Stormwater Pollution Control Plan

Tobacco Valley Solar

200 Hopmeadow Street
Simsbury, Connecticut

PREPARED FOR

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PREPARED BY

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January 15, 2019



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1

Introduction

As it is proposed to disturb approximately 135 acres and clear 19 acres of wooded areas, this Stormwater Pollution Control Plan (SWPCP) has been prepared in accordance with Section 22a-430b of the Connecticut General Statutes and the General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (the "General Permit"), effective date October 1, 2018. This SWPCP addresses pre- and post-construction issues associated with stormwater management during construction. All actions required by this plan shall be followed by the permittee per the conditions of the General Permit.

2

Project Summary

This Stormwater Pollution Control Plan (SWPCP) has been developed for the proposed construction of the proposed Tobacco Valley Solar project (DWW Solar II, L.L.C.), a 26.4 MW-AC photovoltaic solar energy facility (the "Project" or "Facility"). The Project will consist of ground-based solar racks, panels, combiner boxes, power conditioning systems (i.e. inverters), and buried conduit. The Project will also have access roads, perimeter security fences, and paths around the perimeter. The Project will be sited on five (5) parcels of land in Simsbury, Connecticut, plus a smaller leased portion of a 6th parcel, with access provided from Hoskins Road and County Road (the "Site"). The Site is generally bounded by Munnisunk Brook to the north, farmland and residential developments to the east and west, and Bissell Brook to the south. Saxton Brook bisects the Site. Refer to Figure A for a map of the Site.

Most of the Project development will be on farm fields, but approximately 19 acres of forest will also be cleared. There are wetlands associated with the three brooks, two excavated farm ponds, and other parts of the Site.

The project filed for approval from the Connecticut Siting Council on June 29, 2017 (Petition 1313), and was approved by the Siting Council on December 21, 2017. Since the time of the Project approval by the Siting Council, Project representatives have met with permitting staff from Connecticut Department of Energy & Environmental Protection (CTDEEP) to discuss the Project's anticipated compliance with the requires of the General Permit. These meetings occurred on April 24, 2018, and December 5, 2018.

Existing Conditions

Most of the Project is situated in the watersheds of the three brooks that are within or adjacent to the Site. Therefore, most of the stormwater runoff generated in the farm fields flows overland towards wetlands systems associated with one of these three brooks. Stormwater runoff from the field north of Hoskins Road passes through a culvert under the road and flows overland south to Bissell Brook. Refer to USGS Locus Map in Appendix A.

While most of the Site occupies a near level to gently sloping terrace position, there are steeper slopes cut by the streams which occupy valley bottoms. Most of the Site consists of row cropped farm fields with some grass and brush around the field

perimeters. Forested areas consist of uneven-aged stands of mixed hardwoods and confifers, typical of the area.

Proposed Conditions

Under proposed conditions, Site grading has been designed to maintain as much of the existing topography and drainage patterns as practicable to preserve the Site's existing hydrologic characteristics. Stormwater best management practices (BMPs) will be implemented throughout the Site to utilize natural processes of infiltrating rainfall and filtering runoff as close to its source as possible. The plan also avoids impact to ecologically sensitive areas and preserves existing vegetation cover to the maximum extent practicable. The Project avoids the creation of any new significant effective impervious areas.

Under proposed conditions, most of the stormwater runoff generated within the Project will continue to flow overland off the Site. Vegetated buffer strips are proposed around the perimeter of the site to promote natural infiltration into the highly-absorbent soil. The majority of the temporary sediment traps and basins will remain in place as permanent water quality basins, and the contemplated ground cover change from tilled soil to grass and low plantings will reduce the runoff curve number, promoting runoff infiltration, in terms of maintaining pre- and post- peak rates and volumes of runoff.

No work is proposed within an inland wetland or watercourse. Most work in the vicinity of wetlands will maintain a minimum 100 foot undisturbed buffer with the exception of work in existing disturbed farm fields that are closer to wetlands. Refer to Project Layout Map in Appendix A.

Estimated Site Area and Total Area to be disturbed during Construction

The total anticipated site area to be disturbed during construction is approximately 135 acres. Therefore, the Project will require a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from the CTDEEP. It is proposed to clear approximately 19 acres of existing wooded areas.

Estimated Runoff Coefficients

Due to the change in ground cover over the majority of the Site, it is anticipated that runoff coefficients on the Site will be decreased naturally as a result of the proposed improvements (row crops to grass and low plantings). Accordingly, no long-term stormwater peak runoff control features are proposed.

Water Quality Treatment

The Project proposes not to grub removed trees outside the limits of the physical solar development and to maintain a meadow condition for this buffer between the improvements and the treeline. The Project proposes to convert a portion of the

temporary sediment traps and basins to permanent water quality basins in order to provide water quality benefit to the Project, consistent with best management practices implemented at solar projects elsewhere in the United States, such as those described in the Minnesota Stormwater Manual referenced by CTDEEP staff during a meeting with the Project on December 5, 2018.

3

Construction Sequencing

All construction activities are expected to begin in the spring/summer of 2019 and completed by the end of 2019. The general construction notes are as follows:

1. The site contractor shall be fully responsible to control construction such that sedimentation shall not affect roads/highways and their drainage system, neighboring properties, wetlands and regulatory protected areas, whether such sedimentation is caused by water, wind, or direct deposit. Designated access drives must be used to the maximum extents possible.
2. A qualified inspector shall be assigned to be responsible for performing inspections and preparing reports in accordance with Section 5(b)(4)(B) of the Construction General Permit. It is also anticipated that representatives from CTDEEP and/or the State Conservation District will perform periodic inspections.
3. Engineer of record shall perform three (3) monthly plan implementation inspections within the first 90 days of construction activity, as required by Connecticut Department of Energy & Environmental Protection.
4. Throughout the course of the construction project, additional sediment and erosion control measures may be warranted at the discretion of the qualified inspector and/or design engineer. These improvements must be implemented in a timely fashion in accordance with the requirements of the Construction General Permit. Additionally, areas of proposed compacted native soil roads shall be converted to stable gravel roads if/as determined by the qualified inspector or engineer of record.
5. Prior to construction, the applicant shall provide the Town of Simsbury with the name of contact and 24-hour contact information.
6. Contractor shall adhere to 2002 Connecticut Guidelines for Erosion and Sediment Control, as amended.
7. The contractor shall flag the limits of clearing necessary to facilitate the pre-construction meeting.
8. The contractor shall hold pre-construction meeting(s). Attendees shall include, but not be limited to, representatives of the general contractor, site contractor, CTDEEP, Town of Simsbury, engineer of record, and qualified SWPPP inspector.
9. The contractor shall contact Call-Before-You-Dig (1-800-922-4455) prior to engaging in any excavation activities at the Site.
10. The contractor shall notify the Town of Simsbury agent, Zoning Enforcement Officer, and Engineering Department, 48 hours prior to commencement of any construction activity.
11. No construction of site improvements may begin until the proper erosion control measures serving the area to be disturbed are in place.
12. Anticipated work hours will be between 6:30 AM and 5:00 PM.

Pre-Construction Site Protection Sequence (per Resource Protection Plan)

1. Install stabilized vehicle construction exits at the existing farm road intersections with Hoskins Road and County Road.
2. Survey and mark all woodland clearing limits.
3. Mark trees to be felled within 10 feet of clearing limits and install tree protection for trees to be preserved within 10 feet of clearing limits.
4. Field survey and mark boundary between clearing limits and grubbing limits.
5. No tree clearing is anticipated to take place on the site between May 15 and August 31 to minimize disturbance to nesting birds and tree-roosting bats. If bats are encountered during tree clearing activities outside of this designated time-of-year restriction, tree clearing operations will be immediately stopped and the Environmental Monitor will contact the Bat Program within the CTDEEP Wildlife Division to determine proper next steps. If contractor encounters nests with nestlings that have not yet fledged, a 50-foot "no activity" buffer shall be established to protect the nestlings until they fledge.
6. The use of a tub grinder is recommended for the mulching of felled trees.
7. As trees are cleared and grubbed, grind tops and root balls in tub grinder to create material for wood chip mulch berm.
8. Skidders and other equipment should travel around agricultural fields following perimeter roads. Avoid travel across farm fields.
9. As material is produced, install mulch berm at the limit of disturbance generally in areas of cleared forest. Mulch berm has nominal dimensions of 1.5 to 2 feet high by 4-foot wide.
10. Immediately inside the perimeter mulch berm, install entrenched silt fence following standards of the 2002 Connecticut Guidelines for Erosion and Sediment Control. Mulch berm and perimeter silt fence shall be maintained in perpetuity until completion of construction. No work shall be allowed outside of these limits.
11. Concurrent with Items 2 through 9 above, the contractor shall address ongoing erosion problems in the farm fields using temporary diversions and filling and grading gullies. Track gullies up and down slope and hydroseed with a thermally-treated wood bonded fiber matrix (BFM) mulch with tackifier. A stapled biodegradable erosion control blanket without monofilament mesh is an acceptable alternative for hydroseed and BFM.
12. Install temporary sediment traps and basins in accordance with the approved site-specific SWPCP and CT Guidelines. The engineer of record shall inspect features to confirm required storage capacities are provided and that outlets and/or spillways are constructed correctly. Discharge areas below outfalls must be inspected to confirm flow will be over stable ground and sheet flow is encouraged. If disturbed soils are present, the engineer of record to provide correct measures to address condition.
13. Seed and protect disturbed soils around sediment traps and basins within 10 days of completion. Secure seed with a thermally-treated BFM applied following manufacturer's specifications for use at specified application rates. An anionic polyacrylamide product may be included with the tackifier to promote soil stability. All other amendments should be prescribed based on the result of soil tests.

14. Install other erosion and sediment controls following the CT Guidelines and manufacturer's directions. During construction, the contractor shall install measures as required by the engineer of record or qualified inspector, to prevent sediment-laden runoff from reaching wetlands or discharging offsite.
15. Requirements for maintaining vegetative cover within the project limits during construction shall be followed from the Resource Protection Plan.
16. Establish designated vehicular traffic access roads (gravel, or compacted native soil, per plans) that shall be used as primary accesses. Efforts must be made to minimize vehicular trafficking across non-designated areas to the extents possible.

Construction Sequence

1. Perform mass earthwork on the site and install perimeter fence to serve as construction barrier. Topsoil shall be stripped and stockpiled from areas proposed for regrading. Refer to Resource Protection Plan.
2. Topsoil shall be replaced over regraded areas upon completion of mass earthwork activities and areas which were disturbed by mass earthwork operations shall be reseeded within 10 days of completion. Refer to Resource Protection Plan and/or site soil scientist for seed mix.
3. Drive piles for solar panel racking, starting from north end of site and working south towards primary staging area.
4. The installation of racking shall follow the pile driving by roughly one week starting from the same point. It is anticipated that approximately 13 acres of piles will be in ahead of racking on average.
5. Once the racks are up, vehicular access along non-designated routes will be severely impacted due to the module spacing. Reseed and regrade all areas disturbed by construction traffic within the arrays where racks are installed as early as possible. Ruts and rills shall be smoothed and graded as discovered.
6. Install solar panel modules in the racking. Much of this work is anticipated to be performed by hand and light construction equipment which will cause minimal disturbance compared to the use of heavy equipment. Designated access roads shall still be used to the maximum extents possible.
7. Upon completion of construction, re-seed all disturbed areas within 10 days and prevent vehicular trafficking over these areas. Install final landscaping.
8. The temporary sediment traps/basins and their associated diversion channels may be removed once all tributary areas upstream of them have been completed and stabilized with 80 percent vegetated cover, at the direction of the qualified inspector and/or design engineer.
9. After site is stabilized, and after inspection by design engineer, or other owner's representative, remove temporary erosion and sediment controls. Entire site shall be checked for and cleaned of sediment as needed.

4

Erosion and Sedimentation Control Measures

The following erosion and sedimentation controls are for use during the earthwork and construction phases of the Project. The following controls are provided as recommendations for the site contractor and do not constitute or replace the final Stormwater Pollution Control Plan that must be fully implemented by the Contractor in compliance with the DEEP General Permit for the discharge of stormwater and dewatering wastewater from construction activities, and 2002 Connecticut Guidelines for Erosion and Sediment Control as amended.

Silt Fencing

This semi-permeable barrier made of a synthetic porous fabric will provide additional protection. The silt fences will be repaired or replaced as determined by periodic field inspections.

Temporary/Permanent Sediment Trap/Basin

These stormwater settling basins will be installed at the locations shown on the E&S plans and will have the majority of runoff from the on-site construction area diverted to them. The temporary sediment basins must have a safe outlet for excess stormwater. Additional temporary sediment traps may need to be installed during construction depending upon final phasing of improvements.

Temporary/Permanent Diversions

These swales shall be constructed generally as depicted on the site plans and adjusted to work for field conditions. They shall be installed upon completion of the tributary sediment trap/basin and fitted with erosion control blankets and check dams in accordance with the details and standard practices.

Construction Entrance/Exit

Temporary crushed-stone construction entrances/exits will be installed at access points off of town roads.

Street Sweeping

Adjacent streets affected by sediment runoff from vehicle tires shall be swept at a minimum of bi-weekly intervals or on an as-needed basis as required by the qualified inspector.

Flocculent Logs

Flocculent logs shall be placed in the bottom of diversion swales to assist in reducing total suspended solids.

Straw Wattles

Straw wattles are compressed weed-free straw encased in jute, nylon, or other biodegradable materials. The intended location for these are along slopes and at the edges of travel ways to intercept runoff.

Stockpile Management

Active stockpiles shall be topped with hay at the end of each work day. Stockpiles intended to be left dormant for more than 14 days must be stabilized with erosion control blankets and/or hydroseed. Stockpiles shall be completely surrounded with silt fence.

Compost Filter Socks

These media-filled mesh socks shall be installed in the areas depicted on the site plans primarily to act as check dams and/or perimeter control depending upon the area. Care should be taken that these socks do not divert flow, but rather allow it time to settle without modifying intended drainage patterns.

Erosion Control Blankets

Straw fiber or jute netting roll blankets designed for use on moderate slope and channel applications. Material type shall be selected to ensure no danger to wildlife.

Hydroseeding

Disturbed areas shall be hydroseeded at the intervals outlined in the construction sequence. Hydroseed shall be combined with an application of polyacrylamide (PAM) to assist

Keeping Disturbance to a Minimum

Construction traffic shall utilize the existing cart paths around the farm fields (or designated access routes once they are established) and avoid travel across farm fields to minimize soil compaction. The contractor shall also strive to limit areas of exposed soil in each sub-watershed as much as feasible during construction. Areas that have been regraded to final grade shall be seeded within 10 days. The design engineer must be made aware if the contractor encounters drain tiles within the farm fields.

Maintenance

The contractor or subcontractor will be responsible for implementing, at minimum, each control shown on the Site Plan. Refer to the Site Plans in Appendix F.

The qualified inspector will inspect all sediment and erosion control structures periodically and after each rainfall event. Records of the inspections will be prepared and maintained on-site by the contractor.

- Silt shall be removed from behind barriers if greater than 6-inches deep or as needed.
- Damaged or deteriorated items will be repaired within 48 hours of identification, or sooner if a significant rainfall event is predicted.
- Sediment that is collected in sediment traps and basins shall be removed in accordance with the details.
- Erosion control structures shall remain in place until all disturbed earth has been securely stabilized. After removal of structures, disturbed areas shall be regraded and stabilized as necessary.

5

Water Quantity and Quality Controls Long Term Maintenance

The following maintenance program is proposed to ensure the continued effectiveness of the structural water quality controls previously described.

Low Water Crossings

- Soil stability of rip-rap road crossings shall be checked and repaired, as necessary, once annually or after damaging rainfall events

Infiltration/Detention Ponds

- Pond shall be checked for and cleaned of sediment once annually or after damaging rainfall events
- Sediment shall be cleaned from the pond any time it affects the overall performance and infiltration capabilities of the system
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary

Diversion Swales

- Swales shall be checked for and cleaned of sediment once annually or after damaging rainfall events
- Sediment shall be cleaned from a swale any time it affects the overall performance of the system
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary

Vegetated Perimeter Filter Areas

- Vegetated filter areas shall be checked for and cleaned of sediment once annually or after damaging rainfall events
- Sediment shall be cleaned from the filter areas any time it affects the overall performance and infiltration capabilities of the system

6

Site Inspections

Qualified personnel (provided by the permittee) shall inspect disturbed areas of the construction activity that have not been finally stabilized, erosion and sediment control measures, all structural controls, soil stockpile areas, washout areas and locations where vehicles enter or exit the site. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to the receiving waters. Locations where vehicles enter or exit the site shall also be inspected for evidence of off-site sediment tracking.

The permittee shall maintain a rain gauge on-site to document rainfall amounts. For storms that end on a weekend, holiday, or other time after normal working hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For storms of less than 0.5 inches, an inspection shall occur immediately upon the start of the subsequent normal working hours. Where sites have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months. The engineer of record shall perform three (3) monthly plan implementation inspections within the first 90 days of construction activity.

If a pollution discharge to the Munnisunk Brook, Saxton Brook, or Bissell Brook (chemical spill or significant sediment discharge) occurs during the course of this project, the CTDEEP Wildlife Division should be notified within 48 hours of the event (laura.saucier@ct.gov or 860-424-3101).

Reports

A report shall be prepared and retained as part of the Plan. This report shall summarize: the scope of the inspection; name(s) and qualifications of personnel making the inspection; the date(s) of the inspection; weather conditions including precipitation information; major observations relating to erosion and sediment controls and the implementation of the Plan; a description of the stormwater discharge(s) from the site; and any water quality monitoring performed during the inspection. The report shall be signed by the permittee or his/her authorized representative in accordance with the "Certification of Documents" section (subsection 5(i)) of this general permit. Copies of the reports must be provided to the contractor, site owner, CTDEEP, and the design engineer.

The report shall include a statement that, in the judgment of the qualified inspector(s) conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the Plan and permit. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance. Non-engineered corrective actions (as identified in the Guidelines) shall be implemented on site within 24 hours and incorporated into a revised Plan within three (3) calendar days of the date of inspection unless another schedule is specified in the Guidelines. Engineered corrective actions (as identified in the Guidelines) shall be implemented on site within seven (7) days and incorporated into a revised Plan within ten (10) days of the date of inspection, unless another schedule is specified in the Guidelines or is approved by the commissioner. During the period in which any corrective actions are being developed and have not yet been fully implemented, interim measures shall be implemented to minimize the potential for the discharge of pollutants from the site.

7

Turbidity Monitoring

Monitoring Frequency

Sampling shall be conducted at least once every month, when there is a discharge of stormwater from the site while construction activity is ongoing, until final stabilization of the drainage area associated with each outfall is achieved.

Samples are only required to be taken during normal working hours. If sampling is discontinued due to the end of normal working hours, it shall be resumed the following morning or the morning of the next working day following a weekend or holiday, as long as the discharge continues.

Sampling may be temporarily suspended any time conditions exist that may reasonably pose a threat to the safety of the person taking the sample. Such conditions may include high winds, lightning, impinging wave or tidal activity, intense rainfall or other hazardous condition. Once the unsafe condition is no longer present, sampling shall resume.

If there is no stormwater discharge during a month, sampling is not required.

Sample Collection

All samples shall be collected from discharges resulting from a storm event that occurs at least 24 hours after any previous storm event generating a stormwater discharge. Any sample containing snow or ice melt must be identified on the Stormwater Monitoring Report form. Sampling of snow or ice melt in the absence of a storm event is not a valid sample.

Samples shall be grab samples taken at least three separate times during a storm event and shall be representative of the flow and characteristics of the discharge(s). Samples may be taken manually or by an in-situ turbidity probe or other automatic sampling device equipped to take individual turbidity readings (i.e. not composite). The first sample shall be taken within the first hour of stormwater discharge from the site. In cases where samples are collected manually and the discharge begins outside of normal working hours, the first sample shall be taken at the start of normal working hours.

Sample Locations

For this project, 18 discharge points are identified. The location of outfalls that are included in this project are proposed to be the outlets from the 18 temporary sediment traps and basins.

All sampling point(s) shall be clearly marked in the field with a flag, stake, or other visible marker.

Turbidity Values

The stormwater discharge turbidity value for each sampling point shall be determined by taking the average of the turbidity values of all samples taken at that sampling point during a given storm.

Stormwater Monitoring Reports

Copies of the reports must be provided to the contractor, site owner, CTDEEP, and the design engineer.

Within thirty (30) days following the end of each month, permittees shall enter the stormwater sampling result(s) on the Stormwater Monitoring Report (SMR) form (available at www.ct.gov/deep/stormwater) and submit it in accordance with the Network Discharge Monitoring Report (NetDMR) outlined in the Permit or, if the permittee has opted out of NetDMR, to the following address:

Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division (Attn: DMR Processing)
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

If there was no discharge during any given monitoring period, the permittee shall submit the form as required with the words “no discharge” entered in place of the monitoring results.

If the permittee monitors any discharge more frequently than required by this general permit, the results of this monitoring shall be included in additional SMRs for the month in which the samples were collected.

If sampling protocols are modified due to the limitations of normal working hours or unsafe conditions, a description of and reason for the modifications shall be included with the SMR.

If the permittee samples a discharge that is representative of two or more substantially identical discharge points, the permittee shall include the names or locations of the other discharge points.

Submittal of NetDMR Opt-Out Requests

All opt-out requests and requests for the NetDMR subscriber form should be sent to the following address or by email at deep.netdmr@ct.gov:

Attn: NetDMR Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

8

Termination Requirements

Notice of Termination

At the completion of a construction project registered of this general permit, a Notice of Termination must be filed with the Commissioner. A project shall be considered complete after all post-construction measures are installed, cleaned and functioning and the site has been stabilized for at least three months following the cessation of construction activities. A site is considered stabilized when there is no active erosion or sedimentation present and no disturbed areas remain exposed for all phases.

9

Contractors

Each Contractor and Subcontractor who will perform actions on the site that may reasonably be expected to cause or have the potential to cause pollution of the waters of the State shall sign the certification statement below:

Certification Statement

"I certify under penalty of the law that I have read and understand the terms and conditions of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. I understand that, as a Contractor or Subcontractor at the site, I am authorized by this General Permit, and must comply with the terms and conditions of this General Permit, including, but not limited to, the requirements of the Stormwater Pollution Control Plan prepared for the site."

List of Project Contractors

1. Contractor Name:_____
   Address:_____
   Telephone Number:_____ Fax Number:_____
   Contractor Specialty to be used on this Project:_____
   Contractor's On-site Representative:_____

_____
Signature Date

2. Contractor Name:_____
   Address:_____
   Telephone Number:_____ Fax Number:_____
   Contractor Specialty to be used on this Project:_____
   Contractor's On-site Representative:_____

_____
Signature Date

3. Contractor Name:_____
   Address:_____
   Telephone Number:_____ Fax Number:_____
   Contractor Specialty to be used on this Project:_____
   Contractor's On-site Representative:_____

_____
Signature Date

4. Contractor Name:_____
   Address:_____
   Telephone Number:_____ Fax Number:_____
   Contractor Specialty to be used on this Project:_____
   Contractor's On-site Representative:_____

_____
Signature Date

5. Contractor Name:_____
   Address:_____
   Telephone Number:_____ Fax Number:_____
   Contractor Specialty to be used on this Project:_____
   Contractor's On-site Representative:_____

_____
Signature Date

6. Contractor Name:_____
   Address:_____
   Telephone Number:_____ Fax Number:_____
   Contractor Specialty to be used on this Project:_____
   Contractor's On-site Representative:_____

_____
Signature Date

10

Reporting and Record Keeping Requirements

The permittee shall retain copies of the SWPCP and all reports required by this General Permit, and records of all data used to complete the registration to be authorized by this General Permit, for a period of at least five (5) years from the date that construction at the Site is completed, unless the Commissioner specifies another time period in writing.

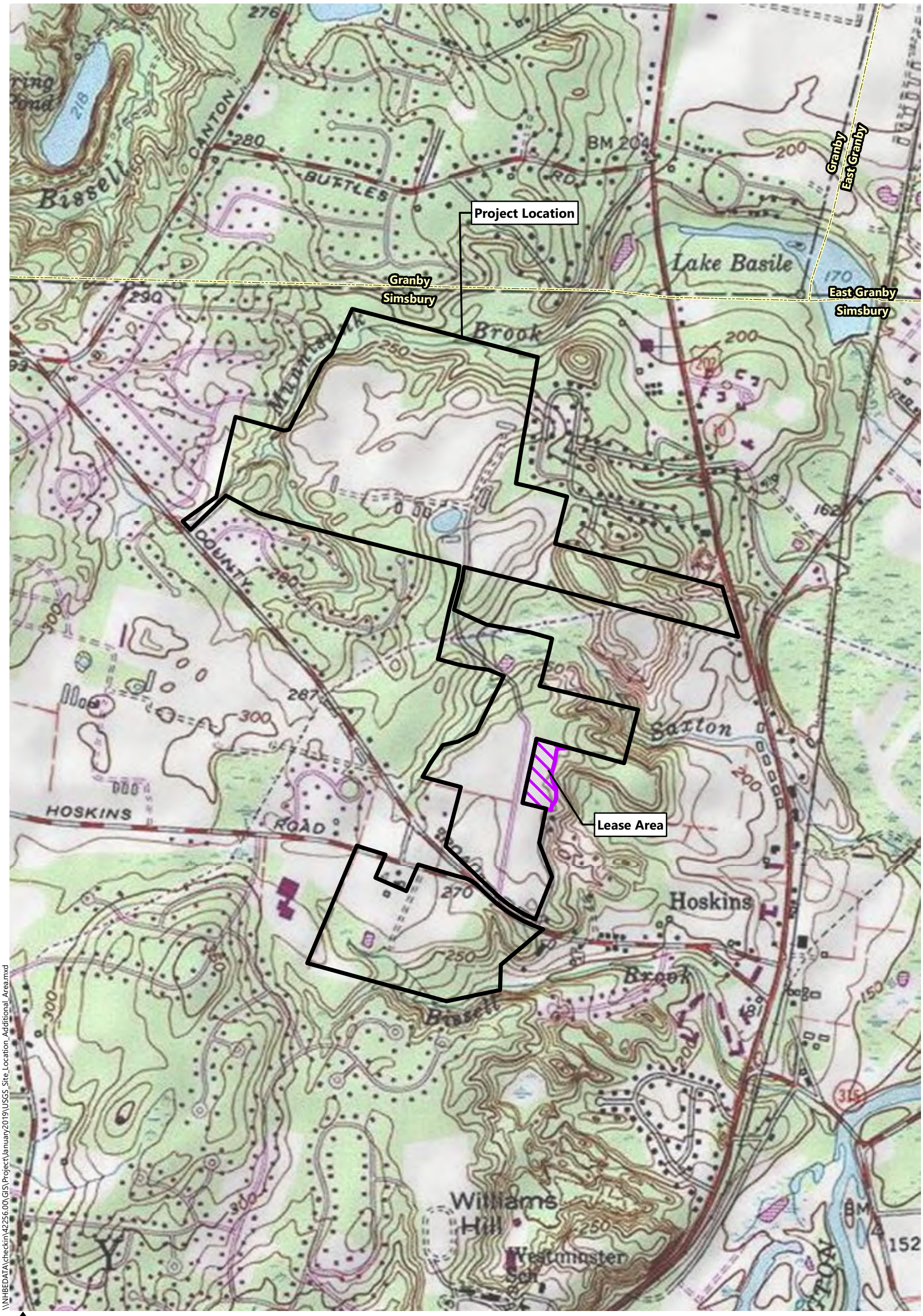
The permittee shall retain an updated copy of the SWPCP required by this General Permit at the construction site from the date construction is initiated at the site until the date construction at the site is complete.

Stormwater Pollution Control Plan Permit Drawing

DRAWING TITLE	NO. OF SHEETS
Cover Sheet	1
Legend and General Notes	1
Resource Protection Plan	1
Key Plan	1
Layout and Materials Plan	13
Grading and Drainage Plan	13
Erosion and Sediment Control Plan	13
Site Details	3
Planting Plan	5

USGS Quad Map & Project Layout Map

January 10, 2019



\\NHBEDATA\checkin\42256.00\GIS\Project\January2019\USGS_Site_Location_Additional_Area.mxd

0 500 1000 2000 Feet

Property Boundary

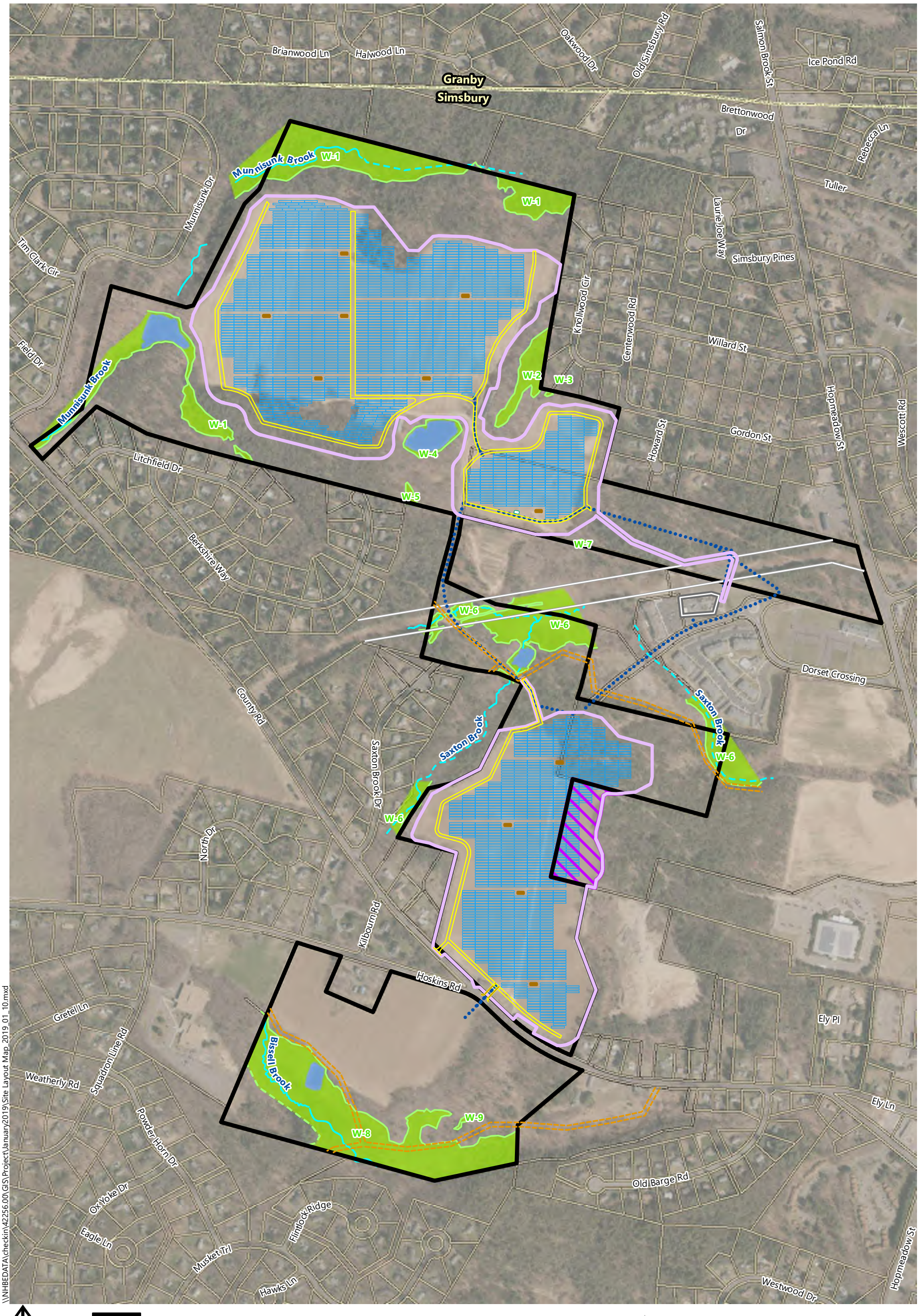
Lease Area

Town Boundary

Tobacco Valley Solar | Simsbury, Connecticut

Figure A
USGS Locus Map

Source: VHB, CTDEEP, ESRI



\\NHBEDATA\checkin\42256.00\GIS\Project\January2019\Site Layout Map_2019_01_10.mxd

0 325 650 1300 Feet

Tobacco Valley Solar | Simsbury, Connecticut

Project Layout Map

- Property Boundary
- Lease Area
- Limit of Work
- Adjacent Parcels
- Town Boundary
- Existing Eversource ROW
- Wetland Resource Area
- Farm Pond
- Delineated Wetland Edge
- Approximate Wetland Edge
- Stream
- Approximate Stream
- Solar Array
- Equipment Pad
- Substation
- Switchgear
- Proposed Road
- Temporary Access Point - Construction Only
- Sewer Easement
- Potential Cable Route

Source: VHB, CTDEEP, ESRI

Sample Inspection Forms

Tobacco Valley Solar – Simsbury, CT – County Road & Hoskins Road

Best Management Practices – Maintenance/ Evaluation Checklist

Construction Practices

Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed ☐yes ☐no (List Items)	Date of Cleaning/Repair	Performed by
Silt Fencing	Once per week or after a 0.5″ or greater storm event						
Compost Filter Sock	Once per week or after a 0.5″ or greater storm event						
Straw Wattles	Once per week or after a 0.5″ or greater storm event						
Stabilized Construction Exit	Once per week or after a 0.5″ or greater storm event						
Temporary Sediment Trap/Basin & Diversion Swales	Once per week or after a 0.5″ or greater storm event						
Vegetated Slope Stabilization	Once per week or after a 0.5″ or greater storm event						

Stormwater Control Manager _____

Tobacco Valley Solar – Simsbury, CT – County Road & Hoskins Road

Best Management Practices – Maintenance/ Evaluation Checklist

Long Term Practices

Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed ☐yes ☐no (List Items)	Date of Cleaning/Repair	Performed by
Street Sweeping	2x per year, preferably in late spring and late fall.						
Trash/Litter	Routinely pick up and remove litter from entire property as required.						
Water Quality Basins	Inspect after every major storm for the first 3 months. Side slopes and buffer shall be mowed/trash removed at least twice during growing season						
Vegetated Areas	Inspect bi-annually. Replant bare areas upon identification.						
Outfalls	Inspect monthly for the first 3 months. Inspect at least once per year thereafter.						

Stormwater Control Manager _____

Computations for Temporary Diversion, Sediment Trap, and Sediment Basin Sizing

Temporary Diversion Sizing

TD	1-1
11,000	sf
0.25	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	1-2
22,000	sf
0.51	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	2-1
11,000	sf
0.25	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	2-2
13,000	sf
0.30	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	4-1
108,000	sf
2.48	ac

Reference DOT Drainage Manual 2000

Swale Slope, S =	0.040	ft / ft	
Manning's n for bare soil / ECB, n =	0.025		
Q25 (disturbed soil) =	11.58	cfs	
Bottom width, w =	3	ft	
Side slopes, X:1 =	3		
Estimated flow depth, d =	0.55	ft	
Q = (1/n) * A * R^(2/3) * S^(1/2)			
A * R^(2/3) = Q / (1/n) / S^(1/2) =	**1.45**	(target for variable depth)	
A = (w * d) + 2 * (0.5d * Xd) =	2.56	sf	
P = w + 2 * (sqrt(d^2 + (Xd)^2) =	6.48	ft	
R = A / P =	0.39	ft	
A * R^(2/3) =	**1.38**	(must be close to target)	
y =	62.4	pcf	
ŧd = y * d * S =	**1.37**	psf	< 1.55 psf for ECB - OK
Velocity, V = Q / A =	**4.53**	fps	< 5.00 fps for ECB - OK

Temporary Diversion Sizing

TD	4-2
26,000	sf
0.60	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	5-1
16,000	sf
0.37	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	5-2
4,000	sf
0.09	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	6-1
39,000	sf
0.90	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	7-1
10,000	sf
0.23	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	7-2
6,000	sf
0.14	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	8-1
137,000	sf
3.15	ac

Reference DOT Drainage Manual 2000

Swale Slope, S =	0.030	ft / ft	
Manning's n for bare soil / ECB, n =	0.025		
Q25 (disturbed soil & forest) =	10.98	cfs	
Bottom width, w =	2	ft	
Side slopes, X:1 =	3		
Estimated flow depth, d =	0.67	ft	
Q = (1/n) * A * R^(2/3) * S^(1/2)			
A * R^(2/3) = Q / (1/n) / S^(1/2) =	**1.58**	(target for variable depth)	
A = (w * d) + 2 * (0.5d * Xd) =	2.69	sf	
P = w + 2 * (sqrt(d^2 + (Xd)^2) =	6.24	ft	
R = A / P =	0.43	ft	
A * R^(2/3) =	**1.53**	(must be close to target)	
y =	62.4	pcf	
ŧd = y * d * S =	**1.25**	psf	< 1.55 psf for ECB - OK
Velocity, V = Q / A =	**4.09**	fps	< 5.00 fps for ECB - OK

Temporary Diversion Sizing

TD	8-2
33,000	sf
0.76	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	10-1
30,000	sf
0.69	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	10-2
14,000	sf
0.32	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	12-1
6,000	sf
0.14	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	12-2
17,000	sf
0.39	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	13-1
3,000	sf
0.07	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	13-2
12,000	sf
0.28	ac

No engineered design is required due to watershed size < 1 ac

TD 14-1

23,000 sf

0.53 ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	14-2
4,000	sf
0.09	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	15-1
3,000	sf
0.07	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	15-2
63,000	sf
1.45	ac

Reference DOT Drainage Manual 2000

Swale Slope, S =	0.005	ft / ft	
Manning's n for bare soil / ECB, n =	0.025		
Q25 (disturbed soil & forest) =	6.77	cfs	
Bottom width, w =	3	ft	
Side slopes, X:1 =	3		
Estimated flow depth, d =	0.73	ft	
Q = (1/n) * A * R^(2/3) * S^(1/2)			
A * R^(2/3) = Q / (1/n) / S^(1/2) =	**2.39**	(target for variable depth)	
A = (w * d) + 2 * (0.5d * Xd) =	3.79	sf	
P = w + 2 * (sqrt(d^2 + (Xd)^2) =	7.62	ft	
R = A / P =	0.50	ft	
A * R^(2/3) =	**2.38**	(must be close to target)	
y =	62.4	pcf	
ŧd = y * d * S =	**0.23**	psf	< 1.55 psf for ECB - OK
Velocity, V = Q / A =	**1.79**	fps	< 5.00 fps for ECB - OK

TD 17-1

20,000 sf

0.46 ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	17-2
15,000	sf
0.34	ac

No engineered design is required due to watershed size < 1 ac

Temporary Diversion Sizing

TD	18-1
14,000	sf
0.32	ac

No engineered design is required due to watershed size < 1 ac

Sediment Trap Sizing

TST	2	PERMANENT
120,000	sf	
2.75	ac	

V	10,000	Freeboard	1
Vw	5,000	Dw	2
Vd	5,000	Dd	1.5

Aw = Vw / 0.85 / Dw	2,941	
square basin W/L	54.2	
W = sqrt(A/4.0)	27.1	at base of stone outlet
L = 4.0W	108.5	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	15.1	
Lbottom	96.5	
Wtopspillway	36.1	
Ltopspillway	117.5	
Wtopofembankment	42.1	
Ltopofembankment	123.5	
Ad =	4,242	
Vd = (Aw + Ad) / 2 * Dd	**5,388**	

Sediment Trap Sizing

TST	4	PERMANENT	
209,000	sf		
4.80	ac		

V	17,400	Freeboard	1
Vw	8,700	Dw	2
Vd	8,700	Dd	1.5

Aw = Vw / 0.85 / Dw	5,118	
square basin W/L	71.5	
W = sqrt(A/2.5)	45.2	at base of stone outlet
L = 2.5W	113.1	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	33.2	
Lbottom	101.1	
Wtopspillway	54.2	
Ltopspillway	122.1	
Wtopofembankment	60.2	
Ltopofembankment	128.1	
Ad =	6,624	
Vd = (Aw + Ad) / 2 * Dd	**8,806**	

Sediment Trap Sizing

TST	5	PERMANENT
215,000	sf	
4.94	ac	

V	17,900	Freeboard	1
Vw	8,950	Dw	2
Vd	8,950	Dd	1.5

Aw = Vw / 0.85 / Dw	5,265	
square basin W/L	72.6	
W = sqrt(A/2.5)	45.9	at base of stone outlet
L = 2.5W	114.7	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	33.9	
Lbottom	102.7	
Wtopspillway	54.9	
Ltopspillway	123.7	
Wtopofembankment	60.9	
Ltopofembankment	129.7	
Ad =	6,791	
Vd = (Aw + Ad) / 2 * Dd	**9,042**	

Sediment Trap Sizing

TST	6	PERMANENT
215,000	sf	
4.94	ac	

V	17,900	Freeboard	1
Vw	8,950	Dw	2
Vd	8,950	Dd	1.5

Aw = Vw / 0.85 / Dw	5,265	
square basin W/L	72.6	
W = sqrt(A/4.0)	36.3	at base of stone outlet
L = 4W	145.1	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	24.3	
Lbottom	133.1	
Wtopspillway	45.3	
Ltopspillway	154.1	
Wtopofembankment	51.3	
Ltopofembankment	160.1	
Ad =	6,978	
Vd = (Aw + Ad) / 2 * Dd	**9,182**	

Sediment Trap Sizing

TST	7	PERMANENT	
40,000	sf		
0.92	ac		

V	3,400	Freeboard	1
Vw	1,700	Dw	2
Vd	1,700	Dd	1.5

Aw = Vw / 0.85 / Dw	1,000	
square basin W/L	31.6	
W = sqrt(A/2)	22.4	at base of stone outlet
L = 2W	44.7	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	10.4	
Lbottom	32.7	
Wtopspillway	31.4	
Ltopspillway	53.7	
Wtopofembankment	37.4	
Ltopofembankment	59.7	
Ad =	1,685	
Vd = (Aw + Ad) / 2 * Dd	**2,014**	

Sediment Trap Sizing

TST	9		PERMANENT	
67,000	sf			
1.54	ac			
V	5,600	Freeboard	1	
Vw	2,800	Dw	2	
Vd	2,800	Dd	1.5	
Aw = Vw / 0.85 / Dw		1,647		
square basin W/L		40.6		
W = sqrt(A/1.0)		40.6		at base of stone outlet
L = 1.0W		40.6		at base of stone outlet
Side slopes		8.5	:1	
Wbottom		6.6		
Lbottom		6.6		
Wtopspillway		66.1		
Ltopspillway		66.1		
Wtopofembankment		83.1		
Ltopofembankment		83.1		
Ad =		4,367		
Vd = (Aw + Ad) / 2 * Dd		**4,511**		

Sediment Trap Sizing

TST	10		PERMANENT	
73,000	sf			
1.68	ac			
V	6,100		Freeboard	1
Vw	3,050		Dw	2
Vd	3,050		Dd	1.5
Aw = Vw / 0.85 / Dw		1,794		
square basin W/L		42.4		
W = sqrt(A/2.0)		30.0		at base of stone outlet
L = 2.0W		59.9		at base of stone outlet
Side slopes		3.0	:1	
Wbottom		18.0		
Lbottom		47.9		
Wtopspillway		39.0		
Ltopspillway		68.9		
Wtopofembankment		45.0		
Ltopofembankment		74.9		
Ad =		2,684		
Vd = (Aw + Ad) / 2 * Dd		**3,358**		

Sediment Trap Sizing

TST	11	PERMANENT	
115,000	sf		
2.64	ac		

V	9,600	Freeboard	0
Vw	4,800	Dw	2.5
Vd	4,800	Dd	1

Aw = Vw / 0.85 / Dw	2,259	
square basin W/L	47.5	
W = sqrt(A/2)	33.6	at base of stone outlet
L = 2.0W	67.2	at base of stone outlet
Side slopes	8.5 :1	
Wbottom	10.0	
Lbottom	24.7	
Wtopspillway	69.5	
Ltopspillway	84.2	
Wtopofembankment	69.5	
Ltopofembankment	84.2	
Ad =	5,853	
Vd = (Aw + Ad) / 2 * Dd	**4,056**	

Sediment Trap Sizing

TST	12	PERMANENT	
56,000	sf		
1.29	ac		

V	4,700	Freeboard	1
Vw	2,350	Dw	2
Vd	2,350	Dd	1.5

Aw = Vw / 0.85 / Dw	1,382	
square basin W/L	37.2	
W = sqrt(A/6.0)	15.2	at base of stone outlet
L = 6.0W	91.1	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	3.2	
Lbottom	79.1	
Wtopspillway	24.2	
Ltopspillway	100.1	
Wtopofembankment	30.2	
Ltopofembankment	106.1	
Ad =	2,420	
Vd = (Aw + Ad) / 2 * Dd	**2,851**	

Sediment Trap Sizing

TST	13	PERMANENT	
55,000	sf		
1.26	ac		

V	4,600	Freeboard	1
Vw	2,300	Dw	2
Vd	2,300	Dd	1.5

Aw = Vw / 0.85 / Dw	1,353	
square basin W/L	36.8	
W = sqrt(A/2.0)	26.0	at base of stone outlet
L = 2.0W	52.0	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	14.0	
Lbottom	40.0	
Wtopspillway	35.0	
Ltopspillway	61.0	
Wtopofembankment	41.0	
Ltopofembankment	67.0	
Ad =	2,136	
Vd = (Aw + Ad) / 2 * Dd	**2,617**	

Sediment Trap Sizing

TST	14	TEMPORARY
186,000	sf	
4.27	ac	

V	15,500	Freeboard	0
Vw	7,750	Dw	2.5
Vd	7,750	Dd	1

Aw = Vw / 0.85 / Dw	3,647	
square basin W/L	60.4	
W = sqrt(A/6.0)	24.7	at base of stone outlet
L = 6.0W	147.9	at base of stone outlet
Side slopes	2.0 :1	
Wbottom	14.7	
Lbottom	137.9	
Wtopspillway	28.7	
Ltopspillway	151.9	
Wtopofembankment	28.7	
Ltopofembankment	151.9	
Ad =	4,353	
Vd = (Aw + Ad) / 2 * Dd	**4,000**	

Sediment Trap Sizing

TST	15	TEMPORARY
73,000	sf	
1.68	ac	

V	6,100	Freeboard	0
Vw	3,050	Dw	2.5
Vd	3,050	Dd	1

Aw = Vw / 0.85 / Dw	1,435	
square basin W/L	37.9	
W = sqrt(A/2.0)	26.8	at base of stone outlet
L = 2.0W	53.6	at base of stone outlet
Side slopes	2.0 :1	
Wbottom	16.8	
Lbottom	43.6	
Wtopspillway	30.8	
Ltopspillway	57.6	
Wtopofembankment	30.8	
Ltopofembankment	57.6	
Ad =	1,773	
Vd = (Aw + Ad) / 2 * Dd	**1,604**	

Sediment Trap Sizing

TST	17	PERMANENT	
78,000	sf		
1.79	ac		

V	6,500	Freeboard	1
Vw	3,250	Dw	2
Vd	3,250	Dd	1.5

Aw = Vw / 0.85 / Dw	1,912	
square basin W/L	43.7	
W = sqrt(A/3.0)	25.2	at base of stone outlet
L = 3.0W	75.7	at base of stone outlet
Side slopes	3.0 :1	
Wbottom	13.2	
Lbottom	63.7	
Wtopspillway	34.2	
Ltopspillway	84.7	
Wtopofembankment	40.2	
Ltopofembankment	90.7	
Ad =	2,902	
Vd = (Aw + Ad) / 2 * Dd	**3,610**	

Sediment Trap Sizing

TST	18		PERMANENT	
156,000	sf			
3.58	ac			
V	13,000		Freeboard	1
Vw	6,500		Dw	2
Vd	6,500		Dd	1.5
Aw = Vw / 0.85 / Dw		3,824		
square basin W/L		61.8		
W = sqrt(A/4.0)		30.9		at base of stone outlet
L = 4.0W		123.7		at base of stone outlet
Side slopes		2.0	:1	
Wbottom		22.9		
Lbottom		115.7		
Wtopspillway		36.9		
Ltopspillway		129.7		
Wtopofembankment		40.9		
Ltopofembankment		133.7		
Ad =		4,787		
Vd = (Aw + Ad) / 2 * Dd		**6,458**		

SEDIMENT BASIN SIZING

SB 1 PERMANENT

DA, drainage area =	266,000	sf
	6.11	ac
	0.010	sq mi.
Construction Duration:	8	months
(DA) (A) = 6.31 ac * 50 tons =	306	tons / year
	204	tons for life of basin
Delivery Ratio DR (from Figure SB-12) for sand-silt loam =	55%	
Density of sediment (from Figure SB-2) for sand-silt loam =	85	pcf
Trap Efficiency TE =	80%	
V sediment storage = (DA)(A)(DR)(TE)(2,000) / Density =	**2,112**	**cf**
10-year, 24-hour rainfall, P =	5.32	in.
Vr (from Hydrographs) =	2.89	watershed inches
Q10 = Qi (from Hydrographs) =	17.37	cfs
Qi / DA =	2.84	
Qo / Qi (from Figure SB-13) =	0.068	
Qo =	1.18	cfs
Release rate = Qo * 640 / DA =	123.8	csm
Vs (from Figure DB-6) =	1.6	watershed inches
Vs = Vs * DA / 12 * 43,560 =	**35,467**	**cf**
Minimum volume below crest of emergency spillway =	***37,579***	***cf***

Effective flow length L = 2W = 2 * 10 * sqrt(Q5) = 20 * sqrt(12.78) =	71.5	ft
Bottom dimensions =	20	ft x
	209	ft
Side slopes =	3	:1
6" Riser height from bottom of basin =	3	ft
10' Wide emergency spillway crest height from bottom of basin =	4.5	ft
Minimum embankment height from bottom of basin =	6	ft
Top of embankment dimensions =	56	ft x
	245	ft

SEDIMENT BASIN SIZING

SB 3 PERMANENT

DA, drainage area =	1,090,000	sf
	25.02	ac
	0.039	sq mi.
Construction Duration:	8	months
(DA) (A) = 7.46 ac * 50 tons =	1252	tons / year
	835	tons for life of basin
Delivery Ratio DR (from Figure SB-12) for sand-silt loam =	55%	
Density of sediment (from Figure SB-2) for sand-silt loam =	85	pcf
Trap Efficiency TE =	80%	
V sediment storage = (DA)(A)(DR)(TE)(2,000) / Density =	**8,645**	**cf**
10-year, 24-hour rainfall, P =	5.32	in.
Vr (from Hydrographs) =	2.88	watershed inches
Q10 = Qi (from Hydrographs) =	60.00	cfs
Qi / DA =	2.40	
Qo / Qi (from Figure SB-13) =	0.078	
Qo =	4.68	cfs
Release rate = Qo * 640 / DA =	119.7	csm
Vs (from Figure DB-6) =	1.6	watershed inches
Vs = Vs * DA / 12 * 43,560 =	**145,333**	**cf**
Minimum volume below crest of emergency spillway =	***153,978***	***cf***

Effective flow length L = 2W = 2 * 10 * sqrt(Q5) = 20 * sqrt(44.12) =	132.8	ft
Bottom dimensions =	155	ft x
	260	ft
Side slopes =	8.5	:1
12" Riser height from bottom of basin =	2	ft
20' Wide emergency spillway crest height from bottom of basin =	3	ft
Minimum embankment height from bottom of basin =	4.5	ft
Top of embankment dimensions =	231.5	ft x
	336.5	ft

SEDIMENT BASIN SIZING

SB 8 PERMANENT

DA, drainage area =	326,000	sf
	7.48	ac
	0.012	sq mi.
Construction Duration:	8	months
(DA) (A) = 7.46 ac * 50 tons =	375	tons / year
	250	tons for life of basin
Delivery Ratio DR (from Figure SB-12) for sand-silt loam =	55%	
Density of sediment (from Figure SB-2) for sand-silt loam =	85	pcf
Trap Efficiency TE =	80%	
V sediment storage = (DA)(A)(DR)(TE)(2,000) / Density =	**2,588**	**cf**
10-year, 24-hour rainfall, P =	5.32	in.
Vr (from Hydrographs) =	2.89	watershed inches
Q10 = Qi (from Hydrographs) =	22.50	cfs
Qi / DA =	3.01	
Qo / Qi (from Figure SB-13) =	0.061	
Qo =	1.37	cfs
Release rate = Qo * 640 / DA =	117.4	csm
Vs (from Figure DB-6) =	1.6	watershed inches
Vs = Vs * DA / 12 * 43,560 =	**43,467**	**cf**
Minimum volume below crest of emergency spillway =	***46,055***	***cf***

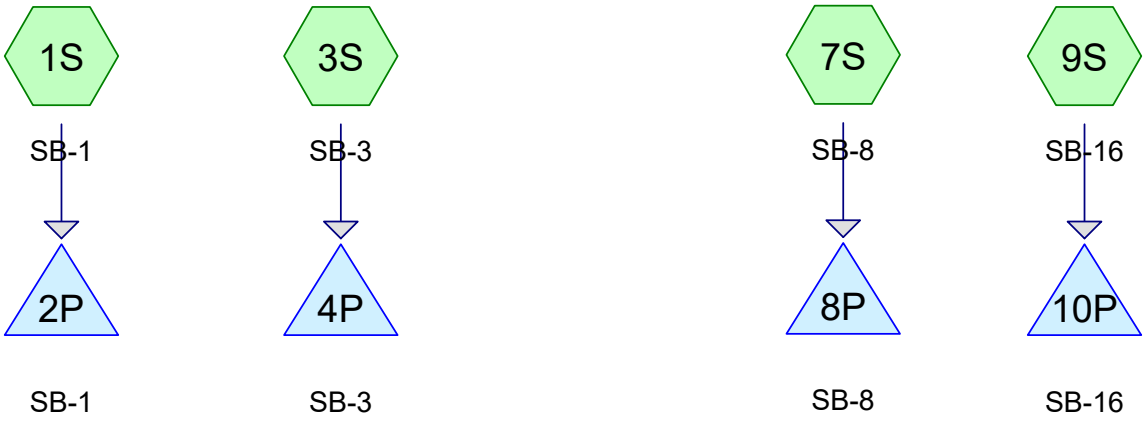
Effective flow length L = 2W = 2 * 10 * sqrt(Q5) = 20 * sqrt(16.57) =	81.4	ft
Bottom dimensions =	25	ft x
	260	ft
Side slopes =	3	:1
6" Riser height from bottom of basin =	3	ft
10' Wide emergency spillway crest height from bottom of basin =	4.5	ft
Minimum embankment height from bottom of basin =	6	ft
Top of embankment dimensions =	61	ft x
	296	ft

SEDIMENT BASIN SIZING

SB 16 PERMANENT

DA, drainage area =	869,000	sf
	19.95	ac
	0.031	sq mi.
Construction Duration:	8	months
(DA) (A) = 7.46 ac * 50 tons =	998	tons / year
	666	tons for life of basin
Delivery Ratio DR (from Figure SB-12) for sand-silt loam =	55%	
Density of sediment (from Figure SB-2) for sand-silt loam =	85	pcf
Trap Efficiency TE =	80%	
V sediment storage = (DA)(A)(DR)(TE)(2,000) / Density =	**6,895**	**cf**
10-year, 24-hour rainfall, P =	5.32	in.
Vr (from Hydrographs) =	2.88	watershed inches
Q10 = Qi (from Hydrographs) =	43.00	cfs
Qi / DA =	2.16	
Qo / Qi (from Figure SB-13) =	0.085	
Qo =	3.66	cfs
Release rate = Qo * 640 / DA =	117.3	csm
Vs (from Figure DB-6) =	1.6	watershed inches
Vs = Vs * DA / 12 * 43,560 =	**115,867**	**cf**
Minimum volume below crest of emergency spillway =	***122,762***	***cf***

Effective flow length L = 2W = 2 * 10 * sqrt(Q5) = 20 * sqrt(31.61) =	112.4	ft
Bottom dimensions =	70	ft x
	410	ft
Side slopes =	8.5	:1
No riser		
10' Wide emergency spillway crest height from bottom of basin =	3	ft
Minimum embankment height from bottom of basin =	4	ft
Top of embankment dimensions =	138	ft x
	478	ft



Subcat Reach Pond Link

Routing Diagram for Sediment Basin Sizing
Prepared by VHB, Printed 12/28/2018
HydroCAD® 10.00-19 s/n 01038 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
58.560	77	Fallow, bare soil, HSG A (1S, 3S, 7S, 9S)
58.560	**77**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SB-1 Runoff Area=6.110 ac 0.00% Impervious Runoff Depth>1.28"
Flow Length=700' Slope=0.0200 '/' Tc=11.1 min CN=77 Runoff=7.50 cfs 0.652 af

Subcatchment 3S: SB-3 Runoff Area=25.020 ac 0.00% Impervious Runoff Depth>1.28"
Flow Length=1,100' Tc=17.6 min CN=77 Runoff=25.90 cfs 2.666 af

Subcatchment 7S: SB-8 Runoff Area=7.480 ac 0.00% Impervious Runoff Depth>1.28"
Flow Length=750' Tc=8.9 min CN=77 Runoff=9.75 cfs 0.799 af

Subcatchment 9S: SB-16 Runoff Area=19.950 ac 0.00% Impervious Runoff Depth>1.28"
Flow Length=1,200' Tc=22.9 min CN=77 Runoff=18.53 cfs 2.123 af

Pond 2P: SB-1 Peak Elev=3.14' Storage=22,676 cf Inflow=7.50 cfs 0.652 af
Primary=0.27 cfs 0.143 af Secondary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.143 af

Pond 4P: SB-3 Peak Elev=2.16' Storage=104,215 cf Inflow=25.90 cfs 2.666 af
Primary=0.63 cfs 0.279 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.279 af

Pond 8P: SB-8 Peak Elev=3.14' Storage=29,157 cf Inflow=9.75 cfs 0.799 af
Primary=0.26 cfs 0.138 af Secondary=0.00 cfs 0.000 af Outflow=0.26 cfs 0.138 af

Pond 10P: SB-16 Peak Elev=2.37' Storage=92,430 cf Inflow=18.53 cfs 2.123 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 58.560 ac Runoff Volume = 6.240 af Average Runoff Depth = 1.28"
100.00% Pervious = 58.560 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SB-1

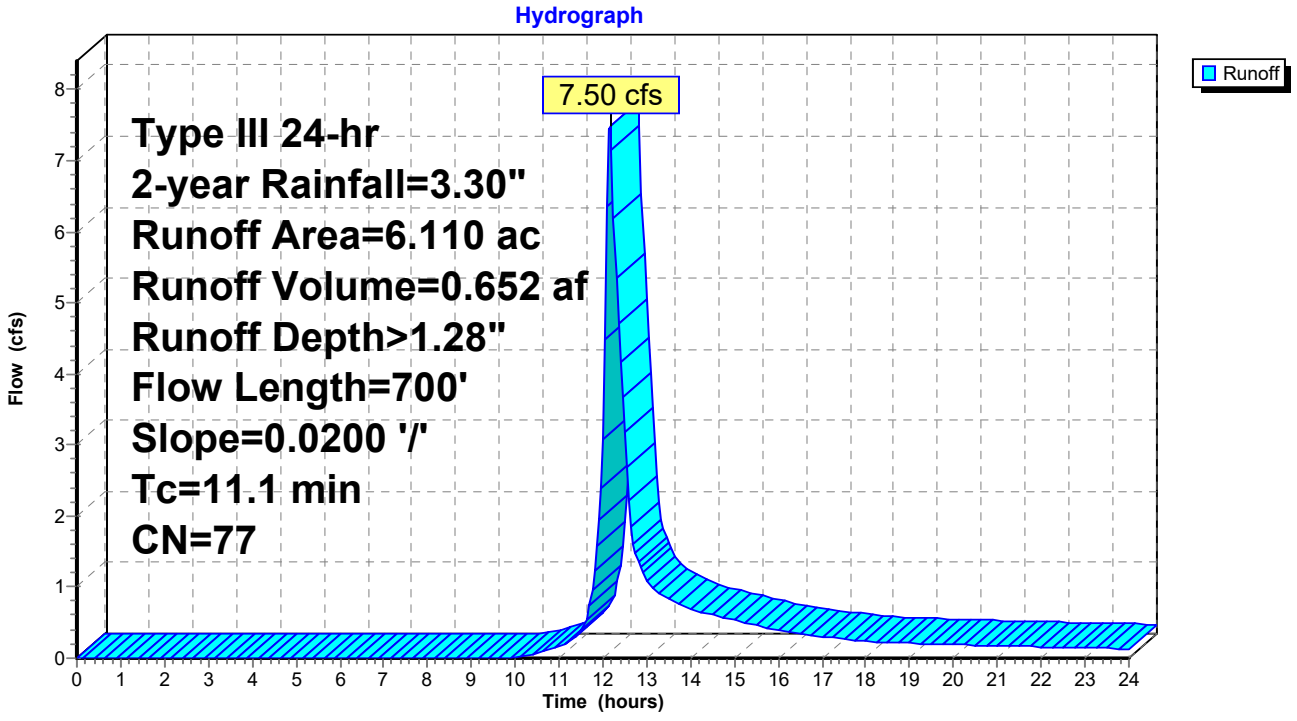
Runoff = 7.50 cfs @ 12.16 hrs, Volume= 0.652 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
6.110	77	Fallow, bare soil, HSG A
6.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.0200	0.42		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
7.1	600	0.0200	1.41		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
11.1	700	Total			

Subcatchment 1S: SB-1



Summary for Subcatchment 3S: SB-3

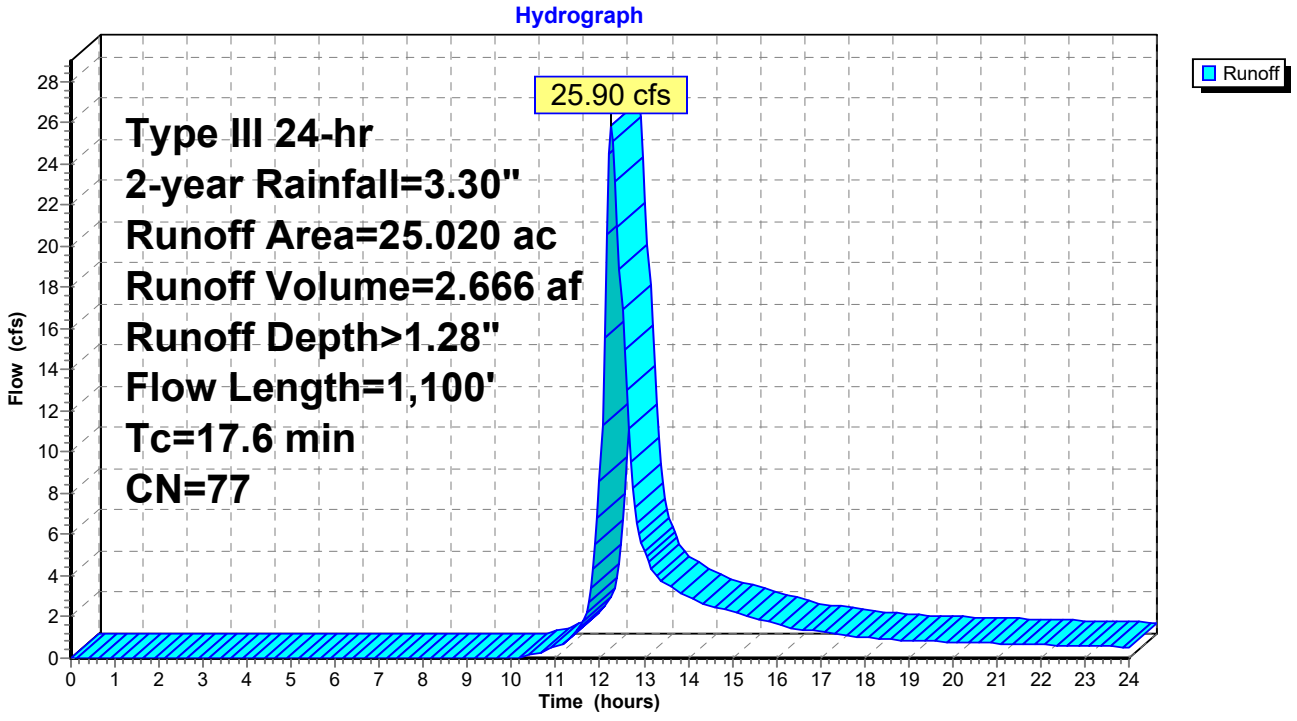
Runoff = 25.90 cfs @ 12.26 hrs, Volume= 2.666 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
25.020	77	Fallow, bare soil, HSG A
25.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.0200	0.42		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
13.6	1,000	0.0150	1.22		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
17.6	1,100	Total			

Subcatchment 3S: SB-3



Summary for Subcatchment 7S: SB-8

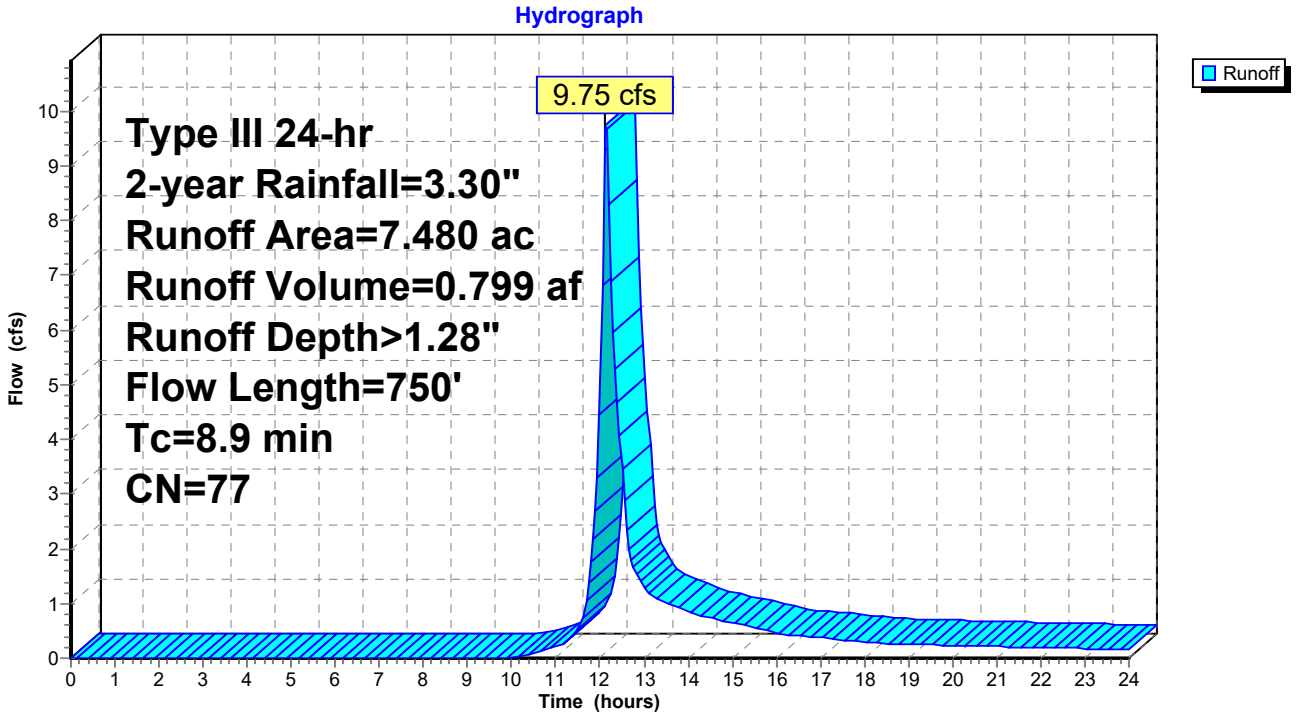
Runoff = 9.75 cfs @ 12.14 hrs, Volume= 0.799 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
7.480	77	Fallow, bare soil, HSG A
7.480		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	100	0.0250	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
5.2	650	0.0430	2.07		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	750	Total			

Subcatchment 7S: SB-8



Summary for Subcatchment 9S: SB-16

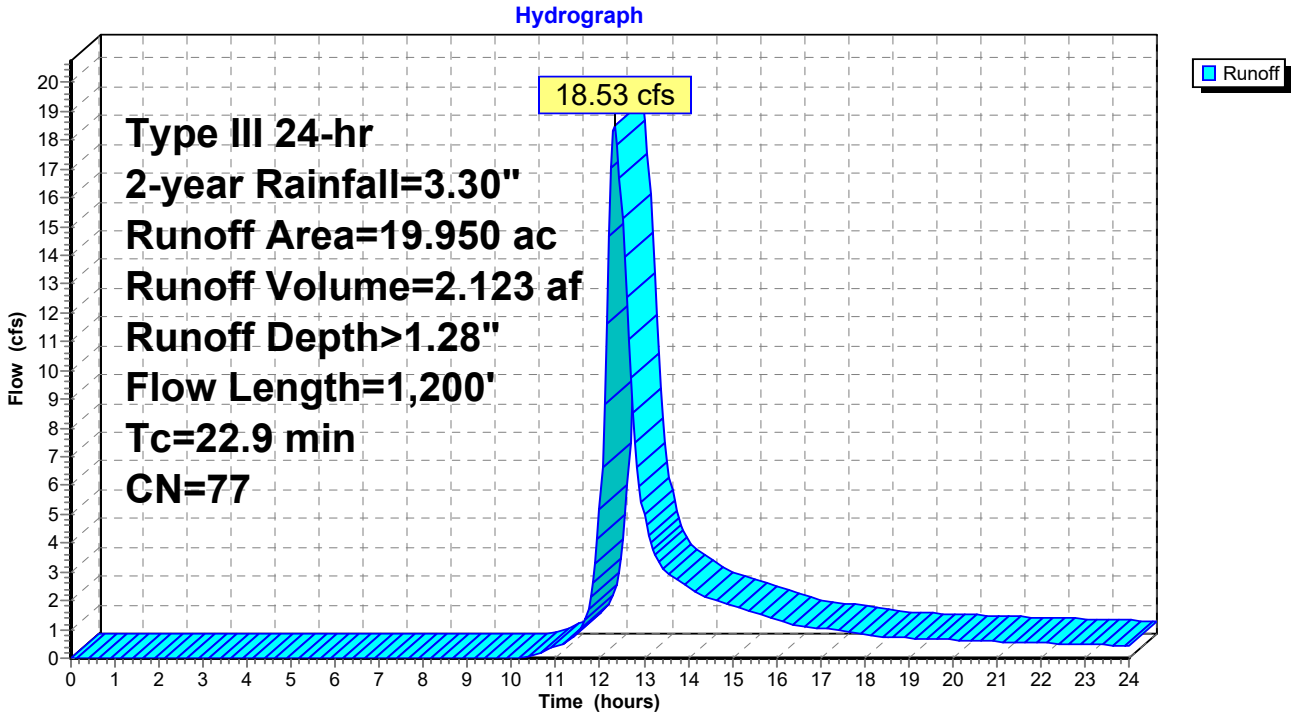
Runoff = 18.53 cfs @ 12.34 hrs, Volume= 2.123 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
19.950	77	Fallow, bare soil, HSG A
19.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.0140	0.36		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
18.3	1,100	0.0100	1.00		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
22.9	1,200	Total			

Subcatchment 9S: SB-16



Summary for Pond 2P: SB-1

Inflow Area = 6.110 ac, 0.00% Impervious, Inflow Depth > 1.28" for 2-year event
Inflow = 7.50 cfs @ 12.16 hrs, Volume= 0.652 af
Outflow = 0.27 cfs @ 17.49 hrs, Volume= 0.143 af, Atten= 96%, Lag= 319.8 min
Primary = 0.27 cfs @ 17.49 hrs, Volume= 0.143 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 3.14' @ 17.49 hrs Surf.Area= 9,860 sf Storage= 22,676 cf

Plug-Flow detention time= 459.5 min calculated for 0.142 af (22% of inflow)
Center-of-Mass det. time= 319.7 min (1,173.7 - 854.0)

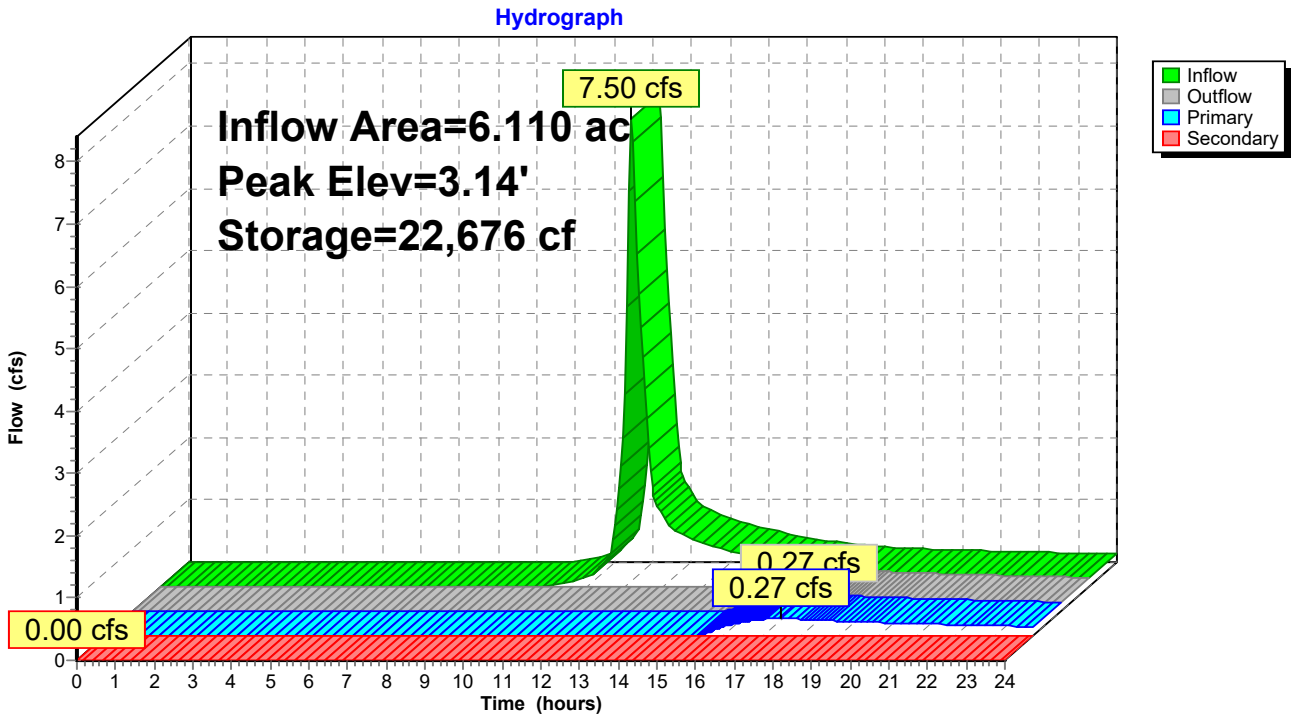
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	58,332 cf	**20.00'W x 235.00'L x 6.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	4.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.27 cfs @ 17.49 hrs HW=3.14' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 0.27 cfs @ 1.23 fps)

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

Pond 2P: SB-1


Hydrograph
Inflow Area=6.110 ac
Peak Elev=3.14'
Storage=22,676 cf
7.50 cfs
0.27 cfs
0.27 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond 4P: SB-3

Inflow Area = 25.020 ac, 0.00% Impervious, Inflow Depth > 1.28" for 2-year event
Inflow = 25.90 cfs @ 12.26 hrs, Volume= 2.666 af
Outflow = 0.63 cfs @ 22.45 hrs, Volume= 0.279 af, Atten= 98%, Lag= 611.7 min
Primary = 0.63 cfs @ 22.45 hrs, Volume= 0.279 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 2.16' @ 22.45 hrs Surf.Area= 56,849 sf Storage= 104,215 cf

Plug-Flow detention time= 566.7 min calculated for 0.279 af (10% of inflow)
Center-of-Mass det. time= 412.8 min (1,271.8 - 859.0)

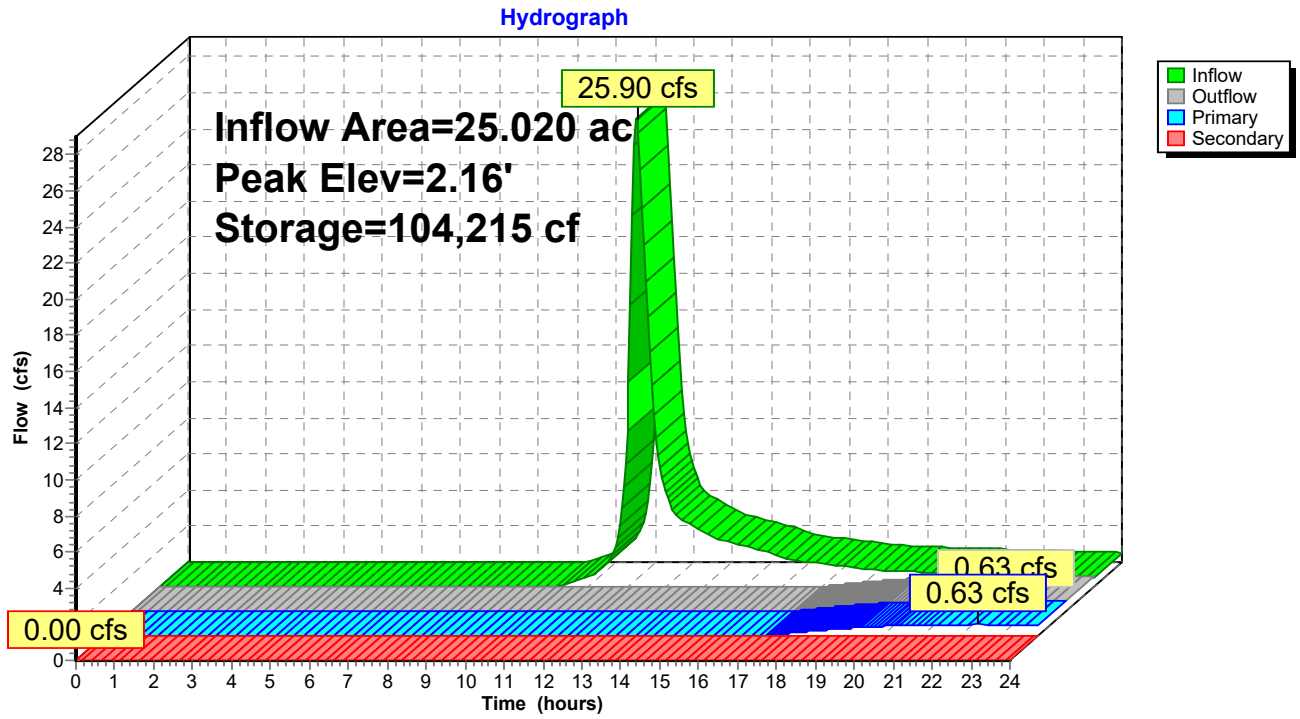
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	261,560 cf	**155.00'W x 260.00'L x 4.50'H Prismatoid Z=8.5**

Device	Routing	Invert	Outlet Devices
#1	Primary	2.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	3.00'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.63 cfs @ 22.45 hrs HW=2.16' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 0.63 cfs @ 1.29 fps)

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

Pond 4P: SB-3


Hydrograph
Inflow Area=25.020 ac
Peak Elev=2.16'
Storage=104,215 cf
25.90 cfs
0.63 cfs
0.63 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond 8P: SB-8

Inflow Area = 7.480 ac, 0.00% Impervious, Inflow Depth > 1.28" for 2-year event
Inflow = 9.75 cfs @ 12.14 hrs, Volume= 0.799 af
Outflow = 0.26 cfs @ 18.92 hrs, Volume= 0.138 af, Atten= 97%, Lag= 407.3 min
Primary = 0.26 cfs @ 18.92 hrs, Volume= 0.138 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 3.14' @ 18.92 hrs Surf.Area= 12,216 sf Storage= 29,157 cf

Plug-Flow detention time= 506.2 min calculated for 0.138 af (17% of inflow)
Center-of-Mass det. time= 361.9 min (1,214.1 - 852.3)

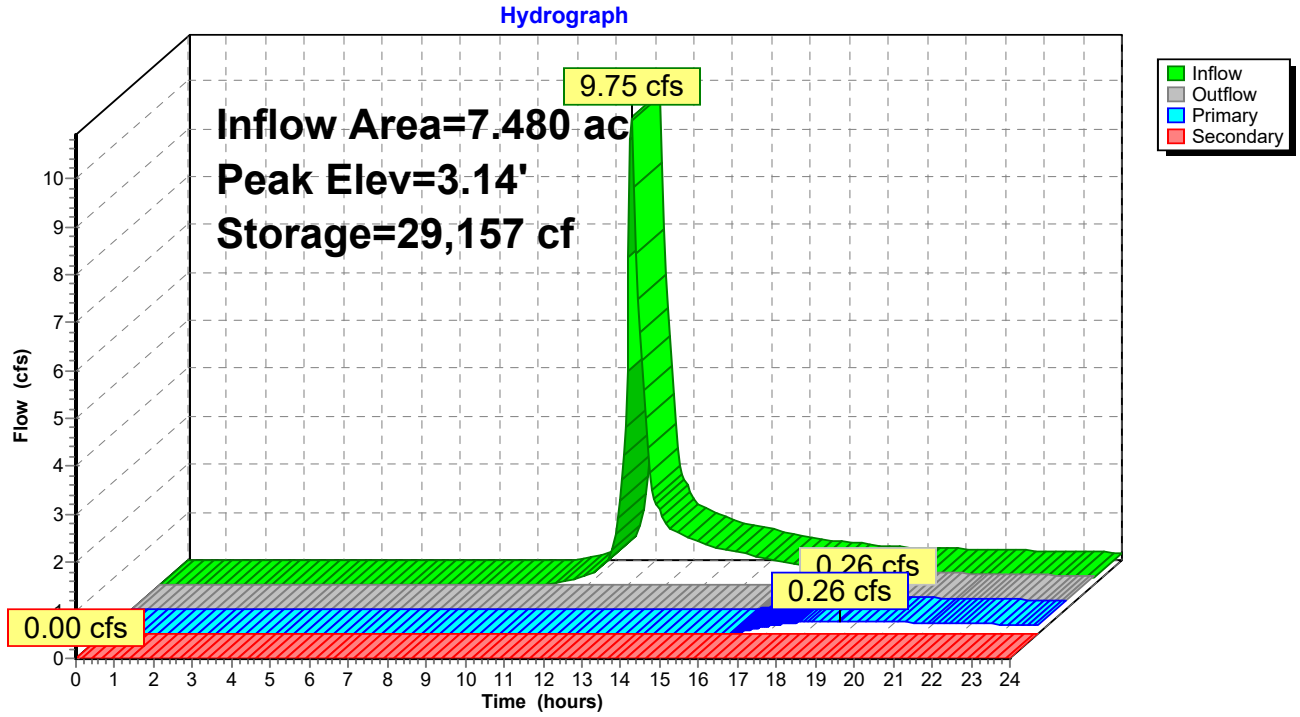
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	72,372 cf	**25.00'W x 260.00'L x 6.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	4.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.26 cfs @ 18.92 hrs HW=3.14' (Free Discharge)
└**1=Orifice/Grate** (Weir Controls 0.26 cfs @ 1.20 fps)

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

Pond 8P: SB-8


Hydrograph
Inflow Area=7.480 ac
Peak Elev=3.14'
Storage=29,157 cf
9.75 cfs
0.26 cfs
0.26 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0 2 3 4 5 6 7 8 9 10

Summary for Pond 10P: SB-16

Inflow Area = 19.950 ac, 0.00% Impervious, Inflow Depth > 1.28" for 2-year event
Inflow = 18.53 cfs @ 12.34 hrs, Volume= 2.123 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 2.37' @ 24.00 hrs Surf.Area= 49,703 sf Storage= 92,430 cf

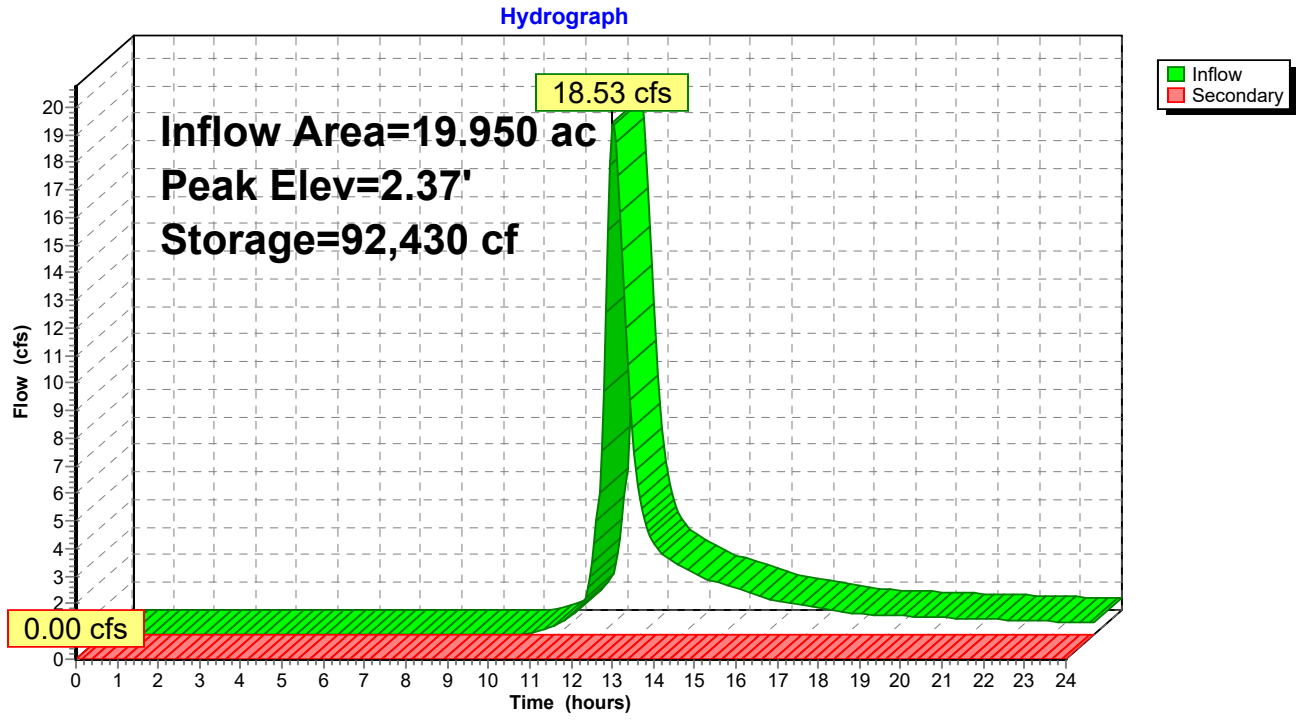
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	186,245 cf	**70.00'W x 410.00'L x 4.00'H Prismatoid Z=8.5**

Device	Routing	Invert	Outlet Devices
#1	Secondary	3.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 10P: SB-16



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SB-1 Runoff Area=6.110 ac 0.00% Impervious Runoff Depth>2.89"
Flow Length=700' Slope=0.0200 '/' Tc=11.1 min CN=77 Runoff=17.37 cfs 1.470 af

Subcatchment 3S: SB-3 Runoff Area=25.020 ac 0.00% Impervious Runoff Depth>2.88"
Flow Length=1,100' Tc=17.6 min CN=77 Runoff=60.00 cfs 6.011 af

Subcatchment 7S: SB-8 Runoff Area=7.480 ac 0.00% Impervious Runoff Depth>2.89"
Flow Length=750' Tc=8.9 min CN=77 Runoff=22.50 cfs 1.801 af

Subcatchment 9S: SB-16 Runoff Area=19.950 ac 0.00% Impervious Runoff Depth>2.88"
Flow Length=1,200' Tc=22.9 min CN=77 Runoff=43.00 cfs 4.788 af

Pond 2P: SB-1 Peak Elev=4.53' Storage=38,053 cf Inflow=17.37 cfs 1.470 af
Primary=1.17 cfs 0.903 af Secondary=0.15 cfs 0.011 af Outflow=1.32 cfs 0.915 af

Pond 4P: SB-3 Peak Elev=3.09' Storage=160,844 cf Inflow=60.00 cfs 6.011 af
Primary=3.94 cfs 3.173 af Secondary=1.24 cfs 0.190 af Outflow=5.18 cfs 3.363 af

Pond 8P: SB-8 Peak Elev=4.55' Storage=48,430 cf Inflow=22.50 cfs 1.801 af
Primary=1.18 cfs 0.978 af Secondary=0.30 cfs 0.037 af Outflow=1.48 cfs 1.015 af

Pond 10P: SB-16 Peak Elev=3.28' Storage=141,620 cf Inflow=43.00 cfs 4.788 af
Outflow=3.66 cfs 1.759 af

Total Runoff Area = 58.560 ac Runoff Volume = 14.070 af Average Runoff Depth = 2.88"
100.00% Pervious = 58.560 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SB-1

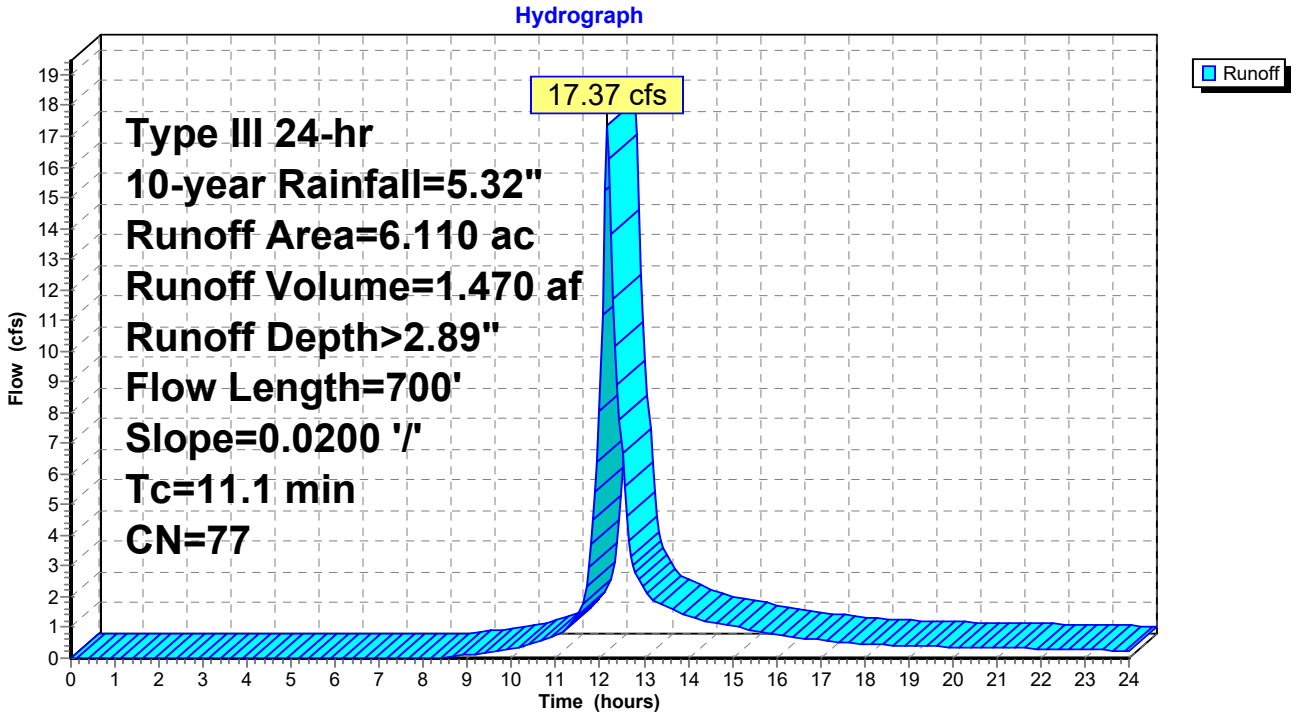
Runoff = 17.37 cfs @ 12.16 hrs, Volume= 1.470 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
6.110	77	Fallow, bare soil, HSG A
6.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.0200	0.42		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
7.1	600	0.0200	1.41		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
11.1	700	Total			

Subcatchment 1S: SB-1



Summary for Subcatchment 3S: SB-3

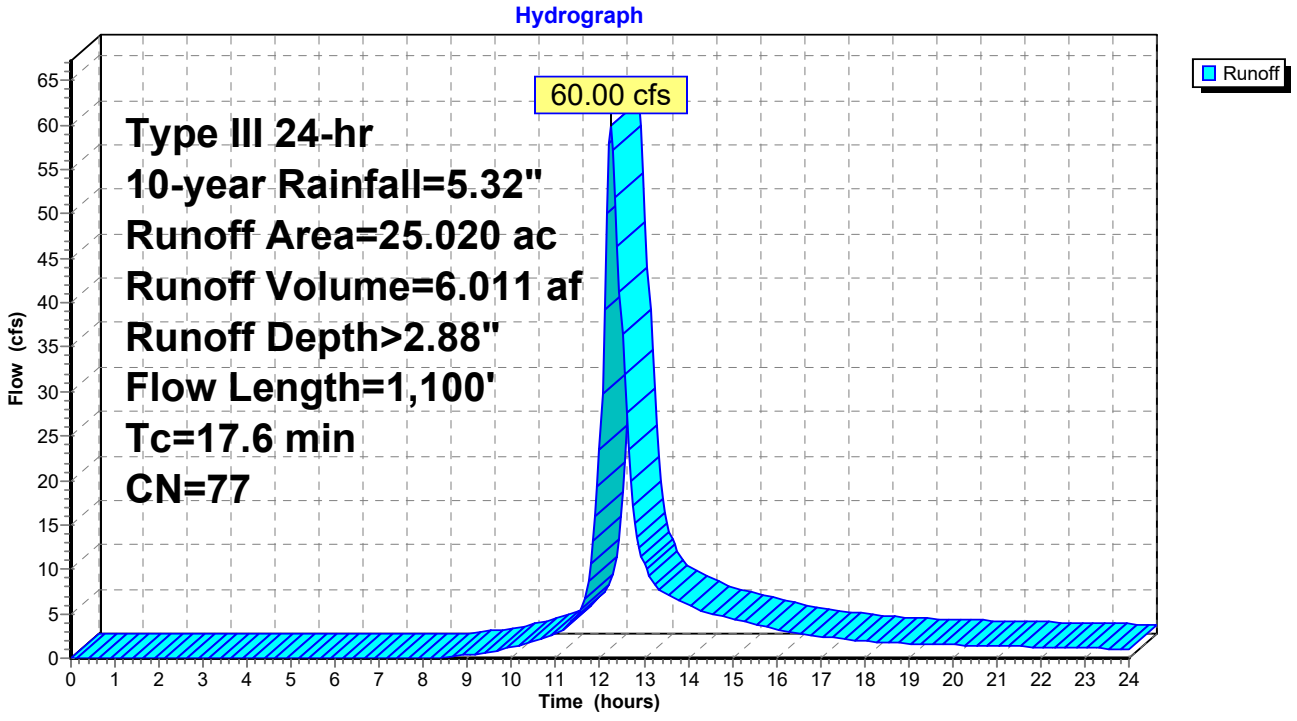
Runoff = 60.00 cfs @ 12.25 hrs, Volume= 6.011 af, Depth> 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
25.020	77	Fallow, bare soil, HSG A
25.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.0200	0.42		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
13.6	1,000	0.0150	1.22		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
17.6	1,100	Total			

Subcatchment 3S: SB-3



Summary for Subcatchment 7S: SB-8

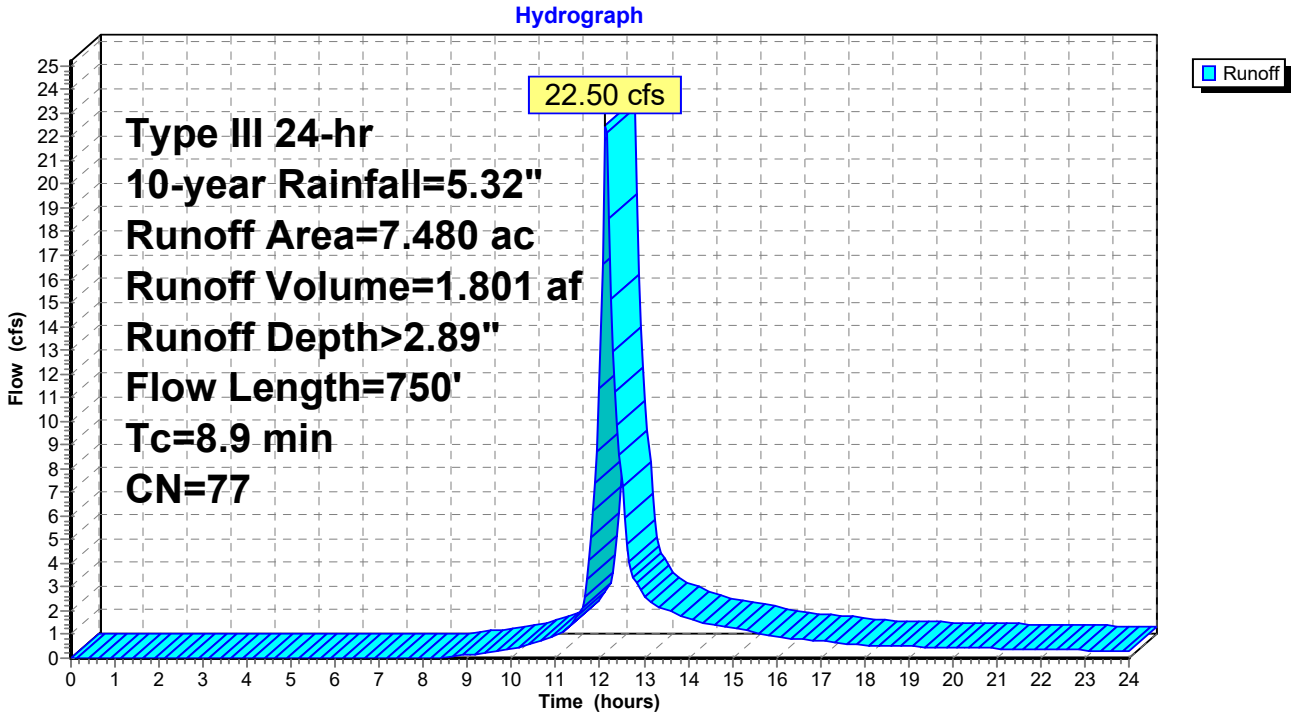
Runoff = 22.50 cfs @ 12.13 hrs, Volume= 1.801 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
7.480	77	Fallow, bare soil, HSG A
7.480		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	100	0.0250	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
5.2	650	0.0430	2.07		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	750	Total			

Subcatchment 7S: SB-8



Summary for Subcatchment 9S: SB-16

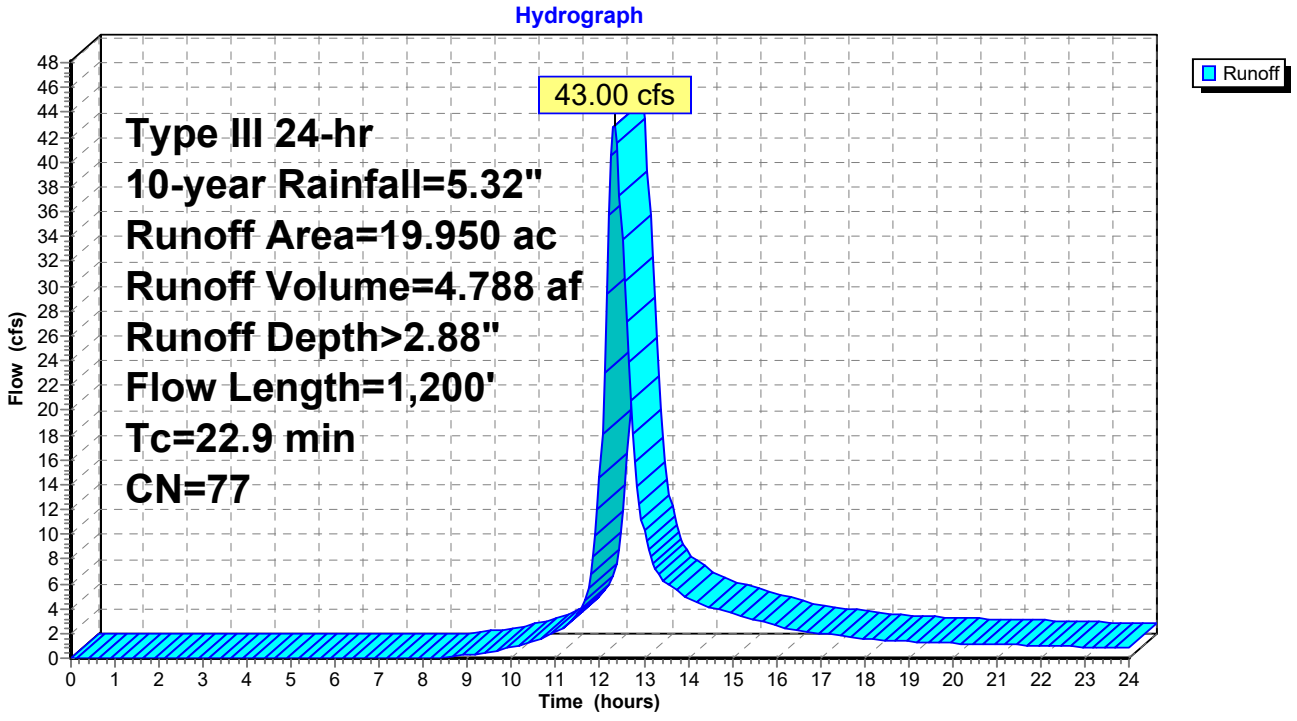
Runoff = 43.00 cfs @ 12.32 hrs, Volume= 4.788 af, Depth> 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
19.950	77	Fallow, bare soil, HSG A
19.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.0140	0.36		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
18.3	1,100	0.0100	1.00		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
22.9	1,200	Total			

Subcatchment 9S: SB-16



Summary for Pond 2P: SB-1

Inflow Area = 6.110 ac, 0.00% Impervious, Inflow Depth > 2.89" for 10-year event
Inflow = 17.37 cfs @ 12.16 hrs, Volume= 1.470 af
Outflow = 1.32 cfs @ 14.13 hrs, Volume= 0.915 af, Atten= 92%, Lag= 118.3 min
Primary = 1.17 cfs @ 14.13 hrs, Volume= 0.903 af
Secondary = 0.15 cfs @ 14.13 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 4.53' @ 14.13 hrs Surf.Area= 12,362 sf Storage= 38,053 cf

Plug-Flow detention time= 319.7 min calculated for 0.913 af (62% of inflow)
Center-of-Mass det. time= 215.2 min (1,045.6 - 830.4)

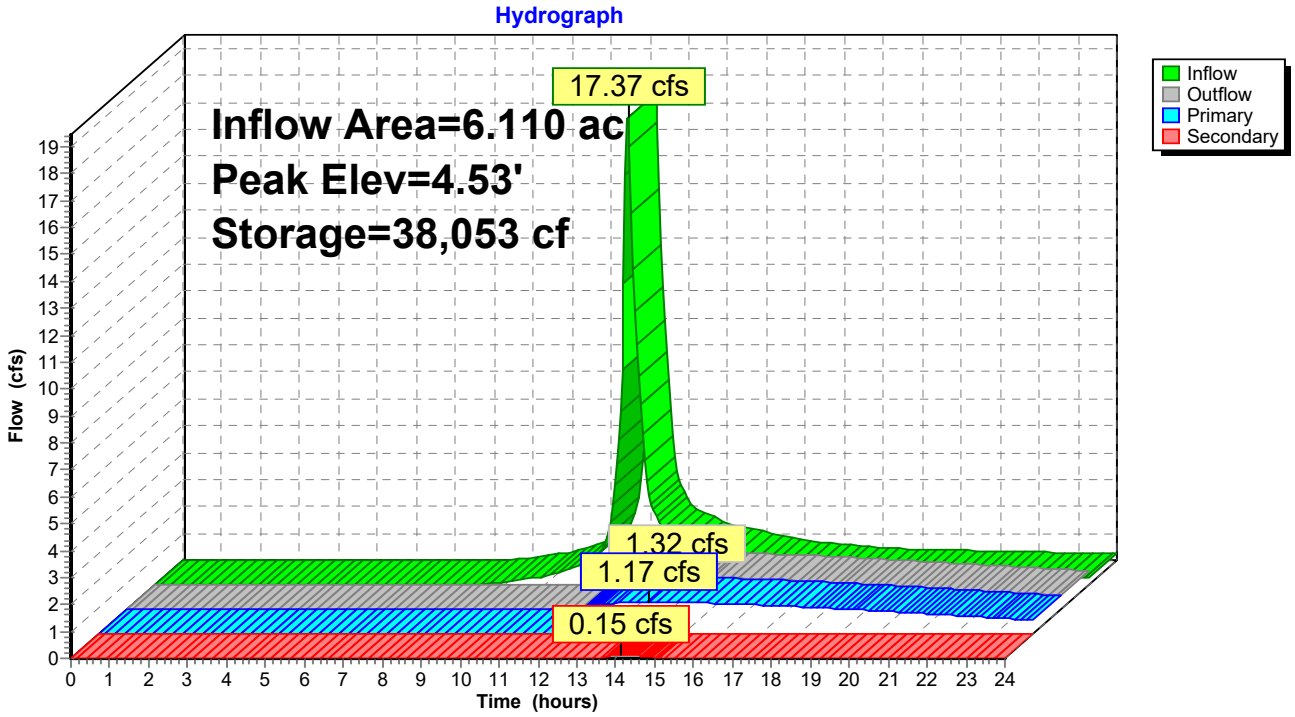
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	58,332 cf	**20.00'W x 235.00'L x 6.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	4.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.17 cfs @ 14.13 hrs HW=4.53' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.17 cfs @ 5.95 fps)

Secondary OutFlow Max=0.10 cfs @ 14.13 hrs HW=4.53' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.38 fps)

Pond 2P: SB-1


Hydrograph
Inflow Area=6.110 ac
Peak Elev=4.53'
Storage=38,053 cf
17.37 cfs
1.32 cfs
1.17 cfs
0.15 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond 4P: SB-3

Inflow Area = 25.020 ac, 0.00% Impervious, Inflow Depth > 2.88" for 10-year event
Inflow = 60.00 cfs @ 12.25 hrs, Volume= 6.011 af
Outflow = 5.18 cfs @ 14.37 hrs, Volume= 3.363 af, Atten= 91%, Lag= 127.6 min
Primary = 3.94 cfs @ 14.37 hrs, Volume= 3.173 af
Secondary = 1.24 cfs @ 14.37 hrs, Volume= 0.190 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 3.09' @ 14.37 hrs Surf.Area= 64,831 sf Storage= 160,844 cf

Plug-Flow detention time= 330.6 min calculated for 3.363 af (56% of inflow)
Center-of-Mass det. time= 220.5 min (1,056.1 - 835.6)

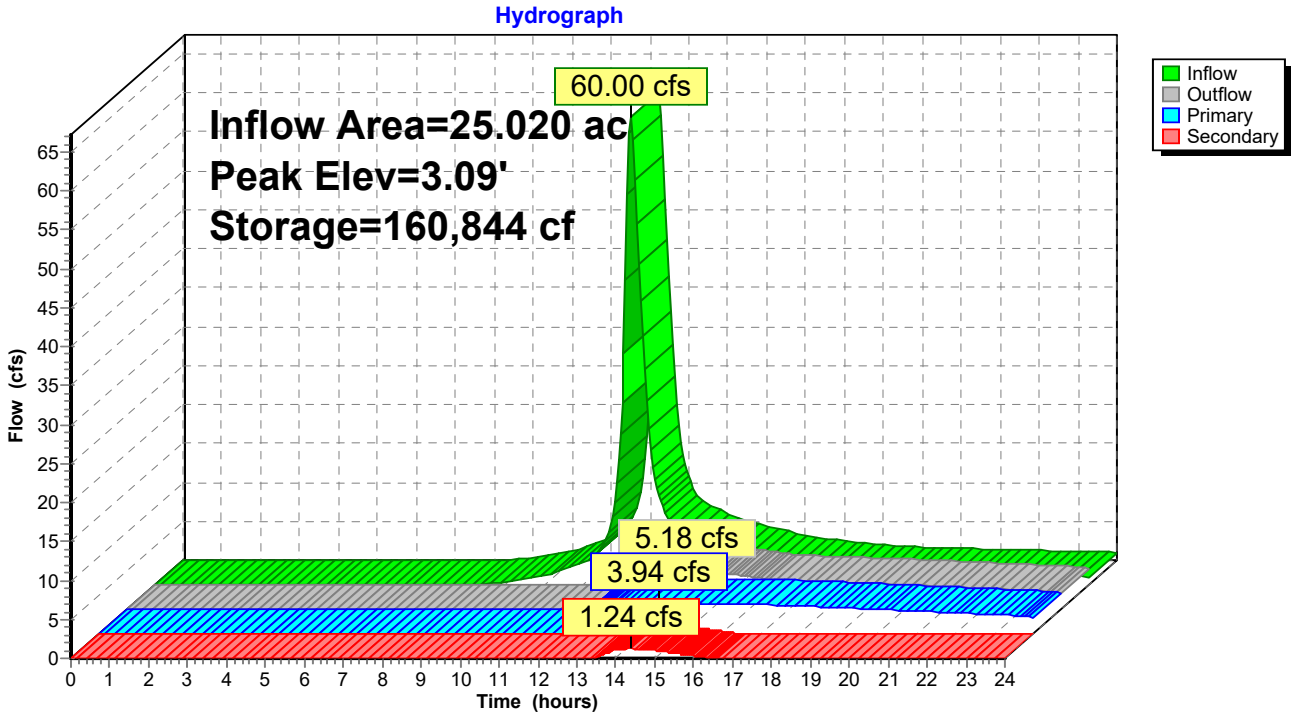
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	261,560 cf	**155.00'W x 260.00'L x 4.50'H Prismatoid Z=8.5**

Device	Routing	Invert	Outlet Devices
#1	Primary	2.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	3.00'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.94 cfs @ 14.37 hrs HW=3.09' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 3.94 cfs @ 5.02 fps)

Secondary OutFlow Max=1.21 cfs @ 14.37 hrs HW=3.09' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.21 cfs @ 0.70 fps)

Pond 4P: SB-3


Hydrograph
60.00 cfs
Inflow Area=25.020 ac
Peak Elev=3.09'
Storage=160,844 cf
5.18 cfs
3.94 cfs
1.24 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 5 10 15 20 25 30 35 40 45 50 55 60 65
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond 8P: SB-8

Inflow Area = 7.480 ac, 0.00% Impervious, Inflow Depth > 2.89" for 10-year event
Inflow = 22.50 cfs @ 12.13 hrs, Volume= 1.801 af
Outflow = 1.48 cfs @ 14.43 hrs, Volume= 1.015 af, Atten= 93%, Lag= 137.8 min
Primary = 1.18 cfs @ 14.43 hrs, Volume= 0.978 af
Secondary = 0.30 cfs @ 14.43 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 4.55' @ 14.43 hrs Surf.Area= 15,029 sf Storage= 48,430 cf

Plug-Flow detention time= 338.2 min calculated for 1.012 af (56% of inflow)
Center-of-Mass det. time= 228.2 min (1,056.9 - 828.7)

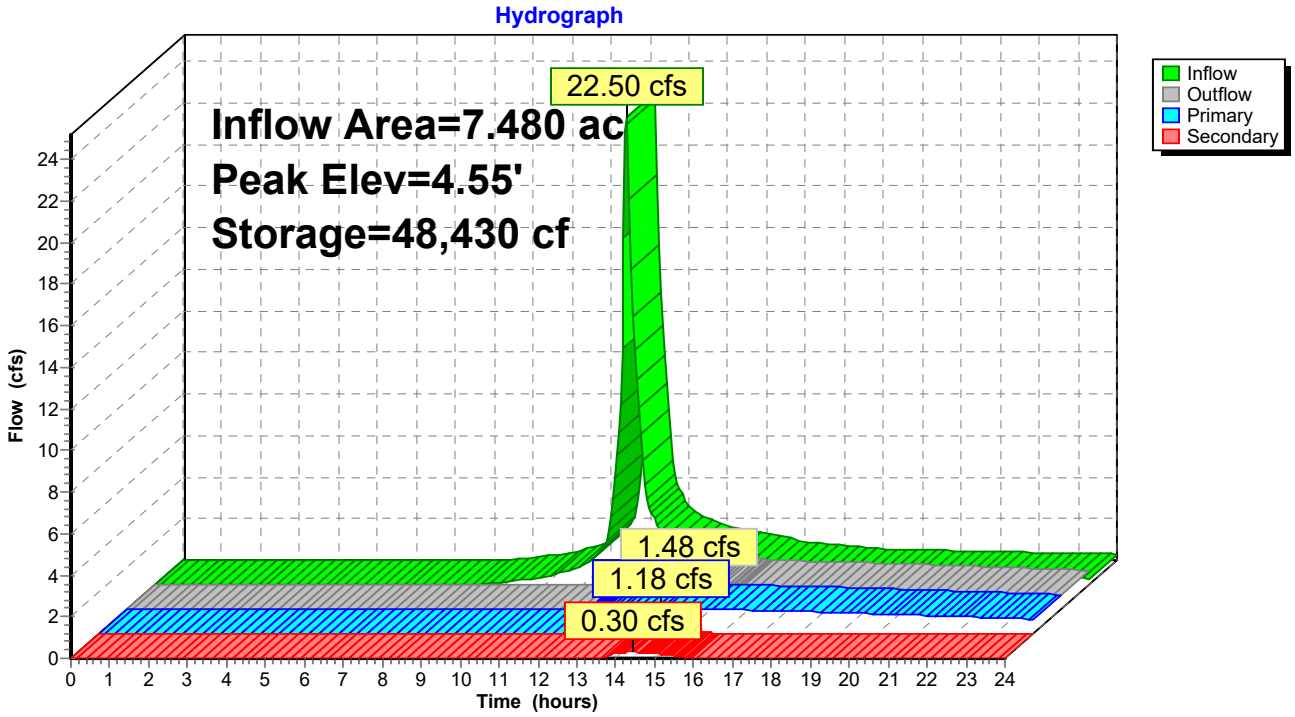
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	72,372 cf	**25.00'W x 260.00'L x 6.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	4.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.18 cfs @ 14.43 hrs HW=4.55' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.18 cfs @ 6.00 fps)

Secondary OutFlow Max=0.28 cfs @ 14.43 hrs HW=4.55' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.28 cfs @ 0.54 fps)

Pond 8P: SB-8


Hydrograph
22.50 cfs
Inflow Area=7.480 ac
Peak Elev=4.55'
Storage=48,430 cf
1.48 cfs
1.18 cfs
0.30 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond 10P: SB-16

Inflow Area = 19.950 ac, 0.00% Impervious, Inflow Depth > 2.88" for 10-year event
Inflow = 43.00 cfs @ 12.32 hrs, Volume= 4.788 af
Outflow = 3.66 cfs @ 14.94 hrs, Volume= 1.759 af, Atten= 91%, Lag= 157.2 min
Secondary = 3.66 cfs @ 14.94 hrs, Volume= 1.759 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 3.28' @ 14.94 hrs Surf.Area= 58,607 sf Storage= 141,620 cf

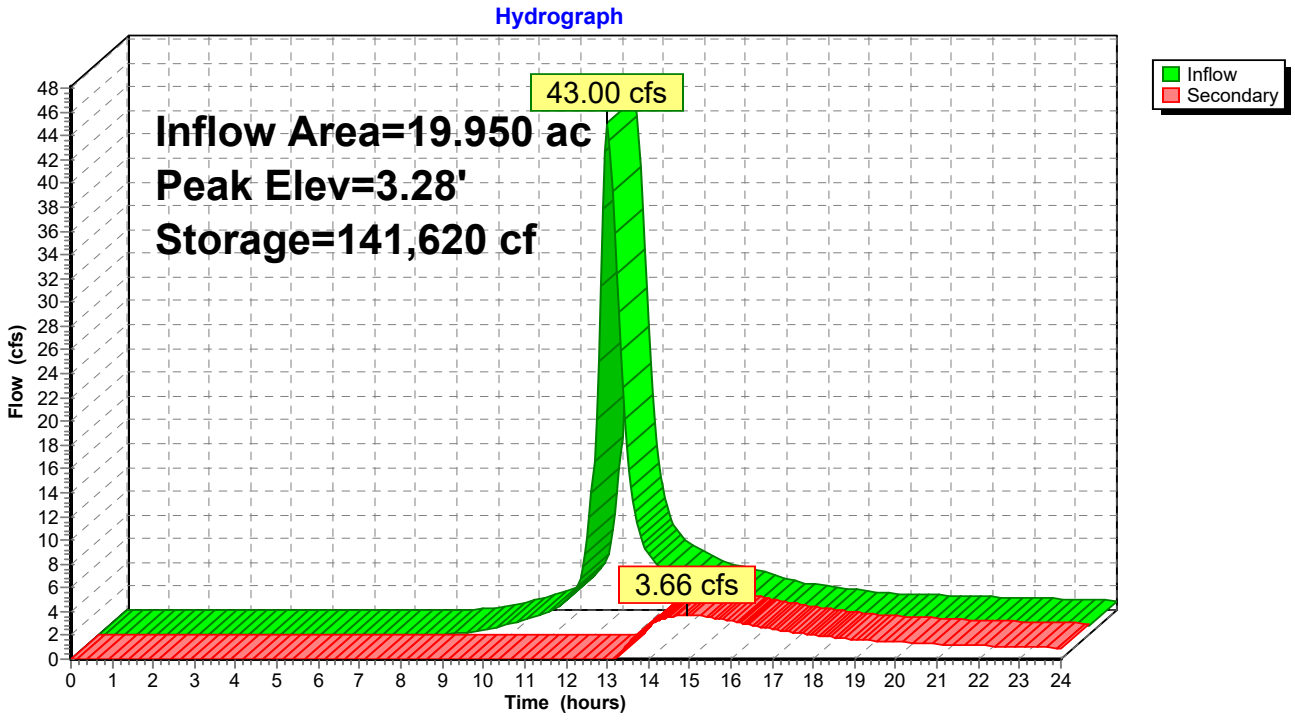
Plug-Flow detention time= 334.9 min calculated for 1.755 af (37% of inflow)
Center-of-Mass det. time= 211.5 min (1,051.3 - 839.8)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	186,245 cf	**70.00'W x 410.00'L x 4.00'H Prismatoid Z=8.5**

Device	Routing	Invert	Outlet Devices
#1	Secondary	3.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Secondary OutFlow Max=3.66 cfs @ 14.94 hrs HW=3.28' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 3.66 cfs @ 1.29 fps)

Pond 10P: SB-16



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SB-1 Runoff Area=6.110 ac 0.00% Impervious Runoff Depth>3.98"
Flow Length=700' Slope=0.0200 '/' Tc=11.1 min CN=77 Runoff=23.93 cfs 2.028 af

Subcatchment 3S: SB-3 Runoff Area=25.020 ac 0.00% Impervious Runoff Depth>3.98"
Flow Length=1,100' Tc=17.6 min CN=77 Runoff=82.73 cfs 8.294 af

Subcatchment 7S: SB-8 Runoff Area=7.480 ac 0.00% Impervious Runoff Depth>3.98"
Flow Length=750' Tc=8.9 min CN=77 Runoff=30.98 cfs 2.484 af

Subcatchment 9S: SB-16 Runoff Area=19.950 ac 0.00% Impervious Runoff Depth>3.97"
Flow Length=1,200' Tc=22.9 min CN=77 Runoff=59.30 cfs 6.606 af

Pond 2P: SB-1 Peak Elev=4.90' Storage=42,866 cf Inflow=23.93 cfs 2.028 af
Primary=1.30 cfs 1.002 af Secondary=6.49 cfs 0.431 af Outflow=7.79 cfs 1.433 af

Pond 4P: SB-3 Peak Elev=3.47' Storage=186,216 cf Inflow=82.73 cfs 8.294 af
Primary=4.58 cfs 3.531 af Secondary=16.50 cfs 1.933 af Outflow=21.08 cfs 5.464 af

Pond 8P: SB-8 Peak Elev=4.93' Storage=54,209 cf Inflow=30.98 cfs 2.484 af
Primary=1.31 cfs 1.066 af Secondary=7.07 cfs 0.573 af Outflow=8.38 cfs 1.640 af

Pond 10P: SB-16 Peak Elev=3.58' Storage=159,449 cf Inflow=59.30 cfs 6.606 af
Outflow=11.85 cfs 3.550 af

Total Runoff Area = 58.560 ac Runoff Volume = 19.411 af Average Runoff Depth = 3.98"
100.00% Pervious = 58.560 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SB-1

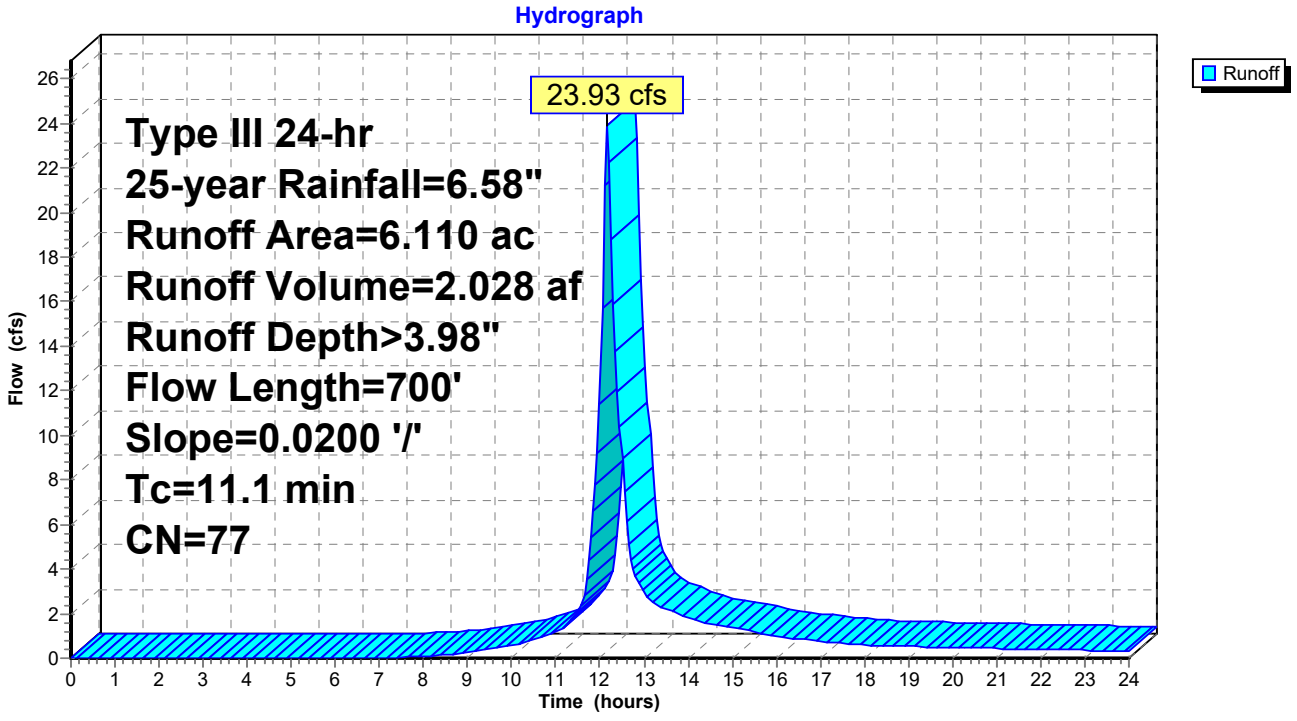
Runoff = 23.93 cfs @ 12.16 hrs, Volume= 2.028 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
6.110	77	Fallow, bare soil, HSG A
6.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.0200	0.42		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
7.1	600	0.0200	1.41		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
11.1	700	Total			

Subcatchment 1S: SB-1



Summary for Subcatchment 3S: SB-3

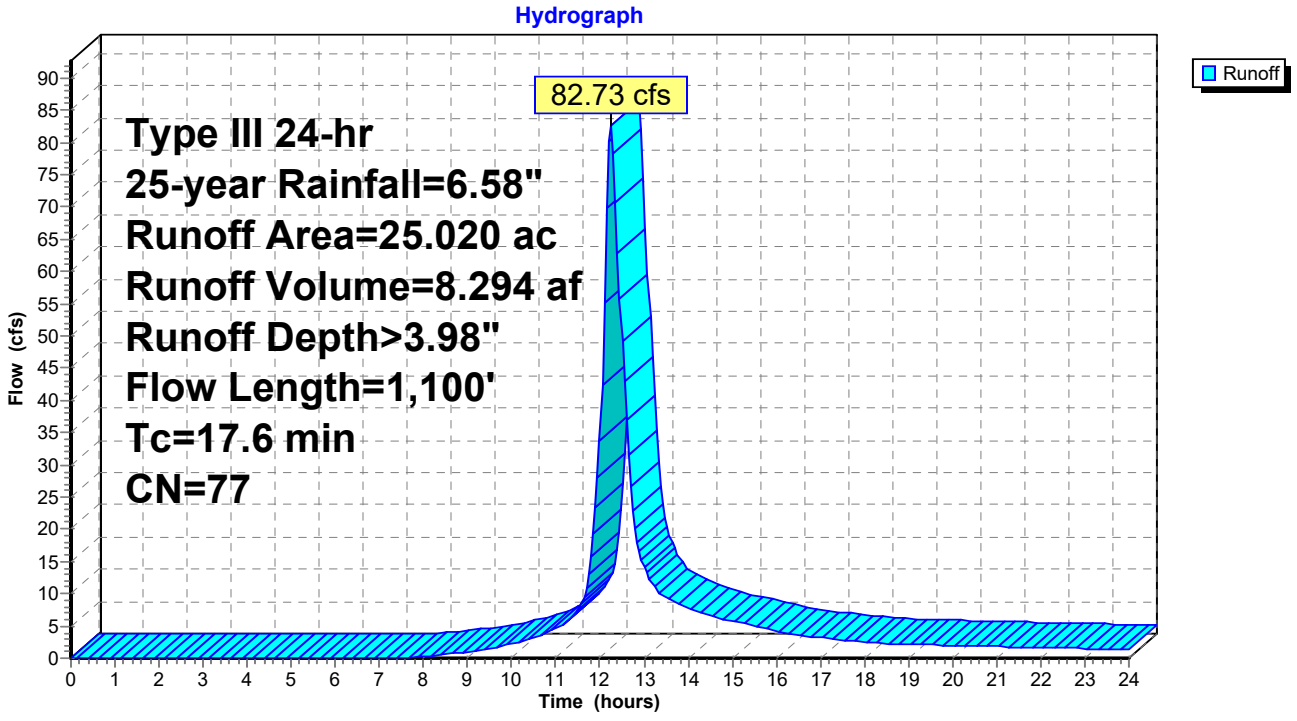
Runoff = 82.73 cfs @ 12.24 hrs, Volume= 8.294 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
25.020	77	Fallow, bare soil, HSG A
25.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.0200	0.42		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
13.6	1,000	0.0150	1.22		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
17.6	1,100	Total			

Subcatchment 3S: SB-3



Summary for Subcatchment 7S: SB-8

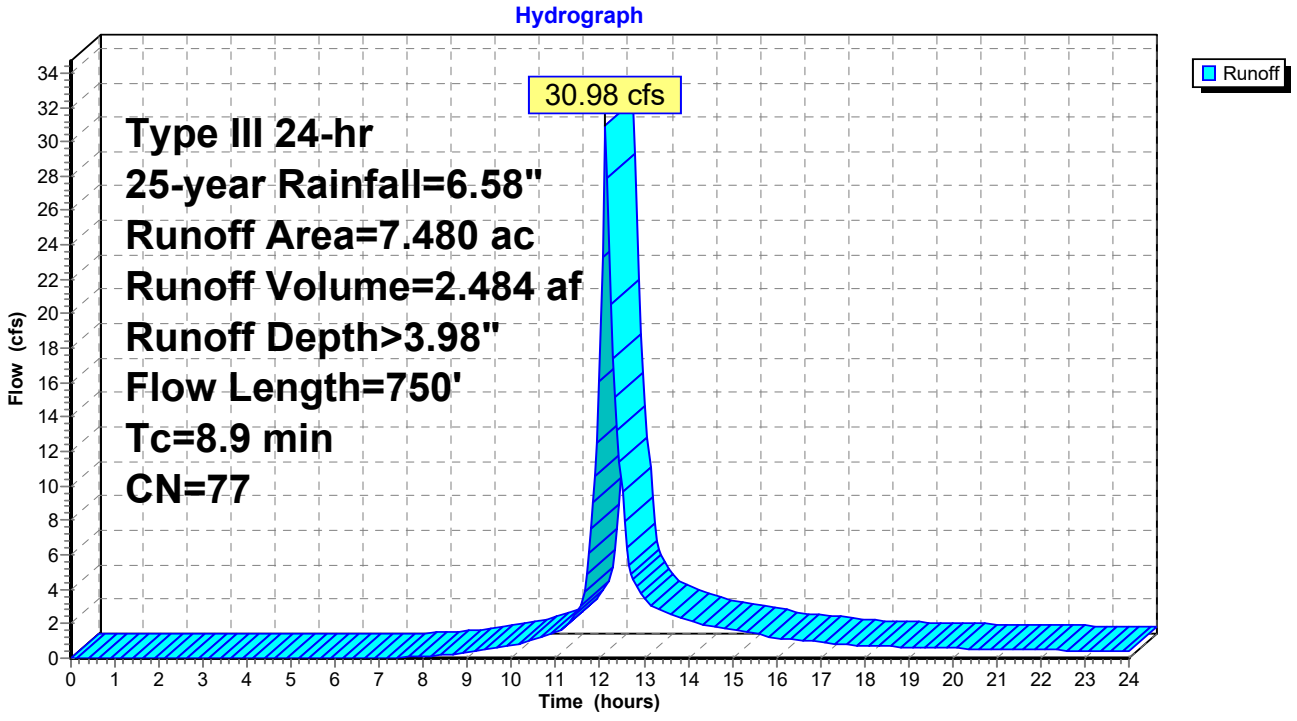
Runoff = 30.98 cfs @ 12.13 hrs, Volume= 2.484 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
7.480	77	Fallow, bare soil, HSG A
7.480		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	100	0.0250	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
5.2	650	0.0430	2.07		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	750	Total			

Subcatchment 7S: SB-8



Summary for Subcatchment 9S: SB-16

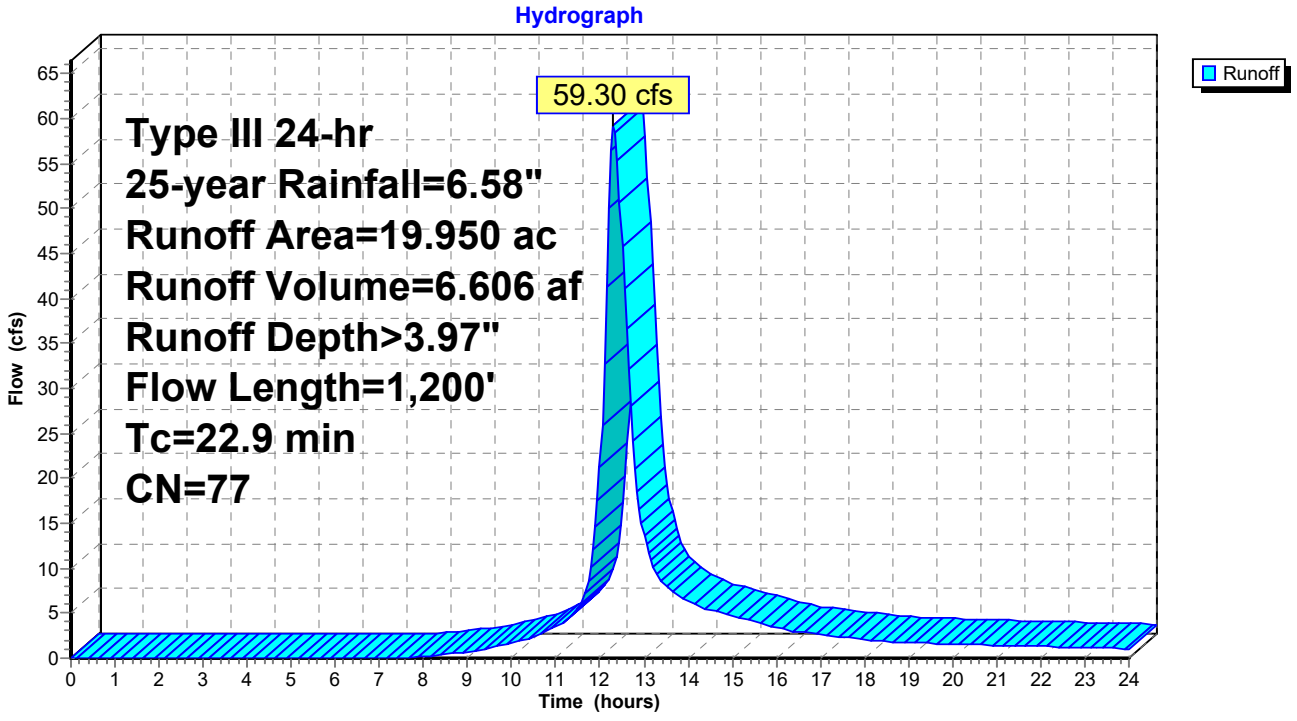
Runoff = 59.30 cfs @ 12.32 hrs, Volume= 6.606 af, Depth> 3.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
19.950	77	Fallow, bare soil, HSG A
19.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.0140	0.36		**Sheet Flow,** Fallow n= 0.050 P2= 3.30"
18.3	1,100	0.0100	1.00		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
22.9	1,200	Total			

Subcatchment 9S: SB-16



Summary for Pond 2P: SB-1

Inflow Area = 6.110 ac, 0.00% Impervious, Inflow Depth > 3.98" for 25-year event
Inflow = 23.93 cfs @ 12.16 hrs, Volume= 2.028 af
Outflow = 7.79 cfs @ 12.54 hrs, Volume= 1.433 af, Atten= 67%, Lag= 23.3 min
Primary = 1.30 cfs @ 12.54 hrs, Volume= 1.002 af
Secondary = 6.49 cfs @ 12.54 hrs, Volume= 0.431 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 4.90' @ 12.54 hrs Surf.Area= 13,069 sf Storage= 42,866 cf

Plug-Flow detention time= 242.6 min calculated for 1.433 af (71% of inflow)
Center-of-Mass det. time= 149.7 min (971.0 - 821.3)

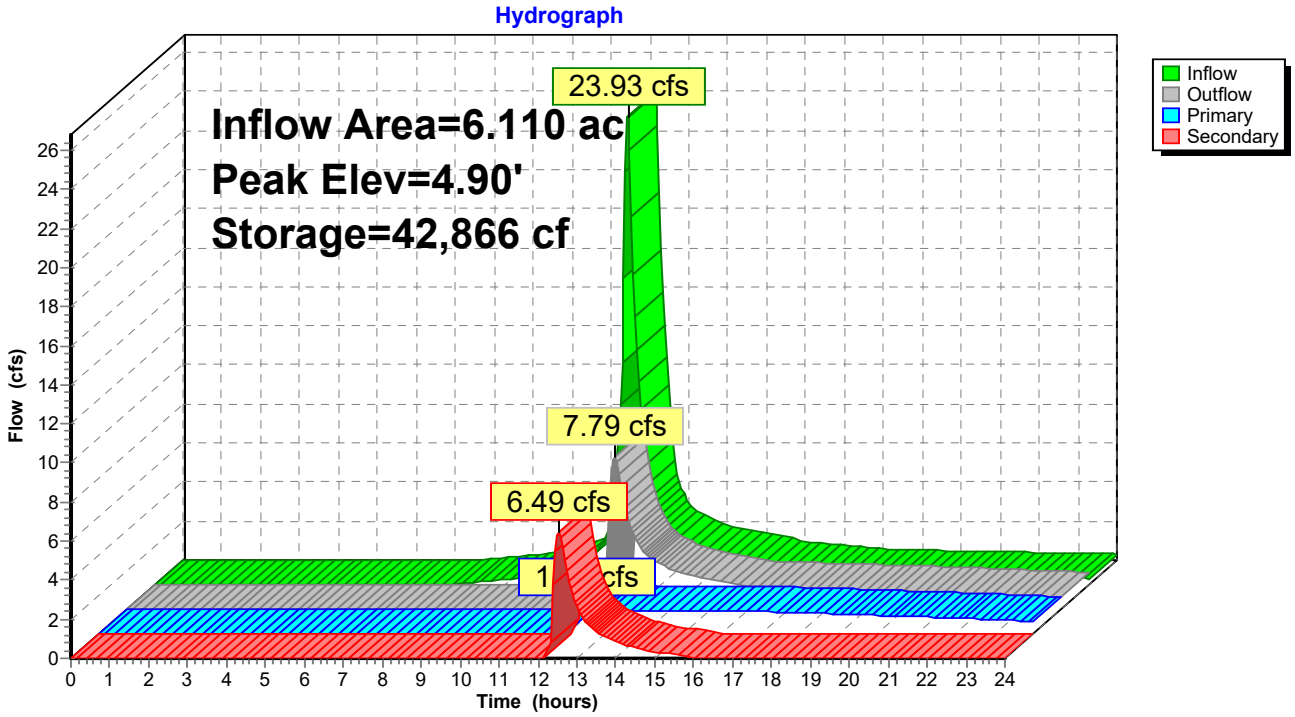
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	58,332 cf	**20.00'W x 235.00'L x 6.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	4.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.30 cfs @ 12.54 hrs HW=4.90' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.30 cfs @ 6.64 fps)

Secondary OutFlow Max=6.44 cfs @ 12.54 hrs HW=4.90' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 6.44 cfs @ 1.60 fps)

Pond 2P: SB-1


Hydrograph
Inflow Area=6.110 ac
Peak Elev=4.90'
Storage=42,866 cf
23.93 cfs
7.79 cfs
6.49 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond 4P: SB-3

Inflow Area = 25.020 ac, 0.00% Impervious, Inflow Depth > 3.98" for 25-year event
Inflow = 82.73 cfs @ 12.24 hrs, Volume= 8.294 af
Outflow = 21.08 cfs @ 12.79 hrs, Volume= 5.464 af, Atten= 75%, Lag= 32.6 min
Primary = 4.58 cfs @ 12.79 hrs, Volume= 3.531 af
Secondary = 16.50 cfs @ 12.79 hrs, Volume= 1.933 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 3.47' @ 12.79 hrs Surf.Area= 68,244 sf Storage= 186,216 cf

Plug-Flow detention time= 248.2 min calculated for 5.464 af (66% of inflow)
Center-of-Mass det. time= 149.7 min (976.2 - 826.5)

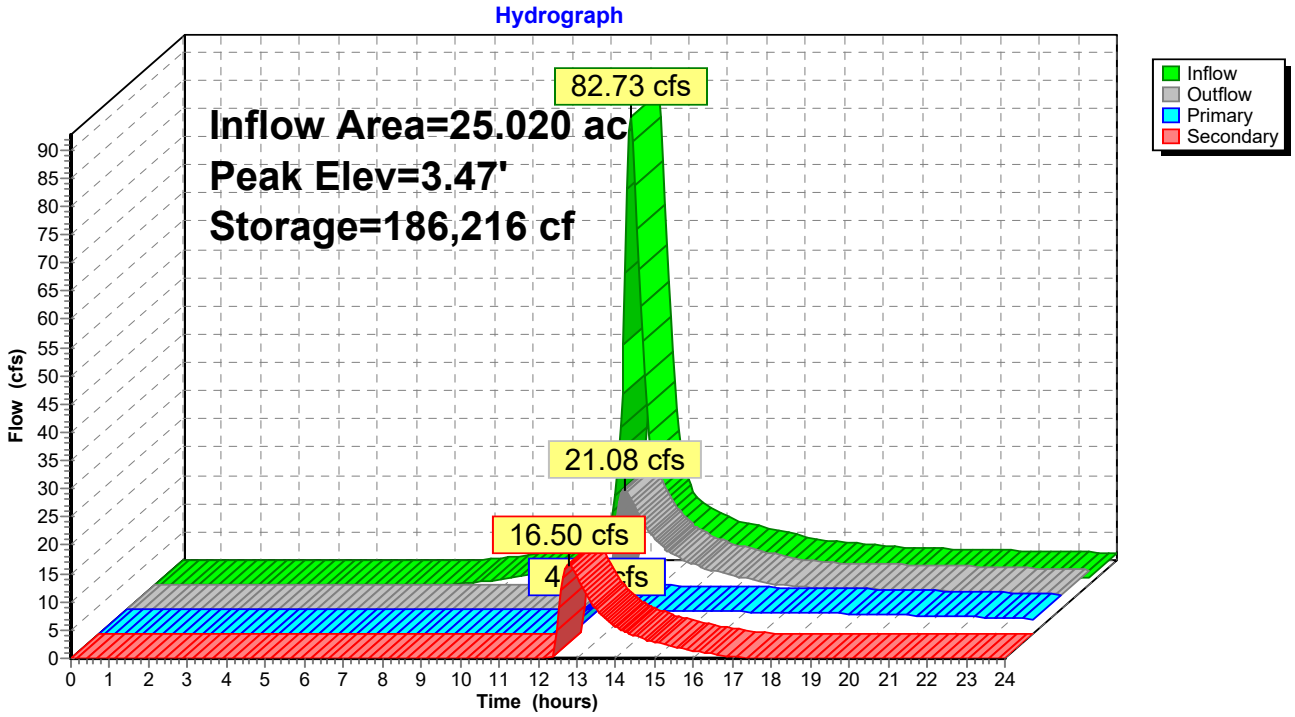
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	261,560 cf	**155.00'W x 260.00'L x 4.50'H Prismatoid Z=8.5**

Device	Routing	Invert	Outlet Devices
#1	Primary	2.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	3.00'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=4.58 cfs @ 12.79 hrs HW=3.47' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 4.58 cfs @ 5.83 fps)

Secondary OutFlow Max=16.46 cfs @ 12.79 hrs HW=3.47' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 16.46 cfs @ 1.76 fps)

Pond 4P: SB-3


Hydrograph
82.73 cfs
Inflow Area=25.020 ac
Peak Elev=3.47'
Storage=186,216 cf
21.08 cfs
16.50 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond 8P: SB-8

Inflow Area = 7.480 ac, 0.00% Impervious, Inflow Depth > 3.98" for 25-year event
Inflow = 30.98 cfs @ 12.13 hrs, Volume= 2.484 af
Outflow = 8.38 cfs @ 12.54 hrs, Volume= 1.640 af, Atten= 73%, Lag= 24.9 min
Primary = 1.31 cfs @ 12.54 hrs, Volume= 1.066 af
Secondary = 7.07 cfs @ 12.54 hrs, Volume= 0.573 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 4.93' @ 12.54 hrs Surf.Area= 15,798 sf Storage= 54,209 cf

Plug-Flow detention time= 249.3 min calculated for 1.640 af (66% of inflow)
Center-of-Mass det. time= 150.1 min (969.6 - 819.5)

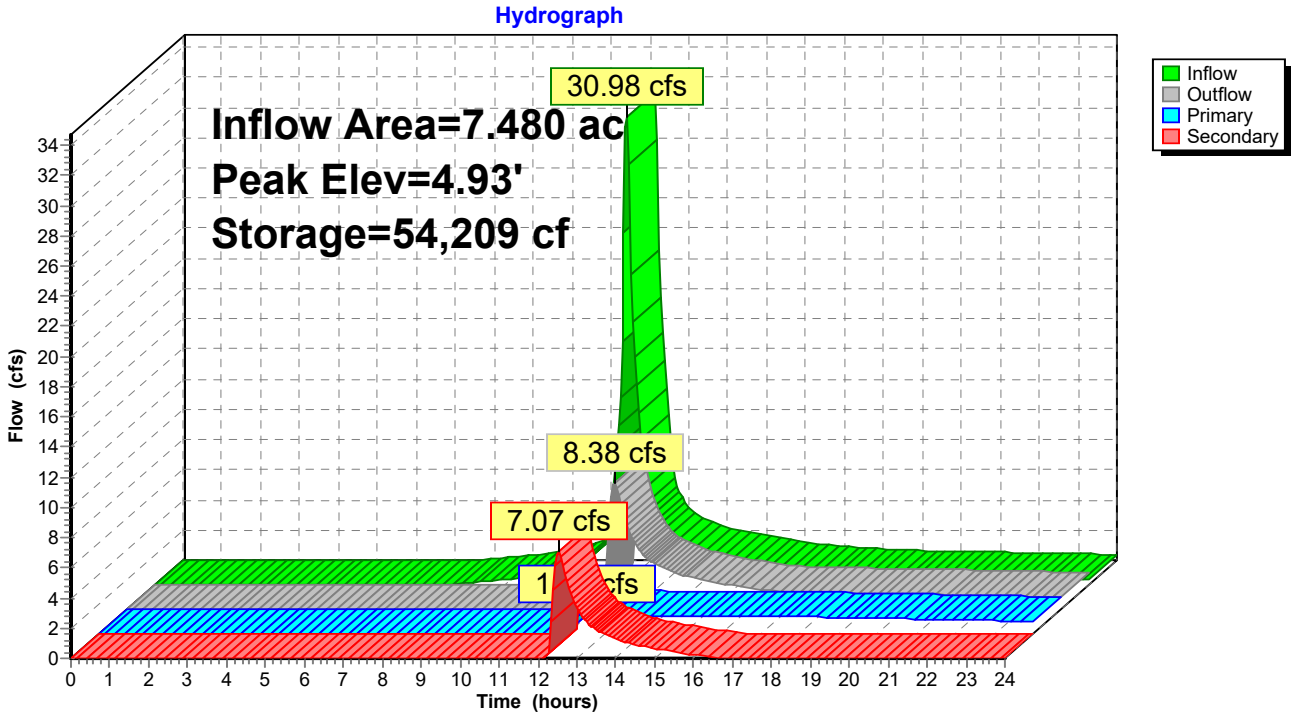
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	72,372 cf	**25.00'W x 260.00'L x 6.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	4.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.31 cfs @ 12.54 hrs HW=4.93' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.31 cfs @ 6.68 fps)

Secondary OutFlow Max=7.03 cfs @ 12.54 hrs HW=4.93' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 7.03 cfs @ 1.65 fps)

Pond 8P: SB-8


Hydrograph
Inflow Area=7.480 ac
Peak Elev=4.93'
Storage=54,209 cf
30.98 cfs
8.38 cfs
7.07 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond 10P: SB-16

Inflow Area = 19.950 ac, 0.00% Impervious, Inflow Depth > 3.97" for 25-year event
Inflow = 59.30 cfs @ 12.32 hrs, Volume= 6.606 af
Outflow = 11.85 cfs @ 13.09 hrs, Volume= 3.550 af, Atten= 80%, Lag= 46.6 min
Secondary = 11.85 cfs @ 13.09 hrs, Volume= 3.550 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 3.58' @ 13.09 hrs Surf.Area= 61,615 sf Storage= 159,449 cf

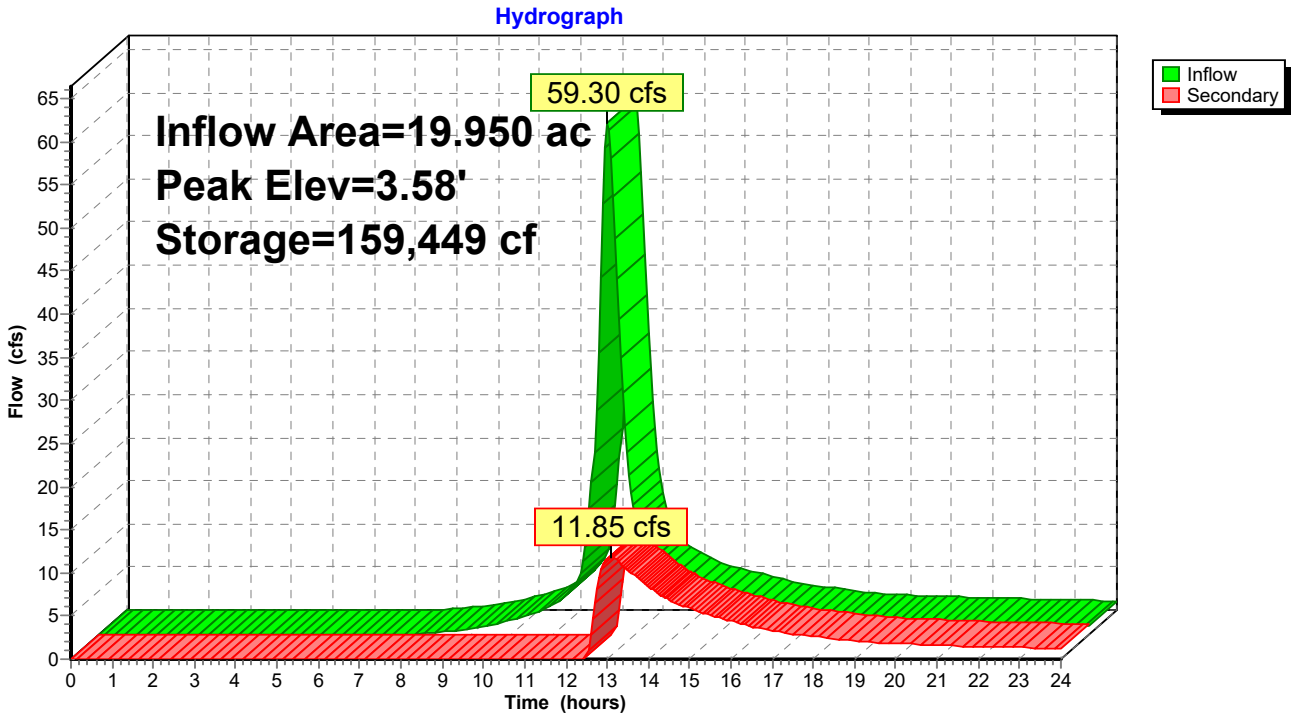
Plug-Flow detention time= 242.8 min calculated for 3.550 af (54% of inflow)
Center-of-Mass det. time= 133.6 min (964.4 - 830.7)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	186,245 cf	**70.00'W x 410.00'L x 4.00'H Prismatoid Z=8.5**

Device	Routing	Invert	Outlet Devices
#1	Secondary	3.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Secondary OutFlow Max=11.83 cfs @ 13.09 hrs HW=3.58' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 11.83 cfs @ 2.04 fps)

Pond 10P: SB-16



Threatened and Endangered Species

Connecticut Department of

ENERGY &
ENVIRONMENTAL
PROTECTION

March 5, 2018

Ms. Sue Moberg
VHB, Inc.
100 Great Meadow Road, Suite 200
Wethersfield, CT 06109
smoberg@vhb.com

Project: Tobacco Valley Solar Project on Hoskins Road, County Road and Hopmeadow Street in Simsbury, Connecticut, Connecticut
NDDB Determination No.: 2017102132

Dear Sue Moberg,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed Tobacco Valley Solar Project Located on Hoskins Road, County Road and Hopmeadow Street in Simsbury, Connecticut, Connecticut. Thank you for including an updated memorandum on November 1, 2017 that provided conservation and protection strategies for plants and animals that may occur at the project site. I concur with your findings in your memorandum and accept the conservation strategies proposed to minimize the impacts on the state listed species in this area. These conservation strategies include:

Plants:
Conservation measures for state listed plants include:

- No work will occur in active floodplains of any of the three perennial tributaries to the Farmington River which will help to protect State Threatened Davis sedge (*Carex davisii*). Furthermore, if the species is encountered in a work area then a conservation strategy will be developed by a qualified botanist and the conservation strategy and information on the observation will be sent to the NDDB Program at (deep.nddbrequest@ct.gov)
- Habitat surveys were conducted for State Endangered Tall swamp rosette-panic grass (*Dichanthelium scabriusculum*) and State Threatened Starry campion (*Silene stellata*) during the appropriate time of year but despite adequate habitat being present for these plants no observations were reported. No further surveys are required.
- An occurrence of State Special Concern Dillenius' tick-trefoil (*Desmodium glabellum*) was discovered within the Eversource energy right-of-way. The area where this plant occurs will be avoided in order to protect this plant form project impacts.

Bats:
Conservation measures you will implement to protect bat species include:

- Conducting tree removal activities outside of the bat pup season (June 1 to August 31). This will minimize impacts to pups at roosts not yet identified.
- Retaining larger diameter trees (12-inch DBH and larger) wherever possible on-site, will minimize the potential for negative impacts to bats.

- Trees with loose, rough bark such as maples, hickories, and oaks are more desirable than other tree species due to the increased cover that the loose bark provides. Large trees with cavities are also utilized by different bat species. These types of trees will be left when possible.
- Bat houses will be installed in the area where trees will be removed will help in the conservation of bats.

Birds

Conservation measures to protect birds include:

- There will be a time of year restriction (TOY) for tree clearing between May 15th and August 31st to prevent disturbance to tree nesting birds.
- Biologists investigated the project site to evaluate potential grassland bird habitat. In the past, grasslands areas were present near the North Simsbury Substation along Hopmeadow Street and once fallow tobacco fields north and east of County Road may have provided suitable habitat for grassland bird species. These habitats are no longer appear suitable as the Eastpoint at Dorset Crossing development occupies the former fields near the substation and the formerly abandoned tobacco fields have been placed back into active row cropping. No further protection strategies are needed since no suitable habitat for grassland birds exists within the project site.
- Biologist conducted summer surveys for whippoorwill. Although this species was not detected during the surveys, a time of year (TOY) work restriction will be followed between May 15th and August 31st and that work restriction period will minimize impacts to this species.

Wood & Box Turtles and Eastern Hognose Snake

Conservation strategies to protect these reptiles include:

- Hiring a qualified herpetologist to be on site to ensure these protection guidelines remain in effect and prevent turtles from being run over when moving heavy equipment. This is especially important in the month of June when turtles are selecting nesting sites.
- Exclusionary practices will be required to prevent any turtle access into construction areas. These measures will need to be installed at the limits of disturbance.
- Exclusionary fencing must be at least 20 in tall and must be secured to and remain in contact with the ground and be regularly maintained (at least bi-weekly and after major weather events) to secure any gaps or openings at ground level that may let animal pass through. Do not use plastic or netted silt-fence.
- All staging and storage areas, outside of previously paved locations, regardless of the duration of time they will be utilized, must be reviewed to remove individuals and exclude them from re-entry.
- All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species, and instructed to relocate turtles found inside work areas or notify the appropriate authorities to relocate individuals.
- Any turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point.

- In areas where silt fence is used for exclusion, it shall be removed as soon as the area is stable to allow for reptile and amphibian passage to resume.
- No heavy machinery or vehicles may be parked in any turtle habitat.
- Special precautions must be taken to avoid degradation of wetland habitats including any wet meadows and seasonal pools.
- The Contractor and consulting herpetologist must search the work area each morning prior to any work being done.
- When felling trees adjacent to brooks and streams please cut them to fall away from the waterway and do not drag trees across the waterway or remove stumps from banks.
- Avoid and limit any equipment use within 50 feet of streams and brooks.
- Any confirmed sightings of box, wood or spotted turtles should be reported and documented with the NDDB (nddbrequestdep@ct.gov) on the appropriate special animal form found at (http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav_GID=1641)

Northern Leopard Frog

- No suitable habitat was observed along the three tributary streams that flow through the Project Site.
- Potentially suitable habitat may be available around western portions of Farm Pond 1 and Bissell Brook as it flows east off of the subject property. These areas are beyond the limits of project related activities.
- No further conservation strategies are needed for this frog species.

Freshwater Mussels

- Although no work is proposed directly within the Farmington River or any of its three tributary streams (Munnisunk Brook, Saxton Brook and Bissell Brook) in the projects site, construction activities will occur in uplands above Munnisunk Brook, Saxton Brook and Bissell Brook.
- Enhanced and rigorous erosion and sediment controls will be installed along slopes immediately above cold-water perennial tributaries (Munnisunk Brook, Saxton Brook and Bissell Brook) to the Farmington River in order to protect freshwater mussels known to occur in the Farmington River.

Odonates (Dragonfly)

- No surveys were conducted for State Threatened *Gomphus quadricolor* (rapids clubtail but no instream work will be necessary as part of this project. Enhanced and rigorous erosion and sediment control mechanisms will be in place to prevent impacts to any and all watercourses.

Coleptera (Beetle)

- The State Special Concern Big sand tiger beetle (*Cicindela formosa generosa*) inhabits exposed sandy substrates. Field surveys were conducted during the beetle's active time (June 1st through June 8th) and again the beginning of September in the area of open unconsolidated sands at the eastern end of a large field south of Munnisunk Brook near the abandoned barns but no beetles were discovered. No further conservation action is required.

Lepedopteran (Butterfly and Moth)

- Surveys were conducted for the State Special Concern *Schinia spinosae* (spiny flower moth) and its larval host plant, sand joint weed (Polygonum articulatum). No host plants or moths were observed in the project area. No further conservation actions are required.
- Surveys for State Special Concern *Sympistis perscripta* (Scribbled sallow moth) were conducted within the Eversource R-O-W and along the open roadsides where its larval host plant *Nuttallanthus canadensis* (Canada toadflax) might occur. VHB observed and GPS-located the limits of a stand of Canada toadflax within the Eversource ROW on June 8, 2017. The proposed TVS Project now avoids this population of Canada toadflax. Prior to the start of work the larger stand of Canada toadflax will be located and fenced off to protect the host plant for the scribbled sallow moth. Canada toadflax is a common weed around farm fields and roadsides any other sizeable populations of this plants will be similarly fenced off to avoid impact during construction.

This determination is good for two years. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by March 5, 2020.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

Dawn M. McKay
Environmental Analyst 3

Historic and/or Archaeological Resources

HERITAGE CONSULTANTS, LLC

INTEGRATED HISTORIC PRESERVATION PLANNING

June 13, 2017

Ms. Catherine Labadia & Mr. Todd Levine
Department of Economic & Community Development
Offices of Culture and Tourism
Deputy State Historic Preservation Officer
One Constitution Plaza
Hartford, Connecticut 06103

RE: Meeting Minutes – May 11, 2017 Consultation Meeting
Simsbury Solar Farm Project Simsbury, Connecticut

Ms. Labadia & Mr. Levine:

This letter is a follow up to our meeting of May 11, 2017 providing our notes regarding the meeting and requesting your concurrence. The project sponsor (Deepwater Wind), their contractor (VHB, Inc.), and I met with you to discuss the results of our Phase 1A Cultural Resources Assessment dated February 2017 for the project site and further assessment required by your office to satisfy State of Connecticut requirements since the project does not have a federal nexus. The following narrative documents our understanding of your office's requirements for the assessment scope of work.

A Phase IB cultural resources reconnaissance survey of the moderate and high archaeological sensitivity areas of the proposed Simsbury Solar Farm Project should be conducted. As discussed, the Scope of Work for the project will entail pedestrian survey of the previously identified moderate sensitivity areas comprising the tobacco fields along Hoskins Road. The walkover survey will be completed in an effort to locate and record any archaeological materials on the ground surface of the moderate sensitivity areas. We also agreed that Heritage Consultants. LLC would conduct limited auger testing in the vicinity of any archaeological find spots in the moderate sensitivity areas to document the stratigraphy in those locations.

Phase IB cultural resources survey of the previously identified high sensitivity areas will be completed using a systematic subsurface testing regime. This will be completed be placing 50 x 50 cm (19.7 x 19.7 in) shovel tests at 15 m (49.2 ft) intervals along parallel survey transects spaced 15 m (49.2 ft) apart. Each shovel test will measure 50 cm (19.7 in) in size and each will be excavated to an approximate depth of 50 cm (19.7 in) below surface or until immovable objects or glacially derived soils are encountered. Stratigraphic soil profiles for all shovel tests will be recorded and all shovel test fill will be screened through 0.64 cm (0.25 in) hardware cloth and examined visually for cultural material. Munsell Soil Color Charts will be used to record soil color; texture and other identifiable characteristics will be documented using standard soils nomenclature. All shovel tests will be backfilled completely following completion of recordation.

During the Phase IB cultural resource reconnaissance survey, Heritage Consultants, LLC also will map the Areas of Potential Effect. The locations of all shovel and auger tests, identified archaeological sites and find spots, natural landscape features, and man-made structures will be recorded. The resultant maps will be digitized and included in the Report of Investigations, and the moderate and high sensitivity areas will be subjected to photo-documentation.

Finally, during our meeting we discussed various options regarding the historic tobacco barns on the subject property. You expressed that it may acceptable that Deepwater Wind remove the three barns on the interior of the project parcel if project constraints make it impossible to preserve them in place; however, ongoing consultation about the barns on the property will be undertaken with your office during the life of the project since CT-SHPO has deemed these structures as potentially important. Finally, CT-SHPO, Deepwater Wind, VHB, Inc., and Heritage Consultants, LLC recognize that this letter supersedes all prior communications.

We look forward to continuing working with you on this important project. Please feel free to call me at (860) 299-6328 with any questions you may have. Alternatively, you may reach me through email at dgeorge@heritage-consultants.com. Thank you for your time and consideration.

David George, M.A., R.P.A.

Heritage Consultants, LLC

Agreed to by Ms. Catherine Labadia, Deputy State Historic Preservation Office:

Signature

6/16/17
Date

Agreed to by Mr. Todd Levine; Environmental Reviewer:

Signature

6/16/17
Date

HERITAGE CONSULTANTS, LLC

INTEGRATED HISTORIC PRESERVATION PLANNING

April 26, 2017

Ms. Catherine Labadia
Deputy Historic Preservation Officer
Connecticut State Historic Preservation Office
One Constitution Plaza
Hartford, Connecticut 06103

RE: Cultural Resources Assessment (Phase IA) Survey of a Proposed Solar Project in Simsbury, Connecticut

Ms. Labadia:

Please finds two hard copies of the above referenced report enclosed for review on comment by the Connecticut State Historic Preservation Office. Please do not hesitate to contact me at 860.299.6328 or dgeorge@heritage-consultants.com if you have any questions. Thank you for your time and consideration.

Sincerely,

David R. George

David R. George, M.A., R.P.A.
Heritage Consultants, LLC

P.O. Box 310249 • Newington, Connecticut 06131
Phone (860) 667-3001 • Fax (860) 667-3008
Email: info@heritage-consultants.com

HERITAGE
CONSULTANTS, LLC

INTEGRATED HISTORIC PRESERVATION PLANNING

September 5, 2017

Mr. Todd Levine
Environmental Reviewer
State Historic Preservation Office
Department of Economic & Community Development
One Constitution Plaza
Hartford, Connecticut 06103

RE: Phase IB Cultural Resources Reconnaissance Survey Report for the Proposed Tobacco Valley Solar Project in Simsbury, Connecticut

Mr. Levine:

Please find enclosed two bound hard copies of a Phase IB Cultural Resources Reconnaissance Survey report for the Tobacco Valley Solar Project in Simsbury. The fieldwork for this investigation was completed following a previously discussed Scope of Work that was approved by your office in June of this year. If you have any questions about the report or the project, please feel free to call me at 860.299.6328 or email me at dgeorge@heritage-consultants.com. I look forward to your response. Thank you for your time and consideration.

Sincerely,

David R. George

David R. George, M.A., R.P.A.
Heritage Consultants, LLC

P.O. Box 310249 • Newington, Connecticut 06131
Phone (860) 667-3001 • Fax (860) 667-3008

Stormwater Report

STORMWATER REPORT

Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, CT

PREPARED FOR

DWW Solar II, LLC
9th Floor, 1166 6th Avenue
New York, NY 10036

PREPARED BY

100 Great Meadow Road
Suite 200
Wethersfield, Connecticut
860.807.4300

June 2017
Revised January 15, 2019



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1

Project Summary

Project Description

The Petitioner, DWW Solar II, LLC, is proposing to construct a 26.4 MW solar farm on existing agricultural fields and woodland along with all associated utilities, access paths, fencing, and landscaping to support this use (the Project). When the Project reaches the end of its life cycle, the improvements constructed as part of this petition will be removed and the agricultural fields will be restored for potential reuse as farmland.

Site Description

The ±293-acre Project Site (Site) is comprised of five parcels in the vicinity of County Road and Hoskins Road (Tax Assessor's IDs G03-403-032, G03-403-012, G03-403-026-32H, G03-403-014, and H05-103-024) and a leased portion of property (Tax Assessor ID H04-403-013C) in Simsbury, Connecticut (see Figure 1). The parcels are generally bounded by Munnisunk Brook to the north, Bissell Brook to the south, residential properties near Hopmeadow Street (US Route 10\State Route 202) to the east, and residential properties near County Road to the west. Three parcels of the Site are zoned R-40 (Single Family Residence) and two parcels are zoned I-1 (Restricted Industrial). The majority of abutting properties are zoned for residential and are improved with single family houses.

Under existing conditions, much of the Site consists of agricultural farm fields that are bordered by forest or woodlands. There are wetland systems associated with Munnisunk Brook along the northern limits of the Site, Saxton Brook through the central portions of the Site, and Bissell Brook along the southern limits of the Site. Under existing conditions, the majority of the untreated stormwater runoff from the Site flows overland towards these wetlands systems. A small portion of runoff in the northeastern portion of the Site flows overland towards residential properties on Knollwood Circle and Howard Street, where it is ultimately captured and discharged to an unnamed brook.

According to available soil mapping[1], a soil test pit investigation performed on June 14, 2017, and a series of test pit investigations performed through December 20, 2018, most of the soils on-site are coarse textured with rapid internal permeability rates and high infiltration rates. The soil profiles examined in test pits were generally consistent or similar to the named series in the mapped units available on-line[1]. Based on this mapping, on-Site soils belong to the Hydraulic Soil Group "A", indicating that the soils having a high infiltration rate even when thoroughly wet. See Appendix A for test pit and infiltration testing data, and NRCS Web Soil Survey output.

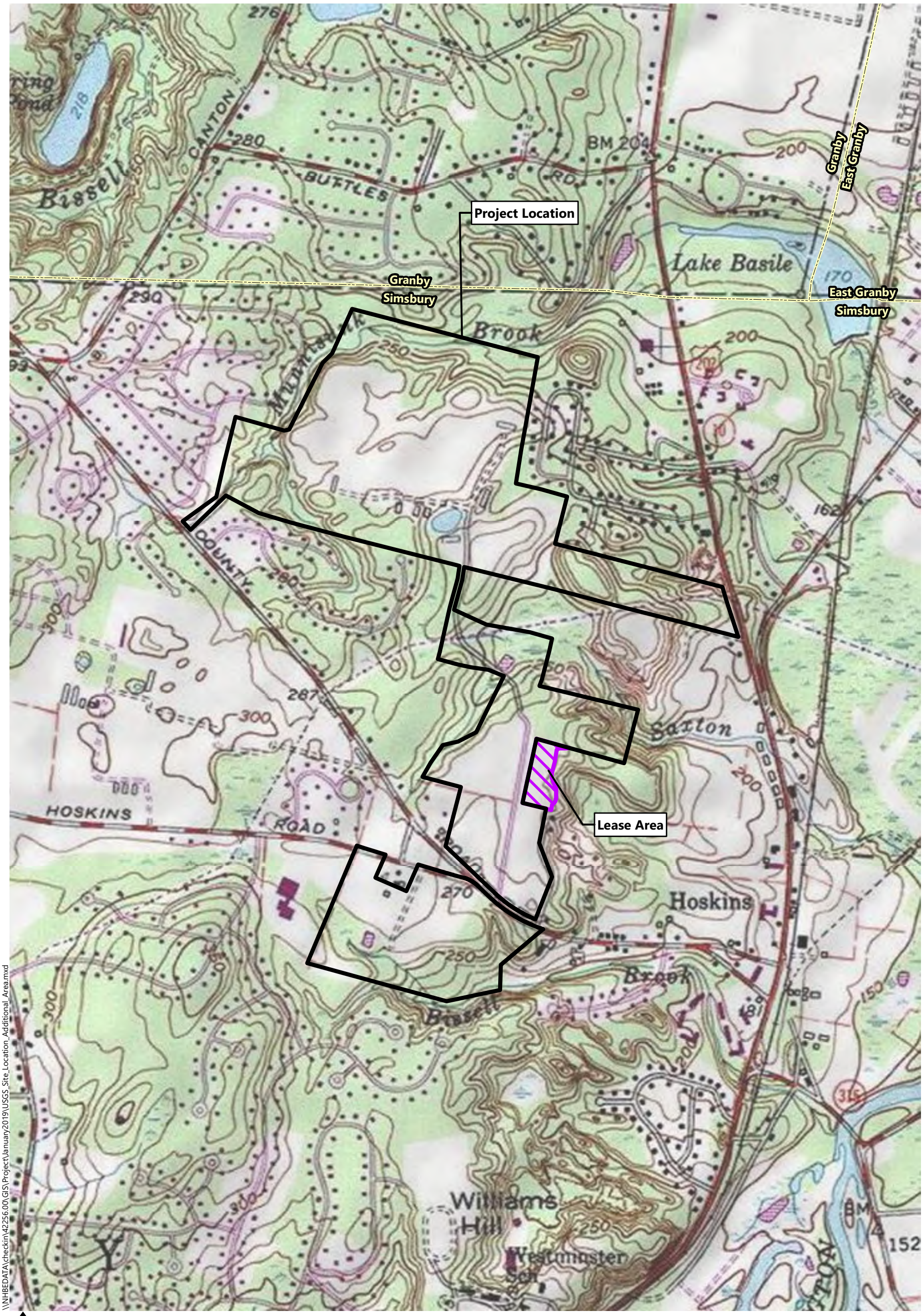
Methodology

The Project was designed to incorporate measures provided in the Connecticut Stormwater Quality Manual (CTDEP 2004). The conclusion of this analysis is that the proposed improvements will not increase the post-development peak runoff rates in comparison to existing pre-development rates at any of the critical design points analyzed and the quality of stormwater runoff leaving the Site will be improved compared to existing.

[1] https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

Figure 1: Site Location Map

January 10, 2019



\\NHBEDATA\checkin\42256.00\GIS\Project\January2019\USGS_Site_Location_Additional_Area.mxd

0 500 1000 2000 Feet

Property Boundary

Lease Area

Town Boundary

Tobacco Valley Solar | Simsbury, Connecticut

Figure A
USGS Locus Map

Source: VHB, CTDEEP, ESRI

2

Existing Drainage Conditions

Summary

Under existing conditions, untreated stormwater runoff from the majority of the Site flows overland towards the wetland systems associated with Munnisunk Brook, Saxton Brook, Bissell Brook, and neighboring properties. A small portion of runoff in the northeastern portion of the Site flows overland to residential properties on Knollwood Circle and Howard Street where it is ultimately captured and discharged to an unnamed brook (See Figure 2). The Site is generally at a higher elevation throughout the agricultural fields and slopes down in all directions to the adjacent wetland systems. While most of the agricultural fields and wetlands are near level to gently sloping there are some steeper slopes between higher elevation farmed upland outwash terraces and valley bottom streams. Most of the Site is occupied by tilled agricultural farm fields with smaller patches covered in grasses and/or brush. Most of the Project Site perimeter is forest or woodland.

Hydrologic Information

For the existing conditions hydrologic analysis, the Site is divided into 10 drainage areas as stormwater runoff flows to five (5) Design Points, which have been identified as Munnisunk Brook (DP-MB), Knollwood Circle (DP-KC), Howard Street (DP-HS), Saxton Brook (DP-SB), and Bissell Brook (DP-BB). Table 1 provides a summary of the existing conditions hydrologic data. Figure 2 illustrates the existing drainage patterns on the Site. Only the areas of the Site that are proposed to be disturbed by construction have been included in this drainage analysis, while portions of the Site unaffected by construction have been excluded.

Drainage Area MB-1 - This ±49-acre area comprises the majority of the large northern parcel (portions of Lot G03-403-032) of the Site consisting mainly of farm field with surrounding dense vegetation. Stormwater in this area flows untreated generally to the north into the adjacent wetlands of Munnisunk Brook (Design Point DP-MB).

Drainage Area MB-2 - This ±13-acre area is located at the southern end of the large northern parcel (portions of Lots G03-403-032 and G03-403-012). Stormwater runoff from this watershed collects at a natural on-Site depression within the wooded area. This depression is large enough to contain and infiltrate a 100-year flood event from the contributing area without drainage leaving the Site under both existing and proposed conditions.

Drainage Area KC-1 - This ±24-acre area is located partly at the southeastern portion of the large northern parcel and the northwestern portion of the smaller northern parcel (portions of Lots G03-403-012 and G03-403-026-32H). Runoff from this watershed flows towards a wetlands system that discharges into the rear yards of residential parcels on Knollwood Circle (Design Point DP-KC).

Drainage Area HS-1- This ±1-acre area is located in the northeastern portion of the smaller northern parcel (portions of Lot G03-403-012). Runoff from this watershed flows towards the rear yards of residential parcels on Howard Street (Design Point DP-HS).

Drainage Area SB-1- This ±8-acre area is located in the southeastern portion of the smaller northern parcel (portions of Lot G03-403-012). Runoff from this watershed flows to the southeast towards Saxton Brook (Design Point DP-SB).

Drainage Area SB-2- This ±15-acre area is located in the northern portion of the central parcel (portion of Lot G03-403-026-32H). Runoff from this watershed generally flows to the north and east towards Saxton Brook (Design Point DP-SB).

Drainage Area SB-3- This ±10-acre area is located in the eastern portion of the central parcel (portions of Lots G03-403-026-32H and G03-403-014). Runoff from this watershed generally flows to the east towards Saxton Brook (Design Point DP-SB).

Drainage Area BB-1- This ±19-acre area comprises the majority of the central parcel of the Site consisting of mainly farm field (portion of Lot G03-403-026-32H). Stormwater in this area flows untreated generally to the south towards the intersection of County Road and Hoskins Road. An existing swale and pipe culvert along the northern edge of the road convey stormwater across the road and into the farm field to the south. Runoff from this area ultimately discharges into Bissell Brook (Design Point DP-BB).

Drainage Area BB-2- This ±6-acre area is located in the southeastern portion of the central parcel (portion of Lot G03-403-026-32H). Runoff from this watershed generally flows to the southeast towards Hoskins Road, where it travels in the gutter of the road until ultimately discharging into Bissell Brook (Design Point DP-BB).

Drainage Area BB-3- This ±20-acre area comprises the majority of the southern parcel of the Site consisting of mainly farm field with surrounding dense vegetation (Lot H05-103-024). Stormwater in this area flows untreated generally to the south and east into the adjacent wetlands of Bissell Brook (Design Point DP-BB).

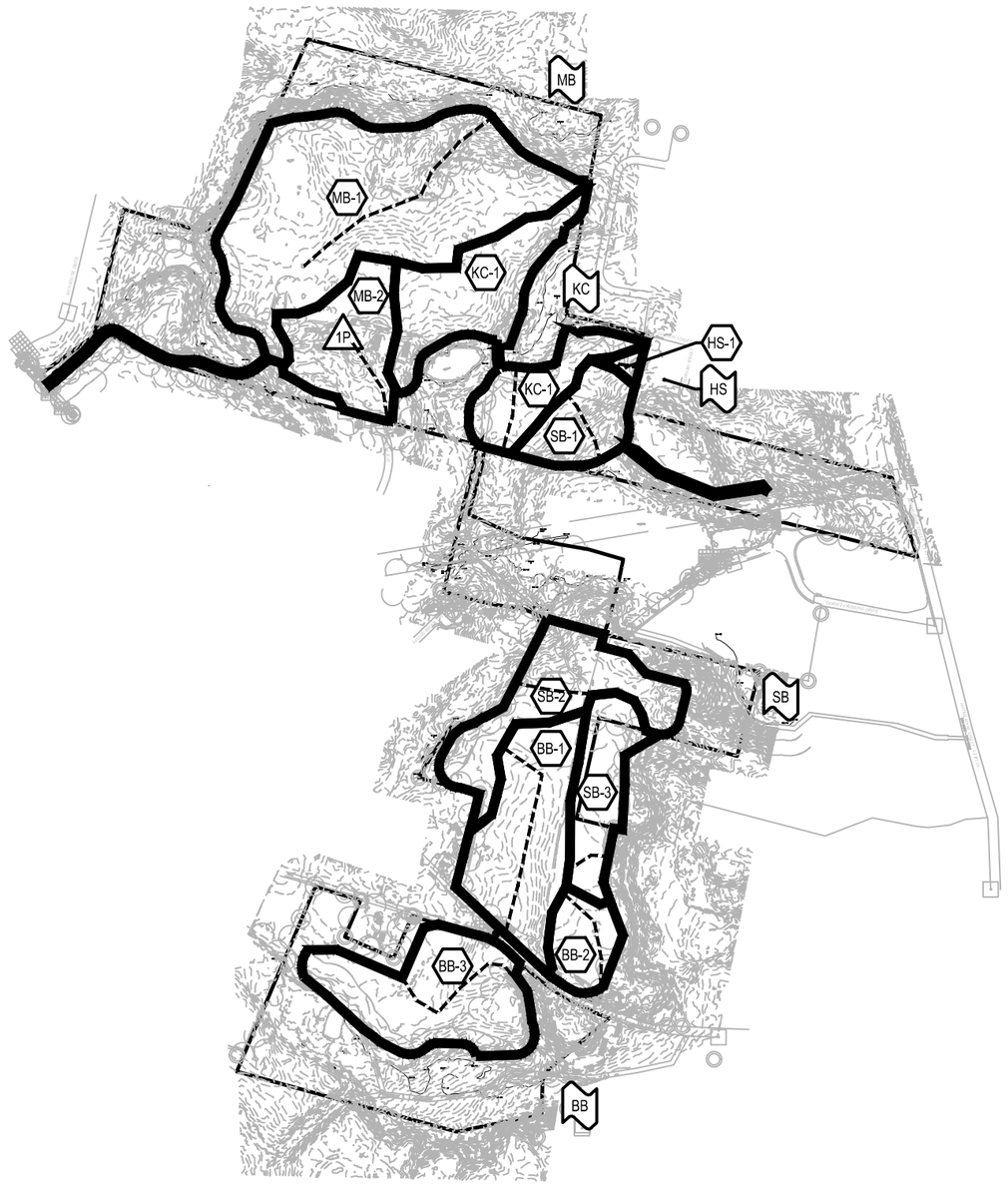
Table 1 summarizes the key hydrologic parameters for each drainage area used in the existing conditions analysis.

Table 1 Existing Conditions Hydrologic Data

Drainage Area	*Discharge Location*	*Design Point*	*Area (acres)*	*Curve Number*	*Time of Concentration (min)*
MB-1	Munnisunk Brook	DP-MB	49.2	62	28
MB-2	On-Site Depression	DP-MB	13.0	48	25
KC-1	Knollwood Circle wetlands	DP-KC	23.6	67	11
HS-1	Howard Street	DP-HS	0.9	61	5
SB-1	Saxton Brook	DP-SB	8.1	61	7
SB-2	Saxton Brook	DP-SB	15.8	51	9
SB-3	Saxton Brook	DP-SB	9.9	63	10
BB-1	Bissell Brook	DP-BB	19.1	70	30
BB-2	Bissell Brook	DP-BB	5.9	70	17
BB-3	Bissell Brook	DP-BB	19.7	61	16

Figure 2: Existing Drainage Areas

Figure 2: Existing Drainage Areas



Legend

SYMBOLS

X — DESIGN POINT

X — DRAINAGE AREA DESIGNATION

X — POND

LINETYPES

DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

WETLAND BOUNDARY

0 500 1000Feet

Existing Drainage Areas **Figure 2**

Tobacco Valley Solar 1/2/2019
County Road & Hoskins Road - Simsbury, CT

3

Proposed Drainage Conditions

Summary

The Site has been designed to mimic existing topography and drainage patterns to maintain the current hydrologic balance. In the majority of the on-Site areas, the Project proposes to install permanent cool-season grass and legume cover where crops had been grown. Turf forming grasses help stabilize the topsoil from erosion, sequester nutrients and pollutants, and lower runoff rates from the fields to the surrounding discharge points. Mature vegetation has been preserved to the maximum extents practicable. As a result, the proposed Project will have minimal impact to surrounding ecologically sensitive areas.

The only impervious surfaces that exist at the Site today are the tobacco barns, and the only impervious surfaces proposed to be constructed are small concrete pads for utility equipment. No work will be performed within the on-Site wetlands and minimal work will take place within the 100-foot upland review area of the associated wetlands systems. Once operational, vehicular access to the Project will be limited to infrequent maintenance visits. The vegetated buffers between the crushed stone access path and the wetland systems will provide water quality treatment in all portions of the Site, and a portion of the temporary sediment trap/basins will remain operational throughout the lifespan of the facility to assist in water quality treatment even further.

Hydrologic Information

Natural drainage patterns will be maintained throughout the Site so that the proposed hydrologic conditions will closely match existing conditions. The proposed conditions analysis utilized the same 10 drainage areas that contribute to five (5) design points as shown in the proposed conditions area map (see Figure 3).

Table 2 summarizes the key hydrologic parameters for each drainage area used in the proposed conditions analysis. Only the areas of the Site that are proposed to be

disturbed by construction have been included in this drainage analysis, while portions of the Site unaffected by construction have been excluded.

Table 2 Proposed Conditions Hydrologic Data

Drainage Area	*Discharge Location*	*Design Point*	*Area (acres)*	*Curve Number*	*Time of Concentration (min)*
MB-1	Munnisunk Brook	DP-MB	49.2	56	36
MB-2	On-Site Depression	DP-MB	13.0	49	20
KC-1	Knollwood Circle wetlands	DP-KC	23.6	54	17
HS-1	Howard Street	DP-HS	0.9	47	9
SB-1	Saxton Brook	DP-SB	8.1	56	13
SB-2	Saxton Brook	DP-SB	15.8	51	15
SB-3	Saxton Brook	DP-SB	9.9	55	18
BB-1	Bissell Brook	DP-BB	19.1	58	44
BB-2	Bissell Brook	DP-BB	5.9	55	27
BB-3	Bissell Brook	DP-BB	19.7	61	16

Figure 3: Proposed Drainage Areas



Legend

SYMBOLS

X — DESIGN POINT

X — DRAINAGE AREA DESIGNATION

X — POND

LINETYPES

DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

WETLAND BOUNDARY

0 500 1000Feet

Proposed Drainage Areas **Figure 3**

Tobacco Valley Solar 1/2/2019
County Road & Hoskins Road - Simsbury, CT

4

Hydrologic Analysis

Hydrologic Analysis

The rainfall-runoff was evaluated for the 2-, 10-, 25-, and 100-year storm recurrence. Rainfall volumes used for this analysis were based on the National Weather Service NOAA Hydrometeorological Design Studies Center, Type III, 24—hour storm event for the Site. Rainfall depths were 3.30, 5.32, 6.58, 8.53 inches respectively. Runoff coefficients for the pre- and post- development conditions provided in the tables below were determined using NRCS Technical Release 55 (TR-55) methodology as provided in the HydroCAD reports found in Appendix D.

The results of the pre- and post-development hydrologic models indicate that peak runoff rates from the Site will be reduced at all design points for all design storms without the need for manmade stormwater mitigation (detention) features. It is noted that no hydraulic analysis has been performed because no closed pipe systems are proposed or impacted by the proposed development. As it may be necessary to convert some or all of the compacted native soil roads to gravel roads during construction, all proposed on-site access routes were modeled as gravel roads (CN 96) in lieu of a combination of gravel roads and compacted native soil roads to be conservative.

Table 3 presents a summary of the existing and proposed conditions peak discharge rates.

Table 3 Peak Discharge Rates (cfs*)

Design Point	2-year	10-year	25-year	100-year
Design Point MB: Munnisunk Brook				
Existing	12.9	51.5	81.5	132.5
Proposed	4.9	31.0	53.9	94.5
Design Point KC: Knollwood Circle				
Existing	14.7	46.5	69.5	107.6
Proposed	2.1	17.1	31.5	57.5
Design Point HS: Howard Street				
Existing	0.4	1.5	2.5	4.0
Proposed	0.0	0.3	0.9	1.9
Design Point SB: Saxton Brook				
Existing	7.0	39.2	66.8	115.3
Proposed	2.8	24.1	44.9	83.4
Design Point BB: Bissell Brook				
Existing	18.3	58.1	87.9	138.4
Proposed	6.6	32.1	53.8	92.1

* Expressed in cubic feet per second

Floodplain Information / Analysis

Portions of the Site lie within the Federal Emergency Management Agency (FEMA) mapped 1% annual chance flood A/AE flood zones as shown on the FEMA Flood Insurance Rate Maps, Maps No. 09003C0191F and 09003C0193F, dated September 26, 2008 (included in Appendix A). All proposed Site improvements, with the exception of the underground cable routes and a small portion of crushed stone access path, are proposed outside of the limits of any special flood hazard areas. Installation of underground cable or conversion of existing dirt path to crushed stone will not displace any flood storage and the project is not anticipated to have any impacts on mapped special flood hazard areas.

Water Quality Volume

Water Quality Volume (WQV) is based upon the first inch of rainfall, or a 1-inch rainfall event, over the acreage of proposed impervious surfaces for the development. Neither the solar panels nor the concrete equipment pads will be subject to vehicular access nor will they produce any pollutants to stormwater runoff. The crushed stone access paths will be trafficked infrequently and the grassy meadows downstream of the paths will provide residence time of stormwater runoff to remove the small amount of sediment from runoff. It is proposed to keep a portion of the temporary

sediment traps and basins as permanent water quality basins to further increase water quality treatment from the project.

Water Quality Flow

Water Quality Flow (WQF) is a rate of stormwater runoff based upon the first inch of rainfall, or a 1-inch rainfall event. This regulation is generally followed for "flow-through" treatment devices. As the proposed development does not incorporate any "flow-through" water quality treatment devices, WQF is not applicable to this project.

Groundwater Recharge

Groundwater Recharge Volume (GRV) is based upon proposed imperviousness and the Hydrologic Soil Group of underlying soils. The proposed development does not include large spans of impervious coverage and the proposal to replace row crops in dirt with low-planting crops will promote more natural infiltration of stormwater runoff into the ground.

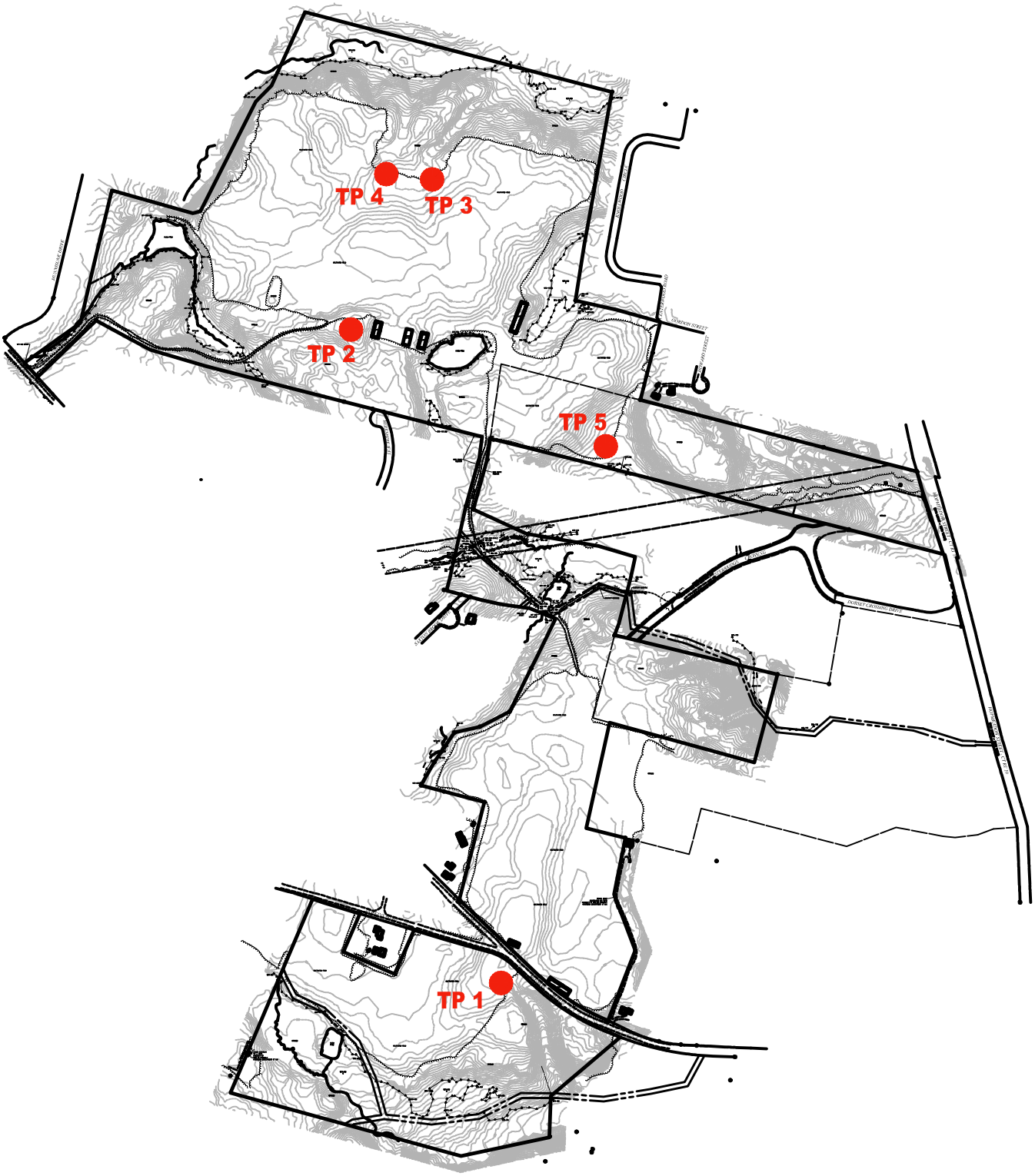
Appendix A:

Test Pit and Infiltration Testing Data

NRCS Soil Survey Information

FEMA Flood Insurance Rate Maps

Test Pit and Infiltration Testing Data


TP 4
TP 3
TP 2
TP 5
TP 1

Tobacco Valley Solar Soil Test Pit Descriptions
Described June 14, 2017
Excavated by 4x4 Volvo Backhoe with extendable boom

Test Pit 1

Ap1	0 to 6 inches	Very dark grayish brown (10YR 3/2) sandy loam, weak medium granular structure, friable, common fine roots (annual rye), clear smooth boundary.
Ap2	6 to 16 inches	Dark brown (10YR 3/3) sandy loam, weak medium subangular blocky structure, friable, common medium roots (trees), abrupt smooth boundary.
Bw	16 to 29 inches	Dark yellowish brown (10YR 4/4) sandy loam, weak medium subangular blocky structure, friable, common fine roots, abrupt smooth boundary.
BC	29 to 42 inches	Dark yellowish brown (10YR 4/4) gravelly loamy fine sand, massive, friable, clear smooth boundary.
2C1	42 to 72 inches	Dark yellowish brown/Brown/Dark brown (10YR 4/4 / 7.5YR 4/4 / 7.5YR 3/3), stratified ¼ inch of less interbedded loamy fine sand/fine sand/loamy sand, common medium 10YR 4/2 apparently depleted zones between contrasting texture plate faces, weak medium geogenic platy structure, very friable, few fine roots, clear smooth boundary.
3C2	72 to 108 inches	Brown (7.5Y 5/3), gravelly coarse sand, single grain, loose.

Test Pit 2

A1	0 to 9 inches	Very dark grayish brown (10YR 3/2) silt loam, moderate and strong medium granular structure, friable, many fine roots, abrupt smooth boundary.
A2	9 to 13 inches	Dark brown (10YR 3/3) cobbly silt loam, weak medium granular structure, friable, many medium roots, abrupt smooth boundary.
Ab	13 to 15 inches	Black (10YR 2/2) Very dark brown, silt loam, massive, friable, few medium roots, abrupt smooth boundary.
Bw1	15 to 26 inches	Brown (7.5YR 4/3) silt loam, weak medium subangular blocky structure, friable, few medium roots, clear smooth boundary.
Bw2	26 to 34 inches	Brown (10YR 4/3) fine sandy loam, weak medium subangular blocky structure, friable, few medium roots, clear smooth boundary.
BC	34 to 72 inches	Brown (10YR 4/3) sandy loam, common medium 7.5YR 4/3 redox concentration and few medium 10YR 4/2 redox depletions, weak medium subangular blocky structure, friable, few medium roots, abrupt smooth boundary.
2C1	72 to 96 inches	(7.5YR 4/3) Brown, sand, single grain, loose. Water at 80 inches.

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Test Pit 3		
A	0 to 5 inches	Very dark grayish brown (10YR 3/2) fine sandy loam, moderate medium granular structure, friable, many fine roots, clear smooth boundary.
Ap	5 to 12 inches	Dark brown (10YR 3/3) loamy fine sand, weak medium subangular blocky structure to massive, friable, few medium roots, abrupt smooth boundary.
Bw	12 to 28 inches	Dark yellowish brown (10YR 4/4) loamy fine sand, weak medium subangular blocky structure, few medium roots, clear smooth boundary.
C1	28 to 65 inches	Yellowish brown (10YR 5/4) loamy sand / fine sand, single grain, loose, few medium roots, clear smooth boundary.
C2	65 to 120 inches	Interbedded Brown (10YR 4/3 / 10YR 5/3) very fine sand and loamy fine sand, massive, breaking to ¼ inch or less geogenic plates, friable, no redox features observed in recovered materials. No groundwater observed.
Test Pit 4		
Ap1	0 to 18 inches	Brown (10YR 4/3), loamy fine sand, weak fine granular structure, very friable, many fine roots, abrupt smooth boundary (sediment).
Ap2	18 to 24 inches	Dark brown (10YR 3/3), sandy loam with 10YR 3/2 and 10YR 4/4 masses, massive, friable, few fine roots, abrupt smooth boundary.
Bw	24 to 44 inches	Brown (7.5YR 4/4) fine sandy loam, weak medium subangular blocky structure, friable, few medium roots, abrupt smooth boundary.
C1	44 to 80 inches	Yellowish brown (10YR 5/4) fine sand, massive, very friable, no roots, clear smooth boundary.
C2	80 to 96 inches	Dark brown (7.5YR 3/4) medium sand, single grain, loose, no roots, clear smooth boundary.
2C3	96 to 112 inches	Dark brown (7.5YR 3/4) very gravelly coarse sand, loose, single grain. No water observed.
Test Pit 5		
CA	0 to 5 inches	Dark yellowish brown (10YR 4/4), loamy fine sand, weak medium subangular blocky structure, friable, many medium roots, clear smooth boundary (slope wash).
C1	5 to 25 inches	Brown (7.5YR 4/4), loamy sand, single grain, loose, few medium roots, abrupt smooth boundary (slope wash).
Ab	25 to 37 inches	Very dark brown (7.5YR 2/2) fine sandy loam, weak medium subangular blocky structure, friable, common medium roots, clear smooth boundary.
Bw1	37 to 50 inches	Brown (10YR 5/3) loamy fine sand, massive, friable, clear smooth boundary.
Bw2	50 to 55 inches	Dark yellowish brown (10YR 4/4) loamy fine sand with common 7.5YR 4/4 concentrations, single grain, loose, no roots, clear smooth boundary.
2C1	55 to 82 inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain, loose, clear smooth boundary.
2C2	82 to 120 inches	Brown (10YR 4/3) gravelly coarse sand, single grain, loose. Water at 90 inches.

Aardvark Permeameter Xcel Version 2010.2											Ksat:	in/hr	Notes
Site:	Tobacco Valley Solar										in/hr	9.1	Presoak 13:20
Date:	06/14/2017	Operator:	Peterson		Test Pit Number:	2					mm/hr	231	
Soil Series:	Tisbury		Soil Horizon:	BC	Test Depth(in) :	40"					cm/hr	23.1	
Diameter of Hole(in):	3		Water Column Height (in):	4		Head Conversion Factor (HCF):							0.67
Boring Conversion Factor (BCF	2.25												

Boring Conversion Factor (BCF) = 5.06/((rad)squared) for Aardvark Reservoir
BCF of 4.25 in auger is 4.5 in diameter boring = 1
BCF of 3.25 in auger is 3.5 in diameter boring = 1.65
BCF of a 2.5 in auger is 2.75 in diameter boring = 2.68
Head Conversion Factor (HCF) = Water Column Ht inches / 6 inches, or Htcm/15cm
Example is 3.5in boring with 7 in water column in boring, 0.5 in head drop over 45 minutes in a structureded clay loam soil

F Value (Radcliffe and West, 2000)		Perc min/in to Ksat in/hr		
		Borehole diameter		
Texture		3.5 in	4.25 in	**3.0 in (2.75 Auger)**
F Value	0.069			
Sands		0.107	0.124	**0.09**
Structured loams and clays		0.082	0.096	**0.069**
Unstructured loams and clays		0.048	0.057	**0.04**

Time T0	Time x	Time	Hours	Reservoir	Reservoir	Reservoir	**Reservoir**	BCF	HCF	**Reservoir**	F value	**Ksat**	**Notes**
2400 hours	2400 hours	Elapsed	Elapsed	Reading	Reading	Change	**Change(min/in)**			**Change**	from table	= F(1/P)	
ti	t+1	(ti+1)-ti	dt/60min/hr	h	h+1	(h+1)-h	dt/dh			**Adjusted**			
		dt				dh				(P*HCF)/BCF			
	initial	next		initial	next		**P**			**Adj P**			
		min	hr	in	in	in	min/in			min/in		in/hr	
8:00	*8:45*	*45*	*0.75*	*14.5*	*14*	*0.5*	*90*	*1.65*	*1.17*	*64*	0.082	0.0771	Example
13:35	*13:36*	*1*	*0.02*	*10.7*	*10*	*0.7*	*1.4*	2.25	0.67	***0***	0.069	**9.8**	
13:36	*13:37*	*1*	*0.02*	*10*	*9.3*	*0.7*	*1.4*	2.25	0.67	***0***	0.069	**9.8**	
13:37	*13:38*	*1*	*0.02*	*9.3*	*8.6*	*0.7*	*1.4*	2.25	0.67	***0***	0.069	**9.8**	
13:38	*13:39*	*1*	*0.02*	*8.6*	*8*	*0.6*	*1.7*	2.25	0.67	***0***	0.069	**8.4**	
13:39	*13:40*	*1*	*0.02*	*8*	*7.3*	*0.7*	*1.4*	2.25	0.67	***0***	0.069	**9.8**	
13:40	*13:41*	*1*	*0.02*	*7.3*	*6.6*	*0.7*	*1.4*	2.25	0.67	***0***	0.069	**9.8**	
13:41	*13:42*	*1*	*0.02*	*6.6*	*5.9*	*0.7*	*1.4*	2.25	0.67	***0***	0.069	**9.8**	
13:42	*13:43*	*1*	*0.02*	*5.9*	*5.3*	*0.6*	*1.7*	2.25	0.67	***0***	0.069	**8.4**	
13:43	*13:44*	*1*	*0.02*	*5.3*	*4.7*	*0.6*	*1.7*	2.25	0.67	***0***	0.069	**8.4**	
STEADY STATE ARITHMETIC AVERAGE (last 4 readings)										**0.5**		######	

Pedon Description

Depth	Horizon	Color	Texture	Structure	Horizon Notes
					Full description of Test Pit 2 provided separately

User is responsible for confirming all Standard Operation Procedures for their area and type of study,
Aardvark Systems International, LLC or third parties do not assume any responsibility for misuse of devices or spreadsheets or calculations

Site Notes:

Aardvark Permeameter Xcel Version 2010.2								Ksat:	in/hr	Notes
Site:	Tobacco Valley Solar							in/hr	3.6	Presoak 13:40
Date:	06/14/2017	Operator:	Kochis	Test Pit Number:	3			mm/hr	91	
Soil Series:	Tisbury	Soil Horizon:	BC	Test Depth(in) :	30"			cm/hr	9.1	
Diameter of Hole(in):	3	Water Column Height (in):	4	Head Conversion Factor (HCF):	0.67					
Boring Conversion Factor (BCF	2.25									

Boring Conversion Factor (BCF) = 5.06/((rad)squared) for Aardvark Reservoir
BCF of 4.25 in auger is 4.5 in diameter boring = 1
BCF of 3.25 in auger is 3.5 in diameter boring = 1.65
BCF of a 2.5 in auger is 2.75 in diameter boring = 2.68
Head Conversion Factor (HCF) = Water Column Ht inches / 6 inches, or Htcm/15cm
Example is 3.5in boring with 7 in water column in boring, 0.5 in head drop over 45 minutes in a structureded clay loam soil

F Value (Radcliffe and West, 2000)		Perc min/in to Ksat in/hr		
		Borehole diameter		
Texture		3.5 in	4.25 in	3.0 in (2.75 Auger)
F Value	0.090			
Sands		0.107	0.124	**0.09**
Structured loams and clays		0.082	0.096	**0.069**
Unstructured loams and clays		0.048	0.057	**0.04**

Time T0	Time x	Time	Hours	Reservoir	Reservoir	Reservoir	Reservoir	BCF	HCF	Reservoir	F value	Ksat	Notes
2400 hours	2400 hours	Elapsed	Elapsed	Reading	Reading	Change	Change(min/in)			Change	from table	= F(1/P)	
ti	t+1	(ti+1)-ti	dt/60min/hr	h	h+1	(h+1)-h	dt/dh			Adjusted			
		dt				dh				(P*HCF)/BCF			
	initial	next		initial	next		P			Adj P			
		min	hr	in	in	in	min/in			min/in		in/hr	
8:00	*8:45*	*45*	*0.75*	*14.5*	*14*	*0.5*	*90*	*1.65*	*1.17*	*64*	0.082	0.0771	Example
14:05	*14:10*	*5*	*0.08*	*14.7*	*13.6*	*1.1*	*4.5*	2.25	0.67	***1***	0.090	**4.0**	
14:10	*14:15*	*5*	*0.08*	*13.6*	*12.6*	*1*	*5.0*	2.25	0.67	***1***	0.090	**3.6**	
14:15	*14:20*	*5*	*0.08*	*12.6*	*11.5*	*1.1*	*4.5*	2.25	0.67	***1***	0.090	**4.0**	
14:20	*14:25*	*5*	*0.08*	*11.5*	*10.5*	*1*	*5.0*	2.25	0.67	***1***	0.090	**3.6**	
14:25	*14:30*	*5*	*0.08*	*10.5*	*9.4*	*1.1*	*4.5*	2.25	0.67	***1***	0.090	**4.0**	
14:30	*14:35*	*5*	*0.08*	*9.4*	*8.4*	*1*	*5.0*	2.25	0.67	***1***	0.090	**3.6**	
			0.00			*0*	*#DIV/0!*	2.25	0.67	***#DIV/0!***	0.090	**#DIV/0!**	
			0.00			*0*	*#DIV/0!*	2.25	0.67	***#DIV/0!***	0.090	**#DIV/0!**	
			0.00			*0*	*#DIV/0!*	2.25	0.67	***#DIV/0!***	0.090	**#DIV/0!**	
STEADY STATE ARITHMETIC AVERAGE (last 4 readings)										**#DIV/0!**		**######**	

Pedon Description

Depth	Horizon	Color	Texture	Structure	Horizon Notes
					Full description of Test Pit 3 provided separately

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Aardvark Systems International, LLC or third parties do not assume any responsibility for misuse of devices or spreadsheets or calculations

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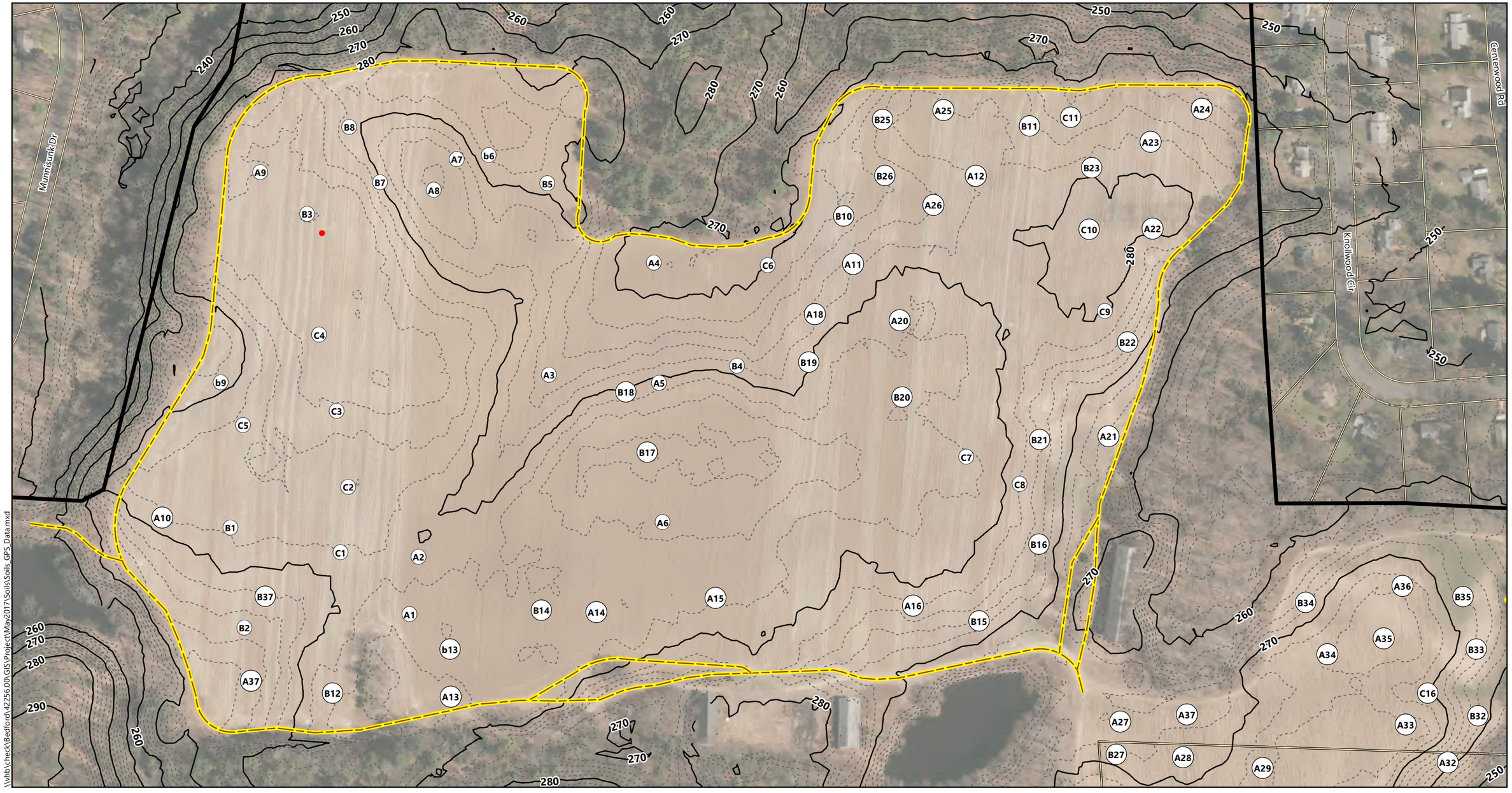

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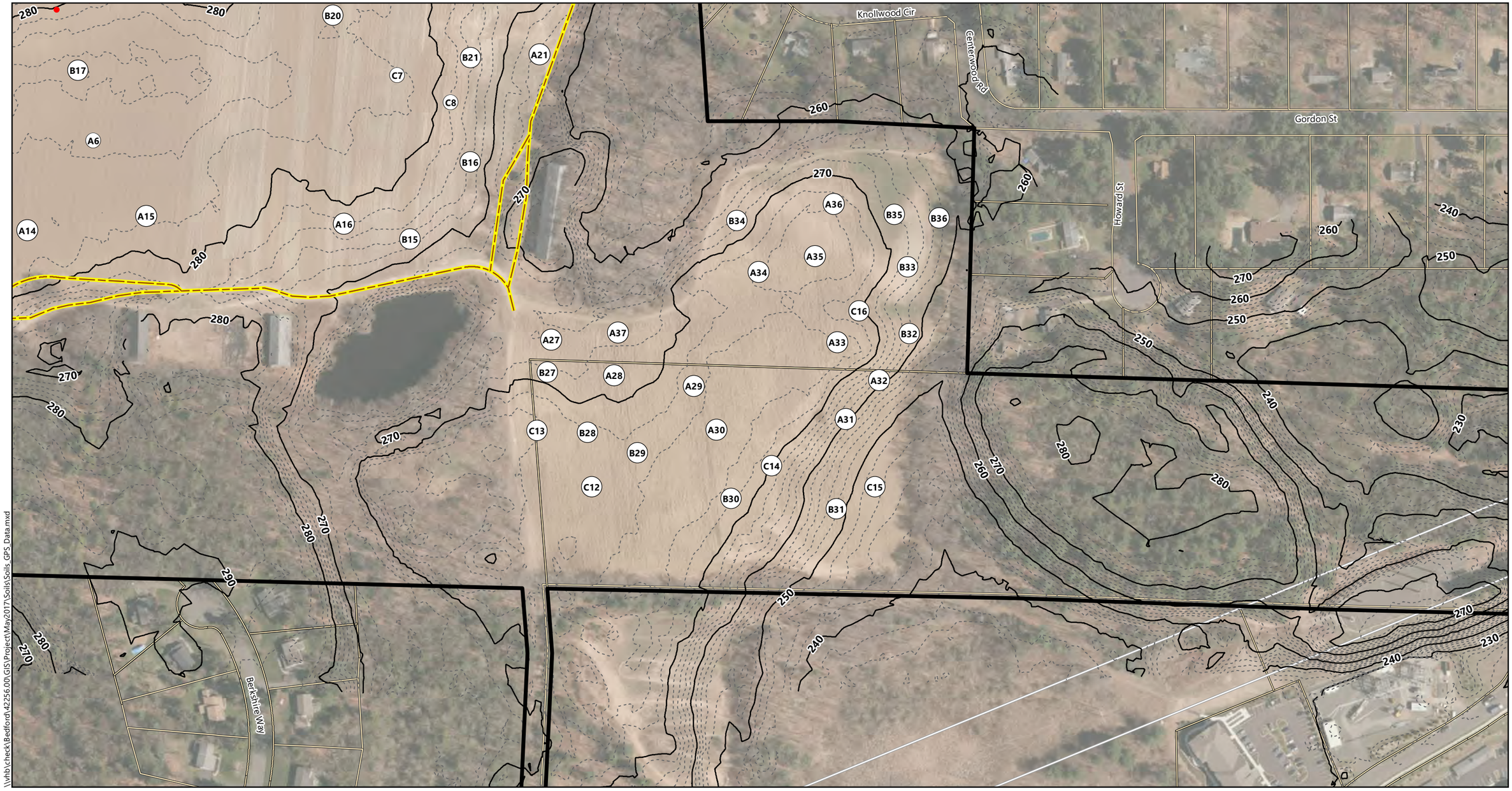
0 100 200 400 Feet

- Property Boundary
- Abutting Parcel
- Access Road
- Soil Areas
- 2-ft Elevation Contour
- 10-ft Index Contour

Tobacco Valley Solar | Simsbury, Connecticut

Agricultural Fields
Page 1 of 3

Source: VHB, CTDEEP, ESRI



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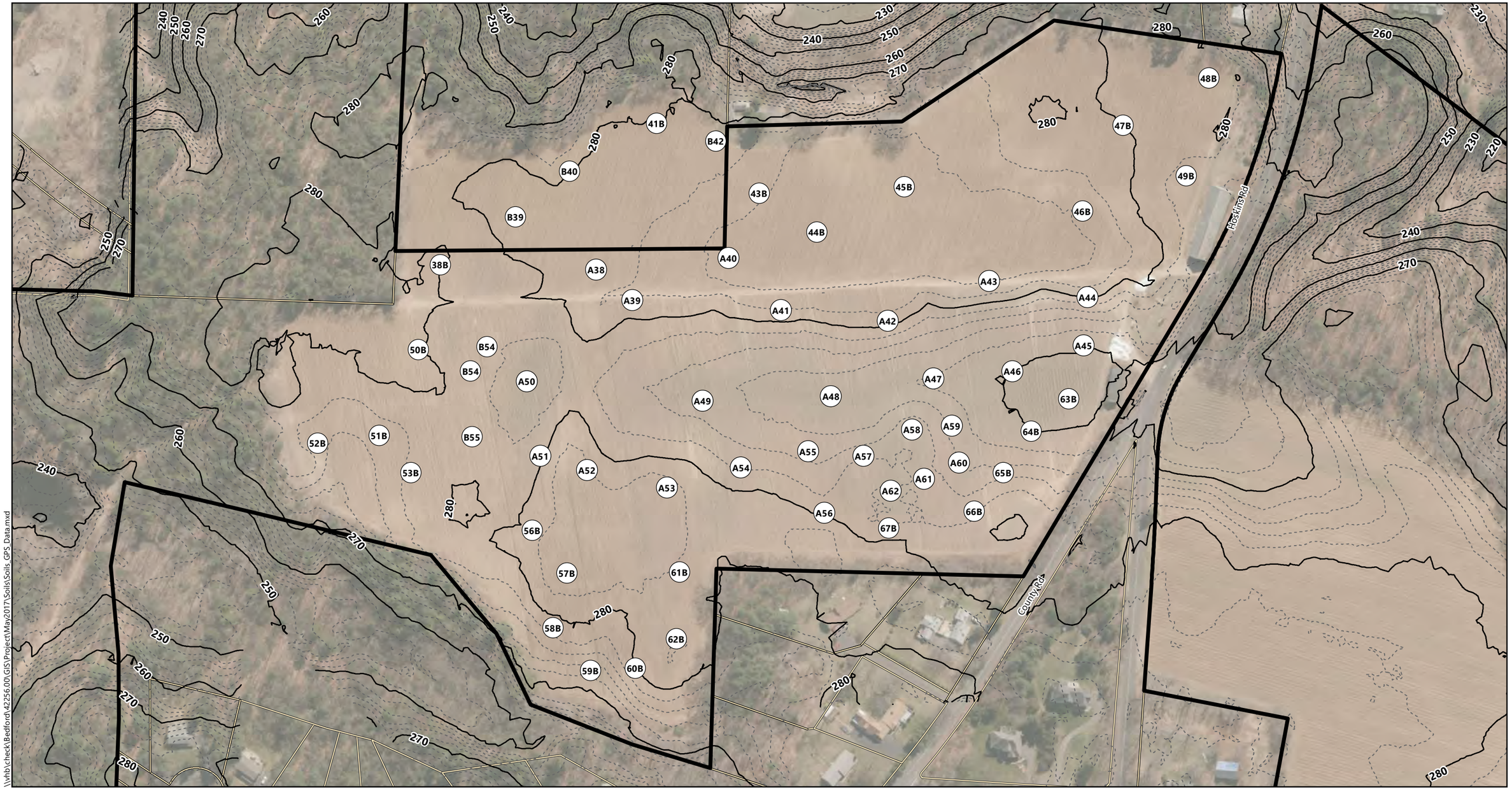
0 100 200 400 Feet

- Property Boundary
- Abutting Parcel
- Access Road
- Soil Areas
- Existing Eversource ROW
- 2-ft Elevation Contour
- 10-ft Index Contour

Tobacco Valley Solar | Simsbury, Connecticut

Agricultural Fields
Page 2 of 3

Source: VHB, CTDEEP, ESRI



0 100 200 400 Feet

- Property Boundary
- Abutting Parcel
- Access Road
- Soil Areas
- Existing Eversource ROW
- 2-ft Elevation Contour
- 10-ft Index Contour

Tobacco Valley Solar | Simsbury, Connecticut

Agricultural Fields
Page 3 of 3

Source: VHB, CTDEEP, ESRI

Test Pit **A1**

Ap	0 to 12 inches	Dark yellowish brown (10YR 3/4) gravelly coarse sandy loam, massive, friable, abrupt smooth boundary.
2C1	12 to 18 inches	Dark yellowish brown (10YR 4/6) coarse sand, single grain, loose, clear smooth boundary.
2C2	18 to 36 inches	Light yellowish brown (10YR 6/4) coarse sand, single grain, loose.

Test Pit **A2**

Ap	0 to 15 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	15 to 26 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	26 to 38 inches	Yellowish brown (10YR 4/6) sand, single grain, loose.

Test Pit **A3**

Ap	0 to 20 inches	Dark yellowish brown (10YR 3/4) fine sandy loam, massive, friable, abrupt smooth boundary.
Bw	20 to 31 inches	Yellowish brown (10YR 5/6) loamy sand, massive, friable, clear smooth boundary.
2C1	31 to 48 inches	Dark yellowish brown (10YR 4/4) gravelly loamy coarse sand, single grain, loose.

Test Pit **A4**

Ap	0 to 23 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	23 to 38 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	38 to 46 inches	Dark yellowish brown (10YR 4/6) gravelly sand, single grain, loose.

Test Pit **A5**

Ap	0 to 11 inches	Dark yellowish brown (10YR 4/3) gravelly coarse sandy loam, massive, friable, abrupt smooth boundary.
2C1	11 to 15 inches	Dark yellowish brown (10YR 4/6) coarse sand, massive, friable, clear smooth boundary.
2C2	15 to 25 inches	Yellowish brown (10YR 5/4) gravelly coarse sand, single grain, loose.

Test Pit **A6**

Ap	0 to 13 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	13 to 22 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	22 to 29+ inches	Yellowish brown (10YR 5/6) gravelly coarse sand, single grain, loose.

Test Pit **A7**

Ap	0 to 22 inches	Dark brown (10YR 3/3) loamy sand, massive, friable, abrupt smooth boundary.
Bw	22 to 28 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, clear smooth boundary.
BC	28 to 38 inches	Strong brown (7.5YR 4/6) loamy sand, single grain, loose.
2C1	38 to 42+inches	Brown (7.5YR 4/4) Sand, single grain, loose.

Test Pit **A8**

Ap1	0 to 13 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Ap2	13 to 19 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, clear smooth boundary.
Ap3	19 to 26 inches	Dark brown (10YR 3/3) fine sandy loam, few concentrations (7.5YR 4/4) massive, friable.
Ab	26 to 39 inches	Dark brown (7.5YR 3/3) sandy loam, massive, friable.
Bw	39 to 44+inches	Brown (7.5YR 4/4) sandy loam, massive, friable.

Test Pit **A9**

Ap1	0 to 13 inches	Dark brown (10YR 3/3) loamy sand, massive, friable, abrupt smooth boundary.
Bw	13 to 18 inches	Reddish brown (5YR 4/4) loamy sand, massive, friable, clear smooth boundary.
BC	18 to 24 inches	Strong brown (7.5YR 4/6) sand, single grain, loose, clear smooth boundary.
C	24 to 40 inches	Brown (7.5YR 4/4) coarse sand, single grain, loose.

Test Pit **A10**

Ap	0 to 12 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 17 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, friable, clear smooth boundary.
2C1	17 to 19 inches	Brown (7.5YR 4/4) Sand, single grain, loose.
2C2	19 to 21 inches	Brown (10YR 5/3) Sand, single grain, loose.
3C3	21 to 36+inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain, loose.

Test Pit **A11**

Ap	0 to 18 inches	Dark brown (10YR 3/3) loamy sand, massive, friable, abrupt smooth boundary.
BC	18 to 22 inches	Brown (7.5YR 4/4) sand, single grain, loose.
2C1	22 to 40 inches	Reddish brown (5YR 4/4) sand, single grain, loose.

Test Pit **A12**

Ap	0 to 12 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 16 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, clear smooth boundary.
2C1	16 to 23 inches	Yellowish brown (10YR 5/4) gravelly sand, single grain, loose.
2C2	23 to 35+inches	Brown (7.5YR 5/3) gravelly sand, single grain, loose.

Test Pit **A13**

Ap	0 to 8 inches	Dark yellowish brown (10YR 3/4) coarse sandy loam, massive, friable, abrupt smooth boundary.
C	8 to 15+ inches	Reddish Brown (5YR 4/4) Very cobble coarse sand, massive, friable, clear smooth boundary.

Test Pit **A14**

Ap	0 to 10 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	10 to 16 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, clear smooth boundary.
2C1	16 to 23 inches	(7.5YR 4/6) sand, single grain, loose.
2C2	23 to 26+inches	Brown (7.5YR 5/3) gravelly sand, single grain, loose.

Test Pit A**15**

Ap	0 to 13 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	13 to 18 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, many medium roots, clear smooth boundary.
2C	18 to 40 inches	Dark gray (7.5YR 4/4) gravelly coarse sand, single grain, loose.

<200 PSI

Test pit A**16**

Ap	0 to 15 inches	Dark yellowish brown (10YR 3/4) loamy sand, massive, friable, abrupt smooth boundary.
Bw	15 to 26 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, clear smooth boundary.
2C1	26 to 30 inches	Dark gray (7.5YR 4/4) gravelly coarse sand, single grain, loose, clear smooth boundary.
2C2	30 to 40 inches	Brown (10YR 5/3) gravelly coarse sand, single grain, loose.

Test pit A**17**

Ap	0 to 11 inches	Dark brown (10YR 3/3) loamy fine sand, massive, friable, abrupt smooth boundary.
Bw	11 to 16 inches	Yellowish brown (10YR 5/6) loamy fine sand, massive, friable, clear smooth boundary.
2C1	16 to 26 inches	Grayish brown (10YR 5/2) very fine sandy loam, massive, friable.
2C2	26 to 28 inches	Pale brown (10YR 6/3) fine sand, single grain, loose.

Test pit A**18**

Ap	0 to 11 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 16 inches	Yellowish brown (10YR 5/6) sandy loam, massive, friable, clear smooth boundary.
BC	16 to 25 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable.
2C1	25 to 38 inches	Brown (7.5YR 5/4) sand, single grain, loose.

Test pit A**20**

Ap	0 to 11 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 17 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C1	17 to 31 inches	Brown (7.5YR 5/4) coarse sand, single grain, loose.

Test pit A**21**

Ap	0 to 9 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
AB1	9 to 16 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, firm (plow pan) clear smooth boundary.
AB2	16 to 39	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable (slope wash).

Test pit A**22**

Ap	0 to 7 inches	Very dark grayish brown (10YR 3/2) sandy loam, massive, friable, abrupt smooth boundary.
Bw	7 to 16 inches	Yellowish brown (10YR 5/4) loamy sand, massive, friable, clear smooth boundary.
2C1	16 to 25 inches	Brown (7.5YR 4/4) gravelly sand, single grain, loose.
2C2	25 to 37 inches	Yellowish brown (7.5YR 5/4) very gravelly coarse sand, single grain loose

Test pit A**23**

Ap	0 to 10 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	10 to 16 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C1	16 to 27 inches	Brown (7.5YR 5/4) sand, single grain, loose, clear smooth boundary.
2C2	27 to 39 inches	Light brown (7.5YR 6/4) sand, single grain, loose.

Test pit A**24**

Ap	0 to 13 inches	Dark brown (10YR 3/3) loamy sand, massive, friable, abrupt smooth boundary.
2C1	13 to 17 inches	Brown (7.5YR 4/4) sand, single grain, loose, clear smooth boundary.
3C2	17 to 22 inches	Brown (7.5YR 4/4) extremely gravelly sand, single grain, loose, clear smooth boundary.
3C3	22 to 36 inches	Brown (7.5YR 5/4) extremely gravelly coarse sand, single grain, loose.

Test pit A**25**

Ap	0 to 15 inches	Very dark grayish brown (10YR 3/2) sandy loam, massive, friable, abrupt smooth boundary.
Bw	15 to 19 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	19 to 33 inches	Brown (7.5YR 5/4) very gravelly coarse sand, single grain, loose.

Test pit A**26**

Ap	0 to 16 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	16 to 25 inches	Brown (7.5YR 4/4) fine sandy loam, massive, friable, clear smooth boundary.
2C1	25 to 39 inches	Reddish brown (5YR 5/3) loamy very fine sand, massive, friable.

Test pit A**27**		
Ap	0 to 17 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	17 to 29 inches	Brown (10YR 5/6) sandy loam, massive, friable, clear smooth boundary.
2C1	29 to 38 inches	Brown (7.5YR 4/4) sand, single grain, loose.
Test pit A**28**		
Ap	0 to 16 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	16 to 25 inches	Brown (7.5YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C1	25 to 39 inches	Brown (7.5YR 4/4) gravelly sand, single grain, loose.
Test pit A**29**		
Ap	0 to 8 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	8 to 14 inches	Brown (7.5YR 4/4) loamy sand, massive, friable, clear smooth boundary.
2C1	14 to 28 inches	Reddish brown (5YR 4/4) very cobbly coarse sand, massive, friable.
Test pit A**30**		
Ap	0 to 11 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
BC	11 to 28 inches	Yellowish brown (10YR 5/4) fine sand, massive, friable, clear smooth boundary.
C	28 to 35 inches	Brown (7.5YR 5/4) sand, single grain, loose.
Test pit A**31**		
Ap	0 to 8 inches	Brown (10YR 4/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
2C1	8 to 12 inches	Brown (7.5YR 4/4) very cobbly loamy sand, single grain, loose, clear smooth boundary.
3C2	12 to 18 inches	Reddish brown (5YR 5/4) loamy fine sand, massive, friable.
4Cd3	18 to 25	Reddish brown (2.5YR 4/4) fine sandy loam, massive, very firm. (weathered bedrock?)

Test pit A**32**

Ap	0 to 7 inches	Brown (10YR 4/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
Bw	7 to 17 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C1	17 to 21 inches	Yellowish brown (10YR 5/4) sand, single grain, loose, clear smooth boundary.
3C2	21 to 32	Light brown (7.5YR 6/4) very cobbly sand, single grain, loose.

Test pit A**33**

Ap	0 to 8 inches	Brown (10YR 4/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
2CR	8 to 10 inches	Reddish brown (2.5YR 4/3) sandy loam, massive to medium platy structure, firm, clear smooth boundary.
R	10 inches	Weathered red sand stone/silt stone

Test pit A**33A**

Ap	0 to 8 inches	Brown (10YR 4/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
Bw	7 to 12 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C1	12 to 17 inches	Reddish brown (5YR 5/4) loamy very fine sand, massive, friable, abrupt smooth boundary.
3Cd2	17 to 30 inches	Reddish brown (5YR 5/4) loamy very fine sand, massive, firm, abrupt smooth boundary.
R	30 inches	Weathered red sand stone/silt stone.

Test pit A**34**

Ap	0 to 10 inches	Brown (10YR 4/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
Bw	10 to 19 inches	Yellowish brown (10YR 5/4) sandy loam, massive, friable, clear smooth boundary.
2C1	19 to 29 inches	Light brown (7.5YR 6/4) coarse sand, single grain, loose, clear smooth boundary.
3C2	29 to 38 inches	Brown (7.5YR 5/4) sand, single grain, loose.

Test pit A**35**		
Ap	0 to 7 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	7 to 15 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, friable, clear smooth boundary.
2C1	15 to 40 inches	Yellowish brown (7.5YR 5/4) cobbly coarse sand, single grain, loose.
Test pit A**36**		
Ap	0 to 12 inches	Dark brown (10YR 3/3) loamy sand, massive, friable, abrupt smooth boundary.
C1	12 to 24 inches	Brown (7.5YR 4/3) sand, single grain, loose, clear smooth boundary.
2C2	24 to 37 inches	Brown (7.5YR 5/4) very cobbly coarse sand, single grain, loose.
Test pit A**37**		
Ap	0 to 13 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	13 to 15 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, friable, clear smooth boundary.
C1	15 to 22 inches	Yellowish brown (10YR 5/4) fine sand, single grain, loose, clear smooth boundary.
C2	22 to 31 inches	Brown (7.5YR 5/4) fine sand, massive, very friable.
Test pit A**38**		
Ap	0 to 12 inches	Brown (10YR 4/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
2C1	12 to 25 inches	Brown (7.5YR 4/4) very cobbly coarse sand, single grain, loose, clear smooth boundary.
2C2	25 to 33 inches	Brown (7.5YR 5/4) coarse sand, single grain, loose, clear smooth boundary.
Test pit A**39**		
Ap	0 to 15 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
BC	15 to 19 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, friable, clear smooth boundary.
2C1	19 to 26 inches	Strong brown (7.5YR 4/6) sand, single grain, loose, clear smooth boundary.
3C2	26 to 34 inches	Brown (7.5YR 5/4) sand, single grain, loose.

Test pit A**40**

Ap	0 to 14 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	14 to 18 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C1	18 to 27 inches	Strong brown (7.5YR 4/6) cobbly coarse sand, single grain, loose, clear smooth boundary.
2C2	27 to 36 inches	Brown (7.5YR 5/4) cobbly coarse sand, single grain, loose.

Test pit A**41**

Ap	0 to 13 inches	Brown (10YR 4/3) cobbly loamy sand, single grain, loose, clear smooth boundary.
BC	13 to 19 inches	Dark yellowish brown (10YR 4/6) very cobbly loamy sand, single grain, loose, clear smooth boundary.
C1	19 to 24 inches	Brown (7.5YR 5/4) cobbly coarse sand, single grain, loose, clear smooth boundary.
2C2	24 to 33 inches	Light brown (7.5YR 6/4) sand, single grain, loose.

Test pit A**42**

Ap	0 to 11 inches	Brown (10YR 4/3) very cobbly loamy sand, single grain, loose, clear smooth boundary.
C	11 to 30 inches	Brown (7.5YR 4/3) very cobbly coarse sand, single grain, loose.

Test pit A**43**

Ap	0 to 15 inches	Brown (10YR 4/3) very cobbly loamy sand, single grain, loose, clear smooth boundary.
C	15 to 31 inches	Reddish brown (5YR 4/4) cobbly coarse sand, single grain, loose.

Test pit A**44**

Ap	0 to 15 inches	Brown (10YR 4/3) very cobbly loamy sand, single grain, loose, clear smooth boundary.
C	15 to 30 inches	Dark yellowish brown (10YR 4/4) very cobbly coarse sand, single grain, loose. (extremely cobbly in part)

Test pit A**45**

Ap	0 to 15 inches	Brown (10YR 4/3) very cobbly loamy sand, single grain, loose, clear smooth boundary.
C	15 to 31 inches	Reddish brown (5YR 4/4) cobbly coarse sand, single grain, loose.

Test Pit A46		
Ap	0 to 26 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
BC	26 to 37 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, abrupt smooth boundary.
C1	37 to 43 inches	Strong brown (7.5YR 4/6) cobbly coarse sand, single grain, loose.
Test Pit A47		
Ap	0 to 15 inches	Dark brown (10YR 3/3) very cobbly sandy loam, massive, friable, abrupt smooth boundary.
Bw	15 to 28 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, abrupt smooth boundary.
2C1	28 to 33 inches	Dark yellowish brown (10YR 4/6) sand, single grain, loose.
3C2	33 to 40 inches	Brown (7.5YR 5/4) cobbly coarse sand, single grain, loose.
Test Pit A48		
Ap	0 to 19 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	19 to 37 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, abrupt smooth boundary.
2C	37 to 44 inches	Yellowish brown (10YR 5/6) sand, single grain, loose.
Test Pit A49		
Ap	0 to 17 inches	Dark brown (10YR 3/3) fine sandy loam, massive, friable, abrupt smooth boundary.
BC	17 to 26 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, abrupt smooth boundary.
2C	26 to 35 inches	Strong brown (7.5YR 5/4) sand, single grain, loose.
Test Pit A50		
Ap	0 to 14 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	14 to 26 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, abrupt smooth boundary.
2C1	26 to 30 inches	Dark reddish brown (5YR 3/4) sand, single grain, loose.
3C2	30 to 35 inches	Brown (7.5YR 5/4) sand, single grain, loose

Test Pit A51		
Ap	0 to 15 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	15 to 26 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, abrupt smooth boundary.
C1	26 to 38 inches	Brown (7.5YR 5/4) sand, single grain, loose.
Test Pit A52		
Ap	0 to 10 inches	Dark brown (10YR 3/3) very cobbly sandy loam, massive, friable, abrupt smooth boundary.
Bw	10 to 14 inches	Strong brown (7.5YR 4/6) cobbly sandy loam, massive, friable, clear smooth boundary.
2C1	14 to 35 inches	Brown (7.5YR 4/4) extremely cobbly coarse sand, single grain, loose.
Test Pit A53		
Ap	0 to 13 inches	Dark brown (10YR 3/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
2C	13 to 38 inches	Brown (7.5YR 5/4) sand, single grain, loose.
Test Pit A54		
Ap	0 to 13 inches	Dark brown (10YR 3/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
C1	13 to 32 inches	Brown (7.5YR 5/4) sand, single grain, loose.
Test Pit A55		
Ap	0 to 9 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
2C1	9 to 14 inches	Yellowish brown (10YR 5/4) sand, single grain, loose, clear smooth boundary.
3C2	14 to 31 inches	Brown (7.5YR 5/4) cobbly coarse sand, single grain, loose.
Test Pit A56		
Ap	0 to 12 inches	Brown (10YR 4/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
BC	12 to 18 inches	Brown (7.5YR 4/4) sandy loam, massive, friable, abrupt smooth boundary.
C1	18 to 31 inches	Strong brown (7.5YR 4/6) cobbly coarse sand, single grain, loose.
Test Pit A57		
Ap	0 to 8 inches	Dark brown (10YR 3/3) very cobbly loamy sand, massive, friable, abrupt smooth boundary.
C	8 to 29 inches	Strong brown (7.5YR 5/6) very cobbly coarse sand, single grain, loose.

Test Pit A58

Ap	0 to 10 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
2C1	10 to 17 inches	Brown (7.5YR 5/4) very cobbly coarse sand, single grain, loose, clear smooth boundary.
2C2	17 to 29 inches	Light brown (7.5YR 6/4) very cobbly coarse sand, single grain, loose.

Test Pit A59

Ap	0 to 13 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	13 to 24 inches	Yellowish brown (7.5YR 5/6) sandy loam, massive, friable, clear smooth boundary.
2C	24 to 34 inches	Yellowish brown (10YR 5/6) sand, single grain, loose.

Test Pit A60

Ap	0 to 14 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	14 to 22 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
BC	22 to 29 inches	Yellowish brown (10YR 5/6) loamy sand, single grain, loose, clear smooth boundary
C	29 to 36 inches	Light yellowish brown (10YR 6/4), sand, single grain, loose.

Test Pit **A61**

Ap	0 to 8 inches	Brown (10YR 4/3) very cobbly sandy loam, massive, friable, abrupt smooth boundary.
2C1	8 to 30 inches	Brown (7.5YR 5/4) very cobbly coarse sand, single grain, loose.

Test Pit **A62**

Ap	0 to 20 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	20 to 29 inches	Yellowish brown (10YR 5/6) sandy loam, massive, friable, clear smooth boundary.
2C1	17 to 29 inches	Yellowish brown (10YR 5/4) sand, single grain, loose.

Test Pit **B1**

Ap	0 to 8 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	8 to 14 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary. (200 psi)
2C1	18 to 46 inches	Dark yellowish brown (10YR 4/6) gravelly coarse sand, single grain, loose.

Test Pit **B2**

Ap	0 to 14 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	14 to 23 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
BC	23 to 34 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
C	34 to 40 inches	Brown (10YR 5/3) gravelly coarse sand, single grain, loose

Test Pit **B3**

Ap	0 to 16 inches	Dark yellowish brown (10YR 3/4) stony sandy loam, massive, friable, abrupt smooth boundary.
Bw	16 to 27 inches	Strong brown (7.5YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	27 to 40 inches	Brown (7.5YR 4/4) gravelly loamy sand with 5 percent 5YR 4/3 hard masses, massive, very friable to single grain, loose.

Test Pit **B4**

Ap	0 to 12 inches	Dark yellowish brown (10YR 3/4) gravelly loamy sand, massive, very friable, abrupt smooth boundary.
Bw	12 to 25 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	25 to 42 inches	Yellowish brown (10YR 4/4) gravelly sand, single grain, loose.

Test Pit **B5**

Ap	0 to 7 inches	Brown (7.5YR 4/4) fine sandy loam, massive, friable, abrupt smooth boundary.
C/A	7 to 10 inches	Yellowish brown 10YR 5/4 loamy fine sand and brown (7.5YR 4/4) sandy loam, massive, friable, abrupt smooth boundary.
C	10 to 40 inches	Yellowish brown (10YR 5/4) loamy fine sand, massive, very friable.

Test Pit **B6**

Ap	0 to 13 inches	Dark brown (7.5YR 3/4) stony sandy loam, massive, friable, abrupt smooth boundary. Plow pan 6 – 13 inches (300 psi)
Bw	13 to 25 inches	Yellowish red (5YR 4/6) sandy loam, massive, friable, clear smooth boundary.
C	25 to 40 inches	Strong brown (7.5YR 5/6) sand, single grain, loose.

Test Pit **B7**

Ap	0 to 5 inches	Brown (7.5YR 4/3) gravelly loamy sand, massive, friable, abrupt smooth boundary.
Bw	5 to 21 inches	Strong brown (7.5YR 4/6) loamy sand, massive, very friable, clear smooth boundary.
C	21 to 40 inches	Strong brown (7.5YR 5/6) sand, massive, very friable to single grain, loose.

Test Pit **B8**

Ap	0 to 12 inches	Brown (7.5YR 3/3) loamy sand, massive, very friable, abrupt smooth boundary.
B/A	12 to 14 inches	Strong brown (7.5YR 4/6) loamy sand, lens of 7.5YR 3/3, massive, very friable, abrupt smooth boundary.
Bw	14 to 18 inches	Strong brown (7.5YR 4/6) loamy sand, massive, very friable, clear smooth boundary.
C1	18 to 38 inches	Brown (7.5YR 5/4) loamy sand, massive, very friable to single grain, loose, clear smooth boundary.
C2	38 to 48	Brown (7.5YR 5/4) sand., single grain, loose.

Test Pit **B9**

Ap	0 to 16 inches	Brown (10YR 4/3) loamy sand, massive, friable, abrupt smooth boundary.
Bw	16 to 23 inches	Brown (7.5YR 4/4) loamy sand, massive, friable, clear smooth boundary.
BC	23 to 30 inches	Brown (7.5YR 4/3) loamy sand, massive, very friable, clear smooth boundary.
C	30 to 40 inches	Brown (7.5YR 5/3) sand, single grain, loose

Test Pit **B10**

Ap	0 to 10 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw1	10 to 21 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
Bw2	21 to 27 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, very friable, clear smooth boundary.
2C1	27 to 40 inches	Brown (10YR 5/3) sand, single grain, loose

Test Pit **B11**

Ap	0 to 9 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	9 to 22 inches	Strong brown (7.5YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	22 to 38 inches	Brown (7.5YR 5/3) gravelly coarse sand, single grain, loose

Test Pit **B12**

Ap	0 to 8 inches	Dark brown (7.5YR 3/3) very cobbly sandy loam, massive, friable, abrupt smooth boundary.
2C	8 to 30 inches	Reddish brown (5YR 4/4) very cobbly coarse sand, single grain, loose.

Test Pit **B13**

Ap	0 to 11 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 21 inches	Dark yellowish brown (10YR 4/4) fine sandy loam, massive, friable, clear smooth boundary.
C	21 to 40 inches	Brown (10YR 5/3) loamy fine sand, massive, friable.

Test Pit **B14**

Ap	0 to 10 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bdw	10 to 14 inches	Brown (7.5YR 4/4) sandy loam, massive, firm, abrupt smooth boundary.
2C1	34 to 40 inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain, loose

Test Pit **B15**

Ap	0 to 11 inches	Dark brown (7.5YR 3/3) cobbly loamy sand, massive, friable, abrupt smooth boundary.
Bdw	11 to 27 inches	Reddish brown (2.5YR 4/4) loamy fine sand, massive, firm, clear smooth boundary.
C	27 to 38 inches	Reddish brown (5YR 4/4) loamy sand, single grain, loose

Test Pit **B16**

Ap	0 to 11 inches	Dark brown (7.5YR 3/3) gravelly sandy loam, massive, friable, abrupt smooth boundary.
2C1	11 to 18 inches	Reddish brown (5YR 4/4) very gravelly coarse sand, single grain, loose. Tightly packed material at edge of field.

Test Pit **B17**

Ap	0 to 12 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 19 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C1	19 to 36 inches	Yellowish brown (10YR 5/6) gravelly coarse sand, single grain, loose.

Test Pit **B18**

Ap	0 to 10 inches	Dark yellowish brown (10YR 3/4) loamy coarse sand, massive, very friable, clear smooth boundary.
2C1	10 to 30 inches	Dark yellowish brown (10YR 4/4) gravelly coarse sand, single grain, loose, clear smooth boundary.
2C2	23 to 34 inches	Yellowish brown (10YR 5/6) gravelly coarse sand, single grain, loose.

Test Pit **B19**

Ap	0 to 11 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 17 inches	Dark yellowish brown (10YR 4/6) fine sand, massive, very friable, clear smooth boundary.
C1	17 to 27 inches	Brown (10YR 5/3) fine sand, massive, very friable, clear smooth boundary.
C2	27 to 40 inches	Brown (10YR 5/3) sand, single grain, loose

Test Pit **B20**

Ap	0 to 10 inches	Brown (10YR 4/3) fine sandy loam, very weak fine granular, friable, abrupt smooth boundary.
Bw	10 to 19 inches	Yellowish brown (10YR 5/6) fine sandy loam, massive, friable, clear smooth boundary.
BC	19 to 24 inches	Dark yellowish brown (10YR 4/6) loamy fine sand, massive, very friable, clear smooth boundary.
C	24 to 38 inches	Pale brown (10YR 6/3) loamy fine sand, massive, very friable.

Test Pit **B21**

ACp	0 to 10 inches	Dark yellowish brown (10YR 3/4) coarse sand, single grain, loose, abrupt smooth boundary.
C1	10 to 34 inches	Light brown (7.5YR 6/3) coarse sand, single grain, loose, clear smooth boundary.
2C2	34 to 40 inches	Light brown (7.5YR 6/3) very gravelly coarse sand, single grain, loose.

Test Pit **B22**

ACp	0 to 6 inches	Dark yellowish brown (10YR 3/6) loamy sand, massive, friable, abrupt smooth boundary.
C	6 to 37 inches	Brown (7.5YR 6/3) sand, single grain, loose.

Test Pit **B23**

Ap	0 to 8 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw1	8 to 13 inches	Brown (7.5YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
Bw2	13 to 18 inches	Reddish brown (5YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
2C	18 to 38 inches	Brown (7.5YR 5/4) gravelly sand, single grain, loose.

Test Pit **B24**

Ap	0 to 9 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	9 to 16 inches	Brown (7.5YR 4/4) sandy loam, massive, friable, clear smooth boundary.
Bw2	16 to 21 inches	Strong brown (7.5YR 4/6) sandy loam, massive, friable, clear smooth boundary.
2C	21 to 40 inches	Brown (7.5YR 5/4) gravelly sand, single grain, loose.

Test Pit **B25**

Ap	0 to 8 inches	Dark brown (7.5YR 3/3) loamy sand, massive, very friable, abrupt smooth boundary.
C	8 to 36 inches	Brown (7.5YR 4/4) gravelly sand, single grain, loose

Test Pit **B26**

Ap	0 to 9 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	9 to 23 inches	Brown (7.5YR 4/4) sandy loam, massive, friable, clear smooth boundary.
BC	23 to 32 inches	Yellowish brown (10YR 4/4) loamy fine sand, massive, very friable, clear smooth boundary.
C	32 to 38 inches	Brown (7.5YR 5/4) fine sand, massive, very friable.

Test Pit **B27**

Ap	0 to 12 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 35 inches	Yellowish brown (10YR 5/4) sand, single grain, loose, clear smooth boundary.
C	35 to 42 inches	Brown (7.5YR 5/4) coarse sand, single grain, loose

Test Pit **B28**

Ap	0 to 9 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	9 to 17 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, very friable, clear smooth boundary.
BC	17 to 36 inches	Brown (7.5YR 4/4) very cobbly coarse sand, single grain, loose.

Test Pit **B29**

Ap	0 to 12 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
AB	12 to 21 inches	Dark yellowish brown (10YR 3/4) loamy fine sand, massive, very friable, clear smooth boundary.
Bw	21 to 32 inches	Yellowish brown (10YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
2C	32 to 42 inches	Brown (10YR 4/3) gravelly sand, single grain, loose

Test Pit **B30**

Ap	0 to 11 inches	Brown (10YR 4/3) loamy sand, massive, very friable, abrupt smooth boundary.
Bw	11 to 15 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
BC	15 to 28 inches	Yellowish brown (10YR 5/4) gravelly loamy sand, single grain, loose, clear smooth boundary.
C	28 to 44 inches	Brown (10YR 5/3) sand, single grain, loose

Test Pit **B31**

Ap	0 to 12 inches	Brown (10YR 4/3) gravelly sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 14 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C	14 to 40 inches	Dark yellowish brown (10YR 4/4) very gravelly loamy coarse sand, massive, very friable.

Test Pit **B32**

Ap	0 to 7 inches	Dark yellowish brown (10YR 3/4) gravelly loamy sand, massive, friable, abrupt smooth boundary.
Bw	7 to 12 inches	Dark yellowish brown (10YR 4/4) gravelly loamy sand, massive, very friable to single, grain loose, clear smooth boundary.
2C1	12 to 17 inches	Reddish brown (5YR 4/4) very cobbly sand, single grain, loose, clear smooth boundary.
3C2	17 to 36 inches	Brown (7.5YR 5/3) coarse sand, single grain, loose

Test Pit **B33**

BAp	0 to 11 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, friable, abrupt smooth boundary.
BC	11 to 15 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, very friable, clear smooth boundary.
1C1	15 to 19 inches	Brown (10YR 4/3) loamy sand, massive, very friable, clear smooth boundary.
2C2	19 to 25 inches	Brown (7.5YR 4/3) very cobbly sand, single grain, loose, clear smooth boundary.
3C3	25 to 38 inches	Brown (7.5YR 5/3) gravelly very coarse sand, single grain, loose.

Test Pit **B34**

Ap	0 to 8 inches	Dark brown (10YR 3/3) loamy sand, massive, very friable, abrupt smooth boundary.
Bw	8 to 13 inches	Strong brown (7.5YR 4/6) loamy sand, massive, very friable, clear smooth boundary.
BC	13 to 28 inches	Yellowish brown (10YR 4/4) sand, single grain, loose, clear smooth boundary.
C	28 to 42 inches	Brown (7.5YR 5/3) sand, single grain, loose

Test Pit **B35**

Ap1	0 to 13 inches	Very dark grayish brown (10YR 3/2) coarse sandy loam, massive, friable, abrupt smooth boundary.
Ap2	13 to 21 inches	Very dark grayish brown (7.5YR 3/2) sandy loam, massive, friable, clear smooth boundary.
Bw	21 to 28 inches	Brown (7.5YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
2C	28 to 36+ inches	Brown (7.5YR 4/4) very gravelly coarse sand, single grain, loose

Test Pit **B36**

Ap	0 to 10 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	10 to 28 inches	Brown (7.5YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C	28 to 40 inches	Brown (7.5YR 4/3) sand, single grain, loose.

Test Pit **B37**

Ap	0 to 8 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	8 to 17 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
BC	17 to 24 inches	Brown (7.5YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
C	24 to 36+ inches	Brown (7.5YR 5/3) coarse sand, single grain, loose

Test Pit **B38**

Ap	0 to 14 inches	Brown (7.5YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
BC	14 to 19 inches	Brown (7.5YR 4/4) loamy sand, single grain, loose, clear smooth boundary.
C	19 to 36 inches	Brown (7.5YR 5/3) very gravelly sand, single grain, loose. With some gravelly coarse sand.

Test Pit **B39**

Ap	0 to 12 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
BC	12 to 16 inches	Brown (7.5YR 4/4) gravelly sand, single grain, loose, clear smooth boundary.
C	16 to 36 inches	Brown (7.5YR 5/4) gravelly coarse sand, single grain, loose.

Test Pit **B40**

Ap	0 to 9 inches	Brown (7.5YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	9 to 14 inches	Strong brown (7.5YR 4/6) loamy sand, single grain, loose, clear smooth boundary.
2C1	14 to 40 inches	Brown (7.5YR 5/3) gravelly sand, single grain, loose.

Test Pit **B41**

^Ap	0 to 14 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
^Cd1	14 to 26 inches	Brown (7.5YR 4/4) loamy sand/sandy loam, massive, firm.
2C2	26 to 30+ inches	Brown (7.5YR 5/3) very gravelly sand, single grain, loose.

Test Pit **B42**

Ap	0 to 14 inches	Dark brown (7.5YR 3/3) fine sandy loam, massive, friable, clear smooth boundary.
Bw	14 to 22 inches	Brown (7.5YR 4/4) loamy sand, massive, very friable, clear smooth boundary.
BC	22 to 31 inches	Brown (7.5YR 5/4) fine sand, single grain, loose, clear smooth boundary.
C	31 to 38 inches	Brown (7.5YR 5/3) fine sand, single grain, loose.

Test Pit **B43**

Ap	0 to 14 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
2C1	14 to 19 inches	Brown (7.5YR 4/4) sand, single grain, loose, clear smooth boundary.
2C2	19 to 30+ inches	Brown (7.5YR 5/4) gravelly coarse sand, single grain, loose.

Test Pit **B44**

Ap	0 to 12 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 17 inches	Strong brown (7.5YR 4/6) loamy coarse sand, single grain, loose, clear smooth boundary.
C	17 to 30 inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain, loose.

Test Pit **B45**

Ap	0 to 12 inches	Dark brown (7.5YR 3/3) fine sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 15 inches	Brown (7.5YR 4/4) gravelly sandy loam, single grain, loose, abrupt smooth boundary.
C	15 to 32 inches	Strong brown (7.5YR 4/6) very cobbly coarse sand, single grain, loose.

Test Pit **B46**

Ap	0 to 12 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	12 to 17 inches	Brown (7.5YR 4/4) sandy loam, massive, friable, abrupt smooth boundary.
2C1	17 to 29 inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain, loose.

Test Pit **B47**

Ap	0 to 11 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
BC	11 to 16 inches	Brown (7.5YR 5/4) gravelly sand, single grain, loose, clear smooth boundary.
C	16 to 34+ inches	Light Brown (7.5YR 6/4) sand, single grain, loose.

Test Pit **B48**

Ap	0 to 13 inches	Brown (7.5YR 4/3) fine sandy loam, massive, friable, abrupt smooth boundary.
Bw	13 to 18 inches	Brown (7.5YR 4/4) sand, single grain, loose, clear smooth boundary.
C	18 to 29+ inches	Light Brown (7.5YR 6/4) very cobbly coarse sand, single grain, loose.

Test Pit **B49**

Ap	0 to 12 inches	Dark brown (7.5YR 3/4) gravelly loamy sand, massive, friable, clear smooth boundary.
Apd	12 to 17 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, clear smooth boundary.
C1	17 to 30+ inches	Brown (7.5YR 4/4) gravelly sand, single grain, loose.

Test Pit **B50**

Ap	0 to 12 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
BC	12 to 15 inches	Brown (7.5YR 4/4) loamy sand, single grain, loose, clear smooth boundary.
C	15 to 34+ inches	Brown (7.5YR 5/4) sand, single grain, loose.

Test Pit **B51**

Ap	0 to 11 inches	Dark brown (7.5YR 3/3) fine sandy loam, massive, friable, abrupt smooth boundary.
BC	11 to 14 inches	Brown (7.5YR 4/4) fine sand, single grain, loose, clear smooth boundary.
C	14 to 32+ inches	Brown (7.5YR 4/4) sand, single grain, loose.

Test Pit **B52**

A	0 to 3 inches	Dark brown (7.5YR 3/3) cobbly sandy loam, massive, friable, abrupt smooth boundary.
Bw	3 to 6 inches	Dark brown (7.5YR 3/4) cobbly sand loam, single grain, loose, clear smooth boundary.
2C	6 to 17+ inches	Reddish brown (5YR 4/3) extremely cobbly coarse sand, single grain, loose.

Test Pit **B53**

Ap	0 to 11 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
2C	11 to 28+ inches	Brown (7.5YR 4/4) sand, single grain, loose.

Test Pit **B54**

Ap	0 to 11 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
BC	11 to 14 inches	Strong brown (7.5YR 4/6) loamy sand, single grain, loose, clear smooth boundary.
C	14 to 34+ inches	Brown (7.5YR 5/4) sand, single grain, loose.

Test Pit **B55**

Ap	0 to 9 inches	Brown (7.5YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
BC	9 to 15 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, clear smooth boundary.
C	15 to 36+ inches	Brown (7.5YR 4/4) sand, single grain, loose.

Test Pit **B56**

Ap	0 to 11 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
A/B	11 to 21 inches	Dark yellowish brown (10YR 3/3) and (10YR 4/6) mechanically mixed sandy loam, massive, friable.
C/A	21 to 44+ inches	Brown (7.5YR 4/4) sand, brown (10YR 4/3) loamy sand, dark brown (10YR 3/3 sandy loam, mechanically mixed.

Test Pit **B57**

Ap	0 to 7 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	7 to 17 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, clear smooth boundary.
C	17 to 30+ inches	Strong brown (7.5YR 4/6) very cobbly loamy coarse sand, single grain, loose.

Test Pit **B58**

Ap	0 to 8 inches	Dark yellowish brown (10YR 3/4) cobbly sandy loam, massive, friable, abrupt smooth boundary.
BC	8 to 15 inches	Brown (7.5YR 4/4) cobbly sandy loam, single grain loose, abrupt smooth boundary.
2C	15 to 28+ inches	Brown (7.5YR 4/4) extremely cobbly loamy coarse sand, single grain loose.

Test Pit **B59**

Ap	0 to 11 inches	Dark yellowish brown (10YR 4/4) very cobbly sandy loam, massive, friable, clear smooth boundary.
AB	11 to 15 inches	Dark yellowish brown (10YR 3/4) cobbly sandy loam, single grain loose, abrupt smooth boundary.
2C	11 to 24+ inches	Brown (7.5YR 4/4) very cobbly loamy coarse sand, single grain loose.

Note: Very difficult to dig in C horizon

Test Pit **B60**

Ap	0 to 10 inches	Dark brown (7.5YR 3/4) very gravelly loamy sand, massive, friable, abrupt smooth boundary.
BC	10 to 14 inches	Strong brown (7.5YR 4/6) gravelly loamy fine sand, single grain loose, clear smooth boundary.
2C1	14 to 21 inches	Dark yellowish brown (10YR 4/4) very gravelly loamy coarse sand, single grain, loose.
2C2	21 to 38+ inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain loose.

Test Pit **B61**

Ap	0 to 12 inches	Dark yellowish brown (10YR 3/4) gravelly sandy loam, massive, friable, abrupt smooth boundary.
2C	12 to 30 inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain loose.

Test Pit **B62**

Ap	0 to 12 inches	Dark yellowish brown (10YR 4/4) gravelly sandy loam, massive, friable, abrupt smooth boundary.
BC	12 to 17 inches	Yellowish brown (10YR 5/4) loamy fine sand, single grain loose, clear smooth boundary.
C	17 to 31+ inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain loose.

Test Pit **B63**

Ap	0 to 25 inches	Dark brown (10YR 3/3) loam, massive, friable, abrupt smooth boundary.
Bw1	25 to 31 inches	Brown (7.5YR 4/4) fine sandy loam, massive, friable, abrupt smooth boundary.
Bw2	31 to 46+ inches	Dark yellowish brown (10YR 4/6) fine sandy loam, massive, friable.

Test Pit **B64**

Ap	0 to 16 inches	Dark brown (10YR 3/3) fine sandy loam, massive, friable, abrupt smooth boundary.
Bw	16 to 26 inches	Dark yellowish brown (10YR 4/6) fine sandy loam, massive, friable, abrupt smooth boundary.
BC	26 to 31 inches	Dark yellowish brown (10YR 4/4) gravelly loamy sand, single grain loose, clear smooth boundary.
2C	31 to 34+ inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain loose.

Test Pit **B65**

Ap	0 to 11 inches	Dark yellowish brown (10YR 3/4) gravelly loamy sand, massive, friable, abrupt smooth boundary.
2C	11 to 24 inches	Brown (7.5YR 4/4) gravelly sand, single grain loose.

Test Pit **B66**

Ap	0 to 10 inches	Dark yellowish brown (10YR 3/4) gravelly sandy loam, massive, friable, clear smooth boundary.
Bw	10 to 16 inches	Dark yellowish brown (10YR 4/6) gravelly sandy loam, massive, friable, abrupt smooth boundary.
2C	16 to 38 inches	Brown (7.5YR 4/4) gravelly coarse sand, single grain loose.

Test Pit **B67**

Ap	0 to 11 inches	Dark yellowish brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 17 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
BC	17 to 23 inches	Yellowish brown (10YR 5/4) loamy fine sand, single grain, loose, clear smooth boundary.
2C1	23 to 32 inches	Brown (7.5YR 5/4) gravelly sand, single grain, loose, clear smooth boundary.
2C2	32 to 38 inches	Brown (7.5YR 5/3) sand, single grain, loose, clear smooth boundary.
2C3	38 to 42+ inches	Brown (7.5YR 4/2) sand, single grain loose.

Test Pit: **C1**

Ap	0 to 8 inches	Brown (10YR 3/4) coarse sandy loam, massive, friable, abrupt smooth boundary.
2C1	8 to 13 inches	Yellowish brown (10YR 5/4) coarse sand, massive, very friable, clear smooth boundary.
2C2	13 to 38 inches	Dark yellowish brown 10YR 4/6 coarse sand, single grain loose.

Test Pit: **C2**

Ap	0 to 11 inches	Brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 20 inches	Yellowish brown (10YR 5/4) sandy loam, massive, friable, clear smooth boundary.
2C1	20+ inches	Dark yellowish brown (10YR 4/4) coarse sand, single grain, loose

Test Pit: **C3**

Ap	0 to 10 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, friable, abrupt smooth boundary.
Bw	10 to 29 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, clear smooth boundary.
C	17 to 40 inches	Brown (10YR 4/3) sand, single grain, loose

Test Pit: **C4**

Ap	0 to 15 inches	Dark yellowish brown (10YR 4/4) loamy sand, massive, friable, abrupt smooth boundary.
Bw	15 to 17 inches	Strong brown (7.5YR 4/6) loamy sand, massive, friable, clear smooth boundary.
C	17 to 40 inches	Brown (7.5YR 4/3) gravelly coarse sand, single grain, loose

Test Pit: **C5**

Ap	0 to 16 inches	Dark brown (7.5YR 3/4) loamy sand, massive, friable, abrupt smooth boundary.
BC	16 to 19 inches	Strong brown (7.5YR 4/6) sand, single grain, loose
C	19 to 40 inches	Dark yellowish brown (10YR 4/6) sand, single grain, loose

Test Pit: **C6**

Ap	0 to 15 inches	Dark brown (10YR 3/3) loamy sand, massive, friable, abrupt smooth boundary.
Bw	15 to 26 inches	Dark yellowish brown (10YR 4/6) loamy sand, massive, friable, abrupt smooth boundary.
C	26 to 30 inches	(10YR 6/3) medium sand, single grain, loose

Test Pit: **C7**

Ap	0 to 11 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary
Bw	11 to 15 inches	Yellowish brown (10YR 5/6) sand, massive, very friable, clear smooth boundary.
C	15 to 40	Light yellowish brown (10YR 6/4) sand, single grain, loose.

Test Pit: **C8**

Ap	0 to 10 inches	Brown (10YR 4/3) loamy sand, massive, friable, abrupt smooth boundary.
2C1	10 to 21 inches	Brown (7.5YR 4/4) loamy sand, massive, friable, clear smooth boundary.
2C2	21 to 32 inches	Brown (7.5YR 5/4) gravelly coarse sand, single grain, loose
2C3	32 + inches	Brown (7.5YR 5/4) very gravelly coarse sand, single grain, loose

Test Pit: **C9**

Ap	0 to 9 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	9 to 14 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C	14 to 40 inches	Strong brown (7.5YR 4/6) sand, single grain, loose

Test Pit: **C10**

Ap	0 to 13 inches	Dark brown (10YR 3/3) fine sandy loam, massive, friable, abrupt smooth boundary.
Bw	13 to 30 inches	Dark yellowish brown (10YR 4/4) fine sandy loam, massive, firm, clear smooth boundary.
C	30 to 42 inches	Yellowish brown (10YYR 5/4) sand, single grain, loose.

Test Pit: **C11**

Ap	0 to 14 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, clear smooth boundary.
C	14 to 40 inches	Dark yellowish brown (10YR 4/6) very gravelly coarse sand, single grain, loose.

Test Pit: **C12**

Ap	0 to11 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 28 inches	Dark yellowish brown (10YR 4/6) sandy loam, massive, friable, clear smooth boundary.
C	28 to 40 inches	Yellowish brown (10YR 5/6) sand, single grain, loose.

Test Pit: **C13**

Ap	0 to11 inches	Brown (10YR 3/4) sandy loam, massive, friable, abrupt smooth boundary.
Bw	11 to 13 inches	Dark yellowish brown (10YR 4/4) sandy loam, massive, friable, clear smooth boundary.
2C1	13 to 20 inches	Dark yellowish brown (10YR 4/4) very gravely loamy sand, massive, friable

Test Pit: **C14**

Ap	0 to14 inches	Brown (10YR 4/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	14 to 21 inches	Dark yellowish brown (10YR 4/6) with streaks (15%) of (10R 2/1). sandy loam, massive, friable, clear smooth boundary.
C	21 to 26 inches	Brown (7.5YR 4/4) loamy sand, massive, friable

Test Pit: **C15**

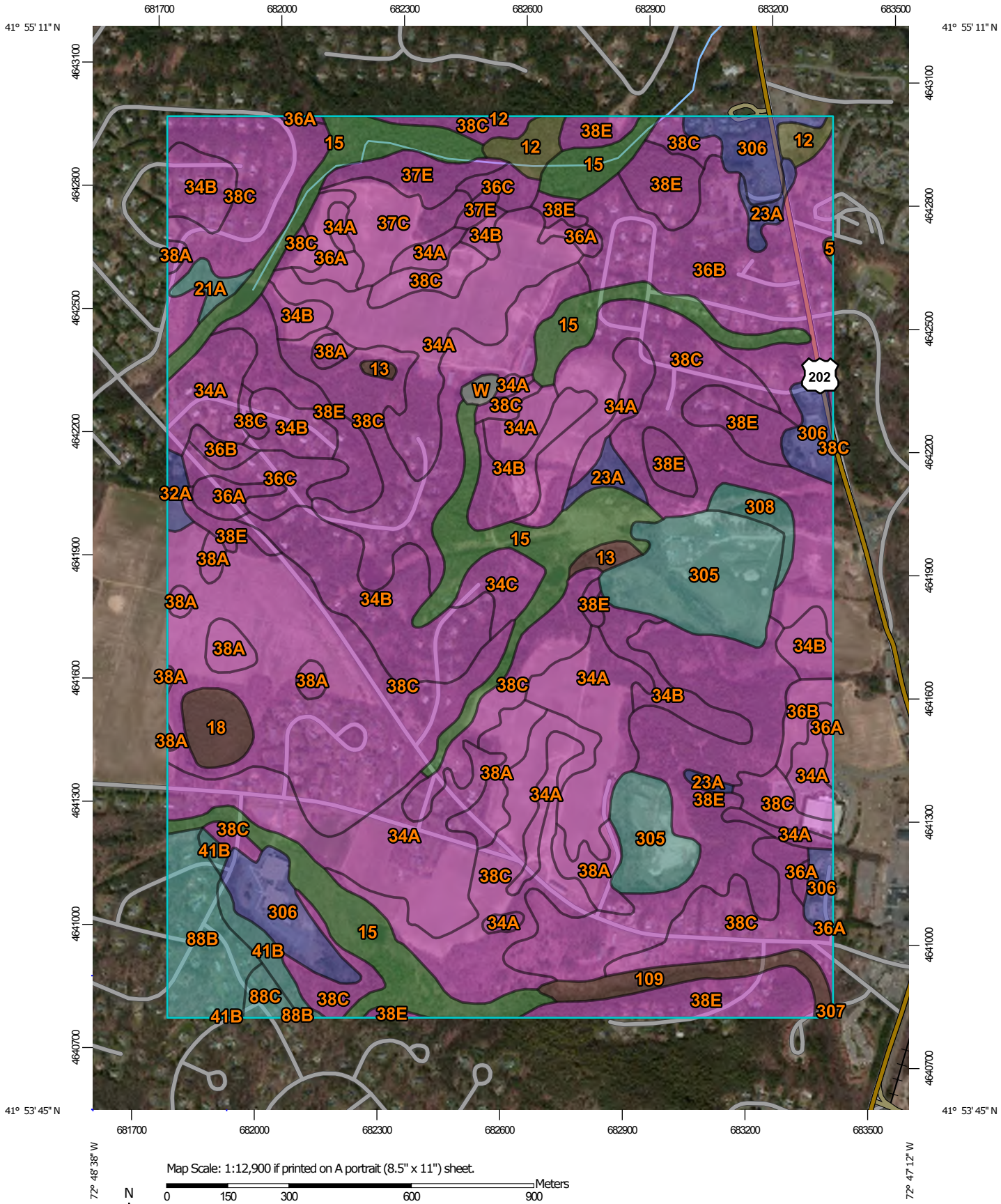
Ap	0 to19 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	19 to 31 inches	Brown (7.5YR 4/4), loamy sand, massive, friable, clear smooth boundary.
C	31 to 40 inches	Brown (7.5YR 4/4) gravelly sand, single grain, loose

Test Pit: **C16**

Ap	0 to16 inches	Dark brown (10YR 3/3) sandy loam, massive, friable, abrupt smooth boundary.
Bw	16 to 29 inches	Strong brown (7.5YR 4/6), sandy loam, massive, friable, clear smooth boundary.
C	29 to 40 inches	Brown (10YR 4/4) loamy sand, massive, friable

NRCS Soil Survey Information

Hydrologic Soil Group—State of Connecticut



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 15, Sep 28, 2016

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

Date(s) aerial images were photographed: Mar 28, 2011—Apr 18, 2011

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
5	Wilbraham silt loam, 0 to 3 percent slopes	C/D	0.3	0.0%
12	Raypol silt loam	C/D	6.8	0.8%
13	Walpole sandy loam, 0 to 3 percent slopes	B/D	2.7	0.3%
15	Scarboro muck, 0 to 3 percent slopes	A/D	74.8	8.4%
18	Catden and Freetown soils, 0 to 2 percent slopes	B/D	6.7	0.8%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	C	2.8	0.3%
23A	Sudbury sandy loam, 0 to 5 percent slopes	B	6.5	0.7%
32A	Haven and Enfield soils, 0 to 3 percent slopes	B	2.1	0.2%
34A	Merrimac fine sandy loam, 0 to 3 percent slopes	A	119.2	13.4%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	64.6	7.3%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	A	6.2	0.7%
36A	Windsor loamy sand, 0 to 3 percent slopes	A	12.3	1.4%
36B	Windsor loamy sand, 3 to 8 percent slopes	A	54.7	6.2%
36C	Windsor loamy sand, 8 to 15 percent slopes	A	11.1	1.2%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	A	10.7	1.2%
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	A	8.4	0.9%
38A	Hinckley loamy sand, 0 to 3 percent slopes	A	21.4	2.4%
38C	Hinckley loamy sand, 3 to 15 percent slopes	A	266.5	30.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	A	104.5	11.8%

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
41B	Ludlow silt loam, 2 to 8 percent slopes, very stony	C	5.0	0.6%
88B	Wethersfield loam, 3 to 8 percent slopes, very stony	C	17.4	2.0%
88C	Wethersfield loam, 8 to 15 percent slopes, very stony	C	2.7	0.3%
109	Fluvaquents-Udifluvents complex, frequently flooded	B/D	8.6	1.0%
305	Udorthents-Pits complex, gravelly	C	37.0	4.2%
306	Udorthents-Urban land complex	B	28.1	3.2%
307	Urban land	D	0.1	0.0%
308	Udorthents, smoothed	C	4.3	0.5%
W	Water		1.3	0.1%
Totals for Area of Interest			**886.5**	**100.0%**

Description

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

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

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FEMA Flood Insurance Rate Maps

od insurance is available in this community, contact yo
nal Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0191F

FIRM

FLOOD INSURANCE RATE MAP

HARTFORD COUNTY, CONNECTICUT (ALL JURISDICTIONS)

PANEL 191 OF 675

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EAST GRANBY, TOWN OF	090035	0191	F
GRANBY, TOWN OF	090135	0191	F
SIMSBURY, TOWN OF	090035	0191	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
09003C0191F

EFFECTIVE DATE:
SEPTEMBER 26, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

TOWN OF GRANBY
TOWN OF SIMSBURY

TOWN OF SIMSBURY
090035

Munnisunk Brook

Dam

Saxton Brook

Saxton Brook

ZONE AE

ZONE X

ZONE A

ZONE A

ZONE X

LIMIT OF DETAILED STUDY

LIMIT OF DETAILED STUDY

Wadhams Pond

BRIANWOOD LN

HALLWOOD DR

LORETTA DR

ICE POND RD

LORETTO WOOD DR

TIM CLARK C R

MUNNISUNK DR

FIELD DR

TOWN LAND FILL

COWLES RD

LITCHFIELD DR

BEAR STRIKE WAY

LAUREL RIDGE LN

SIMSBURY PINES

KNOLLWOOD CIR

CENTERWOOD RD

WILLARD ST

HOWARD ST

GIBSON ST

TOLLAND

185

190

200

220

230

240

245

248

263

265

270

275

JOINS PANEL 0193

683000 M

683000 M

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

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

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

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.

ZONE A99 Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

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

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

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



od insurance is available in this community, contact yo
onal Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0193F

FIRM

FLOOD INSURANCE RATE MAP

HARTFORD COUNTY,
CONNECTICUT
(ALL JURISDICTIONS)

PANEL 193 OF 675

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SIMSBURY, TOWN OF	090035	0193	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
09003C0193F

EFFECTIVE DATE:
SEPTEMBER 26, 2008

Federal Emergency Management Agency

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od insurance is available in this community, contact yo
onal Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

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Appendix B:

Erosion and Sedimentation Control Checklist

Construction Best Management Practices - Maintenance/Evaluation Checklist

Tobacco Valley Solar – Simsbury, CT – County Road & Hoskins Road

Best Management Practices – Maintenance/ Evaluation Checklist

Construction Practices

Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed ☐yes ☐no (List Items)	Date of Cleaning/Repair	Performed by
Silt Fencing	Once per week or after a 0.5″ or greater storm event						
Compost Filter Sock	Once per week or after a 0.5″ or greater storm event						
Straw Wattles	Once per week or after a 0.5″ or greater storm event						
Stabilized Construction Exit	Once per week or after a 0.5″ or greater storm event						
Temporary Sediment Trap/Basin & Diversion Swales	Once per week or after a 0.5″ or greater storm event						
Vegetated Slope Stabilization	Once per week or after a 0.5″ or greater storm event						

Stormwater Control Manager _____

Appendix C:

Long Term Stormwater Operation and Maintenance Measures

Project Information

Site

Project Name:	Tobacco Valley Solar
Address or Locus:	County Road & Hoskins Road
City, State & Zip:	Simsbury, CT 06070

Developer

Client Name:	DWW Solar II, LLC
Client Address:	9th Floor, 1166 6th Avenue
Client City, State & Zip:	New York, NY 10036
Client Telephone No.:	
Client Cell Phone:	
Client E-Mail:	Bryan.Martin@deshaw.com

Site Supervisor

Site Manager Name:	To be determined
Site Manager Address:	
Site Manager City, State & Zip:	
Site Manager Telephone No.:	
Site Manager Cell Phone:	
Site Manager E-Mail:	

Tobacco Valley Solar – Simsbury, CT – County Road & Hoskins Road

Best Management Practices – Maintenance/ Evaluation Checklist

Long Term Practices

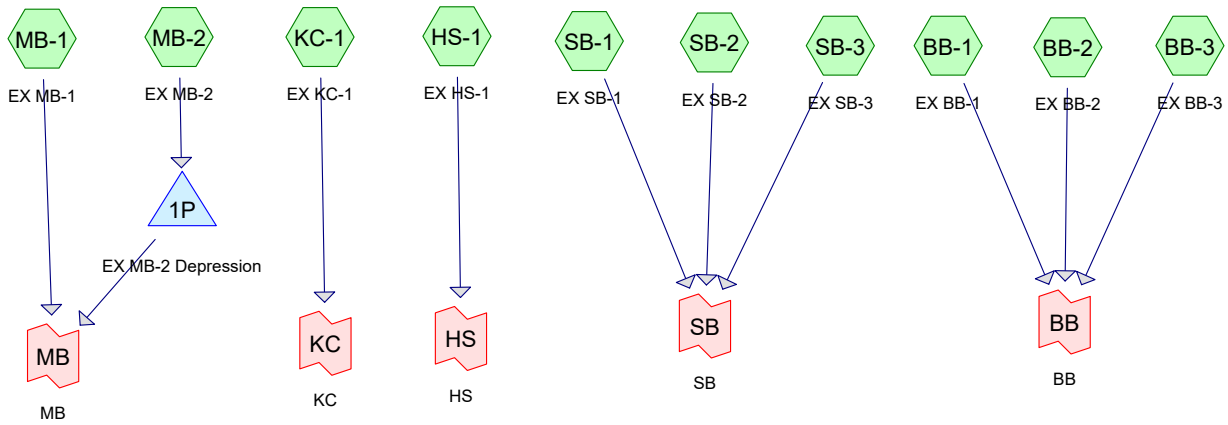
Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed ☐yes ☐no (List Items)	Date of Cleaning/Repair	Performed by
Street Sweeping	2x per year, preferably in late spring and late fall.						
Trash/Litter	Routinely pick up and remove litter from entire property as required.						
Water Quality Basins	Inspect after every major storm for the first 3 months. Side slopes and buffer shall be mowed/trash removed at least twice during growing season						
Vegetated Areas	Inspect bi-annually. Replant bare areas upon identification.						
Outfalls	Inspect monthly for the first 3 months. Inspect at least once per year thereafter.						

Stormwater Control Manager _____

Appendix D:

Hydrologic Analysis

HydroCAD Analysis: Existing Conditions



Subcat Reach Pond Link

Routing Diagram for TVS HydroCAD Existing DM
Prepared by VHB, Printed 1/2/2019
HydroCAD® 10.00-19 s/n 01038 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
10.700	72	Dirt roads, HSG A (BB-1, BB-2, BB-3, HS-1, KC-1, MB-1, MB-2, SB-1, SB-2, SB-3)
0.600	98	Roofs, HSG A (BB-1, BB-2, KC-1, MB-2)
118.100	70	Row crops, contoured, Poor, HSG A (BB-1, BB-2, BB-3, HS-1, KC-1, MB-1, MB-2, SB-1, SB-2, SB-3)
35.800	30	Woods, Good, HSG A (BB-1, BB-2, BB-3, HS-1, KC-1, MB-1, MB-2, SB-1, SB-2, SB-3)
165.200	**62**	**TOTAL AREA**

2-Year Storm Event – Existing

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

Subcatchment BB-1: EX BB-1 Runoff Area=19.100 ac 0.52% Impervious Runoff Depth>0.79"
Flow Length=1,400' Slope=0.0100 '/' Tc=30.2 min CN=70 Runoff=10.11 cfs 1.261 af

Subcatchment BB-2: EX BB-2 Runoff Area=5.900 ac 1.69% Impervious Runoff Depth>0.80"
Flow Length=730' Slope=0.0110 '/' Tc=17.0 min CN=70 Runoff=3.95 cfs 0.392 af

Subcatchment BB-3: EX BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>0.42"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=5.52 cfs 0.695 af

Subcatchment HS-1: EX HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>0.43"
Flow Length=310' Tc=5.2 min CN=61 Runoff=0.35 cfs 0.032 af

Subcatchment KC-1: EX KC-1 Runoff Area=23.600 ac 1.27% Impervious Runoff Depth>0.66"
Flow Length=530' Slope=0.0190 '/' Tc=10.5 min CN=67 Runoff=14.74 cfs 1.302 af

Subcatchment MB-1: EX MB-1 Runoff Area=49.200 ac 0.00% Impervious Runoff Depth>0.46"
Flow Length=1,630' Tc=27.9 min CN=62 Runoff=12.92 cfs 1.868 af

Subcatchment MB-2: EX MB-2 Runoff Area=13.000 ac 0.77% Impervious Runoff Depth>0.08"
Flow Length=540' Tc=25.2 min CN=48 Runoff=0.19 cfs 0.087 af

Subcatchment SB-1: EX SB-1 Runoff Area=8.100 ac 0.00% Impervious Runoff Depth>0.43"
Flow Length=490' Tc=7.4 min CN=61 Runoff=2.83 cfs 0.287 af

Subcatchment SB-2: EX SB-2 Runoff Area=15.800 ac 0.00% Impervious Runoff Depth>0.14"
Flow Length=480' Slope=0.0250 '/' Tc=8.7 min CN=51 Runoff=0.75 cfs 0.184 af

Subcatchment SB-3: EX SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>0.50"
Flow Length=300' Slope=0.0100 '/' Tc=9.8 min CN=63 Runoff=4.19 cfs 0.411 af

Pond 1P: EX MB-2 Depression Peak Elev=270.51' Storage=3,788 cf Inflow=0.19 cfs 0.087 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=18.27 cfs 2.348 af
Primary=18.27 cfs 2.348 af

Link HS: HS Inflow=0.35 cfs 0.032 af
Primary=0.35 cfs 0.032 af

Link KC: KC Inflow=14.74 cfs 1.302 af
Primary=14.74 cfs 1.302 af

Link MB: MB Inflow=12.92 cfs 1.868 af
Primary=12.92 cfs 1.868 af

Link SB: SB Inflow=7.01 cfs 0.883 af
Primary=7.01 cfs 0.883 af

Total Runoff Area = 165.200 ac Runoff Volume = 6.521 af Average Runoff Depth = 0.47"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: EX BB-1

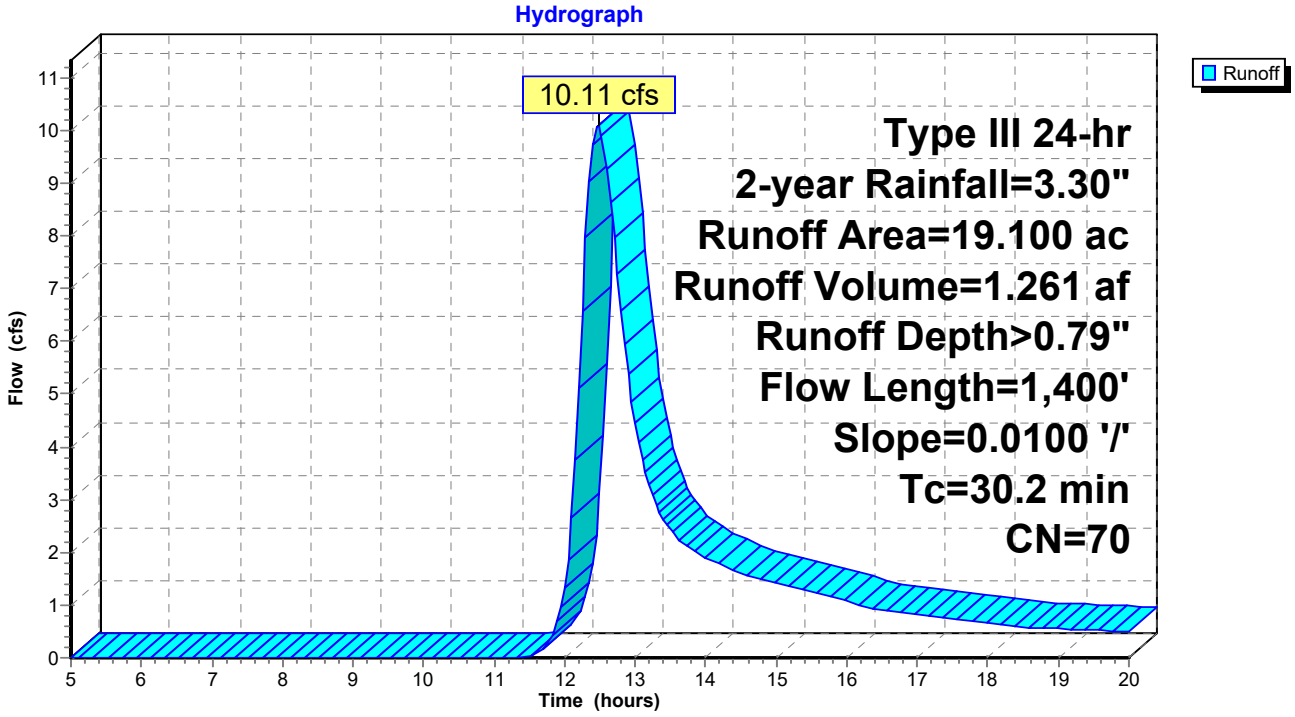
Runoff = 10.11 cfs @ 12.47 hrs, Volume= 1.261 af, Depth> 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
1.500	72	Dirt roads, HSG A
17.200	70	Row crops, contoured, Poor, HSG A
0.300	30	Woods, Good, HSG A
19.100	70	Weighted Average
19.000		99.48% Pervious Area
0.100		0.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
24.1	1,300	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.2	1,400	Total			

Subcatchment BB-1: EX BB-1



Summary for Subcatchment BB-2: EX BB-2

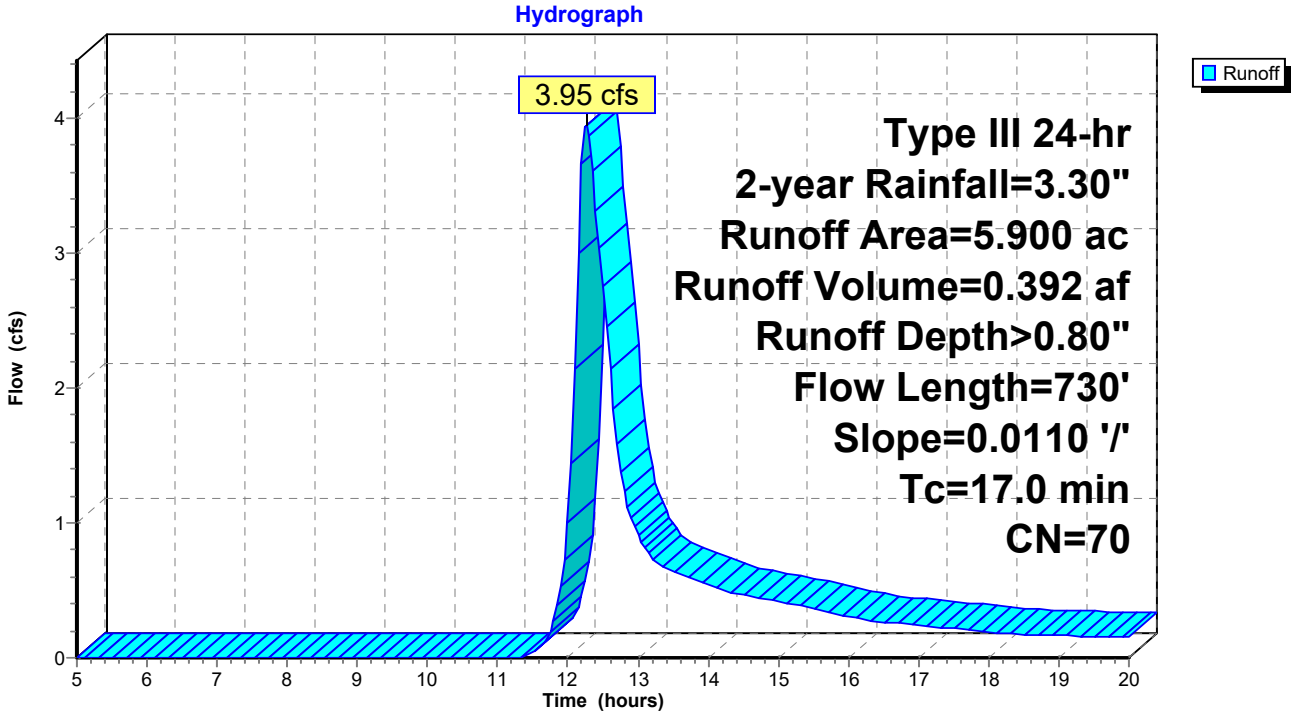
Runoff = 3.95 cfs @ 12.26 hrs, Volume= 0.392 af, Depth> 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.400	72	Dirt roads, HSG A
5.300	70	Row crops, contoured, Poor, HSG A
0.100	30	Woods, Good, HSG A
5.900	70	Weighted Average
5.800		98.31% Pervious Area
0.100		1.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0110	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
11.1	630	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
17.0	730	Total			

Subcatchment BB-2: EX BB-2



Summary for Subcatchment BB-3: EX BB-3

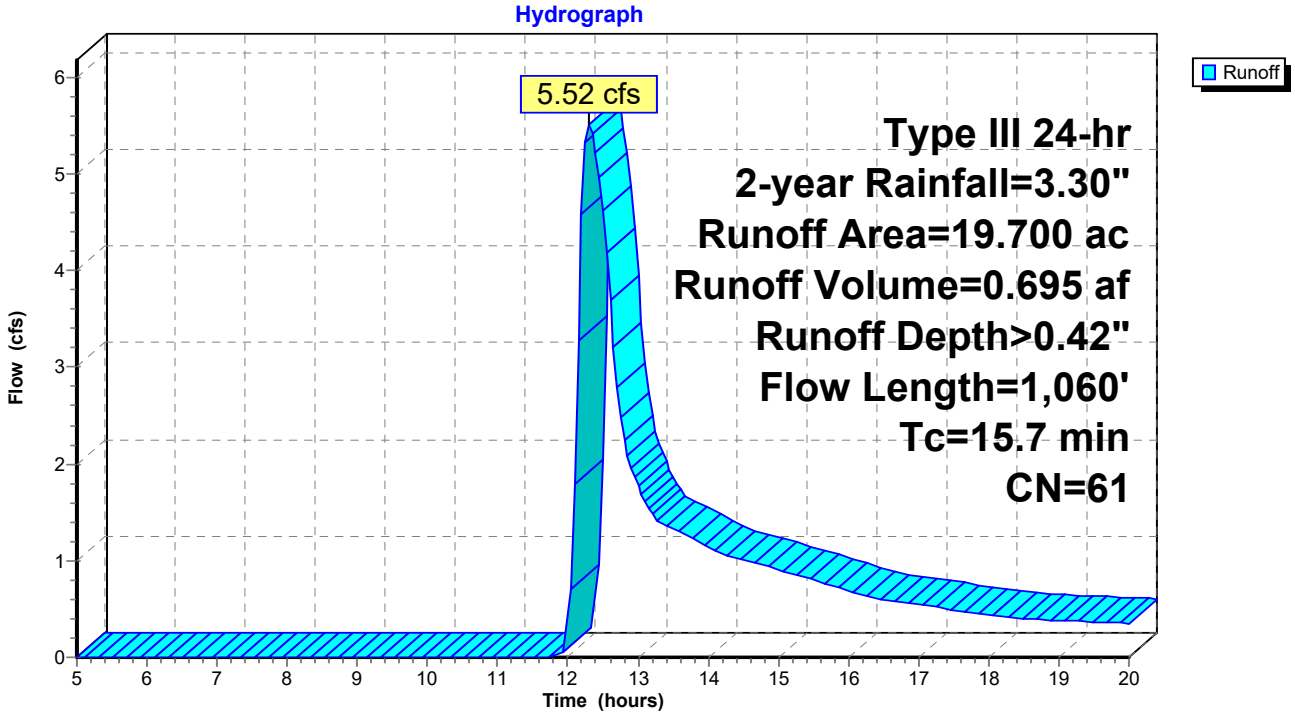
Runoff = 5.52 cfs @ 12.31 hrs, Volume= 0.695 af, Depth> 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: EX BB-3



Summary for Subcatchment HS-1: EX HS-1

[49] Hint: Tc<2dt may require smaller dt

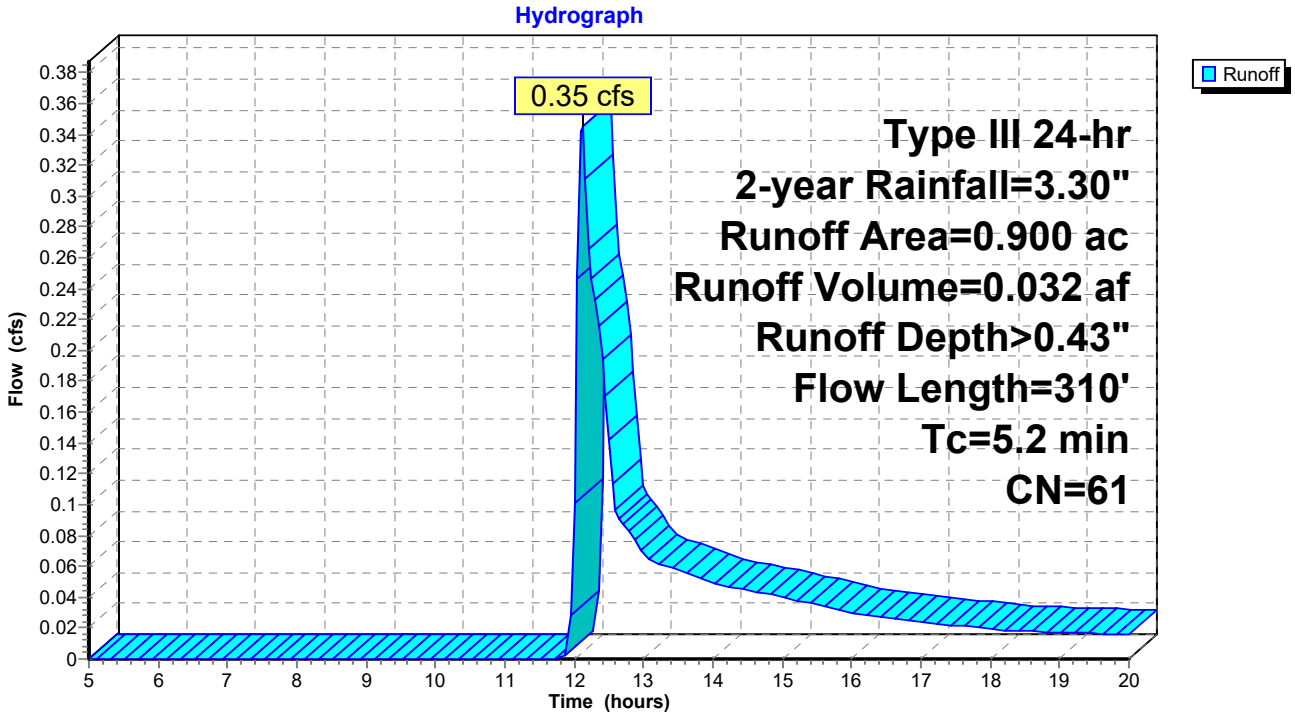
Runoff = 0.35 cfs @ 12.11 hrs, Volume= 0.032 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.100	72	Dirt roads, HSG A
0.600	70	Row crops, contoured, Poor, HSG A
0.200	30	Woods, Good, HSG A
0.900	61	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	100	0.0550	0.54		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.4	180	0.0550	2.11		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.7	30	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.2	310	Total			

Subcatchment HS-1: EX HS-1



Summary for Subcatchment KC-1: EX KC-1

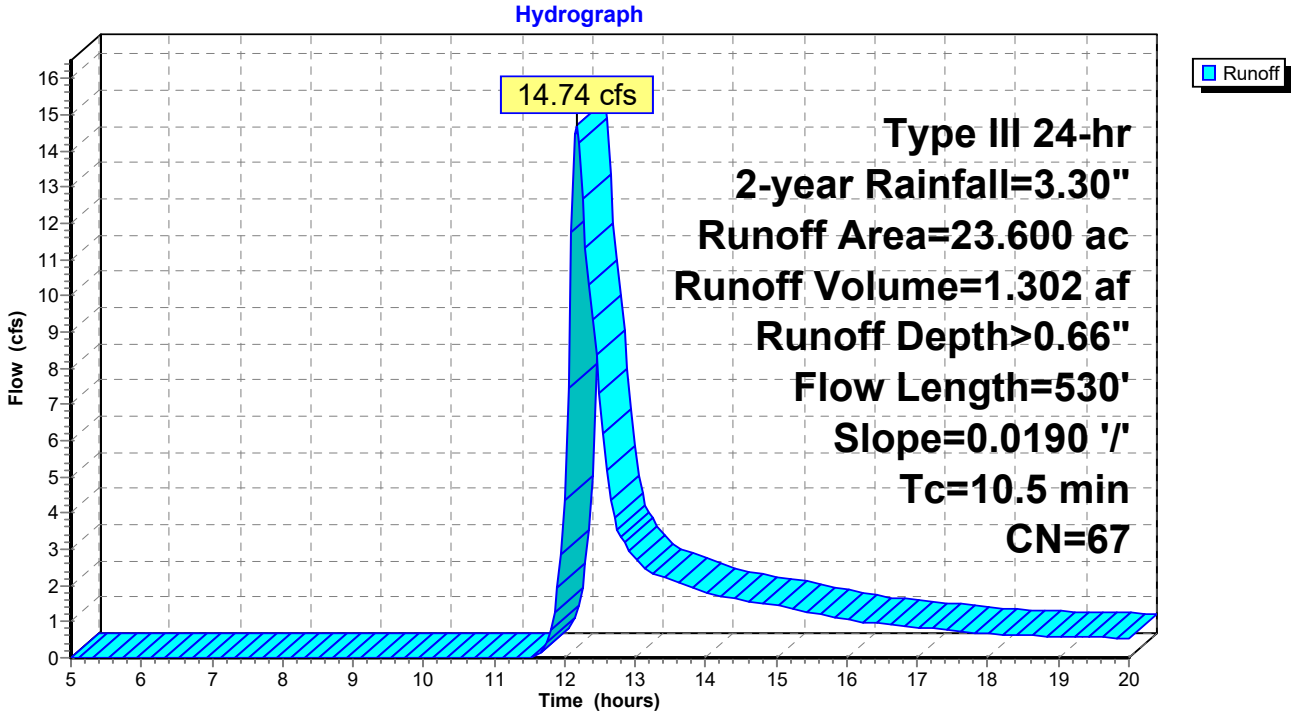
Runoff = 14.74 cfs @ 12.17 hrs, Volume= 1.302 af, Depth> 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.300	98	Roofs, HSG A
1.800	72	Dirt roads, HSG A
19.400	70	Row crops, contoured, Poor, HSG A
2.100	30	Woods, Good, HSG A
23.600	67	Weighted Average
23.300		98.73% Pervious Area
0.300		1.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
5.8	430	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.5	530	Total			

Subcatchment KC-1: EX KC-1



Summary for Subcatchment MB-1: EX MB-1

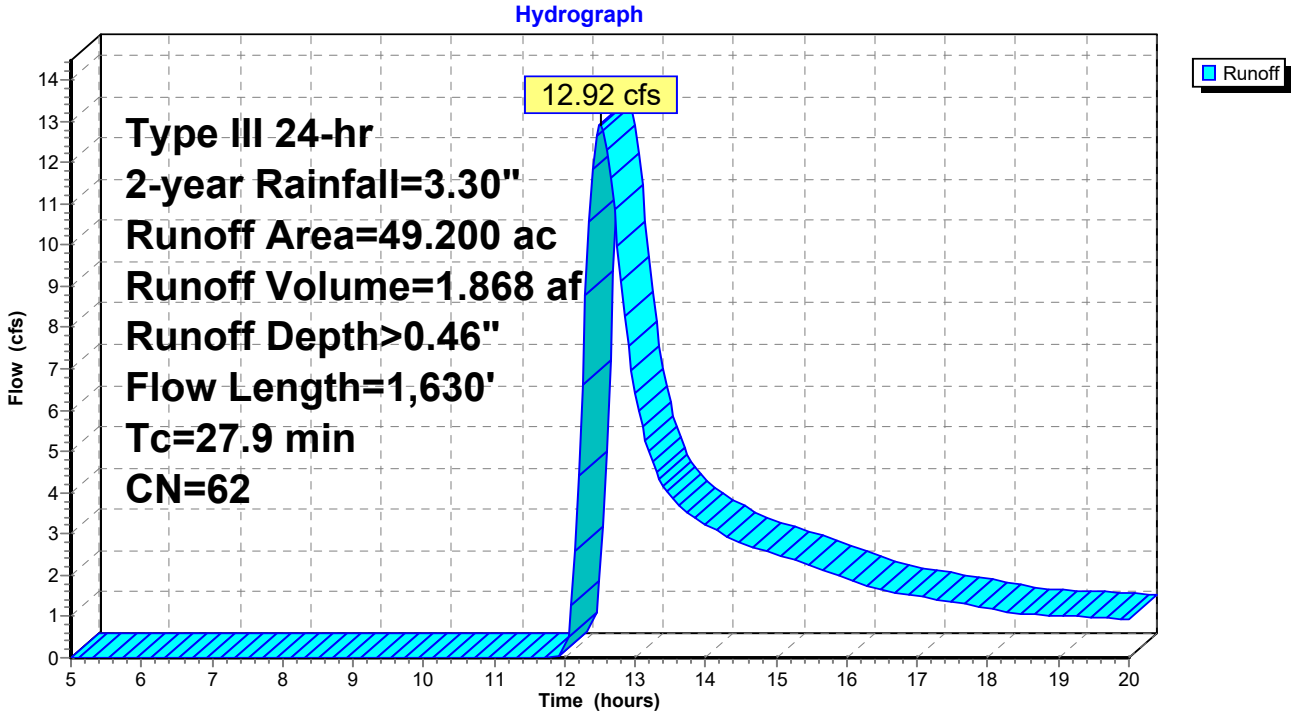
Runoff = 12.92 cfs @ 12.51 hrs, Volume= 1.868 af, Depth> 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
3.000	72	Dirt roads, HSG A
36.100	70	Row crops, contoured, Poor, HSG A
10.100	30	Woods, Good, HSG A
49.200	62	Weighted Average
49.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	730	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.9	1,630	Total			

Subcatchment MB-1: EX MB-1



Summary for Subcatchment MB-2: EX MB-2

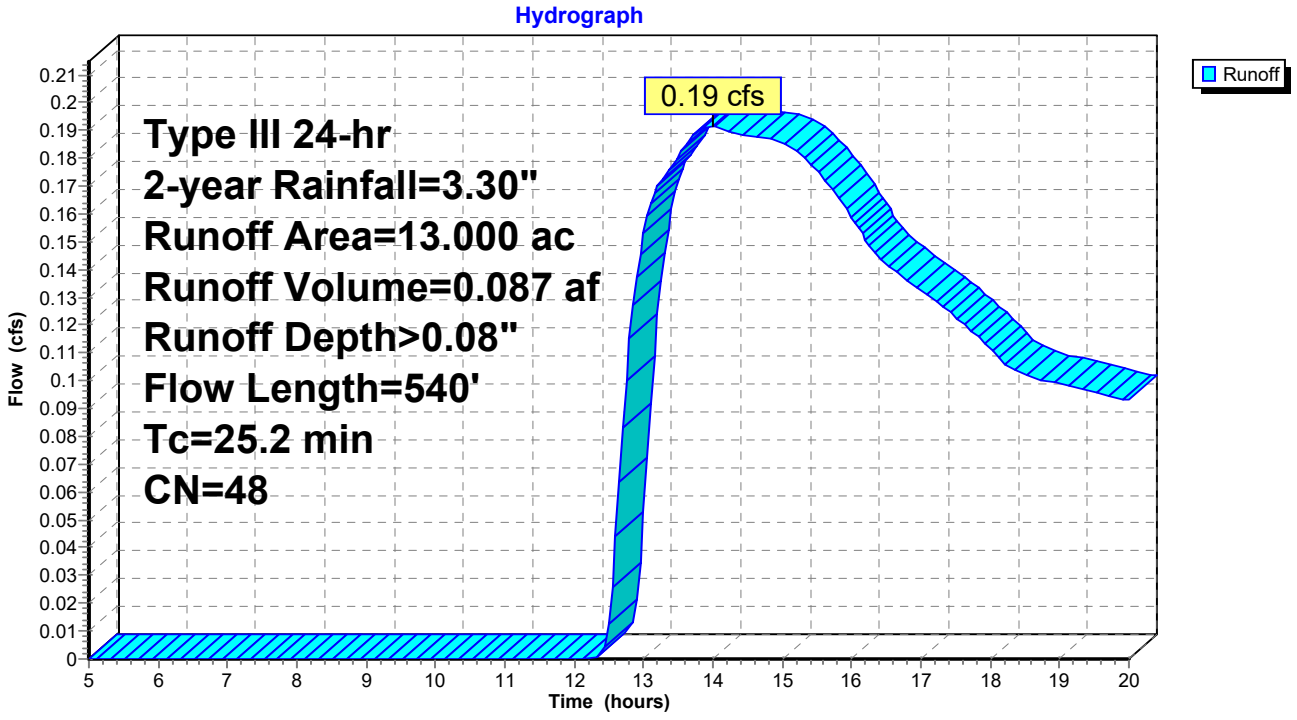
Runoff = 0.19 cfs @ 14.00 hrs, Volume= 0.087 af, Depth> 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.600	72	Dirt roads, HSG A
5.200	70	Row crops, contoured, Poor, HSG A
7.100	30	Woods, Good, HSG A
13.000	48	Weighted Average
12.900		99.23% Pervious Area
0.100		0.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0140	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
7.7	230	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	260	0.0610	1.23		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.2	540	Total			

Subcatchment MB-2: EX MB-2



Summary for Subcatchment SB-1: EX SB-1

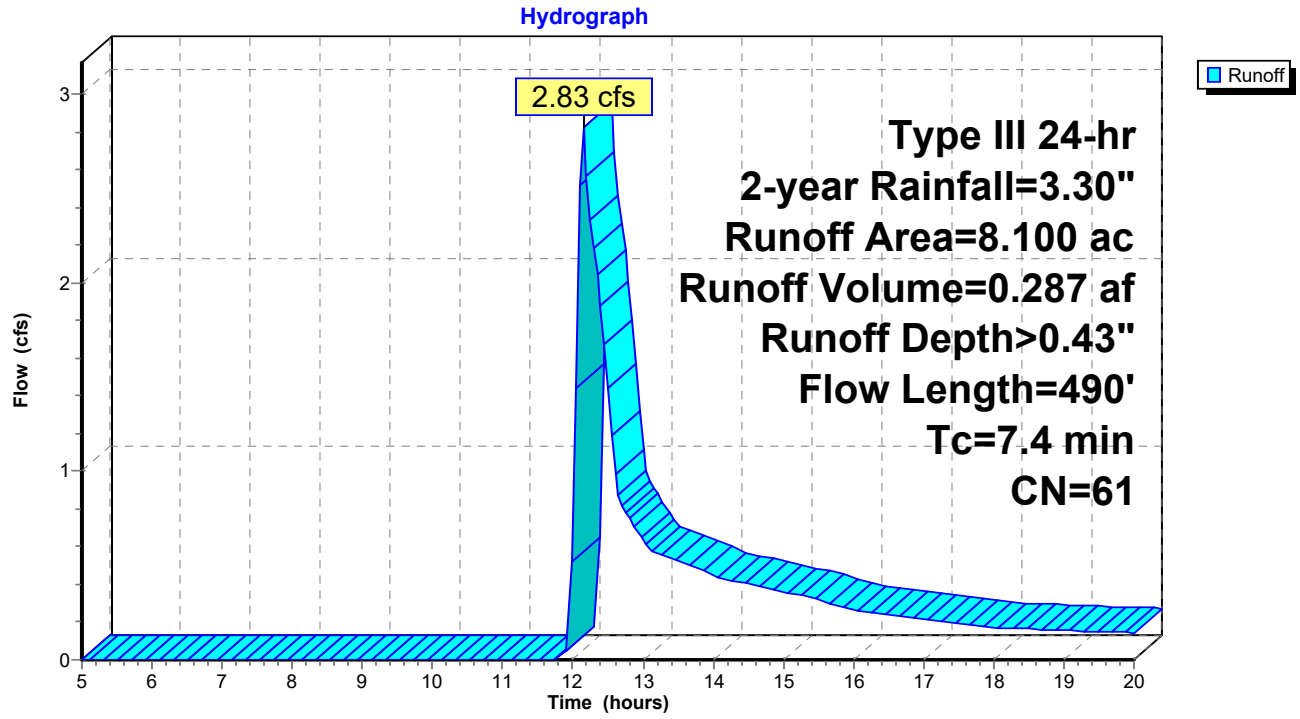
Runoff = 2.83 cfs @ 12.15 hrs, Volume= 0.287 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.500	72	Dirt roads, HSG A
5.800	70	Row crops, contoured, Poor, HSG A
1.800	30	Woods, Good, HSG A
8.100	61	Weighted Average
8.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.0200	0.36		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.3	250	0.1180	3.09		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
1.5	140	0.0280	1.51		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
7.4	490	Total			

Subcatchment SB-1: EX SB-1



Summary for Subcatchment SB-2: EX SB-2

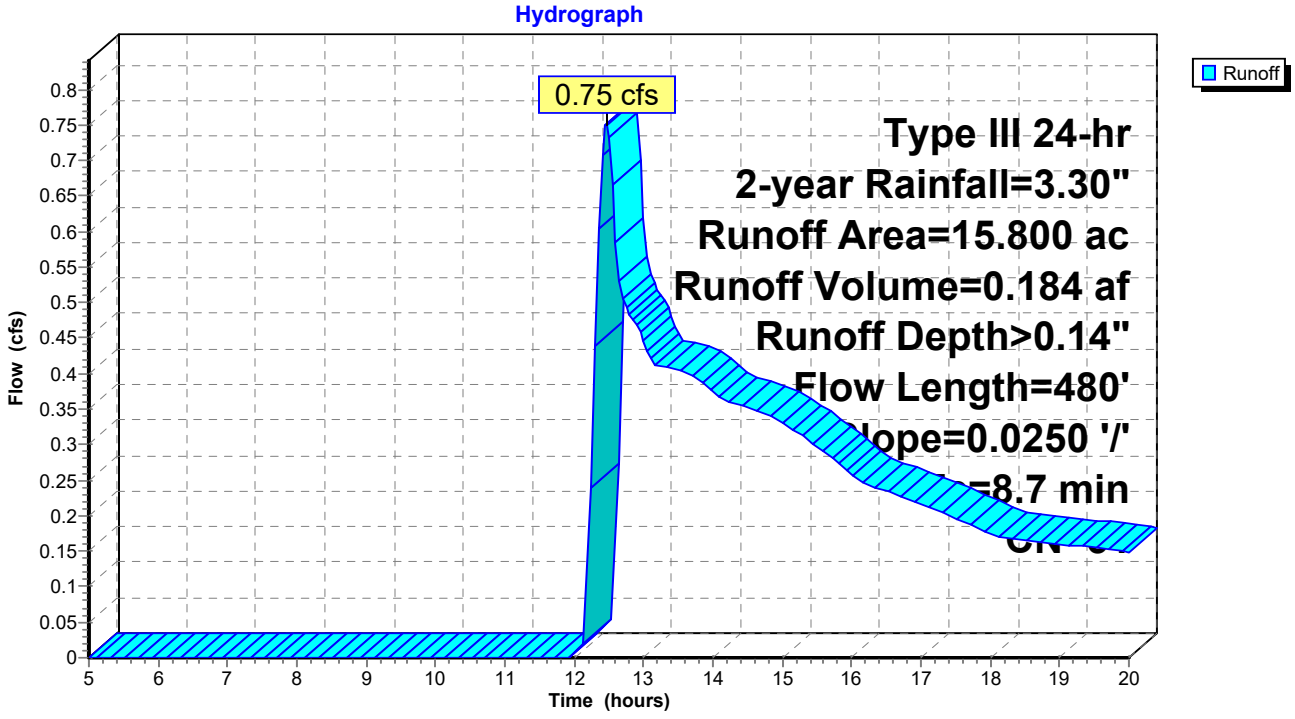
Runoff = 0.75 cfs @ 12.46 hrs, Volume= 0.184 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
1.100	72	Dirt roads, HSG A
7.000	70	Row crops, contoured, Poor, HSG A
7.700	30	Woods, Good, HSG A
15.800	51	Weighted Average
15.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.0250	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
4.5	380	0.0250	1.42		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
8.7	480	Total			

Subcatchment SB-2: EX SB-2



Summary for Subcatchment SB-3: EX SB-3

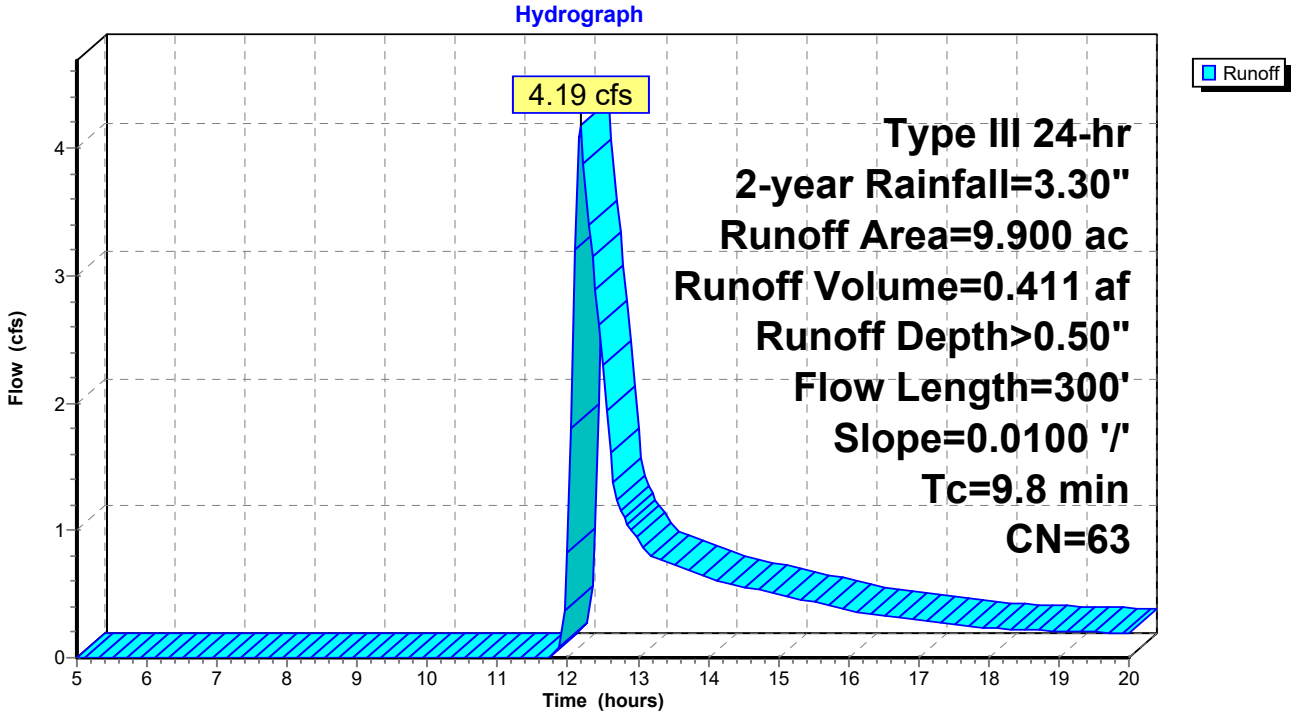
Runoff = 4.19 cfs @ 12.17 hrs, Volume= 0.411 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.400	72	Dirt roads, HSG A
7.800	70	Row crops, contoured, Poor, HSG A
1.700	30	Woods, Good, HSG A
9.900	63	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
3.7	200	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
9.8	300	Total			

Subcatchment SB-3: EX SB-3



Summary for Pond 1P: EX MB-2 Depression

Inflow Area = 13.000 ac, 0.77% Impervious, Inflow Depth > 0.08" for 2-year event
Inflow = 0.19 cfs @ 14.00 hrs, Volume= 0.087 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 270.51' @ 20.00 hrs Surf.Area= 9,125 sf Storage= 3,788 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

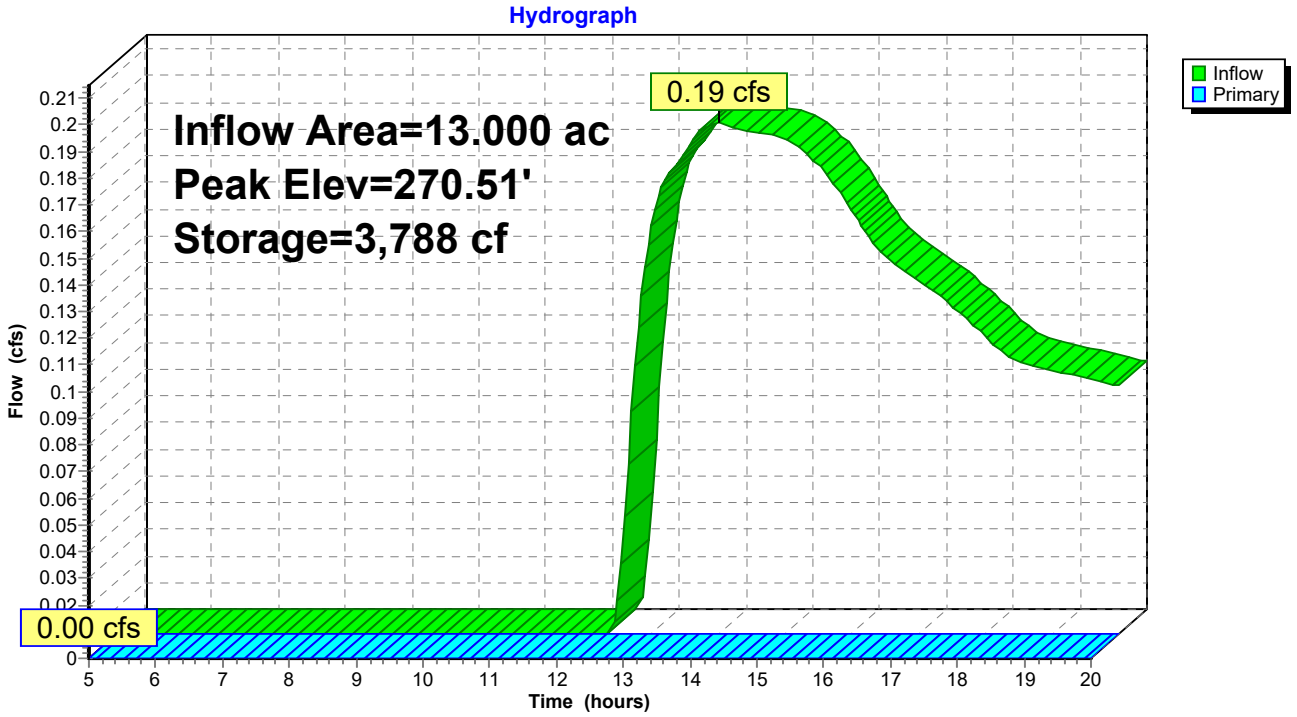
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: EX MB-2 Depression

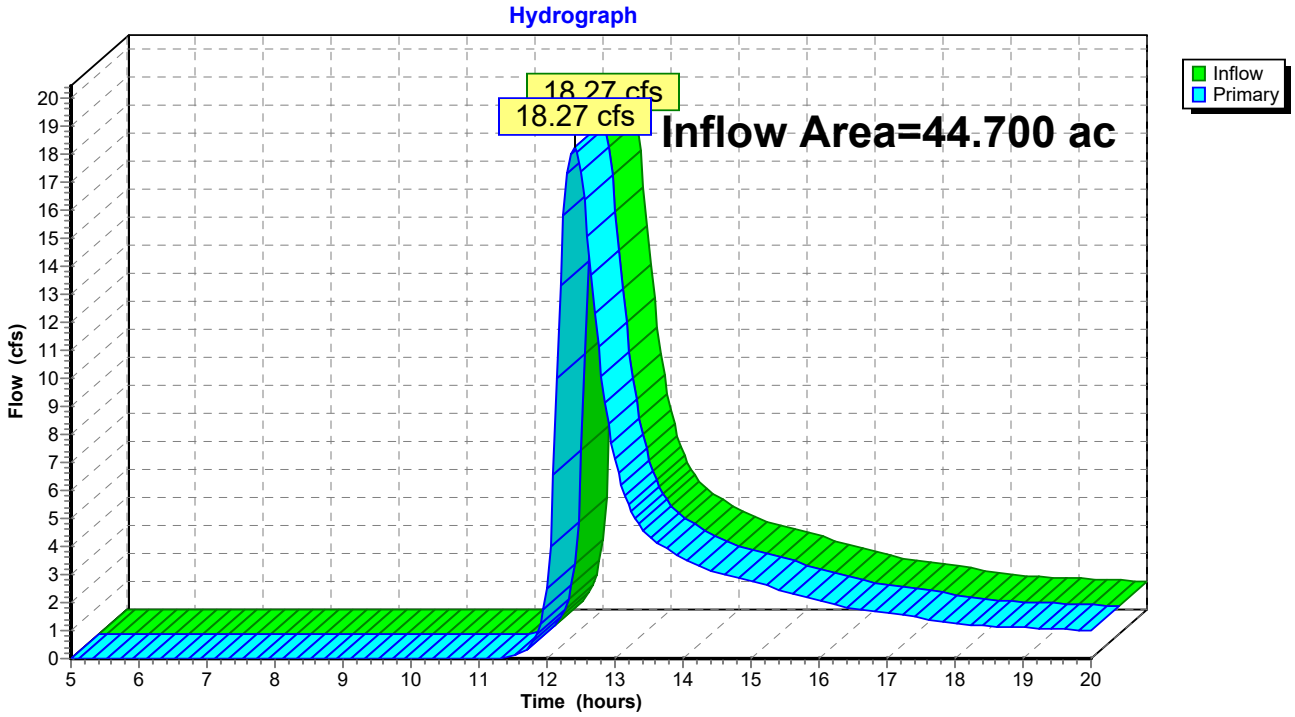


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.45% Impervious, Inflow Depth > 0.63" for 2-year event
Inflow = 18.27 cfs @ 12.40 hrs, Volume= 2.348 af
Primary = 18.27 cfs @ 12.40 hrs, Volume= 2.348 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

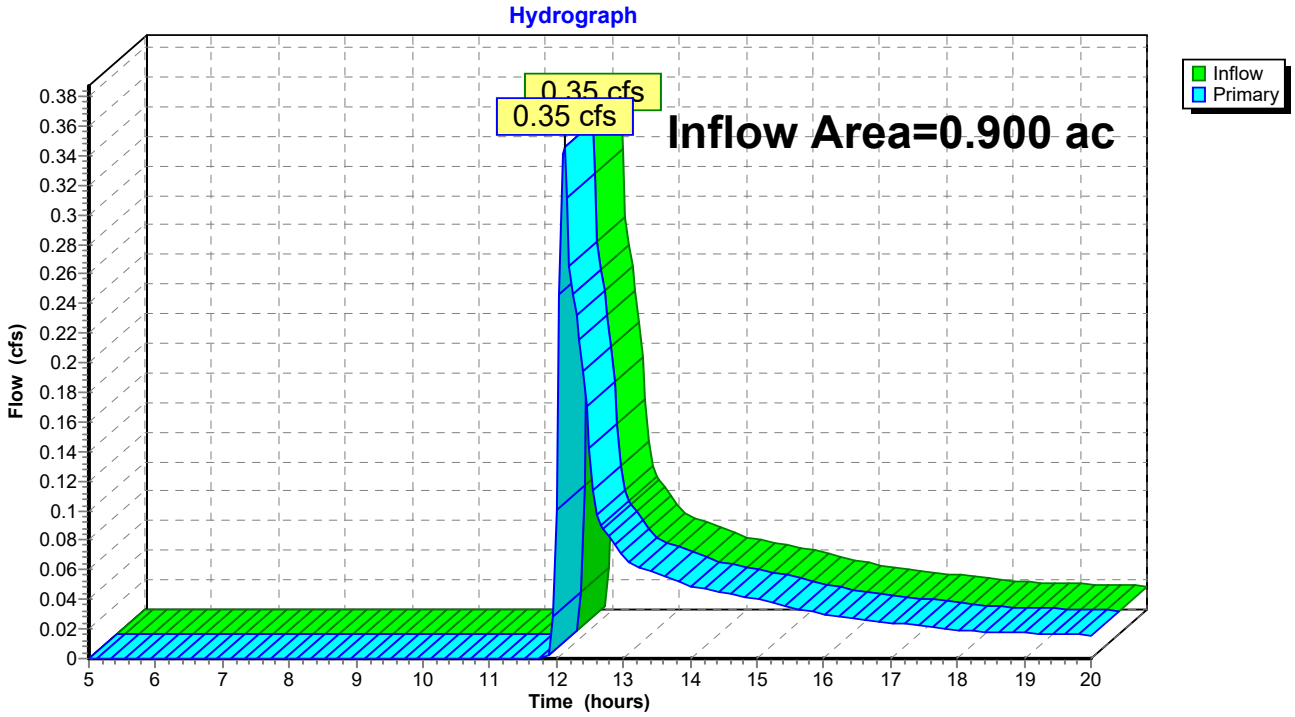


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 0.43" for 2-year event
Inflow = 0.35 cfs @ 12.11 hrs, Volume= 0.032 af
Primary = 0.35 cfs @ 12.11 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

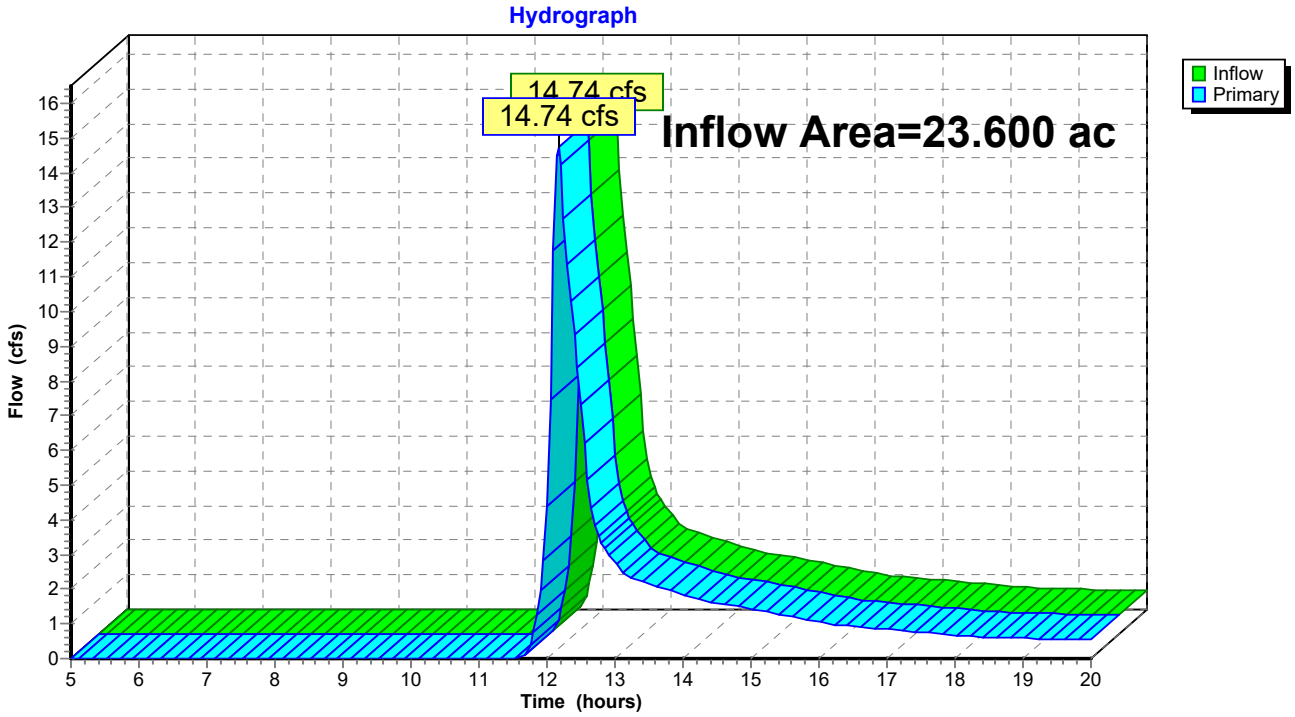


Summary for Link KC: KC

Inflow Area = 23.600 ac, 1.27% Impervious, Inflow Depth > 0.66" for 2-year event
Inflow = 14.74 cfs @ 12.17 hrs, Volume= 1.302 af
Primary = 14.74 cfs @ 12.17 hrs, Volume= 1.302 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

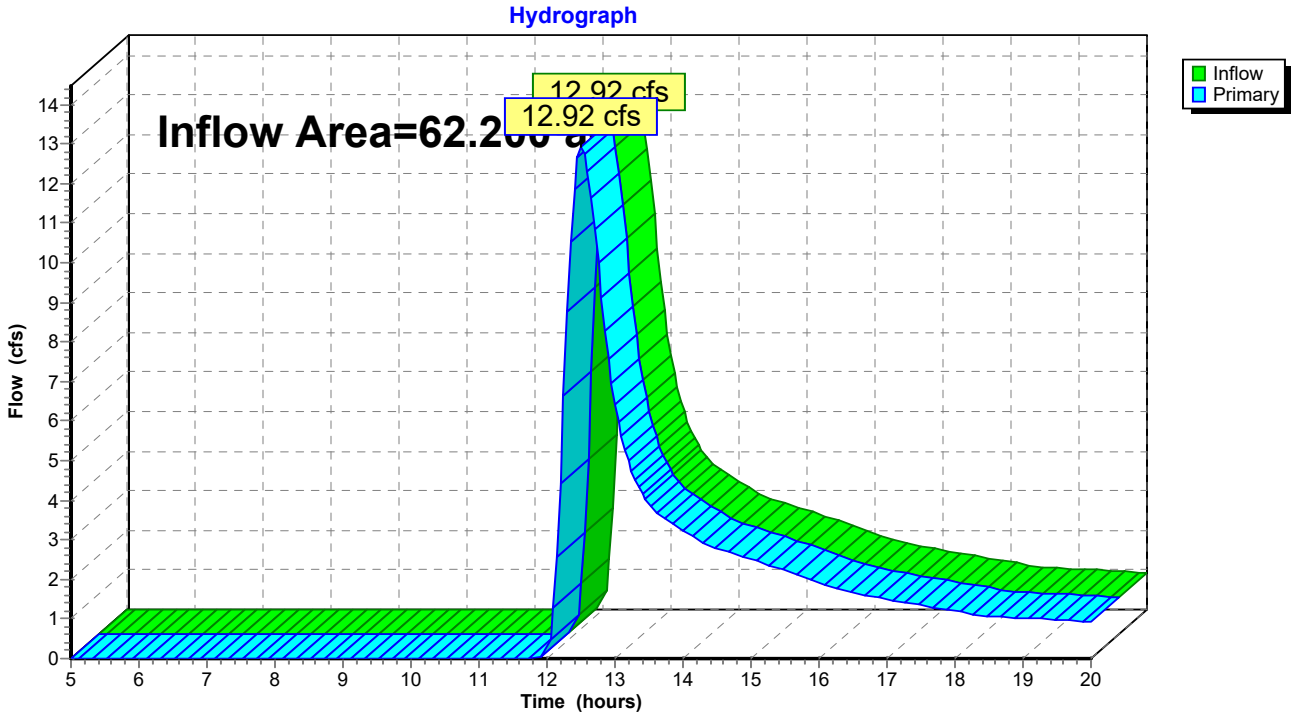


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.16% Impervious, Inflow Depth > 0.36" for 2-year event
Inflow = 12.92 cfs @ 12.51 hrs, Volume= 1.868 af
Primary = 12.92 cfs @ 12.51 hrs, Volume= 1.868 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

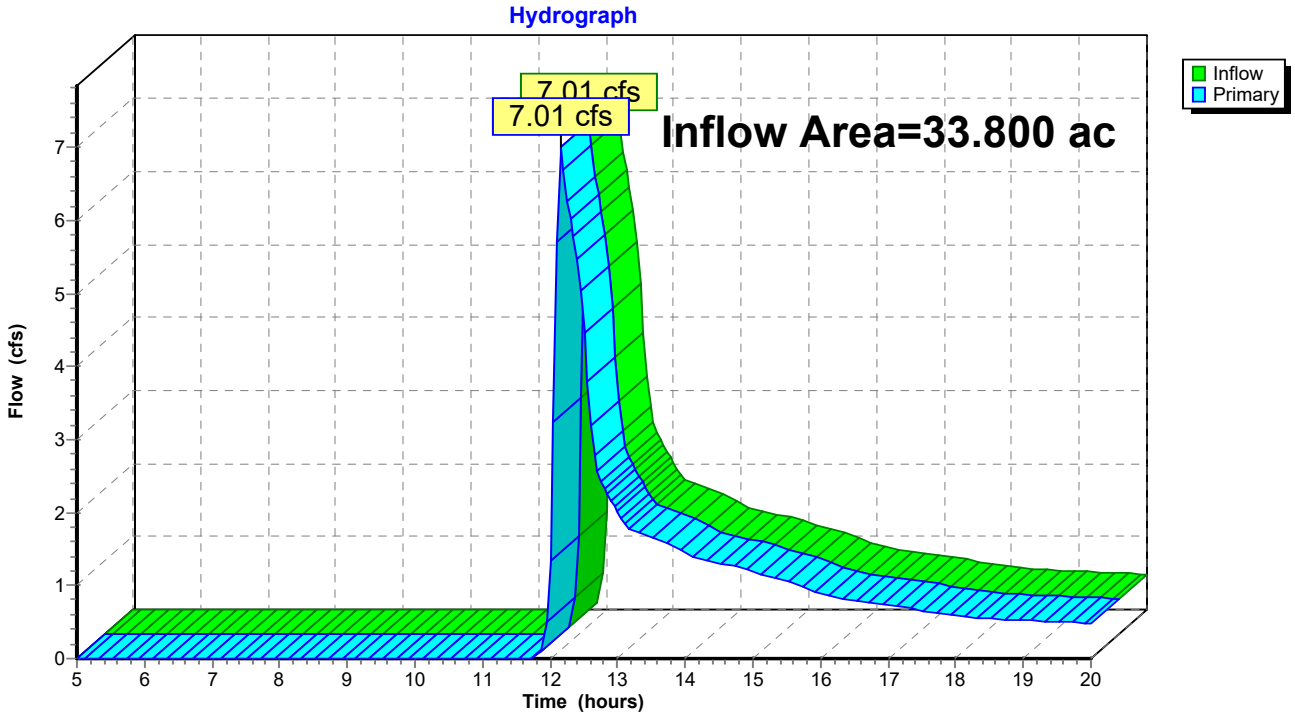


Summary for Link SB: SB

Inflow Area = 33.800 ac, 0.00% Impervious, Inflow Depth > 0.31" for 2-year event
Inflow = 7.01 cfs @ 12.17 hrs, Volume= 0.883 af
Primary = 7.01 cfs @ 12.17 hrs, Volume= 0.883 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



10-Year Storm Event – Existing

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

Subcatchment BB-1: EX BB-1 Runoff Area=19.100 ac 0.52% Impervious Runoff Depth>2.08"
Flow Length=1,400' Slope=0.0100 '/' Tc=30.2 min CN=70 Runoff=28.24 cfs 3.312 af

Subcatchment BB-2: EX BB-2 Runoff Area=5.900 ac 1.69% Impervious Runoff Depth>2.09"
Flow Length=730' Slope=0.0110 '/' Tc=17.0 min CN=70 Runoff=11.10 cfs 1.028 af

Subcatchment BB-3: EX BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>1.41"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=24.52 cfs 2.323 af

Subcatchment HS-1: EX HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>1.42"
Flow Length=310' Tc=5.2 min CN=61 Runoff=1.54 cfs 0.107 af

Subcatchment KC-1: EX KC-1 Runoff Area=23.600 ac 1.27% Impervious Runoff Depth>1.86"
Flow Length=530' Slope=0.0190 '/' Tc=10.5 min CN=67 Runoff=46.51 cfs 3.658 af

Subcatchment MB-1: EX MB-1 Runoff Area=49.200 ac 0.00% Impervious Runoff Depth>1.48"
Flow Length=1,630' Tc=27.9 min CN=62 Runoff=51.52 cfs 6.056 af

Subcatchment MB-2: EX MB-2 Runoff Area=13.000 ac 0.77% Impervious Runoff Depth>0.61"
Flow Length=540' Tc=25.2 min CN=48 Runoff=4.35 cfs 0.663 af

Subcatchment SB-1: EX SB-1 Runoff Area=8.100 ac 0.00% Impervious Runoff Depth>1.42"
Flow Length=490' Tc=7.4 min CN=61 Runoff=12.93 cfs 0.959 af

Subcatchment SB-2: EX SB-2 Runoff Area=15.800 ac 0.00% Impervious Runoff Depth>0.78"
Flow Length=480' Slope=0.0250 '/' Tc=8.7 min CN=51 Runoff=10.71 cfs 1.031 af

Subcatchment SB-3: EX SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>1.56"
Flow Length=300' Slope=0.0100 '/' Tc=9.8 min CN=63 Runoff=16.33 cfs 1.288 af

Pond 1P: EX MB-2 Depression Peak Elev=272.20' Storage=28,834 cf Inflow=4.35 cfs 0.663 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=58.11 cfs 6.663 af
Primary=58.11 cfs 6.663 af

Link HS: HS Inflow=1.54 cfs 0.107 af
Primary=1.54 cfs 0.107 af

Link KC: KC Inflow=46.51 cfs 3.658 af
Primary=46.51 cfs 3.658 af

Link MB: MB Inflow=51.52 cfs 6.056 af
Primary=51.52 cfs 6.056 af

Link SB: SB Inflow=39.22 cfs 3.278 af
Primary=39.22 cfs 3.278 af

Total Runoff Area = 165.200 ac Runoff Volume = 20.424 af Average Runoff Depth = 1.48"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: EX BB-1

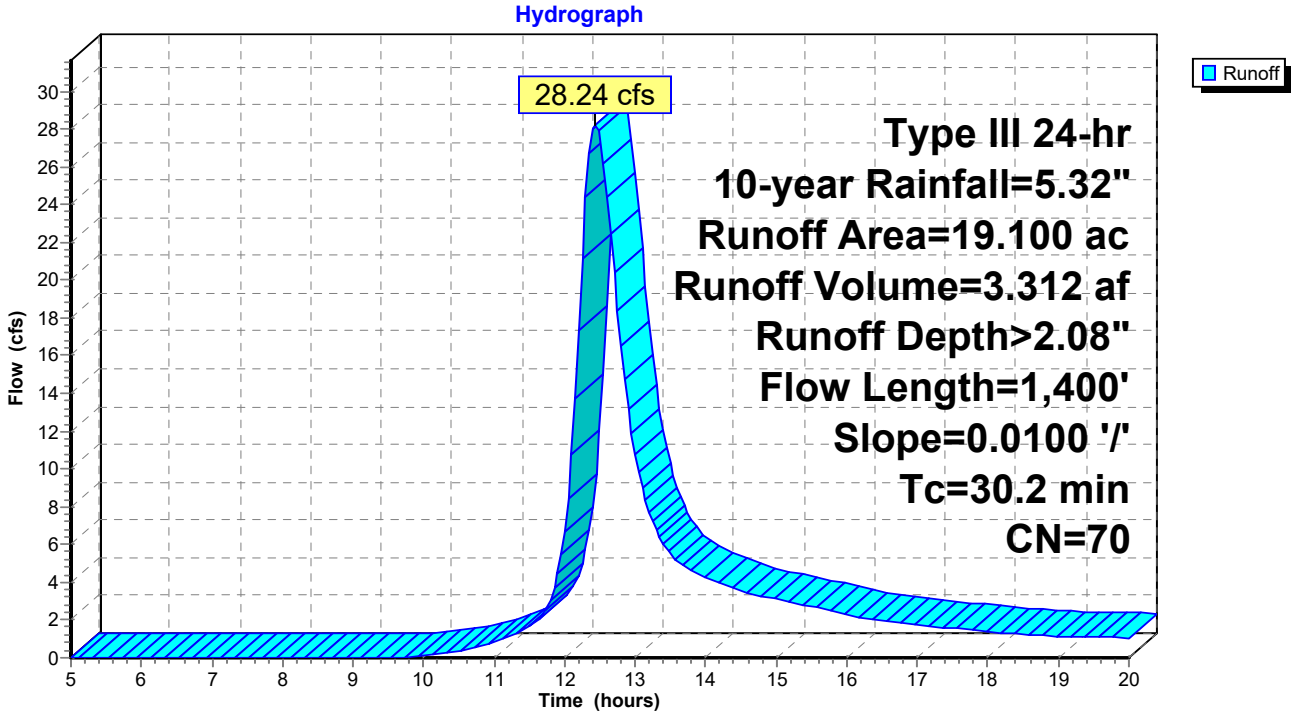
Runoff = 28.24 cfs @ 12.44 hrs, Volume= 3.312 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
1.500	72	Dirt roads, HSG A
17.200	70	Row crops, contoured, Poor, HSG A
0.300	30	Woods, Good, HSG A
19.100	70	Weighted Average
19.000		99.48% Pervious Area
0.100		0.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
24.1	1,300	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.2	1,400	Total			

Subcatchment BB-1: EX BB-1



Summary for Subcatchment BB-2: EX BB-2

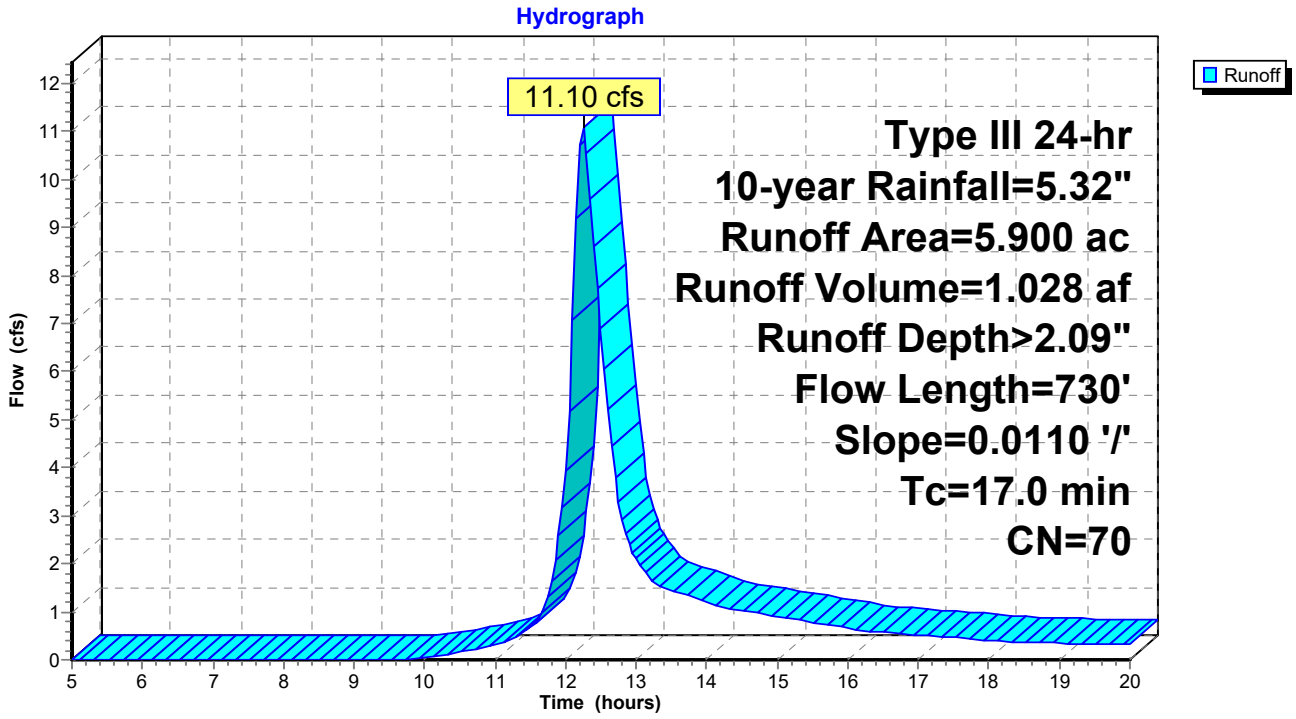
Runoff = 11.10 cfs @ 12.25 hrs, Volume= 1.028 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.400	72	Dirt roads, HSG A
5.300	70	Row crops, contoured, Poor, HSG A
0.100	30	Woods, Good, HSG A
5.900	70	Weighted Average
5.800		98.31% Pervious Area
0.100		1.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0110	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
11.1	630	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
17.0	730	Total			

Subcatchment BB-2: EX BB-2



Summary for Subcatchment BB-3: EX BB-3

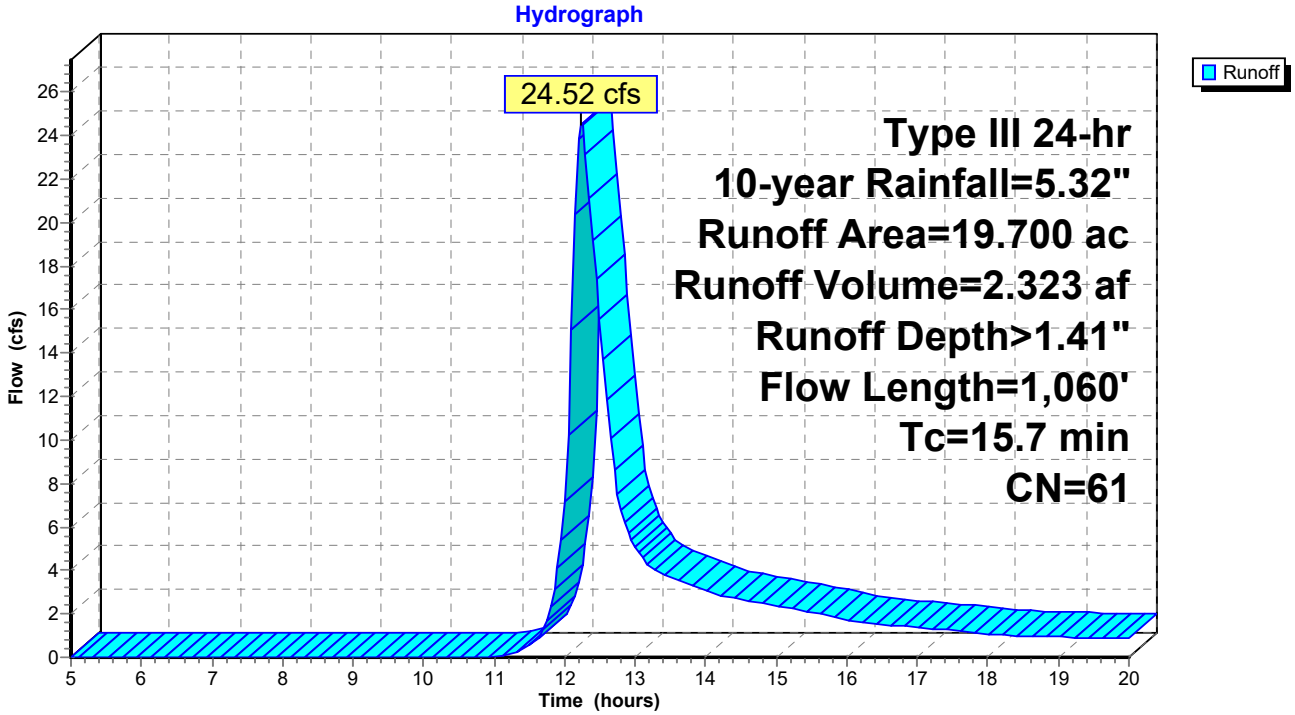
Runoff = 24.52 cfs @ 12.24 hrs, Volume= 2.323 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: EX BB-3



Summary for Subcatchment HS-1: EX HS-1

[49] Hint: Tc<2dt may require smaller dt

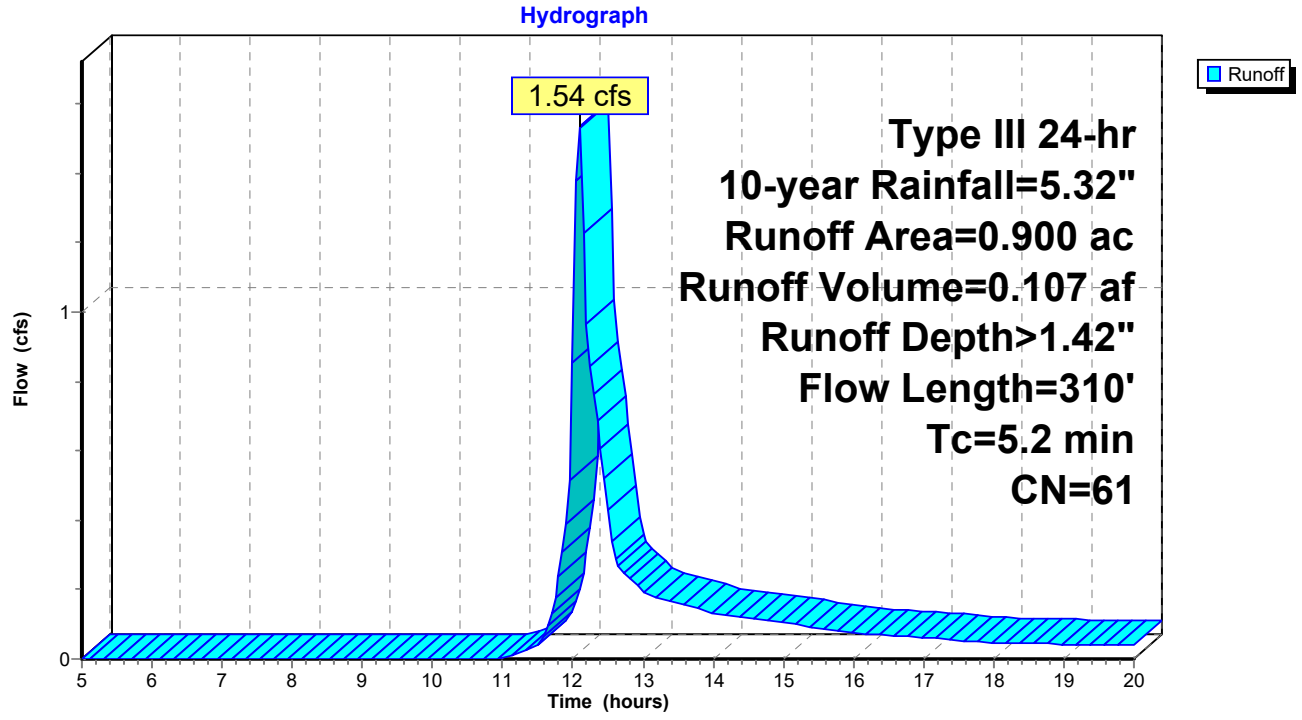
Runoff = 1.54 cfs @ 12.09 hrs, Volume= 0.107 af, Depth> 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.100	72	Dirt roads, HSG A
0.600	70	Row crops, contoured, Poor, HSG A
0.200	30	Woods, Good, HSG A
0.900	61	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	100	0.0550	0.54		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.4	180	0.0550	2.11		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.7	30	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.2	310	Total			

Subcatchment HS-1: EX HS-1



Summary for Subcatchment KC-1: EX KC-1

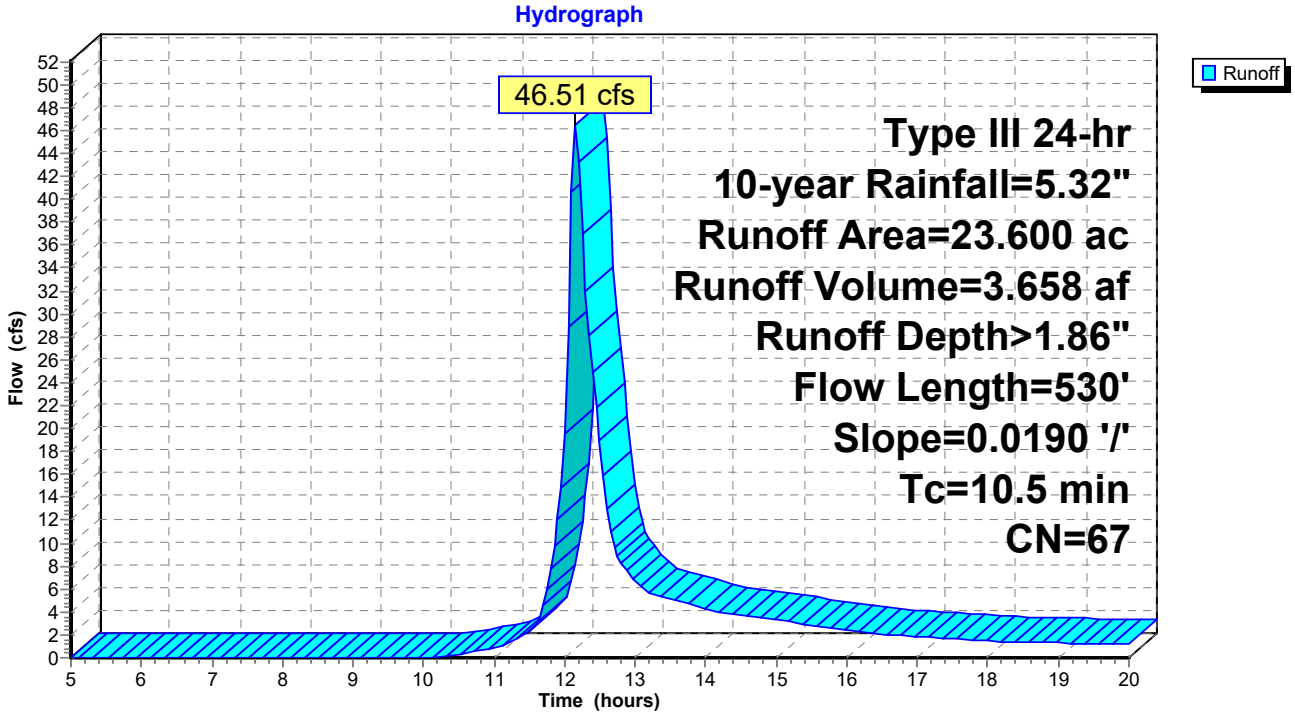
Runoff = 46.51 cfs @ 12.16 hrs, Volume= 3.658 af, Depth> 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.300	98	Roofs, HSG A
1.800	72	Dirt roads, HSG A
19.400	70	Row crops, contoured, Poor, HSG A
2.100	30	Woods, Good, HSG A
23.600	67	Weighted Average
23.300		98.73% Pervious Area
0.300		1.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
5.8	430	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.5	530	Total			

Subcatchment KC-1: EX KC-1



Summary for Subcatchment MB-1: EX MB-1

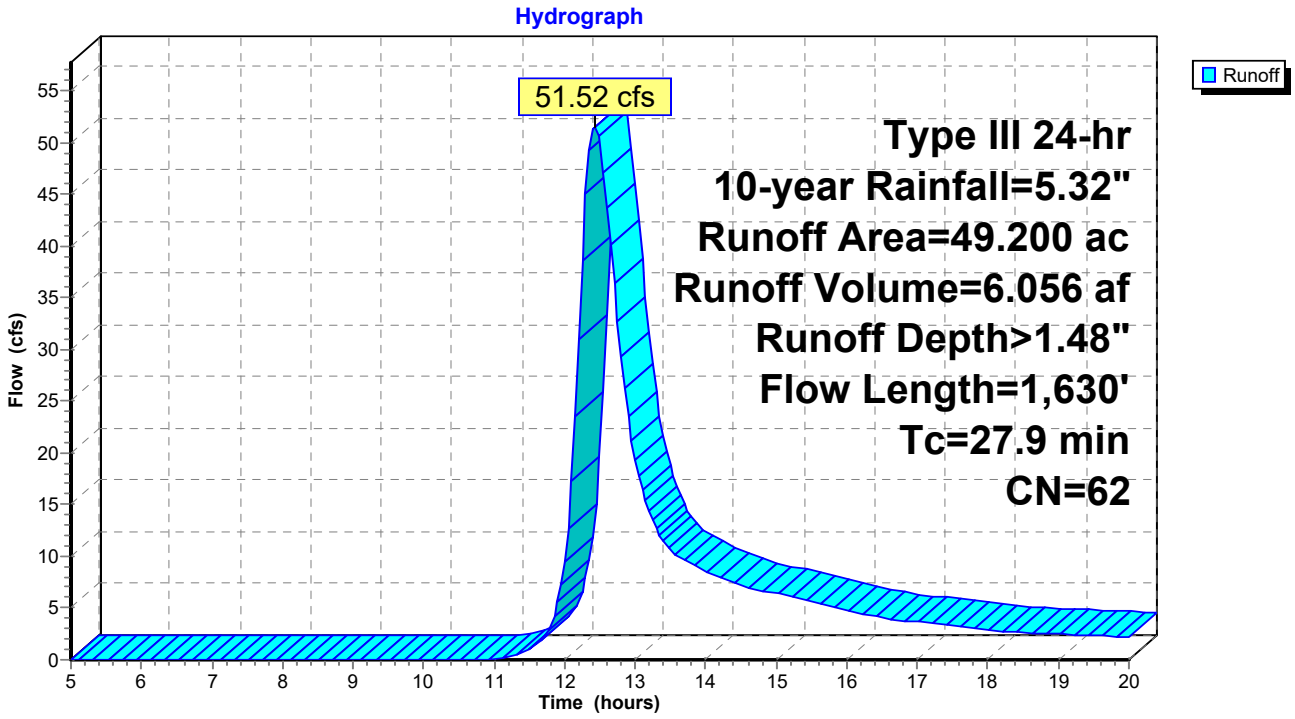
Runoff = 51.52 cfs @ 12.43 hrs, Volume= 6.056 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
3.000	72	Dirt roads, HSG A
36.100	70	Row crops, contoured, Poor, HSG A
10.100	30	Woods, Good, HSG A
49.200	62	Weighted Average
49.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	730	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.9	1,630	Total			

Subcatchment MB-1: EX MB-1



Summary for Subcatchment MB-2: EX MB-2

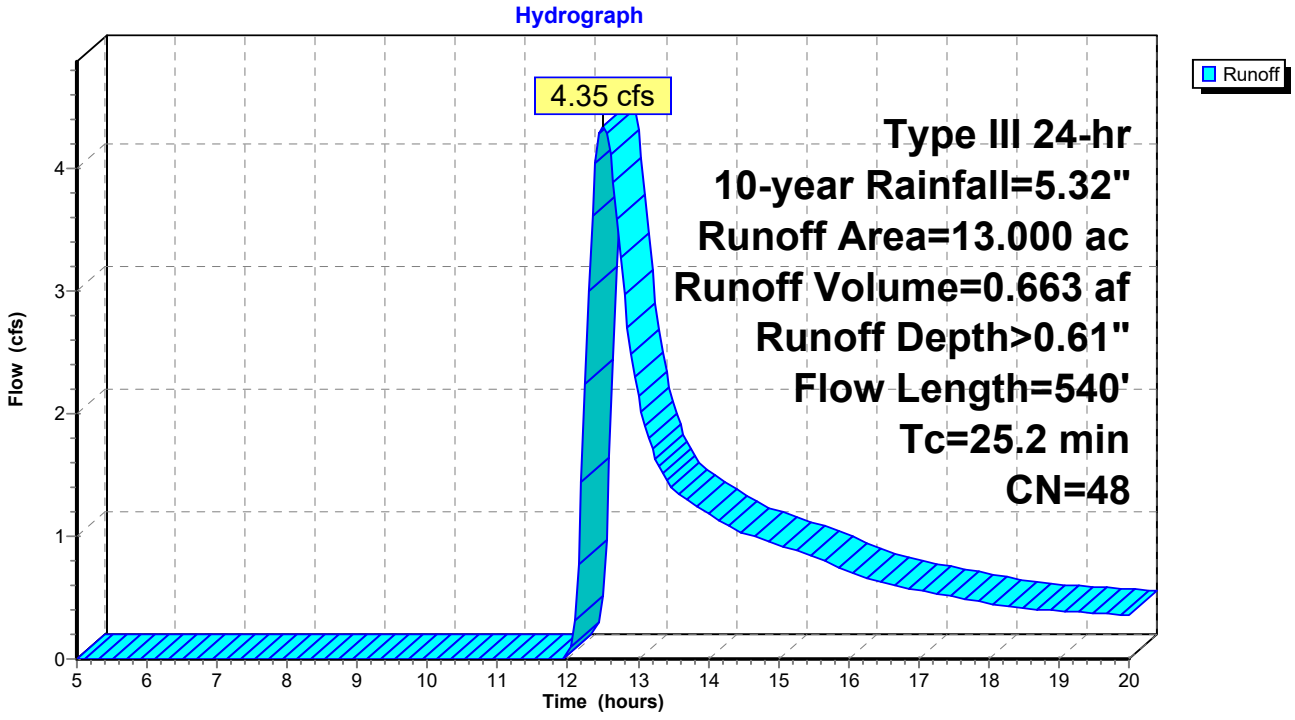
Runoff = 4.35 cfs @ 12.50 hrs, Volume= 0.663 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.600	72	Dirt roads, HSG A
5.200	70	Row crops, contoured, Poor, HSG A
7.100	30	Woods, Good, HSG A
13.000	48	Weighted Average
12.900		99.23% Pervious Area
0.100		0.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0140	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
7.7	230	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	260	0.0610	1.23		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.2	540	Total			

Subcatchment MB-2: EX MB-2



Summary for Subcatchment SB-1: EX SB-1

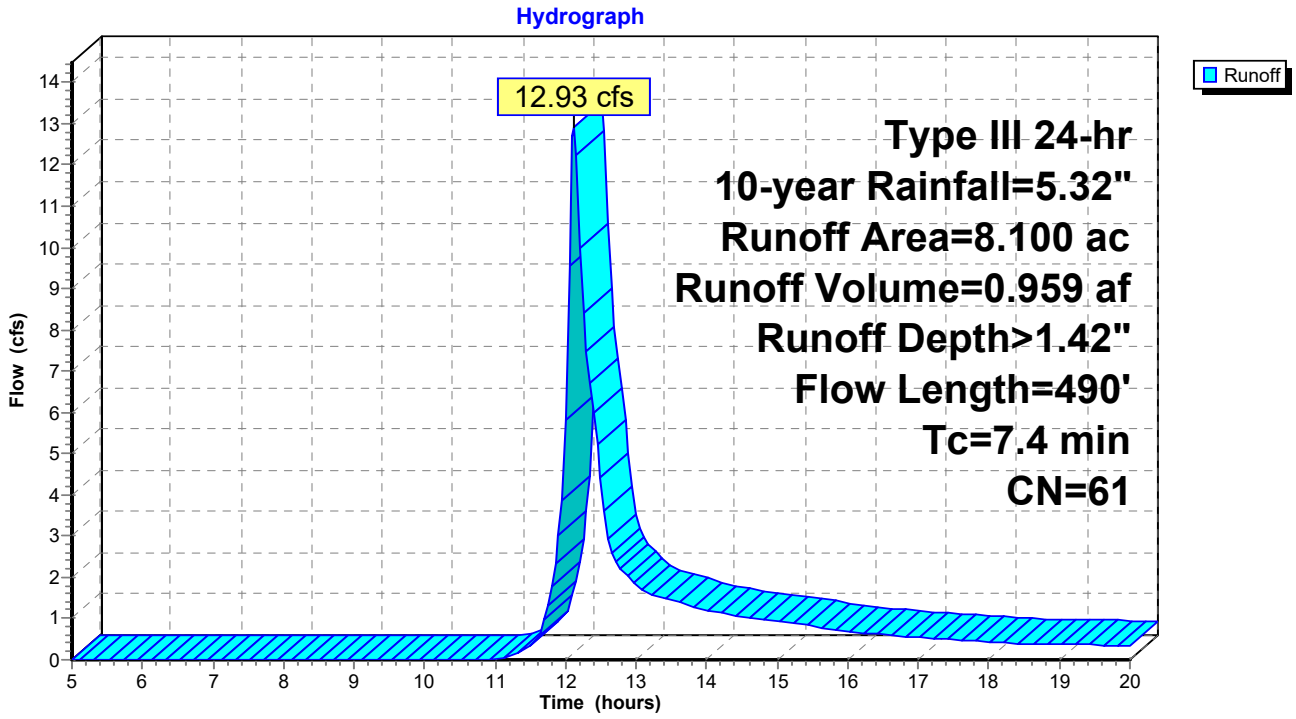
Runoff = 12.93 cfs @ 12.12 hrs, Volume= 0.959 af, Depth> 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.500	72	Dirt roads, HSG A
5.800	70	Row crops, contoured, Poor, HSG A
1.800	30	Woods, Good, HSG A
8.100	61	Weighted Average
8.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.0200	0.36		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.3	250	0.1180	3.09		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
1.5	140	0.0280	1.51		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
7.4	490	Total			

Subcatchment SB-1: EX SB-1



Summary for Subcatchment SB-2: EX SB-2

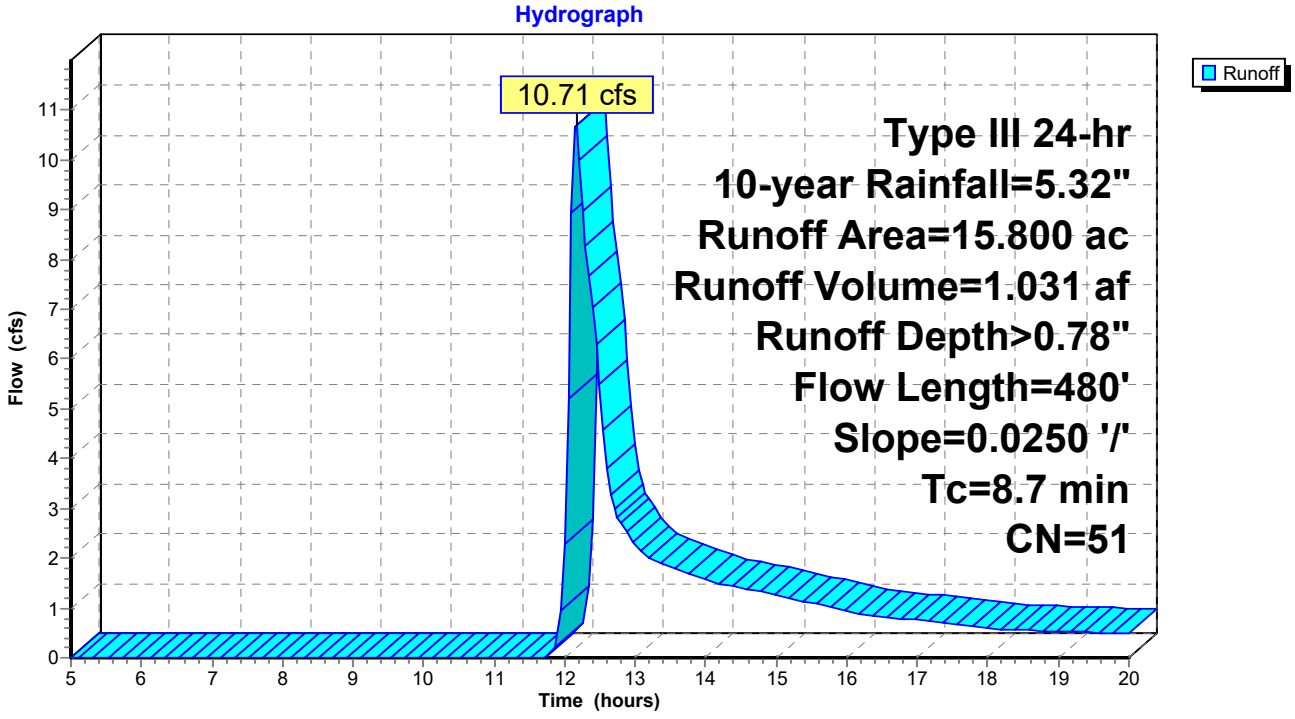
Runoff = 10.71 cfs @ 12.16 hrs, Volume= 1.031 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
1.100	72	Dirt roads, HSG A
7.000	70	Row crops, contoured, Poor, HSG A
7.700	30	Woods, Good, HSG A
15.800	51	Weighted Average
15.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.0250	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
4.5	380	0.0250	1.42		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
8.7	480	Total			

Subcatchment SB-2: EX SB-2



Summary for Subcatchment SB-3: EX SB-3

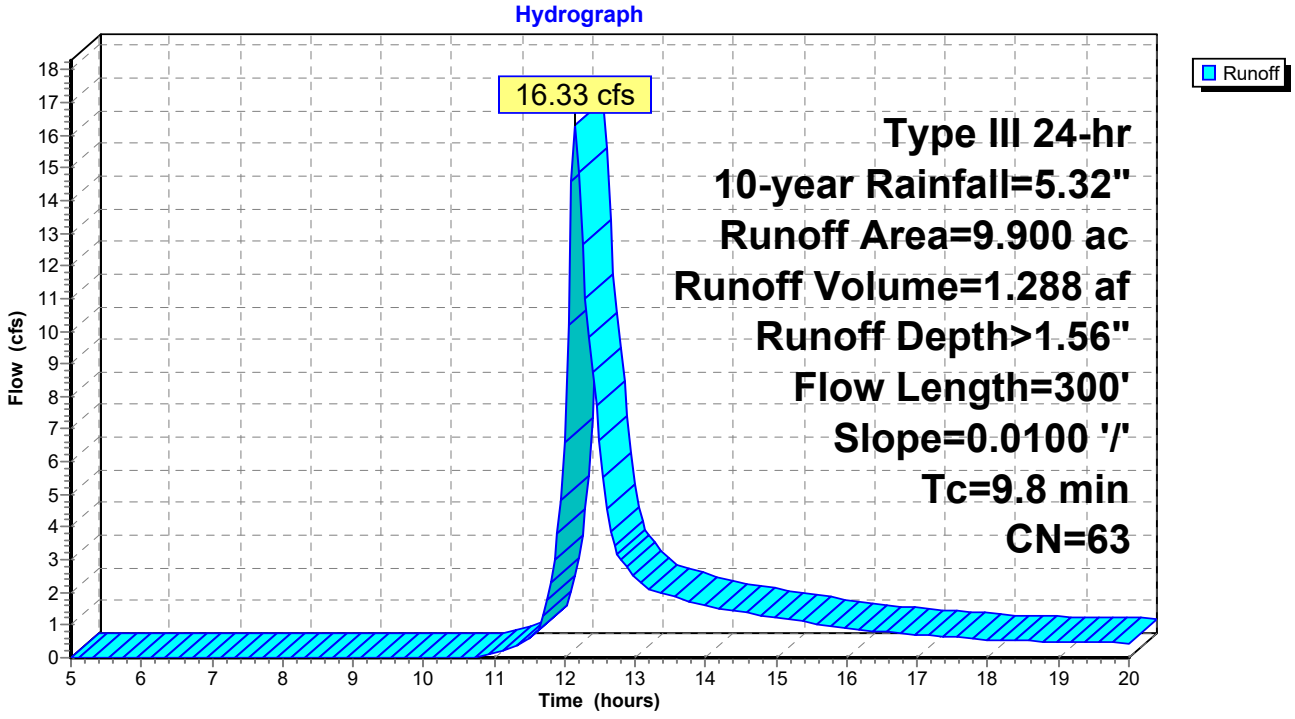
Runoff = 16.33 cfs @ 12.15 hrs, Volume= 1.288 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.400	72	Dirt roads, HSG A
7.800	70	Row crops, contoured, Poor, HSG A
1.700	30	Woods, Good, HSG A
9.900	63	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
3.7	200	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
9.8	300	Total			

Subcatchment SB-3: EX SB-3



Summary for Pond 1P: EX MB-2 Depression

Inflow Area = 13.000 ac, 0.77% Impervious, Inflow Depth > 0.61" for 10-year event
Inflow = 4.35 cfs @ 12.50 hrs, Volume= 0.663 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 272.20' @ 20.00 hrs Surf.Area= 21,426 sf Storage= 28,834 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

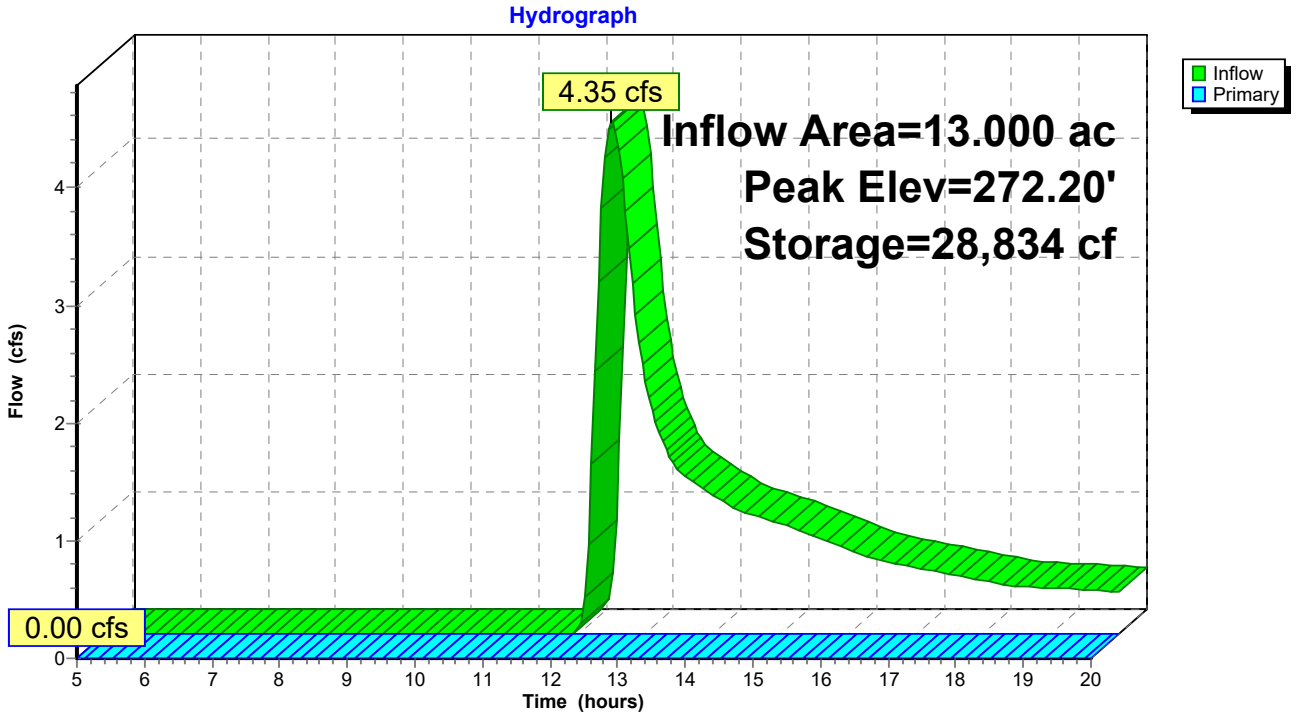
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: EX MB-2 Depression

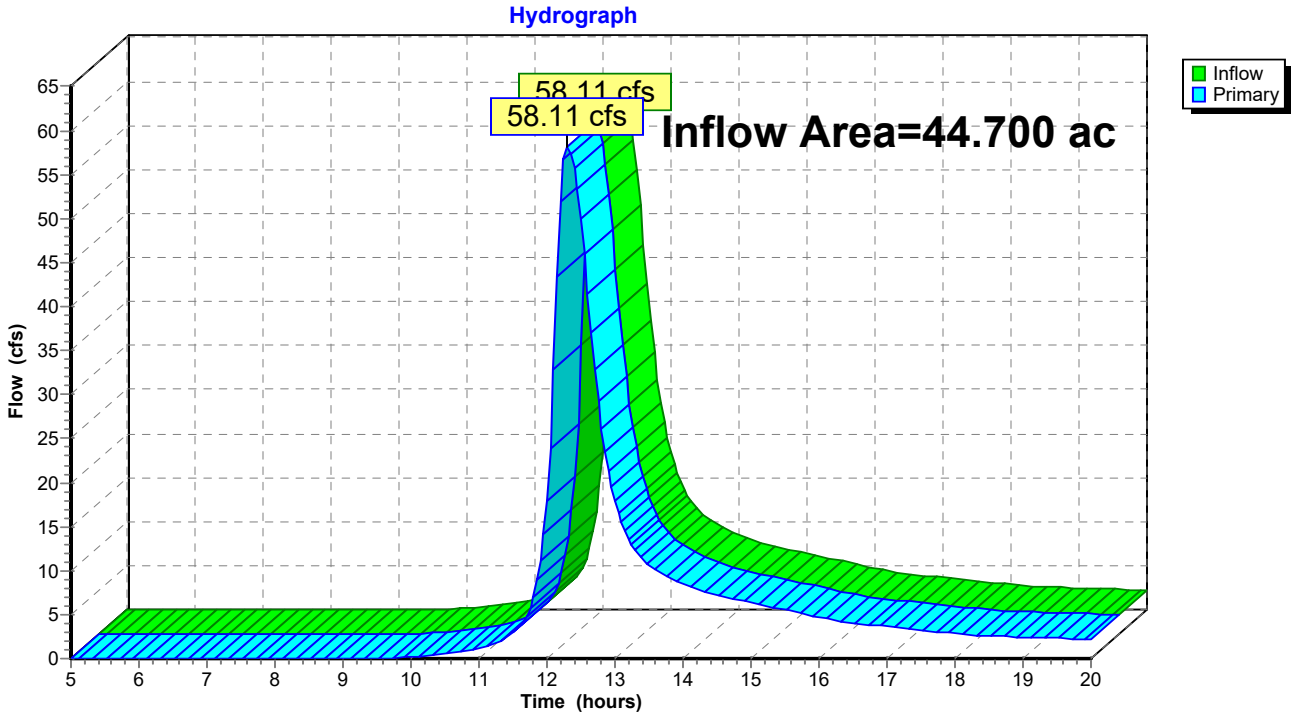


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.45% Impervious, Inflow Depth > 1.79" for 10-year event
Inflow = 58.11 cfs @ 12.31 hrs, Volume= 6.663 af
Primary = 58.11 cfs @ 12.31 hrs, Volume= 6.663 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

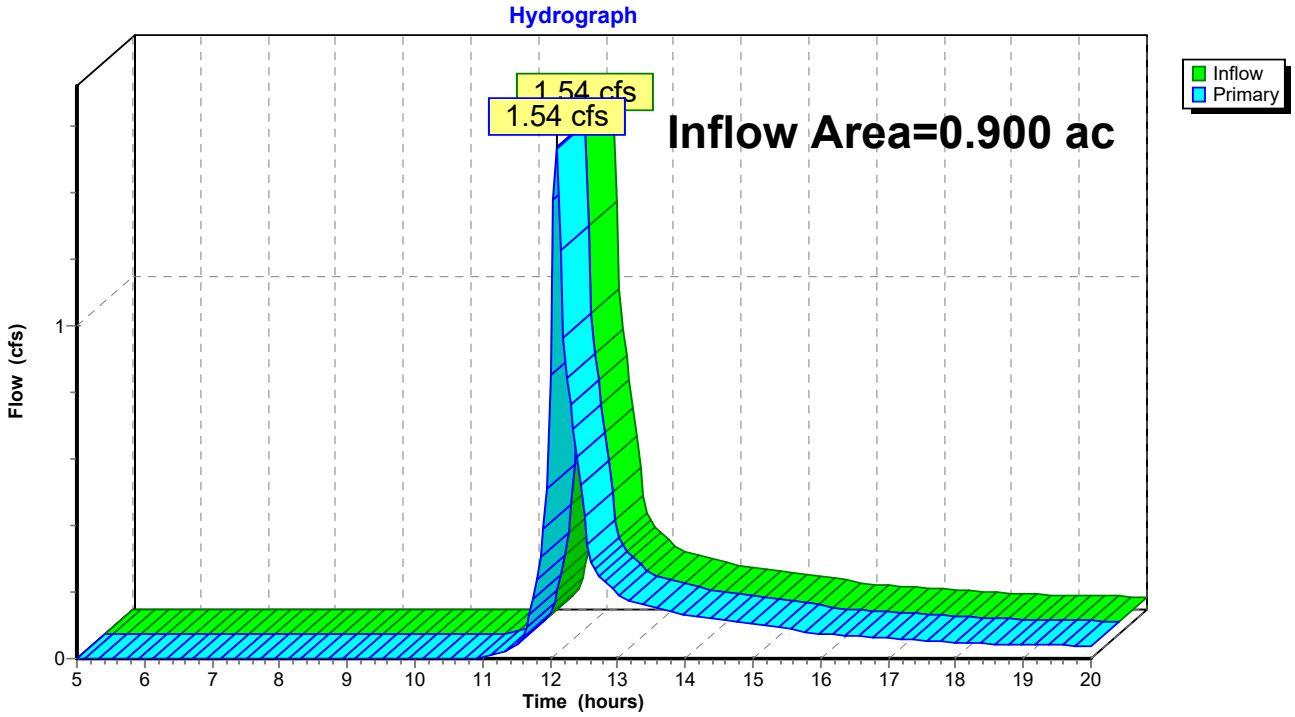


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 1.42" for 10-year event
Inflow = 1.54 cfs @ 12.09 hrs, Volume= 0.107 af
Primary = 1.54 cfs @ 12.09 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

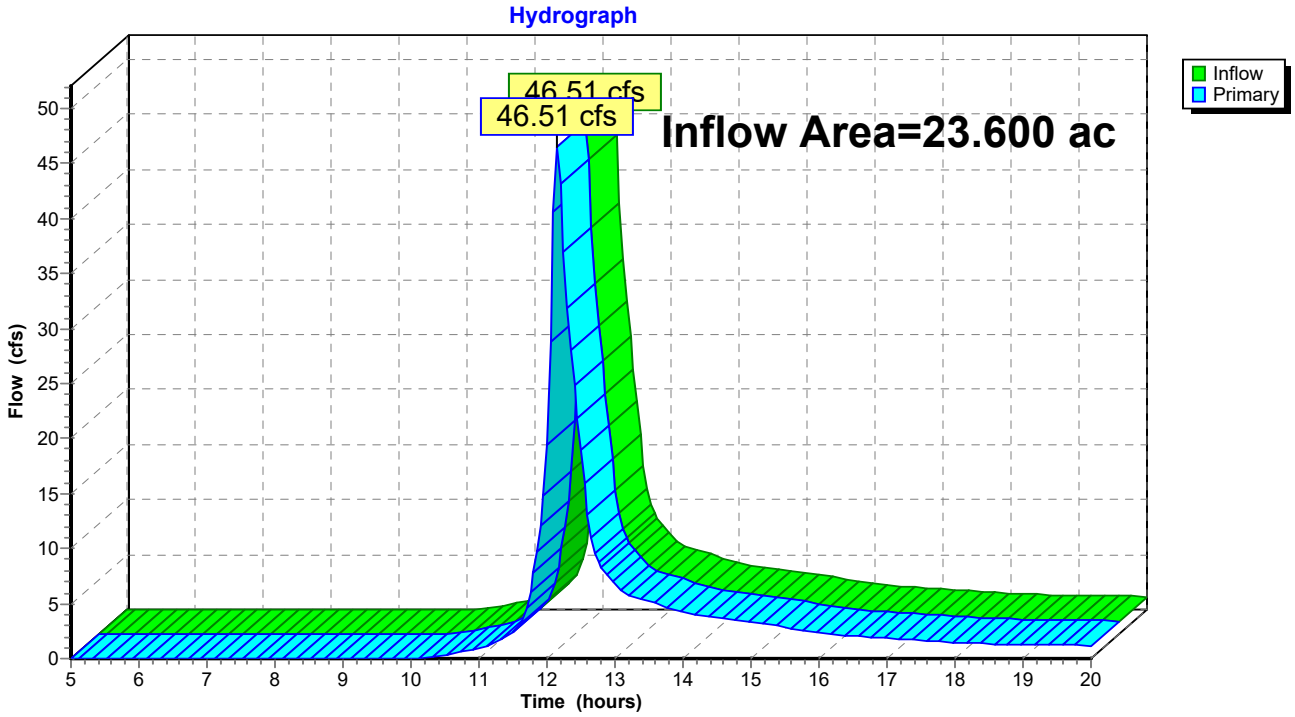


Summary for Link KC: KC

Inflow Area = 23.600 ac, 1.27% Impervious, Inflow Depth > 1.86" for 10-year event
Inflow = 46.51 cfs @ 12.16 hrs, Volume= 3.658 af
Primary = 46.51 cfs @ 12.16 hrs, Volume= 3.658 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

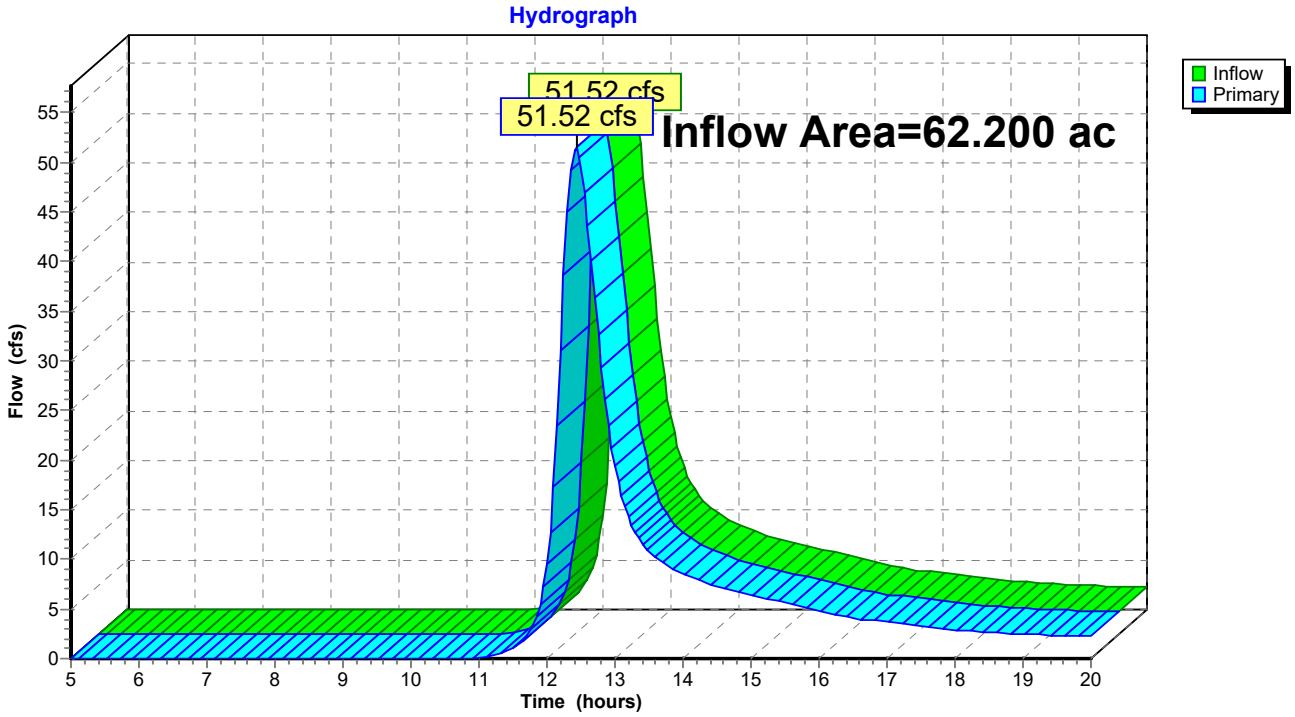


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.16% Impervious, Inflow Depth > 1.17" for 10-year event
Inflow = 51.52 cfs @ 12.43 hrs, Volume= 6.056 af
Primary = 51.52 cfs @ 12.43 hrs, Volume= 6.056 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

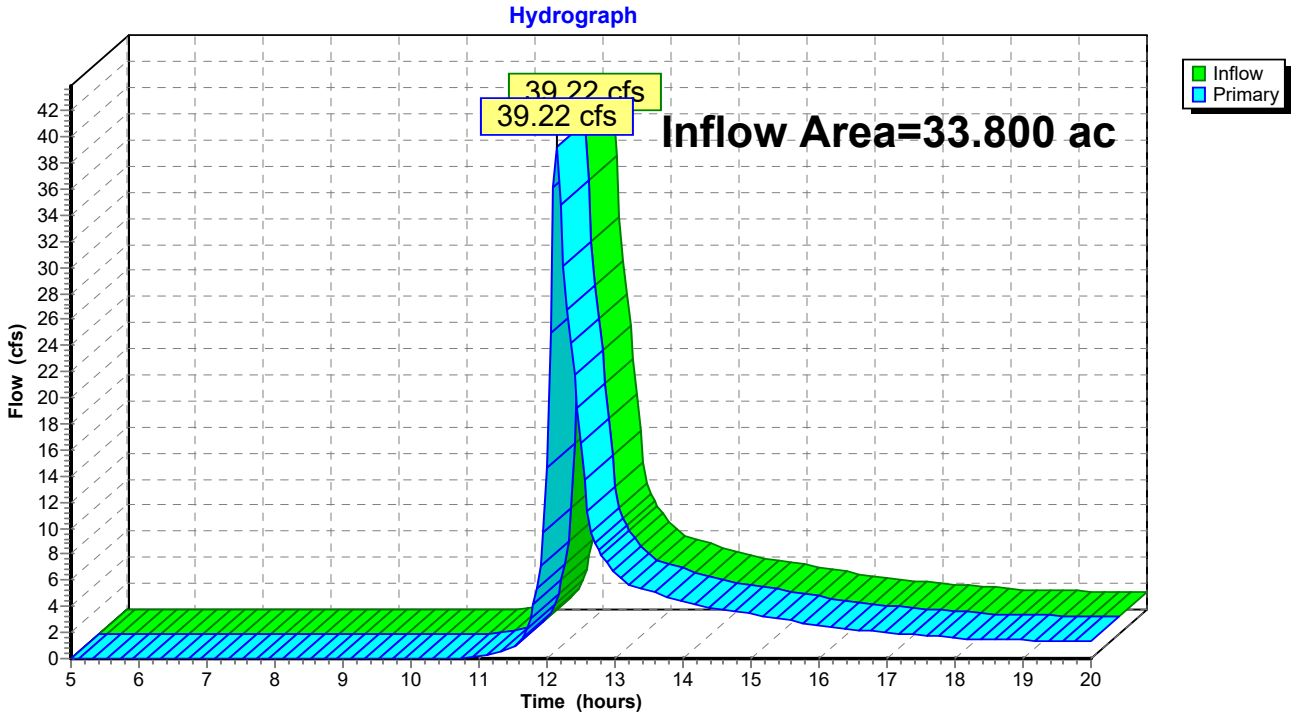


Summary for Link SB: SB

Inflow Area = 33.800 ac, 0.00% Impervious, Inflow Depth > 1.16" for 10-year event
Inflow = 39.22 cfs @ 12.15 hrs, Volume= 3.278 af
Primary = 39.22 cfs @ 12.15 hrs, Volume= 3.278 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



25-Year Storm Event- Existing

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

Subcatchment BB-1: EX BB-1 Runoff Area=19.100 ac 0.52% Impervious Runoff Depth>3.01"
Flow Length=1,400' Slope=0.0100 '/' Tc=30.2 min CN=70 Runoff=41.07 cfs 4.793 af

Subcatchment BB-2: EX BB-2 Runoff Area=5.900 ac 1.69% Impervious Runoff Depth>3.03"
Flow Length=730' Slope=0.0110 '/' Tc=17.0 min CN=70 Runoff=16.15 cfs 1.488 af

Subcatchment BB-3: EX BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>2.19"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=39.37 cfs 3.602 af

Subcatchment HS-1: EX HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>2.20"
Flow Length=310' Tc=5.2 min CN=61 Runoff=2.46 cfs 0.165 af

Subcatchment KC-1: EX KC-1 Runoff Area=23.600 ac 1.27% Impervious Runoff Depth>2.75"
Flow Length=530' Slope=0.0190 '/' Tc=10.5 min CN=67 Runoff=69.53 cfs 5.403 af

Subcatchment MB-1: EX MB-1 Runoff Area=49.200 ac 0.00% Impervious Runoff Depth>2.27"
Flow Length=1,630' Tc=27.9 min CN=62 Runoff=81.45 cfs 9.312 af

Subcatchment MB-2: EX MB-2 Runoff Area=13.000 ac 0.77% Impervious Runoff Depth>1.12"
Flow Length=540' Tc=25.2 min CN=48 Runoff=9.53 cfs 1.219 af

Subcatchment SB-1: EX SB-1 Runoff Area=8.100 ac 0.00% Impervious Runoff Depth>2.20"
Flow Length=490' Tc=7.4 min CN=61 Runoff=20.75 cfs 1.486 af

Subcatchment SB-2: EX SB-2 Runoff Area=15.800 ac 0.00% Impervious Runoff Depth>1.36"
Flow Length=480' Slope=0.0250 '/' Tc=8.7 min CN=51 Runoff=21.64 cfs 1.796 af

Subcatchment SB-3: EX SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>2.38"
Flow Length=300' Slope=0.0100 '/' Tc=9.8 min CN=63 Runoff=25.50 cfs 1.962 af

Pond 1P: EX MB-2 Depression Peak Elev=273.11' Storage=53,030 cf Inflow=9.53 cfs 1.219 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=87.90 cfs 9.883 af
Primary=87.90 cfs 9.883 af

Link HS: HS Inflow=2.46 cfs 0.165 af
Primary=2.46 cfs 0.165 af

Link KC: KC Inflow=69.53 cfs 5.403 af
Primary=69.53 cfs 5.403 af

Link MB: MB Inflow=81.45 cfs 9.312 af
Primary=81.45 cfs 9.312 af

Link SB: SB Inflow=66.79 cfs 5.245 af
Primary=66.79 cfs 5.245 af

Total Runoff Area = 165.200 ac Runoff Volume = 31.225 af Average Runoff Depth = 2.27"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: EX BB-1

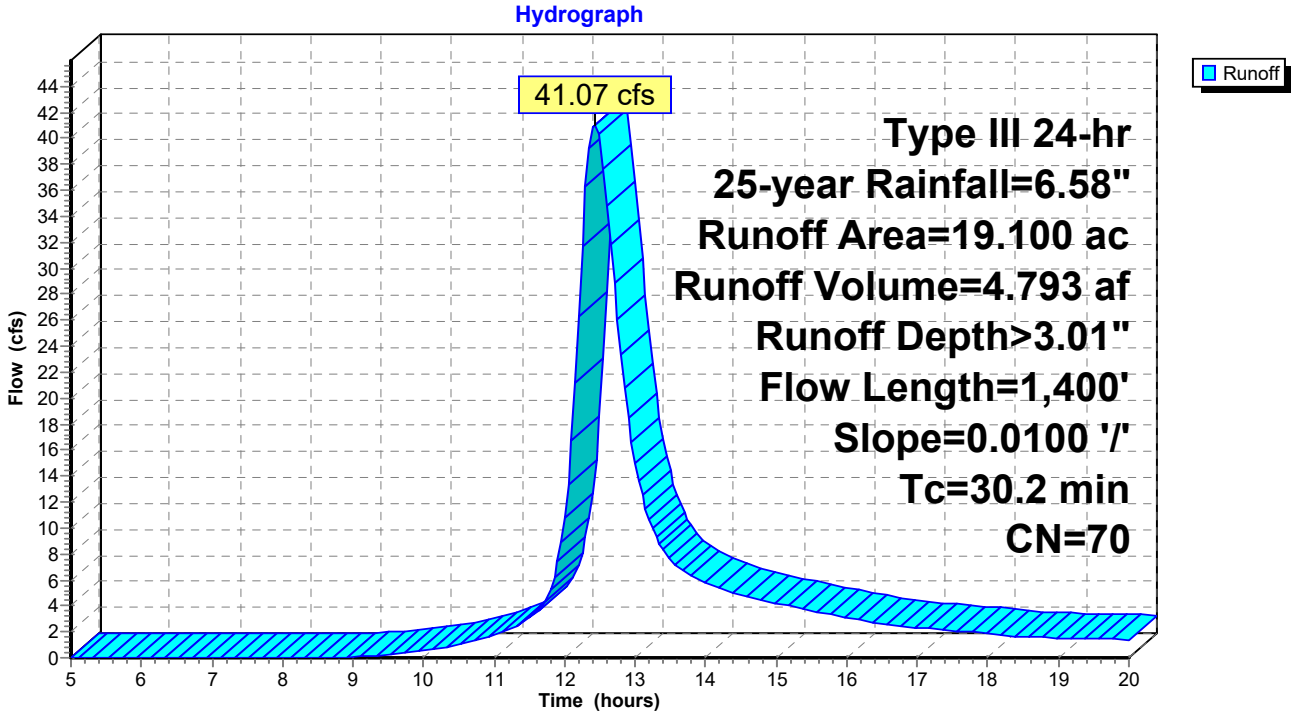
Runoff = 41.07 cfs @ 12.43 hrs, Volume= 4.793 af, Depth> 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
1.500	72	Dirt roads, HSG A
17.200	70	Row crops, contoured, Poor, HSG A
0.300	30	Woods, Good, HSG A
19.100	70	Weighted Average
19.000		99.48% Pervious Area
0.100		0.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
24.1	1,300	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.2	1,400	Total			

Subcatchment BB-1: EX BB-1



Summary for Subcatchment BB-2: EX BB-2

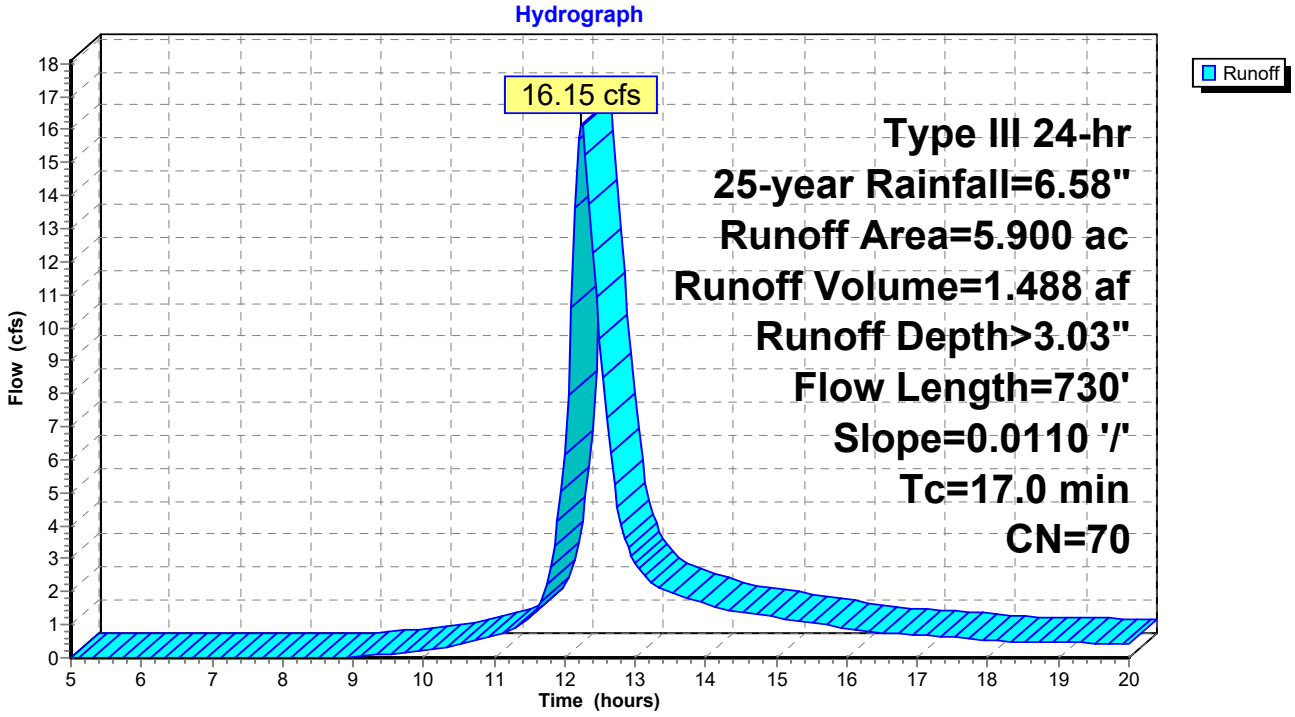
Runoff = 16.15 cfs @ 12.24 hrs, Volume= 1.488 af, Depth> 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.400	72	Dirt roads, HSG A
5.300	70	Row crops, contoured, Poor, HSG A
0.100	30	Woods, Good, HSG A
5.900	70	Weighted Average
5.800		98.31% Pervious Area
0.100		1.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0110	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
11.1	630	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
17.0	730	Total			

Subcatchment BB-2: EX BB-2



Summary for Subcatchment BB-3: EX BB-3

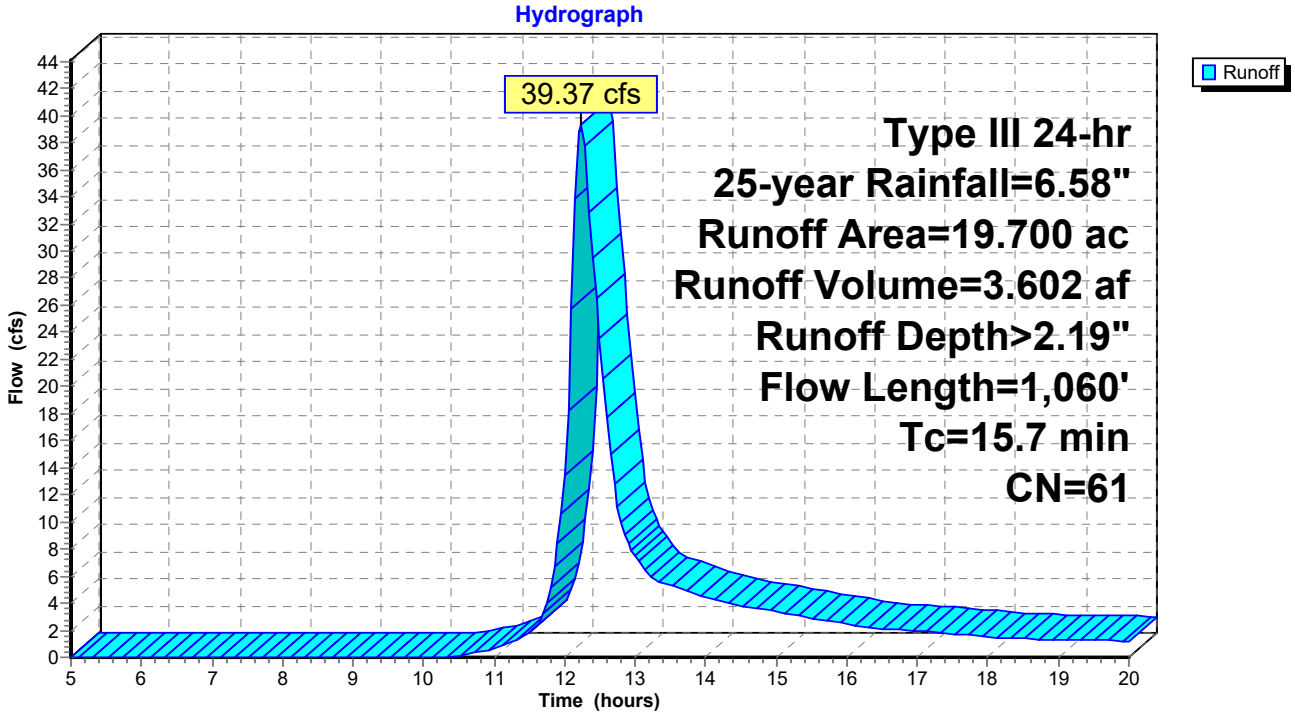
Runoff = 39.37 cfs @ 12.23 hrs, Volume= 3.602 af, Depth> 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: EX BB-3



Summary for Subcatchment HS-1: EX HS-1

[49] Hint: Tc<2dt may require smaller dt

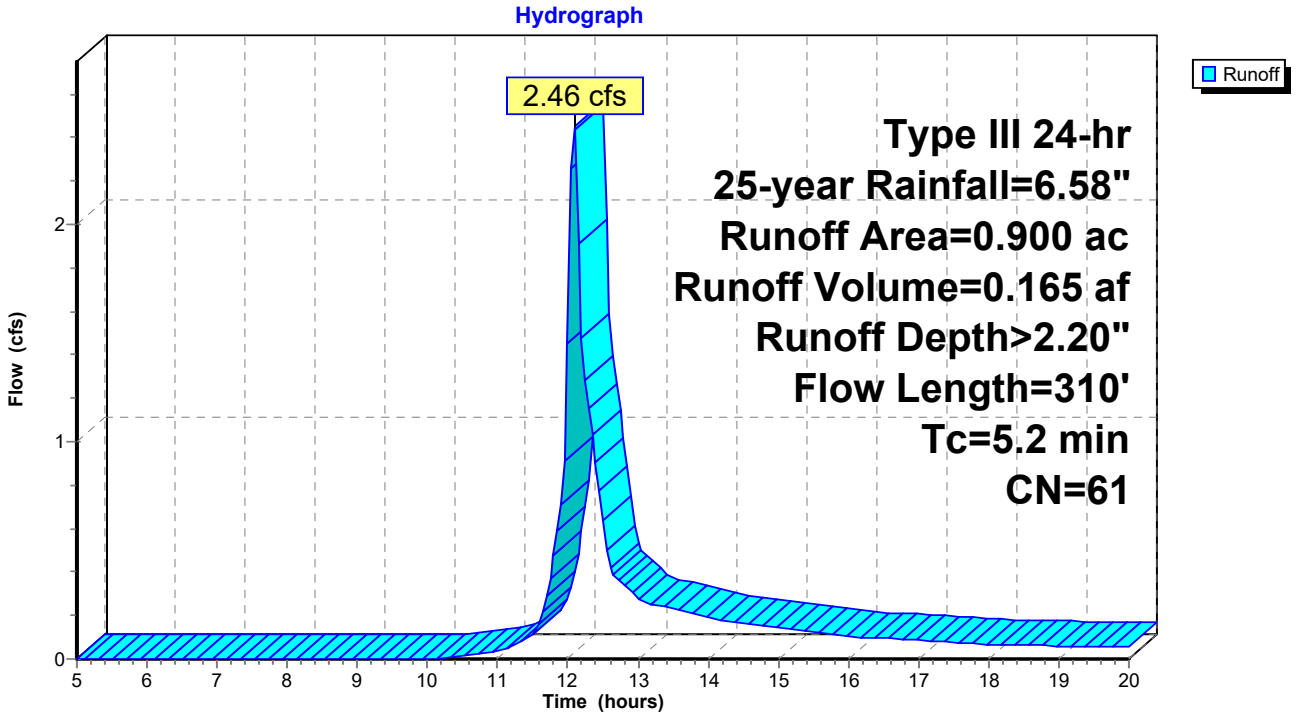
Runoff = 2.46 cfs @ 12.09 hrs, Volume= 0.165 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.100	72	Dirt roads, HSG A
0.600	70	Row crops, contoured, Poor, HSG A
0.200	30	Woods, Good, HSG A
0.900	61	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	100	0.0550	0.54		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.4	180	0.0550	2.11		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.7	30	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.2	310	Total			

Subcatchment HS-1: EX HS-1



Summary for Subcatchment KC-1: EX KC-1

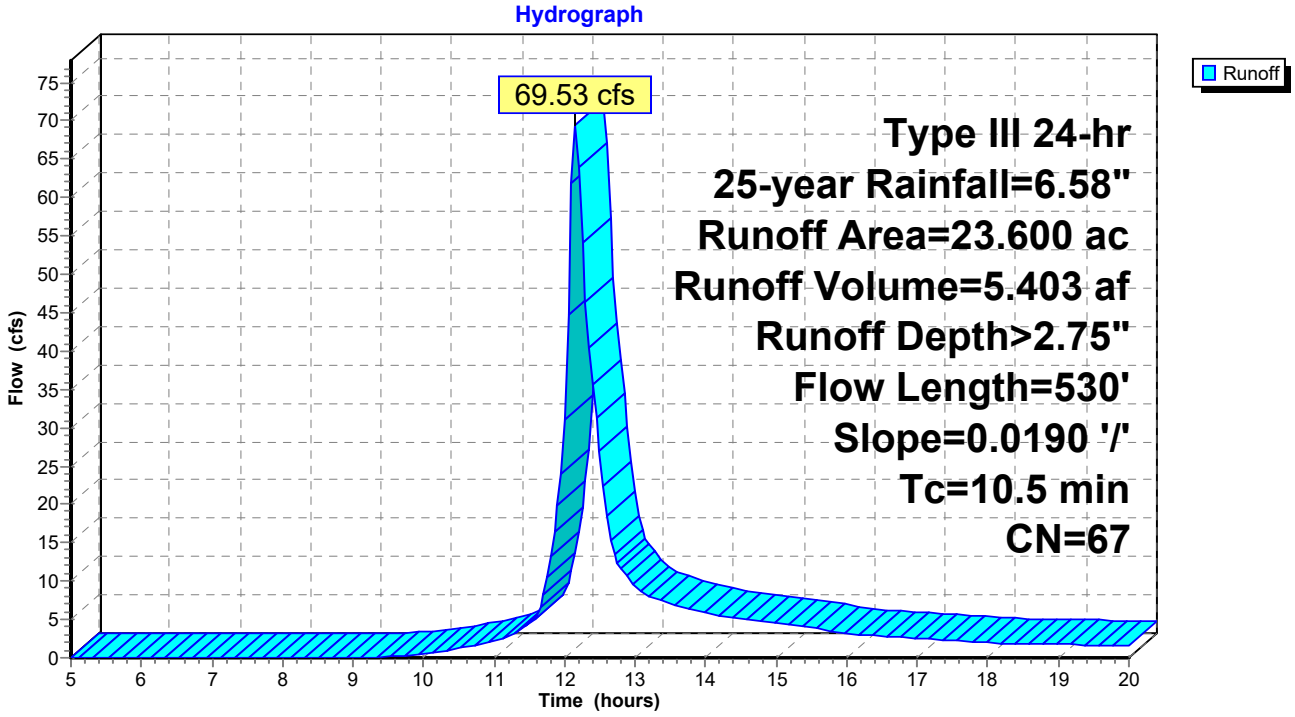
Runoff = 69.53 cfs @ 12.15 hrs, Volume= 5.403 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.300	98	Roofs, HSG A
1.800	72	Dirt roads, HSG A
19.400	70	Row crops, contoured, Poor, HSG A
2.100	30	Woods, Good, HSG A
23.600	67	Weighted Average
23.300		98.73% Pervious Area
0.300		1.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
5.8	430	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.5	530	Total			

Subcatchment KC-1: EX KC-1



Summary for Subcatchment MB-1: EX MB-1

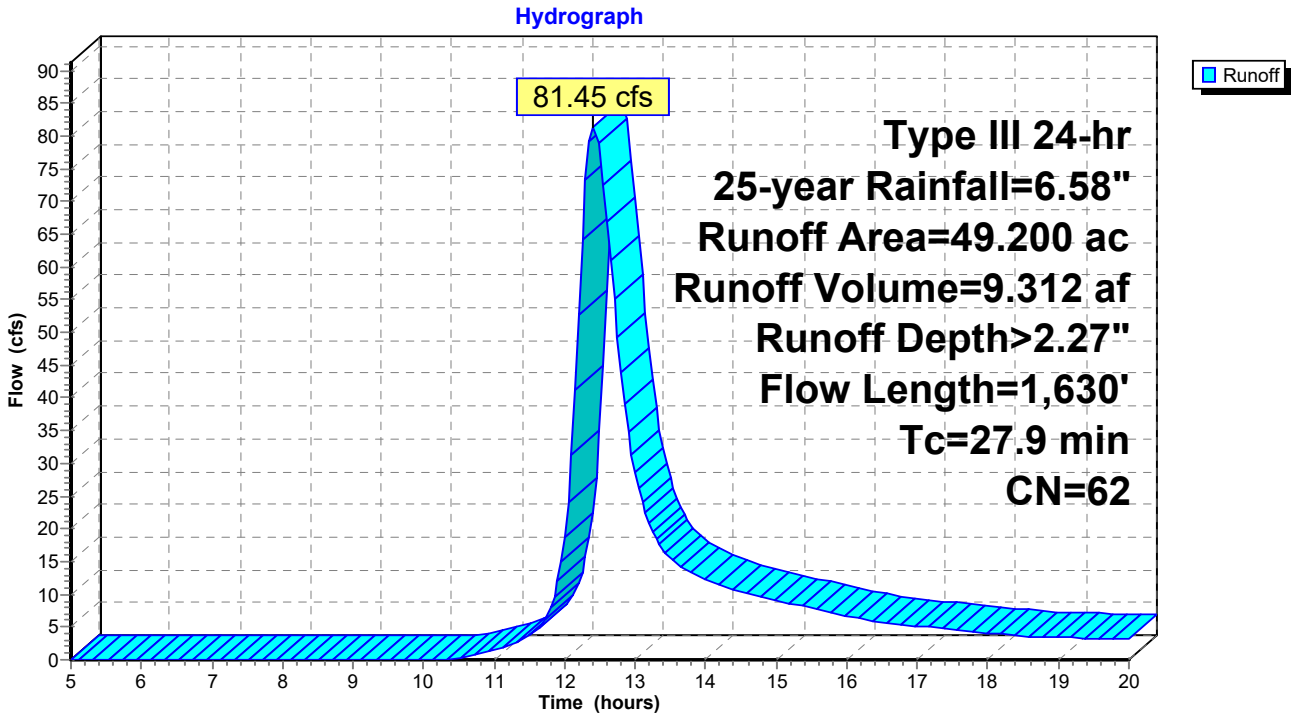
Runoff = 81.45 cfs @ 12.41 hrs, Volume= 9.312 af, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
3.000	72	Dirt roads, HSG A
36.100	70	Row crops, contoured, Poor, HSG A
10.100	30	Woods, Good, HSG A
49.200	62	Weighted Average
49.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	730	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.9	1,630	Total			

Subcatchment MB-1: EX MB-1



Summary for Subcatchment MB-2: EX MB-2

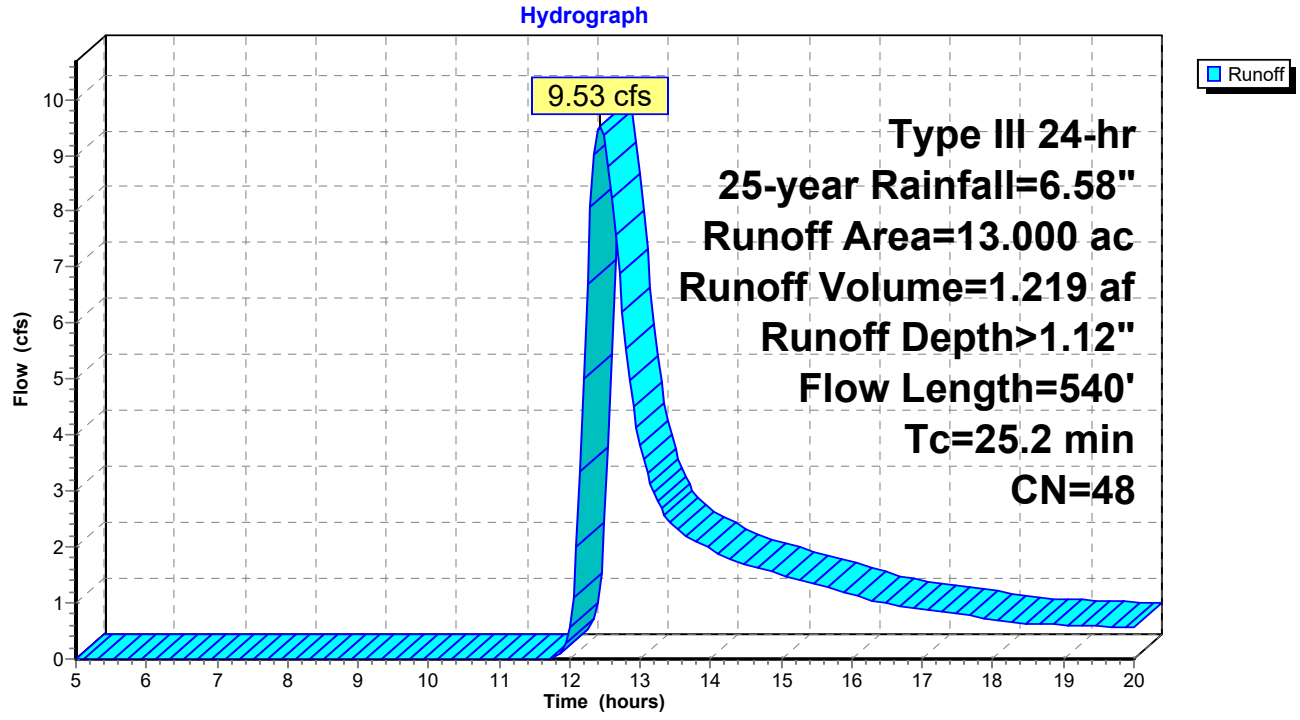
Runoff = 9.53 cfs @ 12.43 hrs, Volume= 1.219 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.600	72	Dirt roads, HSG A
5.200	70	Row crops, contoured, Poor, HSG A
7.100	30	Woods, Good, HSG A
13.000	48	Weighted Average
12.900		99.23% Pervious Area
0.100		0.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0140	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
7.7	230	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	260	0.0610	1.23		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.2	540	Total			

Subcatchment MB-2: EX MB-2



Summary for Subcatchment SB-1: EX SB-1

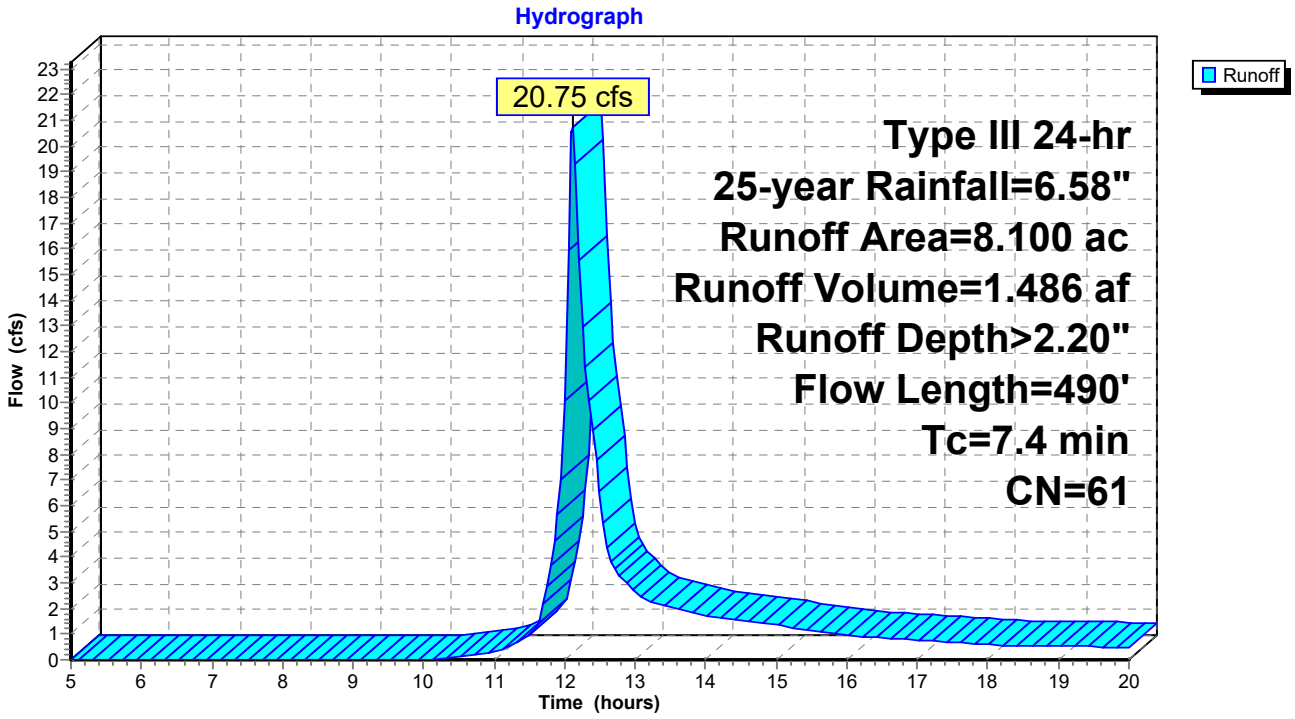
Runoff = 20.75 cfs @ 12.11 hrs, Volume= 1.486 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.500	72	Dirt roads, HSG A
5.800	70	Row crops, contoured, Poor, HSG A
1.800	30	Woods, Good, HSG A
8.100	61	Weighted Average
8.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.0200	0.36		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.3	250	0.1180	3.09		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
1.5	140	0.0280	1.51		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
7.4	490	Total			

Subcatchment SB-1: EX SB-1



Summary for Subcatchment SB-2: EX SB-2

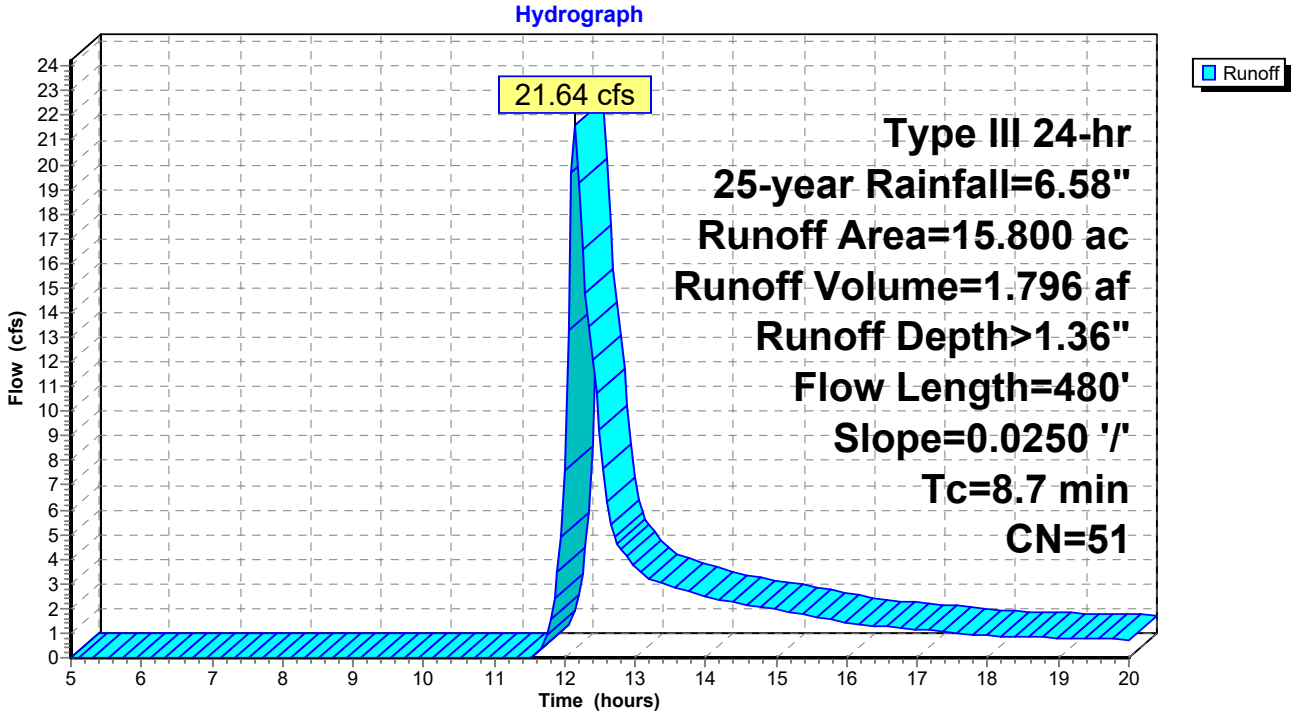
Runoff = 21.64 cfs @ 12.15 hrs, Volume= 1.796 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
1.100	72	Dirt roads, HSG A
7.000	70	Row crops, contoured, Poor, HSG A
7.700	30	Woods, Good, HSG A
15.800	51	Weighted Average
15.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.0250	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
4.5	380	0.0250	1.42		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
8.7	480	Total			

Subcatchment SB-2: EX SB-2



Summary for Subcatchment SB-3: EX SB-3

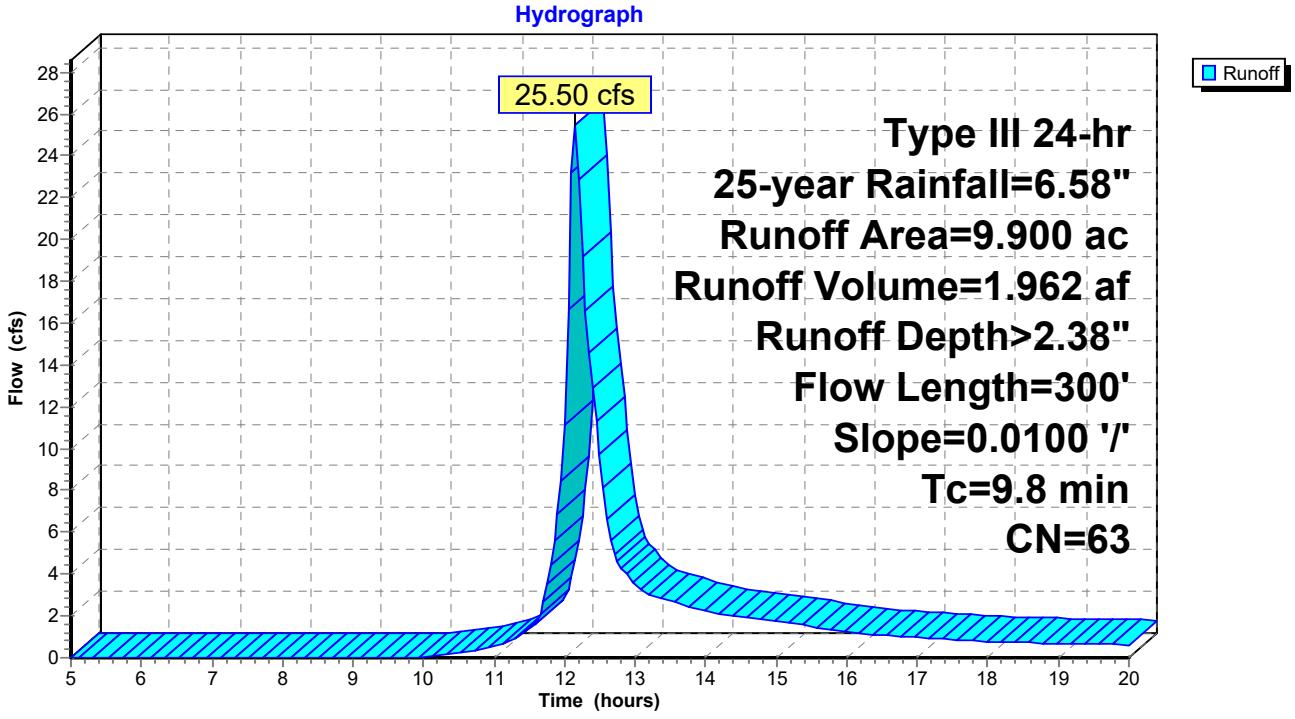
Runoff = 25.50 cfs @ 12.15 hrs, Volume= 1.962 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.400	72	Dirt roads, HSG A
7.800	70	Row crops, contoured, Poor, HSG A
1.700	30	Woods, Good, HSG A
9.900	63	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
3.7	200	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
9.8	300	Total			

Subcatchment SB-3: EX SB-3



Summary for Pond 1P: EX MB-2 Depression

Inflow Area = 13.000 ac, 0.77% Impervious, Inflow Depth > 1.12" for 25-year event
Inflow = 9.53 cfs @ 12.43 hrs, Volume= 1.219 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 273.11' @ 20.00 hrs Surf.Area= 31,754 sf Storage= 53,030 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

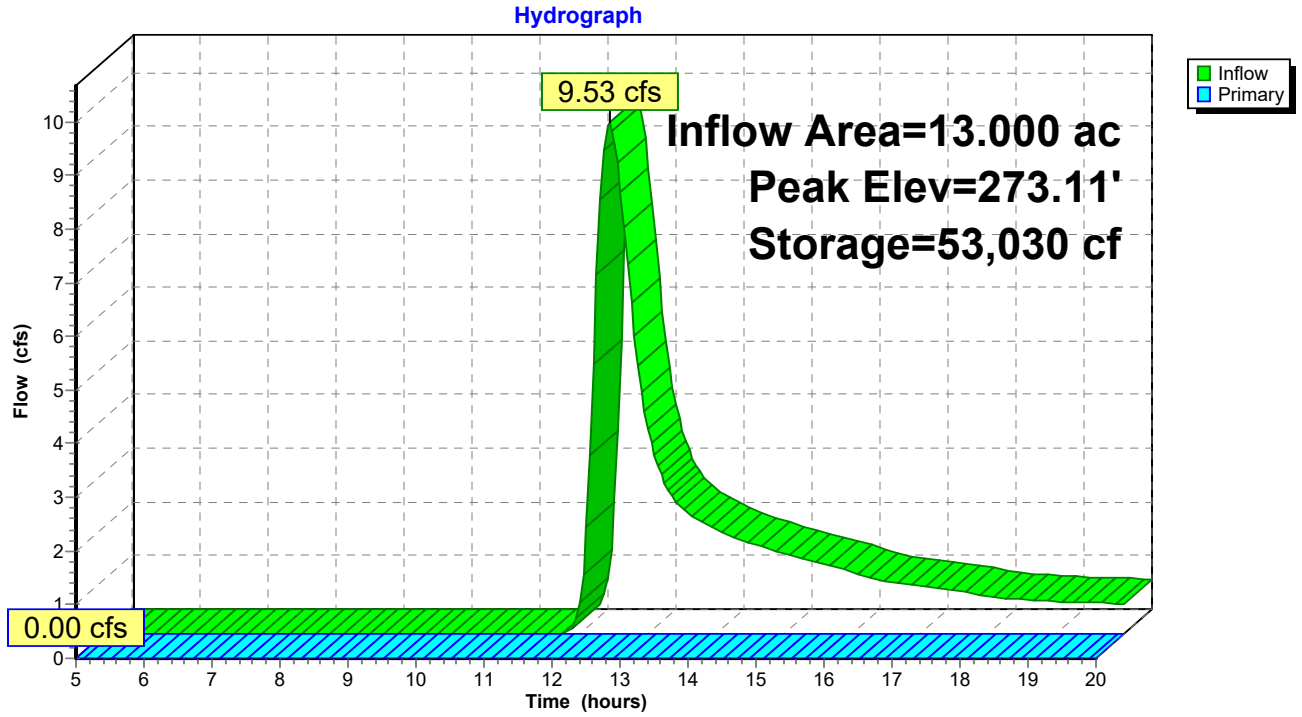
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: EX MB-2 Depression

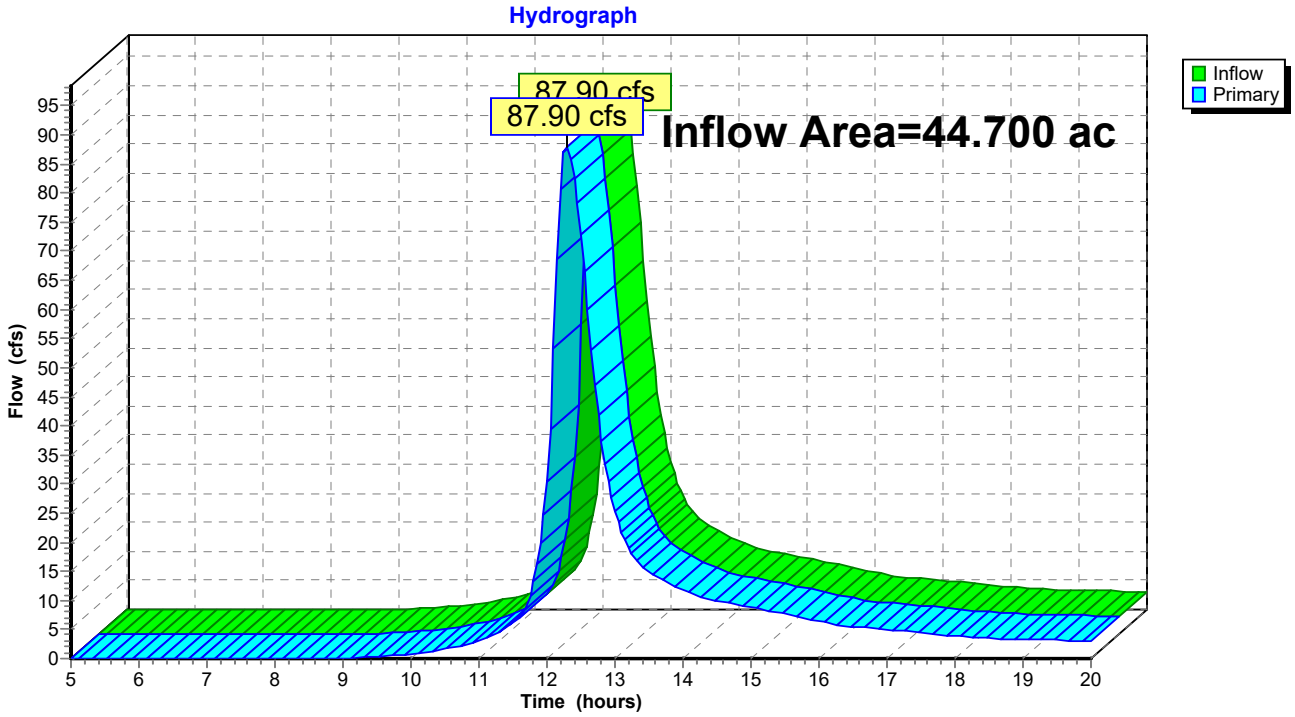


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.45% Impervious, Inflow Depth > 2.65" for 25-year event
Inflow = 87.90 cfs @ 12.29 hrs, Volume= 9.883 af
Primary = 87.90 cfs @ 12.29 hrs, Volume= 9.883 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

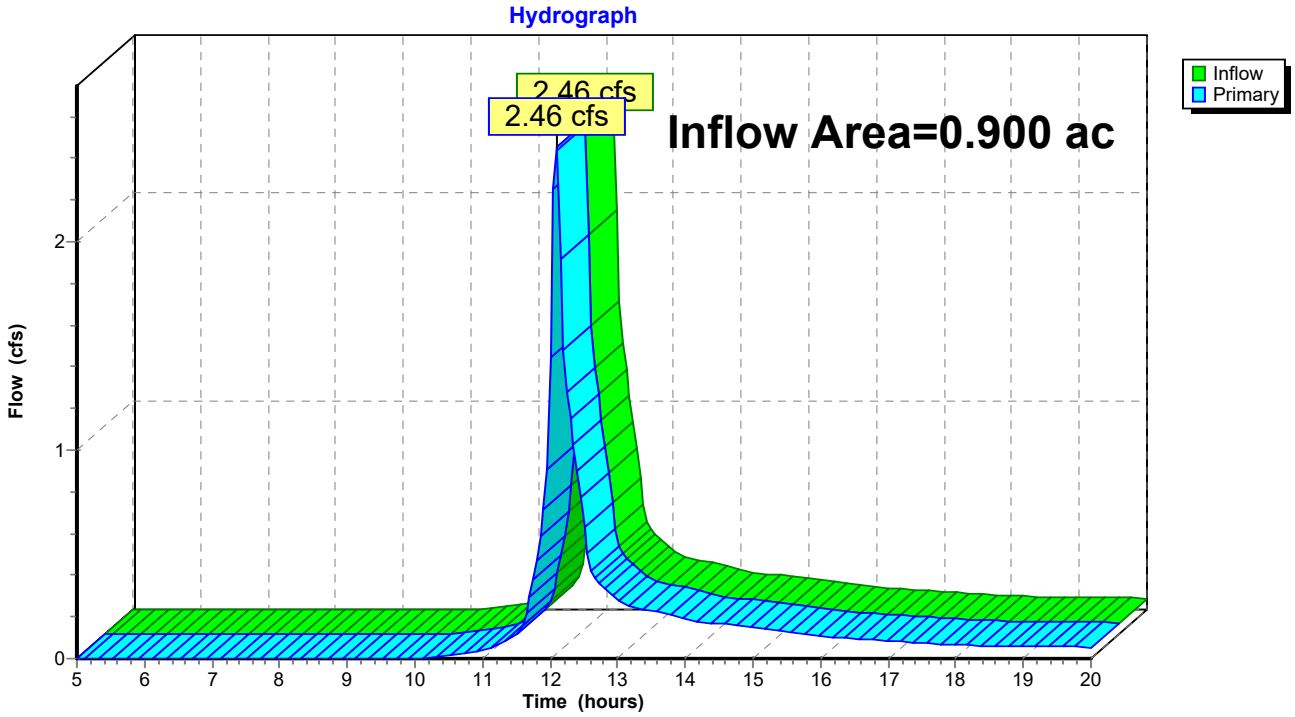


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 2.20" for 25-year event
Inflow = 2.46 cfs @ 12.09 hrs, Volume= 0.165 af
Primary = 2.46 cfs @ 12.09 hrs, Volume= 0.165 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

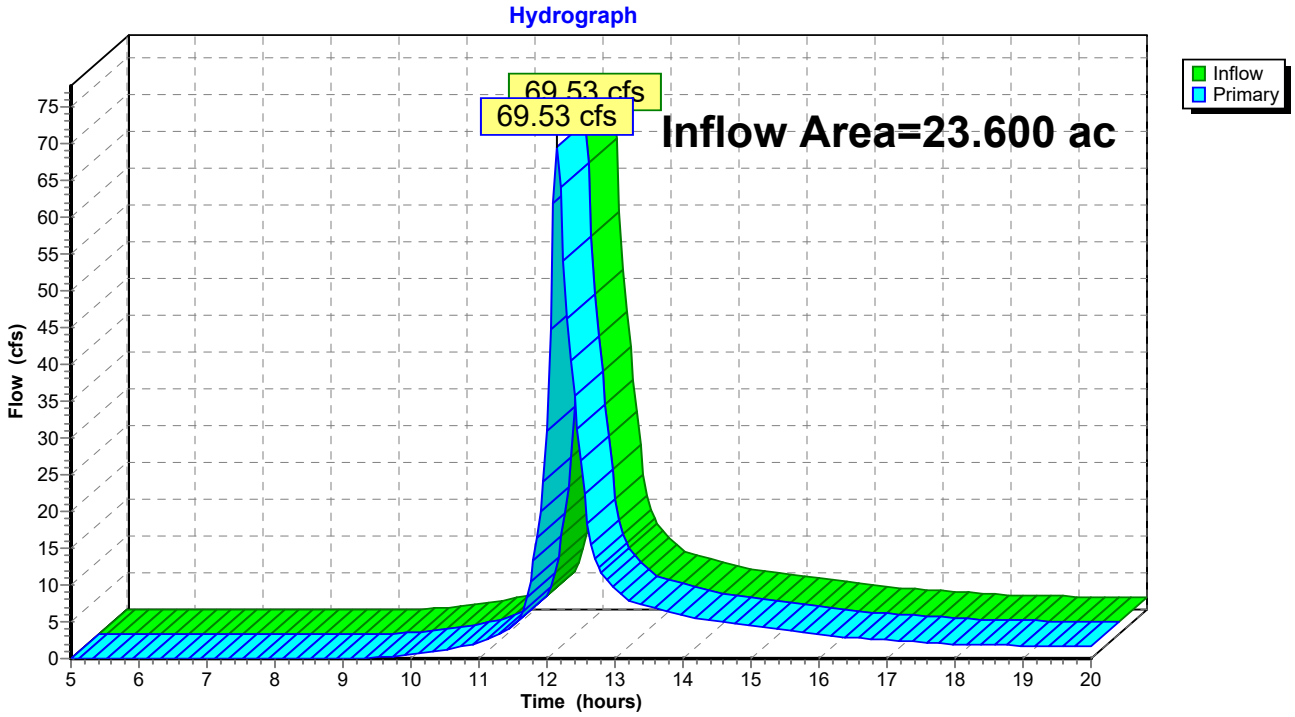


Summary for Link KC: KC

Inflow Area = 23.600 ac, 1.27% Impervious, Inflow Depth > 2.75" for 25-year event
Inflow = 69.53 cfs @ 12.15 hrs, Volume= 5.403 af
Primary = 69.53 cfs @ 12.15 hrs, Volume= 5.403 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

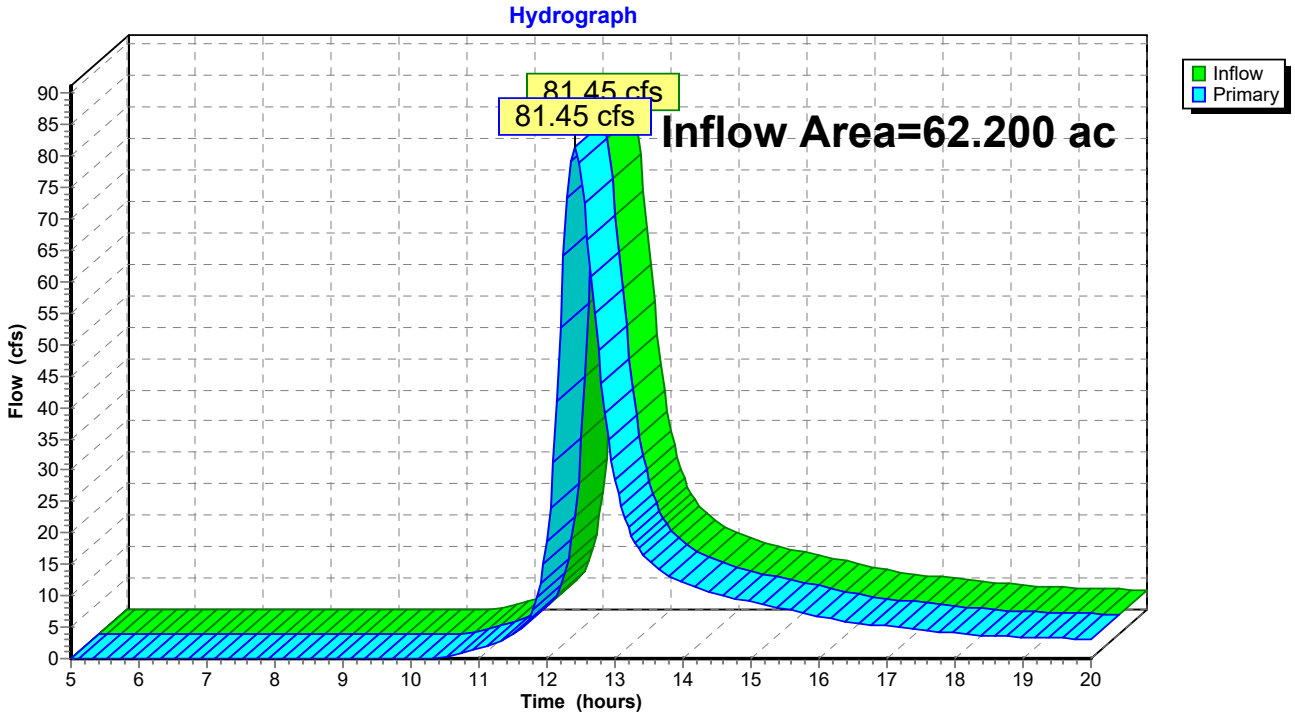


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.16% Impervious, Inflow Depth > 1.80" for 25-year event
Inflow = 81.45 cfs @ 12.41 hrs, Volume= 9.312 af
Primary = 81.45 cfs @ 12.41 hrs, Volume= 9.312 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

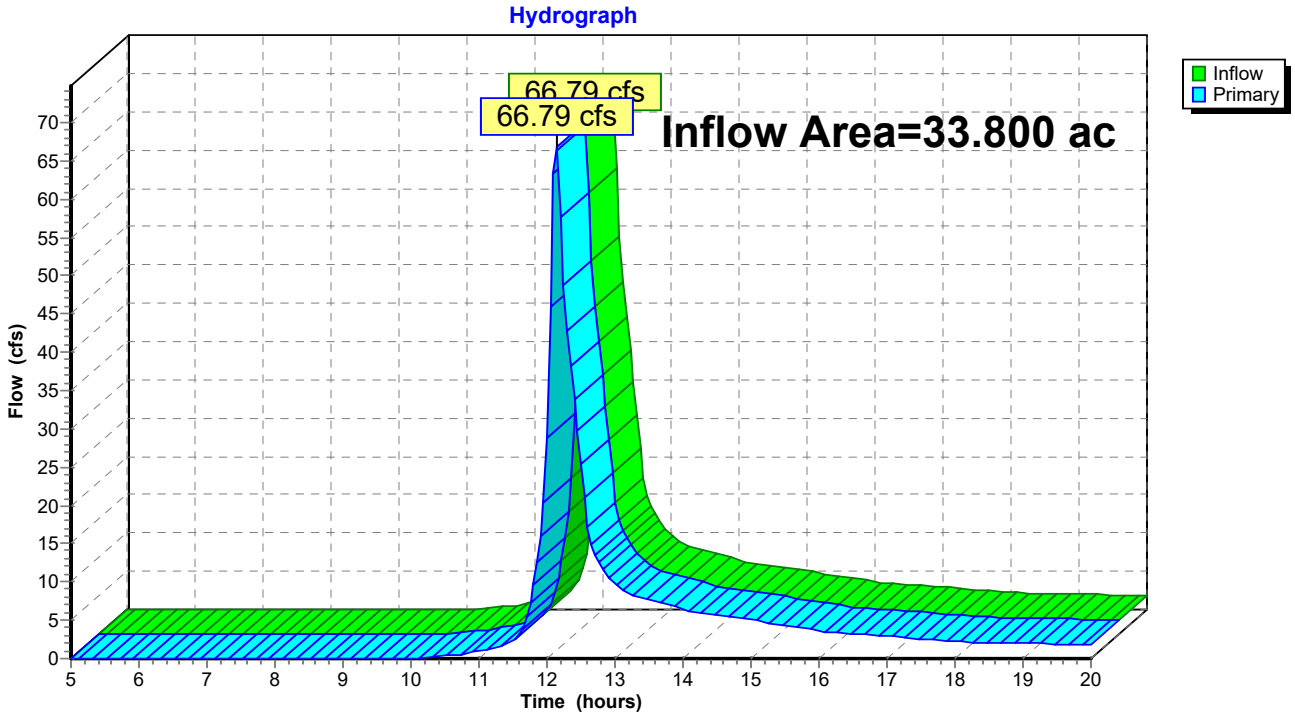


Summary for Link SB: SB

Inflow Area = 33.800 ac, 0.00% Impervious, Inflow Depth > 1.86" for 25-year event
Inflow = 66.79 cfs @ 12.14 hrs, Volume= 5.245 af
Primary = 66.79 cfs @ 12.14 hrs, Volume= 5.245 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



100-Year Storm Event – Existing

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

Subcatchment BB-1: EX BB-1 Runoff Area=19.100 ac 0.52% Impervious Runoff Depth>4.56"
Flow Length=1,400' Slope=0.0100 '/' Tc=30.2 min CN=70 Runoff=62.07 cfs 7.260 af

Subcatchment BB-2: EX BB-2 Runoff Area=5.900 ac 1.69% Impervious Runoff Depth>4.58"
Flow Length=730' Slope=0.0110 '/' Tc=17.0 min CN=70 Runoff=24.40 cfs 2.253 af

Subcatchment BB-3: EX BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>3.55"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=65.20 cfs 5.829 af

Subcatchment HS-1: EX HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>3.56"
Flow Length=310' Tc=5.2 min CN=61 Runoff=4.03 cfs 0.267 af

Subcatchment KC-1: EX KC-1 Runoff Area=23.600 ac 1.27% Impervious Runoff Depth>4.24"
Flow Length=530' Slope=0.0190 '/' Tc=10.5 min CN=67 Runoff=107.62 cfs 8.347 af

Subcatchment MB-1: EX MB-1 Runoff Area=49.200 ac 0.00% Impervious Runoff Depth>3.65"
Flow Length=1,630' Tc=27.9 min CN=62 Runoff=132.51 cfs 14.953 af

Subcatchment MB-2: EX MB-2 Runoff Area=13.000 ac 0.77% Impervious Runoff Depth>2.11"
Flow Length=540' Tc=25.2 min CN=48 Runoff=19.89 cfs 2.288 af

Subcatchment SB-1: EX SB-1 Runoff Area=8.100 ac 0.00% Impervious Runoff Depth>3.56"
Flow Length=490' Tc=7.4 min CN=61 Runoff=34.14 cfs 2.404 af

Subcatchment SB-2: EX SB-2 Runoff Area=15.800 ac 0.00% Impervious Runoff Depth>2.45"
Flow Length=480' Slope=0.0250 '/' Tc=8.7 min CN=51 Runoff=41.89 cfs 3.226 af

Subcatchment SB-3: EX SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>3.79"
Flow Length=300' Slope=0.0100 '/' Tc=9.8 min CN=63 Runoff=41.01 cfs 3.124 af

Pond 1P: EX MB-2 Depression Peak Elev=274.31' Storage=99,599 cf Inflow=19.89 cfs 2.288 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=138.43 cfs 15.342 af
Primary=138.43 cfs 15.342 af

Link HS: HS Inflow=4.03 cfs 0.267 af
Primary=4.03 cfs 0.267 af

Link KC: KC Inflow=107.62 cfs 8.347 af
Primary=107.62 cfs 8.347 af

Link MB: MB Inflow=132.51 cfs 14.953 af
Primary=132.51 cfs 14.953 af

Link SB: SB Inflow=115.32 cfs 8.754 af
Primary=115.32 cfs 8.754 af

Total Runoff Area = 165.200 ac Runoff Volume = 49.952 af Average Runoff Depth = 3.63"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: EX BB-1

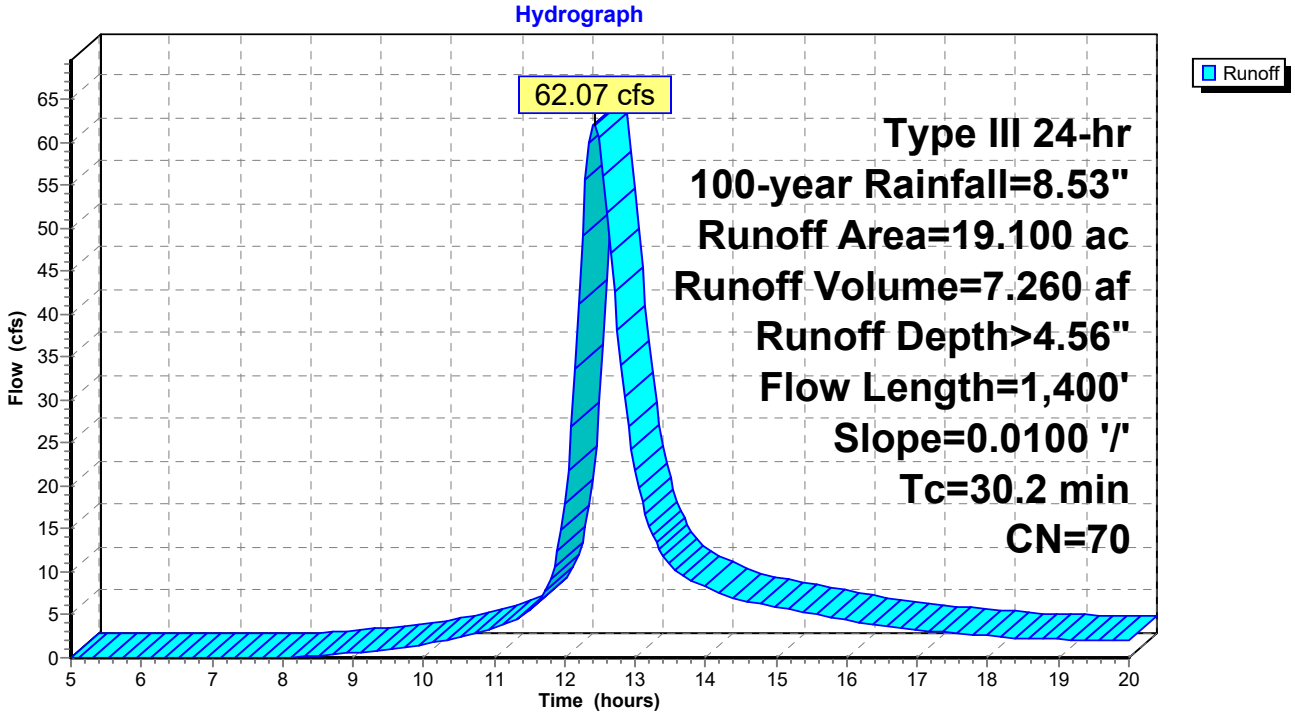
Runoff = 62.07 cfs @ 12.42 hrs, Volume= 7.260 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
1.500	72	Dirt roads, HSG A
17.200	70	Row crops, contoured, Poor, HSG A
0.300	30	Woods, Good, HSG A
19.100	70	Weighted Average
19.000		99.48% Pervious Area
0.100		0.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
24.1	1,300	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.2	1,400	Total			

Subcatchment BB-1: EX BB-1



Summary for Subcatchment BB-2: EX BB-2

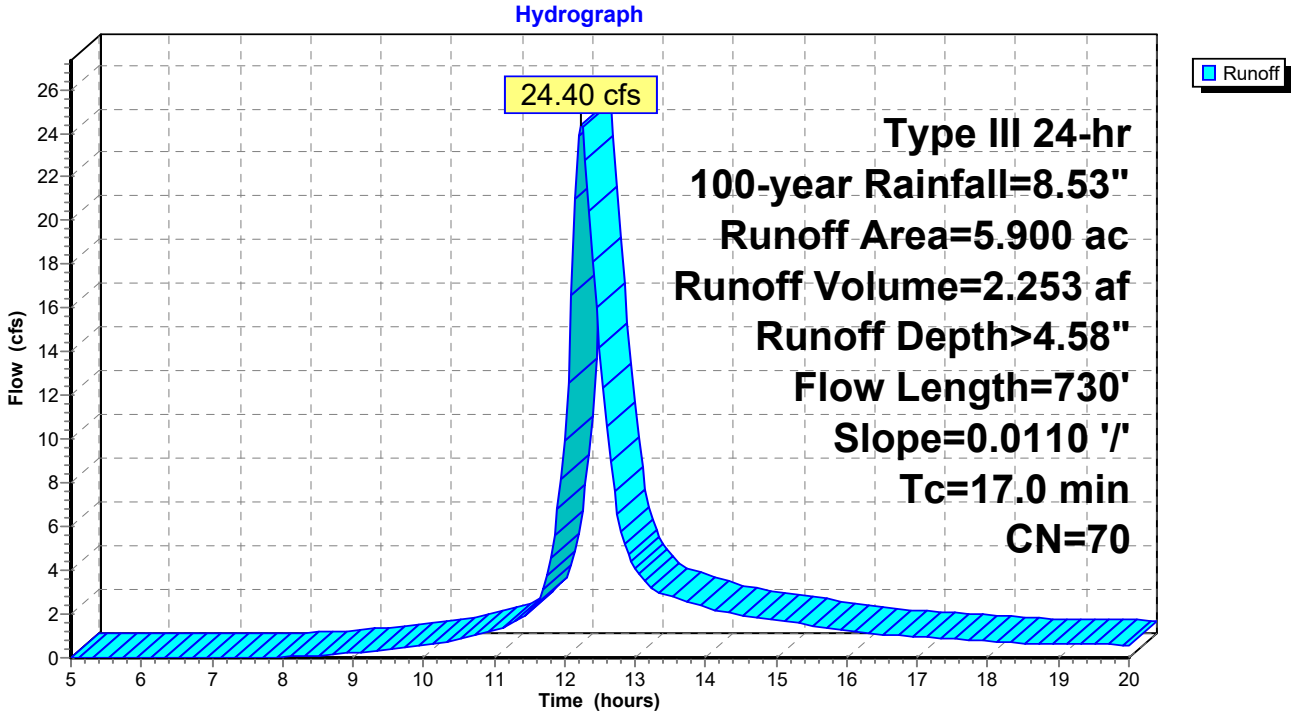
Runoff = 24.40 cfs @ 12.24 hrs, Volume= 2.253 af, Depth> 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.400	72	Dirt roads, HSG A
5.300	70	Row crops, contoured, Poor, HSG A
0.100	30	Woods, Good, HSG A
5.900	70	Weighted Average
5.800		98.31% Pervious Area
0.100		1.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0110	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
11.1	630	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
17.0	730	Total			

Subcatchment BB-2: EX BB-2



Summary for Subcatchment BB-3: EX BB-3

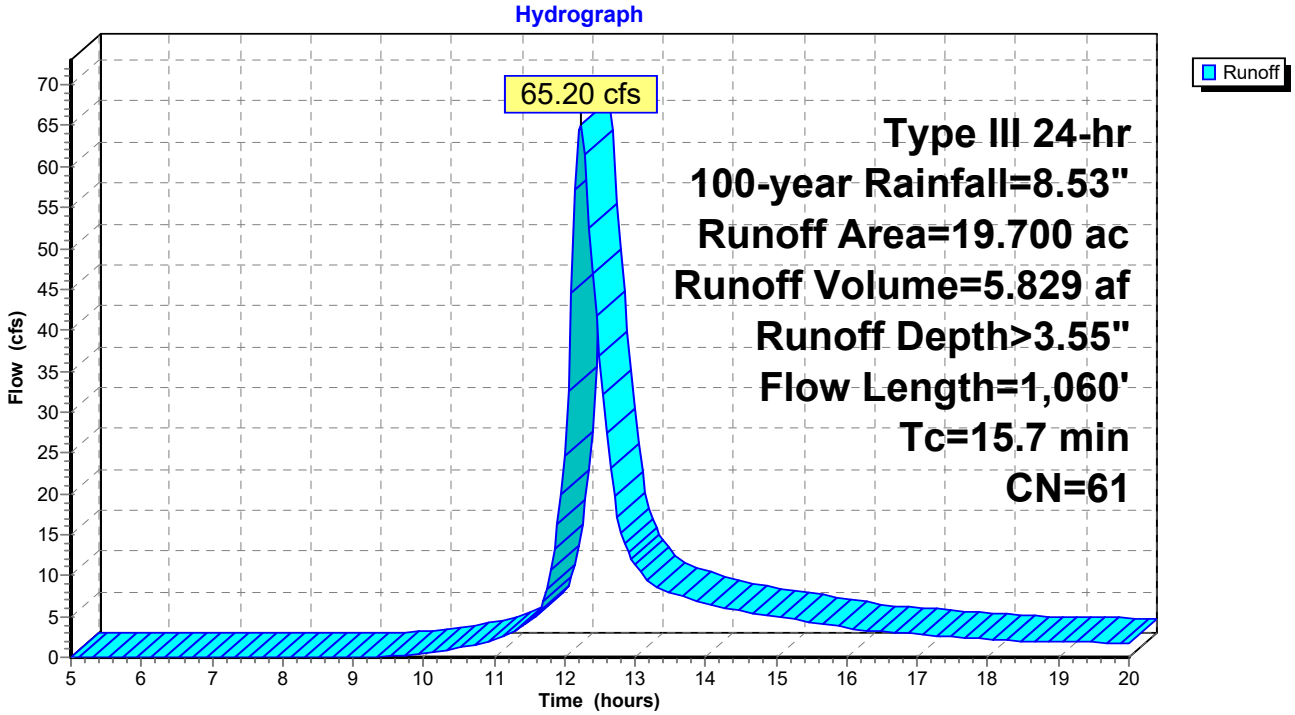
Runoff = 65.20 cfs @ 12.22 hrs, Volume= 5.829 af, Depth> 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: EX BB-3



Summary for Subcatchment HS-1: EX HS-1

[49] Hint: Tc<2dt may require smaller dt

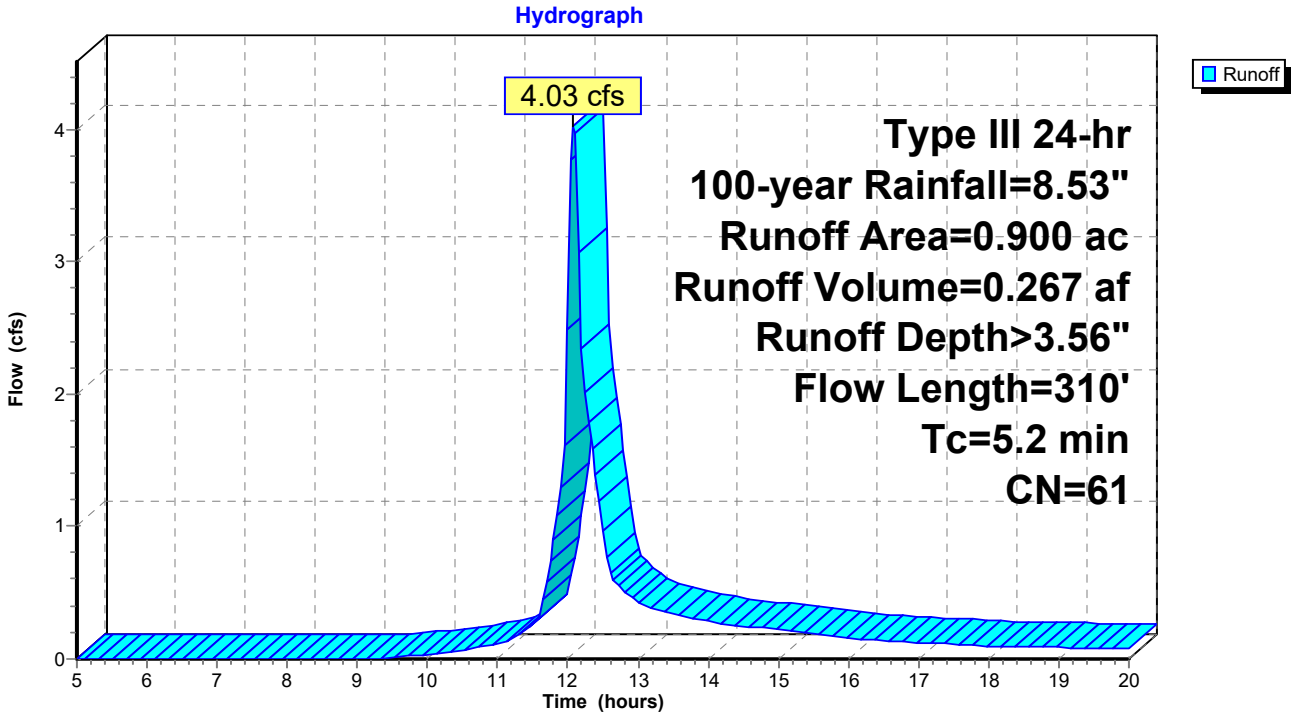
Runoff = 4.03 cfs @ 12.08 hrs, Volume= 0.267 af, Depth> 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.100	72	Dirt roads, HSG A
0.600	70	Row crops, contoured, Poor, HSG A
0.200	30	Woods, Good, HSG A
0.900	61	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	100	0.0550	0.54		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.4	180	0.0550	2.11		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.7	30	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.2	310	Total			

Subcatchment HS-1: EX HS-1



Summary for Subcatchment KC-1: EX KC-1

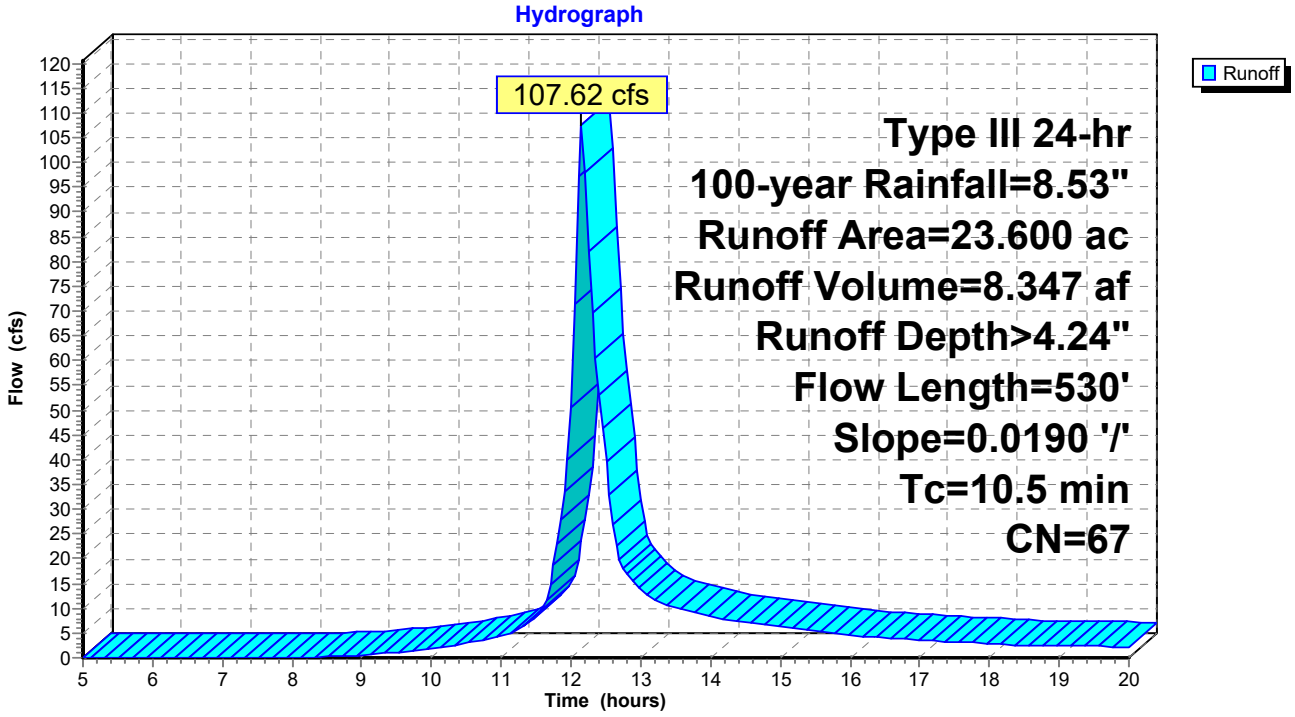
Runoff = 107.62 cfs @ 12.15 hrs, Volume= 8.347 af, Depth> 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.300	98	Roofs, HSG A
1.800	72	Dirt roads, HSG A
19.400	70	Row crops, contoured, Poor, HSG A
2.100	30	Woods, Good, HSG A
23.600	67	Weighted Average
23.300		98.73% Pervious Area
0.300		1.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
5.8	430	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.5	530	Total			

Subcatchment KC-1: EX KC-1



Summary for Subcatchment MB-1: EX MB-1

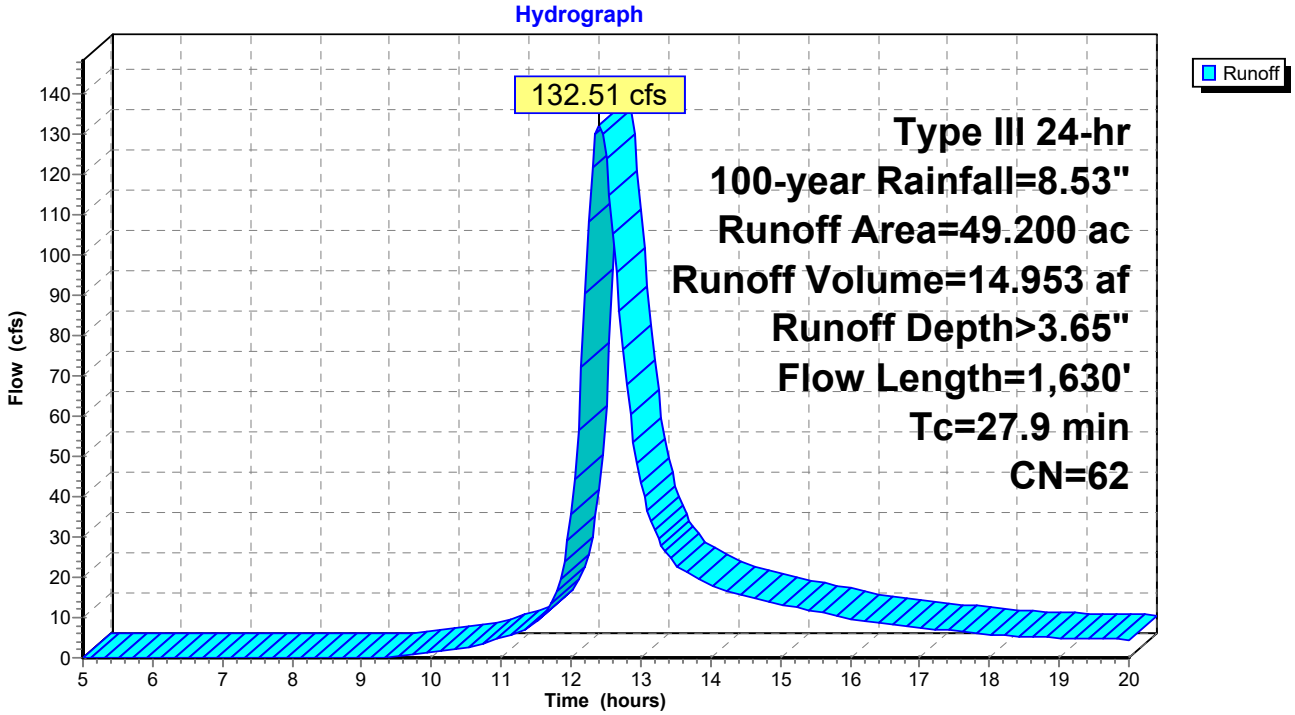
Runoff = 132.51 cfs @ 12.40 hrs, Volume= 14.953 af, Depth> 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
3.000	72	Dirt roads, HSG A
36.100	70	Row crops, contoured, Poor, HSG A
10.100	30	Woods, Good, HSG A
49.200	62	Weighted Average
49.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	730	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.9	1,630	Total			

Subcatchment MB-1: EX MB-1



Summary for Subcatchment MB-2: EX MB-2

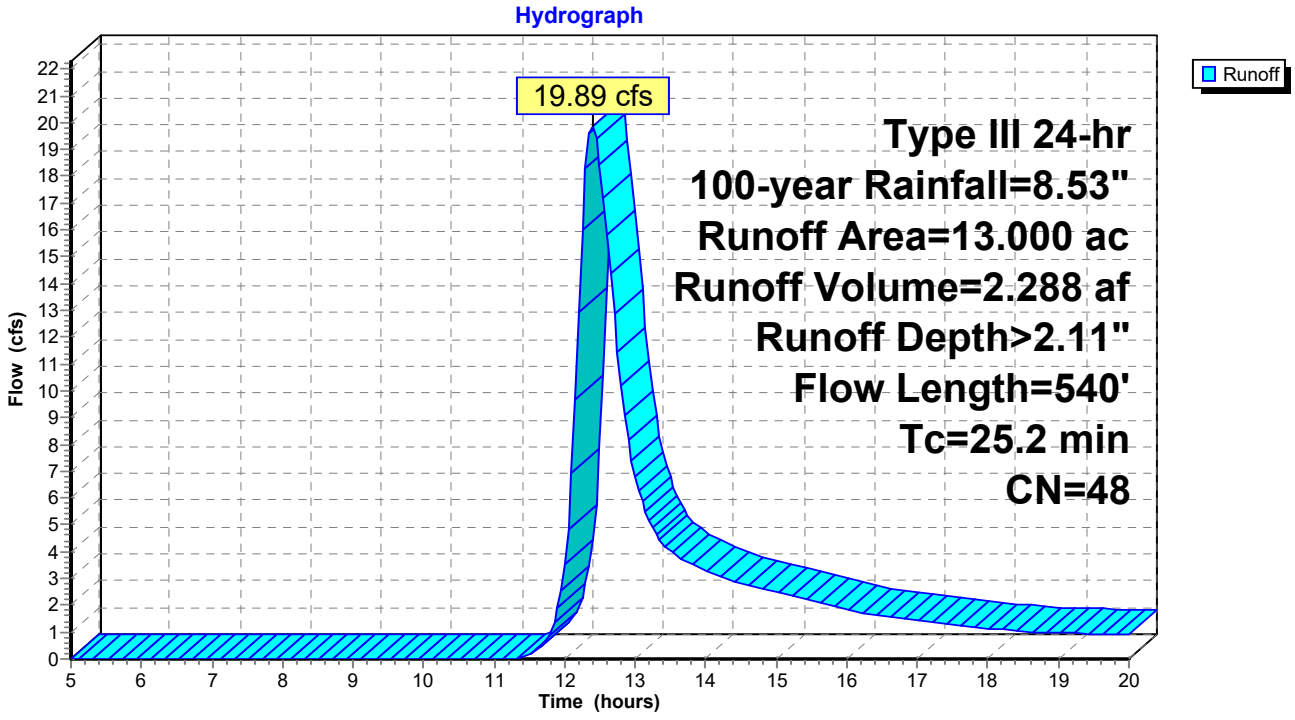
Runoff = 19.89 cfs @ 12.40 hrs, Volume= 2.288 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.100	98	Roofs, HSG A
0.600	72	Dirt roads, HSG A
5.200	70	Row crops, contoured, Poor, HSG A
7.100	30	Woods, Good, HSG A
13.000	48	Weighted Average
12.900		99.23% Pervious Area
0.100		0.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0140	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
7.7	230	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	260	0.0610	1.23		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.2	540	Total			

Subcatchment MB-2: EX MB-2



Summary for Subcatchment SB-1: EX SB-1

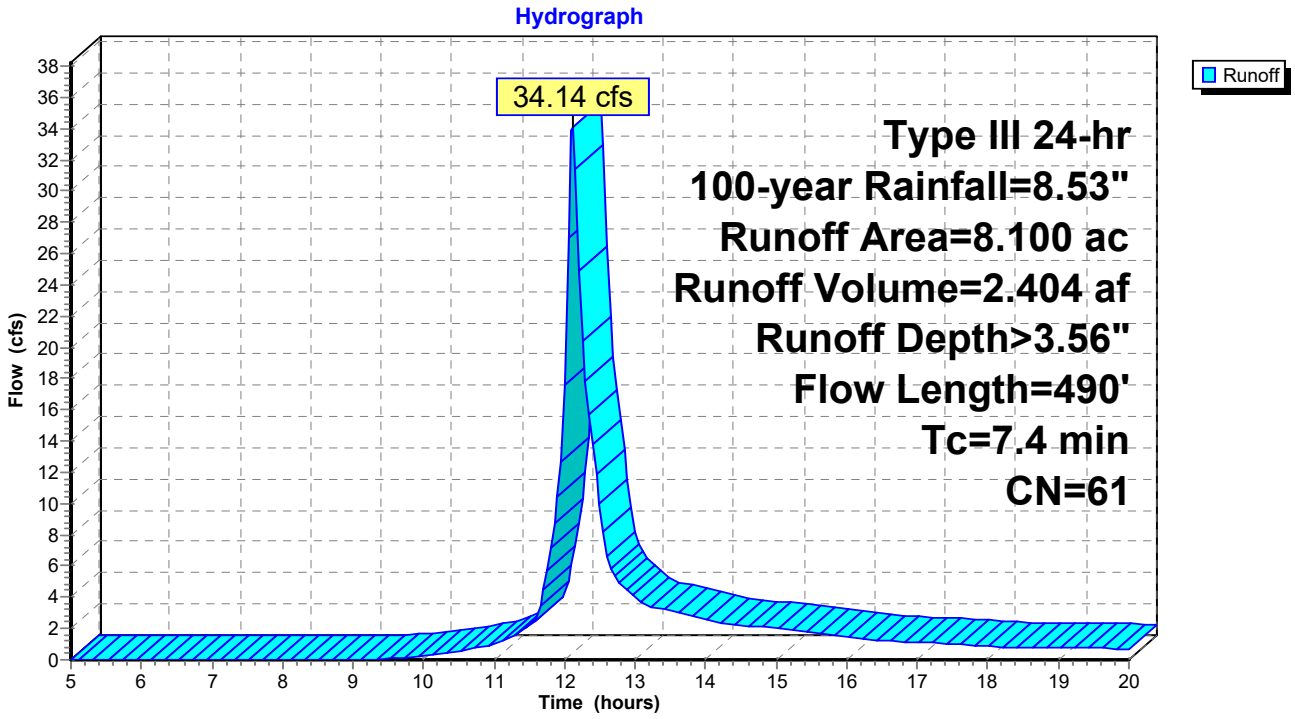
Runoff = 34.14 cfs @ 12.11 hrs, Volume= 2.404 af, Depth> 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.500	72	Dirt roads, HSG A
5.800	70	Row crops, contoured, Poor, HSG A
1.800	30	Woods, Good, HSG A
8.100	61	Weighted Average
8.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.0200	0.36		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
1.3	250	0.1180	3.09		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
1.5	140	0.0280	1.51		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
7.4	490	Total			

Subcatchment SB-1: EX SB-1



Summary for Subcatchment SB-2: EX SB-2

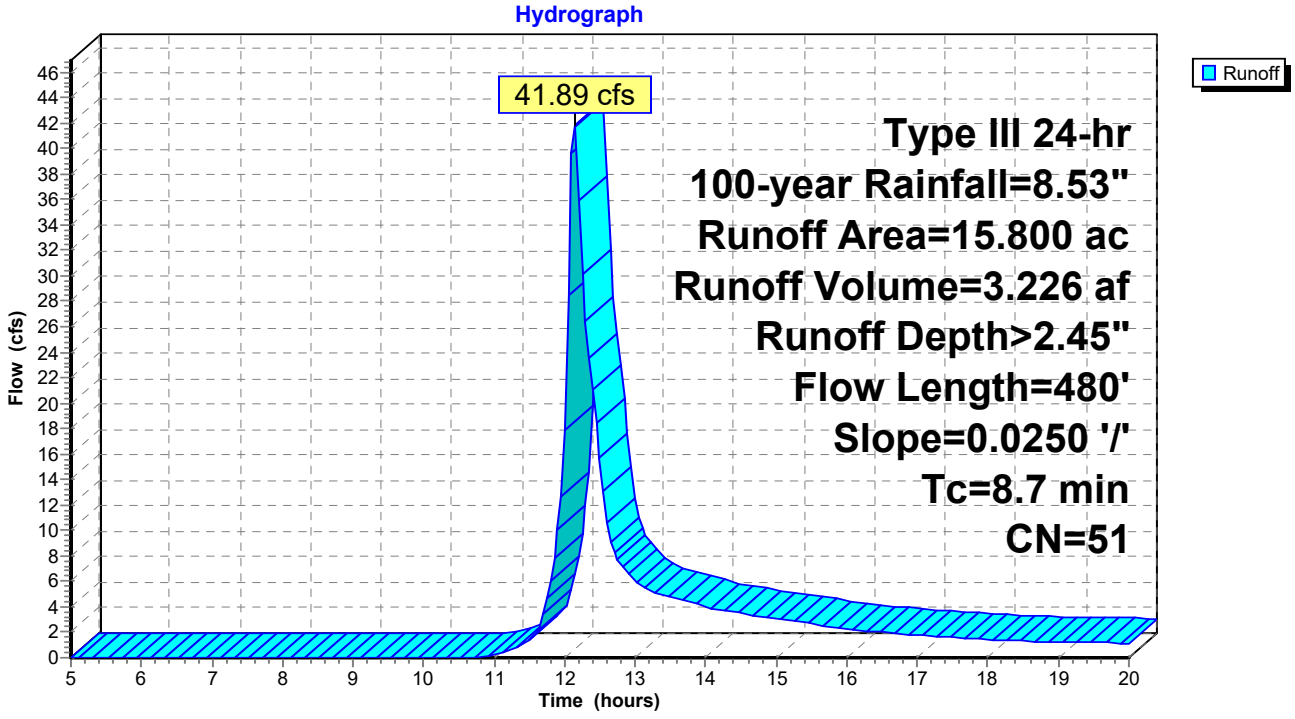
Runoff = 41.89 cfs @ 12.14 hrs, Volume= 3.226 af, Depth> 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
1.100	72	Dirt roads, HSG A
7.000	70	Row crops, contoured, Poor, HSG A
7.700	30	Woods, Good, HSG A
15.800	51	Weighted Average
15.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.0250	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
4.5	380	0.0250	1.42		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
8.7	480	Total			

Subcatchment SB-2: EX SB-2



Summary for Subcatchment SB-3: EX SB-3

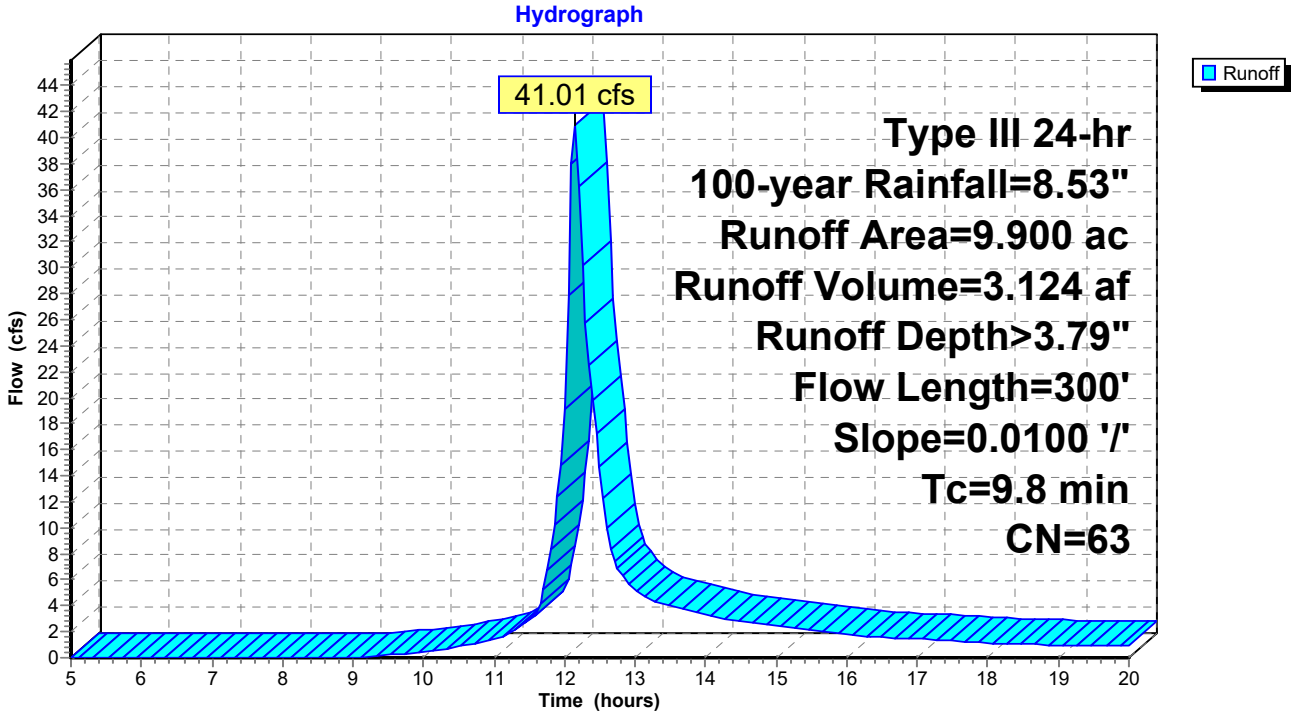
Runoff = 41.01 cfs @ 12.14 hrs, Volume= 3.124 af, Depth> 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.400	72	Dirt roads, HSG A
7.800	70	Row crops, contoured, Poor, HSG A
1.700	30	Woods, Good, HSG A
9.900	63	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0100	0.27		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
3.7	200	0.0100	0.90		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
9.8	300	Total			

Subcatchment SB-3: EX SB-3



Summary for Pond 1P: EX MB-2 Depression

Inflow Area = 13.000 ac, 0.77% Impervious, Inflow Depth > 2.11" for 100-year event
Inflow = 19.89 cfs @ 12.40 hrs, Volume= 2.288 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 274.31' @ 20.00 hrs Surf.Area= 45,101 sf Storage= 99,599 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

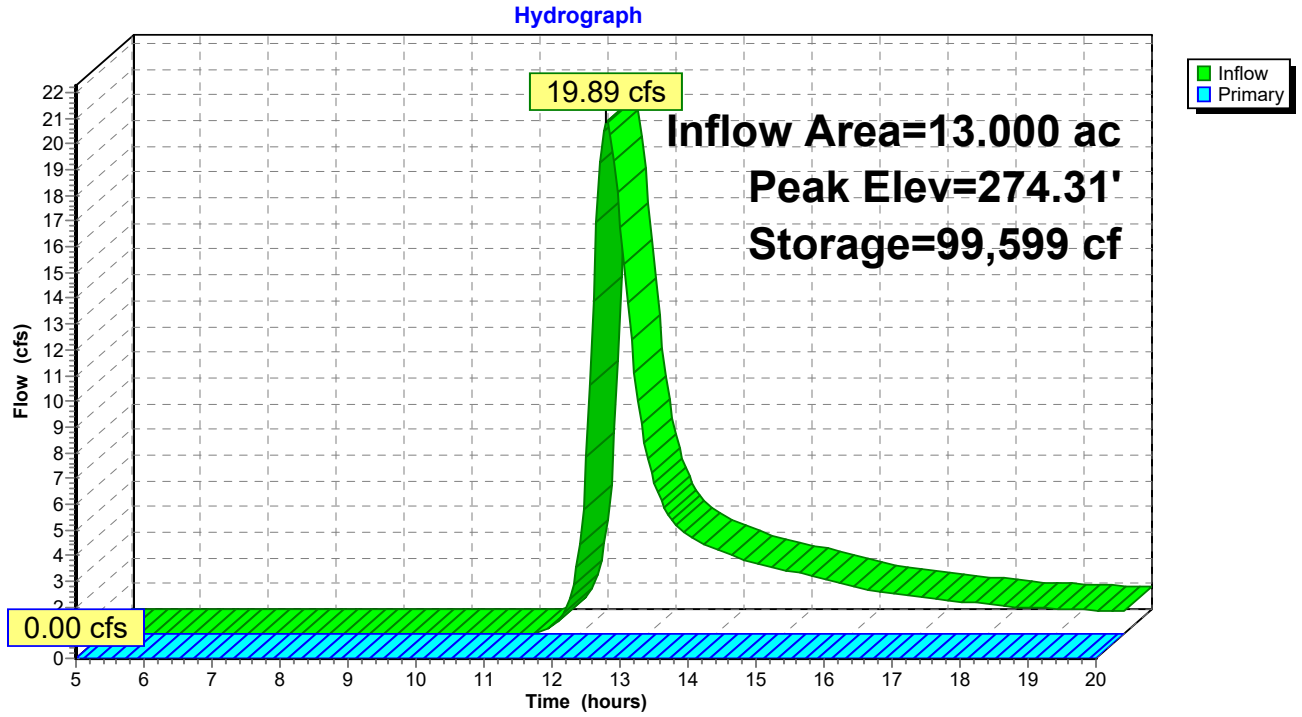
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: EX MB-2 Depression

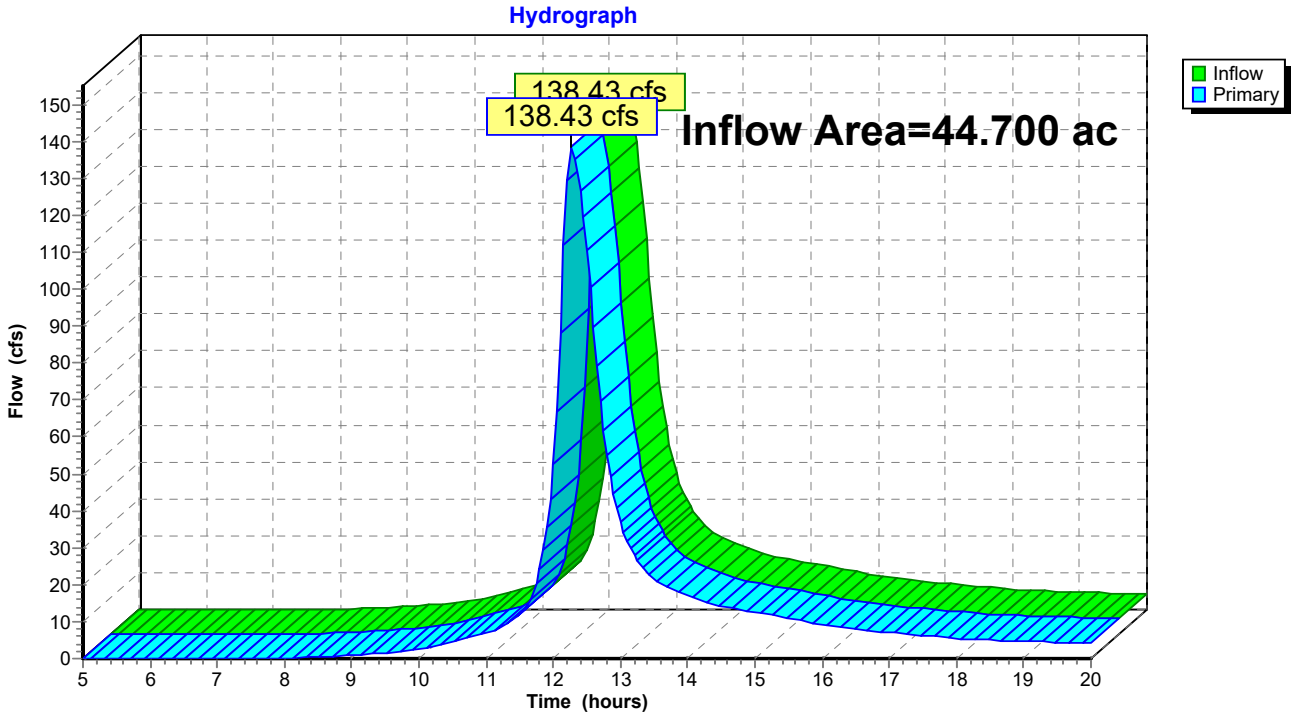


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.45% Impervious, Inflow Depth > 4.12" for 100-year event
Inflow = 138.43 cfs @ 12.27 hrs, Volume= 15.342 af
Primary = 138.43 cfs @ 12.27 hrs, Volume= 15.342 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

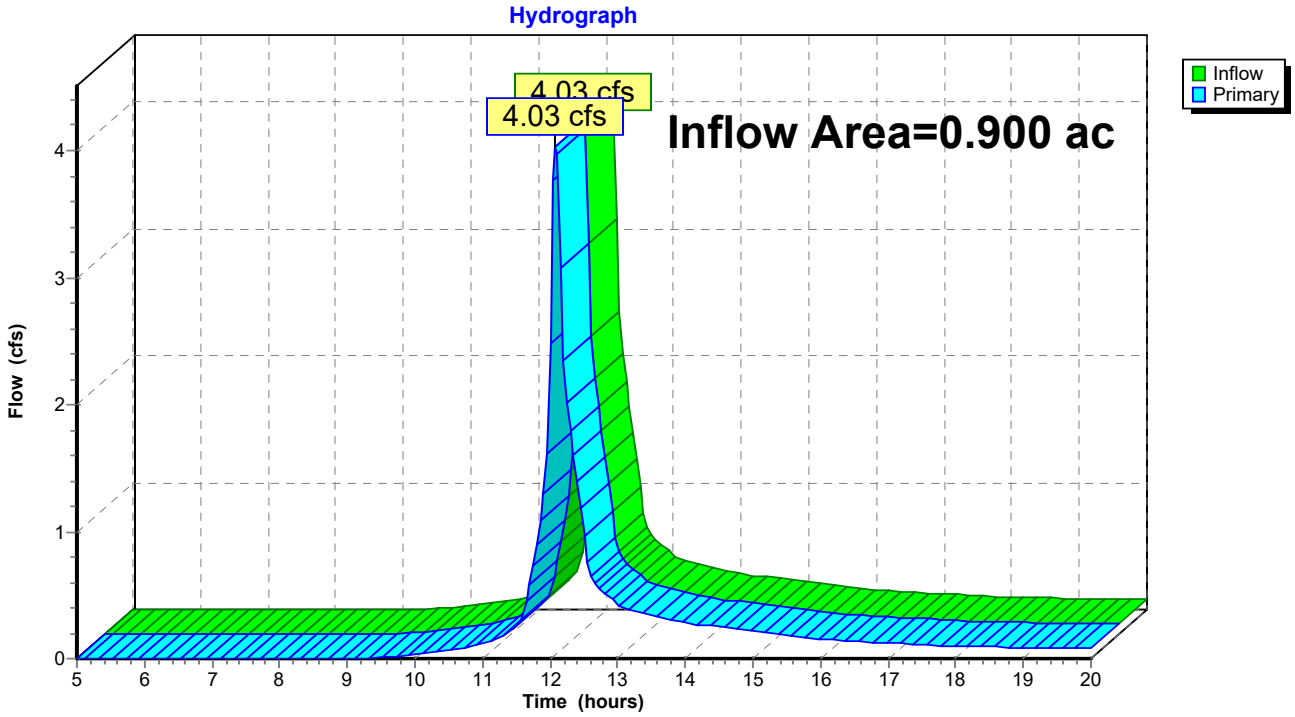


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 3.56" for 100-year event
Inflow = 4.03 cfs @ 12.08 hrs, Volume= 0.267 af
Primary = 4.03 cfs @ 12.08 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

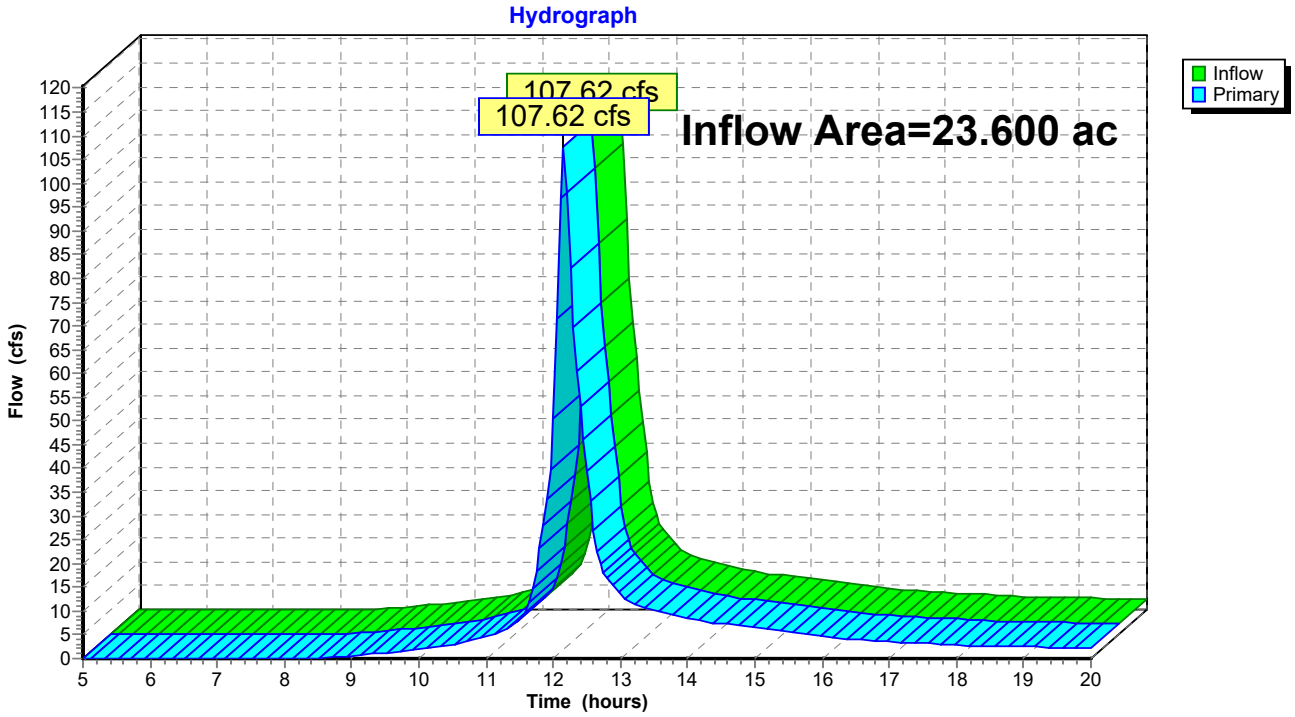


Summary for Link KC: KC

Inflow Area = 23.600 ac, 1.27% Impervious, Inflow Depth > 4.24" for 100-year event
Inflow = 107.62 cfs @ 12.15 hrs, Volume= 8.347 af
Primary = 107.62 cfs @ 12.15 hrs, Volume= 8.347 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

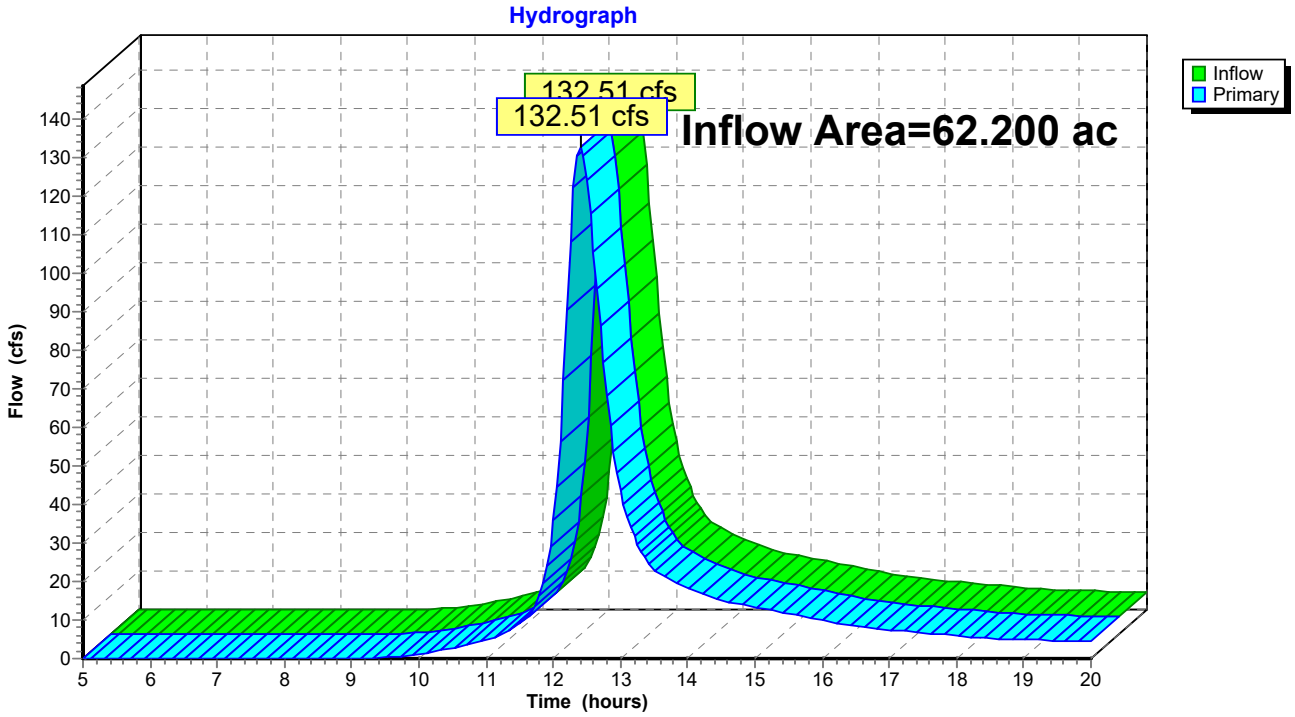


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.16% Impervious, Inflow Depth > 2.88" for 100-year event
Inflow = 132.51 cfs @ 12.40 hrs, Volume= 14.953 af
Primary = 132.51 cfs @ 12.40 hrs, Volume= 14.953 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

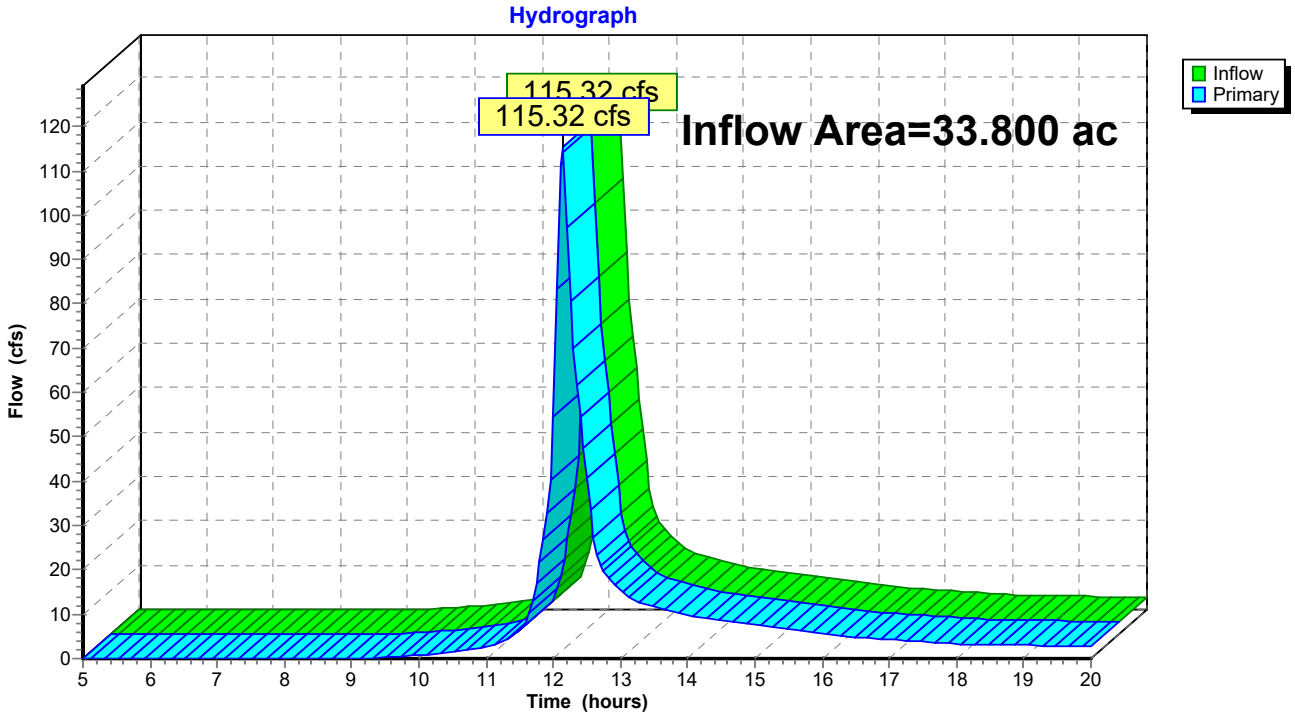


Summary for Link SB: SB

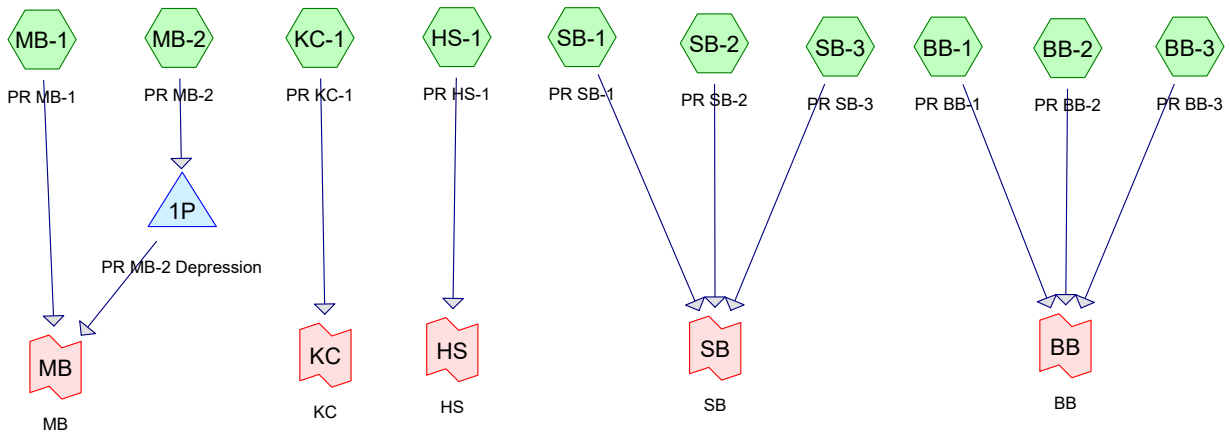
Inflow Area = 33.800 ac, 0.00% Impervious, Inflow Depth > 3.11" for 100-year event
Inflow = 115.32 cfs @ 12.13 hrs, Volume= 8.754 af
Primary = 115.32 cfs @ 12.13 hrs, Volume= 8.754 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



HydroCAD Analysis: Proposed Conditions



Subcat Reach Pond Link

Routing Diagram for TVS HydroCAD Proposed DM
Prepared by VHB, Printed 1/9/2019
HydroCAD® 10.00-19 s/n 01038 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.300	72	Dirt roads, HSG A (BB-3)
13.600	96	Gravel surface, HSG A (BB-1, BB-2, HS-1, KC-1, MB-1, MB-2, SB-1, SB-2, SB-3)
0.100	98	Inverter Pads (BB-1, BB-2, KC-1, MB-1, MB-2, SB-2)
0.100	98	Inverter Pads & Switchyard (SB-1)
94.600	58	Legumes, straight row, Good, HSG A (BB-1, BB-2, HS-1, KC-1, MB-1, MB-2, SB-1, SB-2, SB-3)
24.800	30	Meadow, non-grazed, HSG A (BB-1, BB-2, HS-1, KC-1, MB-1, MB-2, SB-1, SB-2, SB-3)
0.400	98	Roofs, HSG A (BB-1, BB-2, KC-1)
13.700	70	Row crops, contoured, Poor, HSG A (BB-3)
16.600	30	Woods, Good, HSG A (BB-1, BB-3, KC-1, MB-1, MB-2, SB-2, SB-3)
165.200	**55**	**TOTAL AREA**

2-Year Storm Event – Proposed

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

Subcatchment BB-1: PR BB-1 Runoff Area=19.100 ac 0.63% Impervious Runoff Depth>0.32"
Flow Length=1,400' Slope=0.0100 '/' Tc=43.7 min CN=58 Runoff=2.41 cfs 0.504 af

Subcatchment BB-2: PR BB-2 Runoff Area=5.900 ac 1.86% Impervious Runoff Depth>0.23"
Flow Length=730' Slope=0.0110 '/' Tc=26.6 min CN=55 Runoff=0.56 cfs 0.115 af

Subcatchment BB-3: PR BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>0.42"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=5.52 cfs 0.695 af

Subcatchment HS-1: PR HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>0.07"
Flow Length=310' Slope=0.0550 '/' Tc=8.5 min CN=47 Runoff=0.01 cfs 0.005 af

Subcatchment KC-1: PR KC-1 Runoff Area=23.600 ac 0.89% Impervious Runoff Depth>0.21"
Flow Length=530' Slope=0.0190 '/' Tc=17.2 min CN=54 Runoff=2.11 cfs 0.412 af

Subcatchment MB-1: PR MB-1 Runoff Area=49.200 ac 0.08% Impervious Runoff Depth>0.26"
Flow Length=1,600' Tc=36.3 min CN=56 Runoff=4.92 cfs 1.063 af

Subcatchment MB-2: PR MB-2 Runoff Area=13.000 ac 0.08% Impervious Runoff Depth>0.10"
Flow Length=540' Tc=20.1 min CN=49 Runoff=0.24 cfs 0.107 af

Subcatchment SB-1: PR SB-1 Runoff Area=8.100 ac 1.23% Impervious Runoff Depth>0.26"
Flow Length=490' Tc=13.3 min CN=56 Runoff=1.10 cfs 0.178 af

Subcatchment SB-2: PR SB-2 Runoff Area=15.800 ac 0.06% Impervious Runoff Depth>0.14"
Flow Length=480' Slope=0.0250 '/' Tc=14.5 min CN=51 Runoff=0.68 cfs 0.183 af

Subcatchment SB-3: PR SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>0.24"
Flow Length=300' Slope=0.0100 '/' Tc=17.5 min CN=55 Runoff=1.07 cfs 0.194 af

Pond 1P: PR MB-2 Depression Peak Elev=270.60' Storage=4,642 cf Inflow=0.24 cfs 0.107 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=6.60 cfs 1.314 af
Primary=6.60 cfs 1.314 af

Link HS: HS Inflow=0.01 cfs 0.005 af
Primary=0.01 cfs 0.005 af

Link KC: KC Inflow=2.11 cfs 0.412 af
Primary=2.11 cfs 0.412 af

Link MB: MB Inflow=4.92 cfs 1.063 af
Primary=4.92 cfs 1.063 af

Link SB: SB Inflow=2.77 cfs 0.556 af
Primary=2.77 cfs 0.556 af

Total Runoff Area = 165.200 ac Runoff Volume = 3.456 af Average Runoff Depth = 0.25"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: PR BB-1

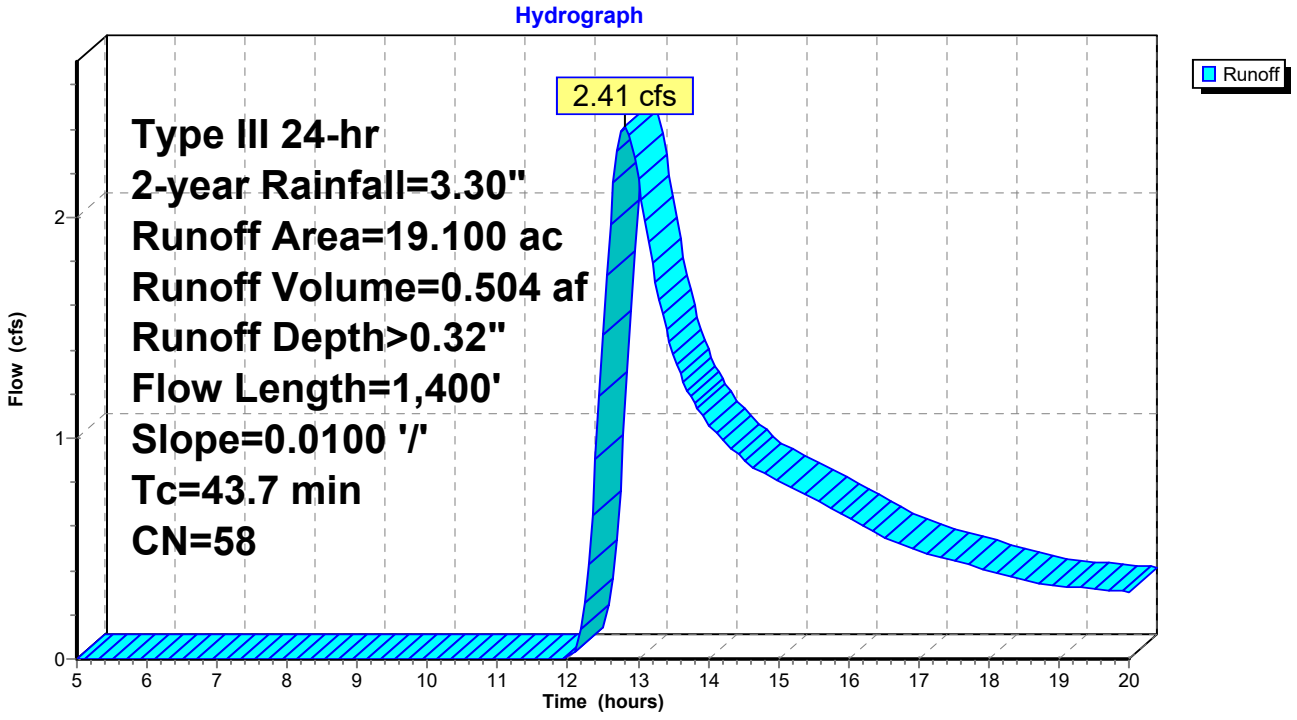
Runoff = 2.41 cfs @ 12.81 hrs, Volume= 0.504 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

	Area (ac)	CN	Description
*	0.020	98	Inverter Pads
	0.100	98	Roofs, HSG A
	1.300	96	Gravel surface, HSG A
	15.780	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	0.300	30	Woods, Good, HSG A
	19.100	58	Weighted Average
	18.980		99.37% Pervious Area
	0.120		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
31.0	1,300	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.7	1,400	Total			

Subcatchment BB-1: PR BB-1



Summary for Subcatchment BB-2: PR BB-2

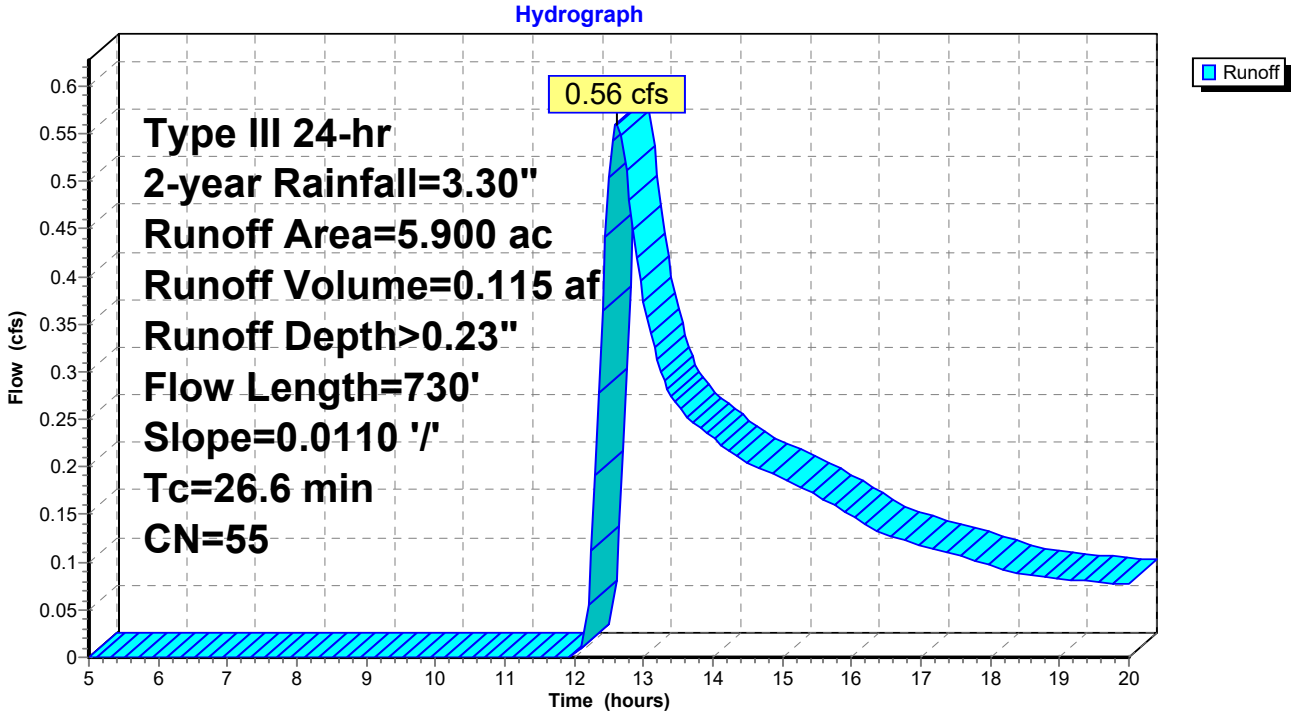
Runoff = 0.56 cfs @ 12.62 hrs, Volume= 0.115 af, Depth> 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.100	98	Roofs, HSG A
	0.600	96	Gravel surface, HSG A
	3.590	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	5.900	55	Weighted Average
	5.790		98.14% Pervious Area
	0.110		1.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
14.3	630	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
26.6	730	Total			

Subcatchment BB-2: PR BB-2



Summary for Subcatchment BB-3: PR BB-3

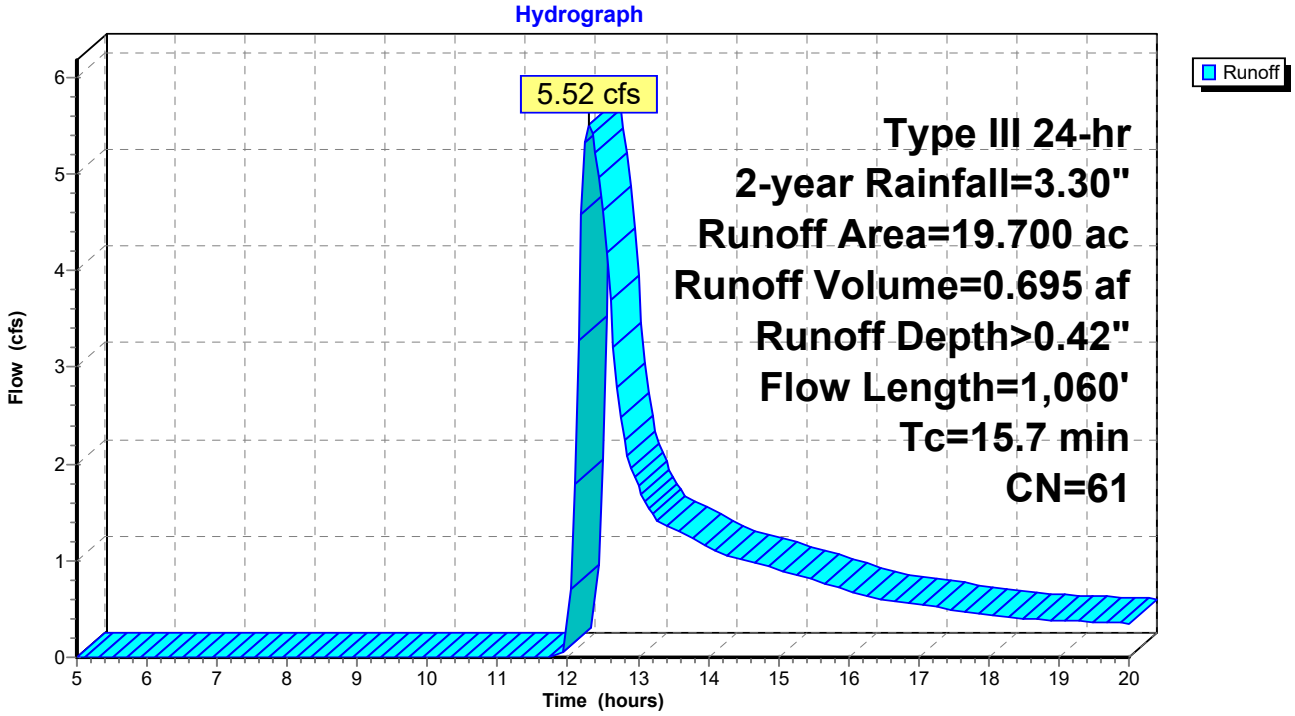
Runoff = 5.52 cfs @ 12.31 hrs, Volume= 0.695 af, Depth> 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: PR BB-3



Summary for Subcatchment HS-1: PR HS-1

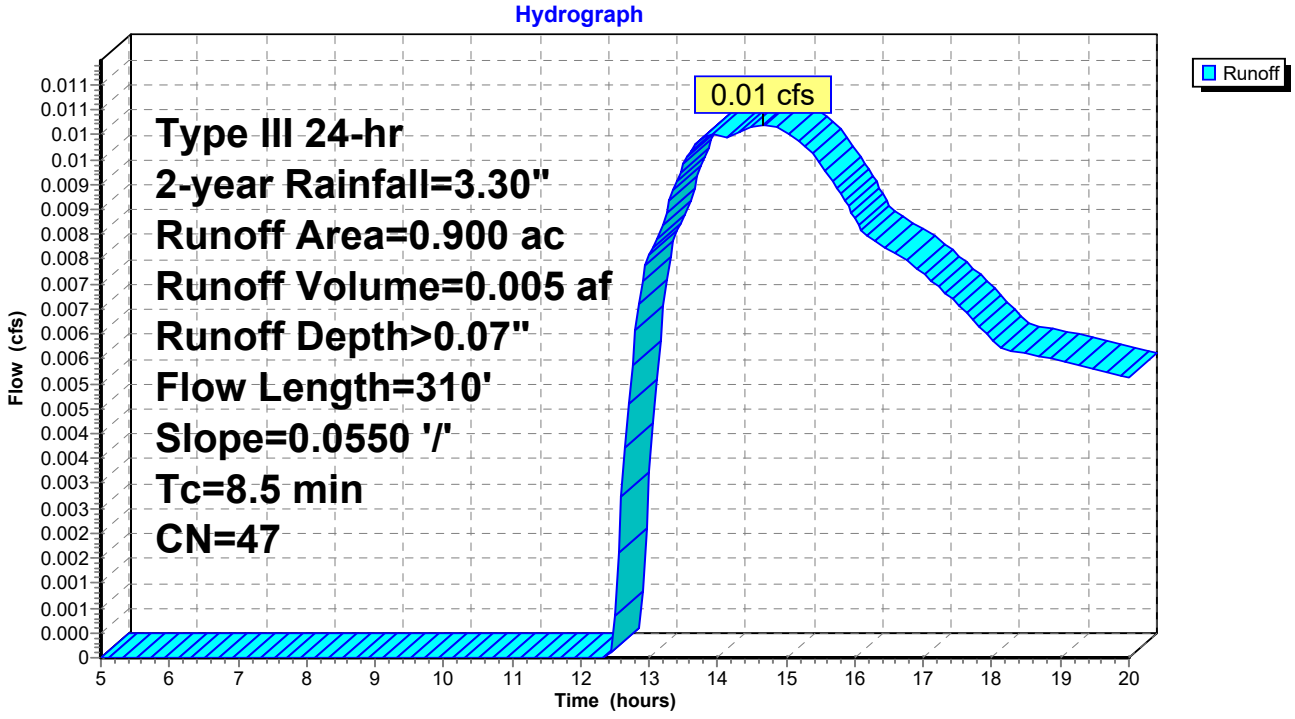
Runoff = 0.01 cfs @ 14.65 hrs, Volume= 0.005 af, Depth> 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.100	96	Gravel surface, HSG A
0.300	58	Legumes, straight row, Good, HSG A
0.500	30	Meadow, non-grazed, HSG A
0.900	47	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0550	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.1	210	0.0550	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.5	310	Total			

Subcatchment HS-1: PR HS-1



Summary for Subcatchment KC-1: PR KC-1

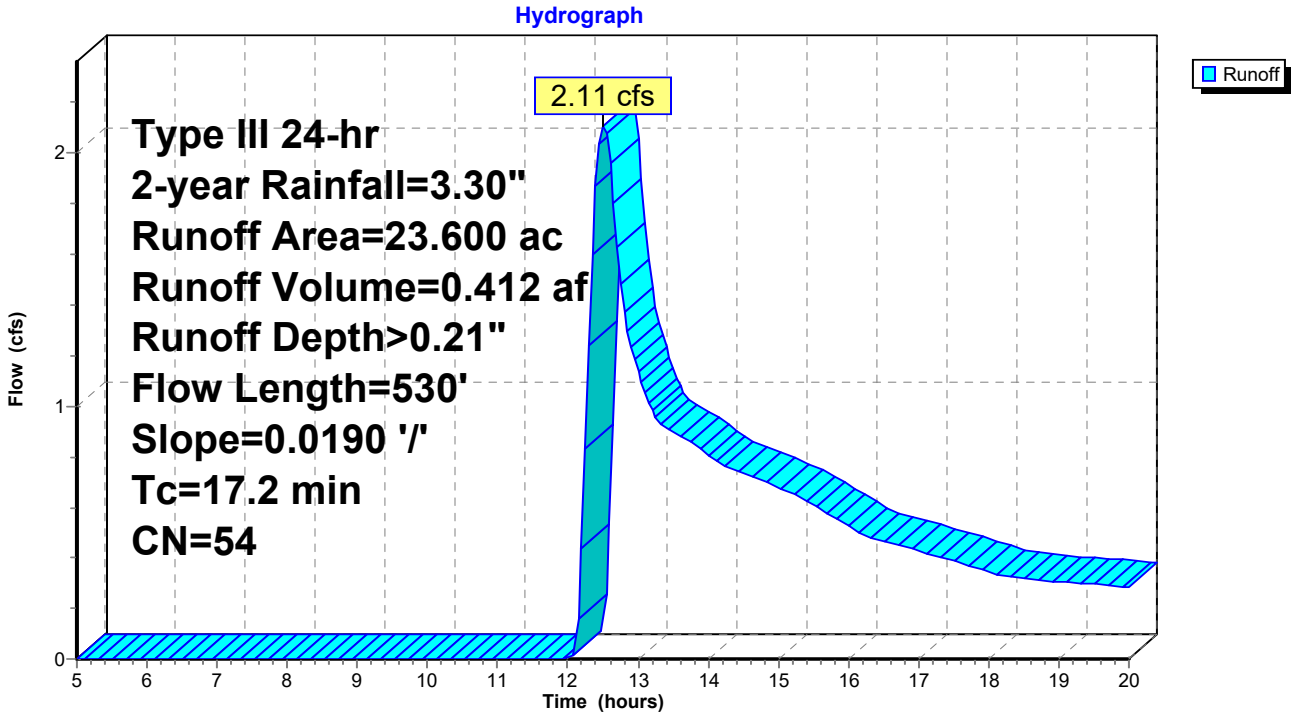
Runoff = 2.11 cfs @ 12.51 hrs, Volume= 0.412 af, Depth> 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

	Area (ac)	CN	Description
	0.200	98	Roofs, HSG A
*	0.010	98	Inverter Pads
	2.500	96	Gravel surface, HSG A
	13.890	58	Legumes, straight row, Good, HSG A
	6.400	30	Meadow, non-grazed, HSG A
	0.600	30	Woods, Good, HSG A
	23.600	54	Weighted Average
	23.390		99.11% Pervious Area
	0.210		0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0190	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
7.4	430	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	530	Total			

Subcatchment KC-1: PR KC-1



Summary for Subcatchment MB-1: PR MB-1

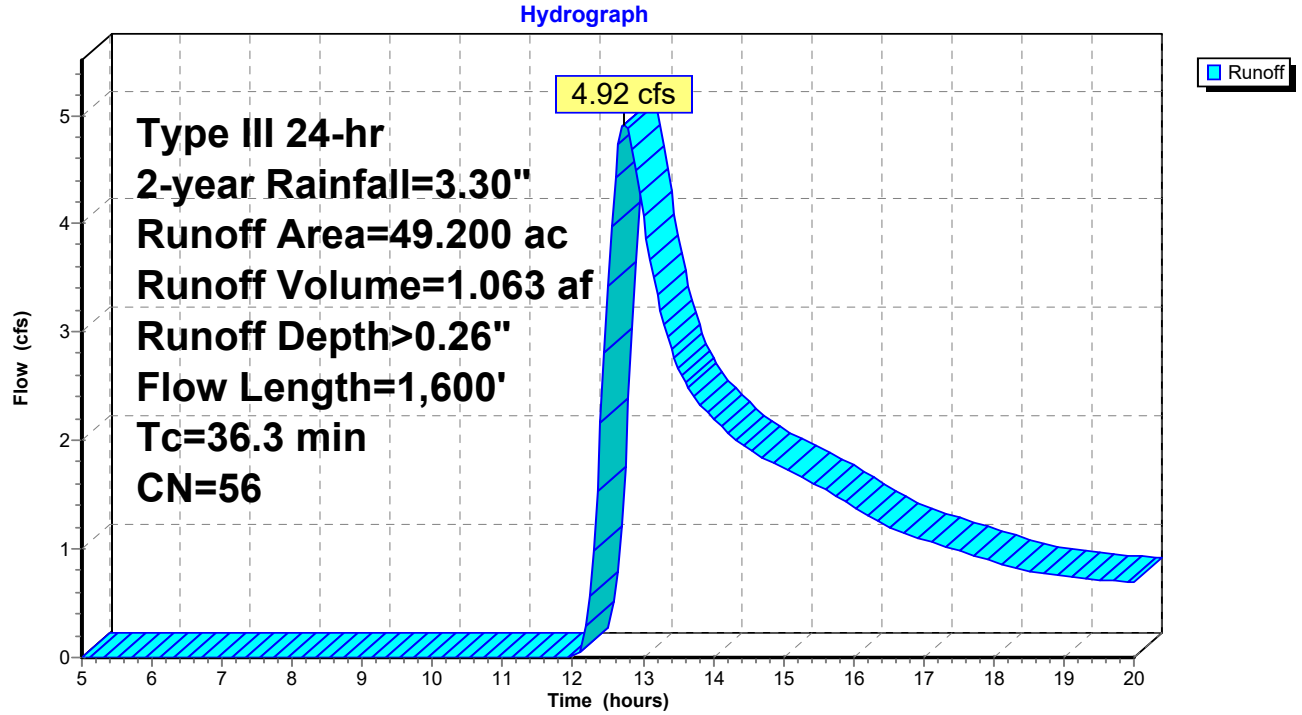
Runoff = 4.92 cfs @ 12.73 hrs, Volume= 1.063 af, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

	Area (ac)	CN	Description
*	0.040	98	Inverter Pads
	4.600	96	Gravel surface, HSG A
	34.460	58	Legumes, straight row, Good, HSG A
	4.600	30	Meadow, non-grazed, HSG A
	5.500	30	Woods, Good, HSG A
	49.200	56	Weighted Average
	49.160		99.92% Pervious Area
	0.040		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0160	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
15.5	900	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.3	600	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
36.3	1,600	Total			

Subcatchment MB-1: PR MB-1



Summary for Subcatchment MB-2: PR MB-2

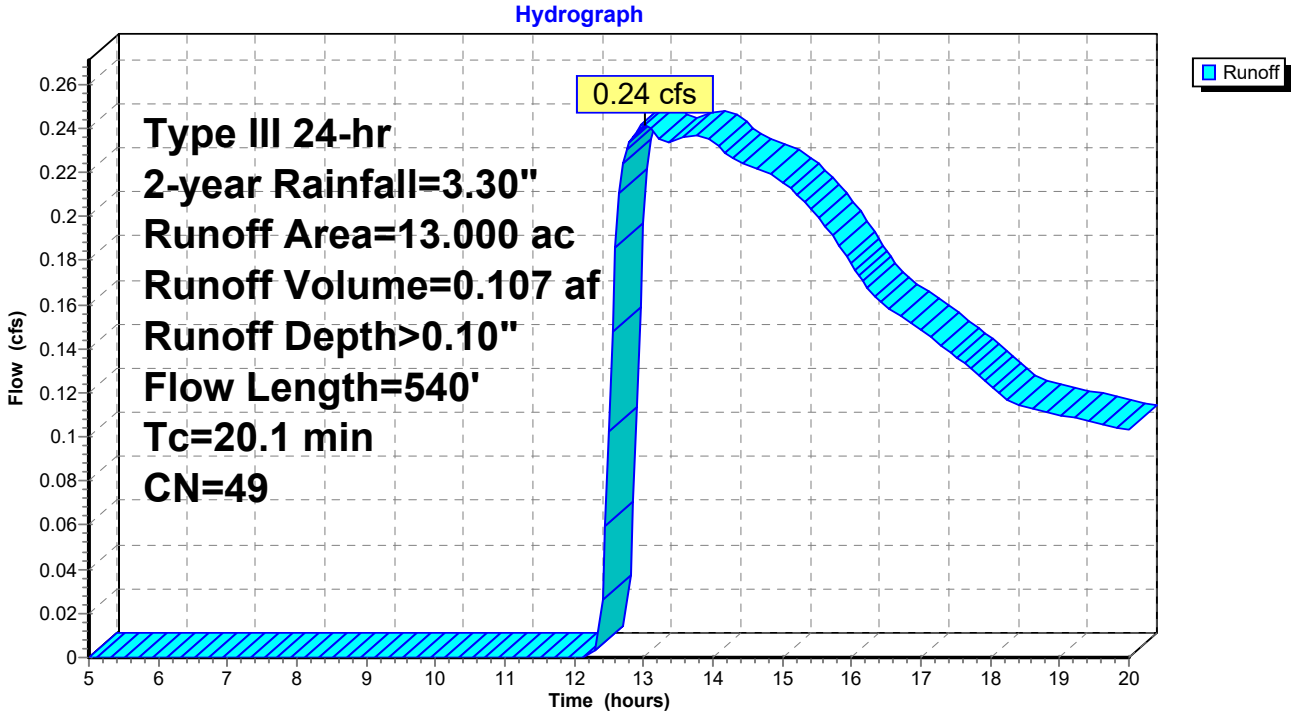
Runoff = 0.24 cfs @ 13.02 hrs, Volume= 0.107 af, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.900	96	Gravel surface, HSG A
	6.890	58	Legumes, straight row, Good, HSG A
	2.400	30	Meadow, non-grazed, HSG A
	2.800	30	Woods, Good, HSG A
	13.000	49	Weighted Average
	12.990		99.92% Pervious Area
	0.010		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	50	0.0170	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
3.3	130	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	360	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	540	Total			

Subcatchment MB-2: PR MB-2



Summary for Subcatchment SB-1: PR SB-1

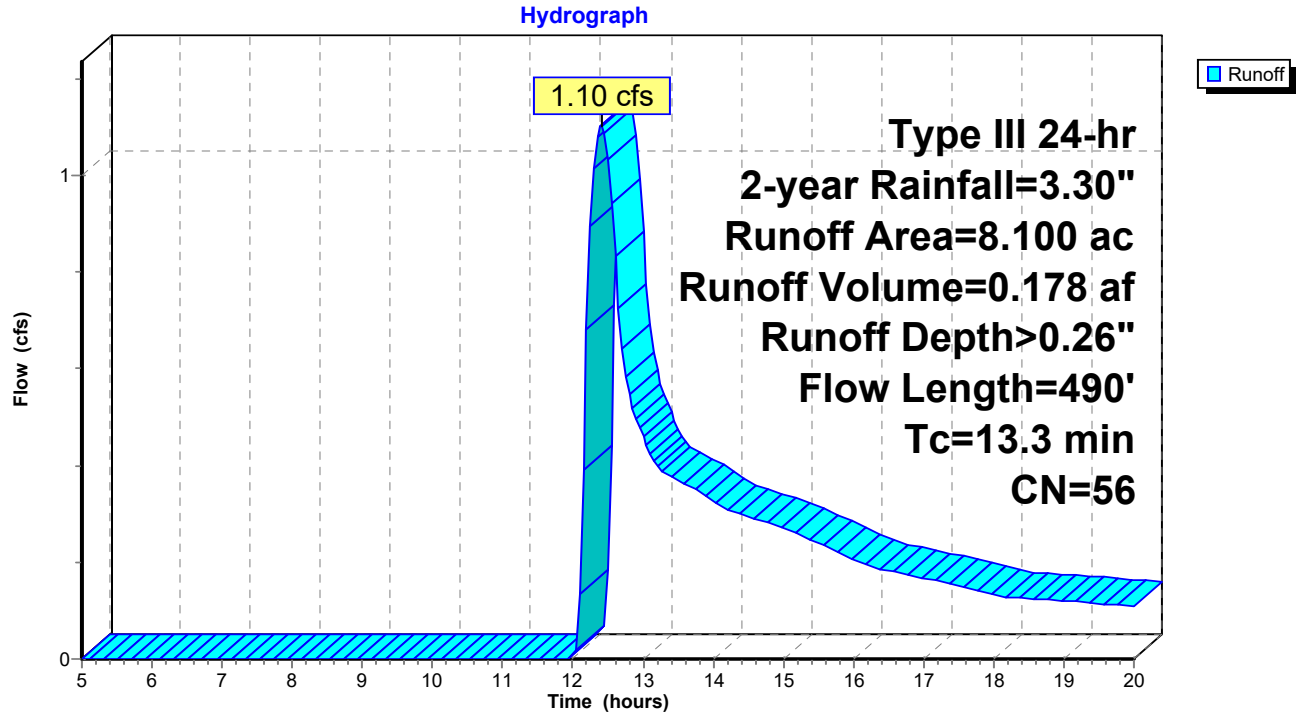
Runoff = 1.10 cfs @ 12.41 hrs, Volume= 0.178 af, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

	Area (ac)	CN	Description
*	0.100	98	Inverter Pads & Switchyard
	1.000	96	Gravel surface, HSG A
	4.900	58	Legumes, straight row, Good, HSG A
	2.100	30	Meadow, non-grazed, HSG A
	8.100	56	Weighted Average
	8.000		98.77% Pervious Area
	0.100		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.7	250	0.1180	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	140	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.3	490	Total			

Subcatchment SB-1: PR SB-1



Summary for Subcatchment SB-2: PR SB-2

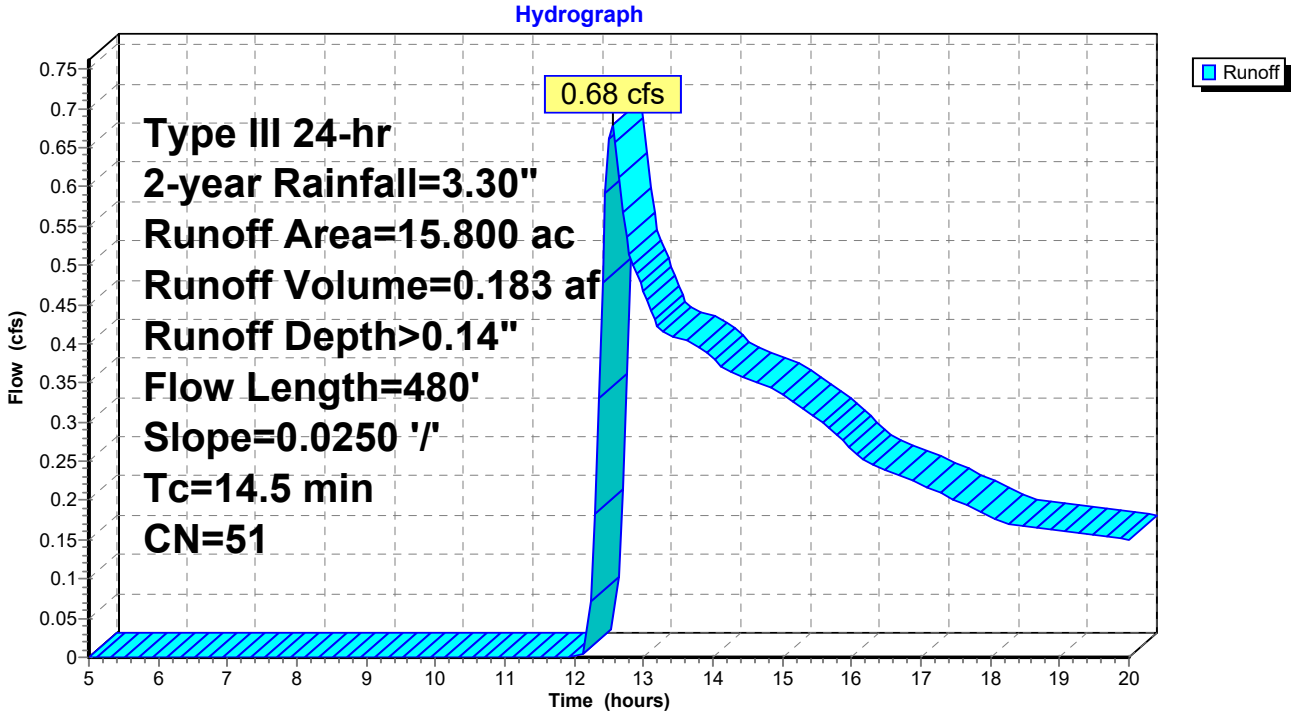
Runoff = 0.68 cfs @ 12.55 hrs, Volume= 0.183 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	1.700	96	Gravel surface, HSG A
	8.090	58	Legumes, straight row, Good, HSG A
	3.500	30	Meadow, non-grazed, HSG A
	2.500	30	Woods, Good, HSG A
	15.800	51	Weighted Average
	15.790		99.94% Pervious Area
	0.010		0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0250	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
5.7	380	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	480	Total			

Subcatchment SB-2: PR SB-2



Summary for Subcatchment SB-3: PR SB-3

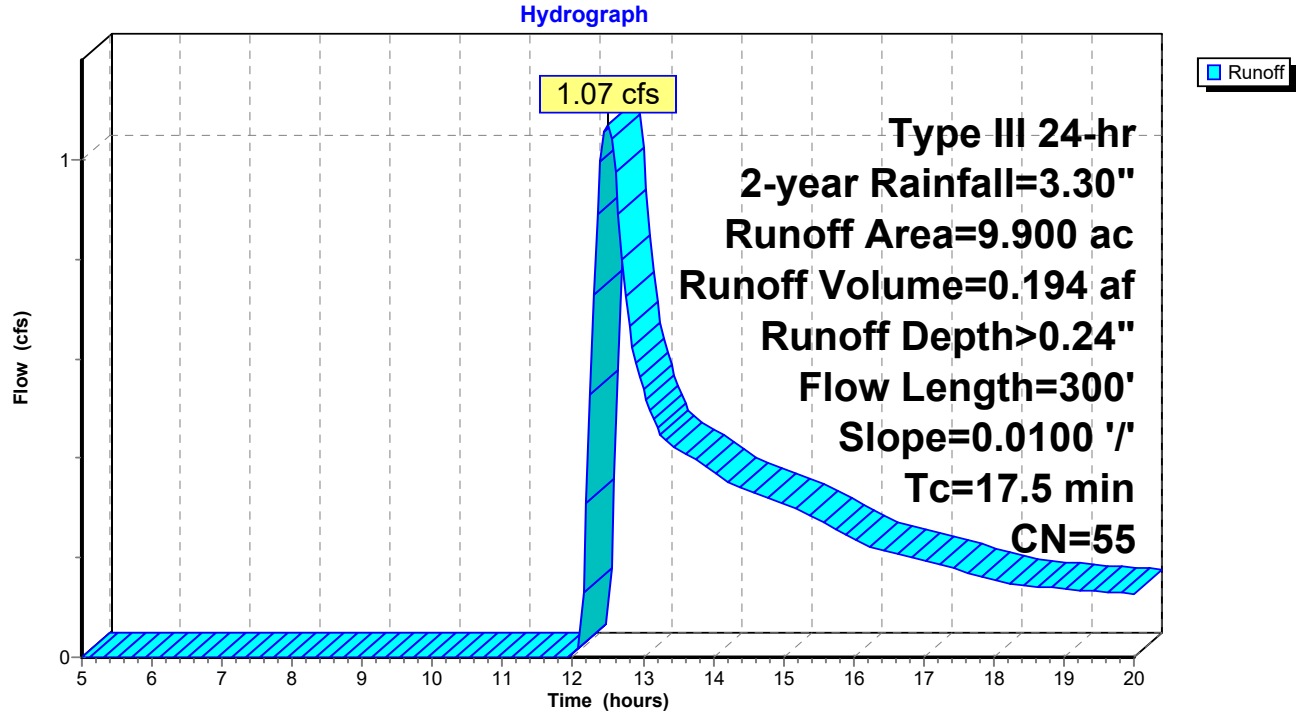
Runoff = 1.07 cfs @ 12.49 hrs, Volume= 0.194 af, Depth> 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.30"

Area (ac)	CN	Description
0.900	96	Gravel surface, HSG A
6.700	58	Legumes, straight row, Good, HSG A
2.100	30	Meadow, non-grazed, HSG A
0.200	30	Woods, Good, HSG A
9.900	55	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.8	200	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.5	300	Total			

Subcatchment SB-3: PR SB-3



Summary for Pond 1P: PR MB-2 Depression

Inflow Area = 13.000 ac, 0.08% Impervious, Inflow Depth > 0.10" for 2-year event
Inflow = 0.24 cfs @ 13.02 hrs, Volume= 0.107 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 270.60' @ 20.00 hrs Surf.Area= 9,738 sf Storage= 4,642 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

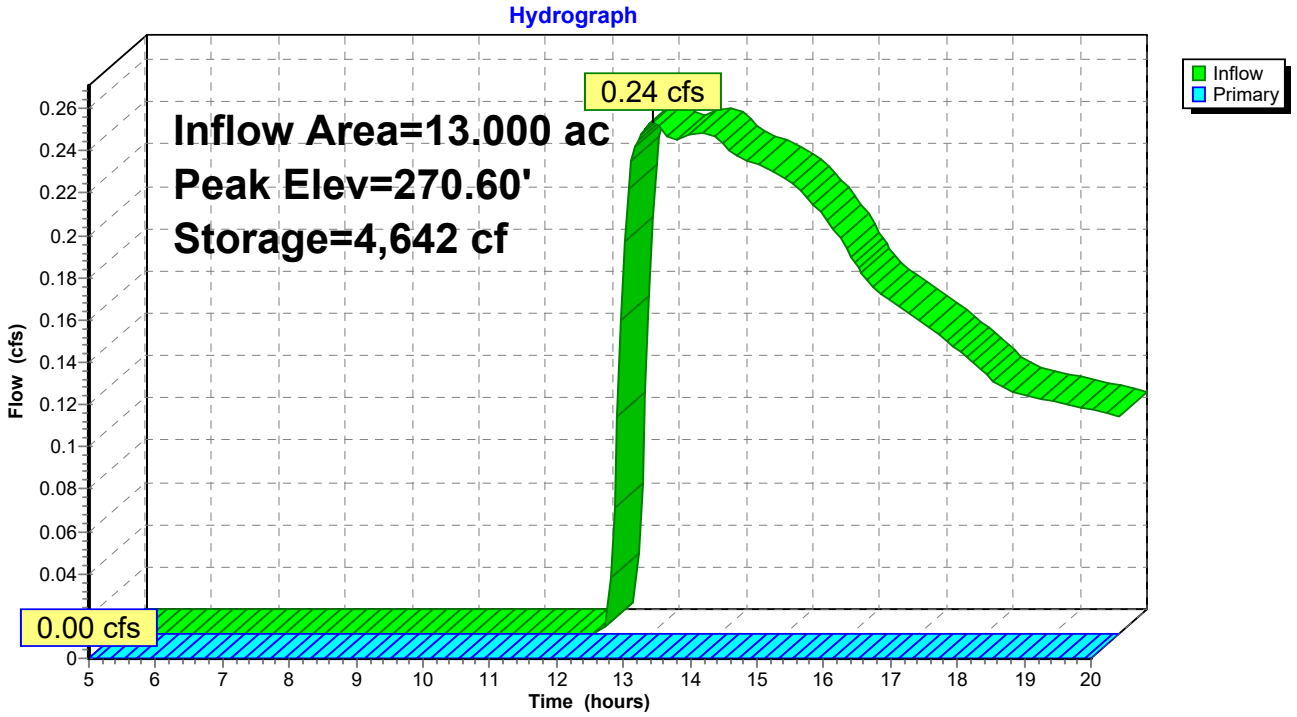
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: PR MB-2 Depression

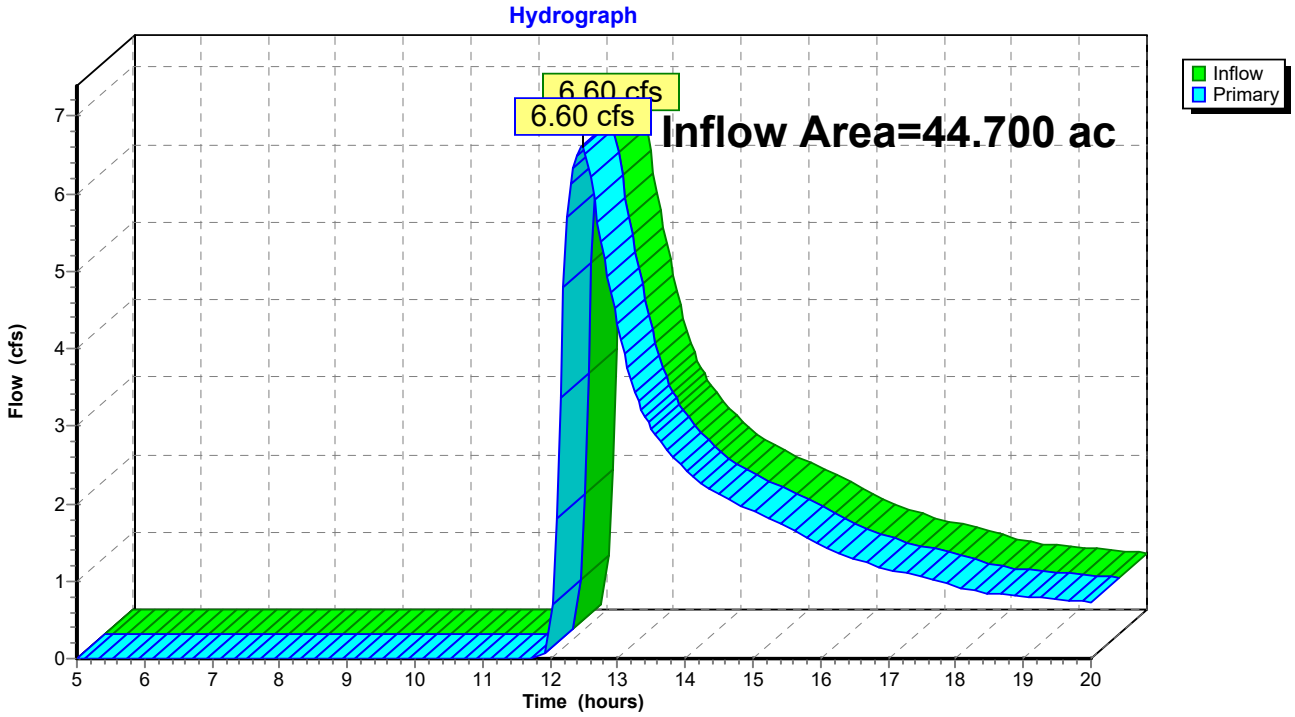


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.51% Impervious, Inflow Depth > 0.35" for 2-year event
Inflow = 6.60 cfs @ 12.47 hrs, Volume= 1.314 af
Primary = 6.60 cfs @ 12.47 hrs, Volume= 1.314 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

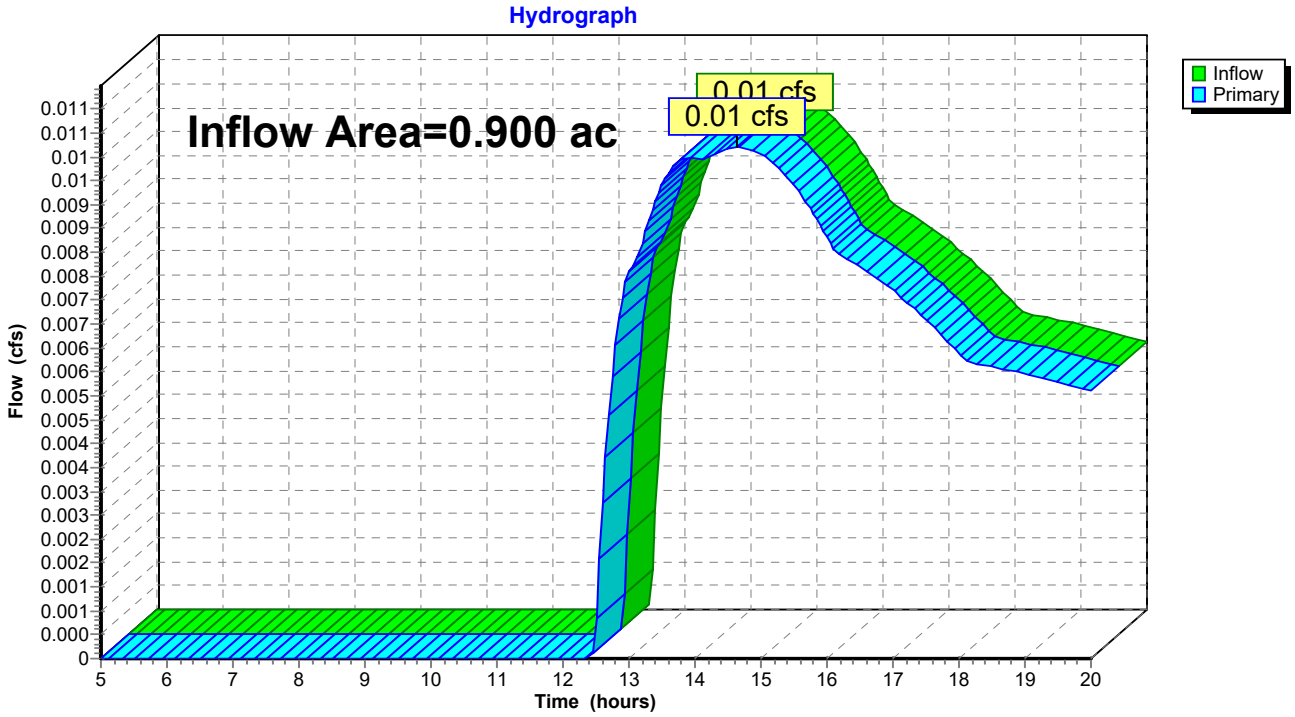


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 0.07" for 2-year event
Inflow = 0.01 cfs @ 14.65 hrs, Volume= 0.005 af
Primary = 0.01 cfs @ 14.65 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

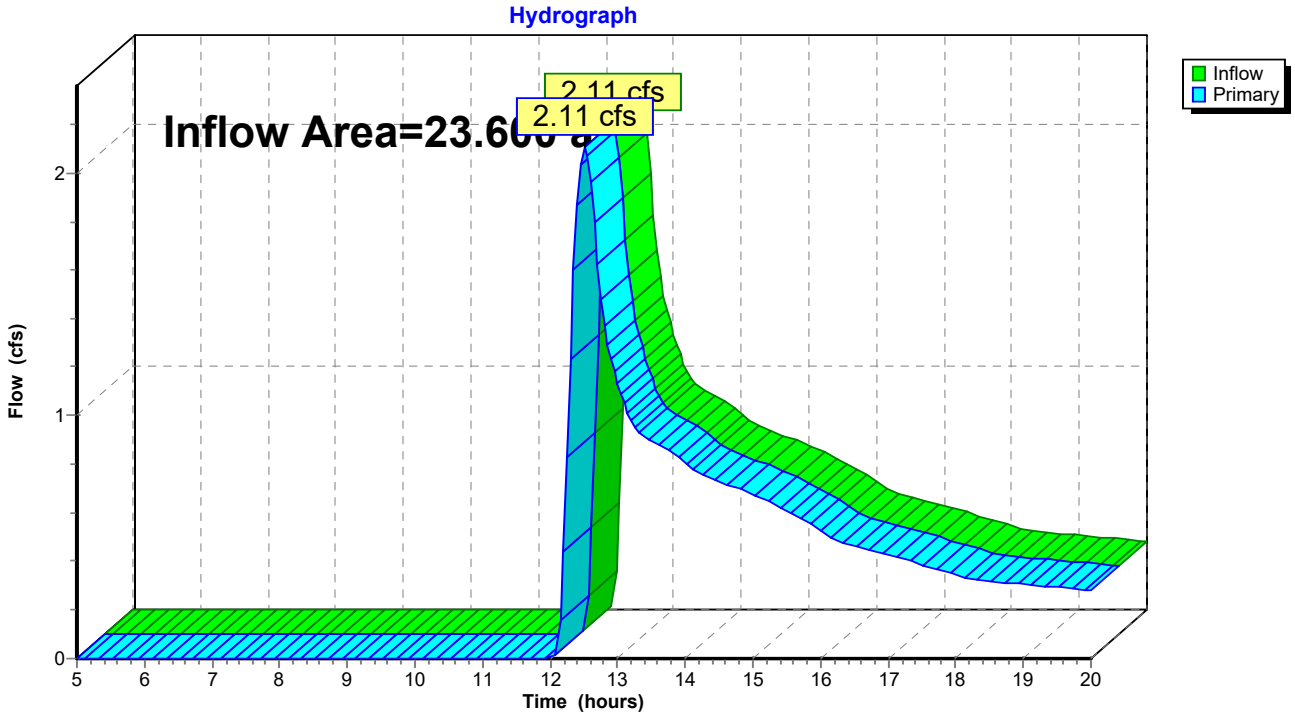


Summary for Link KC: KC

Inflow Area = 23.600 ac, 0.89% Impervious, Inflow Depth > 0.21" for 2-year event
Inflow = 2.11 cfs @ 12.51 hrs, Volume= 0.412 af
Primary = 2.11 cfs @ 12.51 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

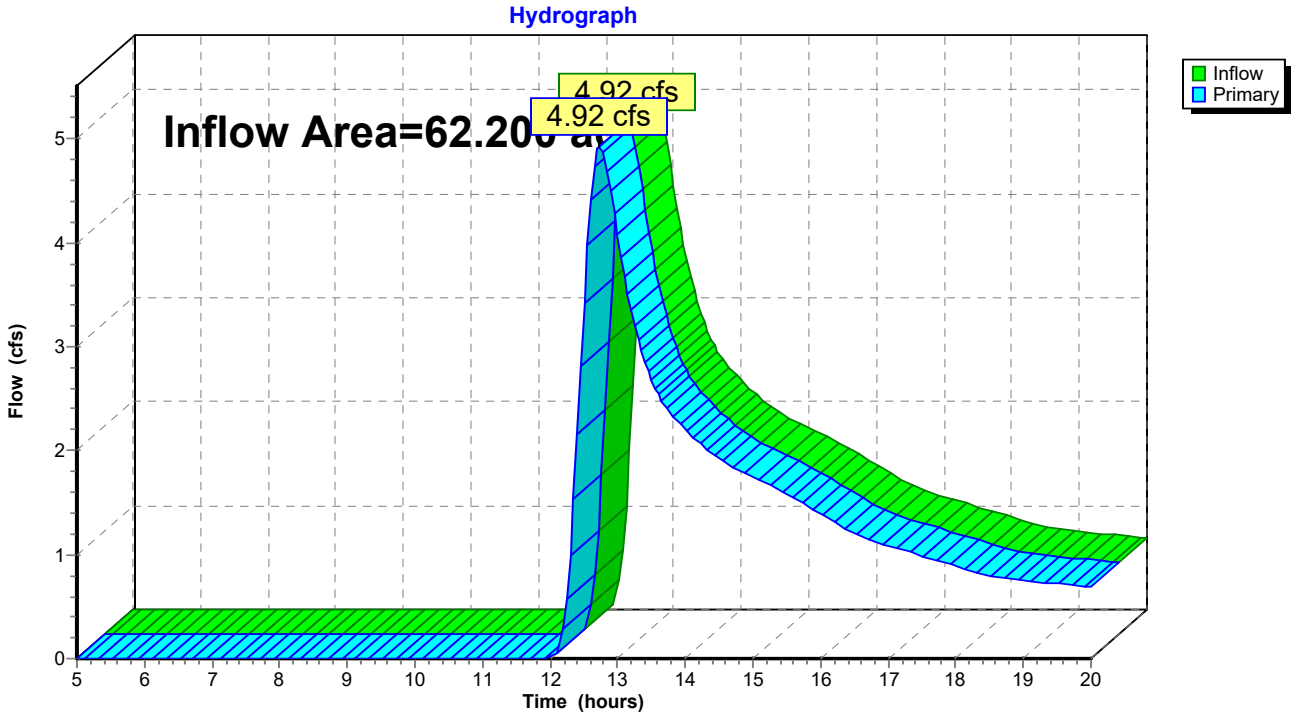


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.08% Impervious, Inflow Depth > 0.21" for 2-year event
Inflow = 4.92 cfs @ 12.73 hrs, Volume= 1.063 af
Primary = 4.92 cfs @ 12.73 hrs, Volume= 1.063 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

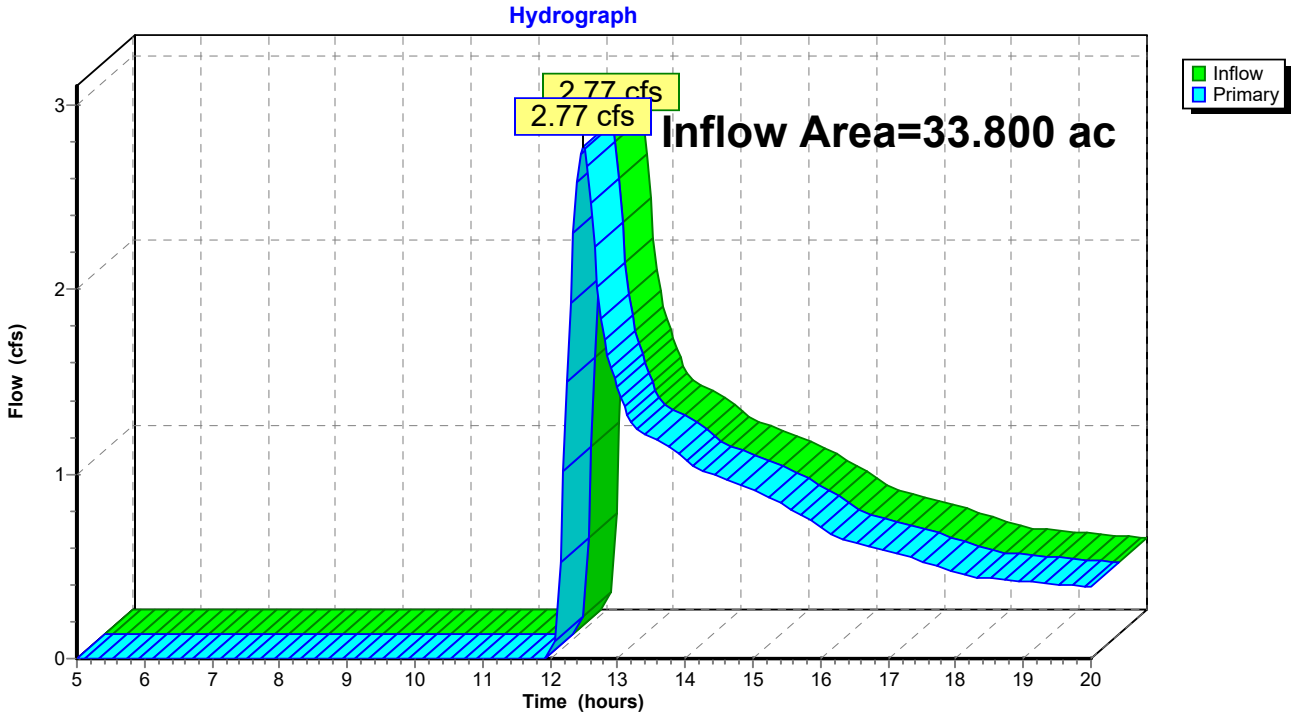


Summary for Link SB: SB

Inflow Area = 33.800 ac, 0.33% Impervious, Inflow Depth > 0.20" for 2-year event
Inflow = 2.77 cfs @ 12.49 hrs, Volume= 0.556 af
Primary = 2.77 cfs @ 12.49 hrs, Volume= 0.556 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



10-Year Storm Event- Proposed

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

Subcatchment BB-1: PR BB-1 Runoff Area=19.100 ac 0.63% Impervious Runoff Depth>1.19"
Flow Length=1,400' Slope=0.0100 '/' Tc=43.7 min CN=58 Runoff=12.60 cfs 1.899 af

Subcatchment BB-2: PR BB-2 Runoff Area=5.900 ac 1.86% Impervious Runoff Depth>1.01"
Flow Length=730' Slope=0.0110 '/' Tc=26.6 min CN=55 Runoff=3.95 cfs 0.498 af

Subcatchment BB-3: PR BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>1.41"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=24.52 cfs 2.323 af

Subcatchment HS-1: PR HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>0.57"
Flow Length=310' Slope=0.0550 '/' Tc=8.5 min CN=47 Runoff=0.34 cfs 0.043 af

Subcatchment KC-1: PR KC-1 Runoff Area=23.600 ac 0.89% Impervious Runoff Depth>0.96"
Flow Length=530' Slope=0.0190 '/' Tc=17.2 min CN=54 Runoff=17.11 cfs 1.879 af

Subcatchment MB-1: PR MB-1 Runoff Area=49.200 ac 0.08% Impervious Runoff Depth>1.07"
Flow Length=1,600' Tc=36.3 min CN=56 Runoff=31.00 cfs 4.382 af

Subcatchment MB-2: PR MB-2 Runoff Area=13.000 ac 0.08% Impervious Runoff Depth>0.67"
Flow Length=540' Tc=20.1 min CN=49 Runoff=5.29 cfs 0.723 af

Subcatchment SB-1: PR SB-1 Runoff Area=8.100 ac 1.23% Impervious Runoff Depth>1.08"
Flow Length=490' Tc=13.3 min CN=56 Runoff=7.66 cfs 0.731 af

Subcatchment SB-2: PR SB-2 Runoff Area=15.800 ac 0.06% Impervious Runoff Depth>0.78"
Flow Length=480' Slope=0.0250 '/' Tc=14.5 min CN=51 Runoff=9.04 cfs 1.027 af

Subcatchment SB-3: PR SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>1.02"
Flow Length=300' Slope=0.0100 '/' Tc=17.5 min CN=55 Runoff=7.77 cfs 0.839 af

Pond 1P: PR MB-2 Depression Peak Elev=272.31' Storage=31,442 cf Inflow=5.29 cfs 0.723 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=32.13 cfs 4.719 af
Primary=32.13 cfs 4.719 af

Link HS: HS Inflow=0.34 cfs 0.043 af
Primary=0.34 cfs 0.043 af

Link KC: KC Inflow=17.11 cfs 1.879 af
Primary=17.11 cfs 1.879 af

Link MB: MB Inflow=31.00 cfs 4.382 af
Primary=31.00 cfs 4.382 af

Link SB: SB Inflow=24.08 cfs 2.597 af
Primary=24.08 cfs 2.597 af

Total Runoff Area = 165.200 ac Runoff Volume = 14.343 af Average Runoff Depth = 1.04"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: PR BB-1

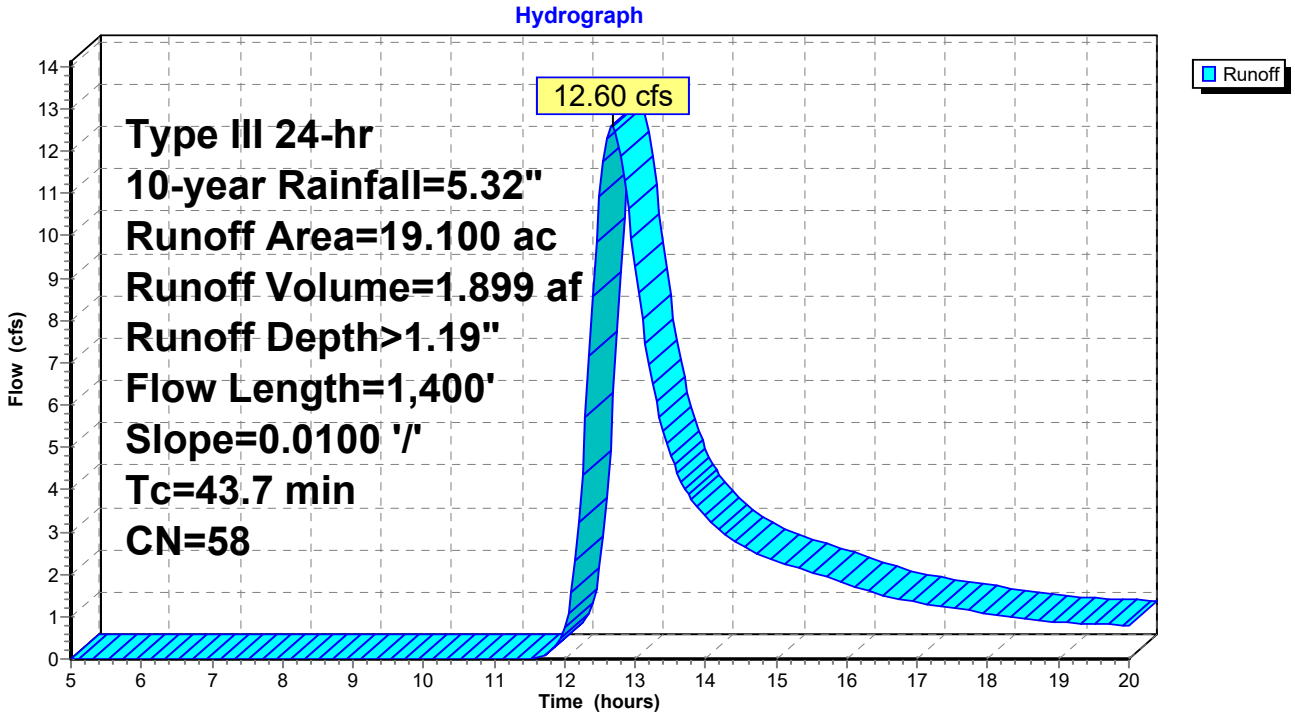
Runoff = 12.60 cfs @ 12.68 hrs, Volume= 1.899 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

	Area (ac)	CN	Description
*	0.020	98	Inverter Pads
	0.100	98	Roofs, HSG A
	1.300	96	Gravel surface, HSG A
	15.780	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	0.300	30	Woods, Good, HSG A
	19.100	58	Weighted Average
	18.980		99.37% Pervious Area
	0.120		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
31.0	1,300	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.7	1,400	Total			

Subcatchment BB-1: PR BB-1



Summary for Subcatchment BB-2: PR BB-2

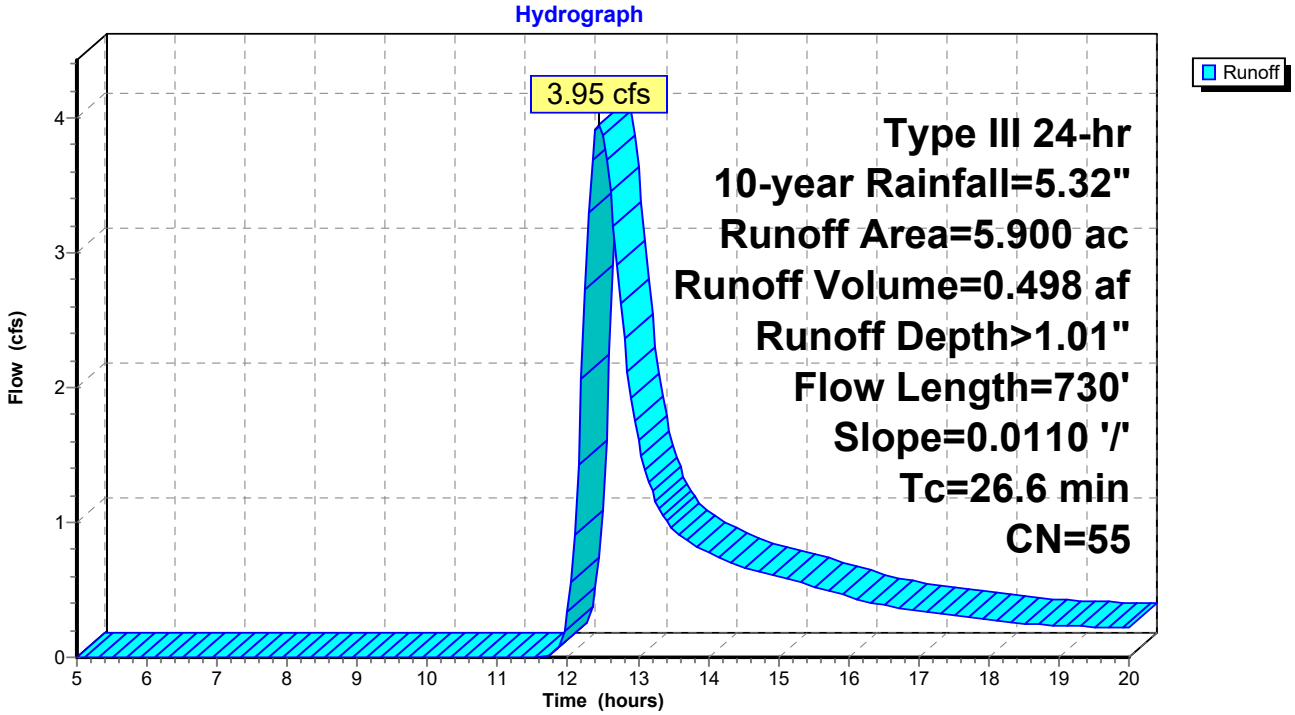
Runoff = 3.95 cfs @ 12.44 hrs, Volume= 0.498 af, Depth> 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.100	98	Roofs, HSG A
	0.600	96	Gravel surface, HSG A
	3.590	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	5.900	55	Weighted Average
	5.790		98.14% Pervious Area
	0.110		1.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
14.3	630	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
26.6	730	Total			

Subcatchment BB-2: PR BB-2



Summary for Subcatchment BB-3: PR BB-3

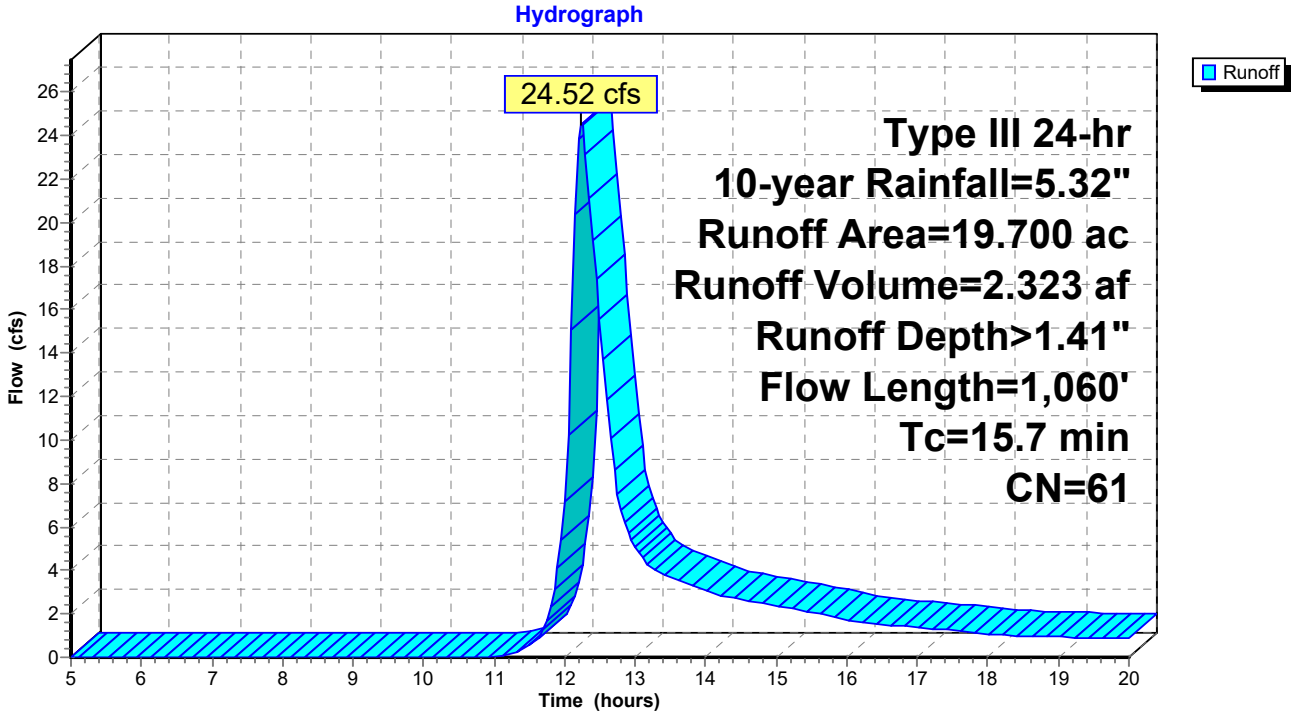
Runoff = 24.52 cfs @ 12.24 hrs, Volume= 2.323 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: PR BB-3



Summary for Subcatchment HS-1: PR HS-1

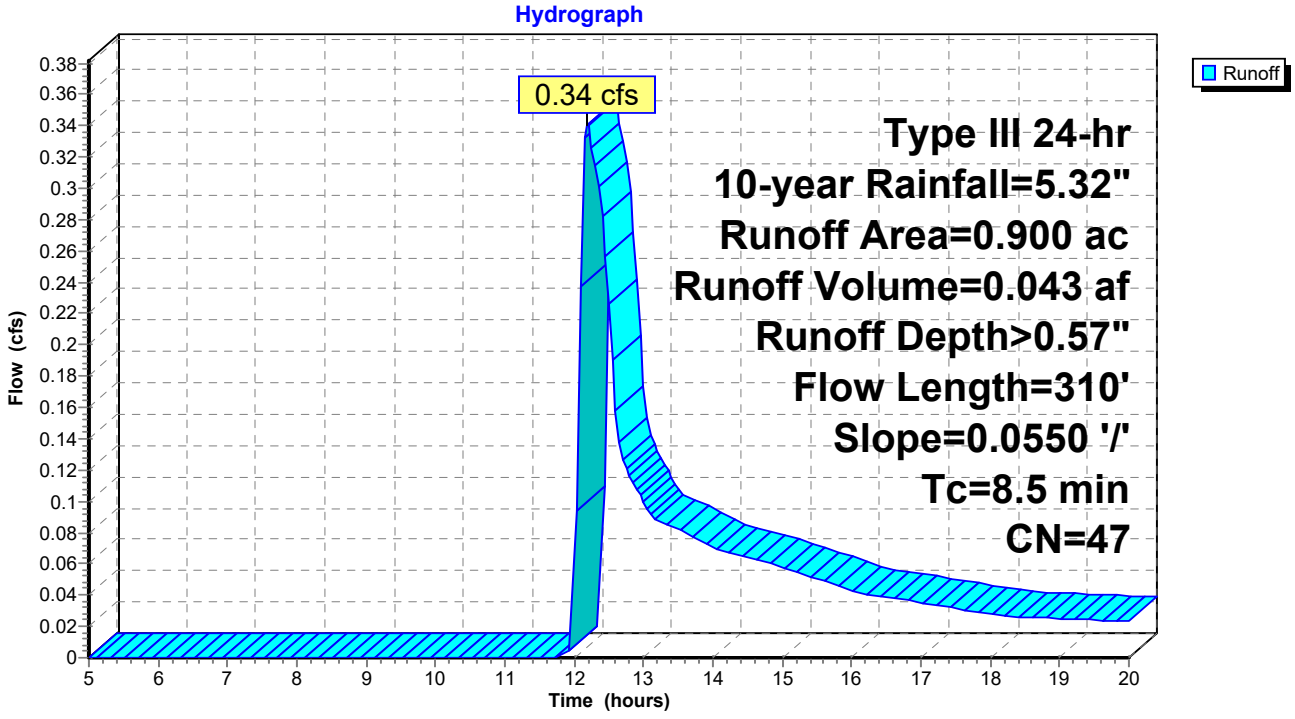
Runoff = 0.34 cfs @ 12.19 hrs, Volume= 0.043 af, Depth> 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.100	96	Gravel surface, HSG A
0.300	58	Legumes, straight row, Good, HSG A
0.500	30	Meadow, non-grazed, HSG A
0.900	47	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0550	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.1	210	0.0550	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.5	310	Total			

Subcatchment HS-1: PR HS-1



Summary for Subcatchment KC-1: PR KC-1

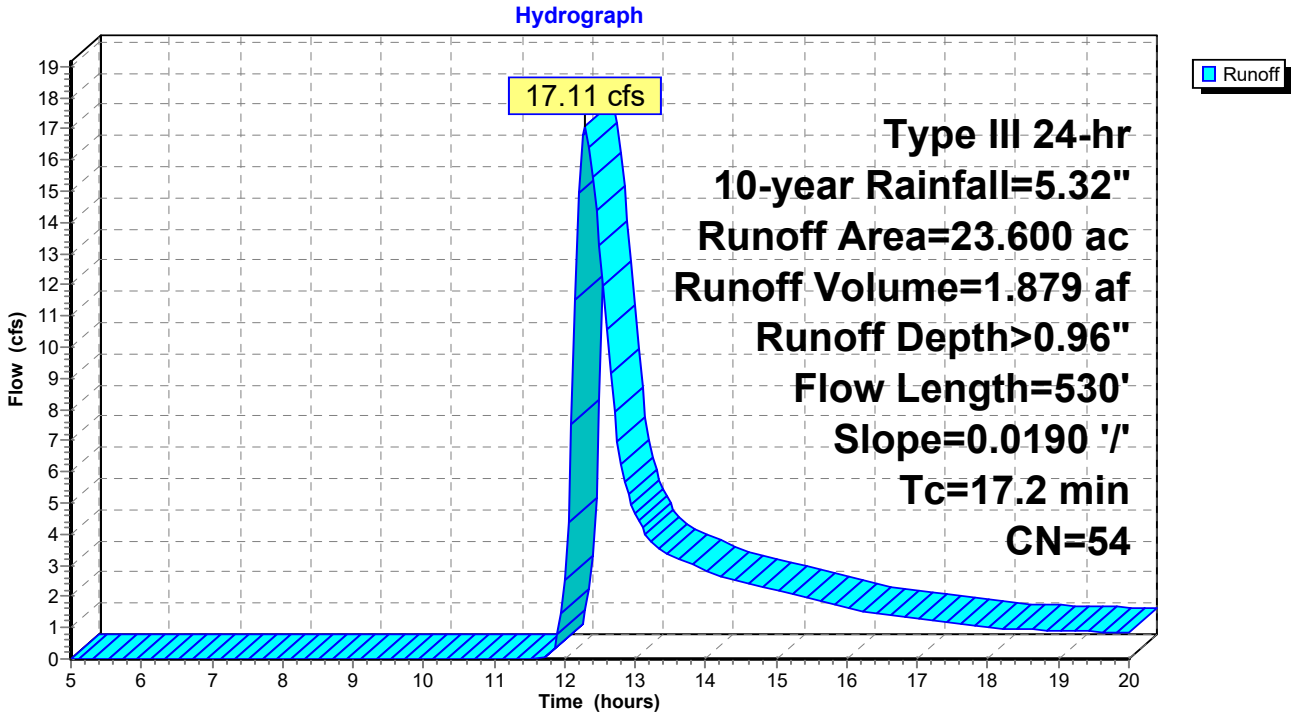
Runoff = 17.11 cfs @ 12.29 hrs, Volume= 1.879 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

	Area (ac)	CN	Description
	0.200	98	Roofs, HSG A
*	0.010	98	Inverter Pads
	2.500	96	Gravel surface, HSG A
	13.890	58	Legumes, straight row, Good, HSG A
	6.400	30	Meadow, non-grazed, HSG A
	0.600	30	Woods, Good, HSG A
	23.600	54	Weighted Average
	23.390		99.11% Pervious Area
	0.210		0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0190	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
7.4	430	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	530	Total			

Subcatchment KC-1: PR KC-1



Summary for Subcatchment MB-1: PR MB-1

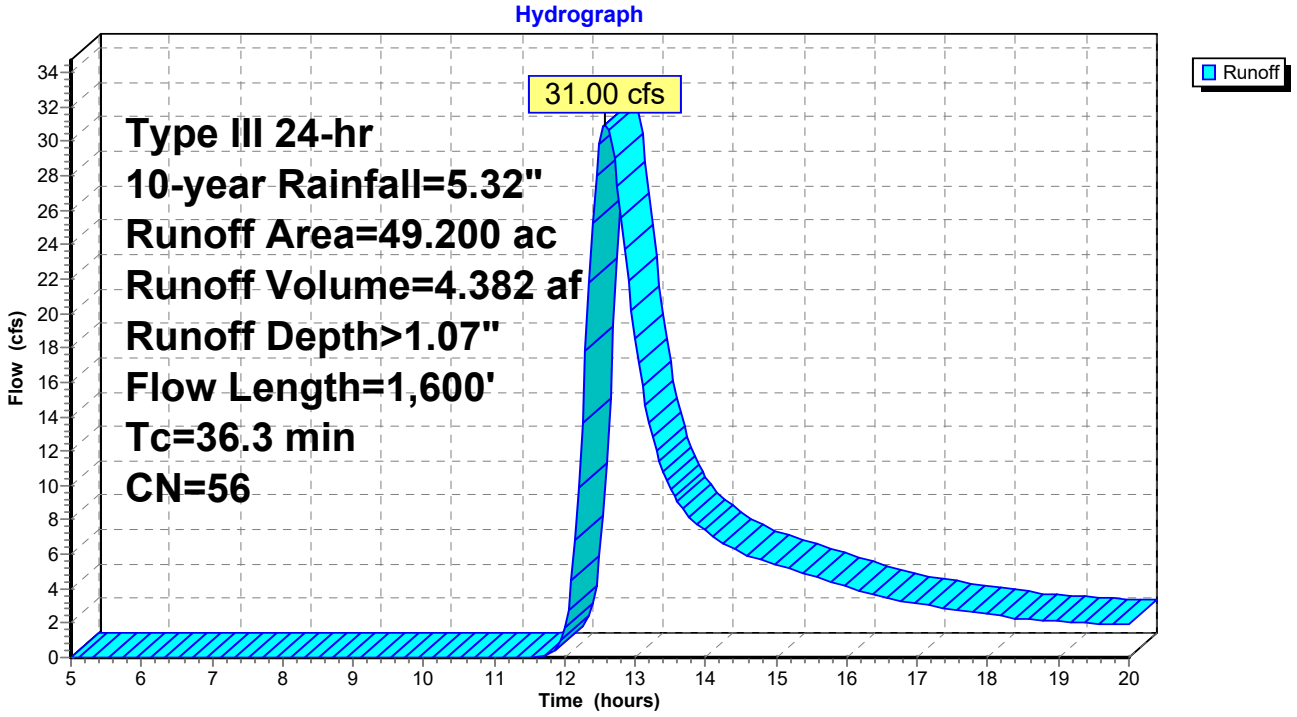
Runoff = 31.00 cfs @ 12.58 hrs, Volume= 4.382 af, Depth> 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

	Area (ac)	CN	Description
*	0.040	98	Inverter Pads
	4.600	96	Gravel surface, HSG A
	34.460	58	Legumes, straight row, Good, HSG A
	4.600	30	Meadow, non-grazed, HSG A
	5.500	30	Woods, Good, HSG A
	49.200	56	Weighted Average
	49.160		99.92% Pervious Area
	0.040		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0160	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
15.5	900	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.3	600	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
36.3	1,600	Total			

Subcatchment MB-1: PR MB-1



Summary for Subcatchment MB-2: PR MB-2

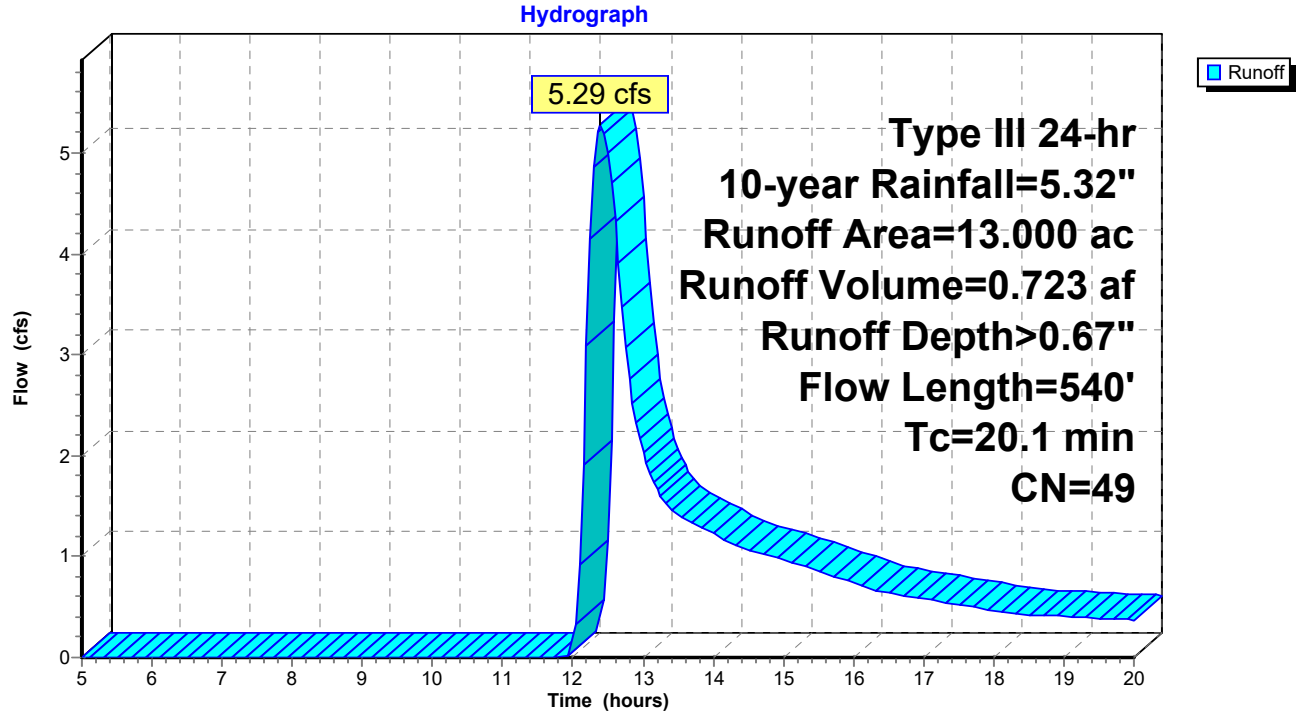
Runoff = 5.29 cfs @ 12.40 hrs, Volume= 0.723 af, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.900	96	Gravel surface, HSG A
	6.890	58	Legumes, straight row, Good, HSG A
	2.400	30	Meadow, non-grazed, HSG A
	2.800	30	Woods, Good, HSG A
	13.000	49	Weighted Average
	12.990		99.92% Pervious Area
	0.010		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	50	0.0170	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
3.3	130	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	360	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	540	Total			

Subcatchment MB-2: PR MB-2



Summary for Subcatchment SB-1: PR SB-1

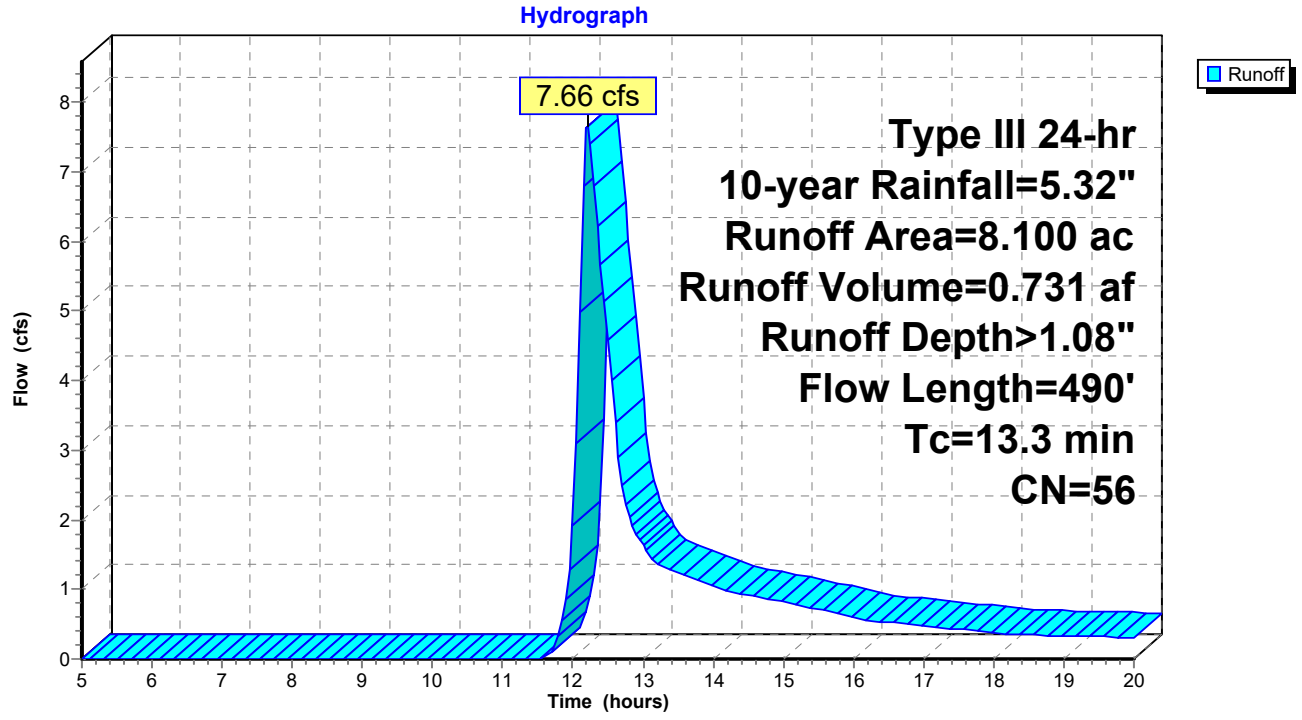
Runoff = 7.66 cfs @ 12.21 hrs, Volume= 0.731 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

	Area (ac)	CN	Description
*	0.100	98	Inverter Pads & Switchyard
	1.000	96	Gravel surface, HSG A
	4.900	58	Legumes, straight row, Good, HSG A
	2.100	30	Meadow, non-grazed, HSG A
	8.100	56	Weighted Average
	8.000		98.77% Pervious Area
	0.100		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.7	250	0.1180	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	140	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.3	490	Total			

Subcatchment SB-1: PR SB-1



Summary for Subcatchment SB-2: PR SB-2

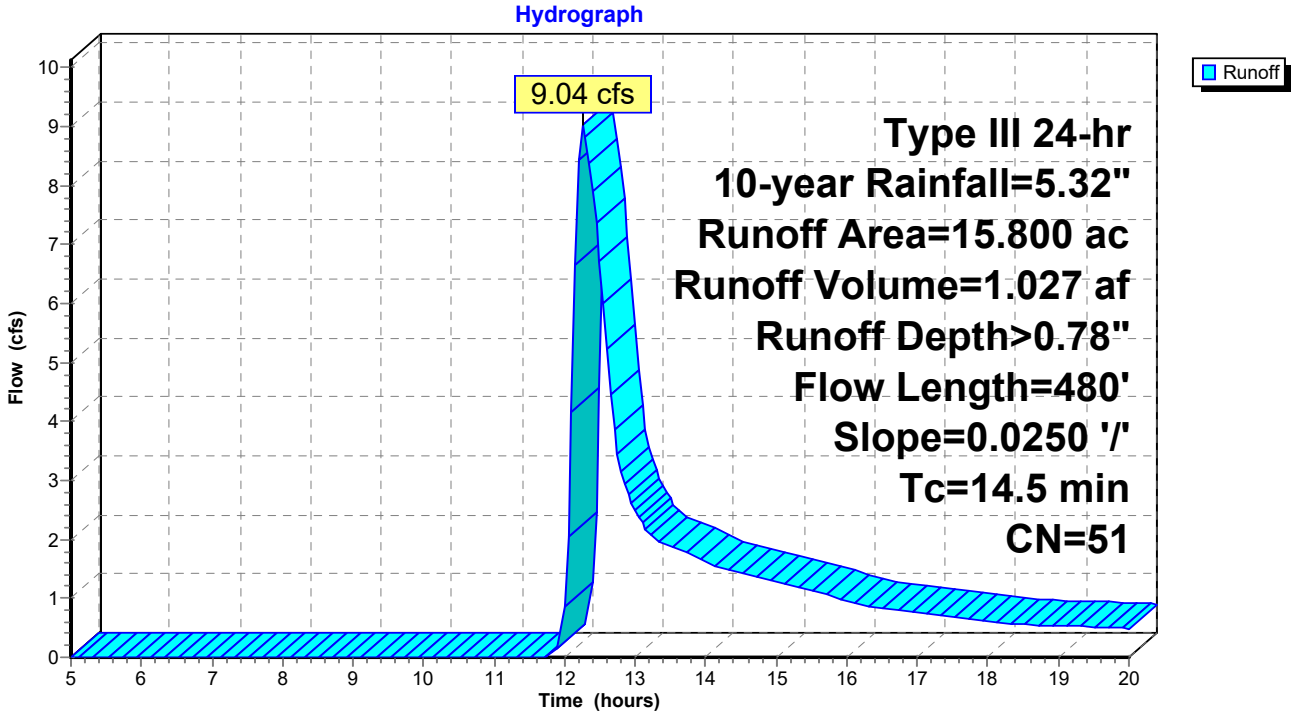
Runoff = 9.04 cfs @ 12.26 hrs, Volume= 1.027 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	1.700	96	Gravel surface, HSG A
	8.090	58	Legumes, straight row, Good, HSG A
	3.500	30	Meadow, non-grazed, HSG A
	2.500	30	Woods, Good, HSG A
	15.800	51	Weighted Average
	15.790		99.94% Pervious Area
	0.010		0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0250	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
5.7	380	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	480	Total			

Subcatchment SB-2: PR SB-2



Summary for Subcatchment SB-3: PR SB-3

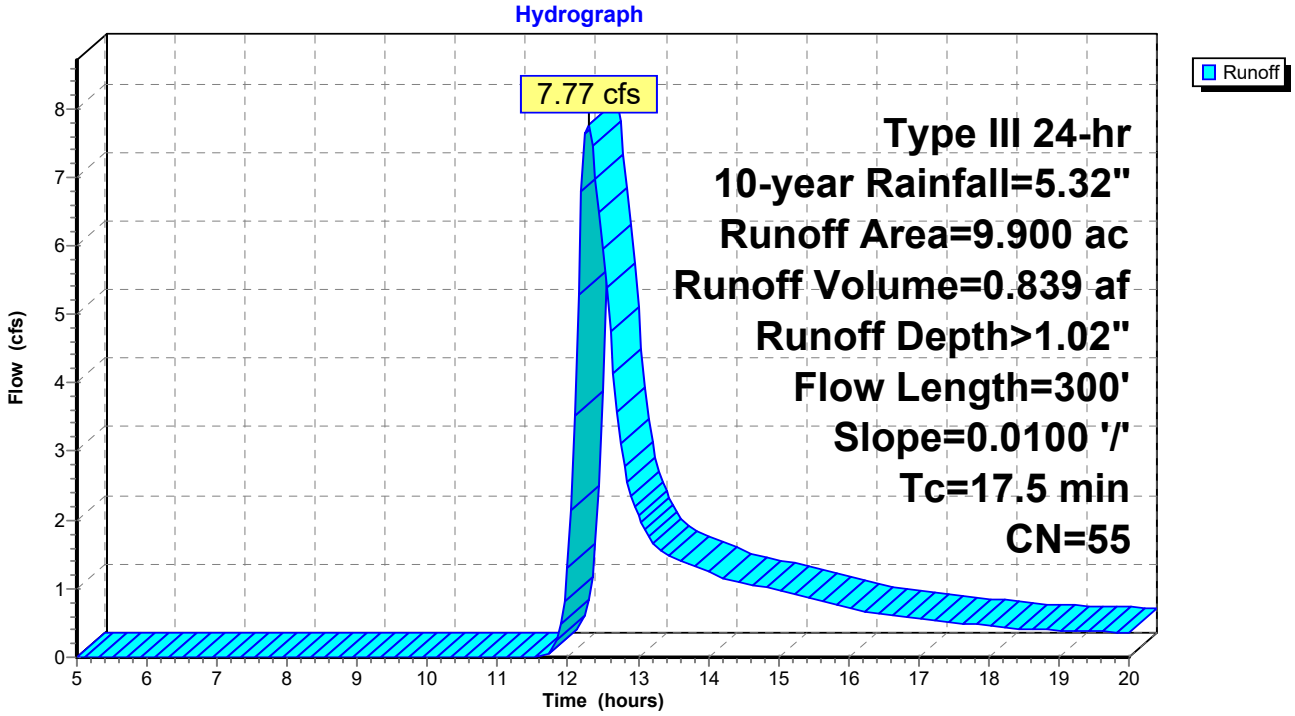
Runoff = 7.77 cfs @ 12.29 hrs, Volume= 0.839 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.32"

Area (ac)	CN	Description
0.900	96	Gravel surface, HSG A
6.700	58	Legumes, straight row, Good, HSG A
2.100	30	Meadow, non-grazed, HSG A
0.200	30	Woods, Good, HSG A
9.900	55	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.8	200	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.5	300	Total			

Subcatchment SB-3: PR SB-3



Summary for Pond 1P: PR MB-2 Depression

Inflow Area = 13.000 ac, 0.08% Impervious, Inflow Depth > 0.67" for 10-year event
Inflow = 5.29 cfs @ 12.40 hrs, Volume= 0.723 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 272.31' @ 20.00 hrs Surf.Area= 22,766 sf Storage= 31,442 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

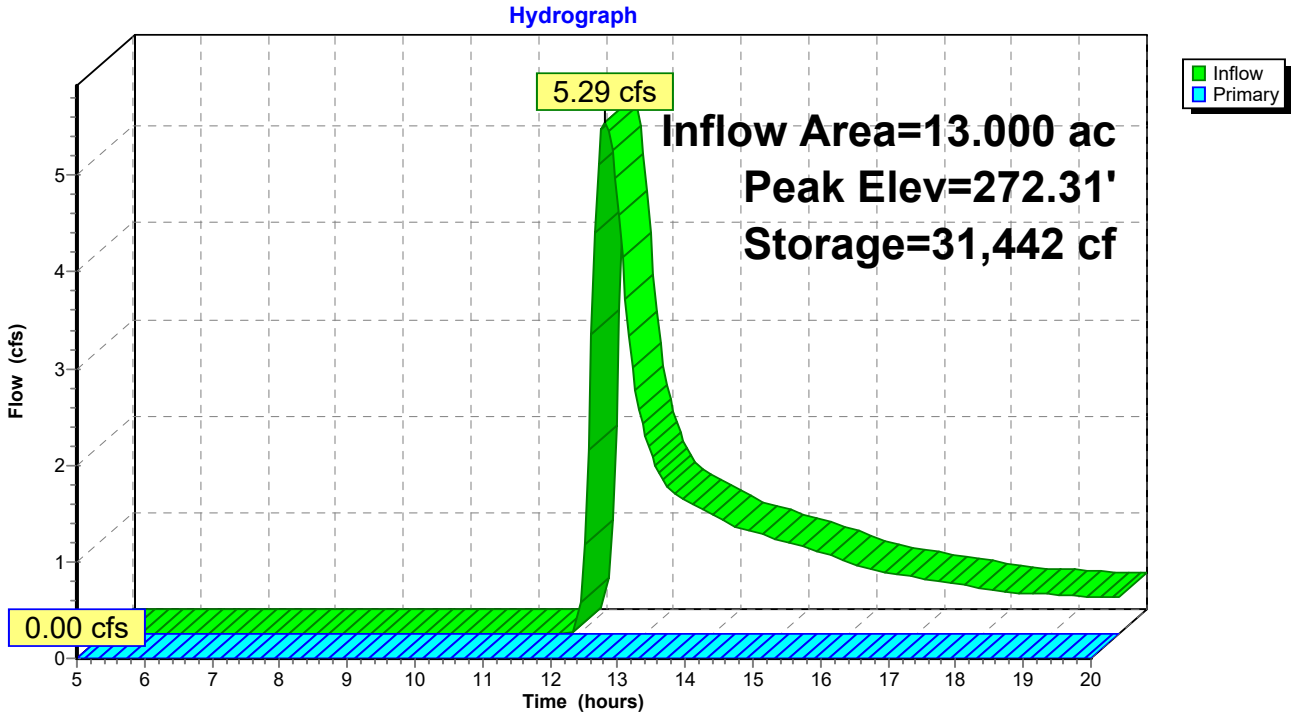
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: PR MB-2 Depression

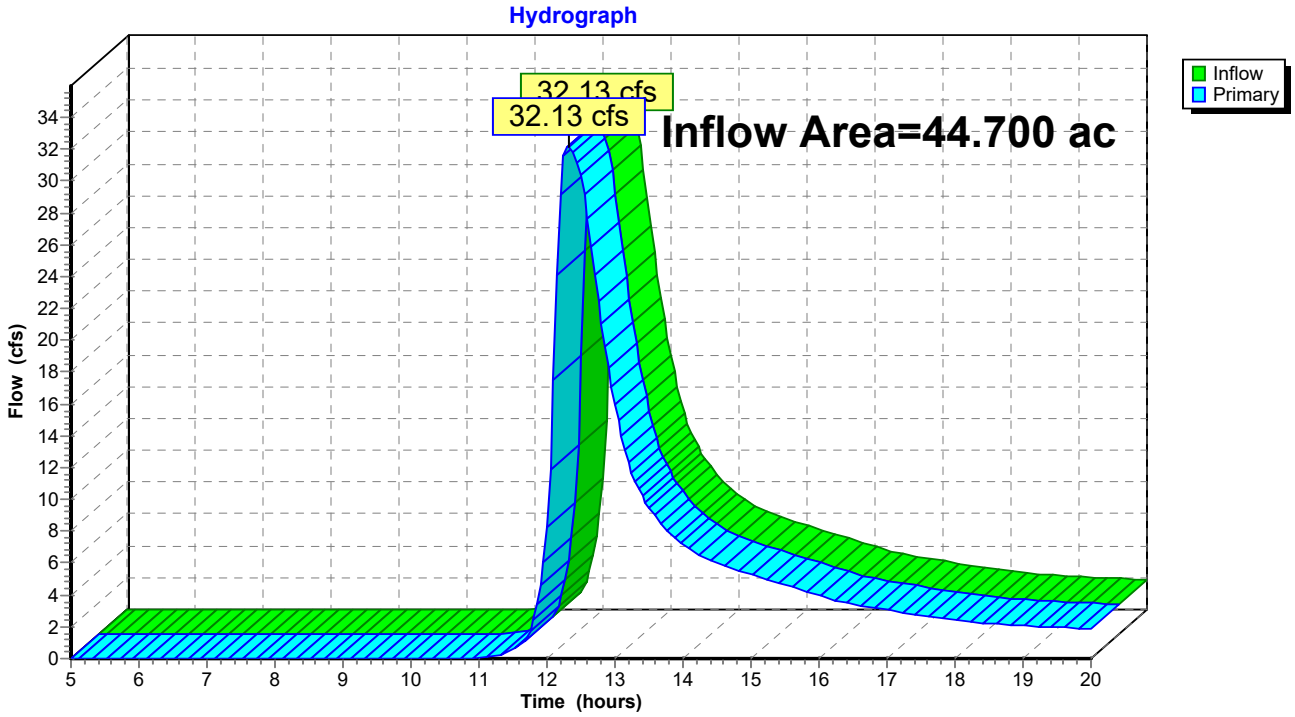


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.51% Impervious, Inflow Depth > 1.27" for 10-year event
Inflow = 32.13 cfs @ 12.31 hrs, Volume= 4.719 af
Primary = 32.13 cfs @ 12.31 hrs, Volume= 4.719 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

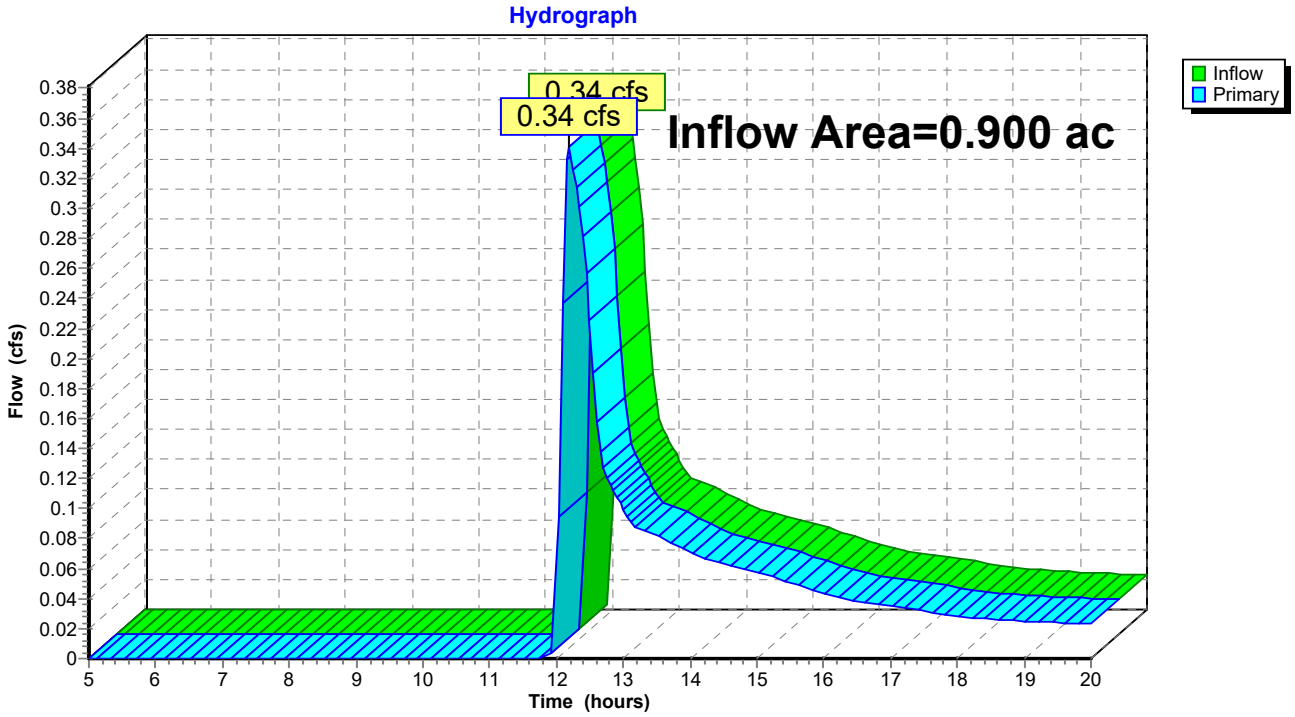


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 0.57" for 10-year event
Inflow = 0.34 cfs @ 12.19 hrs, Volume= 0.043 af
Primary = 0.34 cfs @ 12.19 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

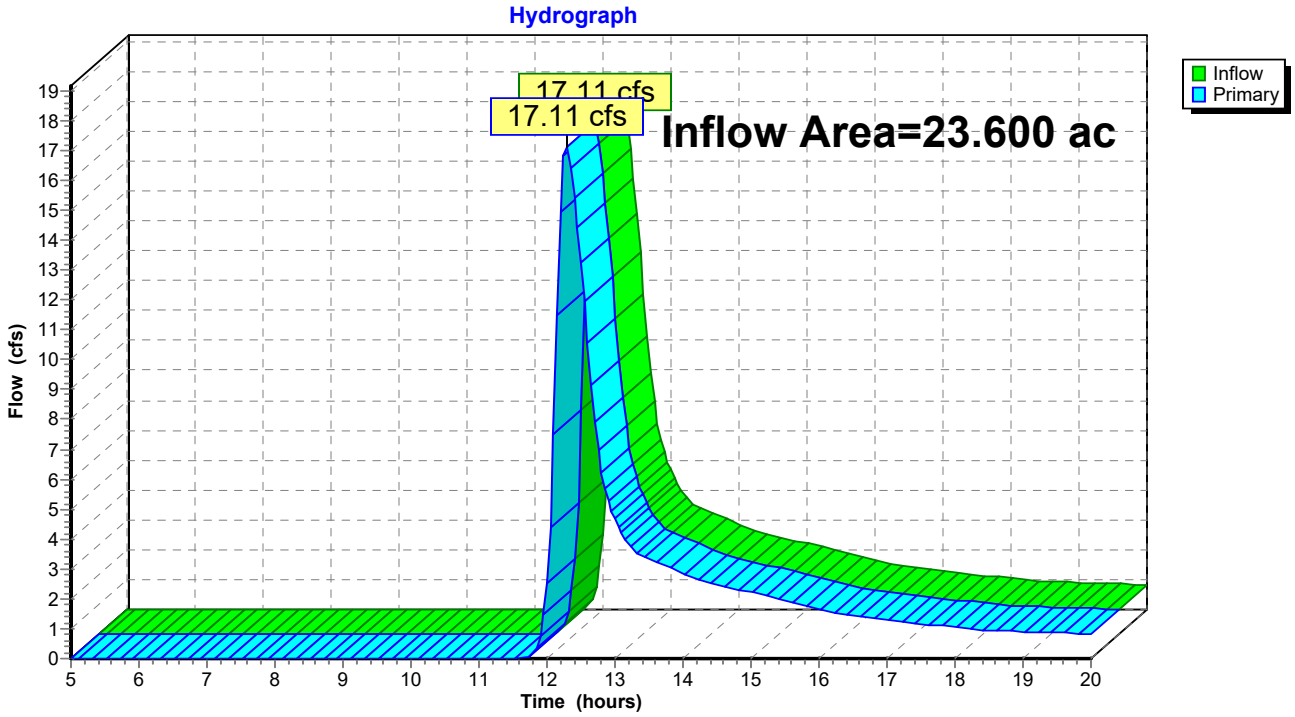


Summary for Link KC: KC

Inflow Area = 23.600 ac, 0.89% Impervious, Inflow Depth > 0.96" for 10-year event
Inflow = 17.11 cfs @ 12.29 hrs, Volume= 1.879 af
Primary = 17.11 cfs @ 12.29 hrs, Volume= 1.879 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

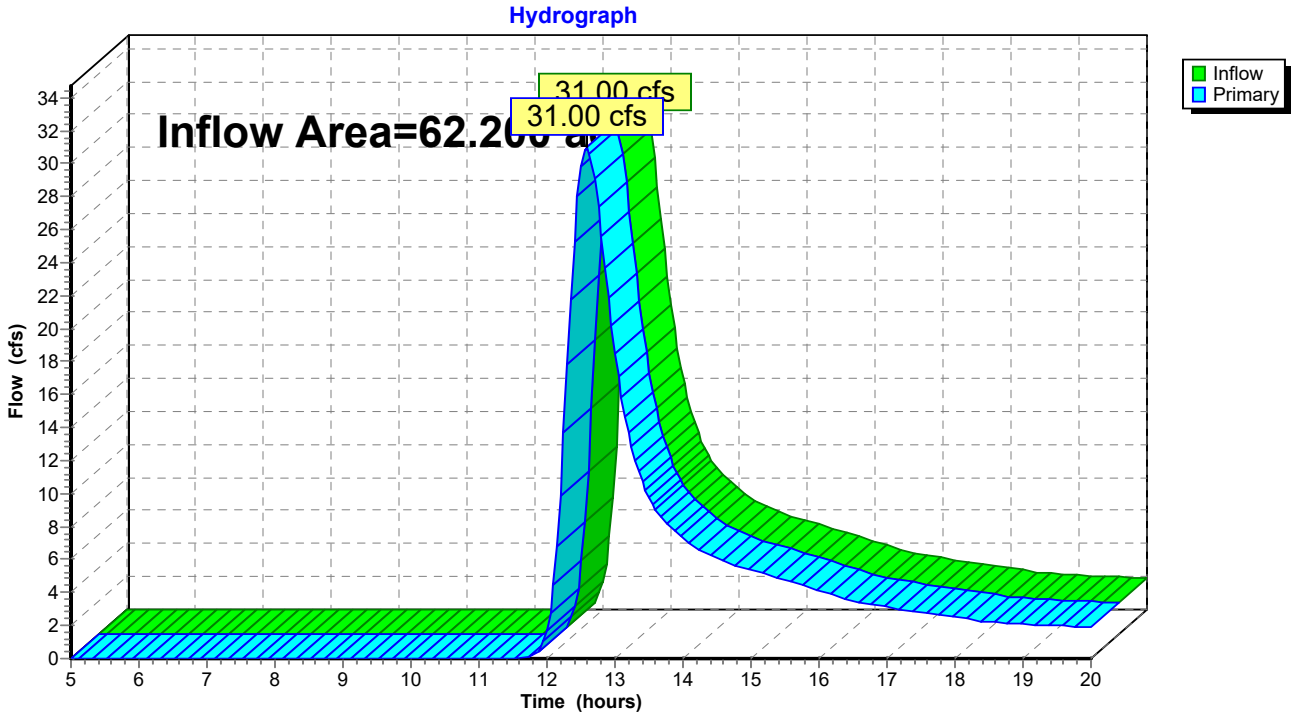


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.08% Impervious, Inflow Depth > 0.85" for 10-year event
Inflow = 31.00 cfs @ 12.58 hrs, Volume= 4.382 af
Primary = 31.00 cfs @ 12.58 hrs, Volume= 4.382 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

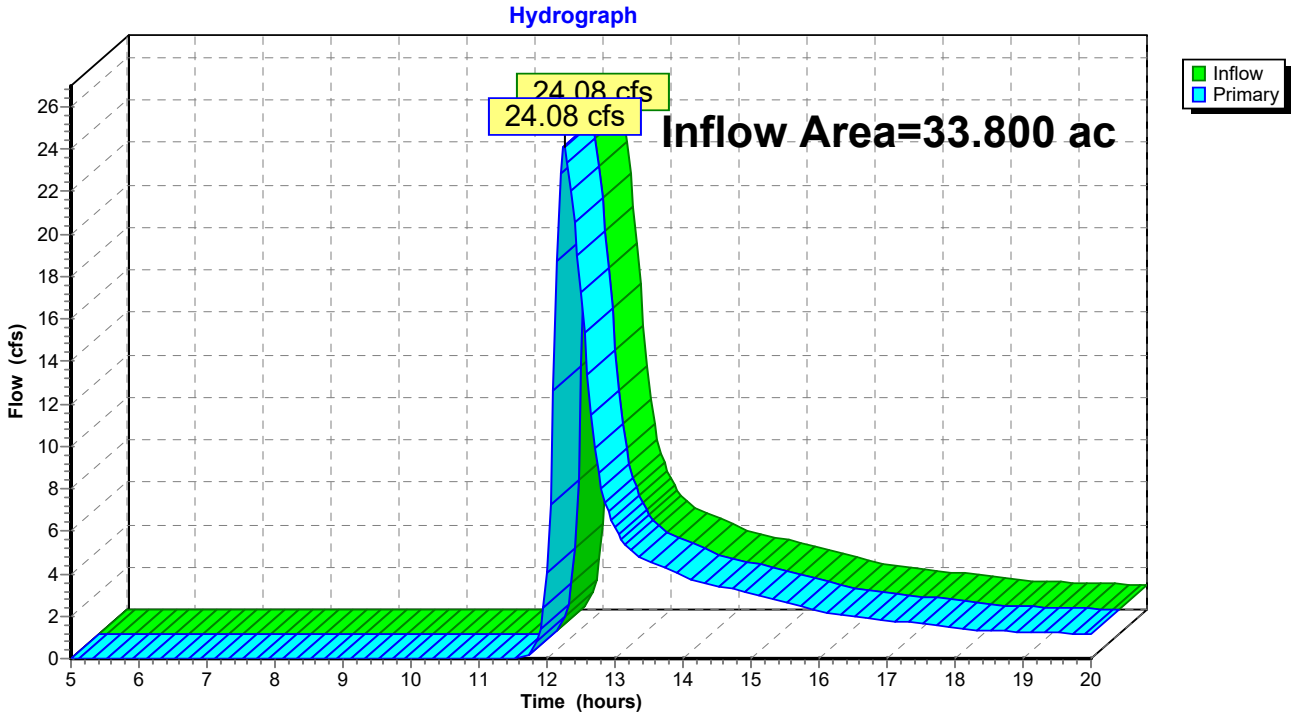


Summary for Link SB: SB

Inflow Area = 33.800 ac, 0.33% Impervious, Inflow Depth > 0.92" for 10-year event
Inflow = 24.08 cfs @ 12.26 hrs, Volume= 2.597 af
Primary = 24.08 cfs @ 12.26 hrs, Volume= 2.597 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



25-Year Storm Event- Proposed

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

Subcatchment BB-1: PR BB-1 Runoff Area=19.100 ac 0.63% Impervious Runoff Depth>1.91"
Flow Length=1,400' Slope=0.0100 '/' Tc=43.7 min CN=58 Runoff=21.12 cfs 3.036 af

Subcatchment BB-2: PR BB-2 Runoff Area=5.900 ac 1.86% Impervious Runoff Depth>1.67"
Flow Length=730' Slope=0.0110 '/' Tc=26.6 min CN=55 Runoff=7.02 cfs 0.822 af

Subcatchment BB-3: PR BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>2.19"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=39.37 cfs 3.602 af

Subcatchment HS-1: PR HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>1.06"
Flow Length=310' Slope=0.0550 '/' Tc=8.5 min CN=47 Runoff=0.87 cfs 0.080 af

Subcatchment KC-1: PR KC-1 Runoff Area=23.600 ac 0.89% Impervious Runoff Depth>1.60"
Flow Length=530' Slope=0.0190 '/' Tc=17.2 min CN=54 Runoff=31.51 cfs 3.141 af

Subcatchment MB-1: PR MB-1 Runoff Area=49.200 ac 0.08% Impervious Runoff Depth>1.75"
Flow Length=1,600' Tc=36.3 min CN=56 Runoff=53.85 cfs 7.158 af

Subcatchment MB-2: PR MB-2 Runoff Area=13.000 ac 0.08% Impervious Runoff Depth>1.20"
Flow Length=540' Tc=20.1 min CN=49 Runoff=11.31 cfs 1.303 af

Subcatchment SB-1: PR SB-1 Runoff Area=8.100 ac 1.23% Impervious Runoff Depth>1.77"
Flow Length=490' Tc=13.3 min CN=56 Runoff=13.42 cfs 1.192 af

Subcatchment SB-2: PR SB-2 Runoff Area=15.800 ac 0.06% Impervious Runoff Depth>1.36"
Flow Length=480' Slope=0.0250 '/' Tc=14.5 min CN=51 Runoff=18.19 cfs 1.791 af

Subcatchment SB-3: PR SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>1.68"
Flow Length=300' Slope=0.0100 '/' Tc=17.5 min CN=55 Runoff=13.97 cfs 1.385 af

Pond 1P: PR MB-2 Depression Peak Elev=273.22' Storage=56,705 cf Inflow=11.31 cfs 1.303 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=53.75 cfs 7.459 af
Primary=53.75 cfs 7.459 af

Link HS: HS Inflow=0.87 cfs 0.080 af
Primary=0.87 cfs 0.080 af

Link KC: KC Inflow=31.51 cfs 3.141 af
Primary=31.51 cfs 3.141 af

Link MB: MB Inflow=53.85 cfs 7.158 af
Primary=53.85 cfs 7.158 af

Link SB: SB Inflow=44.87 cfs 4.367 af
Primary=44.87 cfs 4.367 af

Total Runoff Area = 165.200 ac Runoff Volume = 23.508 af Average Runoff Depth = 1.71"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: PR BB-1

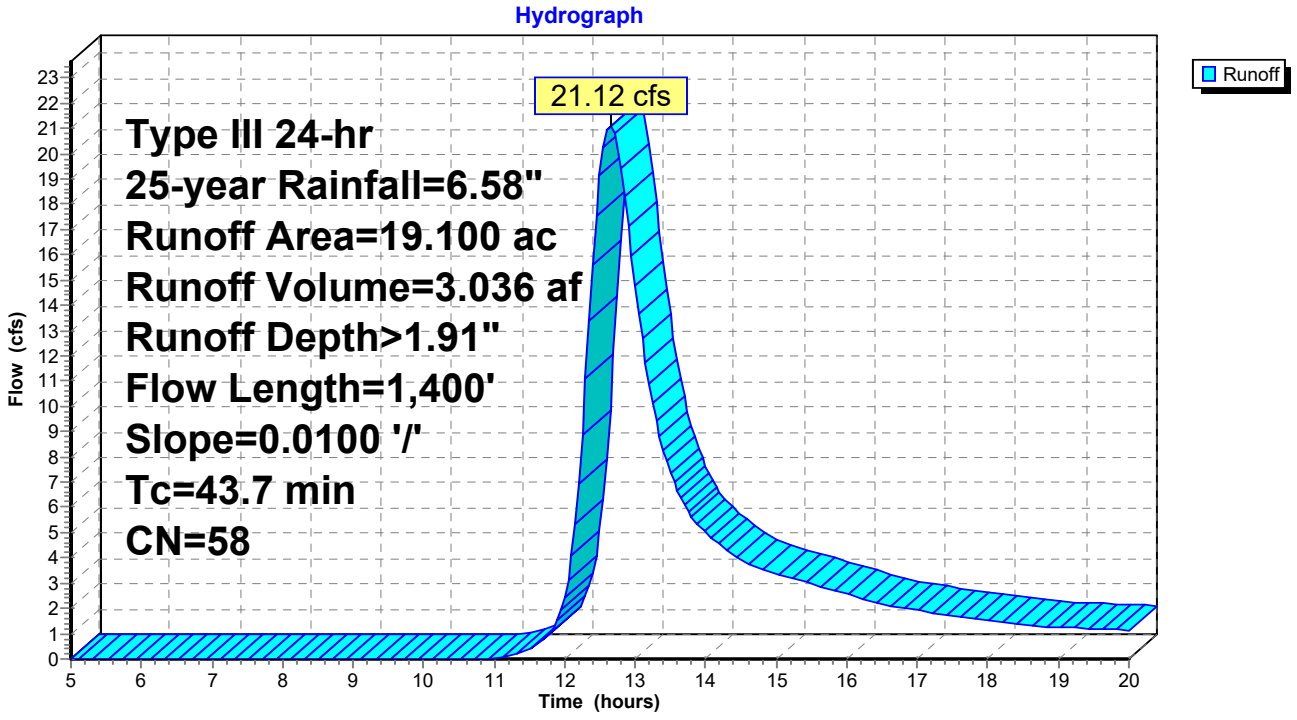
Runoff = 21.12 cfs @ 12.65 hrs, Volume= 3.036 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

	Area (ac)	CN	Description
*	0.020	98	Inverter Pads
	0.100	98	Roofs, HSG A
	1.300	96	Gravel surface, HSG A
	15.780	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	0.300	30	Woods, Good, HSG A
	19.100	58	Weighted Average
	18.980		99.37% Pervious Area
	0.120		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
31.0	1,300	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.7	1,400	Total			

Subcatchment BB-1: PR BB-1



Summary for Subcatchment BB-2: PR BB-2

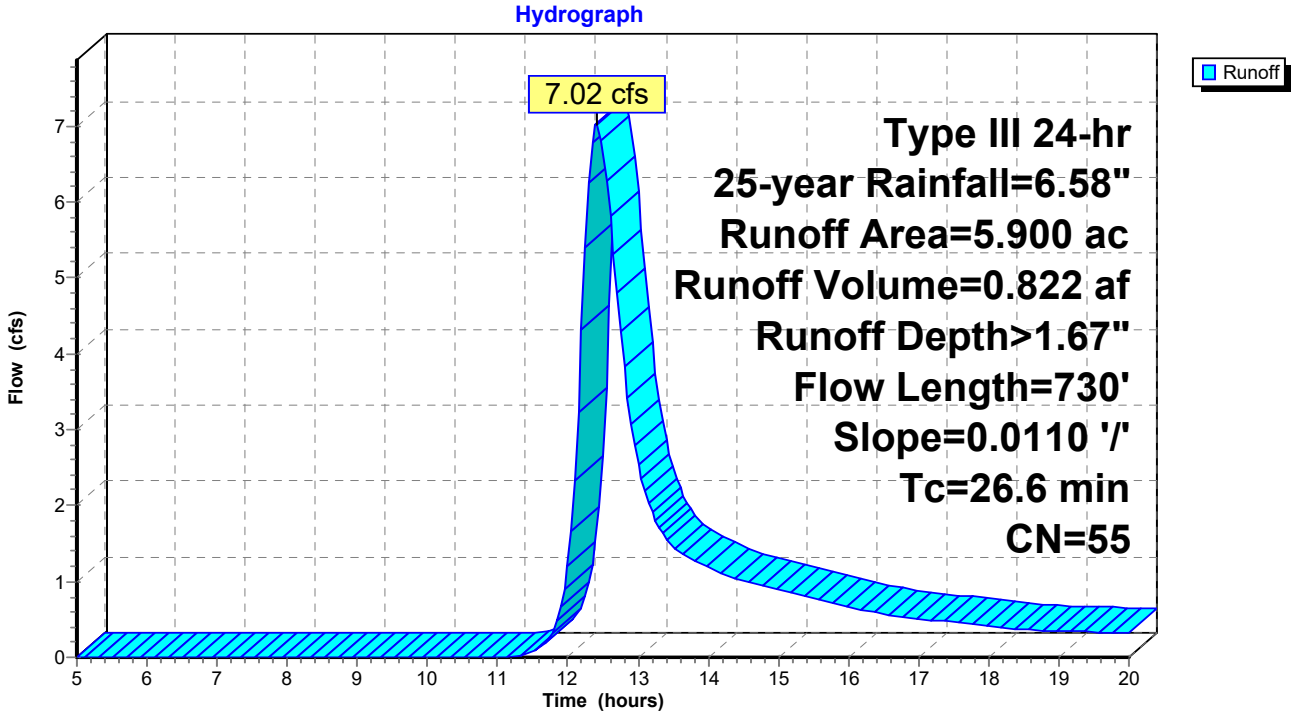
Runoff = 7.02 cfs @ 12.41 hrs, Volume= 0.822 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.100	98	Roofs, HSG A
	0.600	96	Gravel surface, HSG A
	3.590	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	5.900	55	Weighted Average
	5.790		98.14% Pervious Area
	0.110		1.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
14.3	630	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
26.6	730	Total			

Subcatchment BB-2: PR BB-2



Summary for Subcatchment BB-3: PR BB-3

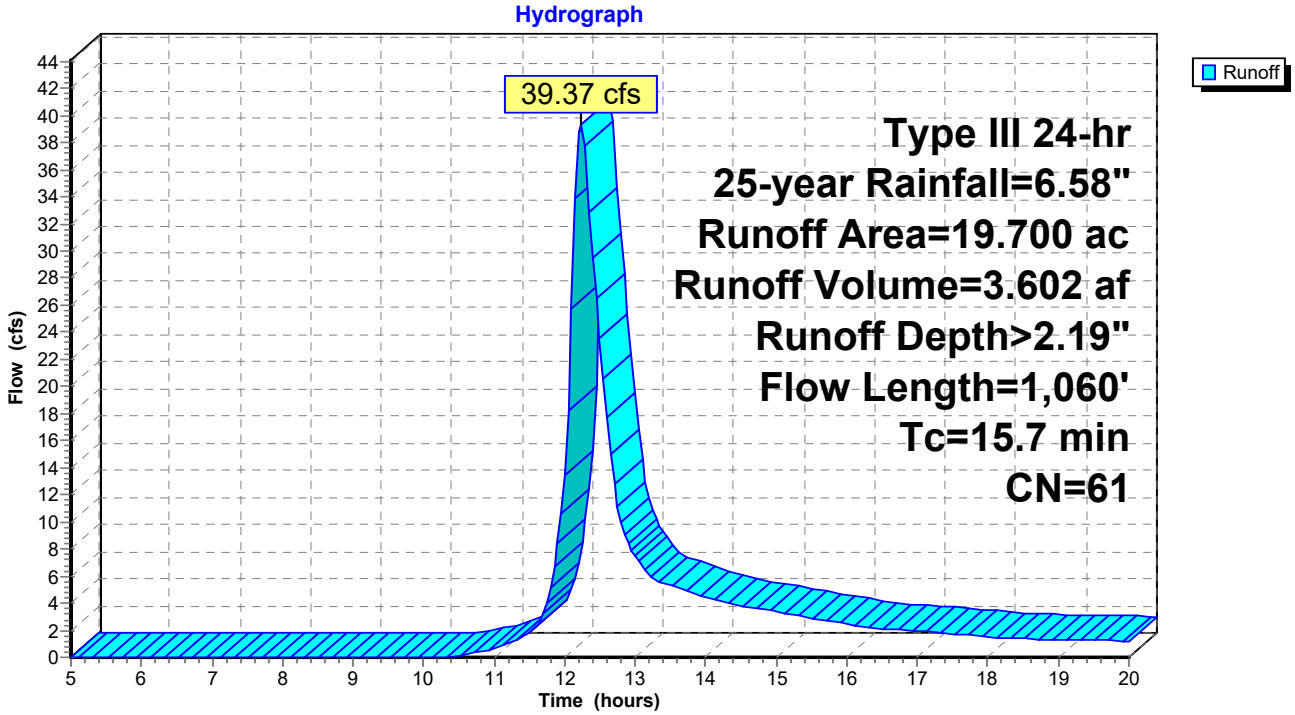
Runoff = 39.37 cfs @ 12.23 hrs, Volume= 3.602 af, Depth> 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: PR BB-3



Summary for Subcatchment HS-1: PR HS-1

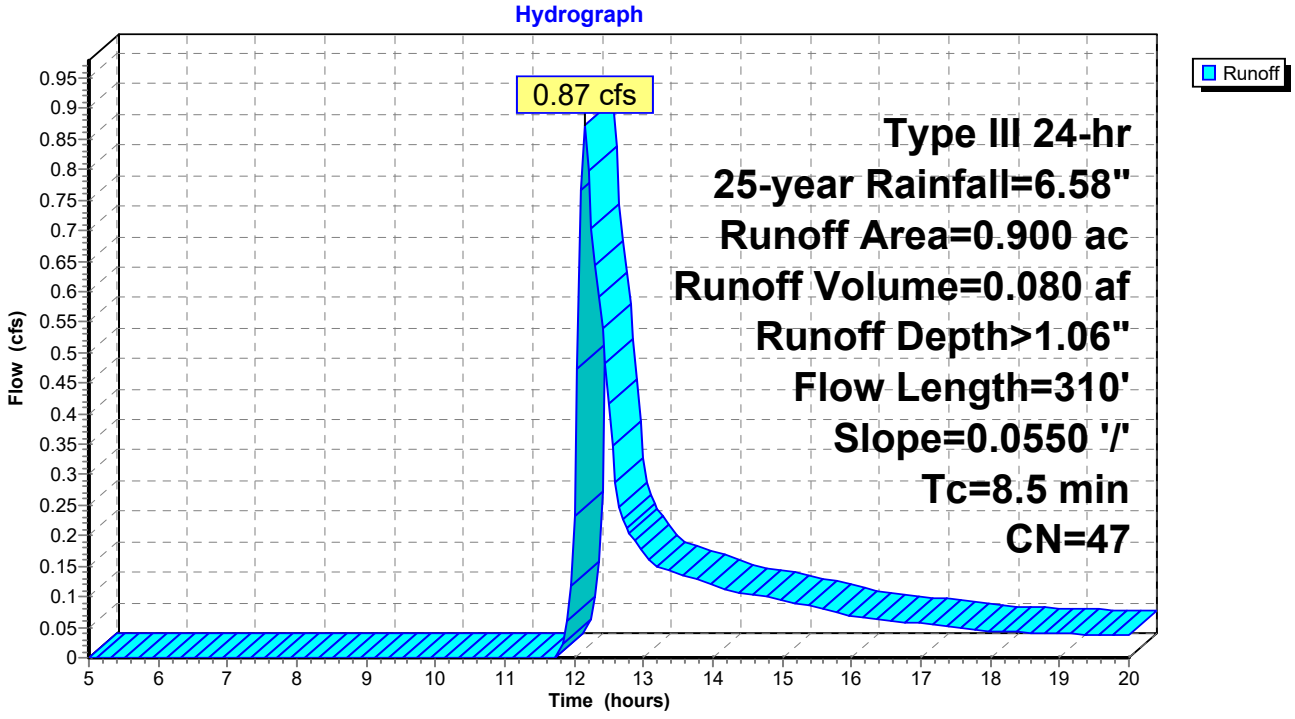
Runoff = 0.87 cfs @ 12.15 hrs, Volume= 0.080 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.100	96	Gravel surface, HSG A
0.300	58	Legumes, straight row, Good, HSG A
0.500	30	Meadow, non-grazed, HSG A
0.900	47	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0550	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.1	210	0.0550	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.5	310	Total			

Subcatchment HS-1: PR HS-1



Summary for Subcatchment KC-1: PR KC-1

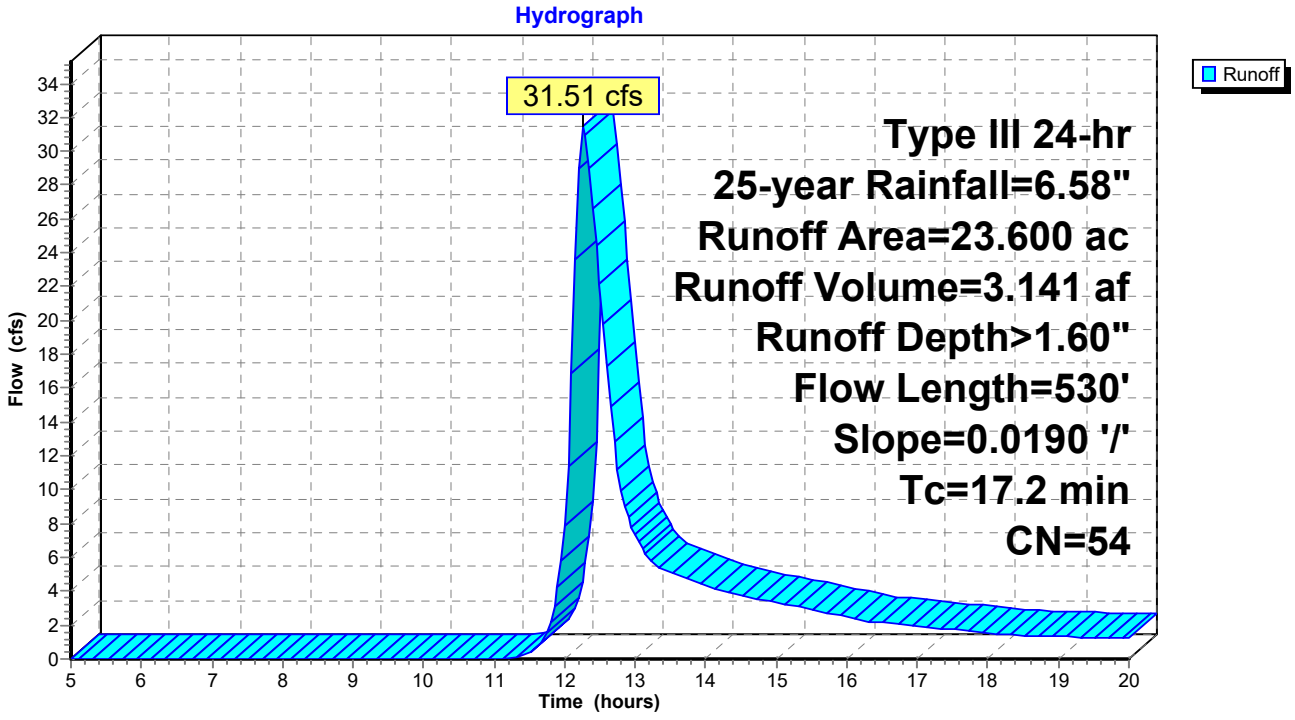
Runoff = 31.51 cfs @ 12.27 hrs, Volume= 3.141 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

	Area (ac)	CN	Description
	0.200	98	Roofs, HSG A
*	0.010	98	Inverter Pads
	2.500	96	Gravel surface, HSG A
	13.890	58	Legumes, straight row, Good, HSG A
	6.400	30	Meadow, non-grazed, HSG A
	0.600	30	Woods, Good, HSG A
	23.600	54	Weighted Average
	23.390		99.11% Pervious Area
	0.210		0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0190	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
7.4	430	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	530	Total			

Subcatchment KC-1: PR KC-1



Summary for Subcatchment MB-1: PR MB-1

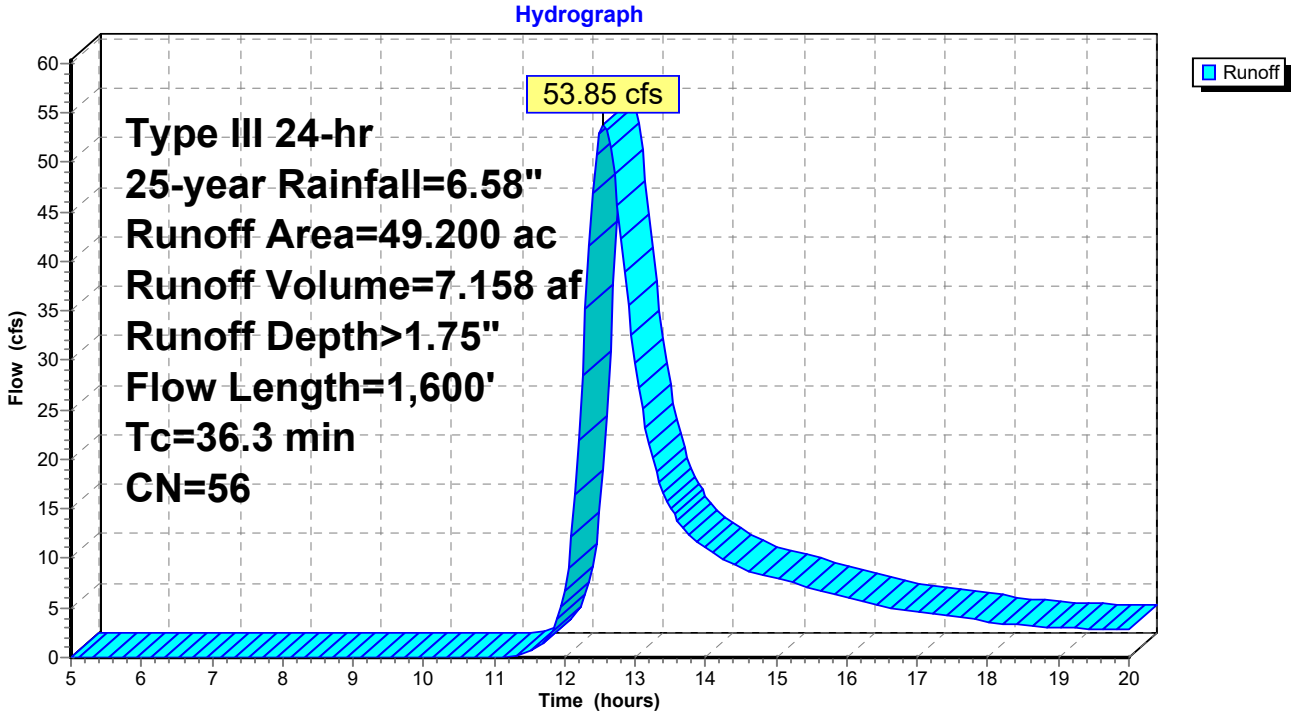
Runoff = 53.85 cfs @ 12.56 hrs, Volume= 7.158 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

	Area (ac)	CN	Description
*	0.040	98	Inverter Pads
	4.600	96	Gravel surface, HSG A
	34.460	58	Legumes, straight row, Good, HSG A
	4.600	30	Meadow, non-grazed, HSG A
	5.500	30	Woods, Good, HSG A
	49.200	56	Weighted Average
	49.160		99.92% Pervious Area
	0.040		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0160	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
15.5	900	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.3	600	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
36.3	1,600	Total			

Subcatchment MB-1: PR MB-1



Summary for Subcatchment MB-2: PR MB-2

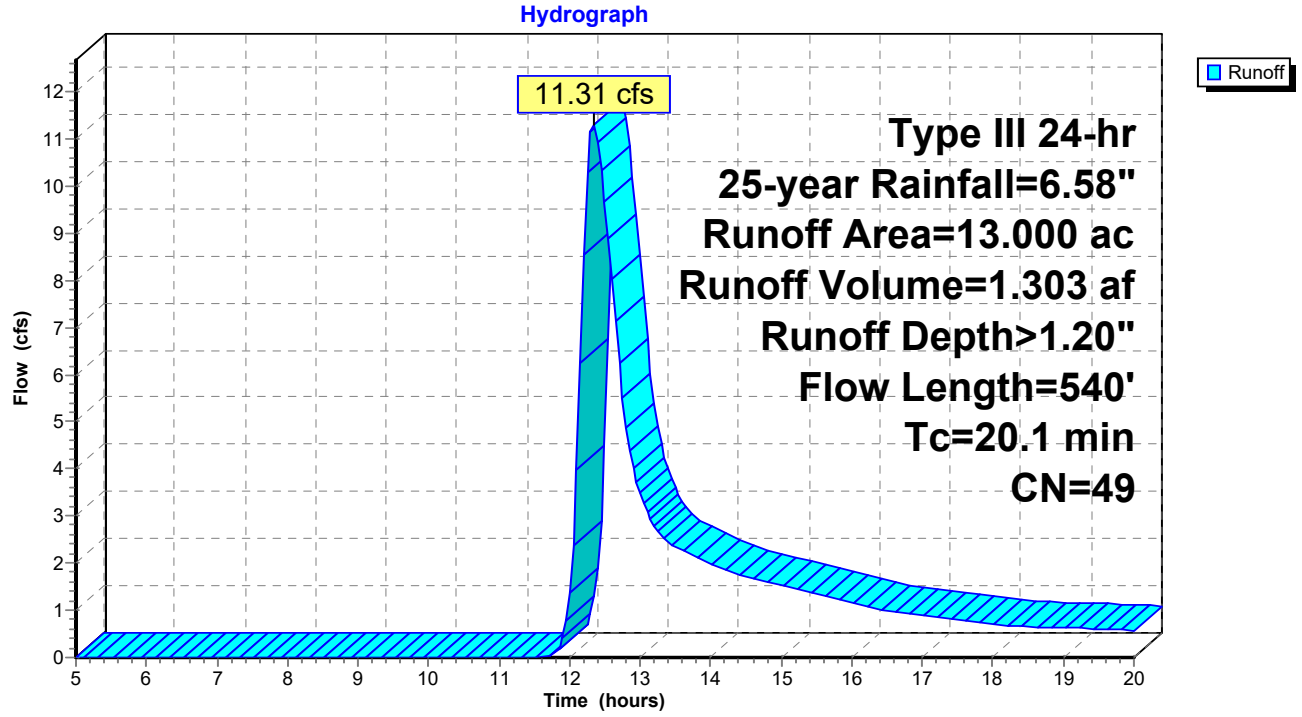
Runoff = 11.31 cfs @ 12.34 hrs, Volume= 1.303 af, Depth> 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.900	96	Gravel surface, HSG A
	6.890	58	Legumes, straight row, Good, HSG A
	2.400	30	Meadow, non-grazed, HSG A
	2.800	30	Woods, Good, HSG A
	13.000	49	Weighted Average
	12.990		99.92% Pervious Area
	0.010		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	50	0.0170	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
3.3	130	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	360	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	540	Total			

Subcatchment MB-2: PR MB-2



Summary for Subcatchment SB-1: PR SB-1

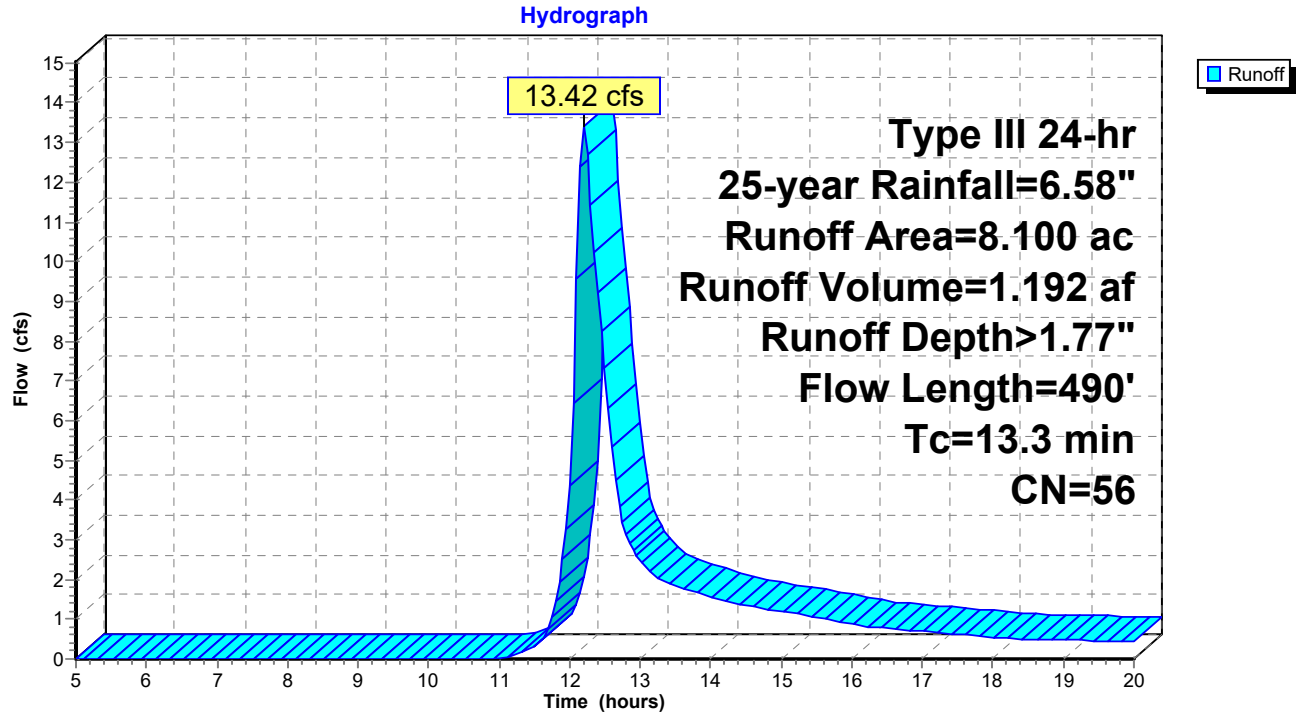
Runoff = 13.42 cfs @ 12.20 hrs, Volume= 1.192 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

	Area (ac)	CN	Description
*	0.100	98	Inverter Pads & Switchyard
	1.000	96	Gravel surface, HSG A
	4.900	58	Legumes, straight row, Good, HSG A
	2.100	30	Meadow, non-grazed, HSG A
	8.100	56	Weighted Average
	8.000		98.77% Pervious Area
	0.100		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.7	250	0.1180	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	140	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.3	490	Total			

Subcatchment SB-1: PR SB-1



Summary for Subcatchment SB-2: PR SB-2

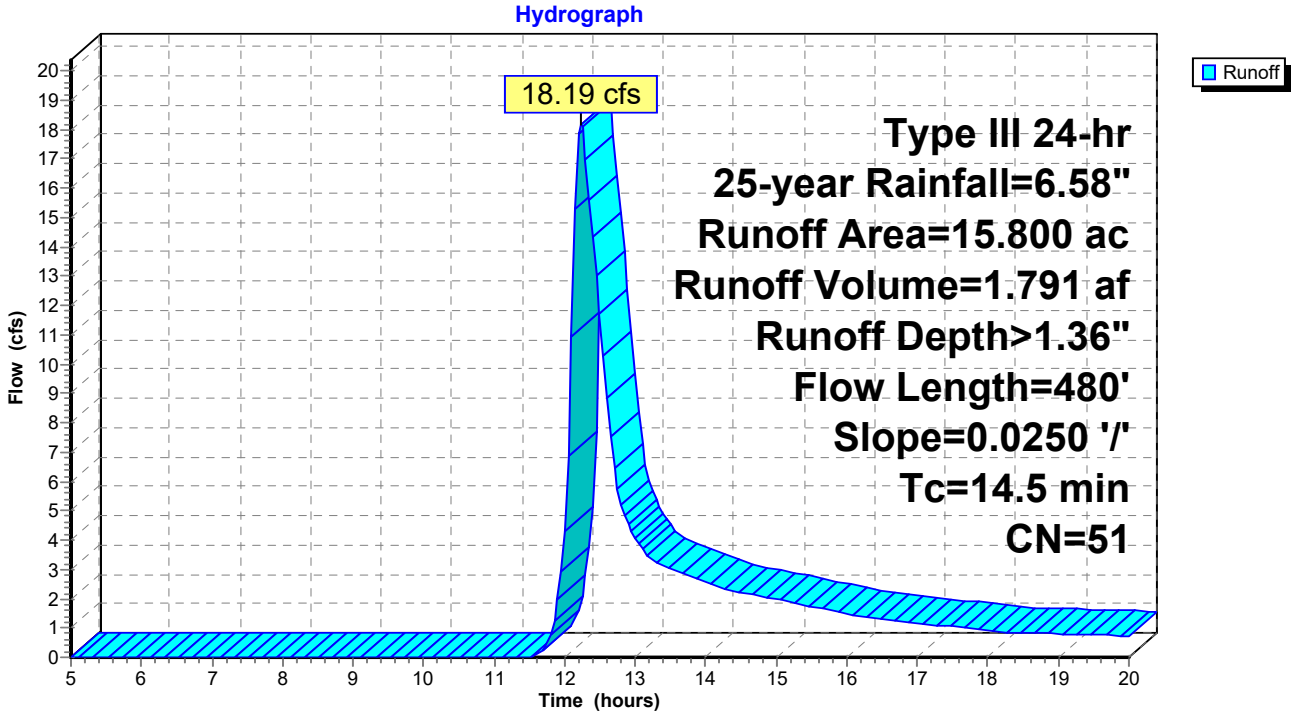
Runoff = 18.19 cfs @ 12.23 hrs, Volume= 1.791 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	1.700	96	Gravel surface, HSG A
	8.090	58	Legumes, straight row, Good, HSG A
	3.500	30	Meadow, non-grazed, HSG A
	2.500	30	Woods, Good, HSG A
	15.800	51	Weighted Average
	15.790		99.94% Pervious Area
	0.010		0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0250	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
5.7	380	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	480	Total			

Subcatchment SB-2: PR SB-2



Summary for Subcatchment SB-3: PR SB-3

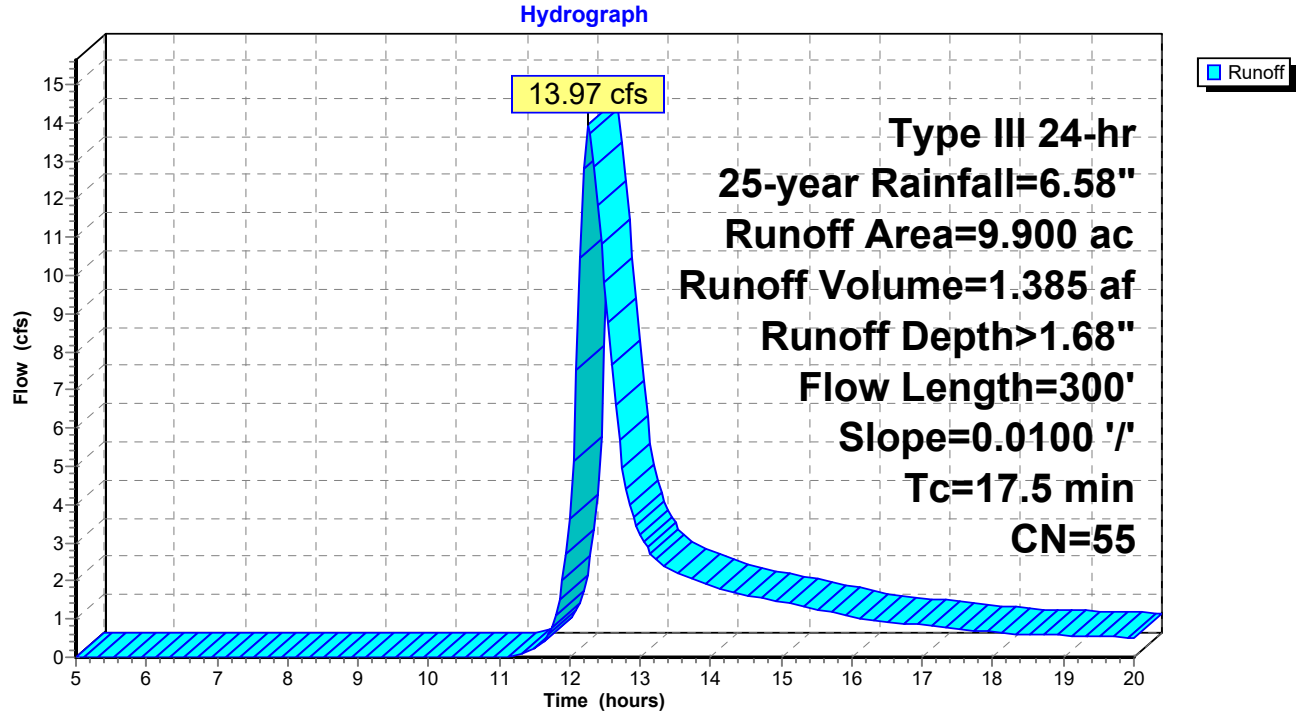
Runoff = 13.97 cfs @ 12.27 hrs, Volume= 1.385 af, Depth> 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.58"

Area (ac)	CN	Description
0.900	96	Gravel surface, HSG A
6.700	58	Legumes, straight row, Good, HSG A
2.100	30	Meadow, non-grazed, HSG A
0.200	30	Woods, Good, HSG A
9.900	55	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.8	200	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.5	300	Total			

Subcatchment SB-3: PR SB-3



Summary for Pond 1P: PR MB-2 Depression

Inflow Area = 13.000 ac, 0.08% Impervious, Inflow Depth > 1.20" for 25-year event
Inflow = 11.31 cfs @ 12.34 hrs, Volume= 1.303 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 273.22' @ 20.00 hrs Surf.Area= 33,042 sf Storage= 56,705 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

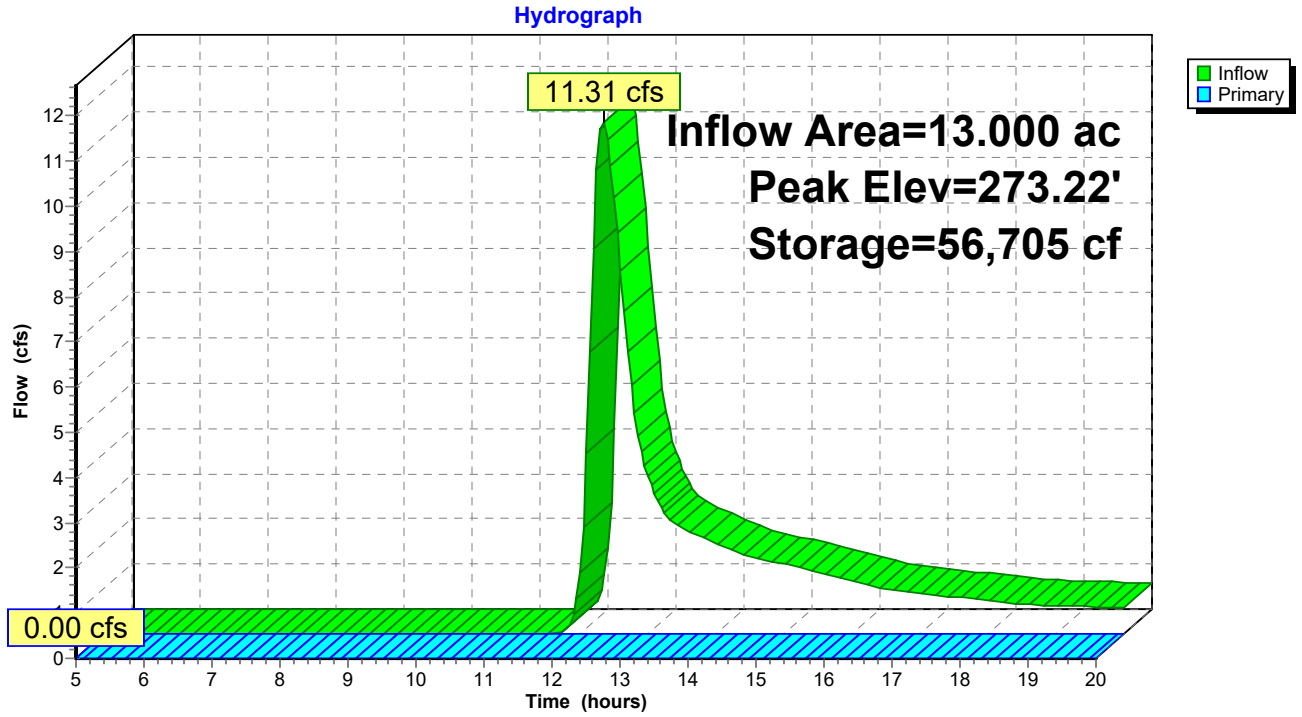
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: PR MB-2 Depression

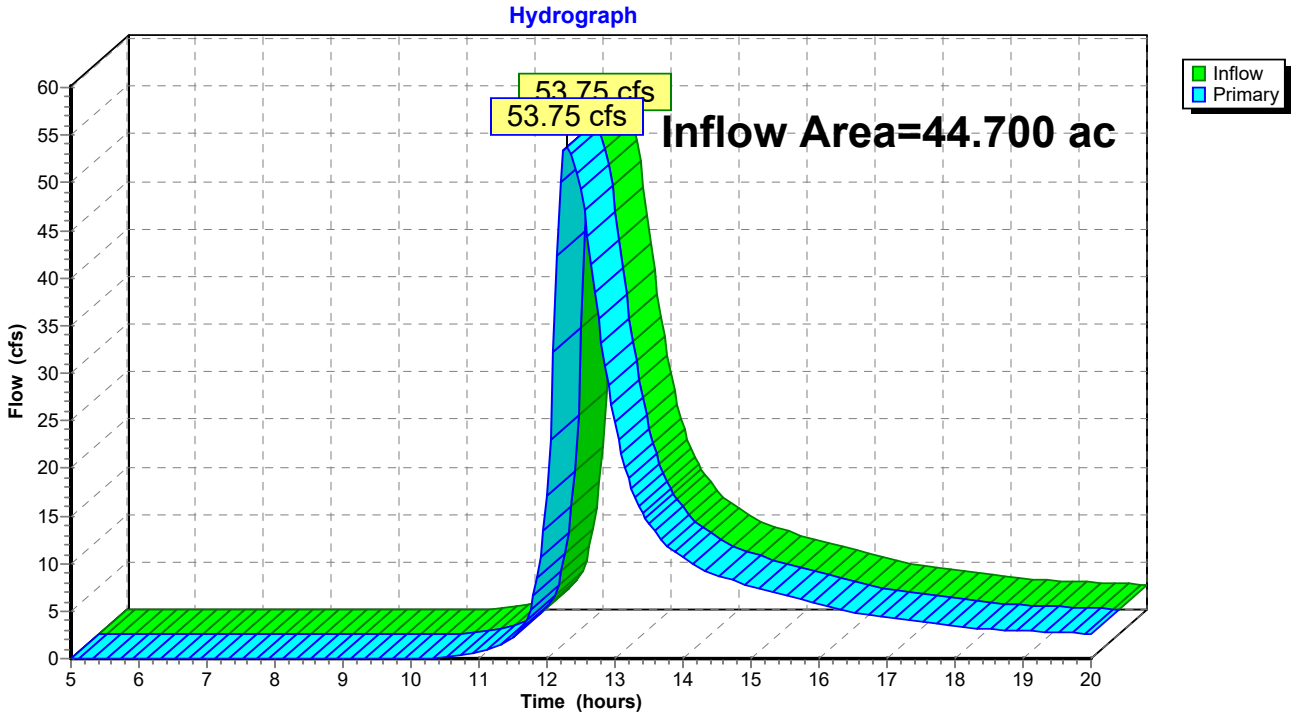


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.51% Impervious, Inflow Depth > 2.00" for 25-year event
Inflow = 53.75 cfs @ 12.29 hrs, Volume= 7.459 af
Primary = 53.75 cfs @ 12.29 hrs, Volume= 7.459 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

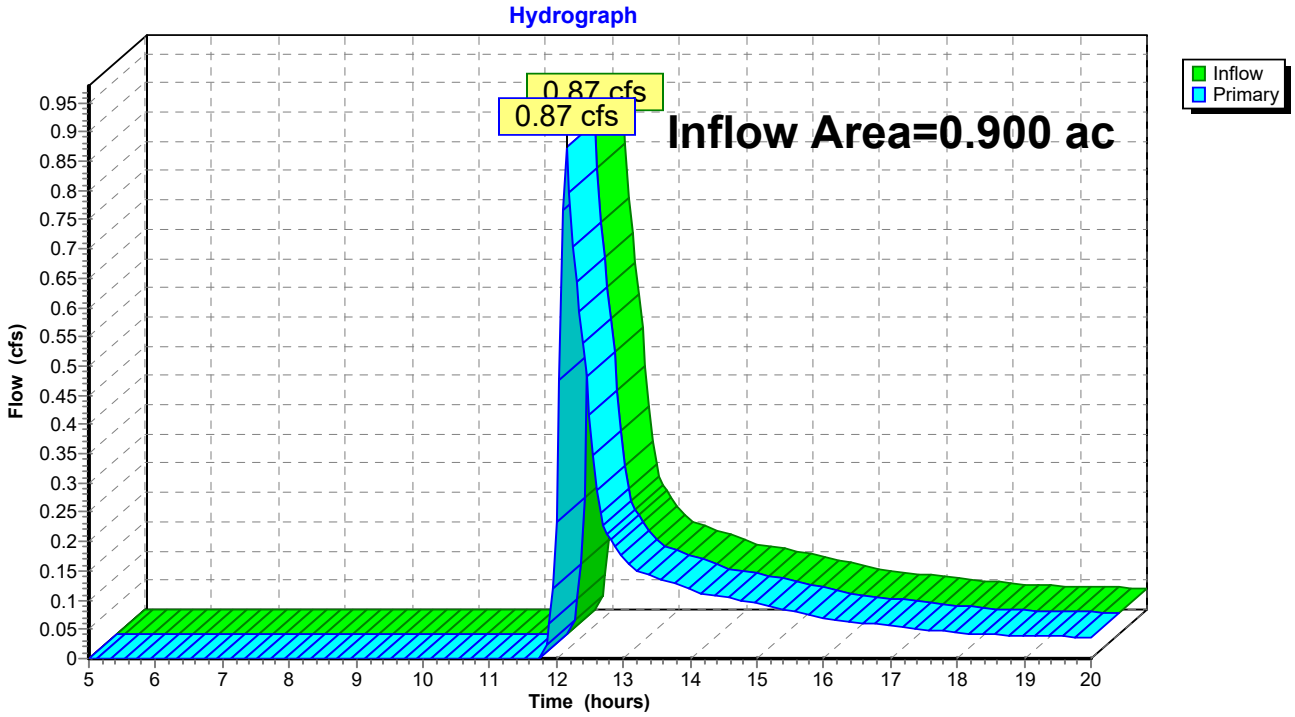


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 1.06" for 25-year event
Inflow = 0.87 cfs @ 12.15 hrs, Volume= 0.080 af
Primary = 0.87 cfs @ 12.15 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

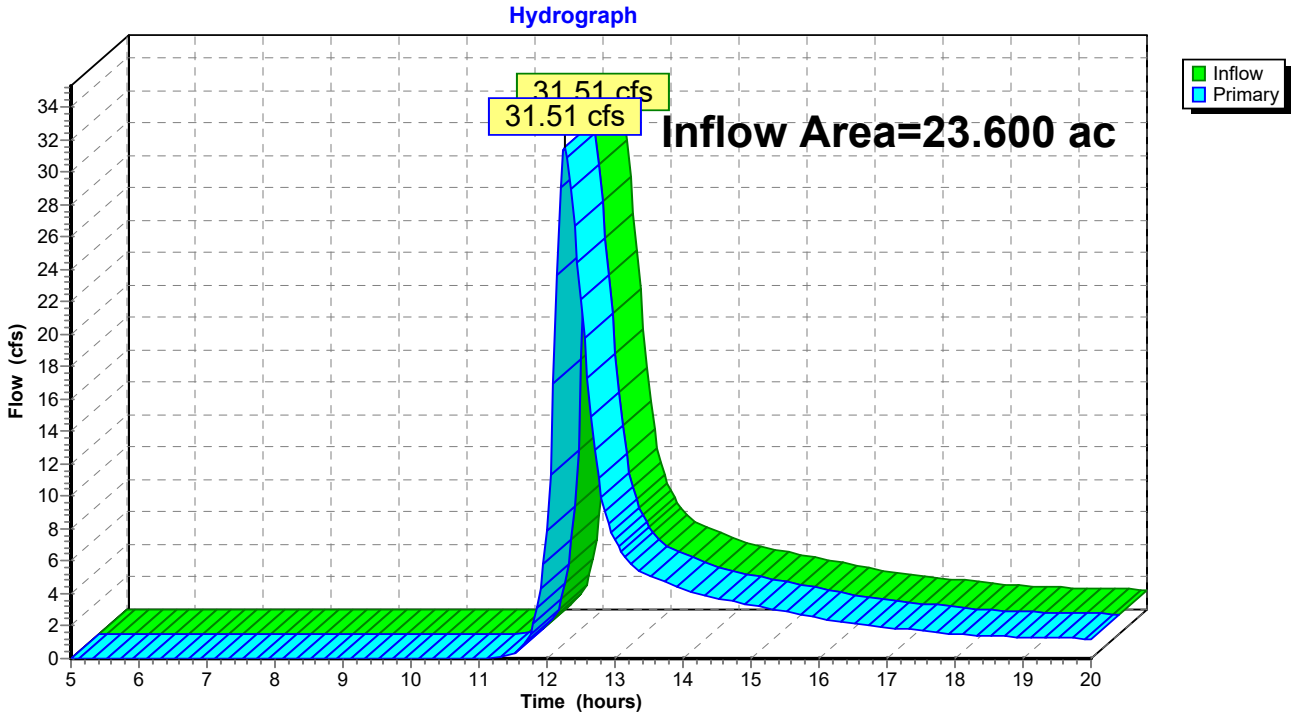


Summary for Link KC: KC

Inflow Area = 23.600 ac, 0.89% Impervious, Inflow Depth > 1.60" for 25-year event
Inflow = 31.51 cfs @ 12.27 hrs, Volume= 3.141 af
Primary = 31.51 cfs @ 12.27 hrs, Volume= 3.141 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

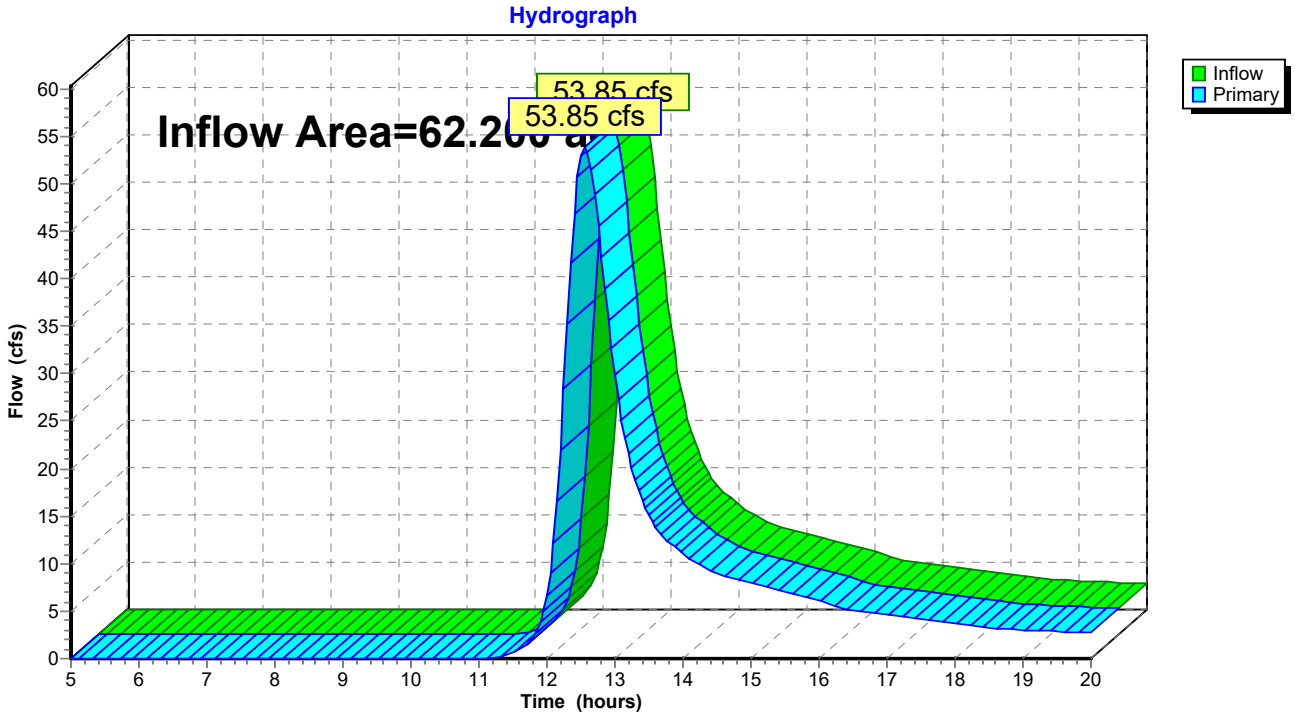


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.08% Impervious, Inflow Depth > 1.38" for 25-year event
Inflow = 53.85 cfs @ 12.56 hrs, Volume= 7.158 af
Primary = 53.85 cfs @ 12.56 hrs, Volume= 7.158 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

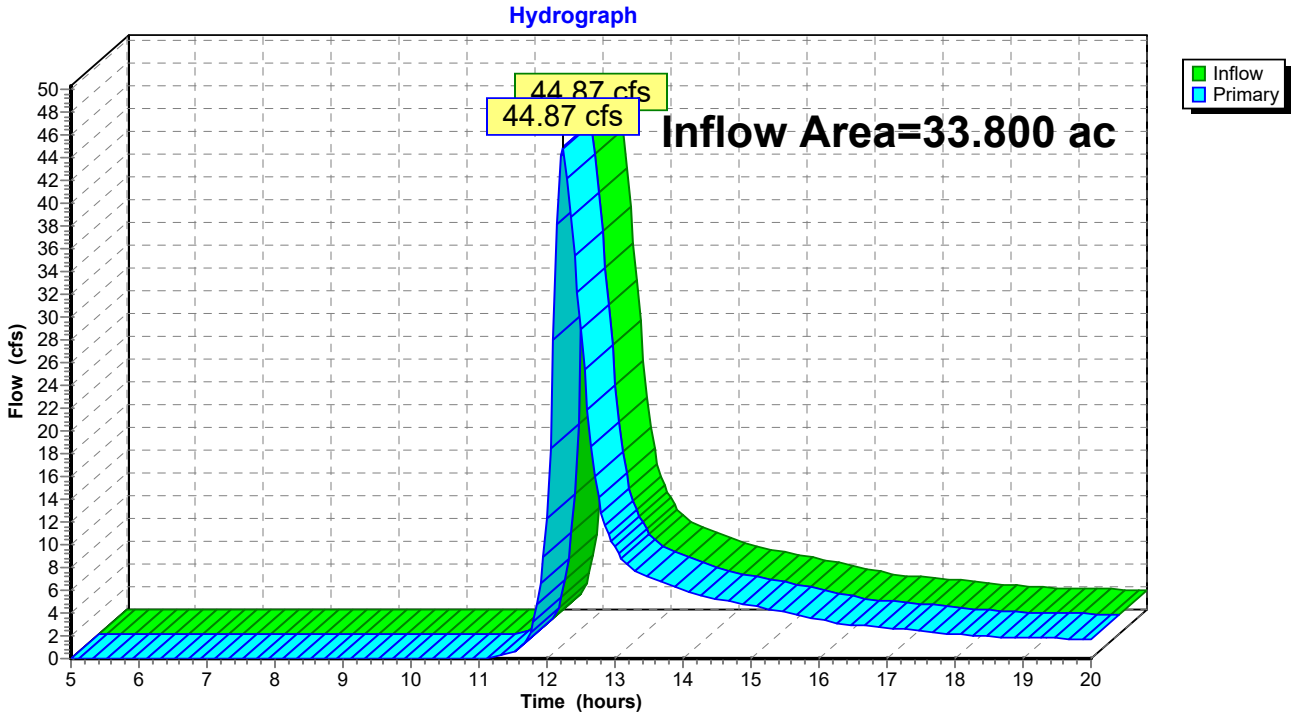


Summary for Link SB: SB

Inflow Area = 33.800 ac, 0.33% Impervious, Inflow Depth > 1.55" for 25-year event
Inflow = 44.87 cfs @ 12.23 hrs, Volume= 4.367 af
Primary = 44.87 cfs @ 12.23 hrs, Volume= 4.367 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



100-Year Storm Event – Proposed

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

Subcatchment BB-1: PR BB-1 Runoff Area=19.100 ac 0.63% Impervious Runoff Depth>3.18"
Flow Length=1,400' Slope=0.0100 '/' Tc=43.7 min CN=58 Runoff=36.07 cfs 5.055 af

Subcatchment BB-2: PR BB-2 Runoff Area=5.900 ac 1.86% Impervious Runoff Depth>2.87"
Flow Length=730' Slope=0.0110 '/' Tc=26.6 min CN=55 Runoff=12.54 cfs 1.409 af

Subcatchment BB-3: PR BB-3 Runoff Area=19.700 ac 0.00% Impervious Runoff Depth>3.55"
Flow Length=1,060' Tc=15.7 min CN=61 Runoff=65.20 cfs 5.829 af

Subcatchment HS-1: PR HS-1 Runoff Area=0.900 ac 0.00% Impervious Runoff Depth>2.02"
Flow Length=310' Slope=0.0550 '/' Tc=8.5 min CN=47 Runoff=1.91 cfs 0.152 af

Subcatchment KC-1: PR KC-1 Runoff Area=23.600 ac 0.89% Impervious Runoff Depth>2.77"
Flow Length=530' Slope=0.0190 '/' Tc=17.2 min CN=54 Runoff=57.46 cfs 5.443 af

Subcatchment MB-1: PR MB-1 Runoff Area=49.200 ac 0.08% Impervious Runoff Depth>2.96"
Flow Length=1,600' Tc=36.3 min CN=56 Runoff=94.53 cfs 12.152 af

Subcatchment MB-2: PR MB-2 Runoff Area=13.000 ac 0.08% Impervious Runoff Depth>2.22"
Flow Length=540' Tc=20.1 min CN=49 Runoff=23.12 cfs 2.409 af

Subcatchment SB-1: PR SB-1 Runoff Area=8.100 ac 1.23% Impervious Runoff Depth>2.99"
Flow Length=490' Tc=13.3 min CN=56 Runoff=23.65 cfs 2.020 af

Subcatchment SB-2: PR SB-2 Runoff Area=15.800 ac 0.06% Impervious Runoff Depth>2.44"
Flow Length=480' Slope=0.0250 '/' Tc=14.5 min CN=51 Runoff=35.62 cfs 3.218 af

Subcatchment SB-3: PR SB-3 Runoff Area=9.900 ac 0.00% Impervious Runoff Depth>2.88"
Flow Length=300' Slope=0.0100 '/' Tc=17.5 min CN=55 Runoff=25.04 cfs 2.374 af

Pond 1P: PR MB-2 Depression Peak Elev=274.43' Storage=104,839 cf Inflow=23.12 cfs 2.409 af
Outflow=0.00 cfs 0.000 af

Link BB: BB Inflow=92.07 cfs 12.293 af
Primary=92.07 cfs 12.293 af

Link HS: HS Inflow=1.91 cfs 0.152 af
Primary=1.91 cfs 0.152 af

Link KC: KC Inflow=57.46 cfs 5.443 af
Primary=57.46 cfs 5.443 af

Link MB: MB Inflow=94.53 cfs 12.152 af
Primary=94.53 cfs 12.152 af

Link SB: SB Inflow=83.40 cfs 7.612 af
Primary=83.40 cfs 7.612 af

Total Runoff Area = 165.200 ac Runoff Volume = 40.060 af Average Runoff Depth = 2.91"
99.64% Pervious = 164.600 ac 0.36% Impervious = 0.600 ac

Summary for Subcatchment BB-1: PR BB-1

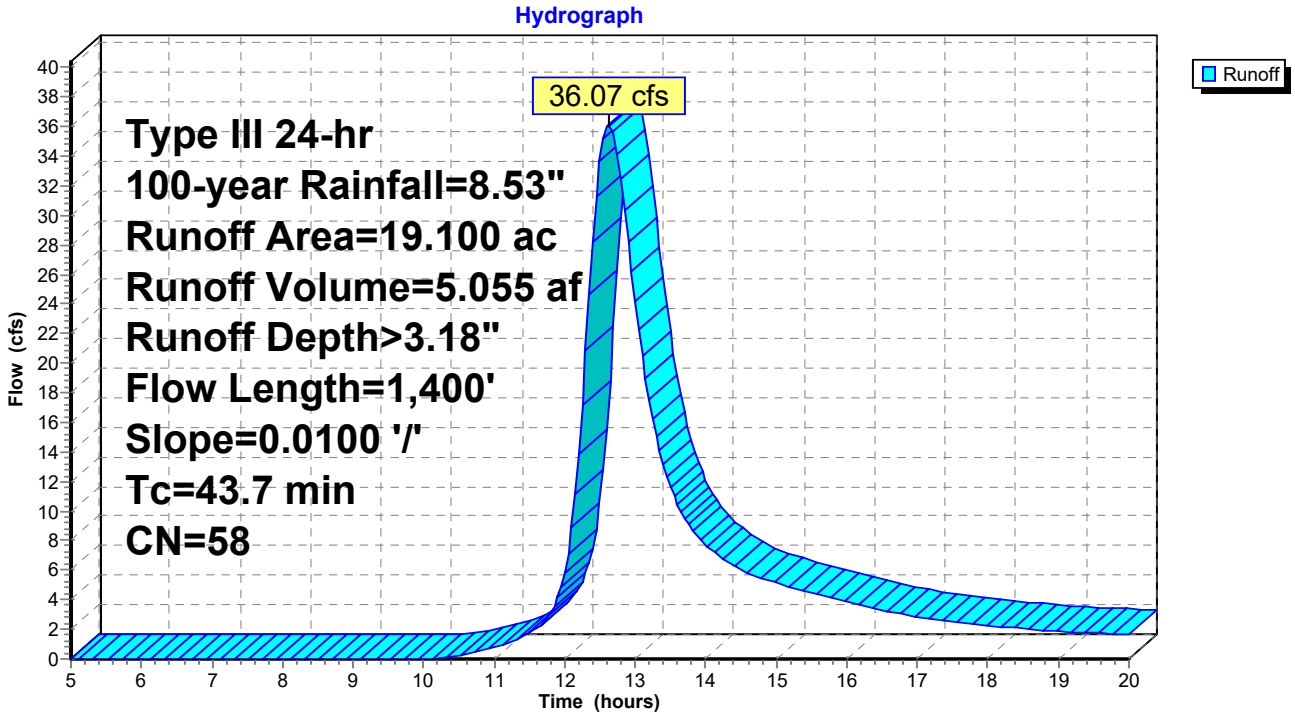
Runoff = 36.07 cfs @ 12.63 hrs, Volume= 5.055 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

	Area (ac)	CN	Description
*	0.020	98	Inverter Pads
	0.100	98	Roofs, HSG A
	1.300	96	Gravel surface, HSG A
	15.780	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	0.300	30	Woods, Good, HSG A
	19.100	58	Weighted Average
	18.980		99.37% Pervious Area
	0.120		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
31.0	1,300	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.7	1,400	Total			

Subcatchment BB-1: PR BB-1



Summary for Subcatchment BB-2: PR BB-2

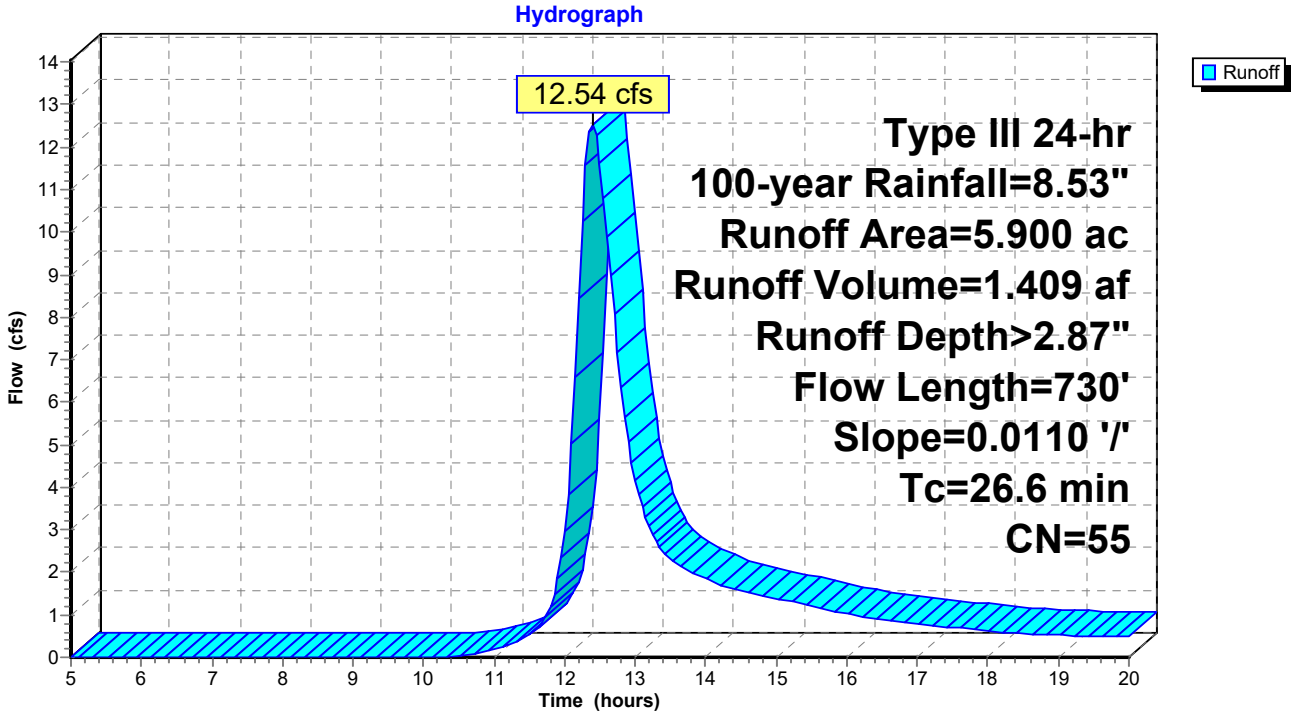
Runoff = 12.54 cfs @ 12.40 hrs, Volume= 1.409 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.100	98	Roofs, HSG A
	0.600	96	Gravel surface, HSG A
	3.590	58	Legumes, straight row, Good, HSG A
	1.600	30	Meadow, non-grazed, HSG A
	5.900	55	Weighted Average
	5.790		98.14% Pervious Area
	0.110		1.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
14.3	630	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
26.6	730	Total			

Subcatchment BB-2: PR BB-2



Summary for Subcatchment BB-3: PR BB-3

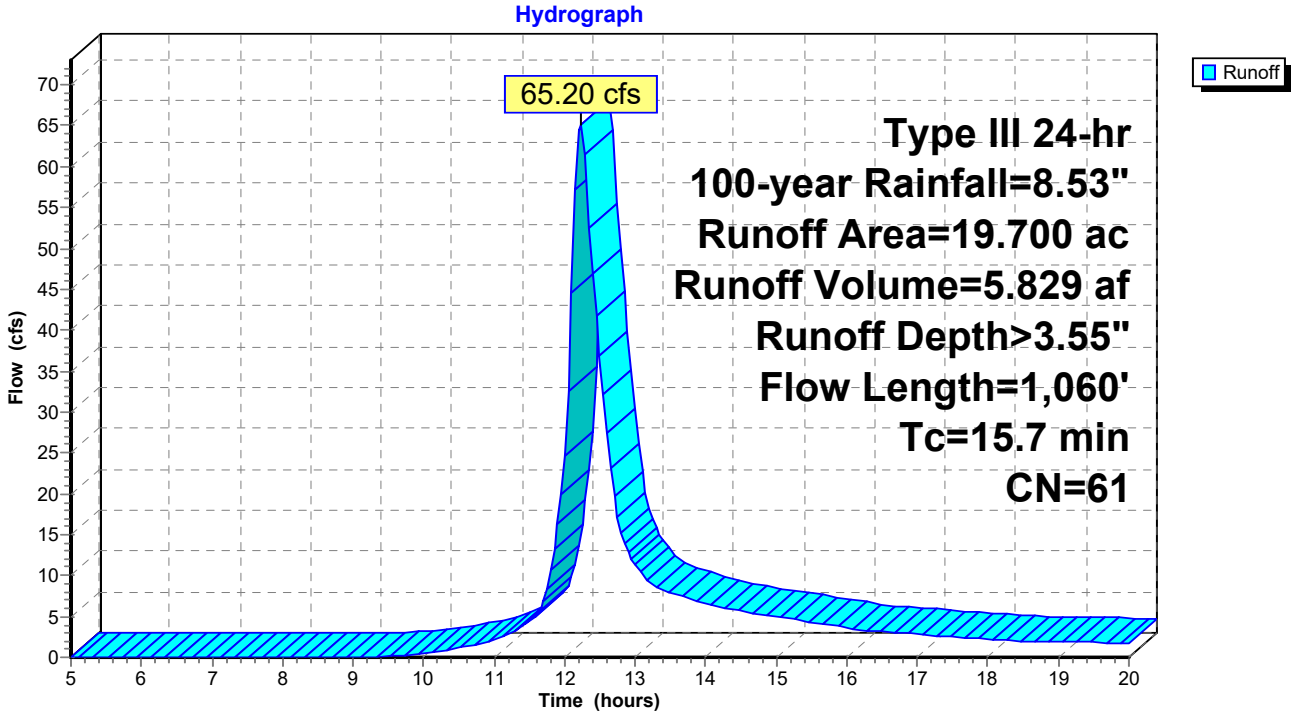
Runoff = 65.20 cfs @ 12.22 hrs, Volume= 5.829 af, Depth> 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
1.300	72	Dirt roads, HSG A
13.700	70	Row crops, contoured, Poor, HSG A
4.700	30	Woods, Good, HSG A
19.700	61	Weighted Average
19.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.0190	0.35		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 3.30"
10.7	800	0.0190	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.3	160	0.0440	9.20	92.01	**Channel Flow,** Area= 10.0 sf Perim= 12.0' r= 0.83' n= 0.030 Earth, grassed & winding
15.7	1,060	Total			

Subcatchment BB-3: PR BB-3



Summary for Subcatchment HS-1: PR HS-1

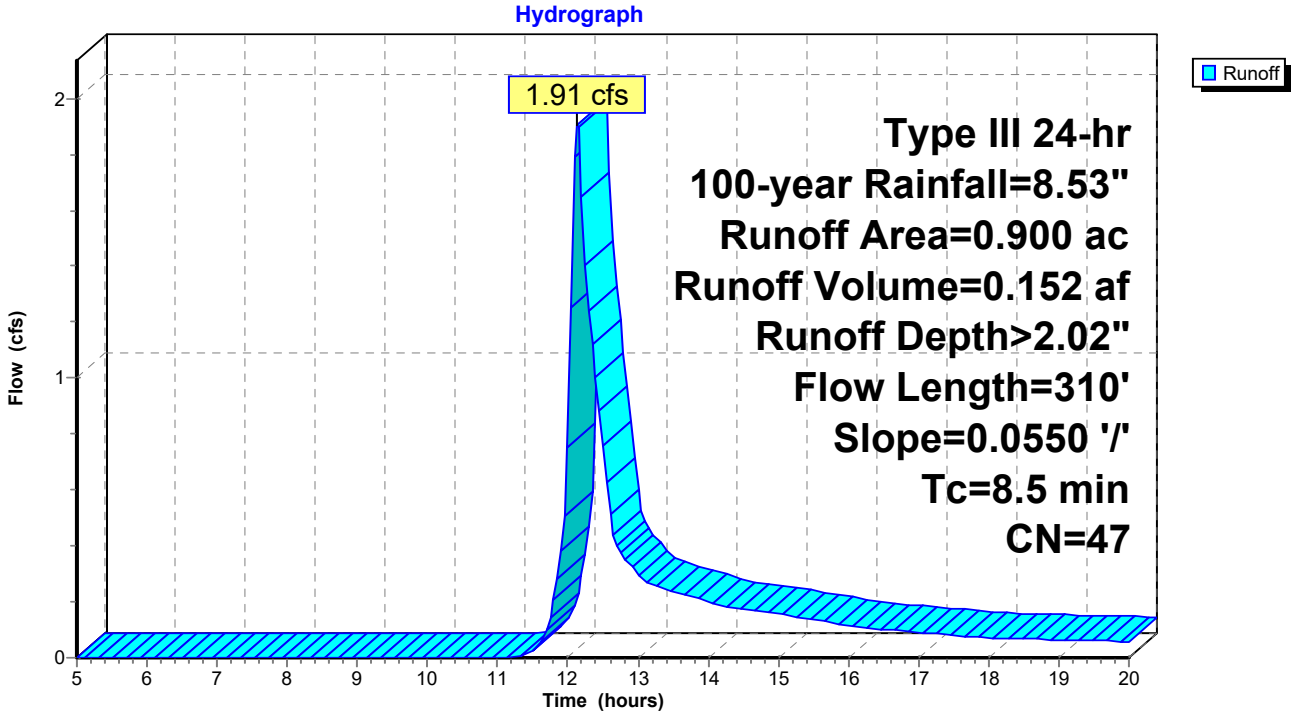
Runoff = 1.91 cfs @ 12.14 hrs, Volume= 0.152 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.100	96	Gravel surface, HSG A
0.300	58	Legumes, straight row, Good, HSG A
0.500	30	Meadow, non-grazed, HSG A
0.900	47	Weighted Average
0.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0550	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.1	210	0.0550	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.5	310	Total			

Subcatchment HS-1: PR HS-1



Summary for Subcatchment KC-1: PR KC-1

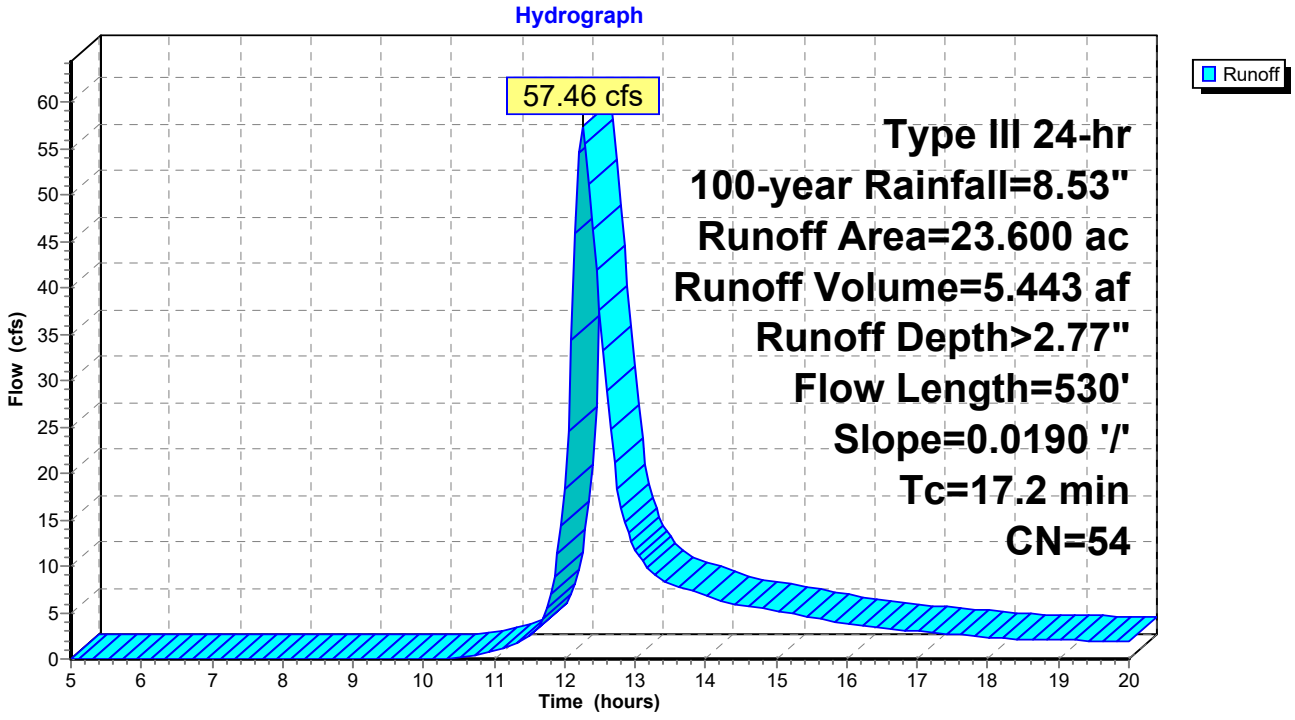
Runoff = 57.46 cfs @ 12.26 hrs, Volume= 5.443 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

	Area (ac)	CN	Description
	0.200	98	Roofs, HSG A
*	0.010	98	Inverter Pads
	2.500	96	Gravel surface, HSG A
	13.890	58	Legumes, straight row, Good, HSG A
	6.400	30	Meadow, non-grazed, HSG A
	0.600	30	Woods, Good, HSG A
	23.600	54	Weighted Average
	23.390		99.11% Pervious Area
	0.210		0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0190	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
7.4	430	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	530	Total			

Subcatchment KC-1: PR KC-1



Summary for Subcatchment MB-1: PR MB-1

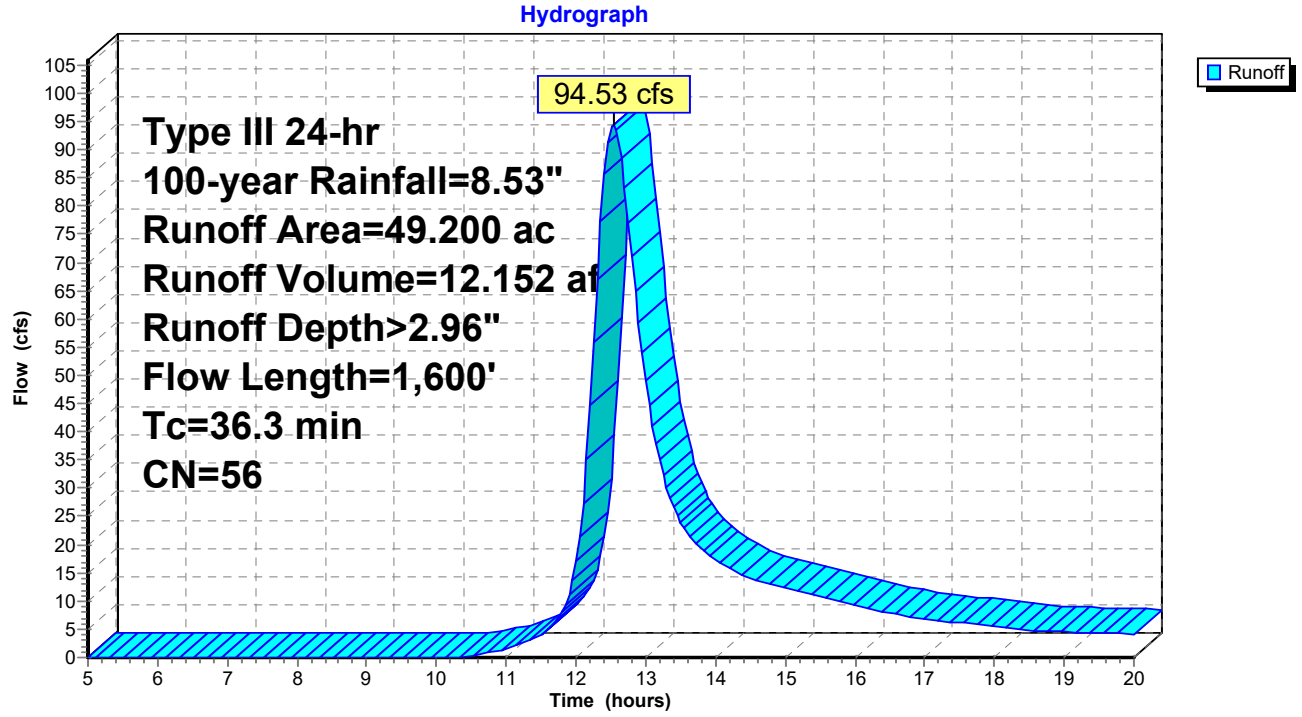
Runoff = 94.53 cfs @ 12.53 hrs, Volume= 12.152 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

	Area (ac)	CN	Description
*	0.040	98	Inverter Pads
	4.600	96	Gravel surface, HSG A
	34.460	58	Legumes, straight row, Good, HSG A
	4.600	30	Meadow, non-grazed, HSG A
	5.500	30	Woods, Good, HSG A
	49.200	56	Weighted Average
	49.160		99.92% Pervious Area
	0.040		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0160	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
15.5	900	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.3	600	0.0380	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
36.3	1,600	Total			

Subcatchment MB-1: PR MB-1



Summary for Subcatchment MB-2: PR MB-2

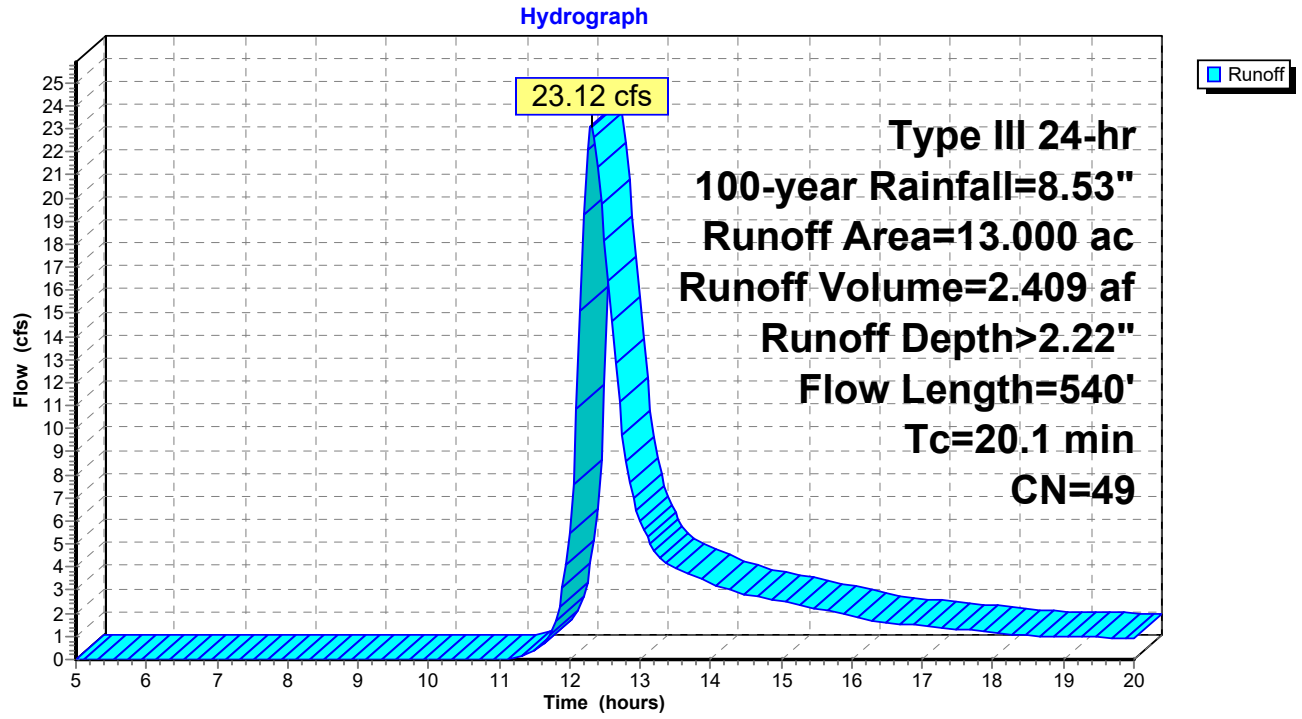
Runoff = 23.12 cfs @ 12.31 hrs, Volume= 2.409 af, Depth> 2.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	0.900	96	Gravel surface, HSG A
	6.890	58	Legumes, straight row, Good, HSG A
	2.400	30	Meadow, non-grazed, HSG A
	2.800	30	Woods, Good, HSG A
	13.000	49	Weighted Average
	12.990		99.92% Pervious Area
	0.010		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	50	0.0170	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
3.3	130	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	360	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	540	Total			

Subcatchment MB-2: PR MB-2



Summary for Subcatchment SB-1: PR SB-1

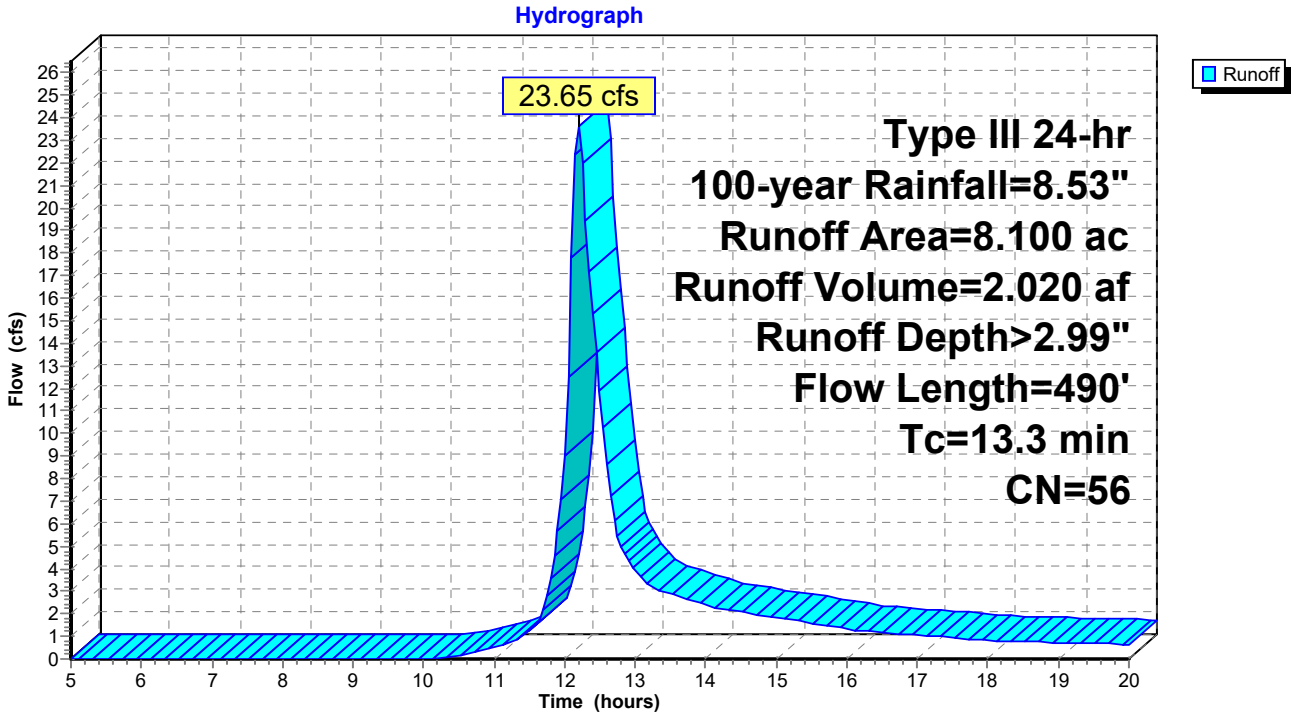
Runoff = 23.65 cfs @ 12.20 hrs, Volume= 2.020 af, Depth> 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

	Area (ac)	CN	Description
*	0.100	98	Inverter Pads & Switchyard
	1.000	96	Gravel surface, HSG A
	4.900	58	Legumes, straight row, Good, HSG A
	2.100	30	Meadow, non-grazed, HSG A
	8.100	56	Weighted Average
	8.000		98.77% Pervious Area
	0.100		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.7	250	0.1180	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	140	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.3	490	Total			

Subcatchment SB-1: PR SB-1



Summary for Subcatchment SB-2: PR SB-2

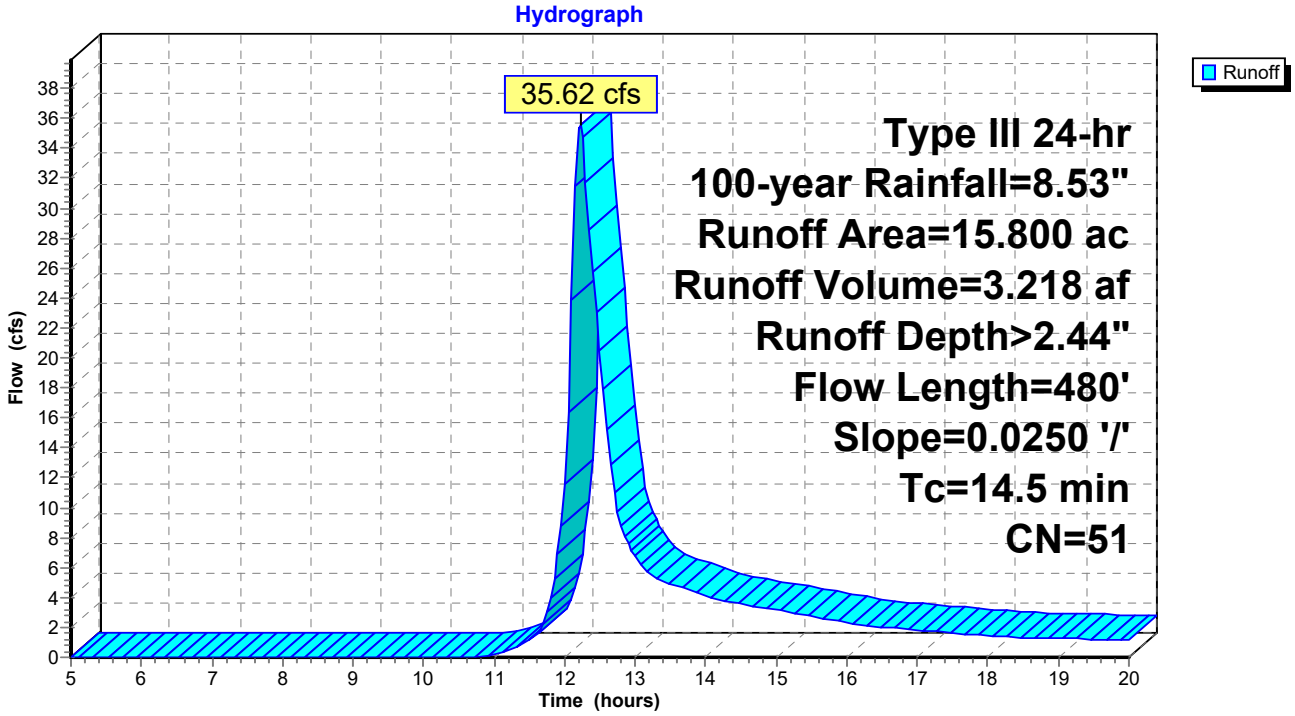
Runoff = 35.62 cfs @ 12.22 hrs, Volume= 3.218 af, Depth> 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

	Area (ac)	CN	Description
*	0.010	98	Inverter Pads
	1.700	96	Gravel surface, HSG A
	8.090	58	Legumes, straight row, Good, HSG A
	3.500	30	Meadow, non-grazed, HSG A
	2.500	30	Woods, Good, HSG A
	15.800	51	Weighted Average
	15.790		99.94% Pervious Area
	0.010		0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0250	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
5.7	380	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	480	Total			

Subcatchment SB-2: PR SB-2



Summary for Subcatchment SB-3: PR SB-3

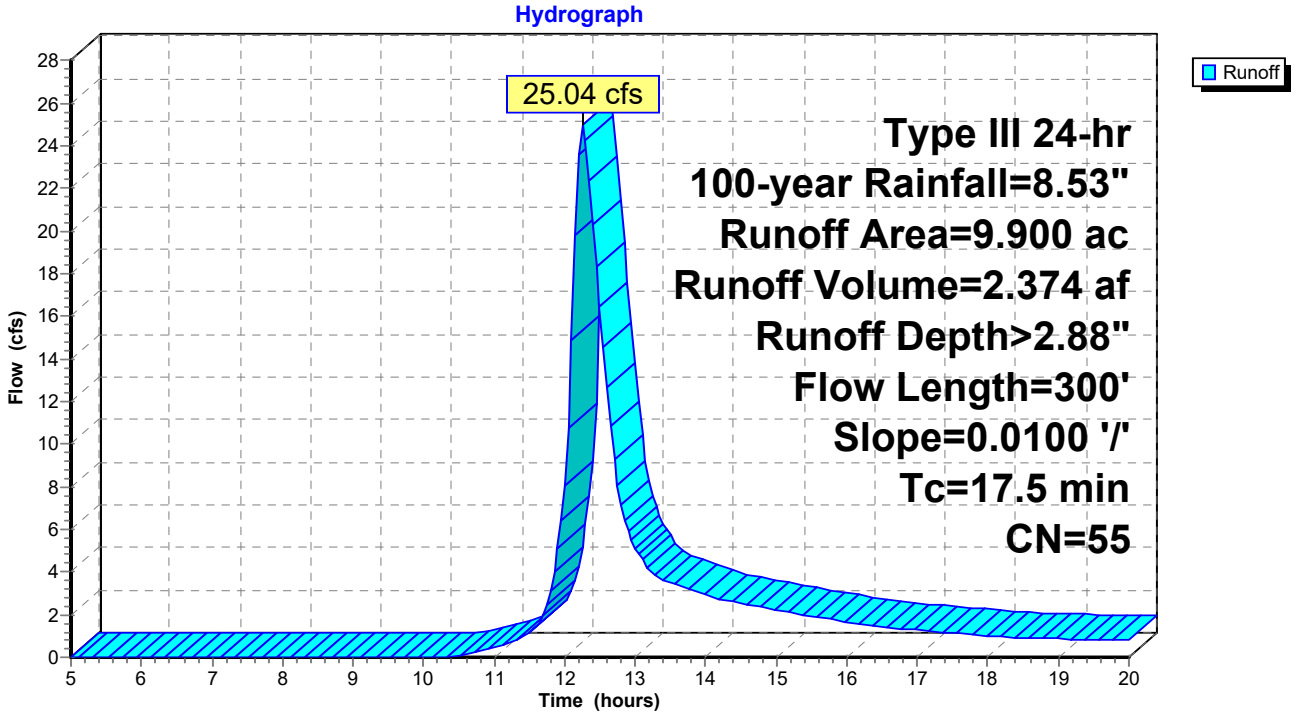
Runoff = 25.04 cfs @ 12.26 hrs, Volume= 2.374 af, Depth> 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.53"

Area (ac)	CN	Description
0.900	96	Gravel surface, HSG A
6.700	58	Legumes, straight row, Good, HSG A
2.100	30	Meadow, non-grazed, HSG A
0.200	30	Woods, Good, HSG A
9.900	55	Weighted Average
9.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.8	200	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.5	300	Total			

Subcatchment SB-3: PR SB-3



Summary for Pond 1P: PR MB-2 Depression

Inflow Area = 13.000 ac, 0.08% Impervious, Inflow Depth > 2.22" for 100-year event
Inflow = 23.12 cfs @ 12.31 hrs, Volume= 2.409 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 274.43' @ 20.00 hrs Surf.Area= 46,270 sf Storage= 104,839 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

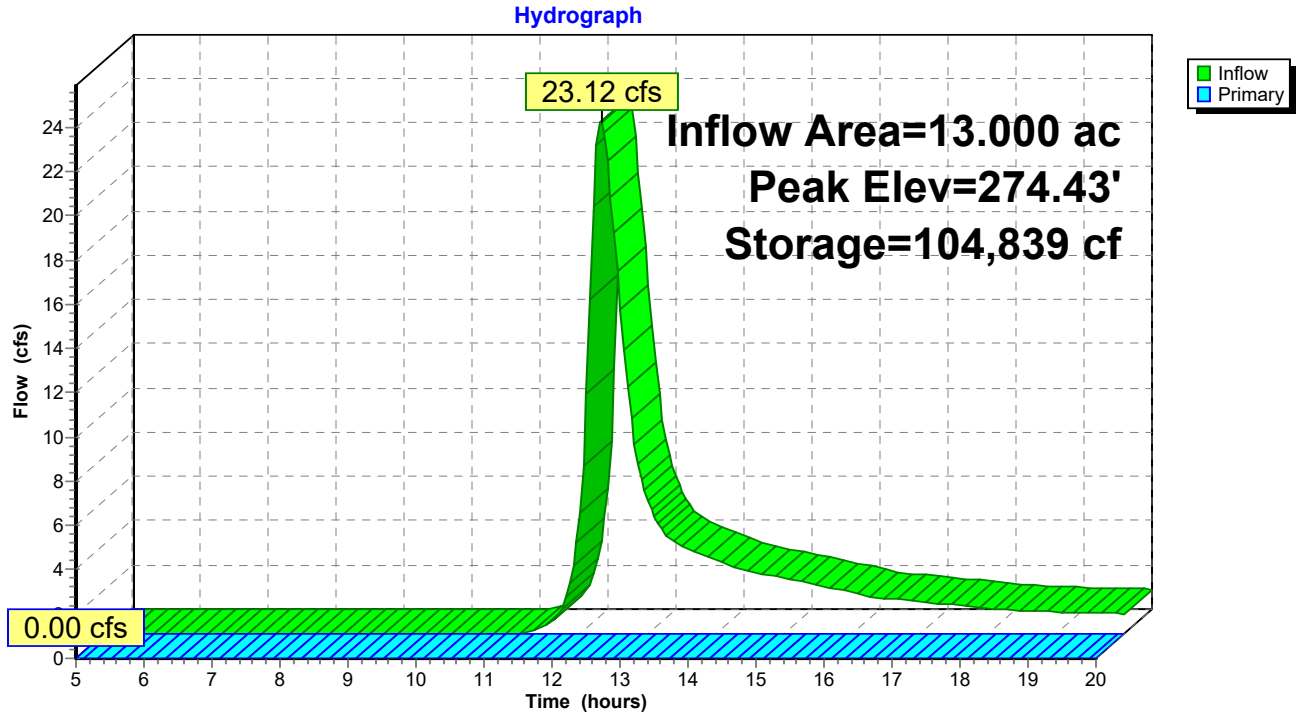
Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	336,950 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
270.00	5,650	0	0
272.00	19,200	24,850	24,850
274.00	41,900	61,100	85,950
276.00	62,300	104,200	190,150
278.00	84,500	146,800	336,950

Device	Routing	Invert	Outlet Devices
#1	Primary	278.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: PR MB-2 Depression

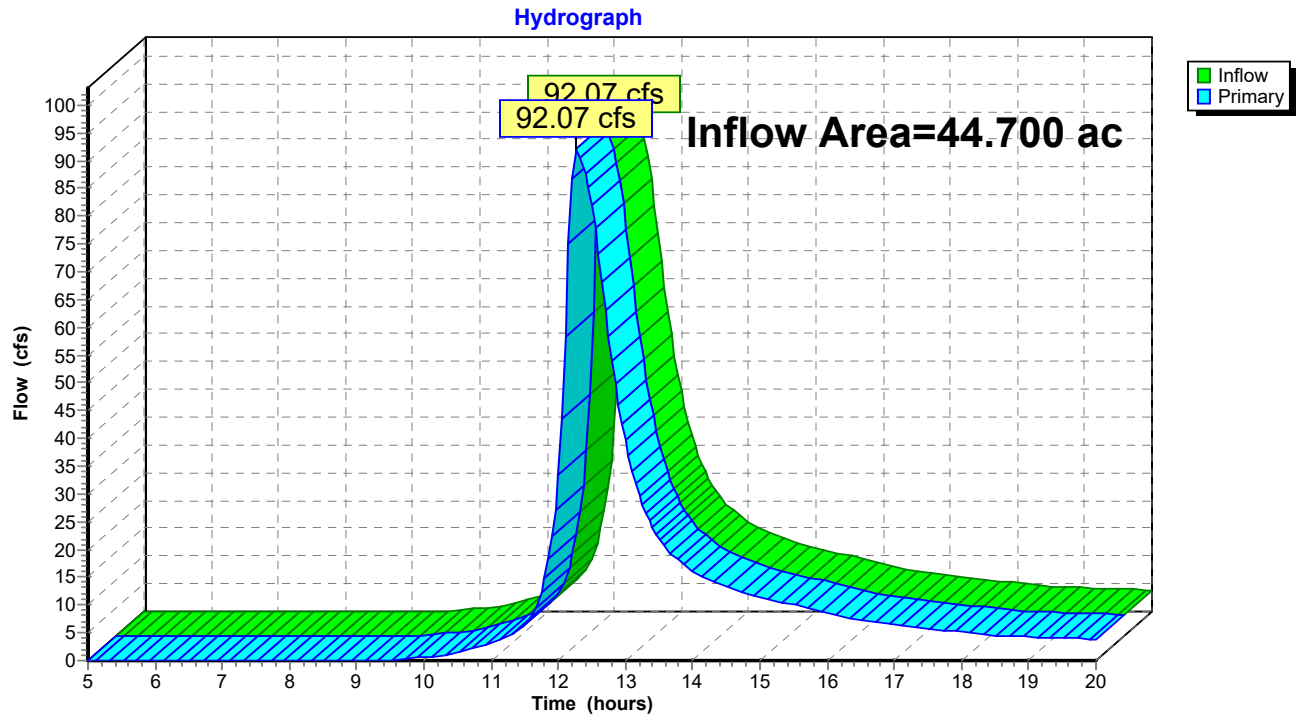


Summary for Link BB: BB

Inflow Area = 44.700 ac, 0.51% Impervious, Inflow Depth > 3.30" for 100-year event
Inflow = 92.07 cfs @ 12.27 hrs, Volume= 12.293 af
Primary = 92.07 cfs @ 12.27 hrs, Volume= 12.293 af, Atten= 0%, Lag= 0.0 min

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

Link BB: BB

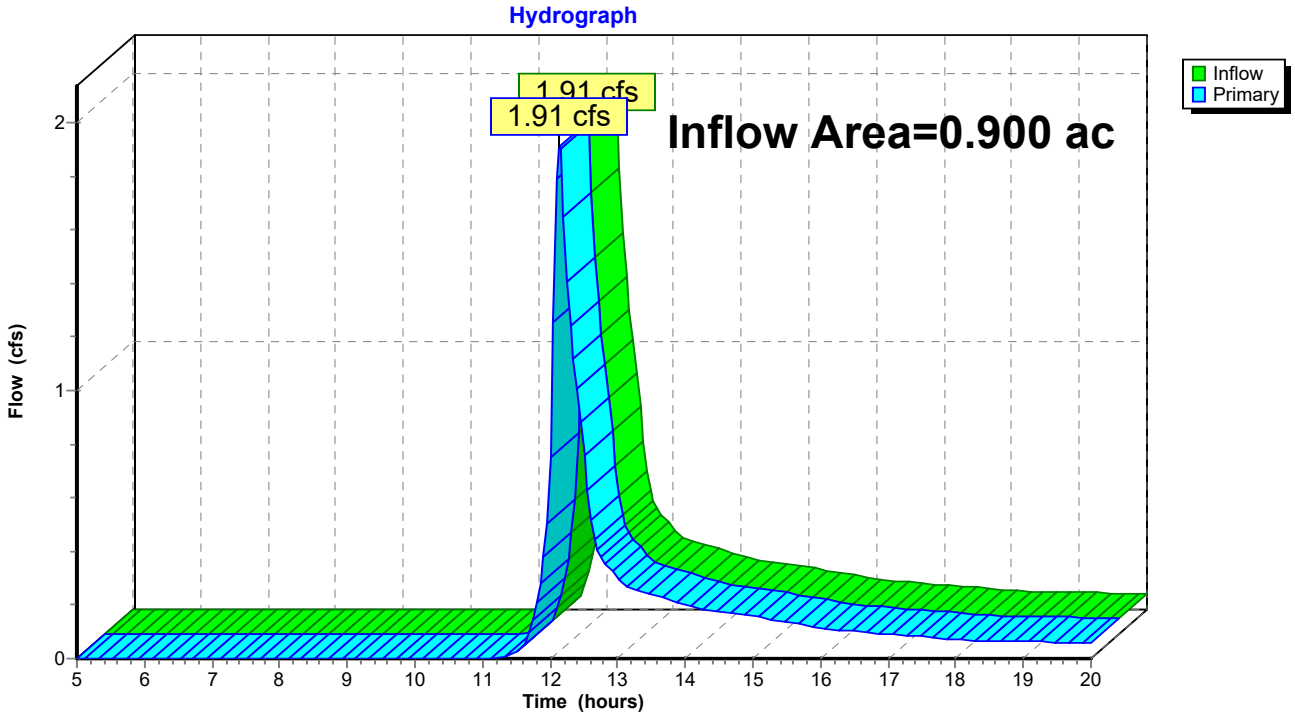


Summary for Link HS: HS

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth > 2.02" for 100-year event
Inflow = 1.91 cfs @ 12.14 hrs, Volume= 0.152 af
Primary = 1.91 cfs @ 12.14 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min

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

Link HS: HS

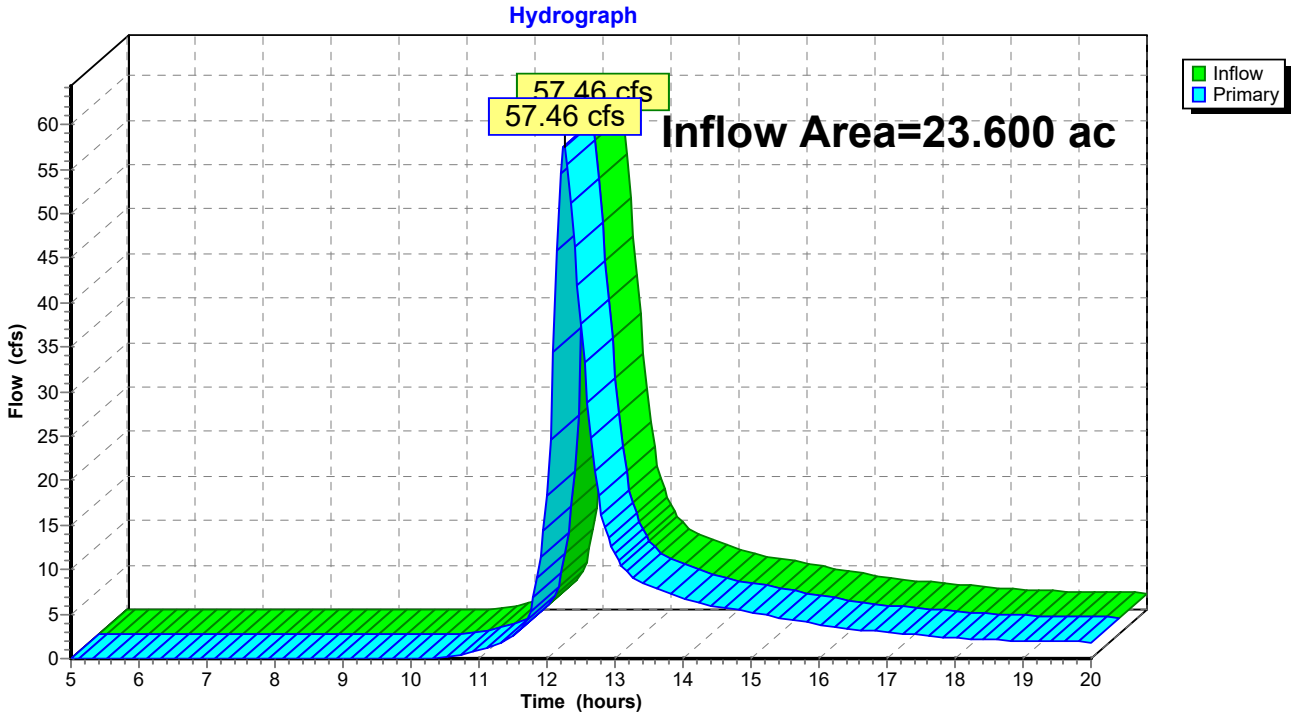


Summary for Link KC: KC

Inflow Area = 23.600 ac, 0.89% Impervious, Inflow Depth > 2.77" for 100-year event
Inflow = 57.46 cfs @ 12.26 hrs, Volume= 5.443 af
Primary = 57.46 cfs @ 12.26 hrs, Volume= 5.443 af, Atten= 0%, Lag= 0.0 min

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

Link KC: KC

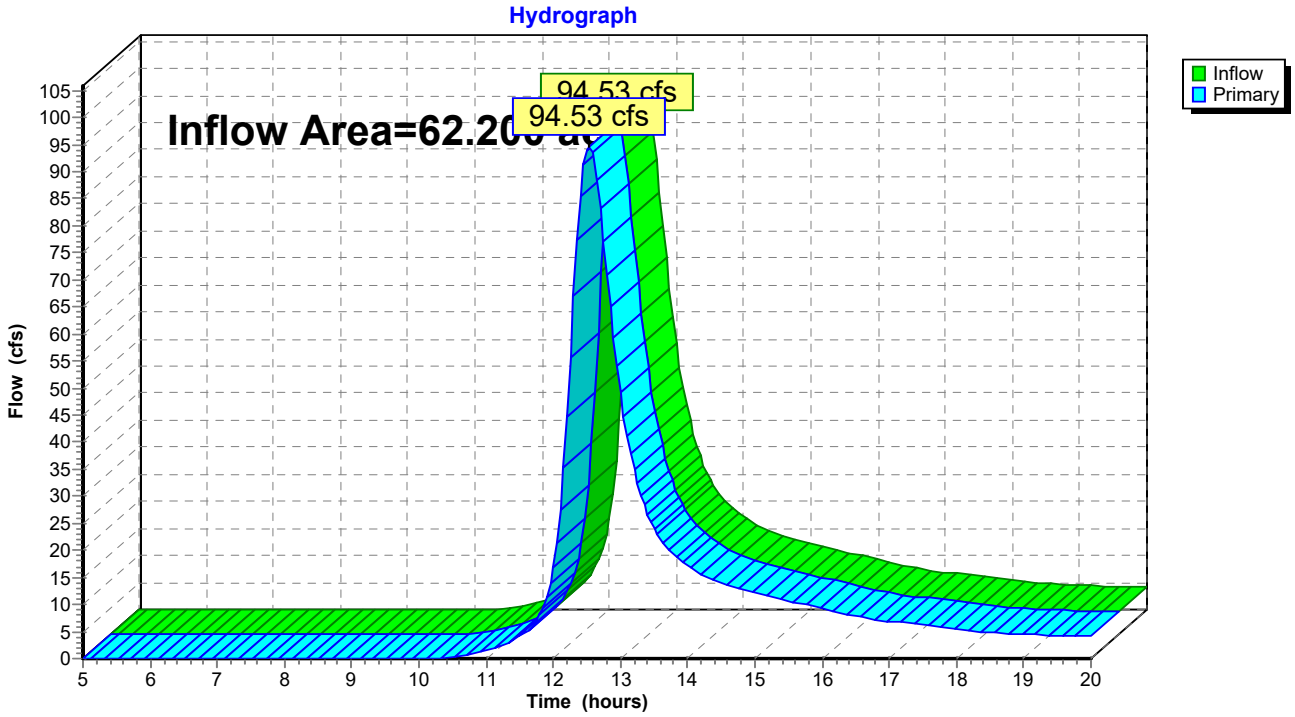


Summary for Link MB: MB

Inflow Area = 62.200 ac, 0.08% Impervious, Inflow Depth > 2.34" for 100-year event
Inflow = 94.53 cfs @ 12.53 hrs, Volume= 12.152 af
Primary = 94.53 cfs @ 12.53 hrs, Volume= 12.152 af, Atten= 0%, Lag= 0.0 min

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

Link MB: MB

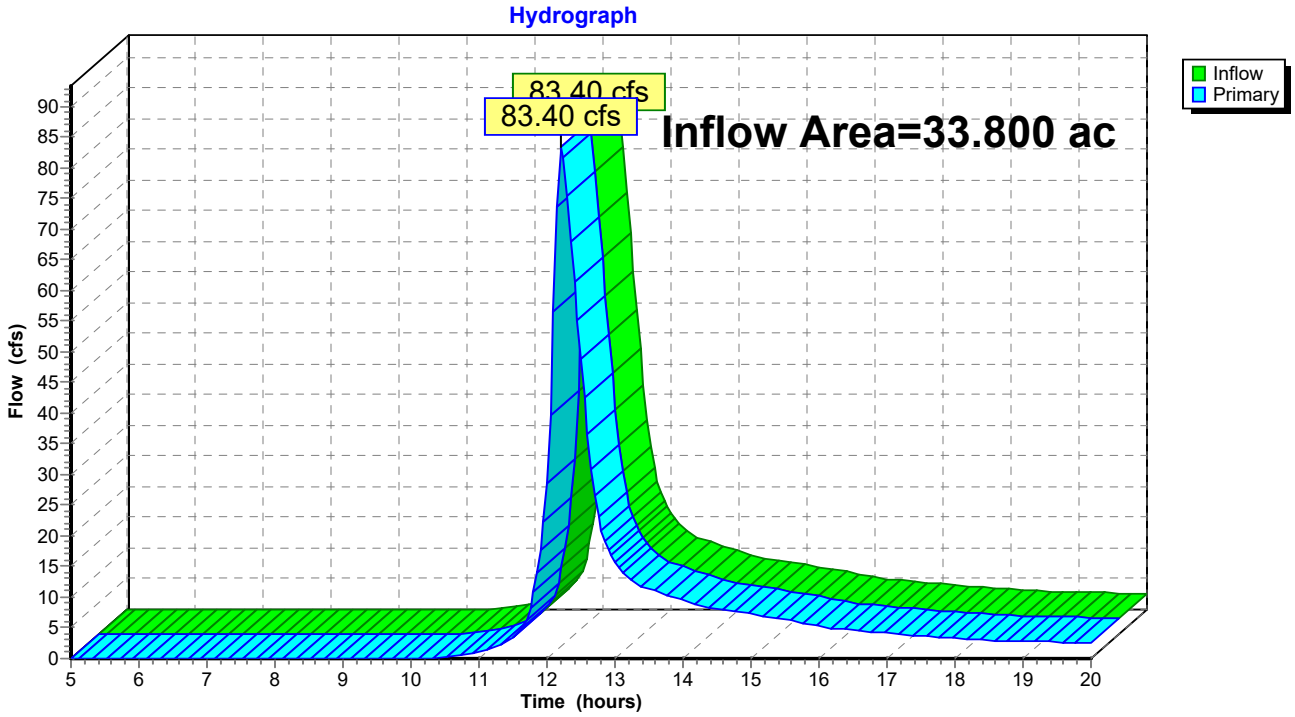


Summary for Link SB: SB

Inflow Area = 33.800 ac, 0.33% Impervious, Inflow Depth > 2.70" for 100-year event
Inflow = 83.40 cfs @ 12.22 hrs, Volume= 7.612 af
Primary = 83.40 cfs @ 12.22 hrs, Volume= 7.612 af, Atten= 0%, Lag= 0.0 min

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

Link SB: SB



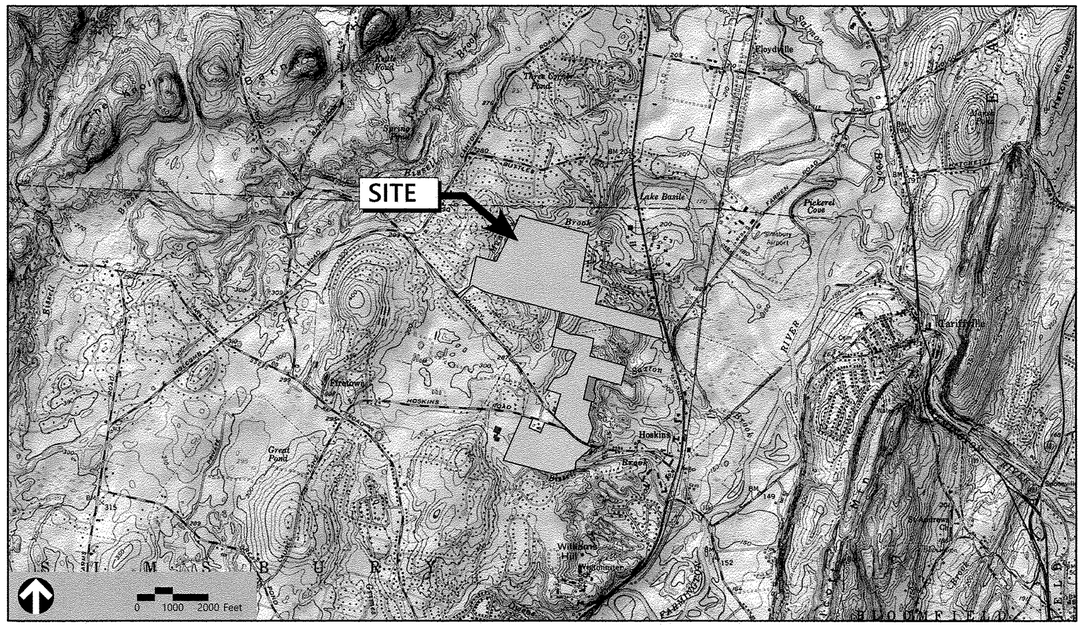
Site Plans

Site Plans

Issued for	Construction
Date Issued	January 15, 2019
Latest Issue	January 15, 2019

Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut



vhb.com

vhb

100 Great Meadow Road
Suite 200
Wethersfield, CT 06109
860.807.4300

Applicant

DWW Solar II, LLC
1166 6th Avenue
9th Floor
New York, NY 10036

Map Block Lot:

G03-403-032
H03-403-012
H03-403-014
H03-403-026-32H
H05-103-024
I04-403-015 (Leased Portion)

Owner

River Bend Development CT, LLC
204 West Newberry Road
Bloomfield, CT 06002

Sheet Index

No.	Drawing Title	Latest Issue
C-1.1	Legend and General Notes	January 15, 2019
C-1.2	Resource Protection Plan	January 15, 2019
C-2	Key Plan	January 15, 2019
C-3.0	Layout and Materials Plan - Overall	January 15, 2019
C-3.1-3.12	Layout and Materials Plan 1 thru 12	January 15, 2019
C-4.0	Grading and Drainage Plan - Overall	January 15, 2019
C-4.1-4.12	Grading and Drainage Plan 1 thru 12	January 15, 2019
C-5.0	Erosion and Sediment Control Plan - Overall	January 15, 2019
C-5.1-5.12	Erosion and Sediment Control Plan 1 thru 12	January 15, 2019
C-6.1	Site Details 1	January 15, 2019
C-6.2	Site Details 2	January 15, 2019
C-6.3	Site Details 3	January 15, 2019
L-1.1-1.4	Planting Plan	January 15, 2019
L2.1	Planting Details and Notes	January 15, 2019

Reference Drawings

No.	Drawing Title	Latest Issue
Sv-1 to Sv-7	ALTA/NSPS Land Title Survey	January 10, 2019



\\VHB\GBL\PROJ\WETHERSFIELD\42256.40 TOBACCO VALLEY SOLAR\CAD\LD\PLANSET\00-42256-COV 15 January 2019

VHB Project : 42256.00 DWW Solar II, LLC Proposed Solar Field
Issued for : Construction - January 2019

Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
10+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
		WETLAND LINE WITH FLAG
		FLOODPLAIN
		100-YEAR FLOOD LIMITS
		GRAVEL ROAD
EOP	EOP	EDGE OF PAVEMENT
BB	BB	BITUMINOUS BERM
BC	BC	BITUMINOUS CURB
CC	CC	CONCRETE CURB
	CG	CURB AND GUTTER
CC	ECC	EXTRUDED CONCRETE CURB
CC	MCC	MONOLITHIC CONCRETE CURB
CC	PCC	PRECAST CONC. CURB
SGE	SGE	SLOPED GRAN. EDGING
VGC	VGC	VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAWCUT
		BUILDING
	EN	BUILDING ENTRANCE
	LD	LOADING DOCK
		BOLLARD
D	D	DUMPSTER PAD
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		TREE LINE
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		STREAM / POND / WATER COURSE
		DETENTION BASIN
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WATTLE
4	4	MINOR CONTOUR
20	20	MAJOR CONTOUR
10	10	PARKING COUNT
	C10	COMPACT PARKING STALLS
DYL	DYL	DOUBLE YELLOW LINE
SL	SL	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
VAN	VAN	VAN-ACCESSIBLE PARKING

Exist.	Prop.	
		CONCRETE
		HEAVY DUTY PAVEMENT
		BUILDINGS
		RIPRAP
		CONSTRUCTION EXIT
27.35 TC×	27.35 TC×	TOP OF CURB ELEVATION
26.85 BC×	26.85 BC×	BOTTOM OF CURB ELEVATION
132.75 ×	132.75 ×	SPOT ELEVATION
45.0 TW 38.5 BW×	45.0 TW 38.5 BW×	TOP & BOTTOM OF WALL ELEVATION
		BORING LOCATION
		TEST PIT LOCATION
MW	MW	MONITORING WELL
UD	UD	UNDERDRAIN
12"D	12"D	DRAIN
6"RD	6"RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
	2"DW	DOMESTIC WATER
3"G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CATCH BASIN
		DOUBLE CATCH BASIN
		GUTTER INLET
		DRAIN MANHOLE
		TRENCH DRAIN
		PLUG OR CAP
CO	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
		SEWER MANHOLE
CS	CS	CURB STOP & BOX
WV	WV	WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
		SIAMESE CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
		WATER WELL
GG	GG	GAS GATE
GM	GM	GAS METER
	EMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX
Matchline		MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UP	UTILITY POLE

Notes

General

1. CONTRACTOR SHALL NOTIFY "CALL BEFORE YOU DIG" (811 OR 1-800-922-4455) AT LEAST 72 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS.
4. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
5. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
6. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
7. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
8. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
9. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
10. THIS PROJECT DISTURBS MORE THAN FIVE ACRES OF LAND AND WILL REQUIRE ADHERENCE TO AND REGISTRATION FOR THE CONNECTICUT DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION GENERAL PERMIT FOR THE DISCHARGE OF STORMWATER AND DEWATERING WASTEWATERS FROM CONSTRUCTION ACTIVITIES, EFFECTIVE OCTOBER 1, 2018.
11. STAGING AND STOCKPILE AREAS SHALL NOT BE LOCATED WITHIN ANY WETLAND AND ABUTTING RESOURCE AREA AND SHALL BE LOCATED WITHIN THE LIMITS OF DISTURBANCE.

Utilities

1. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
3. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
5. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
6. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
7. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.

Layout and Materials

1. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
2. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
3. FINAL LAYOUT SUBJECT TO CONDITIONS ENCOUNTERED IN THE FIELD.

Demolition

1. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
2. THE DEMOLITION LIMITS DEPICTED IN THE PLANS IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
3. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR OR QUALIFIED INSPECTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES ON A WEEKLY BASIS OR MORE FREQUENTLY AS NEEDED, (MINIMUM) OR AS REQUIRED PER THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR SHALL ADDRESS DEFICIENCIES AND MAINTENANCE ITEMS WITHIN TWENTY-FOUR HOURS OF INSPECTION. CONTRACTOR SHALL PROPERLY DISPOSE OF SEDIMENT SUCH THAT IT DOES NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
6. VEGETATIVE SLOPE STABILIZATION WILL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. VEGETATIVE SLOPE STABILIZATION WILL BE USED TO MINIMIZE EROSION ON SLOPES OF 3:1 OR STEEPER. ESTABLISHMENT OF TEMPORARY AND PERMANENT VEGETATIVE COVER MAY BE ESTABLISHED BY HYDRO-SEEDING OR SODDING. A SUITABLE TOPSOIL, GOOD SEEDBED PREPARATION, AND ADEQUATE LIME, FERTILIZER AND WATER WILL BE PROVIDED FOR EFFECTIVE ESTABLISHMENT OF THESE VEGETATIVE STABILIZATION METHODS. MULCH WILL ALSO BE USED AFTER PERMANENT SEEDING TO PROTECT SOIL FROM THE IMPACT OF FALLING RAIN AND TO INCREASE THE CAPACITY OF THE SOIL TO ABSORB WATER.

Existing Conditions Information

1. THE PROPERTY LINES DEPICTED ON THESE PLANS ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB IN FEBRUARY AND MARCH 2017.
2. THE EXISTING CONDITIONS DEPICTED ON THESE PLANS WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY VHB, BASED OFF OF AERIAL PHOTOGRAPHS TAKEN IN FEBRUARY 2017, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING FEBRUARY AND MARCH 2017 AND UPDATED NOVEMBER 2018.
3. EXISTING CONTOURS AND ELEVATIONS DEPICTED DEPICTED ON THESE PLANS WERE DEVELOPED FROM A COMBINED EFFORT OF 2016 LIDAR CONTOURS PROVIDED BY THE STATE OF CONNECTICUT, AERIAL PHOTGRAMMETRIC MAPPING BY VHB BASED ON PHOTOGRAPHS TAKEN IN FEBRUARY 2018 AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING FEBRUARY AND MARCH 2017 AND UPDATED NOVEMBER 2018.
4. AT THE TIME OF VHB'S FIELD SURVEY, THE SITE WAS PARTIALLY COVERED BY SNOW AND ICE. ACCORDINGLY, ALL GROUND FEATURES MAY NOT BE DEPICTED. AN UPDATED SURVEY IS RECOMMENDED UPON COMPLETE SNOW MELT.
5. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES DEPICTED ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE DEPICTED ON THIS PLAN.
6. THE HORIZONTAL DATUM OF THE BASE INFORMATION IS REFERENCED TO THE CONNECTICUT STATE PLANE COORDINATE GRID SYSTEM - NAD83. THE VERTICAL DATUM OF THE BASE INFORMATION IS REFERENCED TO NAD88.
7. THE WETLANDS DEPICTED ON THESE PLANS WRE DELINEATED BY VHB AND FIELD SURVEYED BY VHB BETWEEN FEBRUARY AND APRIL 2017.
8. PORTIONS OF THE SITE LIE WITHIN FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) DESIGNATED FLOOD HAZARD AREAS (FLOODWAY AND 100-YEAR FLOOD ZONES A AND AE) PER FLOOD INSURANCE RATE MAP (FIRM) NUMBERS 09003C0191F AND 09003C0193F, BOTH EFFECTIVE SEPTEMBER 26, 2008. THE APPROXIMATE FLOOD LIMITS DEPICTED ON THESE SITE PLANS WERE DELINEATED FROM THE MAPPED LIMITS OF THE FIRM MAPS AND NOT FROM ACTUAL ELEVATIONS.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

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No.	Revision	Date	Appvd.

Designed by SJK — Checked by PV

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Drawing Title: Legend and General Notes

Drawing Number: C-1.1

STATE OF CONNECTICUT · STEVEN J. KOCHIS · 27483 · LICENSED PROFESSIONAL ENGINEER

January 15, 2019

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Project Number 42256.40

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RESOURCE PROTECTION PLAN

1.1 PRECONSTRUCTION SITE PROTECTION SEQUENCE

THE PRECONSTRUCTION SITE PROTECTION SEQUENCE PREPARES THE SITE FOR SOIL DISTURBANCE. MOST OF THESE MEASURES ARE DESCRIBED IN MORE DETAIL IN THE STORMWATER POLLUTION CONTROL PLAN.

1. INSTALL STABILIZED VEHICLE CONSTRUCTION EXITS AT THE EXISTING FARM ROAD INTERSECTIONS WITH HOSKINS ROAD.
2. SURVEY AND MARK ALL WOODLAND CLEARING LIMITS.
3. MARK TREES TO BE FELLED WITHIN 10 FEET OF CLEARING LIMITS AND INSTALL TREE PROTECTION FOR TREES TO BE PRESERVED WITHIN 10-FEET OF THE CLEARING LIMITS.
4. MARK BOUNDARY BETWEEN CLEARING LIMITS AND GRUBBING LIMITS.
5. CLEARING EQUIPMENT IS NOT TO TRAVEL BEYOND GRUBBING LIMITS TO PRESERVE POTENTIAL ARCHEOLOGICAL RESOURCES.
6. HARVESTERS STATIONED WITHIN THE GRUBBING LIMITS CAN REACH TO CUT TREES BEYOND THE LIMITS. OTHER TREES MAY BE HAND CUT WITH CHAIN SAWS AND RECOVERED WITH CABLES.
7. HARVESTERS STATIONED WITHIN THE GRUBBING LIMITS CAN REACH TO CUT TREES BEYOND THE LIMITS. OTHER TREES MAY BE HAND CUT WITH CHAIN SAWS AND RECOVERED WITH CABLES.
8. AS TREES ARE CLEARED AND GRUBBED TOPS AND ROOT BALLS SHOULD BE TUB GROUND TO CREATE MATERIAL FOR WOOD MULCH BERMS.
9. INSTALL MULCH BERM AT THE LIMIT OF DISTURBANCE; ENTRENCHED PERIMETER SILT FENCE IMMEDIATELY UPSLOPE OF THIS BERM. MULCH BERM AND PERIMETER SILT FENCE SHALL BE MAINTAINED IN PLACE UNTIL COMPLETION OF CONSTRUCTION. NO SOIL-DISTURBING WORK SHALL BE ALLOWED OUTSIDE OF THE MULCH BERMS.
10. IMMEDIATELY ADDRESS ONGOING EROSION PROBLEMS IN THE FARM FIELDS USING TEMPORARY DIVERSIONS AND FILLING AND GRADING GULLIES. TRACK GULLIES UP AND DOWN SLOPE AND HYDROSEED WITH A THERMALLY TREATED WOOD BONDED FIBER MATRIX (BFM) MULCH WITH TACKIFIER OR FLEXIBLE GROWTH MEDIA (FGM). STAPLED BIODEGRADABLE EROSION CONTROL BLANKETS WITHOUT MONOFILAMENT MESH IS AN ACCEPTABLE ALTERNATIVE FOR HYDROSEED AND BFM.
11. INSTALL TEMPORARY SEDIMENT TRAPS AND BASINS IN ACCORDANCE WITH THE APPROVED SITE-SPECIFIC SWPCP. THE ENGINEER OF RECORD (EOR) WILL INSPECT FEATURES TO CONFIRM REQUIRED STORAGE CAPACITIES ARE PROVIDED AND THAT OUTLETS AND/OR SPILLWAYS ARE CONSTRUCTED CORRECTLY. DISCHARGE AREAS BELOW OUTFALLS TO BE INSPECTED TO CONFIRM FLOW WILL BE OVER STABLE GROUND AND SHEET FLOW IS ENCOURAGED.
12. SEED AND PROTECT DISTURBED SOILS AROUND SEDIMENT TRAPS AND BASINS. SECURE SEED WITH A THERMALLY TREATED WOOD FIBER BFM OR FGM APPLIED FOLLOWING MANUFACTURER'S SPECIFICATIONS FOR USE AT SPECIFIED APPLICATION RATES. AN ANIONIC POLYACRYLAMIDE PRODUCT MAY BE INCLUDED WITH THE TACKIFIER TO PROMOTE SOIL STABILITY. ALL OTHER AMENDMENTS SHOULD BE PRESCRIBED BASED ON THE RESULTS OF SOIL TESTS.
13. INSTALL OTHER EROSION AND SEDIMENT CONTROLS FOLLOWING THE CT GUIDELINES AND MANUFACTURER'S DIRECTIONS. DURING CONSTRUCTION THE CONTRACTOR SHALL INSTALL MEASURES AS REQUIRED BY THE DESIGN ENGINEER OR QUALIFIED INSPECTOR, TO PREVENT SEDIMENT LADEN RUNOFF FROM REACHING WETLANDS OR DISCHARGING OFFSITE.
14. QUALIFIED REVIEWING PROFESSIONAL SHALL PERFORM THE PLAN IMPLEMENTATION INSPECTION WITHIN THE FIRST 30 DAYS OF CONSTRUCTION ACTIVITY, IN ACCORDANCE WITH SECTION 5(B)(4)(A) OF THE GENERAL PERMIT.
15. STAKE OUT UTILITY TRENCHES ALONG THE EDGES OF FIELDS AND ACCESS ROADS THROUGH THE AGRICULTURAL FIELDS. INSTALL A NON-WOVEN GEOTEXTILE OVER THE ROAD SURFACE AND APPLY FOUR INCHES OF PROCESSED STONE OVER THE GEOTEXTILE AS A TRAVEL SURFACE.
16. UTILITY TRENCHES SHOULD SEGREGATE TOPSOIL FROM SUBSOIL SO THAT DURING TRENCH BACKFILL THE MATERIALS CAN BE REPLACED IN THE SAME ORDER.
17. MINIMIZE VEGETATION DISTURBANCE WHEN INSTALLING POSTS IN AGRICULTURAL FIELDS.
18. INSTALL UNDERGROUND CONDUIT CABLE GENERALLY STARTING FROM THE HIGH POINTS ON THE SITE MOVING TOWARDS THE LOW POINTS.
19. INSTALL TEMPORARY/PERMANENT LANDSCAPING AND LOAM AND SEED ALL DISTURBED AREAS AS EARLY AS PRACTICABLE.

1.2 GOOD HOUSEKEEPING MEASURES AND SWPCP MONITORING

REFER TO THE SITE-SPECIFIC SWPCP FOR GOOD HOUSEKEEPING MEASURES AND SPECIFIC INSPECTION, TURBIDITY TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS. ALL WORK MUST COMPLY WITH THE CURRENT CONNECTICUT GENERAL PERMIT FOR THE DISCHARGE OF STORMWATER DURING CONSTRUCTION AND THE CT GUIDELINES.

PORTIONS OF THE SITE ARE WITHIN AN AQUIFER PROTECTION ZONE AS SHOWN ON THE PLANS. SHOULD THERE BE ANY HAZARDOUS MATERIALS USED OR STORED WITHIN THE AQUIFER PROTECTION ZONE, A HAZARDOUS MATERIALS MANAGEMENT PLAN SHALL BE DEVELOPED AND SUBMITTED TO THE TOWN OF SIMSBURY.

1.3 AGRICULTURAL SOIL PROTECTION PLAN

PORTIONS OF THE AGRICULTURAL FIELDS WITHIN THE PROJECT AREA CONSIST OF SOIL MAP UNITS DESIGNATED AS PRIME FARMLAND OR OTHER FARMLAND OF STATEWIDE IMPORTANCE. THESE MEASURES HAVE BEEN DEVELOPED TO MAINTAIN THE QUALITY OF THESE RESOURCES TO THE EXTENT PRACTICABLE SHOULD THE SITE BE RETURNED TO AGRICULTURAL MANAGEMENT AT THE END OF PROJECT OPERATION. MAINTAINING SOIL HEALTH PROVIDES BENEFITS DURING THE OPERATIONAL PHASE OF THE PROJECT BY SUSTAINING SOIL FUNCTIONS INCLUDING GROUNDWATER RECHARGE, WATER QUALITY, AND MINIMIZING SOIL LOSS DUE TO EROSION.

1.3.1 BASELINE INVENTORY

1. A SITE SPECIFIC SOIL MAP OF THE PROJECT AREA FARM FIELDS WILL BE PREPARED AND SUBMITTED TO THE CSC BEFORE CONSTRUCTION ACTIVITIES OCCUR IN FARM FIELDS.
2. MAP PREPARATION TO GENERALLY FOLLOW STANDARDS AND PROCEDURES FOR SITE SPECIFIC SOIL MAPPING IN RHODE ISLAND WITH THE CONNOTATIVE LEGEND MODIFIED TO DESCRIBE DRAINAGE CLASS AND INCLUDE ATTRIBUTES ASSOCIATED WITH TOPSOIL THICKNESS, AND TOPSOIL COLOR.
3. CONDUCT BASELINE SOIL TESTS FOR MACRO AND MICRO NUTRIENTS, ORGANIC MATTER CONTENT AND PH OF THE TOPSOIL. PROVIDE TEST RESULTS WILL BE PROVIDED WITH AS PART OF THE BASELINE STUDY.

1.3.2 AGRICULTURAL SOIL PROTECTION PRACTICES

THE AGRICULTURAL SOIL PROTECTION PLAN PRESCRIBES PRACTICES TO AVOID AND MINIMIZE IMPACTS TO THE QUALITY OF FARMLAND SOILS. IMPACT AVOIDANCE AND MINIMIZATION MEASURES INCLUDE:

1. TO THE EXTENT PRACTICABLE, THE SOLAR FARM WILL BE DEVELOPED WITHOUT MODIFYING GRADES WITHIN EXISTING FARM FIELDS.
2. NOTWITHSTANDING THIS PRINCIPLE, SEVERELY ERODED PARTS OF THE FARM WILL BE MITIGATED BY GRADING AND/OR THE INSTALLATION OF STRUCTURAL MEASURES TO CONTROL ONGOING ACCELERATED EROSION.
3. WHEREVER POSSIBLE, FACILITY ROADS ARE LAID OUT OVER EXISTING FARM ROADS.
4. WHERE POSSIBLE, NEW FACILITY ROADS THAT CROSS FARMLAND ARE LAID OUT TO BE USEFUL FOR FUTURE FARMING NEEDS.
5. WHILE THE ENTIRE SITE WILL NEED TO BE ACCESSED DURING THIS INSTALLATION OF SOLAR INFRASTRUCTURE, ROUTINE TRAVEL PATTERNS SHOULD AVOID CROSSING FARMLAND SOILS UNLESS NECESSARY.
6. WHEN PRACTICAL USE LOWER GROUND PRESSURE TRACKED EQUIPMENT, BUGGIES OR TRACTORS AND FARM CARTS TO HAUL CONSTRUCTION MATERIALS ACROSS FIELDS.
7. VIBRATION CAN CAUSE COMPACTION TO PENETRATE DEEPER INTO THE SOIL PROFILE, OPERATE TRACK MOUNTED PILE DRIVERS TO DISPERSE THIS FORCE.
8. CONSTRUCTION EQUIPMENT TRAVEL OPERATION IN AGRICULTURAL FIELDS WILL BE SUSPENDED DURING AND FOR 24 HOURS AFTER RAINFALL EVENTS DURING WHICH GREATER THAN 1-INCH OF RAIN FALLS WITHIN 24 HOURS.
9. USE PERIMETER ROADS AROUND FIELDS TO AVOID CROSSING FIELDS WITH HEAVY EQUIPMENT SUCH AS DUMP TRUCKS OR CONCRETE TRUCKS.

MAINTAIN VEGETATION COVER DURING CONSTRUCTION

1. PROTECT SOILS FROM EROSION LOSSES AND ENHANCE FERTILITY AND SOIL STRUCTURE USING A COVER CROP OR PERMANENT SEED MIX SOWN PRIOR TO INITIATING LAND DEVELOPMENT.
2. A MIX OF ANNUAL RYE GRASS AND RED CLOVER IS RECOMMENDED FOR PLANTING IN EARLY SPRING. IF THE COVER CROP IS TO BE ESTABLISHED DURING THE GROWING SEASON, QUICKLY ESTABLISHING BUCKWHEAT MAY BE USED. APPLICATION RATES FOR SEED SHOULD FOLLOW NRCS GUIDANCE.
3. NUTRIENTS AND LIME SHOULD BE ADDED TO THE SOIL ACCORDING THE RECOMMENDATIONS FROM SOIL TESTS TAKEN IN TASK 1.1, ALL SOIL FERTILITY RECOMMENDATIONS SHOULD BE REVIEWED BY A CERTIFIED PROFESSIONAL AGRONOMIST (CPAG).
4. MAINTAIN THIS COVER CROP DURING CONSTRUCTION THROUGHOUT THE SUMMER INTO THE FALL.
5. INSTALL PERMANENT SEED AT THE START OF SPRING CONSTRUCTION OR IN THE FALL.

ESTABLISH AND MAINTAIN PERMANENT VEGETATIVE COVER

IF PERMANENT SEEDING WAS NOT INSTALLED IN THE FALL PRIOR TO THE FOLLOWING SPRING CONSTRUCTION START, IT SHOULD BE UNDERTAKEN ONCE POSTS FOR RACKING ARE INSTALLED.

1. IF PERMANENT SEEDING WAS NOT INSTALLED IN THE FALL PRIOR TO THE FOLLOWING SPRING CONSTRUCTION START, IT SHOULD BE UNDERTAKEN AFTER RACKING IS INSTALLED.
2. SEED MIX TO CONSIST OF COOL SEASON FESCUE SPECIES NOTED FOR THEIR HARDINESS AND WIDE ECOLOGICAL AMPLITUDE AND DEEPER ROOTED, SHORT-STATURE, WARM SEASON GRASSES SUCH AS LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM) AND PURPLE LOVE GRASS (ERAGROSTIS SPECTABILIS) AND LOW GROWING NITROGEN FIXING FORBS SUCH AS PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), RED CLOVER (TRIFOLIUM PRATENSE) AND TRAILING CLOVER (LESPEDEZA PROCUMBENS) TO SUSTAIN SOIL FERTILITY.
3. DURING ESTABLISHMENT FREQUENT MOWING MAY BE REQUIRED INITIALLY TO CONTROL FIELD WEEDS BEFORE THEY CAN SET SEED.
4. AFTER SUCCESSFUL ESTABLISHMENT OF THE GRASSES AND FORBS, MOWING FREQUENCIES MAY BE REDUCED.
5. MOWING SHOULD NOT OCCUR WITHIN 24 HOURS AFTER A SIGNIFICANT RAINFALL EVENT WHEN THE SOIL WOULD BE SUSCEPTIBLE TO COMPACTION.

1.3.3MAINTAINING THE SOIL'S NUTRIENT STATUS DURING THE OPERATION PHASE

1. FERTILIZATION NEEDS WILL BE LOW AS LITTLE MATERIAL WILL BE TAKEN FROM THE FIELDS AND MANAGEMENT IN PERENNIAL GRASSES TIGHTLY CYCLES NUTRIENTS.
2. ONCE PERMANENT COVER IS ESTABLISHED, SOIL TESTS SHOULD BE TAKEN IF PLANTS SHOW SIGNS OF NUTRIENT STRESS.
3. SOIL AMENDMENTS SHOULD BE APPLIED ACCORDING TO THE RECOMMENDATIONS OF THE TESTING LAB. THE PH OF THE SOIL SHOULD BE MAINTAINED BETWEEN 5.5 TO 8.0.

1.3.4 OTHER PRACTICES

1.3.4.1 TEMPORARY ROADS

FOR USE WHEN TEMPORARY ACCESS ROADS ARE REQUIRED FOR HEAVY EQUIPMENT TO CROSS AGRICULTURAL FIELDS DURING CONSTRUCTION OR DECOMMISSIONING:

1. INSTALL GEOTEXTILE MATTING DESIGNED FOR SOIL SEPARATION OVER THE EXPOSED TOPSOIL (OR IF TOPSOIL IS STRIPPED SUBSOIL) SURFACE PRIOR TO PLACING A 4-INCH LAYER OF PROCESSED STONE FOR THE ROAD SURFACE.
2. COMPLETE REMOVAL OF THE TEMPORARY ACCESS FILL AND GEOTEXTILE ARE REQUIRED UPON COMPLETION OF THE PROJECT TASK REQUIRING THE ROAD.
3. THE TOPSOIL AND SUBSOIL SHOULD BE DECOMPACTED BY TILLAGE AFTER THE ROADS ARE REMOVED AND SEEDED AS DESCRIBED ABOVE.

1.3.4.2 TOPSOIL REMOVAL AND WINDROW FOR TRENCHES AND SLOPE GRADING

1. WHEN TRENCHES ARE INSTALLED IN AGRICULTURAL SOILS, TOPSOIL WILL BE WINDROWED ALONG THE TRENCH SEPARATE FROM SUBSOIL/SUBSTRATE STOCKPILES.
2. THE DEPTH OF TOPSOIL REMOVAL WILL INCLUDE THE ENTIRE A HORIZON DOWN TO THE BEGINNING OF THE B HORIZON. GENERALLY, THIS WILL NOT EXCEED A 12-INCH DEPTH EXCEPT IN BOTTOMS WHERE TOPSOIL THICKNESS CAN EXCEED 24 INCHES.
3. DURING THE TRENCHING OPERATION, SITE SPECIFIC DEPTHS OF TOPSOIL STRIPPING WILL BE RECORDED BY THE ENVIRONMENTAL MONITOR.
4. ROUGH TRENCH BACKFILL AND SLOPE GRADING WILL BE COMPLETED WITH SUBGRADE MATERIALS AT AN ELEVATION BELOW THE FINISHED GRADE THAT MATCHES THE ORIGINAL TOPSOIL THICKNESS.
5. ALL TOPSOIL MATERIAL WILL BE UNIFORMLY RETURNED TO RESTORE THE ORIGINAL TOPSOIL DEPTH.
6. WHERE PREPARATION FOR THE ARRAY LAYOUT REQUIRES CUT AND FILL FOR THE SOIL SECTION, TO THE EXTENT PRACTICABLE, TOPSOIL STOCKPILING WILL BE LOCATED INTERIOR TO THE CONSTRUCTION SITE RATHER THAN THE MARGINS.
7. ONCE REINSTALLED, THE TOPSOIL WILL BE SEEDED AND STABILIZED WITH MULCH AND TACKIFIER APPLIED BY A HYDRO-MULCHER OR STRAW MULCH EITHER SECURED WITH COIR OR JUTE NETTING OR CRIMPED. PRIOR TO MULCHING THE SITE APPROPRIATE NUTRIENTS AND LIME SHALL BE ADDED TO THE SOIL ACCORDING TO THE RESULTS OF SOIL TESTS.

1.3.5 DECOMMISSIONING

THE DECOMMISSIONING PHASE OF THE PROJECT INVOLVES THE REMOVAL OF ALL INFRASTRUCTURE INSTALLED FOR THE PROJECT DOWN TO A NOMINAL DEPTH OF TWO FEET BELOW THE FINISHED GRADE. THE GOAL IS TO RETURN THE SITE WITH SOIL QUALITY COMPARABLE OR BETTER THAN THE RESOURCE PRESENT AT THE BEGINNING OF THE PROJECT. DECOMMISSIONING ACTIVITIES ARE DESCRIBED BELOW.

1.3.5.1 DECOMPACTION

1. AT DECOMMISSIONING IN AGRICULTURAL FIELDS WHERE TOPSOIL WAS STRIPPED TO INSTALL SLABS OR GRAVEL ACCESS ROADS, THE SLAB OR ROAD WILL BE REMOVED TO EXPOSE THE ORIGINAL SUBSOIL.
2. THIS SUBSOIL WILL THEN BE BROKEN UP BY DEEP TILLAGE USING A DEEP-RIPPER OR HEAVY-DUTY CHISEL PLOW WHEN PENETROMETER READINGS EXCEED READINGS IN ADJACENT ACTIVE FARMLANDS.
3. AFTER THE SUBSOIL IS DECOMPACTED, ALL STONE AND ROCK MATERIAL FOUR INCHES AND LARGER IN SIZE THAT IS AT THE SURFACE SHALL BE COLLECTED AND DISPOSED AT THE EDGE OF THE FIELD AWAY FROM WETLANDS.
4. UPON APPROVAL OF THE SUBSOIL DECOMPACTION AND THE STONE REMOVAL BY THE INSPECTOR, THE TOPSOIL THAT HAS BEEN MAINTAINED IN VEGETATED WINDROWS WILL BE APPLIED TO MATCH ADJACENT GRADES.
5. AGRICULTURAL LAND RESTORATION WILL BE COMPLETED WHEN SOILS ARE NOT EXCESSIVELY WET, FROZEN, OR INCAPABLE OF VEGETATIVE STABILIZATION.

1.3.5.2 DECOMMISSIONING COMPACTION TESTING AND REMEDIAL ACTION

1. AFTER PROJECT DECOMMISSIONING IS COMPLETE AND DURING A PERIOD OF RELATIVELY LOW SOIL MOISTURE (E.G., AT LEAST 48 HOURS AFTER A RAINFALL EVENT DURING THE GROWING SEASON) SUBSOIL COMPACTION WILL BE TESTED USING A SOIL PENETROMETER OR OTHER SOIL STRENGTH/DENSITY MEASURING DEVICE.
2. REPRESENTATIVE COMPACTION TESTS WILL BE PERFORMED FOR EACH SOIL MAP UNIT IDENTIFIED WITHIN THE DECOMMISSIONED ARRAYS IN THE FORMER AGRICULTURAL FIELDS. THE SUBSOIL COMPACTION TEST RESULTS WITHIN THE ARRAYS WILL BE COMPARED WITH THE BASELINE DATA FROM THE BASELINE SITE SPECIFIC SOIL SURVEY. THESE NUMBERS MAY ALSO BE COMPARED WITH FARMLAND SOILS IN THE SAME SOIL MAP UNIT OUTSIDE OF THE PROJECT LIMITS.
3. WHERE REPRESENTATIVE SUBSOIL DENSITY WITHIN THE DECOMMISSIONED ARRAY EXCEEDS THE BASELINE SUBSOIL DENSITY, SHATTERING OF THE SOIL PROFILE WILL BE PERFORMED USING APPROPRIATE AGRICULTURAL TOOL.
4. DEEP SHATTERING WILL BE APPLIED DURING PERIODS OF RELATIVELY LOW SOIL MOISTURE TO ENSURE THE DESIRED MITIGATION AND TO PREVENT ADDITIONAL SUBSOIL COMPACTION.
5. ANY OVERSIZED STONE/ROCK MATERIAL (4-INCHES OR GREATER) BROUGHT TO THE SURFACE BY THIS OPERATION WILL BE REMOVED.

1.3.5.3 SOIL TESTING AFTER DECOMMISSIONING

1. SOIL TESTS FOR THE MACRONUTRIENTS N, P, AND K, PH AND ORGANIC MATTER CONTENT WILL BE TAKEN AT A RATE OF ONE SAMPLE PER 20 ACRES.

1.3.5.4 RESEEDING AND ADDITION OF SOIL AMENDMENTS

1. APPLY SOIL AMENDMENTS ACCORDING TO RECOMMENDATIONS PROVIDED BY THE TESTING LAB.
2. AREAS WITH LESS THAN 70 PERCENT VEGETATIVE COVER SHALL BE OVERSEEDED WITH A TEMPORARY OR PERMANENT SEED MIX BASED UPON THE INTENDED USE OF THE SITE AFTER THE SOLAR PROJECT IS DECOMMISSIONED.

1.4 FEDERAL AND STATE ENDANGERED SPECIES ACT CONSERVATION PLAN

THE CTDEEP NATURAL DIVERSITY DATA BASE (NDDB) PROGRAM LETTER OF MARCH 5, 2018 (NDDB DETERMINATION NO. 2017102132) APPROVED THE CONSERVATION MEASURES PLAN PREPARED FOR THE TVS PROJECT. AN ADDENDUM TO THE CONSERVATION MEASURES PLAN WAS SUBMITTED TO NDDB ON JANUARY 11, 2019 TO COVER THE ADDITION OF 4.3 ACRES OF ADJACENT FARMLAND INTO THE PROJECT SITE. THE CONSERVATION MEASURES PLAN PROVIDED PROTECTIVE MEASURES FOR PLANT AND ANIMAL SPECIES PROTECTED UNDER THE CONNECTICUT ENDANGERED SPECIES ACT (CESA) THOUGHT TO HAVE THE POTENTIAL TO OCCUR WITHIN PROJECT SITE OR OCCUPY DOWNSTREAM AQUATIC HABITATS POTENTIALLY INDIRECTLY IMPACTED BY THE PROJECT. THESE CONSERVATIONS MEASURES MUST BE IMPLEMENTED AS PART OF THE CSC D&M PLAN AND ARE RECAPITULATED BELOW:

1.4.1 REPTILES

THE CT DEEP DETERMINED THAT THREE REPTILE SPECIES OF STATE SPECIAL CONCERN POTENTIALLY OCCUR WITHIN THE TVS PROJECT AREA: WOOD TURTLE (GLYPTEMYS INSCULPTA), EASTERN BOX TURTLE (TERRAPENE CAROLINA CAROLINA), AND EASTERN HOGNOSE SNAKE (HETERODON PLATIRHINOS). THE FOLLOWING CONSERVATION MEASURES ARE TO BE IMPLEMENTED TO PROTECT INDIVIDUALS OF THESE SPECIES WHICH MAY BE PRESENT:

1. EXCLUSIONARY FENCING SHALL BE INSTALLED ALONG THE LOD, INCLUDING EXISTING ACCESS ROADS, TO EXCLUDE REPTILES AND AMPHIBIANS FROM ENTERING ACTIVE WORK AREAS. THE FENCING MUST BE AT LEAST 20-INCHES HIGH AND BE PROPERLY ENTRENCHED IN THE GROUND WITHOUT GAPS.
2. EXPERIENCE HAS SHOWN THAT LONG RUNS OF EXCLUSIONARY SILT FENCE NOT INSTALLED ALONG A CONTOUR CAN CREATE CONCENTRATED EROSIVE DISCHARGES. SILT FENCE WINGS AND POROUS WILDLIFE EXCLUSIONARY FENCE (ERTEC RIGID MONOLITHIC HDPE MATRIX OR EQUIVALENT) MUST BE INSTALLED AT REGULAR INTERVALS TO AVOID CREATING CONCENTRATED FLOWS.
3. QUALIFIED PERSONNEL WILL CONDUCT VISUAL SWEEPS OF THE WORK AREA(S) EACH MORNING PRIOR TO WORK START. IF ANY OF THE LISTED SPECIES ARE ENCOUNTERED THEY WILL BE SAFELY MOVED TO AN ADJACENT AREA OUTSIDE OF THE EXCLUSIONARY FENCING.
4. TO THE EXTENT POSSIBLE, CONSTRUCTION VEHICLES AND EQUIPMENT WILL BE PARKED ALONG ACCESS ROUTES AND IN ACTIVE WORK AREAS AND NOT IN POTENTIAL HABITAT. ALL STAGING AND STORAGE AREAS, MUST SWEPT BY QUALIFIED PERSONNEL PRIOR TO USE.
5. QUALIFIED PERSONNEL WILL TRAIN CONTRACTORS IN THE IDENTIFICATION OF THE LISTED SPECIES SO THAT THEY MAY APPROPRIATELY HANDLE AND RELOCATE THE TARGETED SPECIES OR NOTIFY THE APPROPRIATE PERSONNEL TO RELOCATE THE SPECIES OUTSIDE OF ACTIVE WORK AREAS.
6. STATE-LISTED REPTILE SPECIES ENCOUNTERED DURING THE CONSTRUCTION PERIOD WILL BE DOCUMENTED BY QUALIFIED PERSONNEL AND REPORTED TO THE NDDB.
7. SILT FENCE USED FOR EXCLUSION SHALL BE REMOVED AFTER HAZARDS POSED BY EQUIPMENT AND VEHICLE OPERATIONS ARE MITIGATED AFTER CONSTRUCTION IS COMPLETED.

1.4.2 BIRDS AND BATS

1. ALL TREE CLEARING SHALL BE CONDUCTED OUTSIDE OF THE PERIOD BETWEEN MAY 15TH TO AUGUST 31ST TO MINIMIZE DISTURBANCE TO NESTING BIRDS AND TREE-ROOSTING BATS.
2. IF BATS ARE ENCOUNTERED DURING TREE CLEARING ACTIVITIES OUTSIDE OF THE TOY RESTRICTION, TREE CLEARING OPERATIONS WILL BE IMMEDIATELY STOPPED AND THE ENVIRONMENTAL MONITOR WILL CONTACT THE BAT PROGRAM WITHIN THE CTDEEP WILDLIFE DIVISION TO DETERMINE THE PROPER NEXT STEPS.

1.4.3 FRESHWATER MUSSELS

SAXTON BROOK AND MUNNISUNK BROOK ARE COLD-WATER TRIBUTARIES TO THE FARMINGTON RIVER WHICH FLOW WITHIN THE PROPERTY LIMITS OF THE TVS PROJECT. NO WORK IS PROPOSED DIRECTLY WITHIN OR ADJACENT TO THESE PERENNIAL STREAMS OR THE FARM POND IMPOUNDMENTS ALONG THE STREAMS. WORK IS PROPOSED IN THE WATERSHEDS OF THESE STREAMS AND SEDIMENT CONTROLS WILL BE INSTALLED ALONG SLOPES ABOVE THESE STREAMS TO PROTECT WATER QUALITY AND MINIMIZE ANY INDIRECT EFFECTS TO FRESHWATER MUSSELS WITHIN THESE TRIBUTARIES OR THE FARMINGTON RIVER.

1.4.4 PLANTS

ONE OCCURRENCE OF A PLANT SPECIES OF STATE SPECIAL CONCERN WAS IDENTIFIED WITHIN THE EVERSOURCE RIGHT-OF-WAY (ROW) DURING SURVEYS CONDUCTED IN 2017. IF THIS OR OTHER LISTED SPECIES ARE REDISCOVERED BEFORE CONSTRUCTION, THE ELEMENT OCCURRENCE WILL BE DOCUMENTED AND ISOLATED WITH CONSTRUCTION FENCING.

1.4.5 BUTTERFLIES AND MOTHS (LEPIDOPTERA)

A LARGE STAND OF A POTENTIAL HOST PLANT IDENTIFIED IN THE EVERSOURCE ROW NORTH OF THE SIMSBURY SUBSTATION WILL BE PROTECTED BY CONSTRUCTION FENCE. THIS COMMON PLANT OCCURS IN SMALL SCATTER STANDS AROUND THE PERIMETER OF THE AGRICULTURAL FIELDS IN THE PROJECT AREA AND IS NOT PROTECTED BY THE CESA. HOWEVER, THIS SPECIES IS KNOWN TO SERVE AS A HOST PLANT FOR A MOTH THAT CESA LISTS AS SPECIAL CONCERN. THE PARTICULARLY LARGE STAND MAY PROVIDE SUITABLE HABITAT FOR THE STATE-LISTED MOTH.

1.4.6 DRAGONFLIES

A STATE-THREATENED DRAGONFLY POTENTIALLY OCCURS WITHIN THE HABITAT PROVIDED BY COLD WATER STREAMS WITHIN THE TVS PROPERTY LIMITS. THE CONSERVATION MEASURES PROPOSED TO PROTECT THE FRESHWATER MUSSELS ALSO APPLY TO THIS SPECIES OF DRAGONFLY.

1.5 GENERAL WILDLIFE CONSERVATION MEASURES

GENERAL CONSERVATION MEASURES ARE INCORPORATED INTO THE PLAN TO MINIMIZE THE EFFECTS ON WILDLIFE SPECIES THAT MAY UTILIZE THE PROJECT SITE AND THE ADJACENT AREAS. THESE INCLUDE:

1. A 7-FOOT TALL SECURITY FENCE WILL BE INSTALLED AROUND THE PERIMETER OF THE ARRAY TO MEET THE NATIONAL ELECTRIC CODE AND EXCLUDE LARGE MAMMALS SUCH AS DEER. THE BOTTOM OF THE FENCE WILL BE RAISED FOUR INCHES TO PERMIT AMPHIBIANS, REPTILES, AND SMALL MAMMALS TO PASS THROUGH THE PROJECT AREA DURING THE OPERATIONAL PHASE.
2. A POLLINATOR HABITAT AREA WILL BE INSTALLED AS DESCRIBED ON THE PLANTING PLANS.
3. INVASIVE PLANT SPECIES WILL BE CONTROLLED WITHIN THE TVS PROJECT SITE TO ENCOURAGE THE ESTABLISHMENT OF NATIVE PLANTS. INVASIVE PLANT CONTROLS ARE DISCUSSED ON THE PLANTING PLANS.

1.6 WETLANDS

WETLANDS MAY PROVIDE IMPORTANT SERVICES SUCH AS IMPROVEMENTS TO WATER QUALITY, FISH AND WILDLIFE HABITAT, AND FLOOD PROTECTION. WETLANDS ARE PROTECTED BY THE SECTION 404 OF THE FEDERAL CLEAN WATER ACT AND THE CONNECTICUT INLAND WETLANDS AND WATERCOURSES ACT. THE FOLLOWING PROTECTIVE MEASURES WILL BE IMPLEMENTED.

1. THE PROJECT AVOIDS DIRECT IMPACT TO INLAND WETLANDS AND WATERCOURSES.
2. NEW WETLAND CROSSING ARE NOT REQUIRED TO COMPLETE THE PROJECT. EXISTING FARM ROAD CROSSINGS WILL BE UTILIZED TO REACH WORK SITES. CULVERTS WILL BE INSPECTED TO CONFIRM THAT THEY ARE SOUND AND CAPABLE OF SUPPORTING CONSTRUCTION EQUIPMENT PRIOR TO USE.
3. INDIRECT IMPACTS TO WETLANDS AND WATERCOURSE WILL BE MINIMIZED THROUGH IMPLEMENTATION OF THE SITE-SPECIFIC SWPCP DEVELOPED FOR THE PROJECT AND APPROVED BY THE CT DEEP.

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Drawing Number: C-1.2



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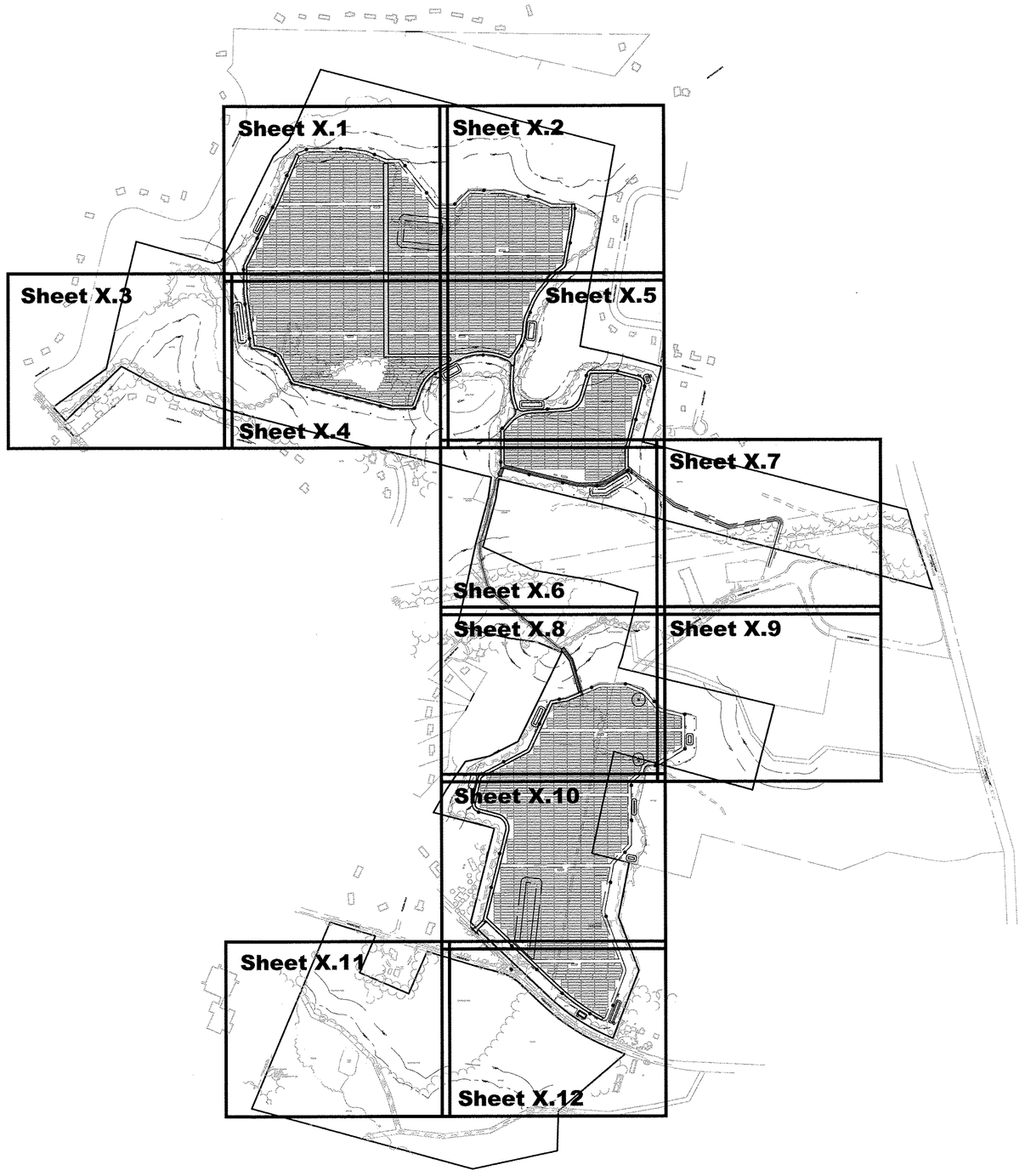

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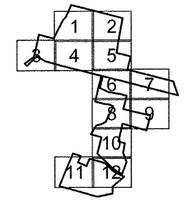

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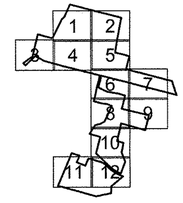

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Drawing Title

Layout and Materials Plan - Overall

Drawing Number

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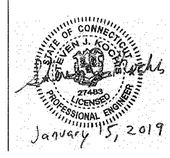

MUNNISUNK DRIVE

MUNNISUNK

WF1-420

WF1-430

WF1-410

WF1-400 START

WOODED

40' SIDE SETBACK

100'

200'

100' WETLAND BUFFER

200' WETLAND BUFFER

LIMIT OF WORK

PROPOSED CLEARING LIMITS (TYP)

CHAIN LINK FENCING (TYP)

COMPACTED NATIVE SOIL ACCESS ROAD

SOLAR PANELS (TYP)

GRAVEL ACCESS ROAD (TYP)

PROPOSED BAT HOUSE ERECTED PRIOR TO MAY 15 TO FACE SOUTH (TYP. OF 3 IN THIS AREA)

MOWED TRAIL FOR PEDESTRIAN USE

PROPOSED BAT HOUSE ERECTED PRIOR TO MAY 15 TO FACE SOUTH (TYP.)

CULTIVATED FIELD

PROPOSED INVERTER (TYP)

±50' WIDE ROAD CROSSING

SB-3

20 FT. WIDE GATE (TYP)

±70' WIDE ROAD CROSSING

TST-2

40' SIDE SETBACK AND RESIDENTIAL BUFFER

Match Line See Sheet 3.2

Match Line See Sheet 3.4

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Match Line
See Sheet 3.1

WF1-440
WF1-450
WF1-460
WF1-470
WF1-480 END

WETLAND 1

100' WETLAND BUFFER
200' WETLAND BUFFER
40' SIDE SETBACK AND RESIDENTIAL BUFFER

WOODED

CHAIN LINK FENCING (TYP)
SOLAR PANELS (TYP)
COMPACTED NATIVE SOIL ACCESS ROAD
LIMIT OF WORK
±50' WIDE ROAD CROSSING
CHANGE IN FENCE TYPE
BLACK VINYL CHAIN LINK FENCING (TYP)
PROPOSED CLEARING LIMITS (TYP)

CULTIVATED FIELD

PROPOSED INVERTER (TYP)
GRAVEL ACCESS ROAD (TYP)
BLACK VINYL CHAIN LINK FENCING (TYP)

KNOLLWOOD CIRCLE

Match Line
See Sheet 3.5

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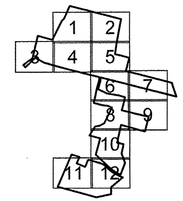

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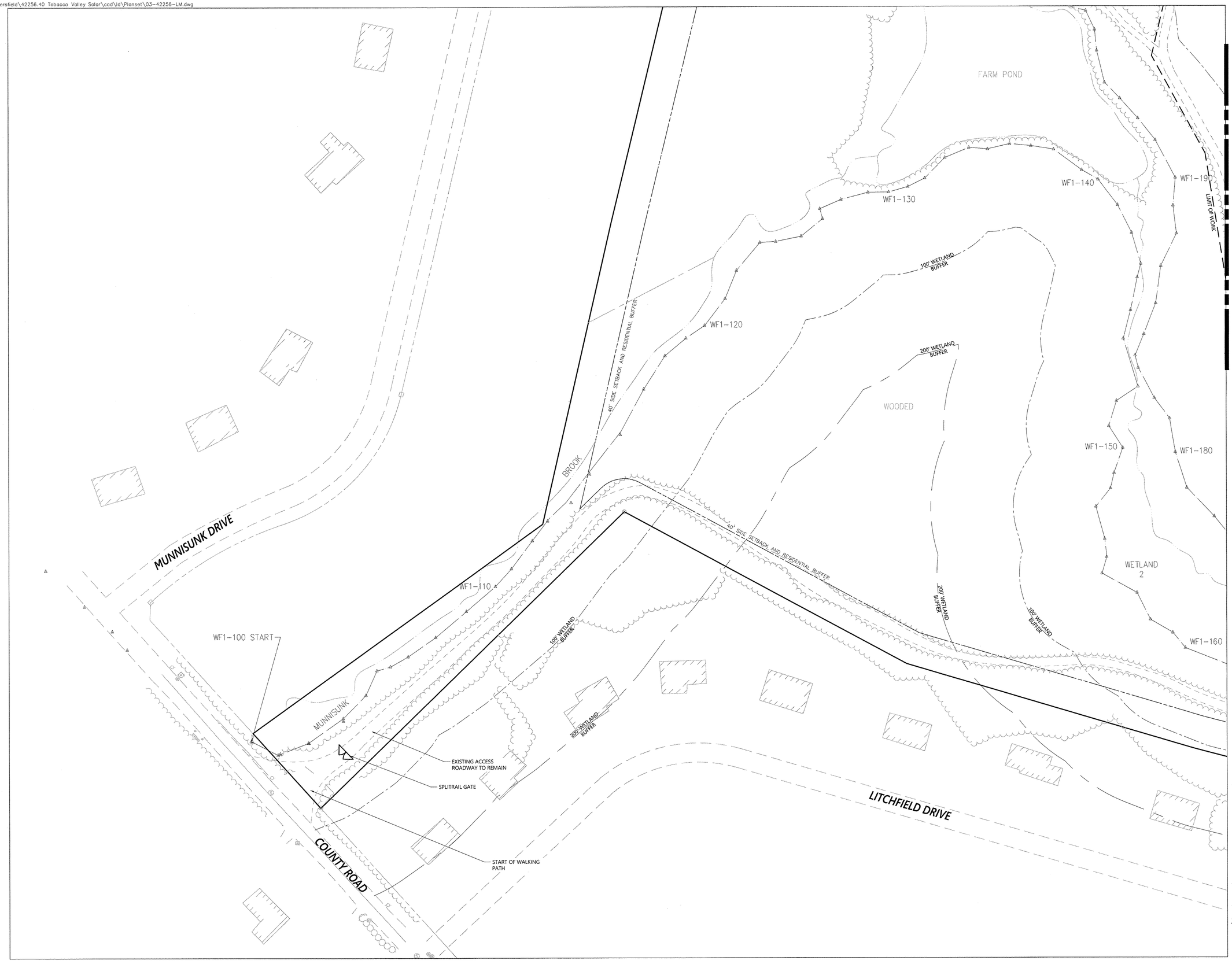

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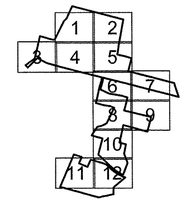

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Match Line

See Sheet 3.3

Match Line

See Sheet 3.5

CHAIN LINK FENCING (TYP)

100' WETLAND BUFFER

WF1-190

LIMIT OF WORK

SB-1

200' WETLAND BUFFER

±70' WIDE ROAD CROSSING

SOLAR PANELS (TYP)

CULTIVATED FIELD

GRAVEL ACCESS ROAD (TYP)

SOLAR PANELS (TYP)

COMPACTED NATIVE SOIL ACCESS ROAD

PROPOSED INVERTER (TYP)

TREES

COMPACTED NATIVE SOIL ACCESS ROAD

20 FT. WIDE GATE (TYP)

GRAVEL ACCESS ROAD (TYP)

MOWED TRAIL FOR PEDESTRIAN USE

WF1-180

CHAIN LINK FENCING (TYP)

[B]

SOLAR PANELS (TYP)

GRAVEL ACCESS ROAD (TYP)

200' WETLAND BUFFER

±50' WIDE ROAD CROSSING

LIMIT OF WORK

PROPOSED CLEARING LIMITS (TYP)

100' WETLAND BUFFER

WOODED

CHANGE IN FENCE TYPE

[B]

NATURAL DEPRESSION

BARN TO BE REMOVED

200' WETLAND BUFFER

BLACK VINYL CHAIN LINK FENCING (TYP)

CONNECT TO EXISTING ACCESS ROADWAY

SOLAR PANELS (TYP)

BARN FOUNDATION TO BE REMOVED

CHAIN LINK FENCING (TYP)

TST-5

LIMIT OF WORK

BARN TO REMAIN

100' WETLAND BUFFER

WF1-160

WF1-172

BLACK VINYL CHAIN LINK FENCING GATE

[B]

BLACK VINYL CHAIN LINK FENCING (TYP)

GRAVEL ACCESS ROAD (TYP)

CHANGE IN FENCE TYPE

BLACK VINYL CHAIN LINK FENCING (TYP)

WF1-306

100' WETLAND BUFFER

WOODED

PROPOSED CLEARING LIMITS (TYP)

LIMIT OF WORK

WF4-100

WF4-130

[B]

PROPOSED BAT HOUSE ERECTED PRIOR TO MAY 15 TO FACE SOUTH (TYP. OF 6 IN THIS AREA)

[B]

PROPOSED CLEARING LIMITS (TYP)

WF1-310 END

WF1-300 START

200' WETLAND BUFFER

100' WETLAND BUFFER

LITCHFIELD DRIVE

40' SIDE SETBACK AND RESIDENTIAL BUFFER

WF5-105

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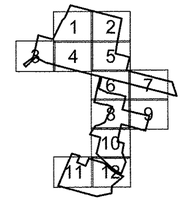

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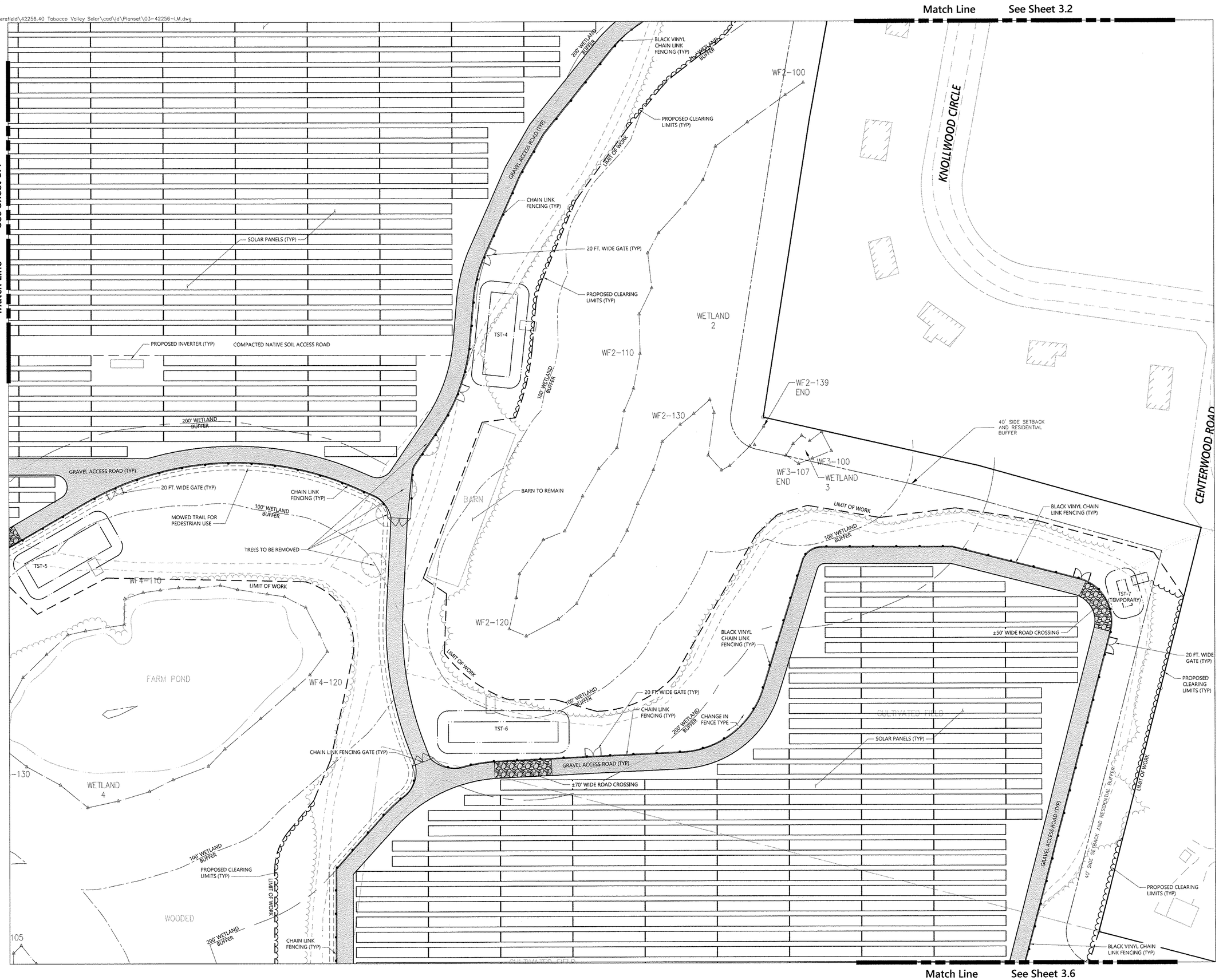

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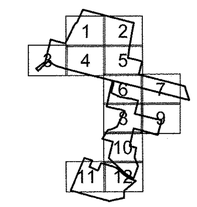

Sheet Index

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by: SJK
Checked by: PV
Issued for: Construction
Date: January 15, 2019

Drawing Title
Layout and Materials Plan 5

Drawing Number
C-3.5

STATE OF CONNECTICUT
STEVEN J. KOCHA
27483
LICENSED
PROFESSIONAL ENGINEER
January 15, 2019

Sheet 9 of 50

Project Number
42256.40

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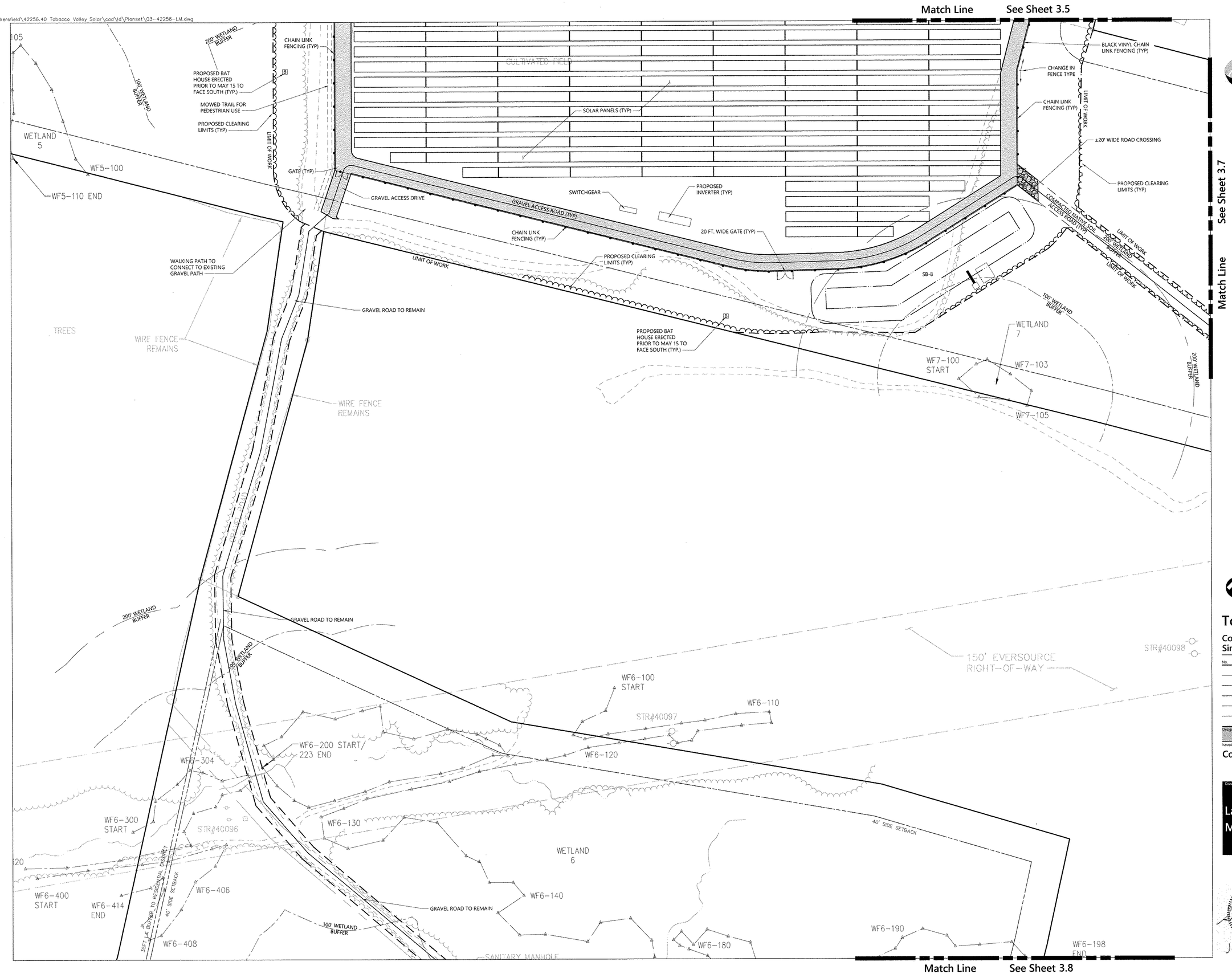

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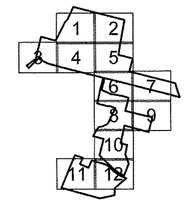

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Designed by: SJK
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Issued for: Construction
Date: January 15, 2019

Drawing Title

Layout and Materials Plan 6

Drawing Number

C-3.6

Sheet 10 of 50

Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOCHS
27483
LICENSED
PROFESSIONAL ENGINEER
January 15, 2019

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Match Line See Sheet 3.6

40' SIDE SETBACK AND RESIDENTIAL BUFFER

WOODED

PROPOSED CLEARING LIMITS (TYP)

200' WETLAND BUFFER

COMPACTED NATIVE SOIL ACCESS ROAD (TYP)

LIMIT OF WORK

40' SIDE SETBACK AND RESIDENTIAL BUFFER

LIMIT OF WORK

PROPOSED CLEARING LIMITS (TYP)

150' EVERSOURCE RIGHT-OF-WAY

STR#40100

STR#LN1256

STR#40099A

STR#40099

LIMIT OF WORK

WOODED

POINT OF INTERCONNECTION

CASTERBRIDGE CROSSING

Match Line See Sheet 3.9

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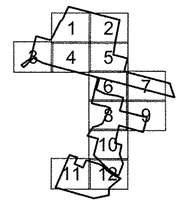

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Tobacco Valley Solar

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Simsbury, Connecticut

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Drawing Title

Layout and Materials Plan 7

Drawing Number

C-3.7

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Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOSOWSKI
27455
LICENSED PROFESSIONAL ENGINEER
January 15, 2019

Match Line See Sheet 3.6

Match Line See Sheet 3.9

Match Line See Sheet 3.10

WF6-408
WF6-190
WF6-198 END
WF6-180
WF6-150
WF6-170
WF6-158 END
WF6-600
WF6-500 START
WF6-509 END
WF6-611
SANITARY MANHOLE
SANITARY MANHOLE
SANITARY MANHOLE
FARM POND
GRAVEL ROAD TO REMAIN
SAXTON BROOK DRIVE
100' WETLAND BUFFER
200' WETLAND BUFFER
35FT LA BUFFER
35FT LA BUFFER TO RESIDENTIAL DISTRICT
40' SIDE SETBACK
PROPOSED GRAVEL ACCESS ROAD SHALL CONNECT TO EXISTING GRAVEL PATH
WOODED
WOODED
WOODED
CULTIVATED FIELD
LIMIT OF WORK
CHAIN LINK FENCING (TYP)
GATE (TYP)
PROPOSED BAT HOUSE ERECTED PRIOR TO MAY 15 TO FACE SOUTH (TYP.)
COMPACTED NATIVE SOIL ACCESS ROAD
PROPOSED CLEARING LIMITS (TYP)
TST-9
±50' WIDE ROAD CROSSING
SOLAR PANELS (TYP)
TST-18
±70' WIDE ROAD CROSSING
20 FT. GATE (TYP)
GRAVEL ACCESS ROAD (TYP)
PROPOSED INVERTER (TYP)
TST-11
±90' WIDE ROAD CROSSING
20 FT. WIDE GATE (TYP)
TST-17
WETLAND 6
BROOK

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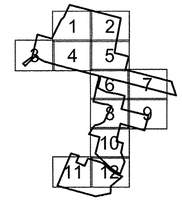

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Drawing Title

Layout and Materials Plan 8

Drawing Number

C-3.8

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Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOCH
27483
LICENSED PROFESSIONAL ENGINEER
January 15, 2019

Match Line See Sheet 3.7

Match Line See Sheet 3.8

CASTERBRIDGE CROSSING

DORSET CROSSING DRIVE

WF6-700

WF6-710

WF6-720

WF6-722

SAXTON BROOK

40' SIDE SETBACK

PROPOSED CLEARING LIMITS (TYP)

COMPACTED NATIVE SOIL ACCESS ROAD

LIMIT OF WORK

CHAIN LINK FENCING (TYP)

±70' WIDE ROAD CROSSING

EST-10

20 FT. WIDE GATE (TYP)

PROPOSED BAT HOUSE ERECTED PRIOR TO MAY 15 TO FACE SOUTH (TYP. OF 4 IN THIS AREA)

100' WETLAND BUFFER

200' WETLAND BUFFER

40' SIDE SETBACK

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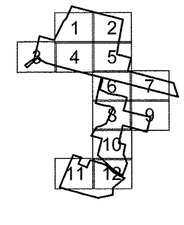

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Drawing Title

Layout and Materials Plan 9

Drawing Number

C-3.9

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Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOOS
27483
LICENSED
PROFESSIONAL ENGINEER
January 15, 2019

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Match Line See Sheet 3.8

BROOK
WF6-606
TST-17
100' WETLAND BUFFER
20 FT. WIDE GATE (TYP)
CHAIN LINK FENCING (TYP)
35FT LA BUFFER TO RESIDENTIAL DISTRICT
40' SIDE SETBACK
LIMIT OF WORK
200' WETLAND BUFFER
±70' WIDE ROAD CROSSING
GRAVEL ACCESS ROAD (TYP)
PROPOSED INVERTER (TYP)
COMPACTED NATIVE SOIL ACCESS ROAD
SOLAR PANELS (TYP)
CHANGE IN FENCE TYPE
TREES TO REMAIN WITHIN AREA ADJACENT TO RESIDENTIAL TO BE USED AS BUFFER
BLACK VINYL CHAIN LINK FENCING (TYP)
CULTIVATED FIELD
BLACK VINYL FENCING GATE
SPLITRAIL FENCING AND GATE
50' FRONT SETBACK
COMPACTED NATIVE SOIL ACCESS ROAD
COUNTY ROAD
SB-16
GRAVEL DRIVE ENCROACHES 0'± ONTO PROPERTY OF NOW OR FORMERLY RIVERBEND DEVELOPMENT CT LLC
±4.3 ACRES ON ADJACENT PROPERTY TO BE LEASED FOR THIS PROJECT. LEASE LINE WILL GENERALLY FOLLOW PROPOSED LIMITS OF WORK IN THIS AREA.
TST-12
WOODED
±50' WIDE ROAD CROSSING
PROPOSED CLEARING LIMITS (TYP)
TST-13
CHAIN LINK FENCING (TYP)

Match Line See Sheet 3.12

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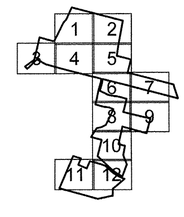

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Drawing Title
Layout and Materials Plan 10

Drawing Number
C-3.10

Sheet 14 of 50

Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOCON
27483
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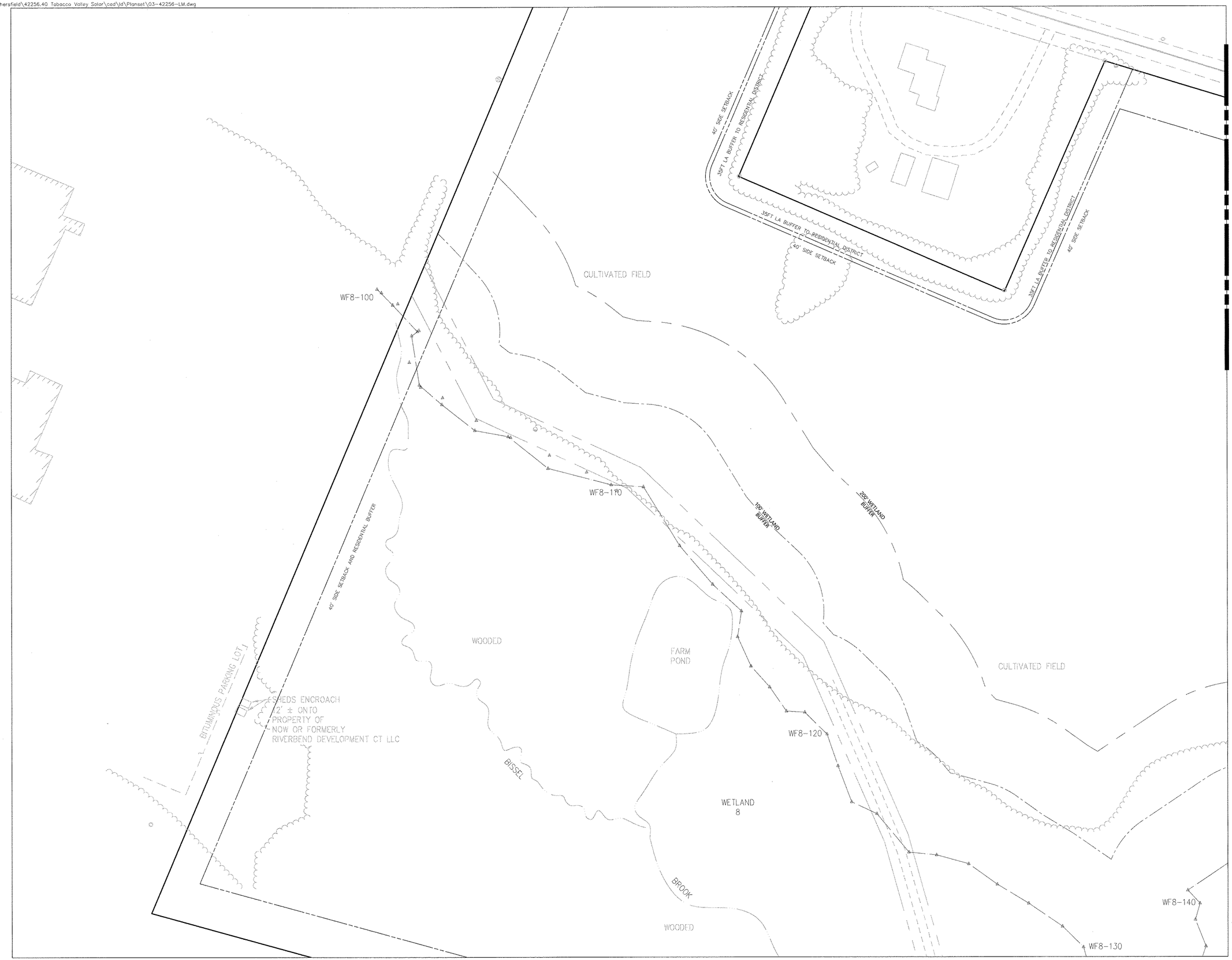

Match Line See Sheet 3.12

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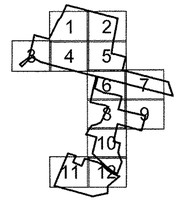

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Layout and Materials Plan 11

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Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOCH
27483
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January 15, 2019

Match Line See Sheet 3.10

Match Line See Sheet 3.11

COUNTY ROAD

HOSKINS ROAD

HOSKINS ROAD

LIMIT OF WORK

TREES TO REMAIN

BLACK VINYL CHAIN LINK FENCING (TYP)

SB-16

±20' WIDE ROAD CROSSING

BARN

TREE TO BE REMOVED

BARN TO REMAIN

LIMIT OF WORK

BLACK VINYL CHAIN LINK FENCING (TYP)

SPLITRAIL FENCING

COMPACTED NATIVE SOIL ACCESS ROAD

PROPOSED INVERTER (TYP)

COMPACTED NATIVE SOIL ACCESS ROAD

CHAIN LINK FENCING (TYP)

CHANGE IN FENCE TYPE

SOLAR PANELS (TYP)

BLACK VINYL CHAIN LINK FENCING (TYP)

±50' WIDE ROAD CROSSING

COMPACTED NATIVE SOIL ACCESS ROAD

20 FT. WIDE GATE (TYP)

CULTIVATED FIELD

CULTIVATED FIELD

SB-16

LIMIT OF WORK

TST-15 (TEMPORARY)

TST-14 (TEMPORARY)

BLACK VINYL CHAIN LINK FENCING (TYP)

LIMIT OF WORK

50' FRONT SETBACK

BARN TO REMAIN

TREES TO REMAIN

WOODED

200' WETLAND BUFFER

100' WETLAND BUFFER

WOODED

40' SIDE SETBACK AND RESIDENTIAL BUFFER

WETLAND 8

WF8-150

WETLAND 9

WF8-180

40

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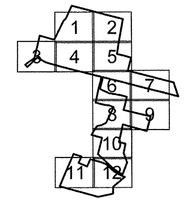

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Issued for Construction Date January 15, 2019

Drawing Title

Layout and Materials Plan 12

Drawing Number

C-3.12

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Project Number 42256.40

STATE OF CONNECTICUT
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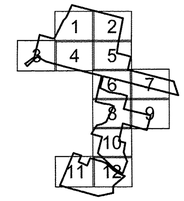

Sheet Index

0 200 400 800 Feet

Tobacco Valley Solar

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Drawing Title

Grading and Drainage Plan - Overall

Drawing Number

C-4.0

Sheet 17 of 50

Project Number 42256.40

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STEVEN J. KOOS
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January 15, 2019

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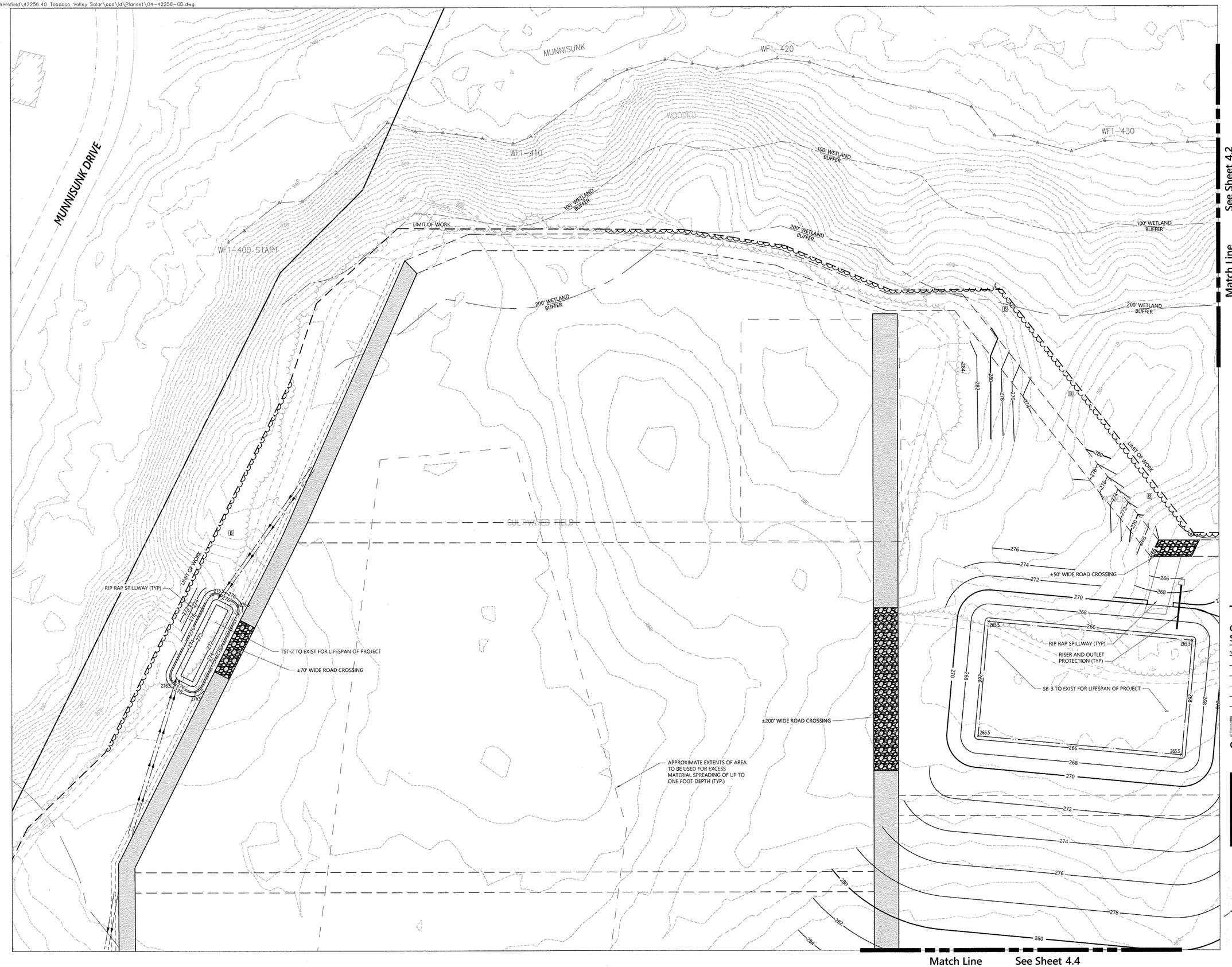

Match Line See Sheet 4.2

Match Line See Sheet 4.4

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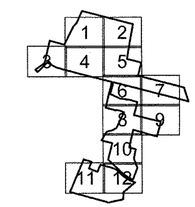

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Tobacco Valley Solar

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Drawing Title

Grading and Drainage Plan 1

Drawing Number

C-4.1

STATE OF CONNECTICUT
STEVEN J. KOCHS
27483
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Sheet 18 of 50

Project Number 42256.40

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Match Line

See Sheet 4.1

WF1-440

WF1-450

WF1-460

WF1-470

WF1-480 END

WETLAND 1

100' WETLAND BUFFER

200' WETLAND BUFFER

WOODED

LIMIT OF WORK

±50' WIDE ROAD CROSSING

CONTRACTOR TO ENSURE THAT STORMWATER RUNOFF IN THIS AREA DRAINS TO SB-3

APPROXIMATE EXTENTS OF AREA TO BE USED FOR EXCESS MATERIAL SPREADING OF UP TO ONE FOOT DEPTH (TYP.)

CULTIVATED FIELD

KNOLLWOOD CIRCLE

Match Line See Sheet 4.5

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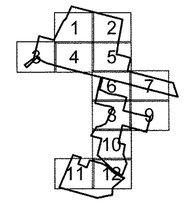

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Tobacco Valley Solar

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Drawing Title

Grading and Drainage Plan 2

Drawing Number

C-4.2

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Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOCH
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See Sheet 4.4

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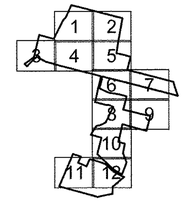

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Tobacco Valley Solar

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No.	Revision	Date	Appvd.

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January 15, 2019

Drawing Title
Layout and Grading and Drainage Plan 3

Drawing Number
C-4.3

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Project Number
42256.40

STATE OF CONNECTICUT
STEVEN J. KOOS
27483
LICENSED PROFESSIONAL ENGINEER
January 15, 2019

Match Line See Sheet 4.3

Match Line See Sheet 4.5

APPROXIMATE EXTENTS OF AREA TO BE USED FOR EXCESS MATERIAL SPREADING OF UP TO ONE FOOT DEPTH (TYP.)

100' WETLAND BUFFER

LIMIT OF WORK

RISER AND OUTLET PROTECTION (TYP)

200' WETLAND BUFFER

±70' WIDE ROAD CROSSING

SB-1 TO EXIST FOR LIFESPAN OF PROJECT

RIP RAP SPILLWAY (TYP)

CULTIVATED FIELD

NORTH PARCEL
AREA = 10,271,864 SQ. FT.
(235.810 ACRES)

TREES

WOODED

NATURAL DEPRESSION AREA BELOW ELEVATION 274 SHALL NOT BE REGRADED OR RESHAPED

±50' WIDE ROAD CROSSING

BARN

BARN FDTN.

WF1-190

WF1-180

WF1-160

WF1-172

WF1-306

WF1-310 END

WF1-300 START

WF4-100

WF4-130

WF5-105

LITCHFIELD DRIVE

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0 25 50 100 Feet

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Drawing Title: Grading and Drainage Plan 4

Drawing Number: C-4.4

Sheet 21 of 50

Project Number: 42256.40

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27463
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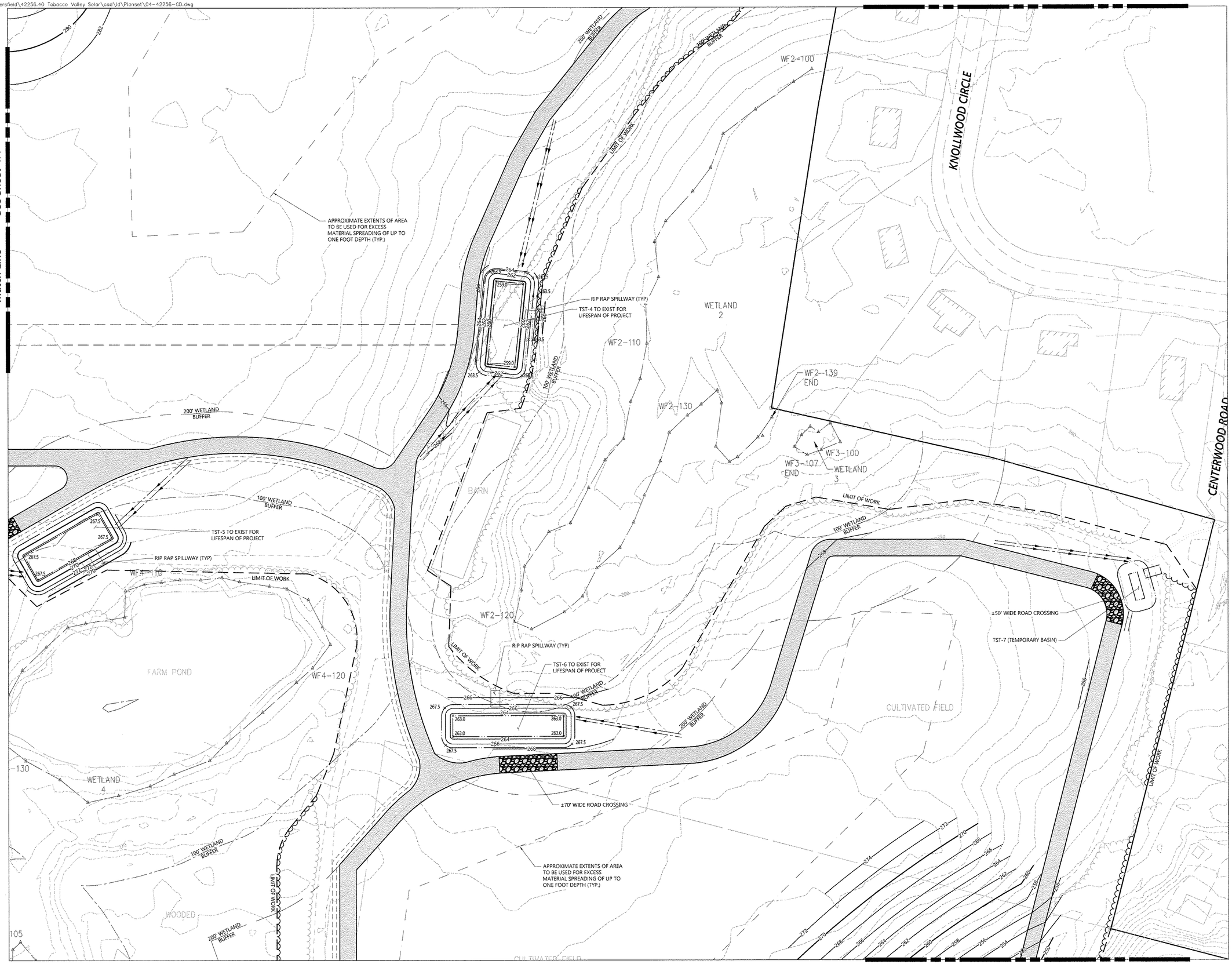
January 15, 2019

Match Line See Sheet 4.2

See Sheet 4.4 Match Line



Match Line See Sheet 4.6

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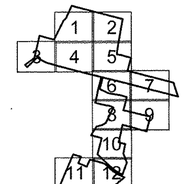

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Drawing Title

Grading and Drainage Plan 5

Drawing Number

C-4.5

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Project Number 42256.40



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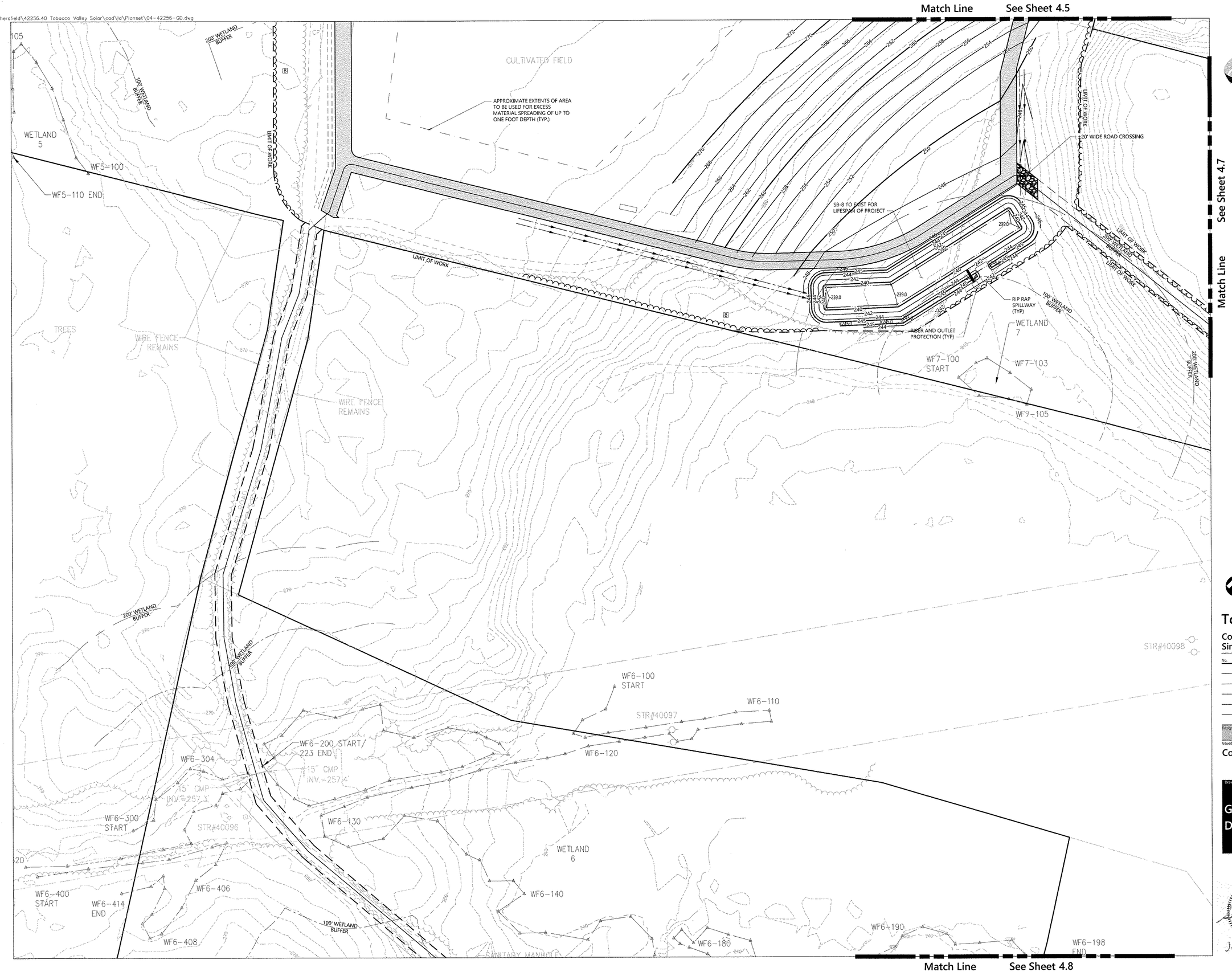

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Date: January 15, 2019

Drawing Title

Grading and Drainage Plan 6

Drawing Number

C-4.6

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STEVEN J. KOCHIS
27483
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January 15, 2019

Sheet 23 of 50

Project Number 42256.40

Match Line See Sheet 4.6

WOODED

25' WETLAND BUFFER

LIMIT OF WORK

LIMIT OF WORK

LIMIT OF WORK

STR#40100

STR#LN1256

STR#40099

STR#40099A

WOODED

CASTERBRIDGE CROSSING

Match Line See Sheet 4.9

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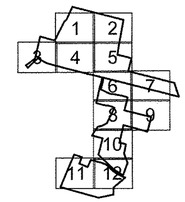

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0 25 50 100 Feet

Tobacco Valley Solar

County Road & Hoskins Road
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Drawing Title

Grading and Drainage Plan 7

Drawing Number

C-4.7

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Project Number 42256.40

STATE OF CONNECTICUT
STEVEN J. KOCSIS
27488
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January 15, 2019

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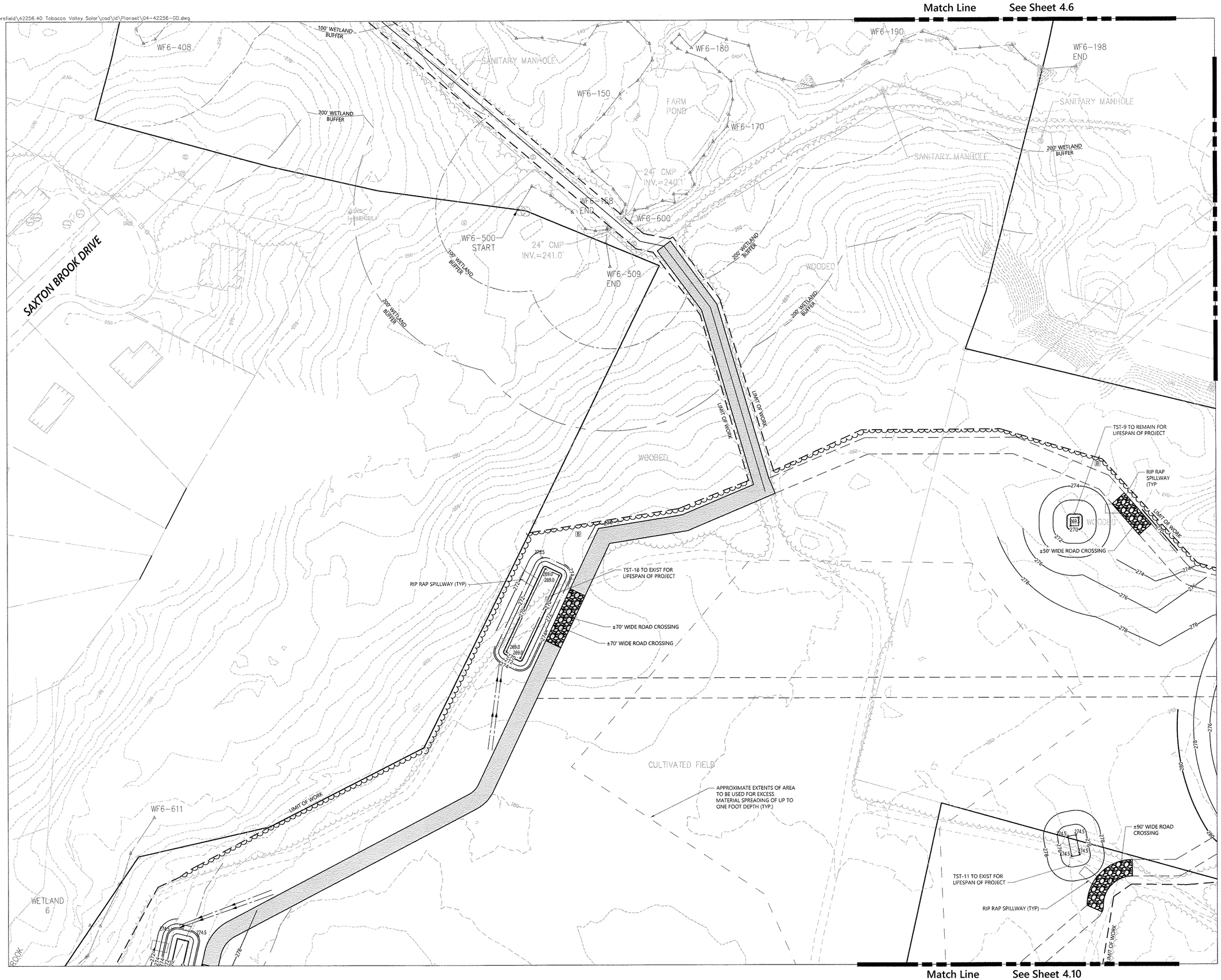

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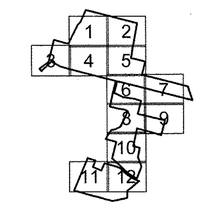

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by: SJK
Checked by: PV
Issued for: Construction
Date: January 15, 2019

Drawing Title

Grading and Drainage Plan 8

Drawing Number

C-4.8

STATE OF CONNECTICUT
STEVEN J. KOOTAS
27483
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Sheet 25 of 50

Project Number
42256.40

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Match Line See Sheet 4.7

Match Line See Sheet 4.8

CASTERBRIDGE CROSSING

DORSET CROSSING DRIVE

WF6-700

WF6-710

WF6-720

WF6-722

SAXTON BROOK

LIMIT OF WORK

±70' WIDE ROAD CROSSING

TST-10 TO EXIST FOR LIFESPAN OF PROJECT

RIP RAP SPILLWAY (TYP)

100' WETLAND BUFFER

300' WETLAND BUFFER

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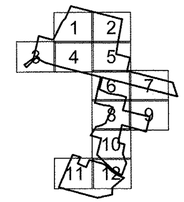

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Drawing Title

Grading and Drainage Plan 9

Drawing Number

C-4.9

Sheet 26 of 50

Project Number 42256.40

STATE OF CONNECTICUT
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Match Line See Sheet 4.8

BROOK

WF6-606

RIP RAP SPILLWAY (TYP)

100' WETLAND BUFFER

200' WETLAND BUFFER

LIMIT OF WORK

TST-17 TO EXIST FOR LIFESPAN OF PROJECT

±70' WIDE ROAD CROSSING

APPROXIMATE EXTENTS OF AREA TO BE USED FOR EXCESS MATERIAL SPREADING OF UP TO ONE FOOT DEPTH (TYP.)

±50' WIDE ROAD CROSSING

TST-12 TO EXIST FOR LIFESPAN OF PROJECT

RIP RAP SPILLWAY (TYP)

WOODED

TST-13 TO EXIST FOR LIFESPAN OF PROJECT

CULTIVATED FIELD

SB-16 TO EXIST FOR LIFESPAN OF PROJECT

GRAVEL DRIVE ENCROACHES 0'± ONTO PROPERTY OF NOW OR FORMERLY RIVERBEND DEVELOPMENT CT LLC

COUNTY ROAD

Match Line See Sheet 4.12

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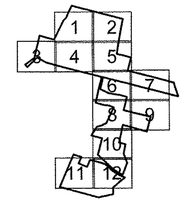

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Tobacco Valley Solar

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Simsbury, Connecticut

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Grading and Drainage Plan 10

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C-4.10

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Project Number 42256.40

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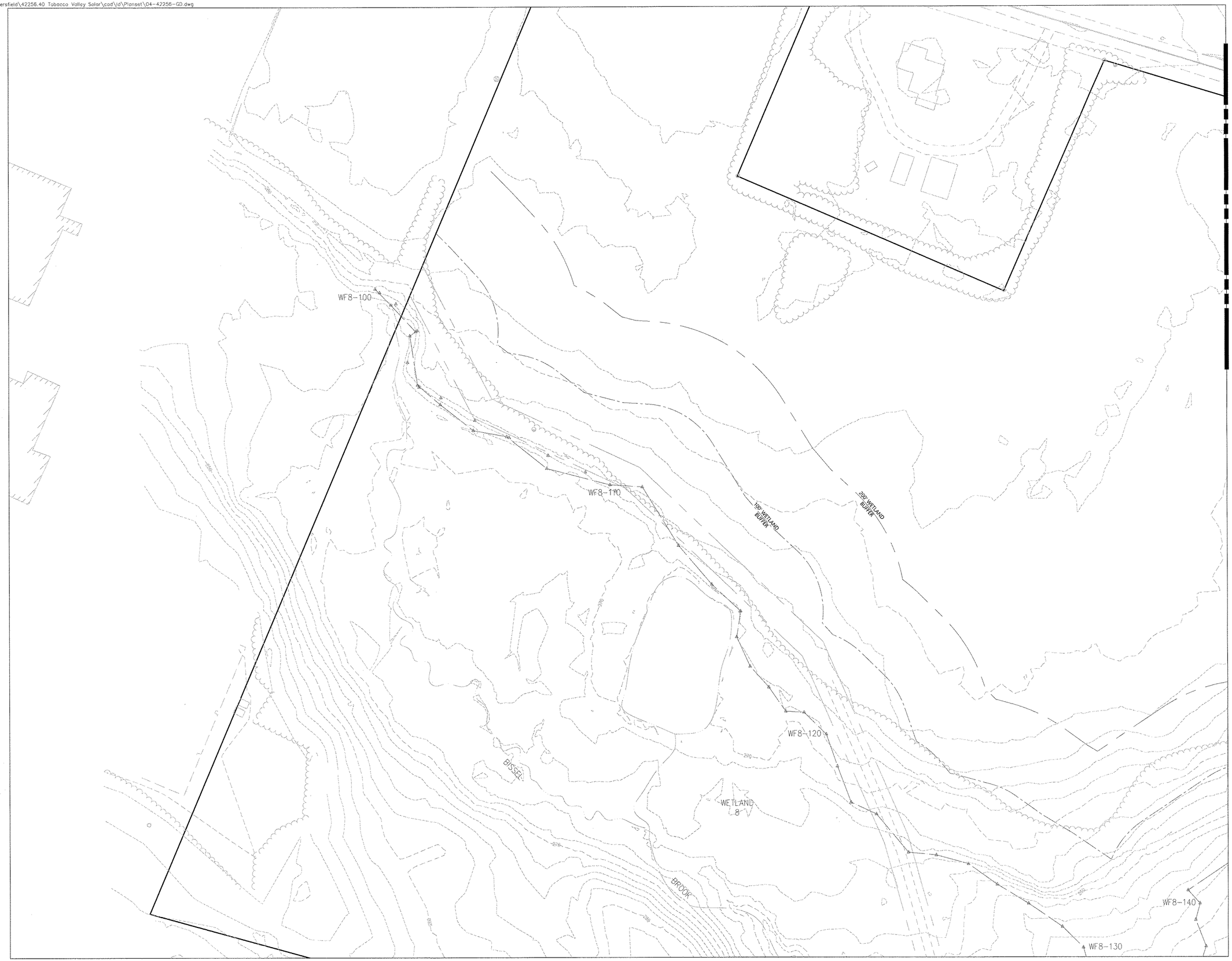

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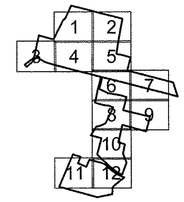

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Tobacco Valley Solar

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Grading and Drainage Plan 11

Drawing Number

C-4.11

Sheet 28 of 50

Project Number 42256.40

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January 15, 2019

Match Line See Sheet 4.10

Match Line See Sheet 4.11

COUNTY ROAD

HOSKINS ROAD

LIMIT OF WORK

RIP RAP SPILLWAY (TYP)

SB-16 TO EXIST FOR LIFESPAN OF PROJECT

±20' WIDE ROAD CROSSING

CONTRACTOR TO ENSURE THAT STORMWATER RUNOFF IN THIS AREA DRAINS TO SB-16

BARN

CULTIVATED FIELD

CB
RIM=269.0
INV.=266.1±
SILTED

INV.=265.3
24" CSP

INV.=264.9
24" CSP

TST-14 (TEMPORARY BASIN)

±50' WIDE ROAD CROSSING

TST-15 (TEMPORARY BASIN

WOODED

200' WETLAND BUFFER

100' WETLAND BUFFER

WETLAND 8

WETLAND 9

WF8-150

WF8-180

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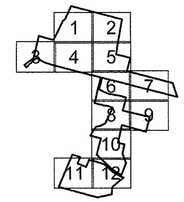

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

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Drawing Title

Grading and Drainage Plan 12

Drawing Number

C-4.12

Sheet 29 of 50

Project Number
42256.40

STATE OF CONNECTICUT
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PROFESSIONAL ENGINEER
January 15, 2019

CONSTRUCTION SEQUENCING

ALL CONSTRUCTION ACTIVITIES ARE EXPECTED TO BEGIN IN THE SPRING/SUMMER OF 2019 AND COMPLETED BY THE END OF 2019. THE GENERAL CONSTRUCTION NOTES ARE AS FOLLOWS:

1. THE SITE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT ROADS/HIGHWAYS AND THEIR DRAINAGE SYSTEM, NEIGHBORING PROPERTIES, WETLANDS AND REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT. DESIGNATED ACCESS DRIVES MUST BE USED TO THE MAXIMUM EXTENTS POSSIBLE.
2. A QUALIFIED INSPECTOR SHALL BE ASSIGNED TO BE RESPONSIBLE FOR PERFORMING INSPECTIONS AND PREPARING REPORTS IN ACCORDANCE WITH SECTION 5(B)(4)(B) OF THE CONSTRUCTION GENERAL PERMIT. IT IS ALSO ANTICIPATED THAT REPRESENTATIVES FROM CTDEEP AND/OR THE STATE CONSERVATION DISTRICT WILL PERFORM PERIODIC INSPECTIONS.
3. ENGINEER OF RECORD SHALL PERFORM THREE (3) MONTHLY PLAN IMPLEMENTATION INSPECTIONS WITHIN THE FIRST 90 DAYS OF CONSTRUCTION ACTIVITY, AS REQUIRED BY CONNECTICUT DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION.
4. THROUGHOUT THE COURSE OF THE CONSTRUCTION PROJECT, ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES MAY BE WARRANTED AT THE DISCRETION OF THE QUALIFIED INSPECTOR AND/OR DESIGN ENGINEER. THESE IMPROVEMENTS MUST BE IMPLEMENTED IN A TIMELY FASHION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION GENERAL PERMIT. ADDITIONALLY, AREAS OF PROPOSED COMPACTED NATIVE SOIL ROADS SHALL BE CONVERTED TO STABLE GRAVEL ROADS IF/AS DETERMINED BY THE QUALIFIED INSPECTOR OR ENGINEER OF RECORD.
5. PRIOR TO CONSTRUCTION, THE APPLICANT SHALL PROVIDE THE TOWN OF SIMSBURY WITH THE NAME OF CONTACT AND 24-HOUR CONTACT INFORMATION.
6. CONTRACTOR SHALL ADHERE TO 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, AS AMENDED.
7. THE CONTRACTOR SHALL FLAG THE LIMITS OF CLEARING NECESSARY TO FACILITATE THE PRE-CONSTRUCTION MEETING.
8. THE CONTRACTOR SHALL HOLD PRE-CONSTRUCTION MEETING(S). ATTENDEES SHALL INCLUDE, BUT NOT BE LIMITED TO, REPRESENTATIVES OF THE GENERAL CONTRACTOR, SITE CONTRACTOR, CTDEEP, TOWN OF SIMSBURY, ENGINEER OF RECORD, AND QUALIFIED SWPPP INSPECTOR.
9. THE CONTRACTOR SHALL CONTACT CALL-BEFORE-YOU-DIG (1-800-922-4455) PRIOR TO ENGAGING IN ANY EXCAVATION ACTIVITIES AT THE SITE.
10. THE CONTRACTOR SHALL NOTIFY THE TOWN OF SIMSBURY AGENT, ZONING ENFORCEMENT OFFICER, AND ENGINEERING DEPARTMENT, 48 HOURS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY.
11. NO CONSTRUCTION OF SITE IMPROVEMENTS MAY BEGIN UNTIL THE PROPER EROSION CONTROL MEASURES SERVING THE AREA TO BE DISTURBED ARE IN PLACE.
12. ANTICIPATED WORK HOURS WILL BE BETWEEN 6:30 AM AND 5:00 PM.

PRE-CONSTRUCTION SITE PROTECTION SEQUENCE (PER RESOURCE PROTECTION PLAN)

1. INSTALL STABILIZED VEHICLE CONSTRUCTION EXITS AT THE EXISTING FARM ROAD INTERSECTIONS WITH HOSKINS ROAD AND COUNTY ROAD.
2. SURVEY AND MARK ALL WOODLAND CLEARING LIMITS.
3. MARK TREES TO BE FELLED WITHIN 10 FEET OF CLEARING LIMITS AND INSTALL TREE PROTECTION FOR TREES TO BE PRESERVED WITHIN 10 FEET OF CLEARING LIMITS.
4. FIELD SURVEY AND MARK BOUNDARY BETWEEN CLEARING LIMITS AND GRUBBING LIMITS.
5. NO TREE CLEARING IS ANTICIPATED TO TAKE PLACE ON THE SITE BETWEEN MAY 15 AND AUGUST 31 TO MINIMIZE DISTURBANCE TO NESTING BIRDS AND TREE-ROOSTING BATS. IF BATS ARE ENCOUNTERED DURING TREE CLEARING ACTIVITIES OUTSIDE OF THIS DESIGNATED TIME-OF-YEAR RESTRICTION, TREE CLEARING OPERATIONS WILL BE IMMEDIATELY STOPPED AND THE ENVIRONMENTAL MONITOR WILL CONTACT THE BAT PROGRAM WITHIN THE CTDEEP WILDLIFE DIVISION TO DETERMINE PROPER NEXT STEPS. IF CONTRACTOR ENCOUNTERS NESTS WITH NESTLINGS THAT HAVE NOT YET FLEDGED, A 50-FOOT "NO ACTIVITY" BUFFER SHALL BE ESTABLISHED TO PROTECT THE NESTLINGS UNTIL THEY FLEDGE.
6. THE USE OF A TUB GRINDER IS RECOMMENDED FOR THE MULCHING OF FELLED TREES.
7. AS TREES ARE CLEARED AND GRUBBED, GRIND TOPS AND ROOT BALLS IN TUB GRINDER TO CREATE MATERIAL FOR WOOD CHIP MULCH BERM.
8. SKIDDERS AND OTHER EQUIPMENT SHOULD TRAVEL AROUND AGRICULTURAL FIELDS FOLLOWING PERIMETER ROADS. AVOID TRAVEL ACROSS FARM FIELDS.
9. AS MATERIAL IS PRODUCED, INSTALL MULCH BERM AT THE LIMIT OF DISTURBANCE GENERALLY IN AREAS OF CLEARED FOREST. MULCH BERM HAS NOMINAL DIMENSIONS OF 1.5 TO 2 FEET HIGH BY 4-FOOT WIDE.
10. IMMEDIATELY INSIDE THE PERIMETER MULCH BERM, INSTALL ENTRENCHED SILT FENCE FOLLOWING STANDARDS OF THE 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL. MULCH BERM AND PERIMETER SILT FENCE SHALL BE MAINTAINED IN PERPETUITY UNTIL COMPLETION OF CONSTRUCTION. NO WORK SHALL BE ALLOWED OUTSIDE OF THESE LIMITS.
11. CONCURRENT WITH ITEMS 2 THROUGH 9 ABOVE, THE CONTRACTOR SHALL ADDRESS ONGOING EROSION PROBLEMS IN THE FARM FIELDS USING TEMPORARY DIVERSIONS AND FILLING AND GRADING GULLIES. TRACK GULLIES UP AND DOWN SLOPE AND HYDROSEED WITH A THERMALLY-TREATED WOOD BONDED FIBER MATRIX (BFM) MULCH WITH TACKIFIER. A STAPLED BIODEGRADABLE EROSION CONTROL BLANKET WITHOUT MONOFILAMENT MESH IS AN ACCEPTABLE ALTERNATIVE FOR HYDROSEED AND BFM.
12. INSTALL TEMPORARY SEDIMENT TRAPS AND BASINS IN ACCORDANCE WITH THE APPROVED SITE-SPECIFIC SWPCP AND CT GUIDELINES. THE ENGINEER OF RECORD SHALL INSPECT FEATURES TO CONFIRM REQUIRED STORAGE CAPACITIES ARE PROVIDED AND THAT OUTLETS AND/OR SPILLWAYS ARE CONSTRUCTED CORRECTLY. DISCHARGE AREAS BELOW OUTFALLS MUST BE INSPECTED TO CONFIRM FLOW WILL BE OVER STABLE GROUND AND SHEET FLOW IS ENCOURAGED. IF DISTURBED SOILS ARE PRESENT, THE ENGINEER OF RECORD TO PROVIDE CORRECT MEASURES TO ADDRESS CONDITION.
13. SEED AND PROTECT DISTURBED SOILS AROUND SEDIMENT TRAPS AND BASINS WITHIN 10 DAYS OF COMPLETION. SECURE SEED WITH A THERMALLY-TREATED BFM APPLIED FOLLOWING MANUFACTURER'S SPECIFICATIONS FOR USE AT SPECIFIED APPLICATION RATES. AN ANIONIC POLYACRYLAMIDE PRODUCT MAY BE INCLUDED WITH THE TACKIFIER TO PROMOTE SOIL STABILITY. ALL OTHER AMENDMENTS SHOULD BE PRESCRIBED BASED ON THE RESULT OF SOIL TESTS.
14. INSTALL OTHER EROSION AND SEDIMENT CONTROLS FOLLOWING THE CT GUIDELINES AND MANUFACTURER'S DIRECTIONS. DURING CONSTRUCTION, THE CONTRACTOR SHALL INSTALL MEASURES AS REQUIRED BY THE ENGINEER OF RECORD OR QUALIFIED INSPECTOR, TO PREVENT SEDIMENT-LADEN RUNOFF FROM REACHING WETLANDS OR DISCHARGING OFFSITE.
15. REQUIREMENTS FOR MAINTAINING VEGETATIVE COVER WITHIN THE PROJECT LIMITS DURING CONSTRUCTION SHALL BE FOLLOWED FROM THE RESOURCE PROTECTION PLAN.
16. ESTABLISH DESIGNATED VEHICULAR TRAFFIC ACCESS ROADS (GRAVEL, OR COMPACTED NATIVE SOIL, PER PLANS) THAT SHALL BE USED AS PRIMARY ACCESSES. EFFORTS MUST BE MADE TO MINIMIZE VEHICULAR TRAFFICKING ACROSS NON-DESIGNATED AREAS TO THE EXTENTS POSSIBLE.

CONSTRUCTION SEQUENCE

1. PERFORM MASS EARTHWORK ON THE SITE AND INSTALL PERIMETER FENCE TO SERVE AS CONSTRUCTION BARRIER. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FROM AREAS PROPOSED FOR REGRADING. REFER TO RESOURCE PROTECTION PLAN.
2. TOPSOIL SHALL BE REPLACED OVER REGRADED AREAS UPON COMPLETION OF MASS EARTHWORK ACTIVITIES AND AREAS WHICH WERE DISTURBED BY MASS EARTHWORK OPERATIONS SHALL BE RESEEDED WITHIN 10 DAYS OF COMPLETION. REFER TO RESOURCE PROTECTION PLAN AND/OR SITE SOIL SCIENTIST FOR SEED MIX.
3. DRIVE PILES FOR SOLAR PANEL RACKING, STARTING FROM NORTH END OF SITE AND WORKING SOUTH TOWARDS PRIMARY STAGING AREA.
4. THE INSTALLATION OF RACKING SHALL FOLLOW THE PILE DRIVING BY ROUGHLY ONE WEEK STARTING FROM THE SAME POINT. IT IS ANTICIPATED THAT APPROXIMATELY 13 ACRES OF PILES WILL BE IN AHEAD OF RACKING ON AVERAGE.
5. ONCE THE RACKS ARE UP, VEHICULAR ACCESS ALONG NON-DESIGNATED ROUTES WILL BE SEVERELY IMPACTED DUE TO THE MODULE SPACING. RESEED AND REGRADE ALL AREAS DISTURBED BY CONSTRUCTION TRAFFIC WITHIN THE ARRAYS WHERE RACKS ARE INSTALLED AS EARLY AS POSSIBLE. RUTS AND RILLS SHALL BE SMOOTHED AND GRADED AS DISCOVERED.
6. INSTALL SOLAR PANEL MODULES IN THE RACKING. MUCH OF THIS WORK IS ANTICIPATED TO BE PERFORMED BY HAND AND LIGHT CONSTRUCTION EQUIPMENT WHICH WILL CAUSE MINIMAL DISTURBANCE COMPARED TO THE USE OF HEAVY EQUIPMENT. DESIGNATED ACCESS ROADS SHALL STILL BE USED TO THE MAXIMUM EXTENTS POSSIBLE.
7. UPON COMPLETION OF CONSTRUCTION, RE-SEED ALL DISTURBED AREAS WITHIN 10 DAYS AND PREVENT VEHICULAR TRAFFICKING OVER THESE AREAS. INSTALL FINAL LANDSCAPING.
8. THE TEMPORARY SEDIMENT TRAPS/BASINS AND THEIR ASSOCIATED DIVERSION CHANNELS MAY BE REMOVED ONCE ALL TRIBUTARY AREAS UPSTREAM OF THEM HAVE BEEN COMPLETED AND STABILIZED WITH 80 PERCENT VEGETATED COVER, AT THE DIRECTION OF THE QUALIFIED INSPECTOR AND/OR DESIGN ENGINEER.
9. AFTER SITE IS STABILIZED, AND AFTER INSPECTION BY DESIGN ENGINEER, OR OTHER OWNER'S REPRESENTATIVE, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS. ENTIRE SITE SHALL BE CHECKED FOR AND CLEANED OF SEDIMENT AS NEEDED.



Legend

- BASIN OUTLINE
- SILT FENCE
- 12" COMPOST FILTER SOCK
- DIVERSION SWALE
- E-FENCE

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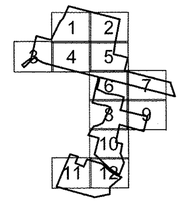

Sheet Index

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

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Date: January 15, 2019

Drawing Title: Erosion and Sediment Control Plan - Overall

Drawing Number: C-5.0

Sheet 30 of 50

Project Number: 42256.40

STATE OF CONNECTICUT
STEVEN J. KOS
27483
LICENSED
PROFESSIONAL ENGINEER
January 15, 2019

MUNNISUNK DRIVE

MUNNISUNK

WF1-400 START

WF1-410

WF1-420

WF1-430

WOODED

CULTIVATED FIELD

LIMIT OF WORK

SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.

100' WETLAND BUFFER

200' WETLAND BUFFER

AREA OF PROPOSED TREE CLEARING OUTSIDE LIMITS OF PERIMETER ACCESS ROAD SHALL NOT BE CLEARED AND GRUBBED EXCEPT AS NEEDED FOR SEDIMENT TRAP/BASIN INSTALLATIONS (TYP.)

WATERSHED BOUNDARY (TYP)

±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY

RIPRAP SPILLWAY (TYP)

TD 2-2 (PERMANENT)

TST-2 (PERMANENT) REFER TO DETAIL SHEET FOR DIMENSIONS

±70' WIDE ROAD CROSSING

TD 2-1 (PERMANENT)

±50' WIDE ROAD CROSSING

SPILLWAY (TYP)

RISER AND OUTLET PROTECTION (TYP)

SB-3 (PERMANENT) REFER TO DETAIL SHEET FOR DIMENSIONS

Match Line See Sheet 5.2

Match Line See Sheet 5.4

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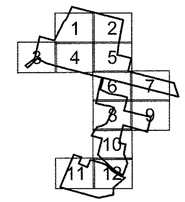

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Tobacco Valley Solar

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Drawing Title

Erosion and Sediment Control Plan - 1

Drawing Number

C-5.1

Sheet 31 of 50

Project Number 42256.40

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See Sheet 5.1

Match Line

WF1-440

WF1-450

WF1-460

WF1-470

WF1-480 END

WETLAND 1

100' WETLAND BUFFER

200' WETLAND BUFFER

WOODED

12" COMPOST FILTER SOCK (TYP) SPACED ±100 FT IN ERODED GULLY

±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY

LIMIT OF WORK

SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.

AREA OF PROPOSED TREE CLEARING OUTSIDE LIMITS OF PERIMETER ACCESS ROAD SHALL NOT BE CLEARED AND GRUBBED EXCEPT AS NEEDED FOR SEDIMENT TRAP/BASIN INSTALLATIONS (TYP.)

±50' WIDE ROAD CROSSING

WATERSHED BOUNDARY (TYP)

CULTIVATED FIELD

AQUIFER PROTECTION AREA (TYP.)

KNOLLWOOD CIRCLE

Match Line See Sheet 5.5

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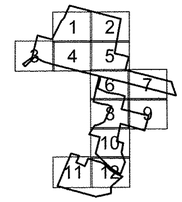

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Drawing Title

Erosion and Sediment Control Plan - 2

Drawing Number

C-5.2

Sheet 32 of 50

Project Number 42256.40

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See Sheet 5.4

Match Line

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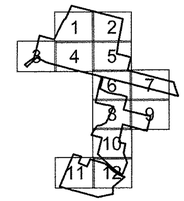

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Drawing Title

Erosion and Sediment Control Plan - 3

Drawing Number

C-5.3

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Project Number 42256.40

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January 15, 2019

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See Sheet 5.3
Match Line
See Sheet 5.5
Match Line

TD 1-2 (PERMANENT)
100' WETLAND BUFFER
LIMIT OF WORK
SB-1 (PERMANENT) REFER TO DETAILS FOR DIMENSIONS
200' WETLAND BUFFER
± 70' WIDE ROAD CROSSING
RISER AND OUTLET PROTECTION (TYP)
RIP RAP SPILLWAY (TYP)
WATERSHED BOUNDARY (TYP)
±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY
TD 1-1 (PERMANENT)
CULTIVATED FIELD
TREE
WF1-190
WF1-180
WF1-160
WF1-172
WF1-306
WF1-310
END
WF1-300
START
LITCHFIELD DRIVE
12" COMPOST FILTER SOCK (TYP)
AREA INSIDE OF COMPOST FILTER SOCK SHALL NOT BE CLEARED AND GRUBBED FOLLOWING TREE CLEARING
SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.
±300' LENGTH OF E-FENCE IN LOCATION SMALL DEPRESSION AND INLETS FROM OFF-SITE AREAS
WATERSHED BOUNDARY (TYP)
AREA OF PROPOSED TREE CLEARING OUTSIDE LIMITS OF PERIMETER ACCESS ROAD SHALL NOT BE CLEARED AND GRUBBED EXCEPT AS NEEDED FOR SEDIMENT TRAP/BASIN INSTALLATIONS (TYP)
AQUIFER PROTECTION AREA (TYP)
±50' WIDE ROAD CROSSING
TD 5-2 (PERMANENT)
BARN
BARN FDTN
WF4-100
WF4-130
WF5-105

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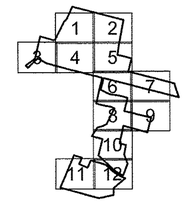

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by: SJK
Checked by: PV
Issued for: Construction
Date: January 15, 2019

Drawing Title
Erosion and Sediment Control Plan - 4

Drawing Number
C-5.4

Sheet 34 of 50

Project Number
42256.40

STATE OF CONNECTICUT
STEVEN J. KOCH
27483
LICENSED PROFESSIONAL ENGINEER
January 15, 2019

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Match Line — See Sheet 5.2

Match Line — See Sheet 5.4

WATERSHED BOUNDARY (TYP)

AQUIFER PROTECTION AREA (TYP.)

TD 4-1 (PERMANENT)

TST-4 (PERMANENT)
REFER TO DETAILS FOR DIMENSIONS

RIP RAP SPILLWAY (TYP)

WATERSHED BOUNDARY (TYP)

TD 5-1 (PERMANENT)

TD 4-2 (PERMANENT)

200' WETLAND BUFFER

100' WETLAND BUFFER

TST-5 (PERMANENT)
REFER TO DETAILS FOR DIMENSIONS

±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY

LIMIT OF WORK

SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.

WF2-100

WF2-110

WF2-120

WF2-130

WF2-139
END

WF3-100

WF3-107
END

WF4-110

WF4-120

WETLAND 2

WETLAND 3

WETLAND 4

FARM POND

BARN

WOODED

CULTIVATED FIELD

KNOLLWOOD CIRCLE

CENTERWOOD ROAD

±70' WIDE ROAD CROSSING

TD 6-1 (PERMANENT)

TD 7-1 (TEMPORARY)

±50' WIDE ROAD CROSSING

TST-7 (TEMPORARY)
REFER TO DETAILS FOR DIMENSIONS

TD 7-2 (TEMPORARY)

POTENTIAL TEMPORARY STOCKPILE AREA FOR TST EXCAVATION. STOCKPILE SHALL BE COMPLETELY SURROUNDED BY SILT FENCE. SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS OR HYDROSEED IF LEFT DORMANT FOR MORE THAN 14 DAYS.

AREA OF PROPOSED TREE CLEARING OUTSIDE LIMITS OF PERIMETER ACCESS ROAD SHALL NOT BE CLEARED AND GRUBBED EXCEPT AS NEEDED FOR SEDIMENT TRAP/BASIN INSTALLATIONS (TYP.)

SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.

WATERSHED BOUNDARY (TYP)

Match Line — See Sheet 5.6

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Drawing Title

Erosion and Sediment Control Plan - 5

Drawing Number

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Project Number 42256.40

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January 15, 2019

Match Line See Sheet 5.5

105
200' WETLAND BUFFER
100' WETLAND BUFFER
WETLAND 5
WF5-100
WF5-110 END
SILT FENCE WITH 12" COMPOST FILTER SOCK IN FRONT (TYP) PLACED AT LIMIT OF WORK LINE
LIMIT OF WORK
CULTIVATED FIELD
TD 8-1 (PERMANENT)
±20' WIDE ROAD CROSSING
SB-8 (PERMANENT) REFER TO DETAILS FOR DIMENSIONS
LIMIT OF WORK
200' WETLAND BUFFER
100' WETLAND BUFFER
RIP RAP SPILLWAY (TYP)
TD 8-2 (PERMANENT)
AREA OF PROPOSED TREE CLEARING OUTSIDE LIMITS OF PERIMETER ACCESS ROAD SHALL NOT BE CLEARED AND GRUBBED EXCEPT AS NEEDED FOR SEDIMENT TRAP/BASIN INSTALLATIONS (TYP.)
RISER AND OUTLET PROTECTION (TYP)
±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY
TREES
WIRE FENCE REMAINS
WIRE FENCE REMAINS
SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.
WF7-100 START
WF7-103
WF7-105
INSTALL STRAW WATTLE AND/OR E-FENCE ALONG DOWNSTREAM SIDE OF CLEARED INTERCONNECTION PATH TO SUBSTATION. CONTRACTOR TO ENSURE THAT DRAINAGE PATTERNS ARE NOT ALTERED.
200' WETLAND BUFFER
100' WETLAND BUFFER
200' WETLAND BUFFER
100' WETLAND BUFFER
STR#40098
WF6-100 START
WF6-110
STR#40097
WF6-120
WF6-200 START/ 223 END
15" CMP INV.=257.4
15" CMP INV.=257.4
WF6-304
WF6-300 START
STR#40096
WF6-130
WETLAND 6
WF6-140
WF6-400 START
WF6-414 END
WF6-406
WF6-408
WF6-180
WF6-190
WF6-198 END
SANITARY MANHOLE

Match Line See Sheet 5.8

Match Line See Sheet 5.7

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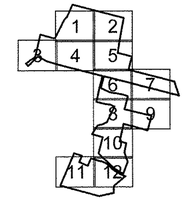

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Tobacco Valley Solar

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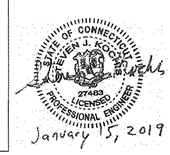
Drawing Title

Erosion and Sediment Control Plan - 6

Drawing Number

C-5.6



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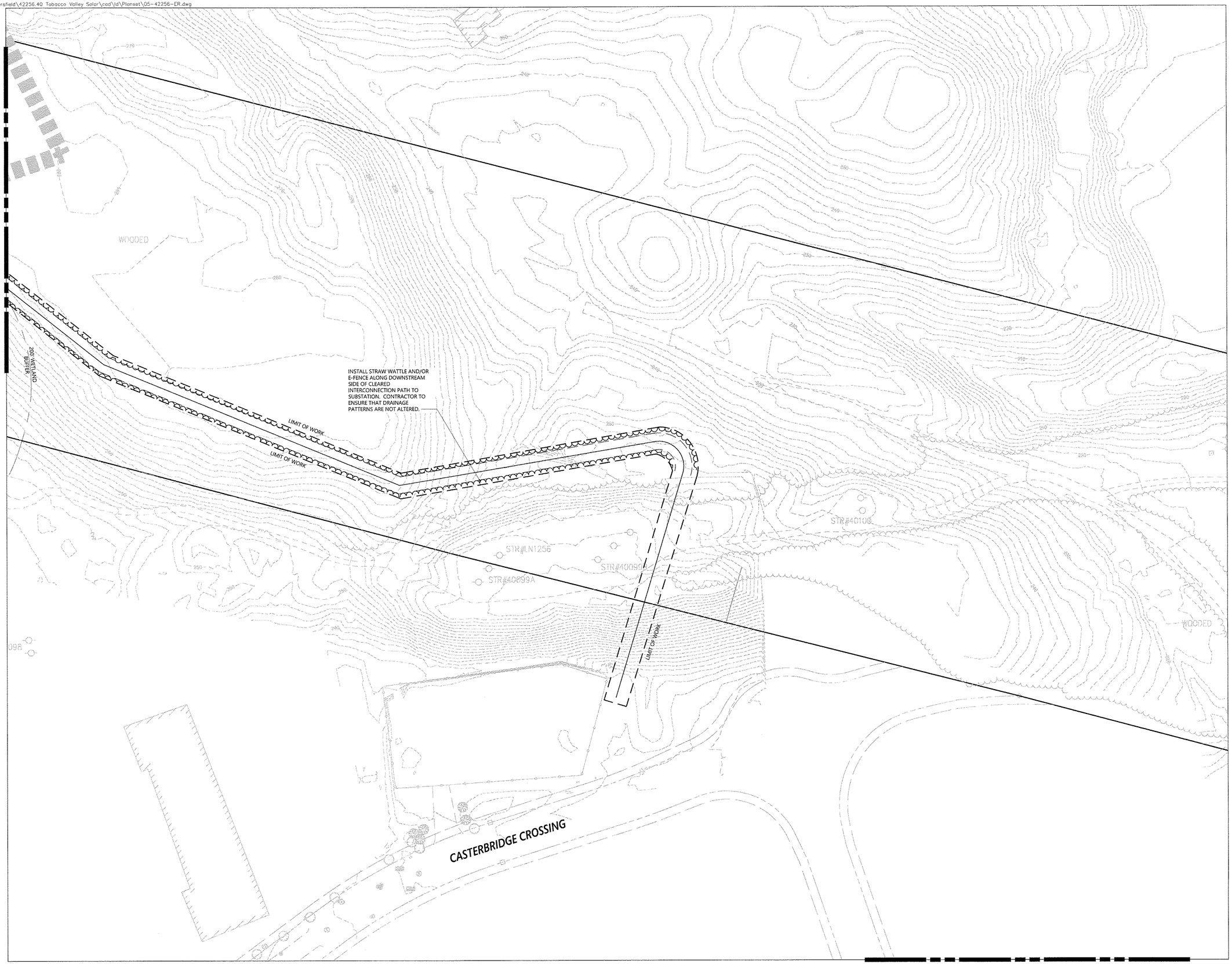

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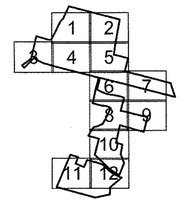

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Erosion and Sediment Control Plan - 7

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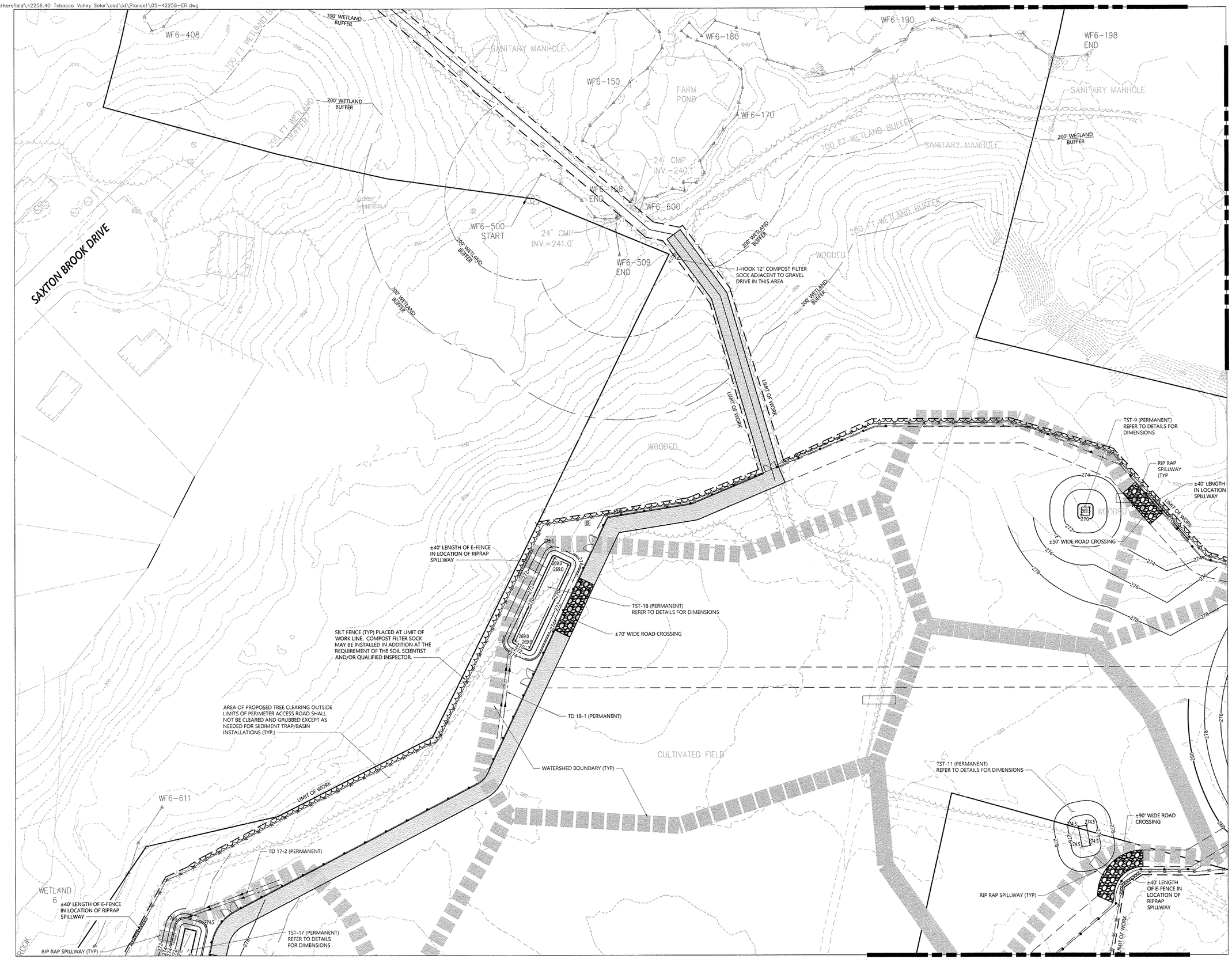

Match Line See Sheet 5.9

Match Line See Sheet 5.10

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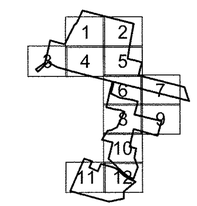

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Drawing Title

Erosion and Sediment Control Plan - 8

Drawing Number

C-5.8

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Match Line See Sheet 5.7

Match Line See Sheet 5.8

CASTERBRIDGE CROSSING

DORSET CROSSING DRIVE

WF6-700

100 FT WETLAND BUFFER

50 FT WETLAND BUFFER

±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY

SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.

AREA OF PROPOSED TREE CLEARING OUTSIDE LIMITS OF PERIMETER ACCESS ROAD SHALL NOT BE CLEARED AND GRUBBED EXCEPT AS NEEDED FOR SEDIMENT TRAP/BASIN INSTALLATIONS (TYP.)

LIMIT OF WORK

TD 10-1 (PERMANENT)

TST-10 (PERMANENT) REFER TO DETAILS FOR DIMENSIONS

±70' WIDE ROAD CROSSING

±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY

RIP RAP SPILLWAY (TYP)

TD 10-2 (PERMANENT)

LIMIT OF WORK

WATERSHED BOUNDARY (TYP)

SAXTON

WF6-710

BROOK

100' WETLAND BUFFER

200' WETLAND BUFFER

WF6-722

WF6-720

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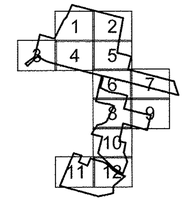

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Erosion and Sediment Control Plan - 9

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Project Number 42256.40

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Match Line See Sheet 5.8

RIP RAP SPILLWAY (TYP)

TST-17 (PERMANENT) REFER TO DETAILS FOR DIMENSIONS

±70' WIDE ROAD CROSSING

TD 17-1 (PERMANENT)

100' WETLAND BUFFER

200' WETLAND BUFFER

LIMIT OF WORK

BROOK

WF6-606

WATERSHED BOUNDARY (TYP)

SILT FENCE (TYP) PLACED AT LIMIT OF WORK LINE. COMPOST FILTER SOCK MAY BE INSTALLED IN ADDITION AT THE REQUIREMENT OF THE SOIL SCIENTIST AND/OR QUALIFIED INSPECTOR.

AQUIFER PROTECTION AREA (TYP.)

CULTIVATED FIELD

TD 12-1 (PERMANENT)

±50' WIDE ROAD CROSSING

TST-12 (PERMANENT) REFER TO DETAILS FOR DIMENSIONS

±40' LENGTH OF E-FENCE IN LOCATION OF RIPRAP SPILLWAY

TD 12-2 (PERMANENT)

TST-13 (PERMANENT) REFER TO DETAILS FOR DIMENSIONS

TD 13-1 (PERMANENT)

TD 13-2 (PERMANENT)

SB-16 (PERMANENT) REFER TO DETAILS FOR DIMENSIONS

GRAVEL DRIVE ENCROACHES 8'± ONTO PROPERTY OF NOW OR FORMERLY RIVERBEND DEVELOPMENT CT, LLC

COUNTY ROAD

Match Line See Sheet 5.12

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Erosion and Sediment Control Plan - 10

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C-5.10

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Project Number 42256.40

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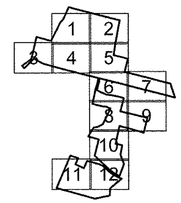

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Tobacco Valley Solar

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Drawing Title

Erosion and Sediment Control Plan - 11

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Project Number 42256.40

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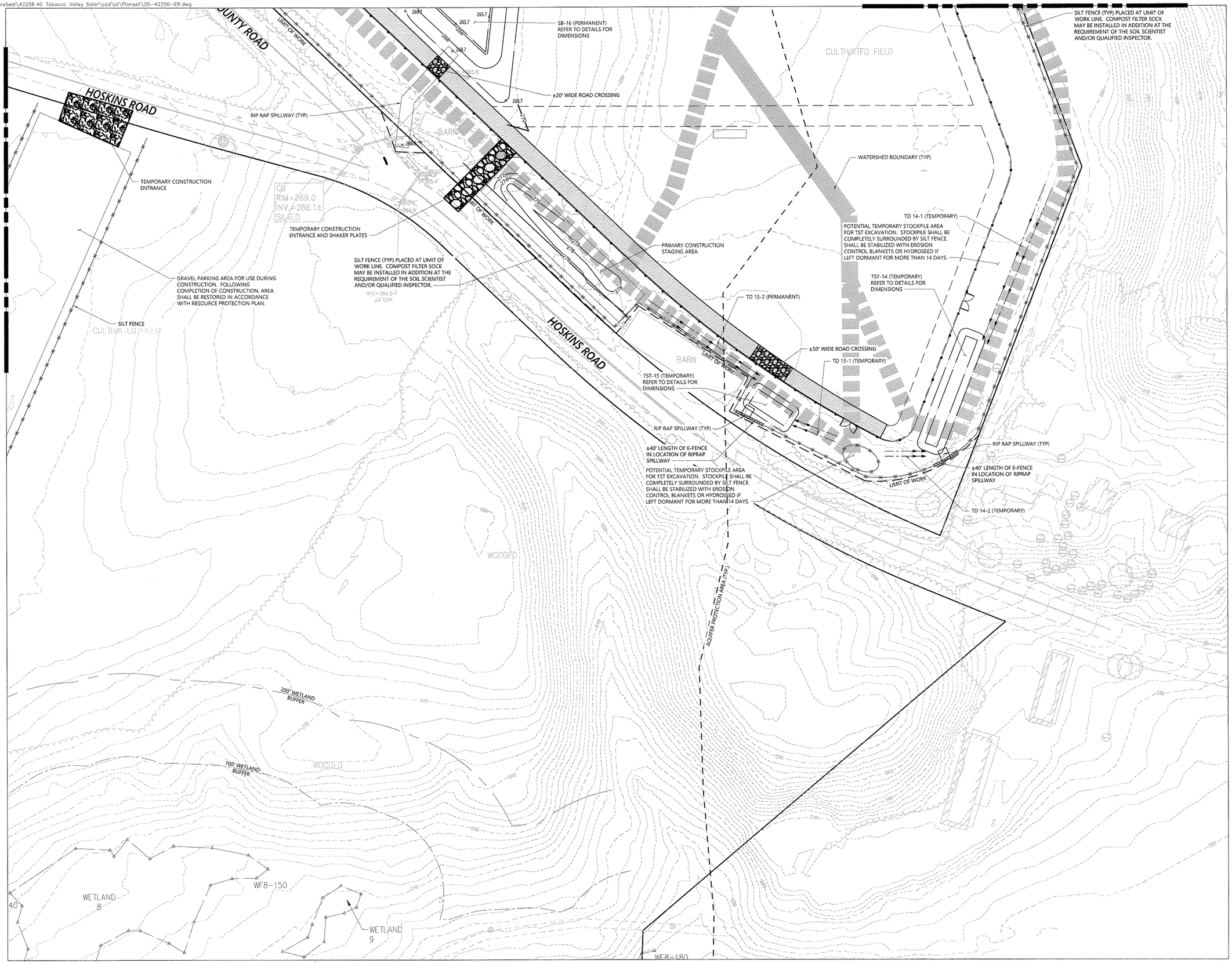

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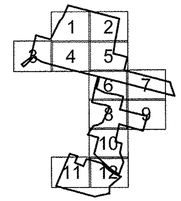

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Erosion and Sediment Control Plan - 12

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C-5.12

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Project Number 42256.40

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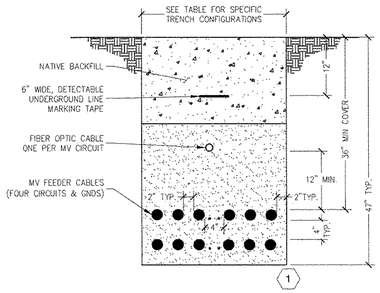


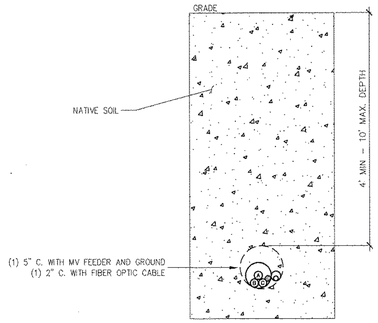
NOTE

FIBER OPTIC CABLE MAY OCCUPY THE SAME LIFT AS THE MV FEEDERS AS LONG AS THE MINIMUM SEPARATION OF 6" VERTICALLY AND HORIZONTALLY IS ADHERED TO.

MAX. PARALLEL MV FEEDERS PER LIFT	
TRENCH WIDTH	30"
LIFT 1	2
LIFT 2	2

Medium Voltage Feeder Trench

I.T.S. Source: Swinerton Renewable Energy

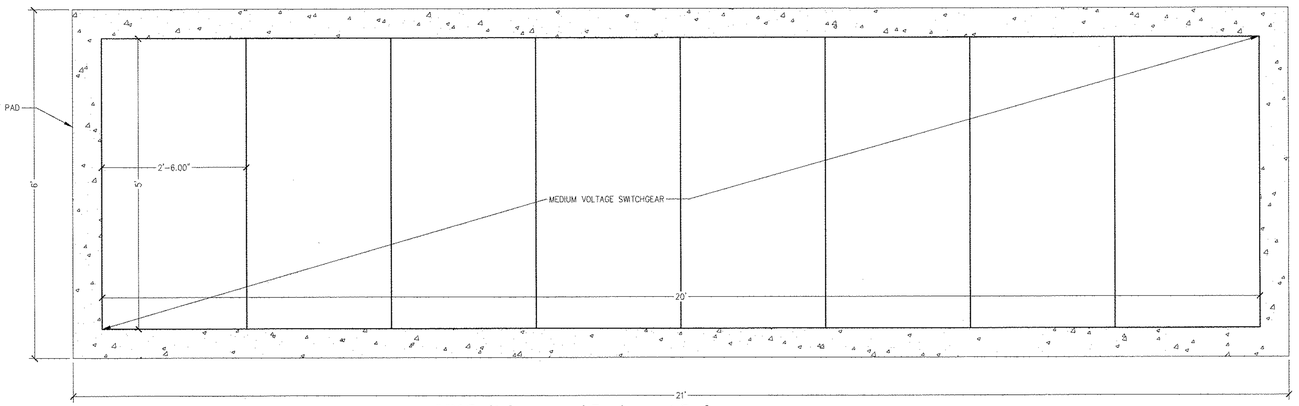


NOTES

1. CONTRACTOR SHALL NOTIFY EOR IF INSTALLATION EXCEEDS MAX. DEPTH.
2. ALL CONDUITS ARE SCHD 40 PVC UON.
3. CONDUIT SHALL NOT HAVE ANY BENDS HORIZONTALLY OR VERTICALLY WHILE CROSSING ROADWAYS.
4. BORE PIT BACKFILL COMPACTION SHALL BE 85% AT NON-ROADWAYS AND 95% AT ROADWAY AREAS.
5. BORE PIT TO BE LOCATED OUT OF THE BUFFER ZONE.
6. ALL CROSSING MUST BE PERPENDICULAR TO THE STREAMS OR ROADWAYS.
7. PROVIDE PULLBOXES ON EACH END. SPLICING IS NOT ALLOWED.
8. MAINTAIN 5' C-C SPACING BETWEEN BORES.
9. NUMBER OF CONDUITS VARIES.

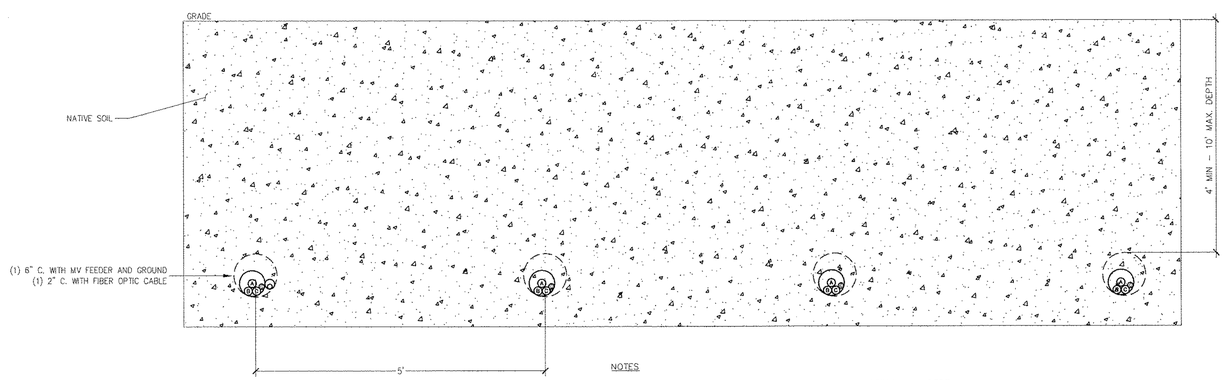
Typical MV Directional Bore

N.T.S. Source: Swinerton Renewable Energy



MV Switchgear and Equipment Pad

N.T.S. Source: Swinerton Renewable Energy



NOTES

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8. MAINTAIN 5' C-C SPACING BETWEEN BORES.

Typical Gen Tie Directional Bore

N.T.S. Source: Swinerton Renewable Energy

GENERAL NOTES

1. TRENCH CONFIGURATIONS SHOWN REPRESENT THE REQUIREMENTS FOR EACH OF THE TRENCH CONDITIONS ON SITE. MINIMUM CLEARANCES, MINIMUM COVER REQUIREMENTS, AND TYPICAL DEPTHS. SEE DETAIL TABLES FOR SPECIFIC TRENCH WIDTHS AND FILL REQUIREMENTS.
2. ALL TRENCHES SHALL HAVE:
   4" VERTICAL SEPARATION BETWEEN CABLE CROSSINGS.
   4" VERTICAL SPACE BETWEEN LIFTS.
   2" HORIZONTAL SEPARATION BETWEEN CABLES OR CONDUITS AND THE SIDE OF TRENCH.
   UNLESS OTHERWISE NOTED.
3. CABLE AMPACITY HAS BEEN DETERMINED USING THE NEHER-MCGRATH METHOD AND EXCEEDS MINIMUM AMPACITY REQUIREMENTS OF THE STATE'S ELECTRICAL CODE. CONTRACTOR SHALL NOTIFY EOR IF INSTALLATION REQUIREMENTS CANNOT BE MET SO FURTHER ANALYSIS MAY BE PERFORMED.
4. TRENCH BACKFILL COMPACTION SHALL BE:
   85% AT NON-ROADWAYS.
   90% AT ROADWAY AREAS.
   95% WHEN WITHIN 24" OF STRUCTURAL COLUMN OR PIER.
   SOIL DENSITY AND COMPACTION SHALL BE IN ACCORDANCE WITH MODIFIED PROCTOR TEST.
   COMPACTION MEANS AND METHODS SHALL BE DETERMINED BY TRENCHING CONTRACTOR.
5. TRENCH CONSTRUCTION SHALL COMPLY WITH OSHA REQUIREMENTS.
6. SAND OR ROCK-FREE NATIVE SOIL SHALL BE USED FOR BEDDING MATERIAL 3" IN DEPTH AND FOR BACKFILL WHEN WITHIN 6" OF CABLES OR CONDUITS, UON. SOIL WITH ROCKS LESS THAN 1/2" IN SIZE AND WITHOUT SHARP EDGES SHALL BE CONSIDERED ROCK-FREE.
7. PROVIDE 6" WIDE DETECTABLE WARNING RIBBON CENTERED IN TRENCH 12" BELOW GRADE AND AT LEAST 12" ABOVE ANY CONDUIT OR DIRECT BURIED CABLE OPERATING AT OVER 600V.

KEYED NOTES

1 CABLE/CONDUIT LIFTS ARE SPECIFIED NUMERICALLY IN DESCENDING ORDER FROM SHALLOWEST TO DEEPEST FROM GRADE, 0,1,2,3,...N.

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Drawing Title: Site Details 1

Drawing Number: C-6.1



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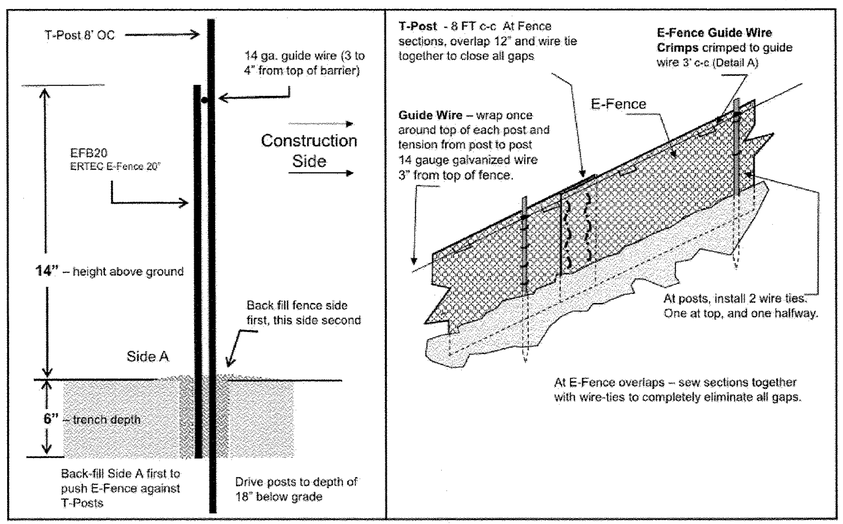
E-Fence DETAILS – Wildlife Exclusion - WPT

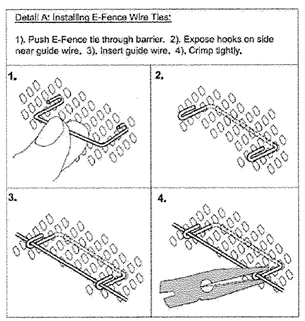
E-Fence™ (Patent #US8402630, other patents pending)



E-Fence Installation Details

N.T.S. Source: Ertec Environmental Systems

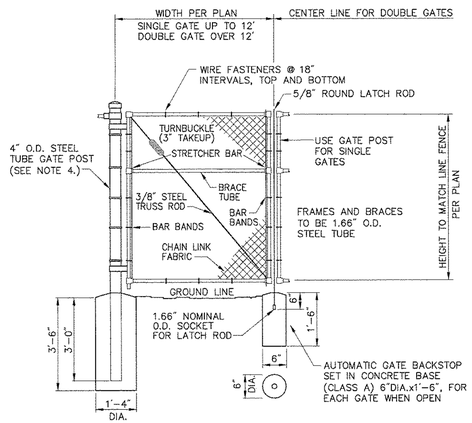
E-Fence DETAILS – Guidewire Crimp



E-Fence™ DETAILS – Wildlife Exclusion

Installation Notes:

1. Excavate a trench a minimum of 4" wide and a minimum of 5" deep.
2. T-posts shall be a minimum of 0.95 lbs/ft. T-posts shall be driven a minimum 18" deep into the ground 8' centers
3. Insert barrier material into trench and attach to post in two places: 1) at 3" below top of fence and at 2) mid-height
4. At 3 inches from top of fence (above wire tie), wrap 14 gauge galvanized wire once around each T-post and pull the guide wire from post to post, wrap, secure and pull wire tight between each post.
5. At segment overlaps (roll length 100 or 150 LF), overlap segments a minimum of 12". Eliminate all gaps by tying sections together with tie wire in two vertical rows, as shown.
6. Push E-Fence Guide Wire Crimps through the E-Fence and crimp the ties to the guide wire on the other side of the fence (two crimps per tie) at 3' intervals, as illustrated in Detail A of the installation guidelines. Crimp to the guide-wire securely.
7. E-Fence must be installed in continuous lengths (100 or 150 feet rolls). Do not cut segments into shorter lengths unless necessary due to sudden changes in elevation.
8. Backfill trench with trench spoils. Backfill from E-Fence side of posts first so that E-Fence is pushed up against T-posts. Back fill other side to complete backfill.



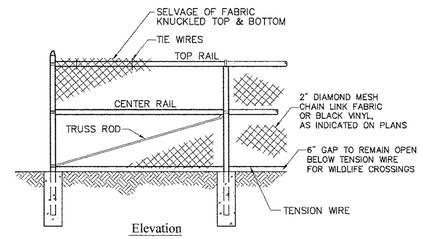
Notes:

1. CHAIN LINK FABRIC FOR GATES TO BE THE SAME AS REQUIRED FOR FENCE.
2. GATE POST BASE--PORTLAND CEMENT CONCRETE (3000 PSI).
3. FENCE FABRIC, POSTS, FRAMEWORKS, AND HARDWARE SHALL BE GALVANIZED STEEL OR BLACK VINYL (AS INDICATED ON PLANS) PER SPECIFICATIONS.
4. GATE POSTS TO BE USED ON EACH SIDE OF SINGLE AND DOUBLE GATE OPENINGS.

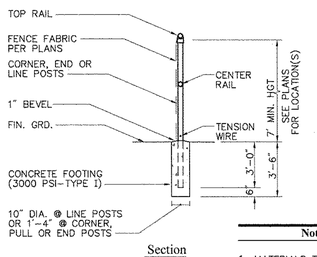
Chain Link Fence Gate

6/08

N.T.S. Source: VHB LD_482



Elevation



Section

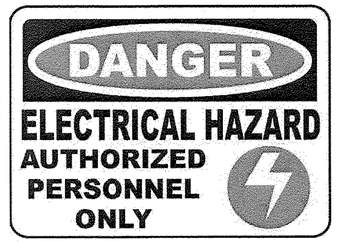
Note:

1. MATERIALS TO BE SUPPLIED AND INSTALLED IN CONFORMANCE WITH "CHAIN LINK MANUFACTURER'S INSTITUTE" PRODUCT MANUAL.

7' Chain Link Fence

6/08

N.T.S. Source: VHB LD_480



TOBACCO VALLEY SOLAR
Site Location: Hoskins Road, Simsbury, CT 06070
Owner: DWW Solar II, LLC
Attn: Chris Thuman
1166 6th Avenue, 9th Floor
New York, New York 10036
IN CASE OF EMERGENCY CALL 911
SIMSBURY POLICE DEPARTMENT - (860) 658-3100

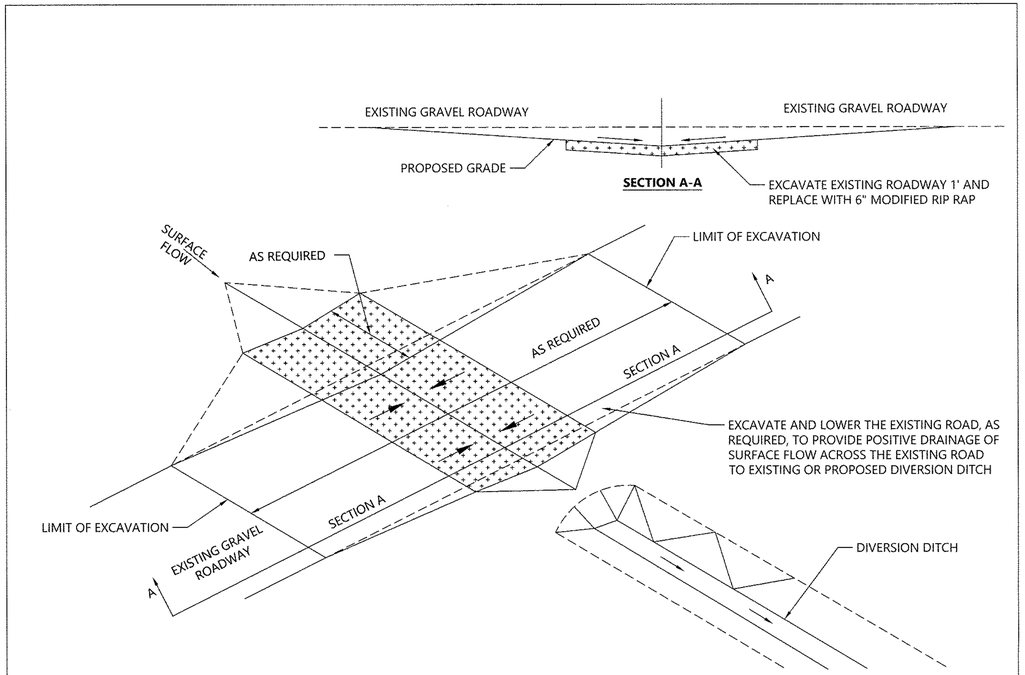
Notes:

1. THE SITE FACILITY SIGN IS A DRAFT SHOWING THE MINIMUM AMOUNT OF INFORMATION THAT WILL BE PROVIDED. SIGN WILL BE 18" X 24".
2. ALL SIGNS WILL BE MOUNTED ONTO THE CHAIN LINK FENCE.

Danger and Site Facility Signs

1/16

N.T.S. Source: VHB



Road Crossing

N.T.S. Source: VHB LD

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100 Great Meadow Road
Suite 200
Wethersfield, CT 06109
860.807.4300

Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by: SJK Checked by: PV

Issued for: Construction Date: January 15, 2019

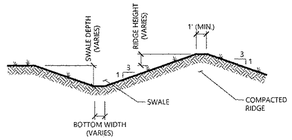
Drawing Title: Site Details 2

Drawing Number: C-6.2

Sheet 44 of 50

Project Number: 42256.40

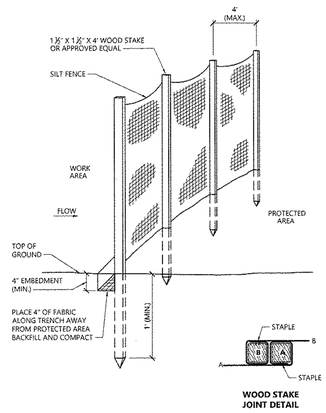




NOTE:
1. ALL SIDE SLOPES SHALL NOT EXCEED 3:1
2. REFER TO "TEMPORARY DIVERSION SIZING" TABLE FOR PLACEMENT OF EROSION CONTROL BLANKET. WHERE NECESSARY, EROSION CONTROL BLANKET SHALL BE PLACED OVER ENTIRE SWALE AREA.
3. REFER TO "TEMPORARY DIVERSION SIZING" TABLE FOR VARIABLE SIZING.
4.THE INTENT IS TO USE THE MATERIAL EXCAVATED FROM THE SWALE TO CONSTRUCT THE RIDGE.

Temporary Diversion

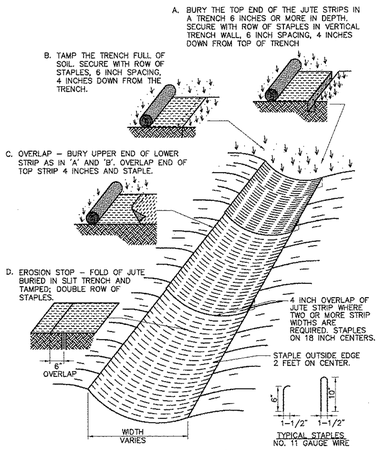
N.T.S. Source: VHB



Silt Fence Barrier

1/16

N.T.S. Source: VHB LD_650

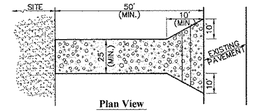


* INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS
** MATERIAL MUST BE APPROVED BY DESIGN ENGINEER

Erosion Control Blanket Swale Installation

6/08

N.T.S. Source: VHB LD_681



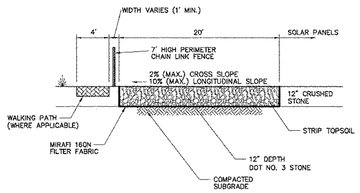
Notes:

1. ENTRANCE WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

Stabilized Construction Exit

6/08

N.T.S. Source: VHB LD_682

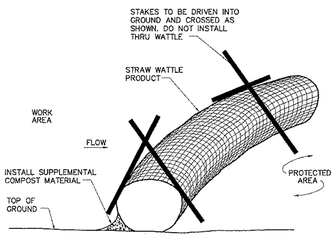


Notes:

1. CRUSHED STONE SHALL BE IN ACCORDANCE WITH THE CURRENT VERSION OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR ROADS, BRIDGES, AND INCIDENTAL CONSTRUCTION.

Perimeter Access Cross Section

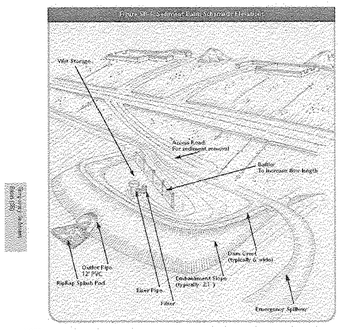
N.T.S. Source: VHB



Straw Wattle Installation

8/12

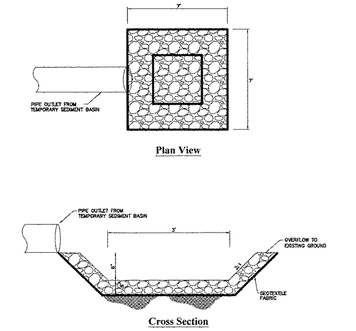
N.T.S. Source: VHB LD_658



NOTE:
1. ALL SIDE SLOPES SHALL NOT EXCEED 2:1
2. EMERGENCY SPILLWAY SHALL BE NATURAL EARTH CHANNEL TO EXISTING GRADE.
3. SIDE SLOPES OF EMBANKMENT SHALL BE STABILIZED BY TEMPORARY SEEDING OR EROSION CONTROL BLANKETS AS DIRECTED BY THE ENGINEER.
4. REFER TO "TEMPORARY SEDIMENT BASIN SIZING" TABLE FOR VARIABLE SIZING.
5. BASIN SHALL BE DRAINED AND CLEANED OF SEDIMENT ONCE SEDIMENT IS > 18" ABOVE TRAP BOTTOM.
6. RISER PIPE SHALL BE FITTED WITH TRASH RACK AS DIRECTED BY THE ENGINEER.
7. PERIMETER SILT FENCE SHALL BE REMOVED IMMEDIATELY DOWNSTREAM FROM SPILLWAY.
8. NO BAFFLES ARE NEEDED AS DESIGNED - EFFECTIVE FLOW LENGTH IS ACHIEVED.

Temporary Sediment Basin (SB)

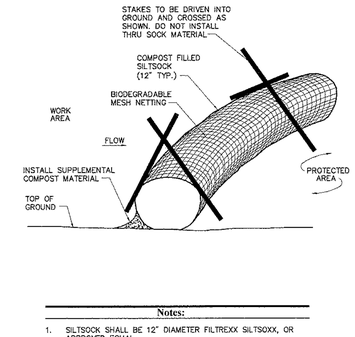
N.T.S. Source: VHB



NOTE:
1. SHALL BE INSTALLED AT THE PIPE OUTLET FROM EACH TEMPORARY SEDIMENT BASIN.

Plunge Pool

N.T.S. Source: VHB



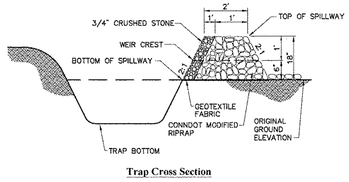
Notes:

1. SILTSOCK SHALL BE 12" DIAMETER FILTREXX SILTSOXX, OR APPROVED EQUAL.
2. SILTSOCKS SHALL OVERLAP A MINIMUM OF 12 INCHES.
3. SILTSOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.
5. IF NON BIODEGRADABLE NETTING IS USED THE NETTING SHALL BE COLLECTED AND DISPOSED OF OFFSITE.

Compost Filter Sock (CFS)

8/12

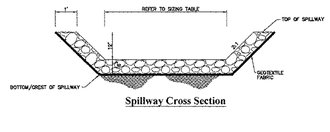
N.T.S. Source: VHB LD_658



NOTE:
1. ALL SIDE SLOPES SHALL NOT EXCEED 2:1
2. TOP OF EMBANKMENT SHALL BE 2' (MIN.) WIDTH AND 1' (MIN.) ABOVE TOP OF SPILLWAY.
3. SIDE SLOPES OF EMBANKMENT SHALL BE STABILIZED BY TEMPORARY SEEDING OR EROSION CONTROL BLANKETS AS DIRECTED BY THE ENGINEER.
4. REFER TO "TEMPORARY SEDIMENT TRAP SIZING" TABLE FOR VARIABLE SIZING.
5. TRAP SHALL BE DRAINED AND CLEANED OF SEDIMENT ONCE SEDIMENT IS > 1' ABOVE TRAP BOTTOM.
6. PERIMETER SILT FENCE SHALL BE REMOVED IMMEDIATELY DOWNSTREAM FROM SPILLWAY.

Temporary Sediment Trap (TST)

N.T.S. Source: VHB



NOTE:
1. ALL SIDE SLOPES SHALL NOT EXCEED 2:1
2. TOP OF EMBANKMENT SHALL BE 2' (MIN.) WIDTH AND 1' (MIN.) ABOVE TOP OF SPILLWAY.
3. SIDE SLOPES OF EMBANKMENT SHALL BE STABILIZED BY TEMPORARY SEEDING OR EROSION CONTROL BLANKETS AS DIRECTED BY THE ENGINEER.
4. REFER TO "TEMPORARY SEDIMENT TRAP SIZING" TABLE FOR VARIABLE SIZING.
5. TRAP SHALL BE DRAINED AND CLEANED OF SEDIMENT ONCE SEDIMENT IS > 1' ABOVE TRAP BOTTOM.
6. PERIMETER SILT FENCE SHALL BE REMOVED IMMEDIATELY DOWNSTREAM FROM SPILLWAY.

Sediment Trap/Basin Spillway

N.T.S. Source: VHB

TEMPORARY SEDIMENT BASIN SIZING

NAME	TRIBUTARY AREA, AC	LENGTH AT BASIN BOTTOM (TOE OF SLOPE), FT	WIDTH AT BASIN BOTTOM (TOE OF SLOPE), FT	SIDE SLOPES	APPROXIMATE BOTTOM ELEVATION, FT	RISER PIPE DIAMETER, IN	HEIGHT OF RISER FROM BOTTOM OF BASIN, FT	CREST LENGTH OF EMERGENCY SPILLWAY, FT	HEIGHT OF BOTTOM OF EMERGENCY SPILLWAY FROM BOTTOM OF BASIN, FT	HEIGHT OF TOP OF EMBANKMENT FROM BOTTOM OF BASIN (MIN.), FT	OVERALL *TOP OF EMBANKMENT* DIMENSIONS (MIN.), FT
SB-1	6.1	209	20	3:1	±266.0	6	3	10	4.5	6	±45x36
SB-3	25.0	260	155	8.5:1	±265.5	12	2	20	3	4.5	337x232
SB-9	7.5	260	25	3:1	±293.5	6	3	10	4.5	6	296x61
SB-16	20.0	410	70	8.5:1	±265.7	NO RISER	NO RISER	10	3	4.5	478x138

TEMPORARY SEDIMENT TRAP SIZING

NAME	TRIBUTARY AREA, AC	LENGTH AT TRAP BOTTOM (TOE OF SLOPE), FT	WIDTH AT TRAP BOTTOM (TOE OF SLOPE), FT	SIDE SLOPES	APPROXIMATE BOTTOM ELEVATION, FT	HEIGHT FROM TRAP BOTTOM TO BOTTOM OF SPILLWAY, FT	HEIGHT FROM BOTTOM OF SPILLWAY TO TOP OF SPILLWAY, FT	LENGTH AT TOP OF SPILLWAY ELEVATION, FT	WIDTH AT TOP OF SPILLWAY ELEVATION, FT	HEIGHT FROM TOP OF SPILLWAY TO TOP OF EMBANKMENT (MIN.), FT	OVERALL *TOP OF EMBANKMENT* DIMENSIONS (MIN.), FT
TST-2	2.7	97	16	3:1	±272.0	2	1.5	118	37	1	124x43
TST-4	4.8	102	24	3:1	±259.8	2	1.5	123	55	1	129x61
TST-5	4.9	103	34	3:1	±267.5	2	1.5	124	55	1	130x61
TST-6	4.9	132	25	3:1	±263.9	2	1.5	155	46	1	161x52
TST-7	0.9	37	15	3:1	±298.0	2	1.5	51	29	1	59x33
TST-9	1.5	10	10	8.5:1	±269.5	2	1.5	70	70	1	87x87
TST-10	1.7	48	18	3:1	±258.0	2	1.5	69	39	1	75x45
TST-11	3.1	25	10	8.5:1	±274.5	2.5	1.5	85	70	0	85x70
TST-12	1.3	80	3	3:1	±273.5	2	1.5	102	25	1	107x31
TST-13	1.3	40	14	3:1	±276.0	2	1.5	61	35	1	67x41
TST-14	4.3	138	15	2:1	±274.0	2	1.5	158	29	0	152x29
TST-15	1.7	44	17	3:1	±273.0	2	1.5	58	31	0	58x31
TST-17	1.8	64	14	3:1	±270.0	2	1.5	85	35	1	91x41
TST-18	3.6	112	19	3:1	±269.0	2	1.5	133	40	1	139x46

Sizing for Temporary Diversions, Sediment Traps & Basins

N.T.S. Source: VHB

TEMPORARY DIVERSION SIZING

NAME	APPROXIMATE TRIBUTARY AREA, AC	APPROXIMATE LENGTH, FT	BOTTOM WIDTH, FT	SIDE SLOPES	SWALE DEPTH, FT
TD 1-1	0.25	50	1	3:1	1
TD 1-2	0.51	200	1	3:1	1
TD 2-1	0.25	200	1	3:1	1
TD 2-2	0.30	200	1	3:1	1
TD 4-1	2.48	200	3	3:1	1
TD 4-2	0.60	120	1	3:1	1
TD 5-1	0.37	110	1	3:1	1
TD 5-2	0.09	50	1	3:1	1
TD 6-1	0.90	130	1	3:1	1
TD 7-1	0.23	150	1	3:1	1
TD 7-2	0.14	30	1	3:1	1
TD 8-1	3.15	150	2	3:1	1
TD 8-2	0.76	360	1	3:1	1
TD 10-1	0.69	100	1	3:1	1
TD 10-2	0.32	25	1	3:1	1
TD 12-1	0.14	60	1	3:1	1
TD 12-2	0.39	90	1	3:1	1
TD 13-1	0.07	30	1	3:1	1
TD 13-2	0.28	200	1	3:1	1
TD 14-1	0.53	180	1	3:1	1
TD 14-2	0.18	50	1	3:1	1
TD 15-1	0.46	60	1	3:1	1
TD 15-2	0.44	160	3	3:1	1
TD 17-1	1.06	90	1	3:1	1
TD 17-2	0.57	110	1	3:1	1
TD 18-1	0.05	130	1	3:1	1

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by: SJK Checked by: PV

Issued for: Construction Date: January 15, 2019

Drawing Title: Site Details 3

Drawing Number: C-6.3

Sheet 45 of 50

Project Number: 42256.40



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PLANTING MODULE KEY

PLANT SCHEDULE AREA 7

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AC	7	Amelanchier canadensis	Canadian Serviceberry	6 - 7' HT.	B & B, Spacing as shown
CC	6	Crataegus crus-galli inermis 'Crusader'	Crusader Hawthorn	1 1/2" CAL	B & B, Spacing as shown
QB	7	Quercus bicolor	Swamp White Oak	2 1/2" CAL.	B & B, Spacing as shown
EVERGREEN TREES	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
JV	13	Juniperus virginiana	Eastern Red Cedar	5 - 6' HT.	B & B, Spacing as shown
PC	20	Picea pungens	Colorado Spruce	6 - 7' HT.	B & B, Spacing as shown
SHRUBS	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
AA	77	Aronia arbutifolia	Red Chokeberry	18 - 24" HT.	B & B, Spacing 4' O.C.
KL	24	Kalmia latifolia 'Keepsake'	Keepsake Mountain Laurel	30 - 36" HT.	B & B, Spacing 5' O.C.
MP	42	Myrica pensylvanica	Northern Bayberry	30 - 36" HT.	B & B, Spacing 8' O.C.
RA	35	Rhus aromatica	Fragrant Sumac	18 - 24" HT.	B & B, Spacing 6' O.C.

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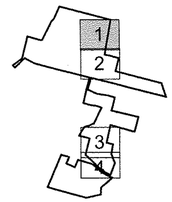
Suite 200
Wethersfield, CT 06109
860.807.4300



Sheet Index

0 25 50 100Feet

Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by SJK | Checked by PV

Issued for
Construction

Date
January 15, 2019

Drawing Title
Planting Plan

Drawing Number
L-1.1

Sheet 46 of 50

Project Number
42256.40

Saved Tuesday, January 15, 2019 4:44:09 PM SKOCHIS Plotted Tuesday, January 15, 2019 4:59:25 PM Kochis, Steve

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PLANTING MODULE KEY

PLANT SCHEDULE AREA 6

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AC	4	Amelanchier canadensis	Canadian Serviceberry	6 - 7` HT.	B & B, Spacing as shown
CC	2	Crataegus crus-galli inermis `Crusader`	Crusader Hawthorn	1 1/2" CAL	B & B, Spacing as shown
QB	4	Quercus bicolor	Swamp White Oak	2 1/2" CAL.	B & B, Spacing as shown
EVERGREEN TREES	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
JV	9	Juniperus virginiana	Eastern Red Cedar	5 - 6` HT.	B & B, Spacing as shown
PC	13	Picea pungens	Colorado Spruce	6 - 7` HT.	B & B, Spacing as shown
SHRUBS	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
AA	44	Aronia arbutifolia	Red Chokeberry	18 - 24" HT.	B & B, Spacing 4` O.C.
KL	12	Kalmia latifolia `Keepsake`	Keepsake Mountain Laurel	30 - 36" HT.	B & B, Spacing 5` O.C.
MP	18	Myrica pensylvanica	Northern Bayberry	30 - 36" HT.	B & B, Spacing 8` O.C.
RA	22	Rhus aromatica	Fragrant Sumac	18 - 24" HT.	B & B, Spacing 6` O.C.

PLANT SCHEDULE AREA 5

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AC	4	Amelanchier canadensis	Canadian Serviceberry	6 - 7` HT.	B & B, Spacing as shown
CC	4	Crataegus crus-galli inermis `Crusader`	Crusader Hawthorn	1 1/2" CAL	B & B, Spacing as shown
QB	5	Quercus bicolor	Swamp White Oak	2 1/2" CAL.	B & B, Spacing as shown
EVERGREEN TREES	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
JV	8	Juniperus virginiana	Eastern Red Cedar	5 - 6` HT.	B & B, Spacing as shown
PC	15	Picea pungens	Colorado Spruce	6 - 7` HT.	B & B, Spacing as shown
SHRUBS	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
AA	44	Aronia arbutifolia	Red Chokeberry	18 - 24" HT.	B & B, Spacing 4` O.C.
KL	16	Kalmia latifolia `Keepsake`	Keepsake Mountain Laurel	30 - 36" HT.	B & B, Spacing 5` O.C.
MP	27	Myrica pensylvanica	Northern Bayberry	30 - 36" HT.	B & B, Spacing 8` O.C.
RA	22	Rhus aromatica	Fragrant Sumac	18 - 24" HT.	B & B, Spacing 6` O.C.

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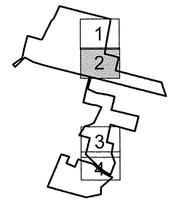

Sheet Index

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by SJK | Checked by PV

Issued for: Construction | Date: January 15, 2019

Drawing Title: Planting Plan

Drawing Number: L-1.2

Sheet 47 of 50

Project Number: 42256.40

Saved Tuesday, January 15, 2019 4:44:09 PM SKOCHIS Plotted Tuesday, January 15, 2019 4:59:50 PM Kochis, Steve

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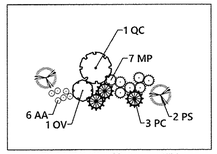
PLANT SCHEDULE AREA 4

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
OV	7	Ostrya virginiana	American Hornbeam	1 1/2" CAL	B & B, Spacing as shown
QC	7	Quercus coccinea	Scarlet Oak	1 1/2" CAL	B & B, Spacing as shown
EVERGREEN TREES	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
PC	21	Picea pungens	Colorado Spruce	6 - 7` HT.	B & B, Spacing as shown
PS	14	Pinus strobus	White Pine	6 - 7` HT.	B & B, Spacing as shown
SHRUBS	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
AA	45	Aronia arbutifolia	Red Chokeberry	18 - 24" HT.	B & B, Spacing 4` O.C.
MP	53	Myrica pensylvanica	Northern Bayberry	30 - 36" HT.	B & B, Spacing 8` O.C.

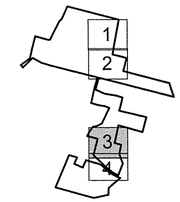


PLANTING MODULE KEY

WETLAND 6
BROOK
WF6-606
100' WETLAND BUFFER
200 FT WETLAND BUFFER
LIMIT OF WORK
LIMIT OF WORK (TYP)
BLACK VINYL CHAIN LINK FENCING (TYP)
GRAVEL ACCESS ROAD (TYP)
BLACK VINYL FENCING GATE
SPLIT RAIL FENCING AND GATE
CULTIVATED FIELD
WOODED
AREA 4
HABITAT POLLINATOR AREA
ENCROACHES ON PROPERTY OF NOW-OR-FORMERLY RIVERBEND DEVELOPMENT LLC

NOTES:

1. REFER TO SHEET L-2.1 FOR DETAILS REGARDING THE RESIDENTIAL SCALE ENTRANCE AT COUNTY ROAD.
2. PRESERVE EXISTING VEGETATION OUTSIDE OF PROPOSED CHAIN LINK SECURITY FENCE.



Sheet Index

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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by SJK | Checked by PV
Issued for Construction | Date January 15, 2019

Drawing Title: Planting Plan

Drawing Number: L-1.3

Sheet 48 of 50

Project Number 42256.40

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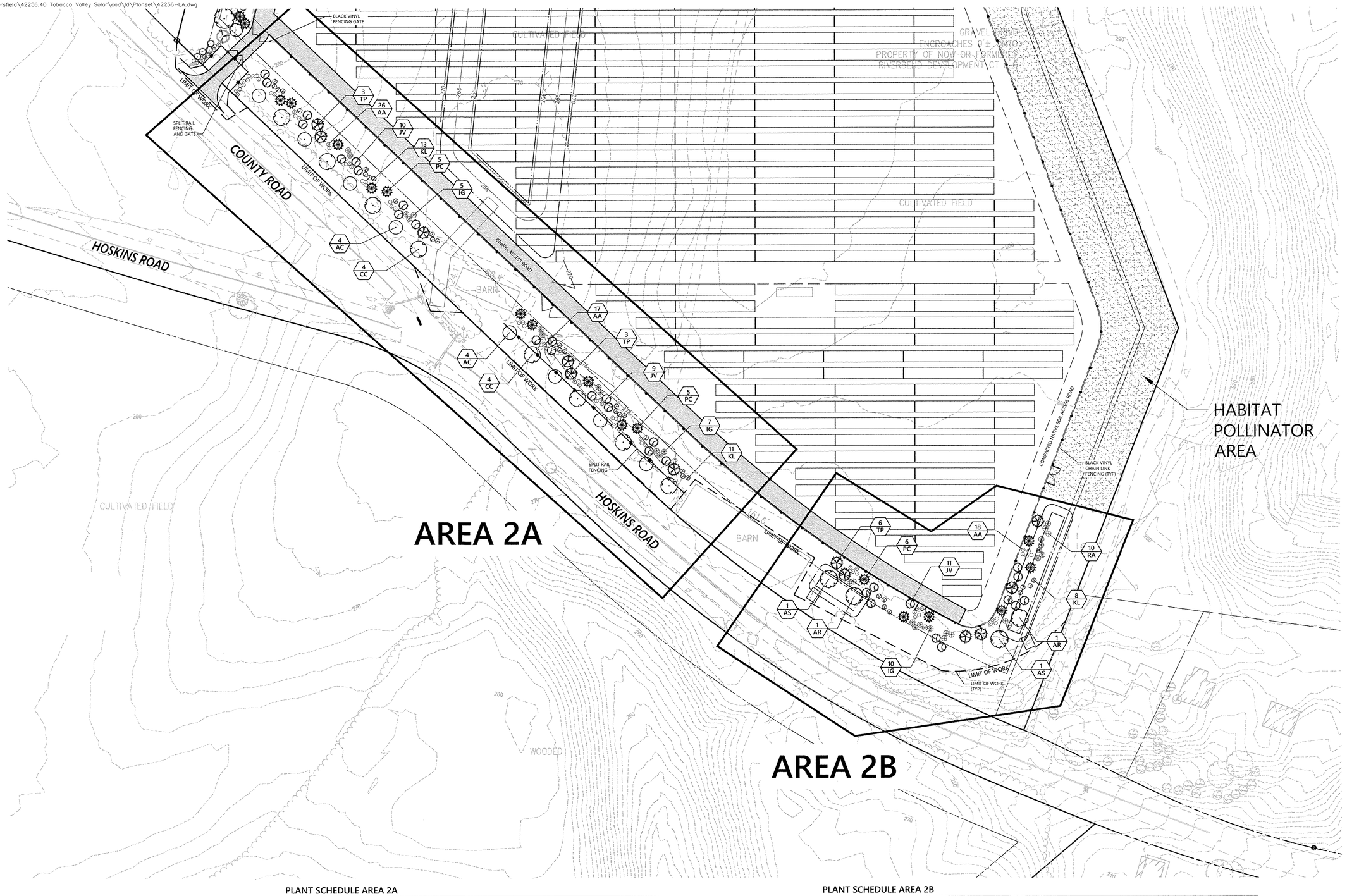

PLANT SCHEDULE AREA 2A

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AC	8	Amelanchier canadensis	Canadian Serviceberry	6 - 7` HT.	B & B, Spacing as shown
CC	8	Crataegus crus-galli inermis `Crusader`	Crusader Hawthorn	1 1/2" CAL	B & B, Spacing as shown
EVERGREEN TREES	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
JV	19	Juniperus virginiana	Eastern Red Cedar	5 - 6` HT.	B & B, Spacing as shown
PC	10	Picea pungens	Colorado Spruce	6 - 7` HT.	B & B, Spacing as shown
TP	6	Thuja plicata `Green Giant`	Green Giant Western Red Cedar	5 - 6` HT.	B & B, Spacing as shown
SHRUBS	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
AA	43	Aronia arbutifolia	Red Chokeberry	18 - 24" HT.	B & B, Spacing 4` O.C.
IG	12	Ilex glabra	Inkberry Holly	18 - 24" HT.	B & B, Spacing 6` O.C.
KL	24	Kalmia latifolia `Keepsake`	Keepsake Mountain Laurel	30 - 36" HT.	B & B, Spacing 5` O.C.

PLANT SCHEDULE AREA 2B

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AR	2	Acer rubrum `October Glory`	October Glory Red Maple	3" CAL.	B & B, Spacing as shown
AS	2	Acer saccharum `Legacy`	Legacy Sugar Maple	3" CAL.	B & B, Spacing as shown
EVERGREEN TREES	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
JV	11	Juniperus virginiana	Eastern Red Cedar	5 - 6` HT.	B & B, Spacing as shown
PC	6	Picea pungens	Colorado Spruce	6 - 7` HT.	B & B, Spacing as shown
TP	6	Thuja plicata `Green Giant`	Green Giant Western Red Cedar	5 - 6` HT.	B & B, Spacing as shown
SHRUBS	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**REMARKS**
AA	18	Aronia arbutifolia	Red Chokeberry	18 - 24" HT.	B & B, Spacing 4` O.C.
IG	10	Ilex glabra	Inkberry Holly	18 - 24" HT.	B & B, Spacing 6` O.C.
KL	8	Kalmia latifolia `Keepsake`	Keepsake Mountain Laurel	30 - 36" HT.	B & B, Spacing 5` O.C.
RA	10	Rhus aromatica	Fragrant Sumac	18 - 24" HT.	B & B, Spacing 6` O.C.

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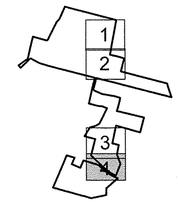
NOTES:

1. PRESERVE EXISTING BARNS ALONG HOSKINS ROAD.
2. CONSTRUCT LANDSCAPE BERM PER GRADING PLAN SHEET 12.
3. PRESERVE EXISTING VEGETATION OUTSIDE OF PROPOSED CHAIN LINK SECURITY FENCE.
4. TEMPORARY CONSTRUCTION ENTRANCE TO BE REMOVED FOLLOWING CONSTRUCTION.



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Tobacco Valley Solar

County Road & Hoskins Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

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Issued for: Construction

Date: January 15, 2019

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Drawing Number: L-1.4

Sheet 49 of 50

Project Number: 42256.40

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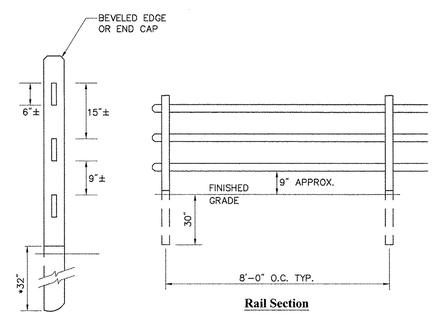
General Site Seed Mix Notes

ESTABLISH AND MAINTAIN PERMANENT VEGETATIVE COVER
IF PERMANENT SEEDING WAS NOT INSTALLED IN THE FALL PRIOR TO THE FOLLOWING SPRING CONSTRUCTION START, IT SHOULD BE UNDERTAKEN ONCE POSTS FOR RACKING ARE INSTALLED.

1. IF PERMANENT SEEDING WAS NOT INSTALLED IN THE FALL PRIOR TO THE FOLLOWING SPRING CONSTRUCTION START, IT SHOULD BE UNDERTAKEN AFTER RACKING IS INSTALLED.
2. SEED MIX TO CONSIST OF COOL SEASON FESCUE SPECIES NOTED FOR THEIR HARDINESS AND WIDE ECOLOGICAL AMPLITUDE AND DEEPER ROOTED, SHORT-STATURE, WARM SEASON GRASSES SUCH AS LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM) AND PURPLE LOVE GRASS (ERAGROSTIS SPECTABILIS) AND LOW GROWING NITROGEN FIXING FORBS SUCH AS PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), RED CLOVER (TRIFOLIUM PRATENSE) AND TRAILING CLOVER (LESPEDEZA PROCUMBENS) TO SUSTAIN SOIL FERTILITY.
3. DURING ESTABLISHMENT FREQUENT MOWING MAY BE REQUIRED INITIALLY TO CONTROL FIELD WEEDS BEFORE THEY CAN SET SEED.
4. AFTER SUCCESSFUL ESTABLISHMENT OF THE GRASSES AND FORBS, MOWING FREQUENCIES MAY BE REDUCED.
5. MOWING SHOULD NOT OCCUR WITHIN 24 HOURS AFTER A SIGNIFICANT RAINFALL EVENT WHEN THE SOIL WOULD BE SUSCEPTIBLE TO COMPACTION.



Residential Scale Gate (Areas 4 & 8)



Fence Post

* TREAT THIS SECTION OF POST WITH A WOOD PRESERVATIVE AS SPECIFIED BY THE FENCE MANUFACTURER.

Rail Section

Notes:

1. FENCE SHALL BE MORGAN POST AND RAIL FENCE (3 ½ – FEET HIGH – 3 RAIL) AS SUPPLIED BY WALPOLE WOODWORKERS, INC. (1-800-343-6948) OR APPROVED EQUAL.
2. FENCE POSTS, SECTIONS, CAPS, ETC. SHALL BE NORTHERN WHITE CEDAR (STAINED WHITE).

Post and Rail Fence 7/06
N.T.S. Source: VHB LD_

Pollinator Habitat Notes

1.1 Location

The location of the Pollinator Habitat Area is depicted on Sheets L-1.3 and L-1.4. It is 1.8 acres in area.

1.2 Site Preparation and Timing

Site preparation will focus on the control of perennial weeds to enhance successful pollinator plant establishment. The crop fields within the TVS Project Site have a substantial seed bank of persistent weeds. Site preparation for the Pollinator Habitat Area should begin in the spring and planting should be conducted in the fall by:

- Mowing any crop residual as needed to expose new weed growth to the herbicide application. Avoid tilling the soil.
- Apply a non-selective, non-persistent herbicide according to application instructions soon after weeds appear in early spring.
- Herbicide applications should be repeated as necessary throughout the spring and summer when emerging weed seedling reach 4-6 inches.
- If weeds resistant to herbicides are present, mow to prevent flowering and seed production.

1.3 Seed Mix

TVS will plant the Northeastern Native Seed Mix which has been developed in partnership with the Xerces Society to produce a high quality perennial mix that is highly attractive to pollinators. The seed mix has been modified to select species native to Connecticut and tolerant of the droughty conditions present in the Pollinator Habitat area:

Table 1. Recommended Pollinator Habitat Seed Mix

Common name	Scientific name	Percent composition
Little Bluestem	*Schizachyrium scoparium*	35.0%
Sundial Lupine	*Lupinus perennis*	15.0%
Partridge Pea	*Chamaecrista fasciculata*	15.0%
Round-head Bush Clover	*Lespedeza capitata*	11.0%
Wild Bergamot	*Monarda fistulosa*	10.0%
Butterfly Milkweed	*Asclepias tuberosa*	10.0%
Hyssop-leaved Thoroughwort	*Eupatorium hyssopifolium*	1.1%
Showy Goldenrod	*Solidago speciosa,*	1.0%
Gray Goldenrod	*Solidago nemoralis*	1.0%
Blue Wood (Heartleaf) Aster	*Symphyotrichum cordifolium*	0.5%
False Indigo	*Baptisia tinctoria*	0.2%
New York Ironweed	*Vernonia noveboracensis*	0.2%

Note: This mix may be varied based on seed availability. The addition of other native species, including grasses is encouraged. Avoid planting species protected by the CT Endangered Species Act.

1.3.1 Planting

The pollinator seed mix should be planted in the fall a minimum of 72 hours after the last herbicide treatment. Use a native seed drill or broadcast and harrow depending on site conditions to plant seed. Planting depths should not exceed ¼ inch and very small seeds should be planted on the soil surface.

1.3.2 Weed Control During Establishment

Control weeds during the first two years of establishment by:

- Mow to control weeds during the first year when weeds over top establishing pollinator plant seedlings.
- Spot spraying herbicide taking care not to allow herbicide to drift. Applications must be made by a licensed professional.
- Small patches of weeds may be removed by hand.

1.3.3 Long-term Maintenance

- Once established, each year 1/3 of the Pollinator Habitat Area will be mowed each fall after asters and goldenrods go to seed.
- Maintain 2/3's of the Pollinator Habitat Area uncut to provide cover and foraging habit for wildlife.
- Examine the site each summer to determine if invasive species require control measures. All applications of herbicide must be made by a Connecticut licensed operator.

Tree Protection

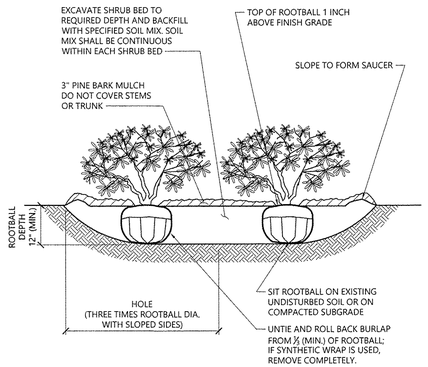
1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY CONSTRUCTION FENCE. ERECT FENCE AT EDGE OF THE TREE DRIPLINE PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT OPERATE VEHICLES WITHIN THE TREE PROTECTION AREA. CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS, OR DISPOSE OF ANY WASTE MATERIALS, WITHIN THE TREE PROTECTION AREA.
3. DAMAGE TO EXISTING TREES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.

Plant Maintenance Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE OF THE LAWNS AND PLANTINGS. NO IRRIGATION IS PROPOSED FOR THIS SITE. THE CONTRACTOR SHALL SUPPLY SUPPLEMENTAL WATERING FOR NEW LAWNS AND PLANTINGS DURING THE ONE YEAR PLANT GUARANTEE PERIOD.
2. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE LANDSCAPE MAINTENANCE WORK. WATER SHALL BE PROVIDED BY THE CONTRACTOR.
3. WATERING SHALL BE REQUIRED DURING THE GROWING SEASON, WHEN NATURAL RAINFALL IS BELOW ONE INCH PER WEEK.
4. WATER SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY SATURATE THE SOIL IN THE ROOT ZONE OF EACH PLANT.
5. CONTRACTOR SHALL REPLACE DEAD OR DYING PLANTS AT THE END OF THE ONE YEAR GUARANTEE PERIOD. CONTRACTOR SHALL TURN OVER MAINTENANCE TO THE FACILITY MAINTENANCE STAFF AT THAT TIME.

Planting Notes

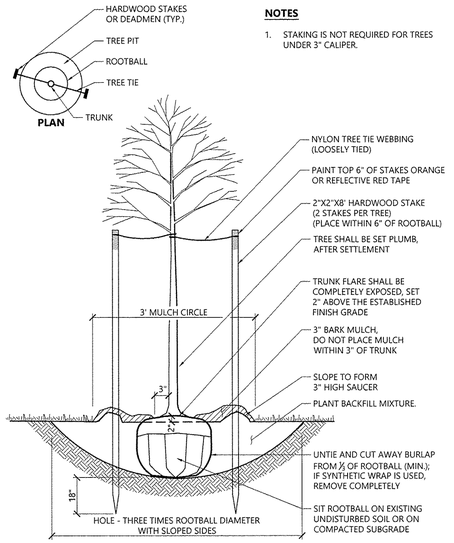
1. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
3. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
4. A 3-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTING BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
5. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
6. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND CONTRACT DOCUMENTS.
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
10. AREAS DESIGNATED "LOAM & SEED" SHALL RECEIVE MINIMUM 6" OF LOAM AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC.
11. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE LOAM AND SEEDED OR MULCHED AS DIRECTED BY OWNER'S REPRESENTATIVE.
12. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.



NOTES

1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

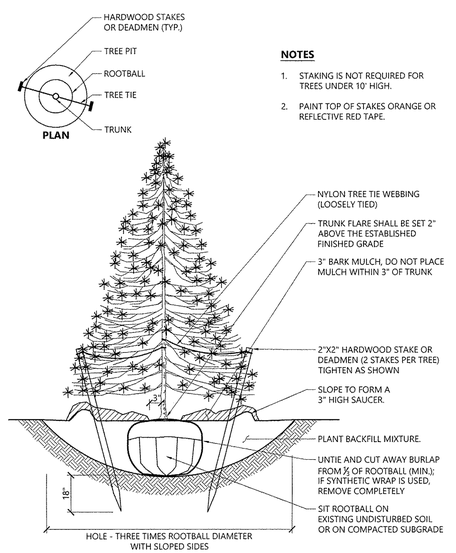
Shrub Bed Planting 1/16
N.T.S. Source: VHB LD_601



NOTES

1. STAKING IS NOT REQUIRED FOR TREES UNDER 3" CALIPER.

Tree Planting (For Trees Under 4" Caliper) 9/18
N.T.S. Source: VHB LD_602



NOTES

1. STAKING IS NOT REQUIRED FOR TREES UNDER 10' HIGH.
2. PAINT TOP OF STAKES ORANGE OR REFLECTIVE RED TAPE.

Evergreen Tree Planting 1/16
N.T.S. Source: VHB LD_604

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Planting Details and Notes

Drawing Number
L2.1

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42256.40

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Map References

1. MAP TITLED "PROPERTY OF CULLMAN BROTHERS, INC. HOPMEADOW STREET, ROUTE NO. 10, COUNTY ROAD, SIMSBURY CONNECTICUT." MAP SCALE 1"=200'. MAP DATED MARCH 1962. BY HAROLD R. SANDERSON.

2. MAP TITLED "PROPERTY OF CULLMAN BROTHERS, INC. COUNTY ROAD & HOSKINS ROAD, SIMSBURY CONNECTICUT." MAP SCALE 1"=200'. MAP DATED MARCH 1962. BY HAROLD R. SANDERSON.

3. MAP TITLED "REVISED LOTTING PLAN, CUMMINGS TERRACE, SIMSBURY CONN. MODEL HOMES, INC. OWNERS & DEVELOPERS." MAP SCALE 1"=100'. MAP DATED OCT. 28, 1949. BY DESMOND & YARWOOD, INC.

4. MAP TITLED "P.T. ASSOCIATES, SIMSBURY, CONNECTICUT. SUBDIVISION PLAN FOR CUMMINGS TERRACE EXTENSION." MAP SCALE 1"=100'. MAP DATED JULY 15, 1954. BY YARWOOD & BLOCK, INC.

5. MAP TITLED "MAP OF PROPERTY OWNED BY H. D. BLANCHARD NEAR THE GRANBY–SIMSBURY TOWN LINE, SIMSBURY, CONN." MAP SCALE 1"=100'. MAP DATED OCT. 1933. BY MERTON HODGE.

6. MAP TITLED "WEATHERLY EAST SECTION A, PROPERTY OF CARL V. JOHNSON JR. & SHERWOOD E. PARMELEE, SQUADRON LINE ROAD, SIMSBURY CONNECTICUT." MAP SCALE 1"=100'. MAP DATED OCTOBER 20, 1964. BY HAROLD R. SANDERSON.

7. MAP TITLED "WEATHERLY EAST SECTION D, CARL V. JOHNSON, JR & SHERWOOD E. PARMELEE, FLINTLOCK RIDGE & MUSKET TRAIL, SIMSBURY CONNECTICUT." MAP SCALE 1"=100'. MAP DATED OCTOBER 18, 1966. BY HAROLD R. SANDERSON.

8. MAP TITLED "RE–SUBDIVISION CUMMINGS TERRACE, PROPERTY OF W.W.A. ASSOCIATES, HOWARD STREET, SIMSBURY, CONNECTICUT." MAP SCALE 1"=100'. MAP DATED MARCH 26, 1968. BY HAROLD R. SANDERSON.

9. MAP TITLED "FINAL PLAN SHOWING LAND FOR OPEN SPACE, OLD COUNTY ESTATES, PROPERTY OF CHARLES SCHNIER, COUNTY ROAD, SIMSBURY CONNECTICUT." MAP SCALE 1"=100'. MAP DATED JULY 3, 1973. BY SANDERSON & WASHBURN.

10. MAP TITLED "FINAL SUBDIVISION PLAN, OLD COUNTY ESTATES SECTION II, PROPERTY OF CHARLES SCHNIER, COUNTY ROAD & HOLCOMB STREET, SIMSBURY CONNECTICUT." MAP SCALE 1"=100'. MAP DATED SEPTEMBER 10, 1973. BY SANDERSON & WASHBURN.

11. MAP TITLED " SANITARY SEWER LINE, PROPERTY OF GENERAL CIGAR INC. & SIMSBURY SAND & GRAVEL INC. HOPMEADOW STREET TO OLD COUNTY ESTATES–SECT. III, SIMSBURY, CONNECTICUT. MAP SCALE 1"=200'. MAP DATED MAY 1975. BY SANDERSON & WASHBURN.

12. MAP TITLED "FINAL SUBDIVISION PLAN, OLD COUNTY ESTATES, SECTION III, PROPERTY OF CHARLES SCHNIER, COUNTY ROAD, SIMSBURY, CONNECTICUT." MAP SCALE 1"=100'. MAP DATED JANUARY 28, 1975. BY SANDERSON & WASHBURN.

13. MAP TITLED "REVISION OF A PORTION OF SANITARY SEWER LINE, PROPERTY OF GENERAL CIGAR, INC. & SIMSBURY SAND & GRAVEL, INC. HOPMEADOW STREET TO OLD COUNTY ESTATES–SECT. III, SIMSBURY, CONNECTICUT." MAP SCALE 1"=200'. MAP DATED JAN 1976. BY SANDERSON & WASHBURN.

14. MAP TITLED "EASEMENT PLAN, BISSELL BROOK INTERCEPTOR, SANITARY SEWERS, SEWER COMMISSION, SIMSBURY, CONN." MAP SCALE 1"=40'. MAP DATED JULY 1977. SHEETS 1 THROUGH 3 OF 3. BY TIGHE & BOND.

15. MAP TITLED "OLD COUNTY EAST, 16 LOT R–40 OPEN SPACE SUBDIVISION WITH 30,000 SQ. FT. LOTS, OWNER–DEVELOPER – S.J. FISH & SONS, INC." MAP SCALE 1"=100'. MAP DATED 11 DEC. 1978 AND REVISED 21 DEC. 1978. BY ALLEN HIXON.

16. MAP TITLED "LAND OF THE CULBRO CORPORATION TO BE CONVEYED TO MADELINE F. WAGNER AND RICHARD D. WAGNER, HOPMEADOW STREET, SIMSBURY, CONNECTICUT." MAP SCALE 1"=40'. MAP DATED 03–08–91, REVISED 12–09–96. BY F.A. HESKETH & ASSOCIATES, INC.

17. MAP TITLED "TOWN OF SIMSBURY, MAP SHOWING EASEMENT ACQUIRED FROM CULBRO CORP. BY THE STATE OF CONNECTICUT, WOLCOTT ROAD/ROUTE 10 INTERSECTION IMPROVEMENTS." MAP SCALE 1=500. MAP DATED SEPTEMBER 1995. BY ANDREW D. TUPPER, L.S.

18. MAP TITLED " PROPERTY SURVEY, PROPERTIES OWNED BY THE ESTATE OF HELEN E. THIBAULT & CHARLES N. & DOROTHY A. STERMER, NO.'S 10, 12 AND 14 COUNTY ROAD, SIMSBURY, CONNECTICUT, ZONE R–40." MAP SCALE 1"=30. MAP DATED JUNE 25, 2001. BY HENRY C. COTTON & ASSOCIATES.

19. MAP TITLED "PERIMETER SURVEY, RESUBDIVISION PLAN PREPARED FOR DORSET CROSSING, LLC, DORSET CROSSING DRIVE, SIMSBURY CONNECTICUT." MAP SCALE 1"100'. MAP DATED 4–11–2012 AND REVISED THROUGH 12–6–2013. BY F.A. HESKETH & ASSOCIATES, INC.

20. MAP TITLED "PROPERTY OF GEORGE A. ROSSETTI, INC. TO BE ACQUIRED BY LANDEV, INC. 1515–1517 HOPMEADOW ST.–SIMSBURY, CT." MAP SCALE 1"=40'. MAP DATED DECEMBER 16, 1986. BY ED LALLY AND ASSOCIATES.

21. MAP TITLED "NORTHEAST UTILITIES SERVICE CO., THE CONNECTICUT LIGHT AND POWER COMPANY, TRANSMISSION RIGHT OF WAY PLAN, WEINGART JCT TO NORTH BLOOMFIELD S/S." MAP SCALE 1"=100'. MAP DATED MARCH 2009 THOUGH JUNE 2009. BY BL COMPANIES.

22. MAP TITLED "EASEMENT SURVEY, TOWN OF SIMSBURY, MAP SHOWING EASEMENTS ACQUIRED FROM DORSET CROSSING, LLC BY THE STATE OF CONNECTICUT, HOPMEADOW STREET, US RTE 202." MAP SCALE 1"=40'. MAP DATED JULY 2009. BY F.A. HESKETH & ASSOCIATES, INC.

23. MAP TITLED "TOWN OF SIMSBURY, MAP SHOWING EASEMENT ACQUIRED FROM CULBRO CORP. BY THE STATE OF CONNECTICUT, WOLCOTT ROAD/ROUTE 10 INTERSECTION IMPROVEMENTS." MAP SCALE 1"=500'. MAP DATED SEPTEMBER 1995.

24. MAP TITLED "PROPERTY OF ESTATE OF TIMOTHY J. CLARK TO BE CONVEYED TO CHARLES SCHNIER, COUNTY ROAD & HOLCOMB STREET, SIMSBURY & GRANBY, CONNECTICUT." MAP SCALE 1"=400'. MAP DATED OCTOBER, 1973. BY SANDERSON & WASHBURN.

Property Abutter List

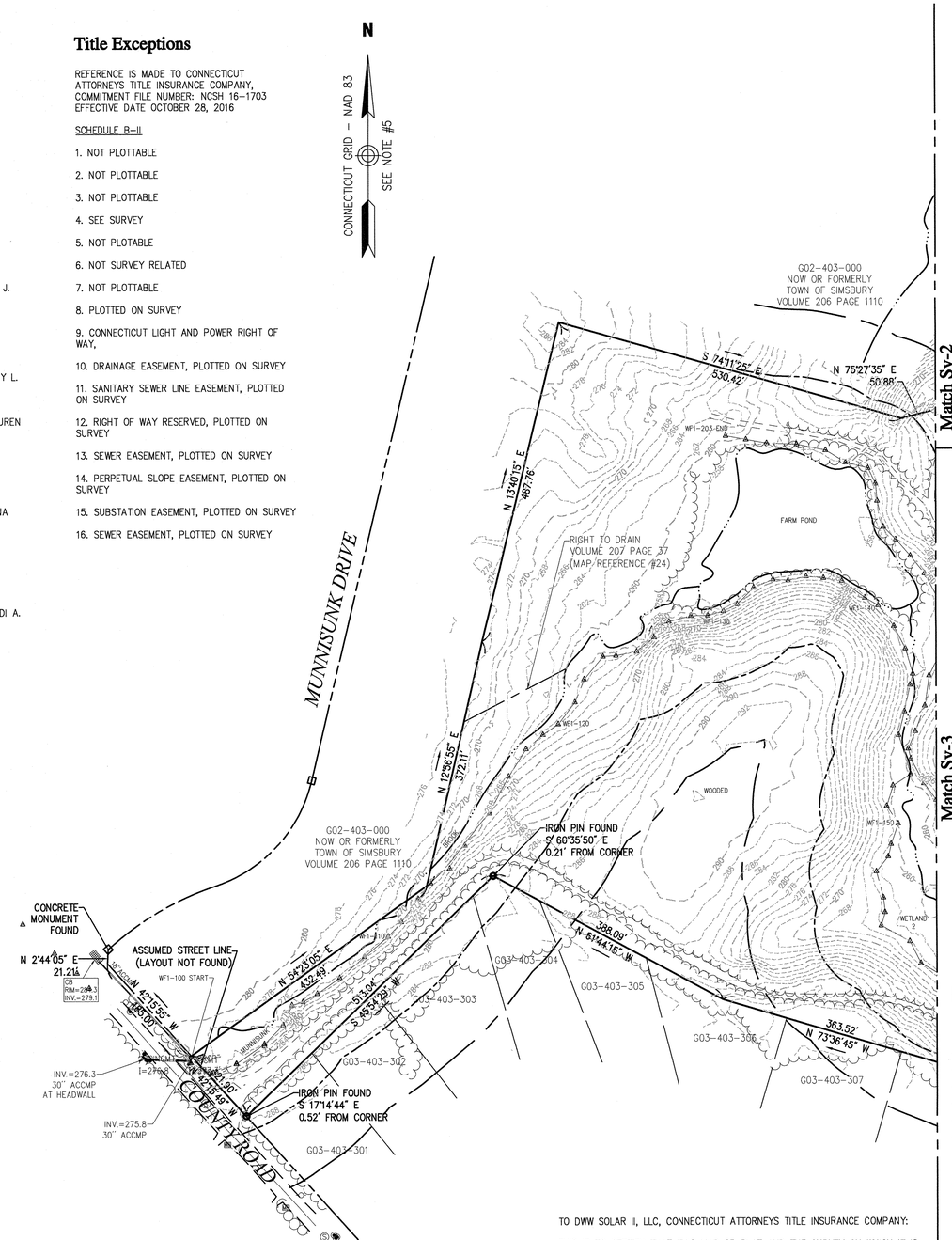
MAP BLOCK LOT	CURRENT OWNER
H05–403–27	NOW OR FORMERLY MARCKTELL, JOHN W. & AIDA B. VOLUME 821 PAGE 265
H05–403–027G	NOW OR FORMERLY POZZATO, JOSEPH JR. & APRIL VOLUME 884 PAGE 250
H05–403–027B	NOW OR FORMERLY POZZATO, APRIL & JOSEPH JR VOLUME 746 PAGE 238
H05–403–027F	NOW OR FORMERLY POZZATTO, JOHN ANTHONY VOLUME 447 PAGE 305
H05–403–027D	NOW OR FORMERLY TOWN OF SIMSBURY OPEN SPACE
H04–403–000	NOW OR FORMERLY TOWN OF SIMSBURY OPEN SPACE VOLUME 243 PAGE 356
H03–403–335	NOW OR FORMERLY SUTTON, STEPHEN & CARA L. VOLUME 695 PAGE 769
G03–403–334	NOW OR FORMERLY SHLANSKY, LISABETH C. VOLUME 786 PAGE 1073
G03–403–311	NOW OR FORMERLY GALVIN, MICHAEL & SHARI L. VOLUME 737 PAGE 055
G03–403–310	NOW OR FORMERLY SZEKRETAR, RAYMOND M & LISA K. VOLUME 720 PAGE 971
G03–403–309	NOW OR FORMERLY SMITH, GEORGE P & NADINE M. VOLUME 370 PAGE 206
G03–403–308	NOW OR FORMERLY KLISKA, JOHN J JR. VOLUME 580 PAGE 668
G03–403–307	NOW OR FORMERLY PAWLING, GERARD & THERESA VOLUME 371 PAGE 812
G03–403–306	NOW OR FORMERLY SANTIAGO, ANTHONY & JACQUELINE F. VOLUME 764 PAGE 132
G03–403–305	NOW OR FORMERLY LATORRE, RONALD C. & LORITA M. VOLUME 649 PAGE 966
G03–403–304	NOW OR FORMERLY GREENWOOD, JEFFREY A. & DELLA A. VOLUME 382 PAGE 660
G03–403–303	NOW OR FORMERLY SUMNER, JEAN H. VOLUME 222 PAGE 212
G03–403–302	NOW OR FORMERLY FISHER, JEANNINE M. VOLUME 893 PAGE 220
G03–403–301	NOW OR FORMERLY AGRAWAL, SUNIL K. VOLUME 303 PAGE 160
H02–403–010	NOW OR FORMERLY JACOBS, JOHN H AND BERTHA M. VOLUME 141 PAGE 477
H02–403–009	NOW OR FORMERLY LAMAJ, NADIR VOLUME 496 PAGE 55
H02–403–008	NOW OR FORMERLY BUSHAW, ANN LENZ VOLUME 668 PAGE 708
H03–403–007	NOW OR FORMERLY GILBERT, PATRICIA H. VOLUME 439 PAGE 317
H03–403–006	NOW OR FORMERLY PITBLADO, JENNIFER M. VOLUME 908 PAGE 766
H03–403–005	NOW OR FORMERLY WITTELS, NEDDA E & JILL J. VOLUME 328 PAGE 703
H03–403–004	NOW OR FORMERLY AUBIN, MARY C VOLUME 642 PAGE 451
H03–403–003	NOW OR FORMERLY GODBEY, JOHN C & TAMMY L. VOLUME 457 PAGE 1101
H03–403–002	NOW OR FORMERLY CREMENS, SCOTT D & LAUREN VOLUME 667 PAGE 635
H03–403–001–1L	NOW OR FORMERLY WINNICK, ROBIN L. VOLUME 763 PAGE 665
H03–403–032	NOW OR FORMERLY CHAMBERS, EVA, CHRISTINA & SCOTT, CO–TRUST VOLUME 412 PAGE 42
H03–403–033	NOW OR FORMERLY WRISLEY, HOLLY J. VOLUME 361 PAGE 977
H03–403–001–2L	NOW OR FORMERLY NIELSON, HARRY III & HEIDI A. VOLUME 335 PAGE 154
H03–403–002	NOW OR FORMERLY IONS, SHARON R. VOLUME 895 PAGE 846
H05–403–001	NOW OR FORMERLY LOPEZ, JANNETTE VOLUME 802 PAGE 91

Title Exceptions

REFERENCE IS MADE TO CONNECTICUT ATTORNEYS TITLE INSURANCE COMPANY, COMMITMENT FILE NUMBER: NCSH 16–1703 EFFECTIVE DATE OCTOBER 28, 2016

SCHEDULE B–II

1. NOT PLOTTABLE
2. NOT PLOTTABLE
3. NOT PLOTTABLE
4. SEE SURVEY
5. NOT PLOTABLE
6. NOT SURVEY RELATED
7. NOT PLOTTABLE
8. PLOTTED ON SURVEY
9. CONNECTICUT LIGHT AND POWER RIGHT OF WAY,
10. DRAINAGE EASEMENT, PLOTTED ON SURVEY
11. SANITARY SEWER LINE EASEMENT, PLOTTED ON SURVEY
12. RIGHT OF WAY RESERVED, PLOTTED ON SURVEY
13. SEWER EASEMENT, PLOTTED ON SURVEY
14. PERPETUAL SLOPE EASEMENT, PLOTTED ON SURVEY
15. SUBSTATION EASEMENT, PLOTTED ON SURVEY
16. SEWER EASEMENT, PLOTTED ON SURVEY



Legend

- DRILL HOLE FOUND
- IRON PIN/REBAR FOUND
- MONUMENT FOUND
- DRAIN MANHOLE
- SEWER MANHOLE
- UTILITY POLE
- 1–100 WETLAND FLAG
- PROPERTY LINE
- EASEMENT LINE
- STATE FREEWAY LINE
- STATE HIGHWAY LINE
- TOWN LAYOUT LINE
- ASSESSORS LOT LINE
- EDGE OF PAVEMENT
- TREE LINE
- STREAM
- ABUTTER LINE
- EDGE OF GRAVEL
- WETLAND REVIEW LINE

100 0 100 200
SCALE IN FEET

General Notes

1. THE PROPERTY LINES DEPICTED ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB IN FEBRUARY AND MARCH, 2017.

2. THIS EXISTING CONDITIONS DEPICTED ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY VHB, BASED ON AERIAL PHOTOGRAPHS TAKEN IN FEBRUARY, 2017, AUGMENTED BY AN ON–THE–GROUND SURVEY PERFORMED BY VHB DURING FEBRUARY AND MARCH, 2017, AND UPDATED IN NOVEMBER, 2018.

3. CONTOURS AND ELEVATIONS DEPICTED ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF 2016 LIDAR CONTOURS PROVIDED BY THE STATE OF CONNECTICUT, AERIAL PHOTOGRAMMETRIC MAPPING BY VHB, BASED ON AERIAL PHOTOGRAPHS TAKEN IN FEBRUARY, 2018, AND AUGMENTED BY AN ON–THE–GROUND SURVEY PERFORMED BY VHB DURING FEBRUARY AND MARCH, 2017, AND UPDATED IN NOVEMBER, 2018.

4. AT THE TIME OF OUR FIELD SURVEY, THE SITE WAS PARTIALLY COVERED BY SNOW AND ICE. ACCORDINGLY, ALL GROUND FEATURES MAY NOT BE DEPICTED. AN UPDATED SURVEY IS RECOMMENDED UPON COMPLETE SNOW MELT.

5. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES DEPICTED ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE DEPICTED ON THIS PLAN.

6. COORDINATES, HORIZONTAL DATUM AND BEARINGS DEPICTED ON THIS SURVEY ARE REFERENCED TO THE CONNECTICUT STATE PLANE COORDINATE GRID SYSTEM – NAD 83. THE VERTICAL DATUM DEPICTED ON THIS SURVEY IS REFERENCED TO THE NAVD88. BOTH DATUMS WERE COMPUTED AND MEASURED USING AVERAGED REAL TIME NETWORK (RTN) GPS SOLUTION.

7. THE WETLANDS DEPICTED ON THIS PLAN WERE DELINEATED BY VHB, INC., AND FIELD SURVEYED BY VHB BETWEEN FEBRUARY AND APRIL, 2017 USING MAPPING GRADE GPS RECEIVERS WITH AN EXPECTED HORIZONTAL ACCURACY OF 1–2 METERS.

8. PORTIONS OF THE SITE LIE WITHIN FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) DESIGNATED FLOOD HAZARD AREAS (FLOODWAY AND 100–YEAR FLOOD ZONES A AND AE) PER FLOOD INSURANCE RATE MAP (FIRM) NUMBERS 09003C0191F AND 09003C0193F, BOTH EFFECTIVE SEPTEMBER 26, 2008 AND IS SUBJECT TO CHANGE.

9. NO PARKING SPACES WERE OBSERVED AT THE TIME OF SURVEY.

TO DWW SOLAR II, LLC, CONNECTICUT ATTORNEYS TITLE INSURANCE COMPANY:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2–5, 7A, 8–11 AND 13 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED IN APRIL, 2017 AND UPDATED IN NOVEMBER, 2018.

DATE OF MAP: JANUARY 10, 2019.

THIS SURVEY AND MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20–300b–1 THROUGH 20–300b–20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.

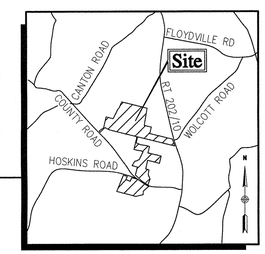
THIS IS A PROPERTY SURVEY CONFORMING TO A HORIZONTAL CLASS A–2 ACCURACY AND A TOPOGRAPHIC SURVEY CONFORMING TO A VERTICAL CLASS T–3. THE BOUNDARY DETERMINATION IS A RESURVEY OF THE EXISTING PROPERTY LINES AND AN ORIGINAL SURVEY OF THE PROPOSED PROPERTY LINES.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON. THIS PLAN IS NOT VALID WITHOUT A LIVE SIGNATURE AND EMBOSSED SEAL.

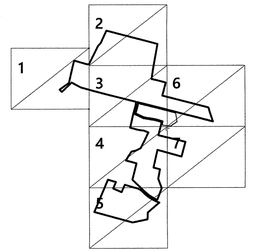
1/10/19

CHRISTOPHER C. DANFORTH, L.S. #70118 DATE

vhb.com
vhb
100 Great Meadow Road
Suite 200
Wethersfield, CT 06109
860.807.4300



Locus Map
(NOT TO SCALE)



Sheet Index

DWW Solar II, LLC

Hoskins and County Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by MAS Checked by CCD
Issued for Date
January 10, 2019

Drawing Title
ALTA/NSPS Land Title Survey

Drawing Number
Sv-1

Sheet 1 of 7

Project Number
42256.00

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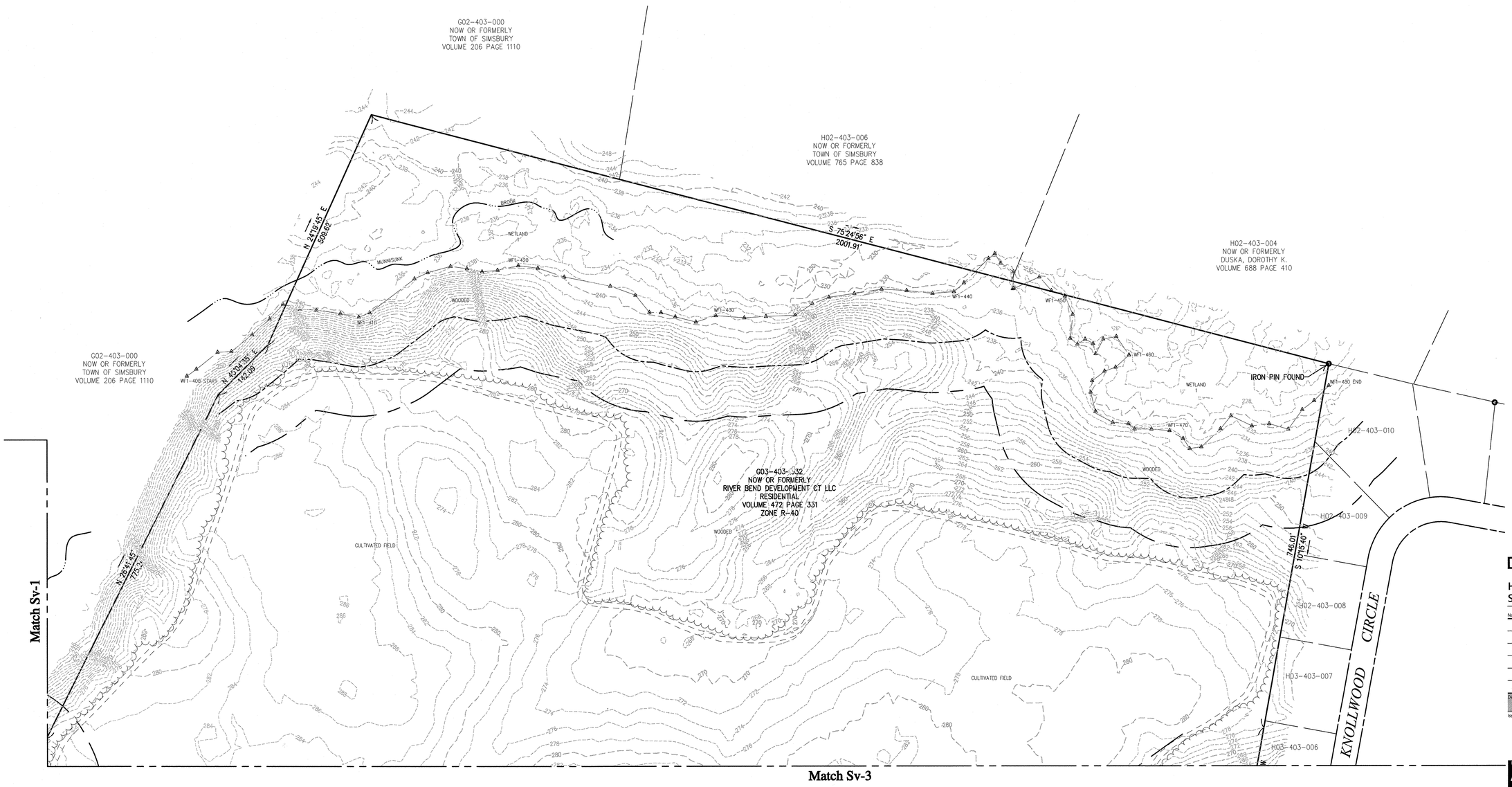

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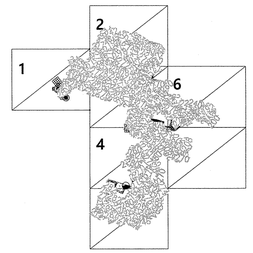
CONNECTICUT GRID – NAD 83
SEE NOTE #5



Sheet Index

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SCALE IN FEET

DWW Solar II, LLC

Hoskins and County Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by MAS | Checked by CCD

Issued for

Date
January 10, 2019

Drawing Title
ALTA/NSPS
Land Title Survey

Drawing Number
Sv-2

Sheet 2 of 7

Project Number
42256.00

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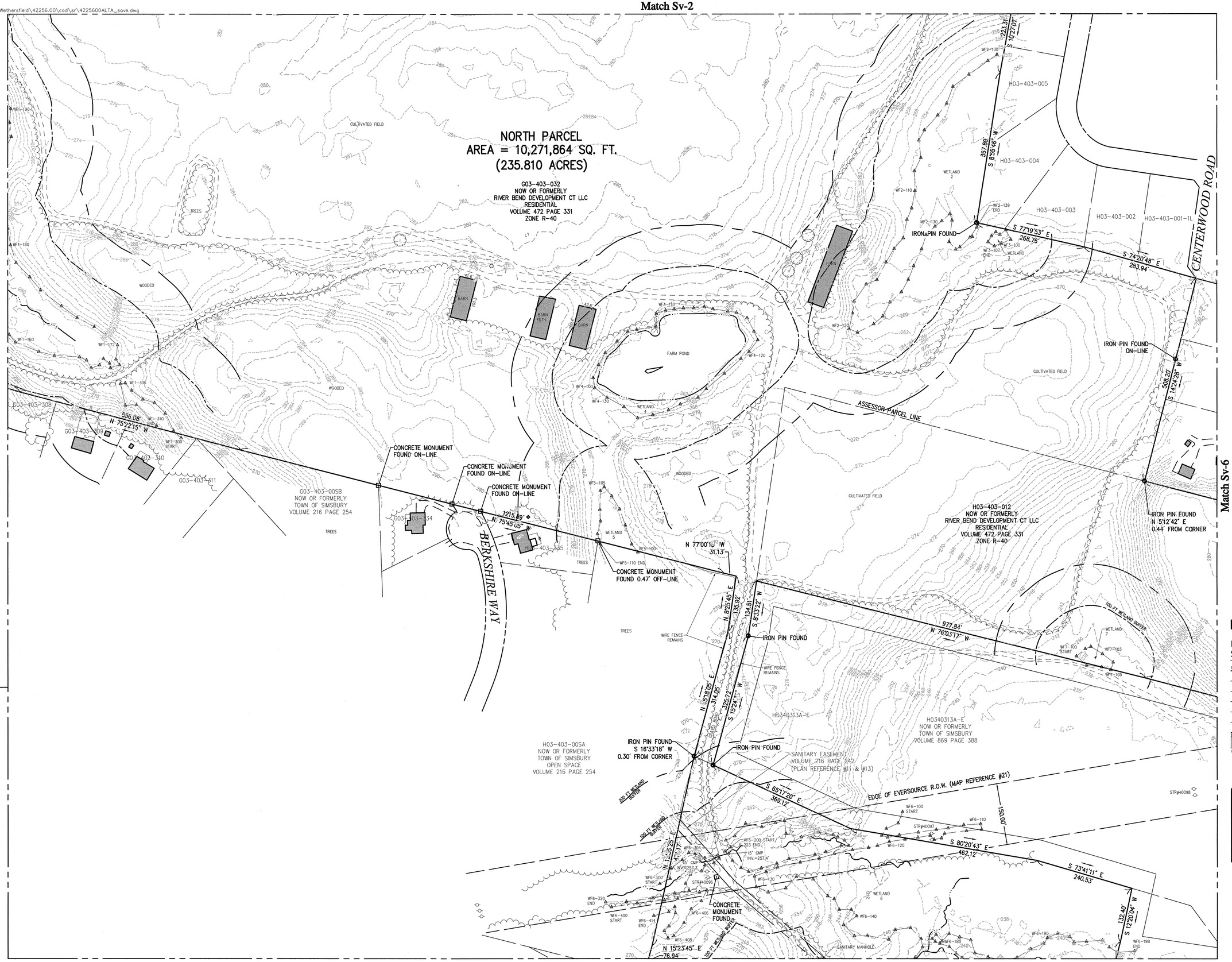
Match Sv-2



Match Sv-1

Match Sv-6

Match Sv-4

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Wethersfield, CT 06109
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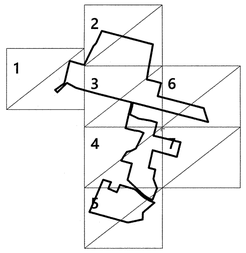
N

CONNECTICUT GRID - NAD 83
SEE NOTE #5



Sheet Index

100 0 100 200
SCALE IN FEET

DWW Solar II, LLC

Hoskins and County Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by MAS
Checked by CCD
Issued for
Date January 10, 2019

Drawing Title
ALTA/NSPS
Land Title Survey

Drawing Number
Sv-3

Sheet 3 of 7

Project Number
42256.00

STATE OF CONNECTICUT
REGISTERED PROFESSIONAL
LAND SURVEYOR
1/10/19

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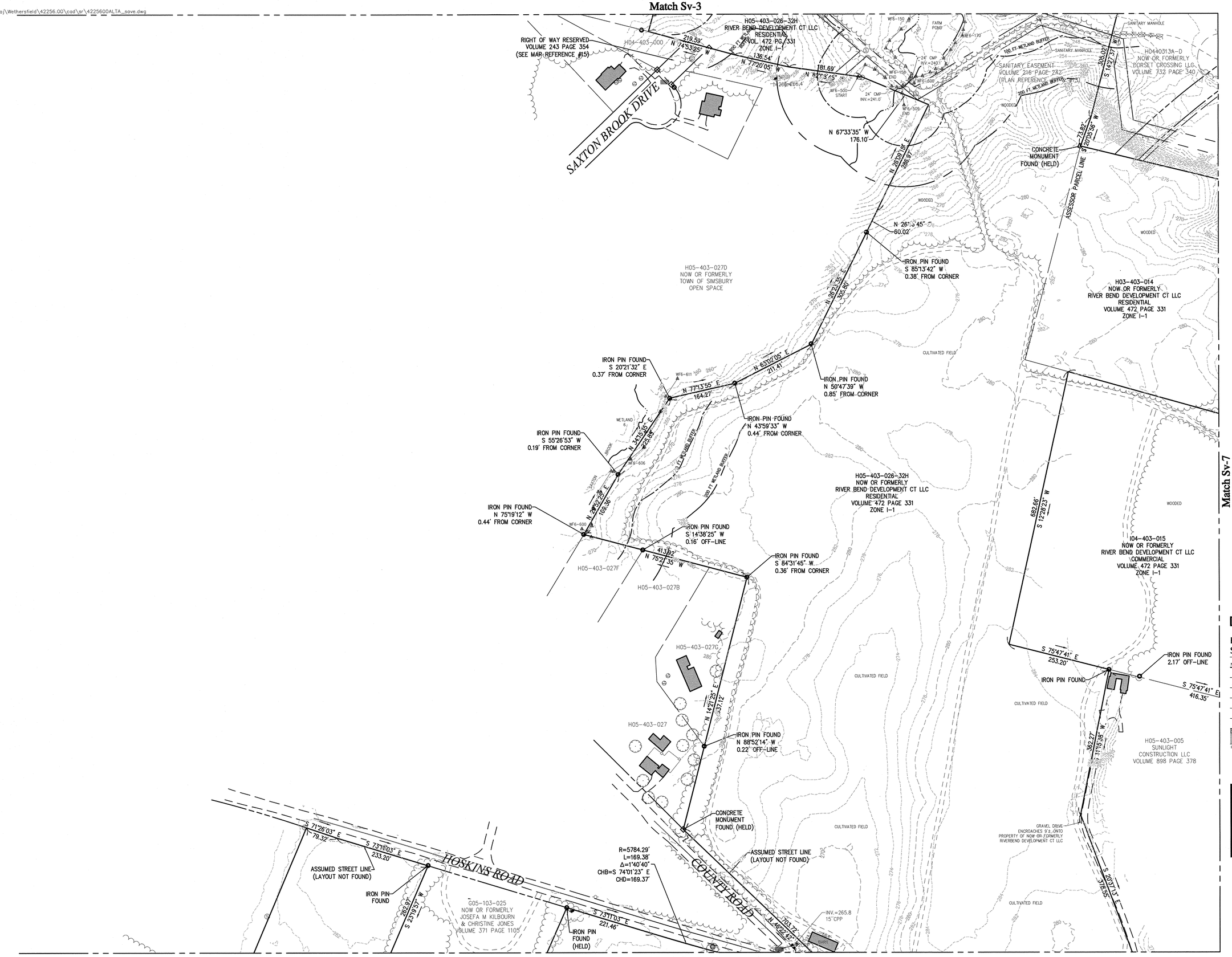

Match Sv-7

Match Sv-5

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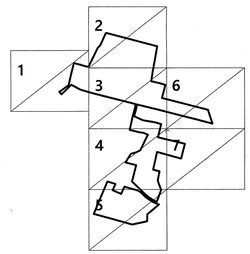
N

CONNECTICUT GRID – NAD 83

SEE NOTE #5



Sheet Index

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SCALE IN FEET

DWW Solar II, LLC

Hoskins and County Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by MAS | Checked by CCD

Issued for

Date: January 10, 2019

Drawing Title

ALTA/NSPS
Land Title Survey

Drawing Number

Sv-4

Sheet 4 of 7

Project Number

42256.00

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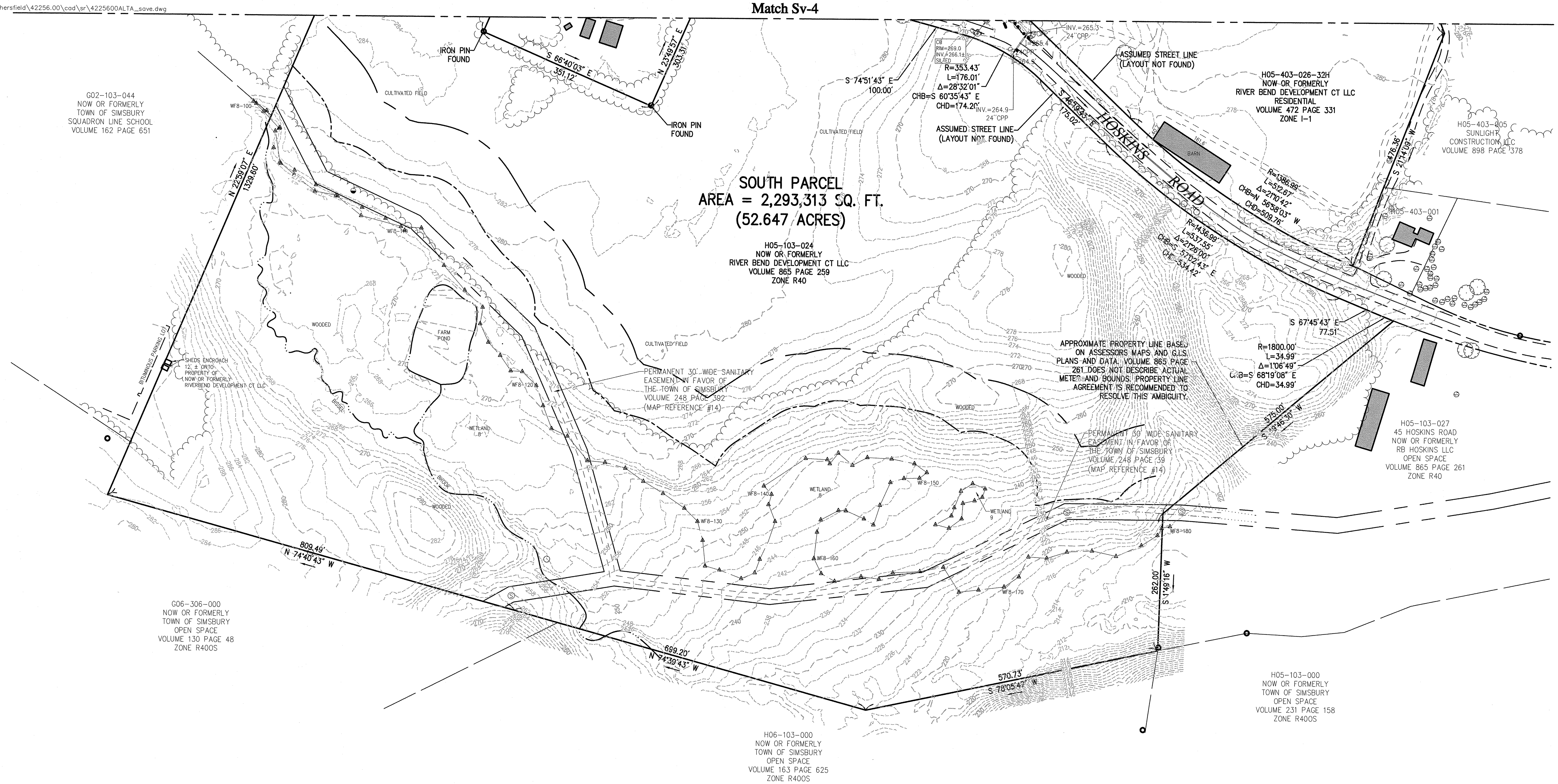
Match Sv-4



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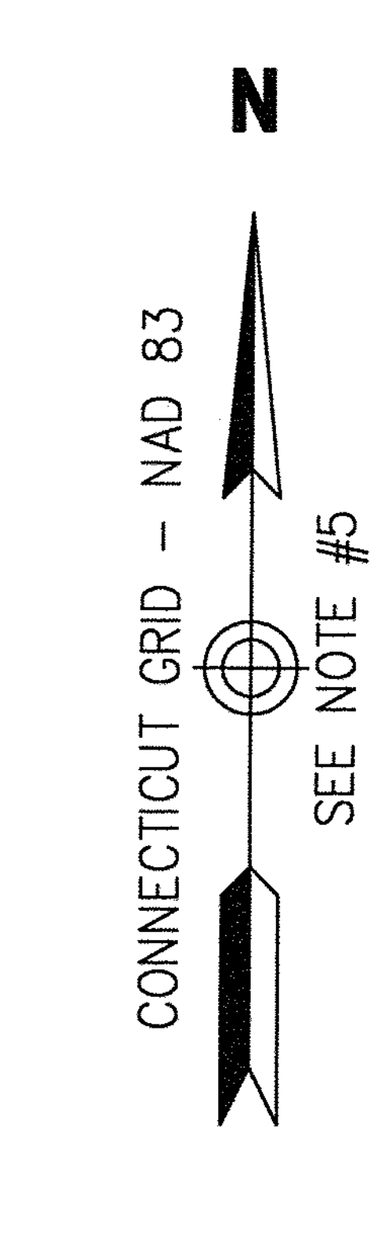

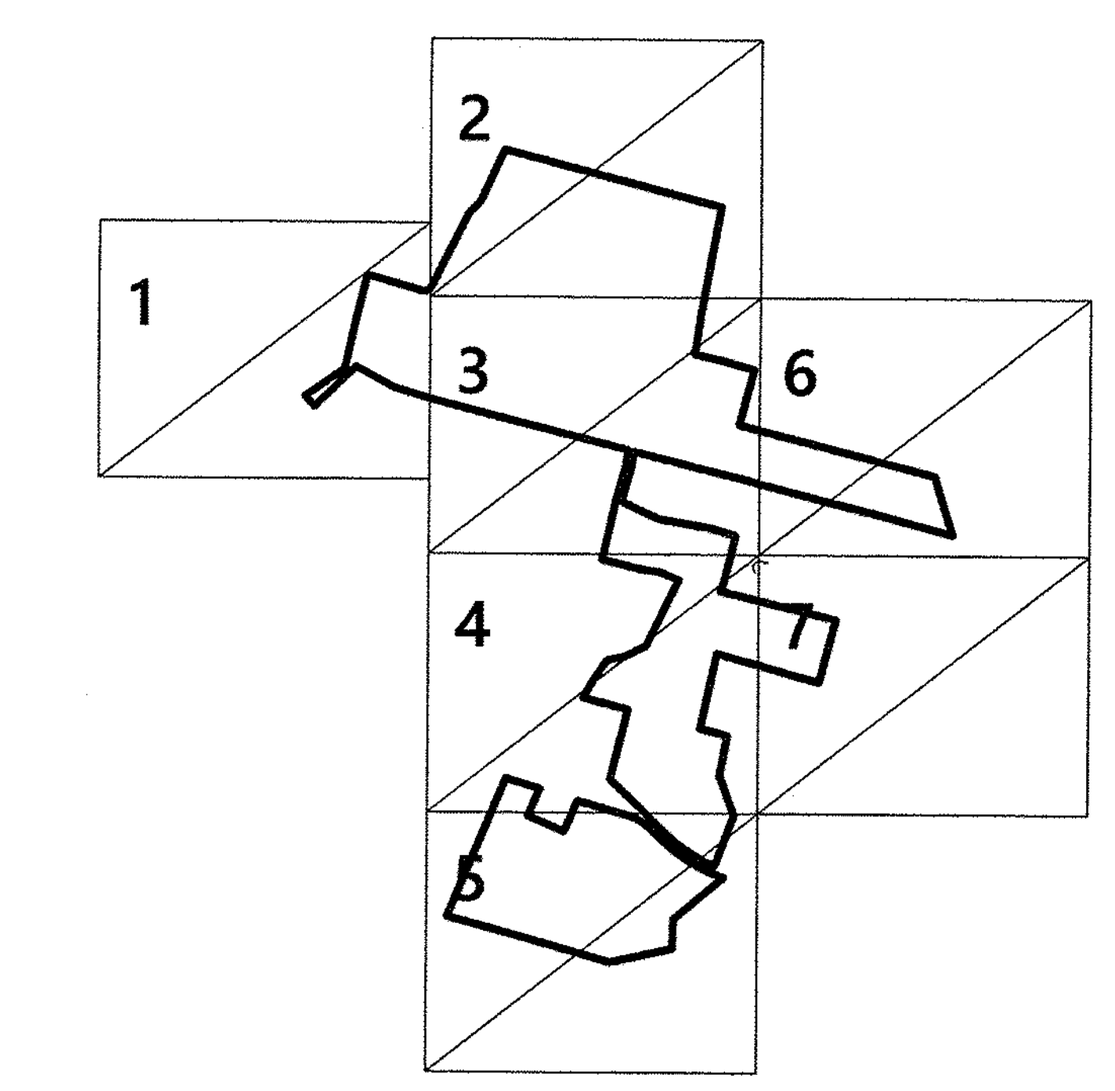

Sheet Index

100 0 100 200
SCALE IN FEET

Record Description, North Parcel

VOL. 472 PAGE 0339

TRACT 7:

Commencing at a merestone set in the northeasterly line of County Road at the southerly corner of land now or formerly of Helen Thibault; thence running N 21° 43' 00" E along said land now or formerly of Helen Thibault, 637.12 feet to an iron pin; thence running N 68° 00' 00" W along said land now or formerly of Helen Thibault and land now or formerly of Joseph Pozzato et al, partly along each, in all, 413.92 feet to an iron pin; thence running N 37° 14' 00" E, 169.36 feet to an iron pin; thence running N 41° 37' 10" E, 225.85 feet to an iron pin; thence running N 84° 35' 30" E, 164.27 feet to a point; thence running N 70° 23' 40" E, 211.41 feet to an iron pin; thence running N 33° 45' 10" E, 305.8 feet to an iron pin; thence running N 33° 38' 20" E, 60.02 feet to an iron pin; thence running N 33° 30' 50" E, 286.97 feet to an iron pin; thence running N 60° 12' 00" W, 176.1 feet to a point; thence running N 74° 47' 10" W, 181.69 feet to a point; thence running N 69° 58' 30" W, 136.54 feet to a point; thence running N 67° 31' 50" W, 219.59 feet to an iron pin, the last eleven (11) courses being along land now or formerly of Henry Trudell; thence running N 22° 45' 20" E, 76.94 feet to a point; thence running N 19° 57' 00" E, 471.17 feet to an iron pin; thence running N 22° 39' 40" E, 314.05 feet to an iron pin; thence r nning N 15° 47' 20" E, 135.92 feet to an iron pin; thence running N 69° 38' 40" W, 31.13 feet to an iron pin; thence running N 68° 23' 30" W, 1,215.89 feet to a point; thence running N 68° 00' 40" W, 556.08 feet to a tree and fence marking an old corner; thence running N 66° 15' 10" W, 363.52 feet to a point; thence running N 54° 22' 40" W, 388.09 feet to a point; thence running S 78° 57' 10" W, 108.92 feet to an iron pin; thence running N 20° 18' 30" E, 392.1 feet to an iron pin; thence running N 21° 01' 50" E, 487.76 feet to an iron pin; thence running S 66° 49' 50" E, 530.42 feet to a point; thence running N 82° 49' 10" E, 50.88 feet to an iron pin; thence running N 34° 03' 20" E, 775.24 feet to a point; thence running N 52° 26' 10" E, 142.09 feet to a point; thence running N 31° 41' 20" E, 509.62 feet to an iron pin, the last seventeen (17) courses being along land now or formerly of Anna Clark et al; thence running S 68° 05' 00" E along said land now or formerly of Anna Clark et al and lands now or formerly of Anthony J. Davis and Harold D. Blanchard, partly along each, in all, 2002.19 feet to an iron pin; thence running S 17° 37' 00" W, 745.87 feet to an iron pin; thence running S 17° 52' 50" W, 223.21 feet to a point; thence running S 16° 16' 10" W, 367.87 feet to an iron pin; thence running S 68° 27' 00" E, 552.88 feet to an iron pin, the last four (4) courses being along land now or formerly of John C. Stoddard et al; thence running S 21° 49' 30" W, 508.1 feet to an iron pin; thence running S 68° 06' 30" E, 1111.72 feet to an iron pin; thence running S 67° 58' 20" E, 80.79 feet to a merestone, the last three (3) courses being along land now or formerly of James Roddy; thence running S 68° 09' 00" E, 611.1 feet to a merestone set in the westerly line of Hopmeadow Street; thence running S 9° 08' 50" E along said westerly line of Hopmeadow Street, 132.34 feet to a merestone; thence running S 10° 41' 30" E along said westerly line of Hopmeadow Street, 414.76 feet to a merestone; thence running N 68° 03' 30" W along lands now or formerly of George Rossetti and The Horowitz Realty Corporation, partly along each, in all, 615.89 feet to a merestone.

-8-

VOL. 472 PAGE 0340

TRACT 7 (continued):

thence running N 68° 30' 00" W along land now or formerly of The State of Connecticut, 698.17 feet to a merestone; thence running N 67° 52' 50" W, 658.26 feet to a point; thence running N 68° 41' 40" W, 977.84 feet to a point; thence running S 16° 15' 40" W, 134.59 feet to an iron pin; thence running S 22° 48' 10" W, 325.73 feet to an iron pin; thence running S 57° 48' 30" E, 370.89 feet to a point; thence running S 73° 50' 10" E through an iron pin, 409.2 feet to a point; thence running S 66° 25' 50" E, 293.08 feet to an iron pin; thence running S 20° 25' 30" W, 356.41 feet to a point; thence running S 25° 14' 00" W, 156.17 feet to an iron pipe and stone pile; thence running S 69° 08' 00" E, 1,055.64 feet to an iron pin; thence running S 72° 08' 10" E, 329.41 feet to an iron pin; thence running N 17° 20' 50" E, 495.9 feet to an iron pin, the last twelve (12) courses being along land now or formerly of The Horowitz Realty Corporation; thence running S 72° 28' 30" E along lands now or formerly of George Rossetti and Ruth Beem, partly along each, in all, 774.39 feet to an iron pin set in the westerly line of Hopmeadow Street; thence running S 6° 37' 00" E, 162.52 feet to a Connecticut Highway Department marker; thence running S 6° 38' 30" E, 554.12 feet to a Connecticut Highway Department marker; thence running S 8° 45' 50" E, 601.7 feet to a Connecticut Highway Department marker; thence running S 5° 07' 10" W, 304.35 feet to a merestone, the last four (4) courses being along said westerly line of Hopmeadow Street; thence running N 89° 01'30"W along land now or formerly of William A. Tierney, 199.37 feet to an iron pin; thence running S 14° 47' 40" W along said land now or formerly of William A. Tierney, 465.95 feet to an iron pin; thence running N 71° 55' 30" W along land now or formerly of Pentagon Building Corp., 639.02 feet to an iron pin; thence running N 73° 33' 50" W, 227.91 feet to an iron pin; thence running N 17° 16' 30" E, 212.00 feet to an iron pin; thence running N 67° 56' 30" W, 862.6 feet to an iron pin, the last three (3) courses being along land now or formerly of Patrick McGarvey et al; thence running N 68° 29' 00" W through an iron pin, 593.91 feet to a point; thence running S 18° 36' 20" E through an iron pin, 362.28 feet to a point; thence running S 13° 17' 30" E, 378.55 feet to a point; thence running S 28° 37' 30" W, 476.36 feet to a merestone set in the northeasterly line of County Road, the last four (4) courses being along land now or formerly of Marie Rowe Tetro; thence running northwesterly in a curve to the right having a radius of 1,386.99 feet along said northeasterly line of County Road, 512.86 feet to a point; thence running N 38° 56' 00" W along said northeasterly line of County Road, 703.72 feet to the point or place of beginning.

Said Parcel contains 300.87 acres, more or less, and is shown on a map entitled "PROPERTY OF CULLMAN BROTHERS INC. HOPMEADOW STREET ROUTE NO. 10 COUNTY ROAD SIMSBURY CONNECTICUT SCALE 1" = 200' MARCH 1962 SURVEY BY HAROLD R. SANDERSON C.E. & L.S. BLOOMFIELD CONNECTICUT", on file in the Town Clerk's Office in said Town of Simsbury.

and being the "Eighth Parcel" conveyed to General Cigar Co., Inc. by virtue of a Deed from Cullman Bros., Inc., dated February 21, 1964, as corrected by a Deed from Cullman, Bros., Inc. dated November 28, 1967, and recorded in the Simsbury Land Records at Volume 146, Page 60 and Volume 168, Page 254, respectively.

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TRACT 13:

Beginning at a point in the northeasterly highway line of County Road, said point being 666.19 feet northwesterly from the westerly most corner of land, now or formerly, of R.D. & M.A. Dauphinaie as measured along said northeasterly highway line. Thence N 53°-16'-40" E along other land now or formerly of Charles Schnier 513.04 feet to land now or formerly of General Cigar Co., Inc. Thence S 78°-57'-10" W, 108.92 feet along said land now or formerly of General Cigar Co., Inc. to a point. Thence continuing along land now or formerly of General Cigar Co., Inc. N 20°-18'-30" E, 19.99 feet to a point at land to be conveyed to the Town of Simsbury for Open Space. Thence S 61°-44'-40" W along said Open Space, 432.49 feet to a point in the aforesaid northeasterly highway line of County Road. Thence S 34°-54'-20" E along said highway line 121.81 feet to the point or place of beginning.

The herein described parcel contains 0.92 acres, more or less.

Record Description, South Parcel

SCHEDULE A

That certain piece or parcel of land with all improvements thereon and appurtenances thereto described as follows:

1. Acreage along Hoskins Road, comprised of approximately 49.4 acres, more or less, as shown on the Simsbury Tax Assessor's Map H05, Block 103, Lot 024

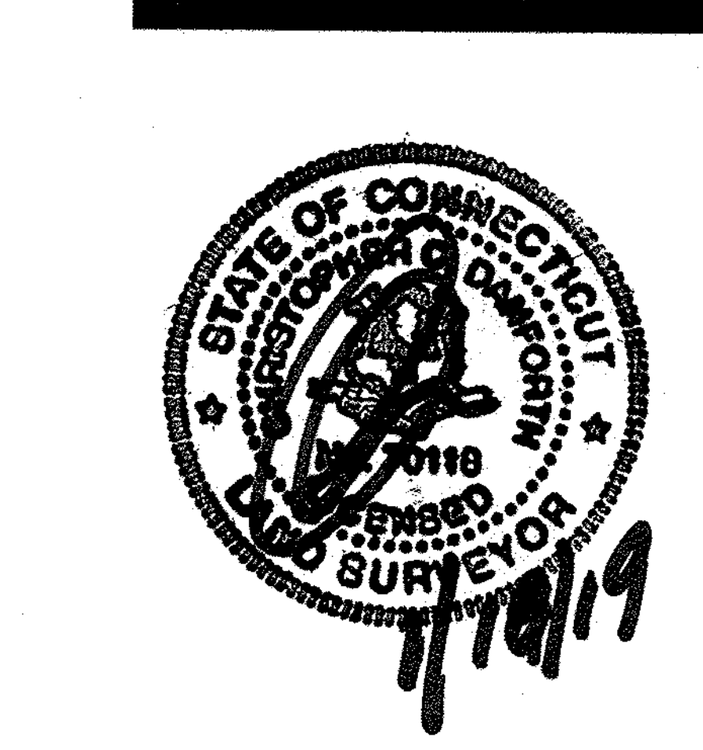
DWW Solar II, LLC

Hoskins and County Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by MAS
Checked by CCD
Issued for
Date January 10, 2019

Drawing Title
ALTA/NSPS Land Title Survey



Drawing Number
Sv-5

Sheet 5 of 7

Project Number
42256.00

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North Parcel Survey Description

BEGINNING AT A CONCRETE MONUMENT FOUND IN THE NORTHEASTERLY LINE OF COUNTY ROAD AND AT THE SOUTHERLY CORNER OF LAND NOW OR FORMERLY OF MARCKTELL, JOHN W. & AIDA B.;

THENCE N 14° 21' 25" E BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF MARCKTELL, JOHN W. & AIDA B. AND NOW OR FORMERLY OF POZZATO, JOSEPH JR. & APRIL A DISTANCE OF 637.12' IN PART BY EACH TO A POINT;

THENCE N 75° 21' 35" W BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF POZZATO, JOSEPH JR. & APRIL, LAND NOW OR FORMERLY OF POZZATO, APRIL & JOSEPH JR. AND LAND NOW OR FORMERLY POZZATTO, JOHN ANTHONY A DISTANCE OF 413.92' TO A POINT;

THENCE N 29° 52' 25" E A DISTANCE OF 169.36' TO A POINT;

THENCE N 34° 15' 35" E A DISTANCE OF 225.85' TO A POINT;

THENCE N 77° 13' 55" E A DISTANCE OF 164.27' TO A POINT;

THENCE N 63° 02' 05" E A DISTANCE OF 211.41' TO A POINT;

THENCE N 26° 23' 35" E A DISTANCE OF 305.80' TO A POINT;

THENCE N 26° 16' 45" E A DISTANCE OF 60.02' TO A POINT;

THENCE N 26° 09' 15" E A DISTANCE OF 286.97' TO A POINT, THE LAST SEVEN COURSES BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE N 67° 33' 35" W A DISTANCE OF 176.10' TO A POINT;

THENCE N 82° 08' 45" W A DISTANCE OF 181.69' TO A POINT;

THENCE N 77° 20' 05" W A DISTANCE OF 136.54' TO A POINT;

THENCE N 74° 53' 25" W A DISTANCE OF 219.59' TO A POINT, THE LAST FOUR COURSES BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE N 15° 23' 45" E A DISTANCE OF 76.94' TO A POINT;

THENCE N 12° 35' 25" E A DISTANCE OF 471.17' TO A POINT;

THENCE N 15° 18' 05" E A DISTANCE OF 314.05' TO A POINT;

THENCE N 08° 25' 45" E A DISTANCE OF 135.92' TO A POINT, THE LAST FOUR COURSES BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE N 77° 00' 15" W BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY A DISTANCE OF 31.13' TO A POINT;

THENCE N 75° 45' 05" W BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF SUTTON, STEPHEN & CARLA L., LAND NOW OR FORMERLY OF SHLANSKY, LISABETH C. AND LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY A DISTANCE OF 1215.89' TO A POINT;

THENCE N 75° 22' 15" W BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY, LAND NOW OR FORMERLY OF SZEKRETAR, RAYMOND M. & LISA K., LAND NOW OR FORMERLY OF SMITH, GEORGE P. & NADINE M. AND KLISKA, JOHN J JR. A DISTANCE OF 556.08' TO A POINT;

THENCE N 73° 36' 45" W BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF KLISKA, JOHN J. JR., LAND NOW OR FORMERLY OF PAWLING, GERARD & THERESA AND LAND NOW OR FORMERLY OF SANTIAGO, ANTHONY & JACQUELINE F. A DISTANCE OF 363.52' TO A POINT;

THENCE N 61° 44' 15" W BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF SANTIAGO, ANTHONY & JACQUELINE F., LAND NOW OR FORMERLY OF LATORRE, RONALD C. & LORITA M. AND LAND NOW OR FORMERLY OF GREENWOOD, JEFFREY A. & DELLA A. A DISTANCE OF 388.09' TO A POINT;

THENCE S 45° 54' 29" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF GREENWOOD, JEFFREY A. & DELLA A., LAND NOW OR FORMERLY OFSUMNER, JEAN H., LAND NOW OR FORMERLY OF FISHER, JEANNINE M. AND LAND NOW OR FORMERLY OF AGRAWAL, SUNIL K. A DISTANCE OF 513.04' TO A POINT;

THENCE N 42° 15' 49" W BOUNDED SOUTHERLY BY COUNTY ROAD A DISTANCE OF 121.90' TO A POINT;

THENCE N 54° 23' 05" E A DISTANCE OF 432.49' TO A POINT;

THENCE N 12° 56' 55" E A DISTANCE OF 372.11' TO A POINT;

THENCE N 13° 40' 15" E A DISTANCE OF 487.76' TO A POINT, THE LAST THREE COURSES BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE S 74° 11' 25" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY A DISTANCE OF 530.42' TO A POINT;

THENCE N 75° 27' 35" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY A DISTANCE OF 50.88' TO A POINT;

THENCE N 26° 41' 45" E A DISTANCE OF 775.24' TO A POINT;

THENCE N 45° 04' 35" E A DISTANCE OF 142.09' TO A POINT;

THENCE N 24° 19' 45" E A DISTANCE OF 509.62' TO A POINT, THE LAST THREE COURSES BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE S 75° 24' 56" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY AND LAND NOW OR FORMERLY OF DUSKA, DOROTHY K. A DISTANCE OF 2001.91' TO A POINT;

THENCE S 10° 15' 40" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF JACOBS, JOHN H & BERTHA M., LAND NOW OR FORMERLY OF LAMAJ, NADIR, LAND NOW OR FORMERLY OF BUSHAW, ANN LENZ, LAND NOW OR FORMERLY OF GILBERT, PATRICIA H. AND LAND NOW OR FORMERLY OF PITBLADO, JENNIFER M. A DISTANCE OF 746.01' TO A POINT;

THENCE S 10° 27' 07" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF PITBLADO, JENNIFER M. AND WITTELS, NEDDA E. & JILL J. A DISTANCE OF 223.31' TO A POINT;

THENCE S 08° 55' 46" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF WITTELS, NEDDA E. & JILL J. AND LAND NOW OR FORMERLY OFAUBIN, MARY C. A DISTANCE OF 367.89' TO AN IRON PIN FOUND;

THENCE S 77° 19' 53" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF WITTELS, NEDDA E. & JILL J. AND LAND NOW OR FORMERLY OF GODBEY, JOHN C. & TAMMY L. A DISTANCE OF 268.76' TO A POINT;

THENCE S 74° 20' 48" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF CREMENS, SCOTT D. & LAUREN AND LAND NOW OR FORMERLY OF WINNICK, ROBIN L. A DISTANCE OF 283.94' TO A POINT;

THENCE S 14° 24' 28" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF CHAMBERS, EVA, CHRISTINA & SCOTT, CO-TRUST, LAND NOW OR FORMERLY WRISLEY, HOLLY J. AND NIELSON, HARRY III & HEIDI A. A DISTANCE OF 508.20' TO A POINT;

THENCE S 75° 30' 02" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF NIELSON, HARRY III & HEIDI A., LAND NOW OR FORMERLY OF IONS, SHARON R. AND LAND NOW OR FORMERLY OF FEOLA, ANTHONY S. A DISTANCE OF 1192.02' TO A CONCRETE MONUMENT FOUND;

THENCE S 75° 32' 44" E BOUNDED NORHTERLY BY LAND NOW OR FORMERLY OF STATE OF CONNECTICUT A DISTANCE OF 610.98' TO A CONCRETE MONUMENT FOUND;

THENCE S 16° 06' 02" E BOUNDED EASTERLY BY HOPKINS ROAD – CONNECTICUT STATE ROUTE 202 A DISTANCE OF 132.28' TO A POINT;

THENCE S 18° 08' 34" E BOUNDED EASTERLY BY HOPKINS ROAD – CONNECTICUT STATE ROUTE 202 A DISTANCE OF 415.77' TO A POINT;

THENCE N 75° 19' 32" W BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF DORSET CROSSING LLC A DISTANCE OF 615.94' TO AN IRON PIN FOUND;

THENCE N 75° 52' 11" W BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF DORSET CROSSING LLC AND LAND NOW OR FORMERLY OF THE CONNECTICUT LIGHT AND POWER COMPANY A DISTANCE OF 698.07' TO A POINT;

THENCE N 75° 14' 52" W A DISTANCE OF 658.65' TO A POINT;

THENCE N 76° 03' 17" W A DISTANCE OF 977.84' TO A POINT, THE LAST TWO COURSES BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE S 08° 33' 22" W A DISTANCE OF 134.51' TO AN IRON PIN FOUND;

THENCE S 15° 24' 35" W A DISTANCE OF 325.72' TO AN IRON PIN FOUND, THE LAST TWO COURSES BEING BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE S 65° 17' 20" E A DISTANCE OF 369.12' TO A POINT;

THENCE S 80° 20' 43" E A DISTANCE OF 462.12' TO A POINT;

THENCE S 73° 41' 11" E A DISTANCE OF 240.53' TO A POINT, THE LAST THREE COURSES BOUNDED NOTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE S 12° 20' 04" W BOUNDED A DISTANCE OF 132.40' TO A POINT;

THENCE S 14° 27' 37" W A DISTANCE OF 305.02' TO A POINT;

THENCE S 20° 05' 56" W A DISTANCE OF 73.82' TO A CONCRETE MONUMENT HELD, THE LAST THREE COURSES BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF DORSET CROSSING LLC;

THENCE S 76° 24' 47" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF DORSET CROSSING LLC A DISTANCE OF 1057.49' TO A POINT;

THENCE S 14° 41' 36" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF RIVER BEND DEVELOPMENT CT LLC A DISTANCE OF 575.37' TO A POINT;

THENCE N 74° 31' 13" W BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF RIVER BEND DEVELOPMENT CT LLC A DISTANCE OF 947.47' TO A POINT;

THENCE S 12° 28' 23" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF RIVER BEND DEVELOPMENT LLC A DISTANCE OF 682.66' TO A POINT;

THENCE S 75° 47' 41" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF RIVER BEND DEVELOPMENT LLC A DISTANCE OF 253.20' TO AN IRON PIN FOUND;

THENCE S 11° 15' 38" W A DISTANCE OF 362.27' TO A POINT;

THENCE S 20° 37' 13" E A DISTANCE OF 378.55' TO A POINT, THE LAST TWO COURSES BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF SUNLIGHT CONSTRUCTION LLC;

THENCE S 21° 14' 09" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF SUNLIGHT CONSTRUCTION LLC AND LAND NOW OR FORMERLY LOPEZ, JANNETTE A DISTANCE OF 476.36' TO A POINT;

THENCE BOUNDED SOUTHERLY BY HOSKINS ROAD ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 1386.99, AND A CENTRAL ANGLE OF 21° 10' 42" A DISTANCE 512.67 FEET TO THE POINT OF TANGENCY;

THENCE N 46° 22' 42" W BOUNDED SOUTHERLY BY HOSKINS ROAD A DISTANCE OF 703.72' TO THE POINT OF BEGINNING;

SAID PARCEL CONTAINS 235.81 ACRES, MORE OR LESS.

South Parcel Survey Description

BEGINNING AT AN IRON PIN FOUND IN THE SOUTHERLY LINE OF HOSKINS ROAD AND AT THE NORTHEASTERLY CORNER OF LAND NOW OR FORMERLY OF JOSEFA M. KILBOURN & CHRISTINE JONES;

THENCE S 73° 11' 03" E BOUNDED NORTHERLY BY HOSKINS ROAD A DISTANCE OF 221.46' TO A POINT;

THENCE BOUNDED NORTHERLY BY HOSKINS ROAD ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 5784.29, AND A CENTRAL ANGLE OF 1° 40' 40" A DISTANCE OF 169.38 FEET TO THE POINT OF TANGENCY;

THENCE S 74° 51' 43" E BOUNDED NORTHERLY BY HOSKINS ROAD A DISTANCE OF 100.00' TO A POINT;

THENCE BOUNDED NORTHERLY BY HOSKINS ROAD ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 353.43, AND A CENTRAL ANGLE OF 28° 32' 01" A DISTANCE OF 176.01 FEET TO THE POINT OF TANGENCY;

THENCE S 46° 19' 43" E BOUNDED NORTHERLY BY HOSKINS ROAD A DISTANCE OF 175.02' TO A POINT;

THENCE BOUNDED NOTHERLY BY HOSKINS ROAD ALONG A A CURVE TO THE LEFT, HAVING A RADIUS OF 1436.99, AND A CENTRAL ANGLE OF 21° 26' 00" A DISTANCE OF 537.55 FEET TO THE POINT OF TANGENCY;

THENCE S 67° 45' 43" E BOUNDED NORTHERLY BY HOSKINS ROAD A DISTANCE OF 77.51' TO A POINT;

THENCE BOUNDED NORTHERLY BY HOSKINS ROAD ALONG A A CURVE TO THE LEFT, HAVING A RADIUS OF 1800.00, AND A CENTRAL ANGLE OF 1° 06' 49" DISTANCE OF 34.99 FEET TO THE POINT OF TANGENCY;

THENCE S 49° 46' 30" W A DISTANCE OF 575.00' TO A POINT;

THENCE S 01° 49' 16" W A DISTANCE OF 262.00' TO A POINT, THE LAST TWO COURSES BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF RB HOSKINS LLC;

THENCE S 78° 05' 47" W A DISTANCE OF 570.73' TO A POINT;

THENCE N 74° 39' 43" W A DISTANCE OF 699.20' TO A POINT;

THENCE N 74° 40' 43" W A DISTANCE OF 809.49' TO A POINT, THE LAST THREE COURSES BOUNDED SOUTHERLY BY LAND NOW OR FORMERLY OF THE TOWN OF SIMSBURY;

THENCE N 22° 59' 07" E BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF SIMSBURY A DISTANCE OF 1329.60' TO A POINT ON THE SOUTHERLY LINE OF HOSKINS ROAD;

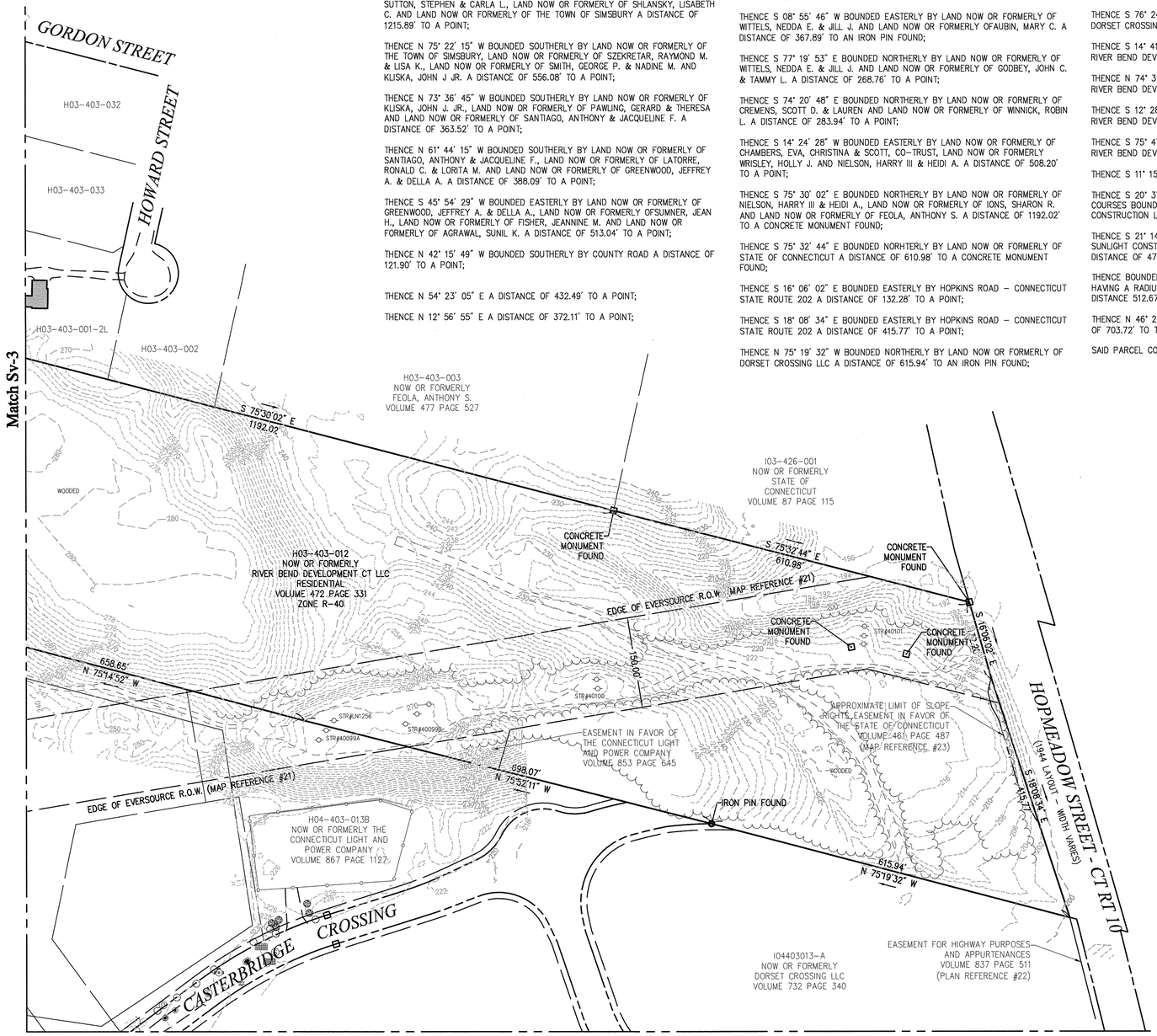
THENCE S 71° 26' 03" E A DISTANCE OF 79.32' TO A POINT;

THENCE S 73° 11' 03" E A DISTANCE OF 233.20' TO AN IRON PIN FOUND, THE LAST TWO COURSES BOUNDED NORTHERLY BY HOSKINS ROAD;
THENCE S 23° 19' 57" W BOUNDED EASTERLY BY LAND NOW OR FORMERLY OF JOSEFA M. KILBOURN & CHRISTINE JONES A DISTANCE OF 262.97' TO AN IRON PIN FOUND;

THENCE S 66° 40' 03" E BOUNDED NORTHERLY BY LAND NOW OR FORMERLY OF JOSEFA M. KILBOURN & CHRISTINE JONES A DISTANCE OF 351.12' TO AN IRON PIN FOUND;

THENCE N 23° 49' 57" E BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF JOSEFA M. KILBOURN & CHRISTINE JONES A DISTANCE OF 303.31' TO THE POINT OF BEGINNING;

SAID PARCEL CONTAINS 52.65 ACRES, MORE OR LESS.



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100 Great Meadow Road
Suite 200
Wethersfield, CT 06109
860.807.4300

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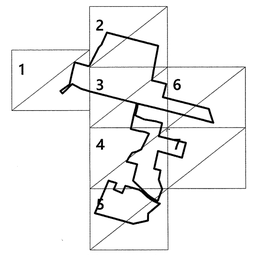
CONNECTICUT GRID – NAD 83

SEE NOTE #5



Sheet Index

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SCALE IN FEET

DWW Solar II, LLC

Hoskins and County Road
Simsbury, Connecticut

No.	Revision	Date	Appvd.

Designed by: MAS
Checked by: CCD
Issued for
Date: January 10, 2019

ALTA/NSPS
Land Title Survey

Drawing Number: Sv-6

Sheet 6 of 7

Project Number: 42256.00

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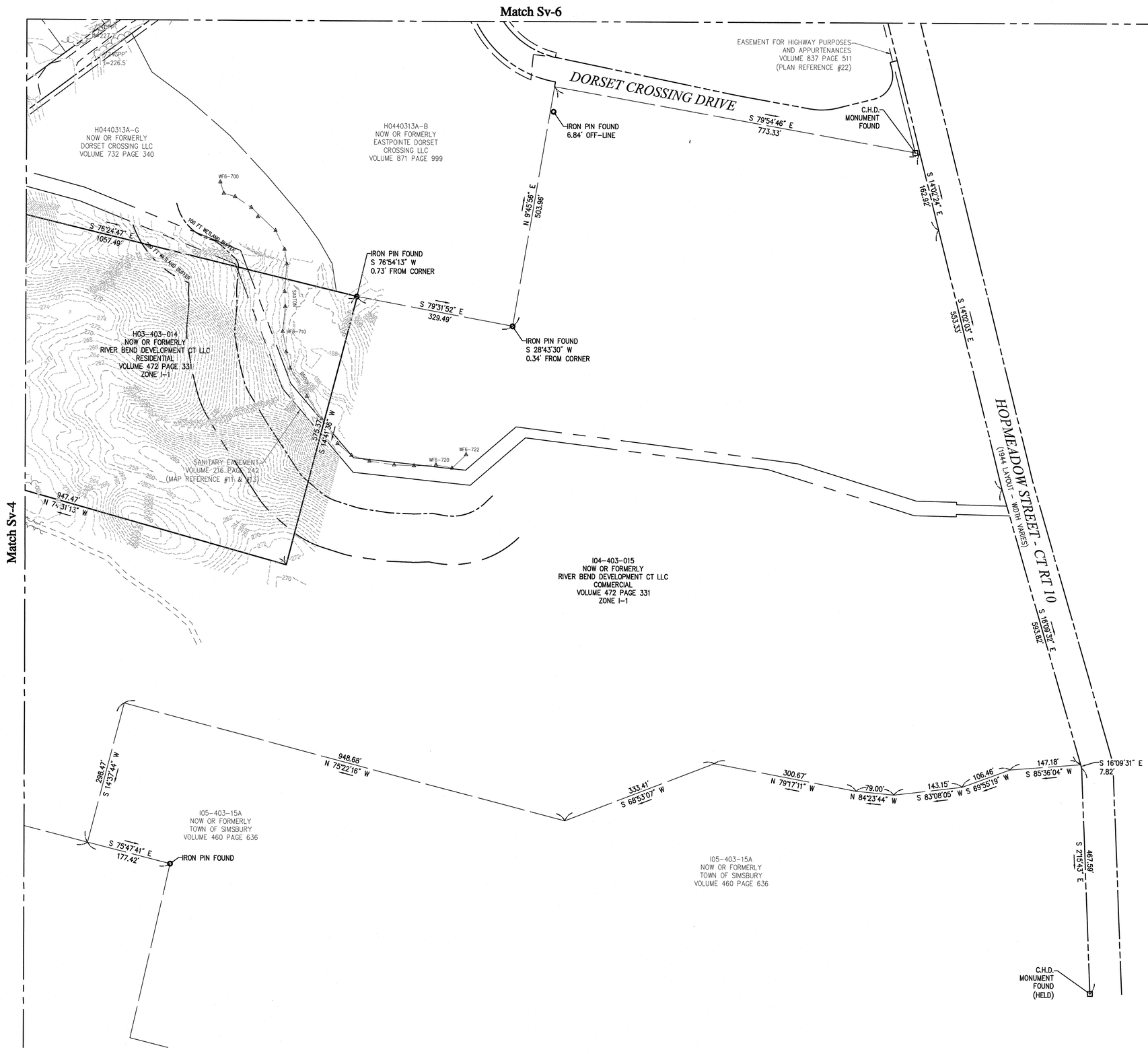

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Suite 200
Wethersfield, CT 06109
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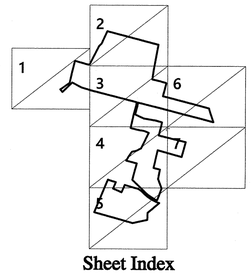
N

CONNECTICUT GRID – NAD 83

SEE NOTE #5



Sheet Index

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Date: January 10, 2019

Drawing Title: ALTA/NSPS Land Title Survey

Drawing Number: Sv-7

Sheet 7 of 7

Project Number: 42256.00