aluminum has value for recycling. DC wiring can be removed manually from the panels to the inverter. Underground wire in the array of the array will pulled and removed from the ground. Any overhead cabling for the interconnection will be removed from poles. All wire will be sent to an approved recycling facility.

3.5 Electrical Equipment Removal

Inverters, combiner boxes, transformers, switchgear and other electrical equipment will be dismantled, packaged, and removed from the site per manufactures specifications for removal, decontamination, disposal or recycling. Any dielectric fluids present in transformer, or other electric equipment will be removed, packaged and sent to an approved waste facility.

3.6 Racking and Fencing removal

All Racking and fencing material will be broken down into manageable units and removed from facility and sent to an approved recycler. All racking posts driven into the ground will be pulled and removed.

3.7 Concrete Slab Removal

Concrete slabs used as equipment pads will be broken and removed to a depth of one foot below grade. Clean concrete will be crushed and disposed of off-site and or recycled and reused either on or off-site.

3.8 Access Road Removal

All new access road areas will be removed and replaced with topsoil to encourage vegetative growth per consultation with the landowner, provided that the landowner may wish to keep a portion of the access road intact for their own traffic purposes.

3.0 Decommissioning Terms

Project shall be decommissioned within 180 days of the end of the project's operational life. Areas disturbed during the decommissioning phase will be with seeded with a drought tolerant grass seed mix appropriate for the area. At completion of decommissioning phase as described in this document, the land will be returned to a meadow condition.

