Stormwater Management Report

Torrington High School / Middle School

50 Major Besse Drive
Torrington, CT

PREPARED FOR
City of Torrington
140 Main Street
Torrington, CT 06790

February 2, 2022

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SECTION 1 - INTRODUCTION

The property is situated on approximately 51.02 acres of land at 50 Major Besse Drive in Torrington, Connecticut. It currently consists of the existing Torrington High School building, paved parking areas and drive, and several sports fields and courts. The project proposes a complete replacement of the existing High School building with a new building to serve as both the new High School and Middle School. The High school is expected to accommodate approximately 935 pupils and the middle school will accommodate approximately 645 pupils. The project also proposes newly reconfigured paved parking areas and drives. There are wetlands around the Besse park Pond, located south of the project, which are not anticipated to be disturbed. The project includes new athletic fields and courts for soccer, baseball, and tennis. The existing football field and track are not a part of this project and will not be disturbed. The property is bordered to the north by Terrace Drive housing (off of Daley Drive), to the west by State Highway 8, to the south by Winthrop Street, and to the east by residential properties off of Roulin Street.

The project was designed utilizing the City of Torrington Zoning Regulations, the 2000 Connecticut Department of Transportation (ConnDOT) Drainage Manual for pipe sizing, and the 2004 Connecticut Department of Energy and Environmental (CT DEEP) Water Quality Manual.

SECTION 2 – HYDROLOGY

The intent of the hydrologic analysis is to determine rates of runoff for maximum storm frequencies of two, ten, 25, and 100-year intervals under existing and proposed conditions for the designated offsite discharge points.

Methodology

The analysis to determine peak flows generated from the site was prepared using TR-55 procedures for calculating peak rates of runoff resulting from precipitation events and procedures for developing runoff hydrographs. HydroCAD software was utilized to perform hydrologic computations. Rainfall Frequency Estimates for precipitation frequency, based on National Oceanic and Atmospheric Administration (NOAA) data from the weather station in Hartford, were utilized to generate the flows. The following 24-hour, precipitation estimates were utilized:

2-Year	3.53 inches
10-Year	5.72 inches
25-Year	7.09 inches
100-Year	9.20 inches

Existing Conditions

The site slopes from east to west with flow being directed to the large swale along State Highway 8 using three (3) different outlets and sheet flow. There are also three (3) outlets that empty into Besse Park Pond which accommodate the southern portion of the site. Stormwater runoff from the parking lots, building roof leaders, and athletic fields is all captured with catch basins, area drains, and associated piping and conveyed to the swale along the western property line adjacent State Highway 8. The Besse Park Pond has a weir that allows overflow into the swale as well. The northern most outlet also takes flow from the northeastern subdivision from Roulin Street and consists of a 36" RCP which runs underneath the existing track and football stadium on the northern portion of the site. Flow from the swale is all directed into a large culvert which flows west under State Highway 8 and into Troy Brook.

There are existing wetlands located near the Besse Park Pond, however it is not anticipated that wetlands will be disturbed.

NRCS soils mapping indicates a large part of the site is Urban Land, considered to be generally of low permeability and classified as Hydrologic Soil Group "D." This area is made up of the building area, and parking lot areas. The athletic fields on the north of the site are classified as Hydrologic Soil Group 'C'. The wooded area east of the athletic fields is classified as Hydrologic Soil Group "A" and the wooded area on the southeast portion of the site is classified as Hydrologic Soil Group "B".

Drainage from the site is split into six (6) separate sub-watersheds:

- Sub-watershed E1-1A: This area consists of the athletic fields (except the synthetic turf football field) as well as the wooded sloped area east of the fields, the building courtyard, and off-site flow from the neighboring subdivision to the east. Flow from this watershed is diverted into the western large swale via a thirty-six (36") inch RCP and is collected through a series of area drains, catch basins, and pipes.

- Sub-watershed E1-1B: This area consists of the track and synthetic turf football field located on the western portion of the site. Flow from this watershed is collected via a synthetic turf drainage system. Runoff is allowed to flow vertically through the turf and its stone bedding and then horizontally through the stone, panel drains, and ultimately its collector trench. Flow ultimately ends up in the 36" RCP.

- Sub-watershed E1-2: This consists of an area south of the synthetic turf field and consists largely of impervious surfaces, collecting water from the build and roof leaders, as well as some runoff from the parking lot that isn't directly draining into the swale. Stormwater is diverted in this sub-watershed through a series of area drains, catch basins, pipes, and roof leaders, to the swale in an eightteen (18") inch RCP.

- Sub-watershed E1-3: This consists of the eastern portion of the building, the sloped area east of the building, and the parking lots south of the building down grade to the west to the tennis courts. This system collects flow through area drains, catch basins, roof leaders, and pipes, where it reaches an outlet in the southern most outlet in the swale through a twenty-four (24") inch RCP.

- Sub-watershed E1-4: This consists of all stormwater sheet flowing directly west into the swale. This area is mostly impervious bituminous parking.

- Sub-watershed E2 Pond: This consists of all the water being diverted into Besse Park Pond. There are three systems on site which have outlets in the bank of the east side of the pond, these direct flow from the adjacent main entrance roadway on the south of the site as well as some flow from catch basins found on Winthrop Ave and the southern subdivision. The rest of the flow entering the pond consists of direct flow from the surrounding pond area as well as the southeastern wetlands, diverted into the pond though a large box culvert. The pond has an overflow weir which flows into the swale and through a culvert under State Highway 8.

Existing Watershed Data (Existing Conditions Cover Characteristics, Existing Watershed Area Map, and hydrologic computations) have been included as Appendix A.

Proposed Conditions

Under proposed conditions, the impervious cover is increased from 18.97 acres to 19.78 acres (including new tennis courts). The discharge points remain the same under proposed conditions; the three (3) main outlets to the swale are being maintained and reused. Peak flow reduction and water quality treatment are achieved via ADS Stormtech MC-4500 underground detention chambers found on the northwest and southwest corners of the proposed school building. Additional water quality treatment is obtained through shallow bioretention areas within the parking lots and proprietary treatment units (Hydroworks Hydroguard) located within the drainage network.

- Sub-watershed P1-1A: This sub-watershed consists of the athletic field (except the synthetic turf football field) as well as the sloped area east of the field and the neighboring subdivision off of Roulin Street. This system has a few proposed structures but is mainly composed of existing drainage structures. Flow ultimately ends up in the 36" RCP to the swale.

- Sub-watershed P1-1B: This consists of the track and synthetic turf field as previously described in E1-1B.

- Sub-watershed P1-2: This sub-watershed consists of the area north of the proposed school building and a small section of the tennis courts. This system will re-use several existing structures (with new tops) connected with new piping. This system contains an underground detention basin, which then connects to an existing 18" RCP, draining into the swale west of the proposed school building.

- Sub-watershed P1-3A: This sub-watershed consists of the eastern portion of the school building, internal courtyard, parking (east of the building), sections of the baseball fields, and off-site flow from the neighboring subdivision upgrade to the east. This system consists of piping, area drains, catch basins, manholes, and ends in an underground detention basin, tying into an existing 24" RCP, the southmost outfall found in the large drainage swale along State Highway 8.

- Sub-watershed P1-3B: This sub-watershed consists of the western portion of the school building and fire access drive located west of the building. This area is collected within the drainage network in the access drive and connects into the 24" RCP.

- Sub-watershed P1-4: This sub-watershed consists of the area of the west edge of the property abutting the large swale. This mostly pervious area sheet flows into the swale with no drainage structures or piping.

- Sub-watershed P2: This sub-watershed consists of the southernmost section of the site, containing Major Besse Pond to the west, some parking and driveways in the center of the watershed, and wetlands and an existing apartment complex on the eastern section of this watershed. All stormwater on the impervious driveways will be diverted into

the pond via a system of catch basins and pipes, tying into an existing 15" RCP, 12" RCP, and 46" RCP.

The underground detention systems are proprietary HDPE systems, ADS Stormtech MC-4500s, which consist of 60" half-moon units set on 18-24 inches of stone base. Detention Pond 1 has been designed with 8 rows of 26 chambers each for a horizontal area of 112' long x 74' wide. The bottom of the 18" stone base has been set at elevation 658.00 so that the bottom of the system is at 659.50. Based on the geotechnical report, borings/pits B-1, S-7, and S-14 are the most representative excavations, which indicate no groundwater and the predominant soil characteristic is sand/gravel. We have therefore assumed a conservative infiltration rate of 5.0 inches/hour below the stone base. The system is equipped with an outlet control structure consisting of an inline manhole. The manhole will be constructed with an interior vertical concrete slab or metal plate with various orifices to provide outlet control. A 15" orifice will be at elevation 660.00 (6" above the bottom of the system) and a 24" orifice at elevation 662.35. The 18" stone base and 6" difference between the bottom of the system and the first orifice provide treatment of the water quality volume.

Detention Pond 2 has been designed with 7 rows of 30 chambers each for a horizontal area of 127' long x 64' wide. The bottom of the 24" stone base has been set at elevation 658.50 so that the bottom of the system is at 660.50. Based on the geotechnical report, borings/pits S-2 and S-3 are the most representative excavations, which indicate no groundwater and the predominant soil characteristic is sand/gravel. We have therefore assumed a conservative infiltration rate of 5.0 inches/hour below the stone base. The system is equipped with an outlet control structure consisting of an inline manhole. The manhole will be constructed with an interior vertical concrete slab or metal plate with various orifices to provide outlet control. Two (2) 15" orifices will be at elevation 661.00 (6" above the bottom of the system) and a 24" orifice at elevation 663.00 The 24" stone base and 6" difference between the bottom of the system and the first orifice provide treatment of the water quality volume.

Proposed Watershed Data (Proposed Conditions Cover Characteristics and Proposed Watershed Area Map) have been included as Appendix B. Water Quality computations can be found in Appendix D and boring log information can be found in Appendix F.

Peak Flow Comparison

Peak flows at the off-site analysis points are as follows:

Watershed	Storm Event (Type III)	Discharge Existing (cfs)	Discharge Proposed (cfs)
1 (Total Flow to Western Swale Along Highway 8)	2-Year	55.07	34.0
	10-Year	128.82	97.77
	25-Year	178.06	151.99
	100-Year	256.61	231.27

It can be seen that total peak flow rates to the existing swale will be reduced under proposed conditions for all design storms.

SECTION 3 – HYDRAULICS

The intent of the hydraulic analysis is to ensure that new on-site drainage facilities could accommodate and safely convey the 25-year, 24-hour design storm.

Methodology

The storm drain system was analyzed using the Rational Method for estimating runoff for a 25-year design storm. It was designed using guidance from the 2000 ConnDOT Drainage Manual. The software "Hydraflow Stormsewers" was used to model pipe flow through the pipe network and the software "HydroCAD" was used to model the flow through the bypass manholes.

Proposed Conditions

The site has been designed with a series of drainage facilities, including area drains, catch basins, manholes, and piping, designed to remove stormwater from paved and pervious surfaces, and convey it to water quality treatment, storage and discharge areas. There are six (6) different drainage networks under proposed conditions:

- Network 1: This consists of five (5) catch basin and associated piping located on the southern portion of the site and ties into the storm network in Winthrop Avenue. Since this area is so small, it was not analyzed as part of this analysis.
- Network 2: This network consists of six (6) catch basins, one (1) Hydroguard HG4 treatment unit, and associated piping. This system ties into the existing 12" RCP which flows into Besse Pond at the southern portion of the site.
- Network 3: This network consists of eight (8) catch basins, one (1) manhole, one (1) Hydroguard HG6 treatment unit, and associated piping. This system outlets at the same location of the existing 15" RCP which flows into the northeastern portion of Besse Pond. The outfall of this network includes a concrete wingwall with a scour hole for riprap outlet protection.
- Network 4: This network consists of seventeen (17) catch basins, four (4) manholes, nine (9) area drains, (2) Hydroguard treatment units (HG10 and HG4i), Detention Pond 2, and associated piping. This system ties into the existing 24" RCP which outlets to the western swale.
- Network 5: This network consists of fifteen (15) catch basins, three (3) manholes, Detention Pond 1, and associated piping. This system outlets at the same location of the existing 18" RCP which flows into the western swale. The outfall of this network includes a concrete wingwall with a scour hole for riprap outlet protection.
- Network 6: This network consists primarily of existing structures with a handful of proposed structures tied in. This network all flows into the large 36" RCP running under the existing football field and track. While this network was not analyzed, it should be noted that the total area contributing to the 36" RCP is being reduced from

22.06 acres to 21.05 acres. The runoff from the new impervious tennis courts is collected and routed into Detention Pond 1.

The drainage systems have been designed to safely convey storm flows from the 25-Year Design Storm, with all pipes designed with sufficient capacity and the hydraulic grade lines through the entire systems sufficiently below grade. Detailed calculations (Catchment Map and computations) for the on-site stormwater system hydraulics are included in Appendix C.

SECTION 4 – STORMWATER QUALITY

The project has been designed to address both short-term and long-term stormwater quality. Short term (during construction) treatment has been provided in the form of erosion control measures and long-term (post construction) treatment has been provided through the use of Low Impact Development principals. Erosion control has been designed per the 2002 Connecticut Erosion Control Guidelines. Long-term stormwater quality has been designed to meet the stormwater quality standards set forth in the 2004 CT DEEP Stormwater Quality Manual.

Short Term Erosion Control

The proposed erosion and sedimentation controls consider the specific characteristics of the site and the anticipated construction activities, and have been designed in accordance with the 2002 CT DEEP Guidelines for Soil Erosion and Sediment Control, as required by Standard 3 of the LID Manual.

Construction Entrances

Construction entrances will be utilized to remove sediment from construction vehicle tires and prevent it from being tracked onto adjoining paved roadway areas.

Erosion Control Barriers

Prior to any construction activity, hay bales, silt fence, or combination hay bale/silt fence barriers will be placed at the downgradient limits of construction, adjacent Beaver Pond. These barriers will be inspected once every seven calendar days and within 24 hours after every rainfall generating a discharge and replaced as necessary. Collected silt will be removed when one-half the barrier height is reached.

Temporary Seeding

Temporary Seeding will be utilized on portions where the phasing and sequencing require an initial disturbance followed by an extended period of inactivity that is greater than 30 days but less than 1 year. Temporary seeding will be conducted within 7 days after the suspension of grading work in disturbed areas where the suspension of work is expected to be more than 30 days but less than 1 year.

Soil Stabilization- Mulches

Structural (non-living) soil stabilization will be utilized to protect the soil surface on a temporary basis without the intention of promoting plant growth. When grading of the disturbed area will be suspended for a period of 30 or more consecutive days, but less than 5 months, disturbed areas will

be stabilized within 7 days of the suspension of grading through the use of mulch, non-bituminous tackifiers, erosion control netting, or other approved materials appropriate for use as a temporary soil protector. For surfaces that are not to be reworked within 5 months but will be reworked within 1 year, use temporary seeding, seeding-type mulch (hay, straw, or cellulose fiber) or when slopes are less than 3:1, wood chips, bark chips or shredded bark.

Temporary Filter Inserts

Temporary Filter Inserts will be placed in each existing catch basin and yard drains prior to the start of construction, and in each new catch basin or yard drain during construction. These devices will be removed upon final site stabilization. Filter inserts will be inspected once every seven (7) calendar days and within 24 hours after every rainfall generating a discharge. Replacement of the inserts will be as often as necessary to maintain function of the drainage structure and prevent excessive ponding due to clogged fabric. Ripped or otherwise damaged inserts will be replaced immediately.

Stockpile Management

The topsoil stockpiles which will be idle for at least 30 days will be stabilized with temporary seed and mulch no later than 7 days from the last use. Small stockpiles may be covered with impervious tarps or erosion control matting in lieu of seeding and mulching.

A geotextile silt fence or hay bale barrier will be installed around the stockpile area approximately 10 feet from the proposed toe of the slope.

Long Term Stormwater Quality

The project was designed with guidance and direction from the CT DEEP 2004 Connecticut Stormwater Quality Manual (2004 Manual).

The design intent of the 2004 Connecticut Stormwater Quality Manual is to provide a "stormwater treatment train," where stormwater quality is achieved through a series of treatment measures. Harmful pollutants, such as sediment, pathogens, organic material, hydrocarbons, metals, synthetic organic chemicals and deicing compounds, are carried by the low-flow storms. Many of these pollutants are associated with vehicular exhaust, engine leaks and deicing, therefore key areas of on-site treatment include parking lots and access drives. Additionally, rooftops are a concern as a result of atmospheric ambient accumulation. Since pollutants typically attach themselves to solid particles, treatment practices are designed to remove suspended solids.

The treatment train for this site, which represents pretreatment, includes:

- Parking lot sweeping
- Catch basins with sumps
- Biofiltration in the form of bioretention areas in the parking lot islands.
- Underground detention system and associated stone/field stone.
- Proprietary treatment units (Hydroworks Hydroguard)

The underground detention systems have been sized to treat the required stormwater quality volume for their respective sub-watersheds P1-2 and P1-3A. Storage volume is provided in the open space within the units below its first 15" orifice outlets, as well as the void spaces in the stones located

under, around and above the units. Sub-watershed P2 consists of small bioretention areas within the parking lot islands providing a toral of 5,291 cubic feet of water quality volume. For treatment of the remaining areas on site (P1-3B and other untreated portions of P2), a water quality flow rate has been used to size proprietary treatment units.

Since this site is assumed to be hydrologic soil group "D," the requirement for groundwater recharge volume is waived (groundwater recharge depth D = 0 inches) per the 2004 CT Stormwater Quality Manual.

Computations for WQV and WQF can be viewed in Appendix E. Hydroworks treatment sizing output can also be found in Appendix E.

Maintenance and Operation

Maintenance and operation will be provided as follows.

<u>During Construction</u>

- Dust Control: Moisten disturbed soil areas with water periodically, or use a non-asphaltic soil tacifier to minimize dust.
- Temporary Soil Protection: Inspect seeded areas weekly and within 24 hours after a storm generating a discharge.
- Catch Basin Filter Inserts: Inspect the fabric at least once a week and within 24 hours after the end of a storm generating a discharge. Check the fabric for structural soundness (i.e. tears), proper anchoring/alignment within the grate and ability to drain runoff (i.e. percent of clogging by sediment). Remove the sediment every week, or sooner if ponding is excessive. Each time the sediment is removed, replace the section of fabric removed with a new section. Do not remove the sediment and reuse the same section of fabric.
- Hay Bale/ Silt Fence Barrier: Inspect the barrier at least once a week and within 24 hours after the end of a storm generating a discharge. For dewatering operations, inspect frequently before, during and after pumping operations. Remove the sediment deposits when the depth reaches one half the barrier heights. Repair or replace a barrier within 24 hours of observed failure. Maintain the barrier until the contributing disturbed area is stabilized.
- Construction Entrance/Exit Pad: Maintain the pad in a condition that will prevent tracking and washing of sediment onto paved surfaces. Place additional clean gravel on top of gravel that has become silted, or remove the silted gravel and replace the gravel to the depth removed with clean gravel, as conditions warrant. Remove immediately all sediment spilled, dropped, washed or tracked onto paved surfaces. Roads adjacent to the construction site shall be cleaned at the end of each day by hand sweeping or sweeper truck.
- Existing Catch Basins and Sumps: Inspect the filter baskets as specified above. After final removal of the filter baskets at the end of construction, clean the sump of all silt and debris.

- New Catch Basins and Sumps: As new catch basins are constructed, a sediment trap shall be installed in the unit and a sediment barrier installed around the grate. Inspect the trap and barrier weekly and within 24 hours after a storm generating a discharge. After stabilization of the drainage area entering the catch basin, remove the trap and barrier and clean the basin sump of all silt and debris.

- Temporary Stockpiles: Inspect temporary stockpiles at the end of each workday to ensure that tarps are in place and secured. Temporary stockpiles that are expected to be inactive for more than 30 days should be temporarily seeded (see above).

After Construction

- Bioretention Areas: Inspect several times during the first few months to ensure that seed mix/grass cover is established. Inspect semi-annually and after major rain events for the first year. Inspect swales annually after the first year. Trash should be removed as accumulated. Sediment build-up should be removed when its depth is greater than four (4) inches. Grass should be reseeded if the side or bottom slopes exhibit erosion. Grass should be mowed once per month and should be cut to leave at least two (2) inches of height. The seed mix should be mowed 2 – 3 times per year. Mowing should not occur when the ground is soft, to avoid ruts.

- Parking Lot and Site Cleanup: Inspect on a regular basis not to exceed weekly for litter and debris.

- Parking Lot and Driveway Sweeping: At least twice a year, with the first occurring as soon as possible after snowmelt and the second not less than 90 days following the first.

- Catch Basins and Sumps: Maintenance includes removal of trash from the grate and the sump, as well as sediment from the sump. They shall be inspected semi-annually and cleaned when the sump is one half full of sediment. One of the inspections shall be after the snow and ice removal season is over, and prior to the spring rainfall events. If the sumps is filled more than half-filled with sediment at the semi-annual inspections, they shall be inspected quarterly.

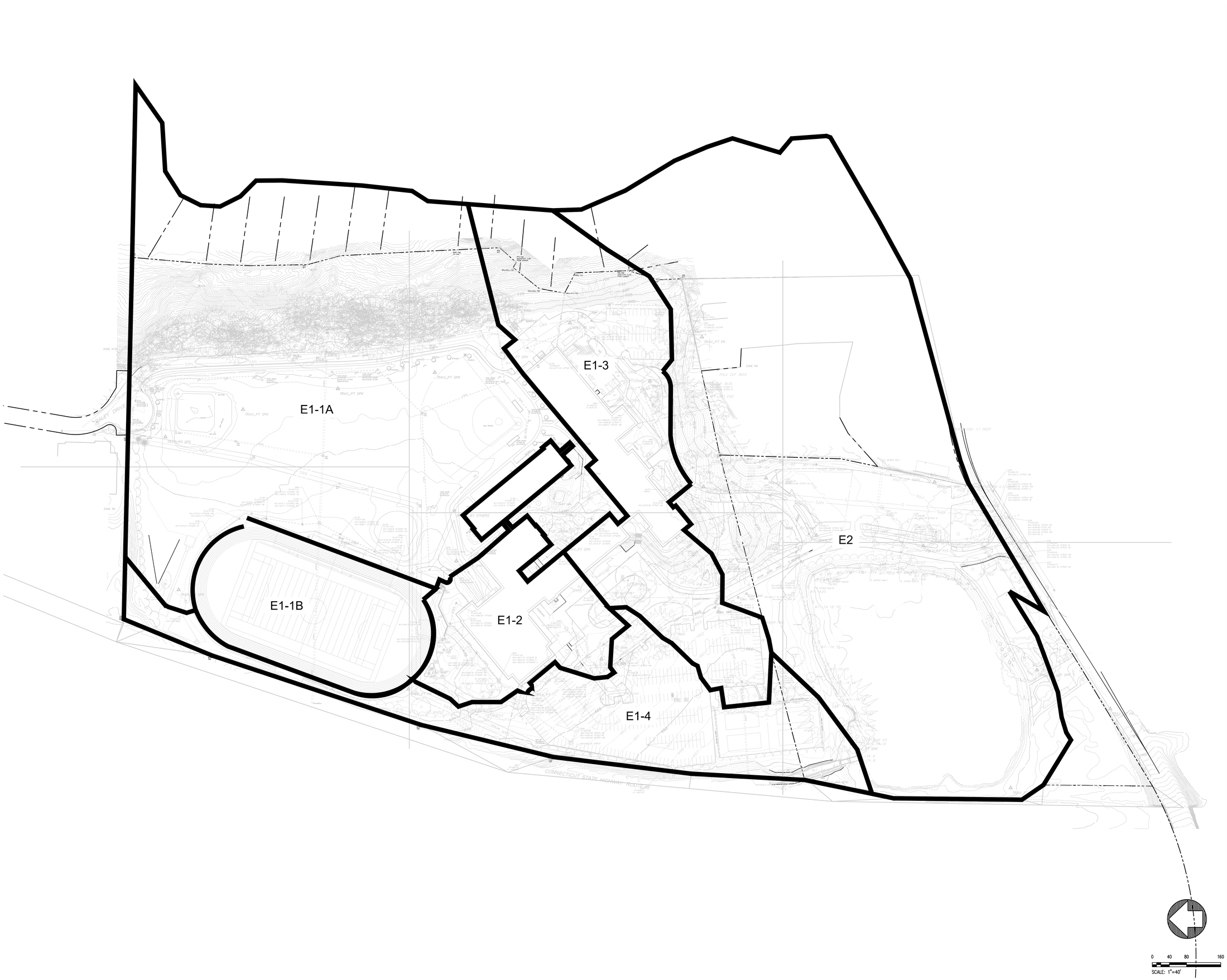
- Landscaped Areas: Inspect semi-annually for erosion or dying vegetation. Repair and stabilize any bare or eroded areas and replace vegetation as soon as possible.

APPENDIX A

EXISTING WATERSHED DATA

Existing Watershed Cover Characteristics
Torrington High School - Torrington, CT
Project # 70683.00

Watershed	Total Area (ac)	Track & Field	Impervious (ac)	Fair Grass "A"	Fair Grass "B"	Fair Grass "C"	Fair Grass "D"	Fair Woods "A"	Fair Woods "B"	Fair Woods "D"	Pond "W"	CN	Tc (min)
E1-1A	18.45	-	1.60	0.08	-	7.80	2.30	6.02	0.65	-	-	69	12.3
E1-1B	3.61	3.61	-	-	-	-	-	-	-	-	-	98	45.1
E1-2	3.39	-	2.58	-	-	0.01	0.80	-	-	-	-	92	6
E1-3	7.26	-	3.51	-	-	-	2.15	0.63	0.96	-	-	83	10.4
E1-4	5.43	-	3.00	-	-	2.05	0.38	-	-	-	-	90	6
E2	21.41	-	5.28	-	-	-	2.04	-	4.08	5.83	4.19	84	14.6
TOTAL	59.54	3.61	15.96	0.08	0.00	9.87	7.66	6.65	5.69	5.83	4.19	103.20	94.4



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Torrington

Middle/ High School & Central Administration Building

PHASE 1 OF 3: SITE & BUILDING CONSTRUCTION AND ABATEMENT & DEMOLITION OF EXISTING BUILDING

Torrington Public Schools

50 Major Besse Drive
Torrington, CT 06790

STATE PROJECT NO: 143-0076 N

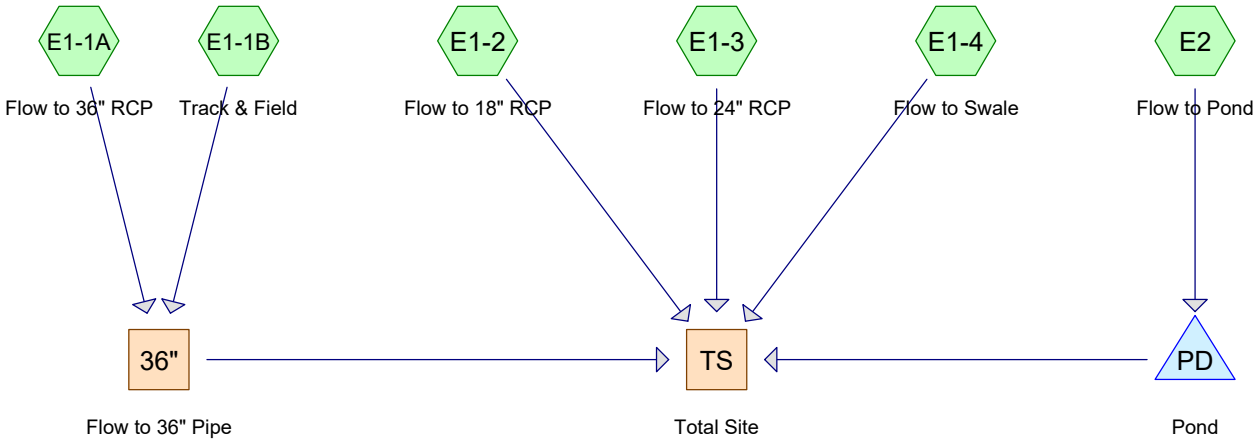
KEYPLAN

Number	Date	Issued For
		100% DESIGN DEVELOPMENT SUBMISSION

PROGRESS PRINT NOT FOR CONSTRUCTION

EXISTING WATERSHED AREA MAP

Date: 09/17/2021
Scale: 1" = 80'
Proj. Number: 19351.00
Drawing Number: EWAM



Subcat Reach Pond Link

Routing Diagram for 70683_Existing HydroCAD
Prepared by {enter your company name here}, Printed 9/9/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.080	49	50-75% Grass cover, Fair, HSG A (E1-1A)
9.860	79	50-75% Grass cover, Fair, HSG C (E1-1A, E1-2, E1-4)
8.270	84	50-75% Grass cover, Fair, HSG D (E1-1A, E1-2, E1-3, E1-4, E2)
15.360	98	Paved parking, HSG D (E1-1A, E1-2, E1-3, E1-4, E2)
3.610	98	Track & Field (E1-1B)
4.190	98	Water Surface, 0% imp, HSG A (E2)
0.630	36	Woods, Fair, HSG A (E1-3)
5.690	60	Woods, Fair, HSG B (E1-1A, E1-3, E2)
5.830	79	Woods, Fair, HSG D (E2)
6.020	45	Woods, Poor, HSG A (E1-1A)
59.540	**81**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.920	HSG A	E1-1A, E1-3, E2
5.690	HSG B	E1-1A, E1-3, E2
9.860	HSG C	E1-1A, E1-2, E1-4
29.460	HSG D	E1-1A, E1-2, E1-3, E1-4, E2
3.610	Other	E1-1B
59.540		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.080	0.000	9.860	8.270	0.000	18.210	50-75% Grass cover, Fair	E1-1A, E1-2, E1-3, E1-4, E2
0.000	0.000	0.000	15.360	0.000	15.360	Paved parking	E1-1A, E1-2, E1-3, E1-4, E2
0.000	0.000	0.000	0.000	3.610	3.610	Track & Field	E1-1B
4.190	0.000	0.000	0.000	0.000	4.190	Water Surface, 0% imp	E2
0.630	5.690	0.000	5.830	0.000	12.150	Woods, Fair	E1-1A, E1-3, E2
6.020	0.000	0.000	0.000	0.000	6.020	Woods, Poor	E1-1A
10.920	**5.690**	**9.860**	**29.460**	**3.610**	**59.540**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	E1-1A	0.00	0.00	687.0	0.0250	0.012	12.0	0.0	0.0
2	E1-1B	0.00	0.00	200.0	0.0050	0.020	12.0	1.0	0.0
3	E1-1B	0.00	0.00	500.0	0.0050	0.013	8.0	0.0	0.0
4	E1-2	0.00	0.00	453.0	0.0215	0.012	18.0	0.0	0.0
5	E1-3	0.00	0.00	605.0	0.0150	0.012	12.0	0.0	0.0
6	E1-3	0.00	0.00	462.0	0.0215	0.012	18.0	0.0	0.0
7	E1-3	0.00	0.00	481.0	0.0215	0.012	24.0	0.0	0.0
8	E2	0.00	0.00	252.0	0.0100	0.012	24.0	0.0	0.0

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

SubcatchmentE1-1A: Flow to 36" RCP Runoff Area=18.450 ac 8.67% Impervious Runoff Depth>0.97"
Flow Length=986' Tc=12.3 min CN=69 Runoff=15.30 cfs 1.490 af

SubcatchmentE1-1B: Track & Field Runoff Area=3.610 ac 100.00% Impervious Runoff Depth>3.28"
Flow Length=725' Slope=0.0050 '/' Tc=45.1 min CN=98 Runoff=5.84 cfs 0.985 af

SubcatchmentE1-2: Flow to 18" RCP Runoff Area=3.380 ac 58.28% Impervious Runoff Depth>2.66"
Flow Length=553' Tc=6.0 min CN=92 Runoff=10.03 cfs 0.750 af

SubcatchmentE1-3: Flow to 24" RCP Runoff Area=7.250 ac 48.41% Impervious Runoff Depth>1.88"
Flow Length=1,796' Tc=10.4 min CN=83 Runoff=13.68 cfs 1.136 af

SubcatchmentE1-4: Flow to Swale Runoff Area=5.430 ac 55.25% Impervious Runoff Depth>2.47"
Flow Length=599' Tc=6.0 min CN=90 Runoff=15.18 cfs 1.120 af

SubcatchmentE2: Flow to Pond Runoff Area=21.420 ac 24.65% Impervious Runoff Depth>1.96"
Flow Length=875' Tc=14.6 min CN=84 Runoff=37.50 cfs 3.493 af

Reach 36": Flow to 36" Pipe Inflow=18.32 cfs 2.475 af
Outflow=18.32 cfs 2.475 af

Reach TS: Total Site Inflow=55.07 cfs 8.462 af
Outflow=55.07 cfs 8.462 af

Pond PD: Pond Peak Elev=650.36' Storage=1.390 af Inflow=37.50 cfs 3.493 af
Outflow=14.31 cfs 2.981 af

Total Runoff Area = 59.540 ac Runoff Volume = 8.974 af Average Runoff Depth = 1.81"
68.14% Pervious = 40.570 ac 31.86% Impervious = 18.970 ac

Summary for Subcatchment E1-1A: Flow to 36" RCP

Runoff = 15.30 cfs @ 12.19 hrs, Volume= 1.490 af, Depth> 0.97"

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 2-Year Rainfall=3.53"

Area (ac)	CN	Description
1.600	98	Paved parking, HSG D
0.080	49	50-75% Grass cover, Fair, HSG A
7.800	79	50-75% Grass cover, Fair, HSG C
2.300	84	50-75% Grass cover, Fair, HSG D
6.020	45	Woods, Poor, HSG A
0.650	60	Woods, Fair, HSG B
18.450	69	Weighted Average
16.850		91.33% Pervious Area
1.600		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0200	0.18		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
1.4	199	0.0210	2.33		**Shallow Concentrated Flow, B-C FIELD** Unpaved Kv= 16.1 fps
1.5	687	0.0250	7.77	6.10	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
12.3	986	Total			

Summary for Subcatchment E1-1B: Track & Field

Runoff = 5.84 cfs @ 12.59 hrs, Volume= 0.985 af, Depth> 3.28"

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=3.53"

	Area (ac)	CN	Description
*	3.610	98	Track & Field
	3.610		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Summary for Subcatchment E1-2: Flow to 18" RCP

Runoff = 10.03 cfs @ 12.09 hrs, Volume= 0.750 af, Depth> 2.66"

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=3.53"

Area (ac)	CN	Description
1.970	98	Paved parking, HSG D
0.010	79	50-75% Grass cover, Fair, HSG C
1.400	84	50-75% Grass cover, Fair, HSG D
3.380	92	Weighted Average
1.410		41.72% Pervious Area
1.970		58.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0900	0.32		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
0.8	453	0.0215	9.44	16.69	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
6.0	553	Total			

Summary for Subcatchment E1-3: Flow to 24" RCP

Runoff = 13.68 cfs @ 12.15 hrs, Volume= 1.136 af, Depth> 1.88"

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 2-Year Rainfall=3.53"

Area (ac)	CN	Description
3.510	98	Paved parking, HSG D
2.150	84	50-75% Grass cover, Fair, HSG D
0.630	36	Woods, Fair, HSG A
0.960	60	Woods, Fair, HSG B
7.250	83	Weighted Average
3.740		51.59% Pervious Area
3.510		48.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.3300	0.25		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.3	112	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.2	36	0.0300	3.52		**Shallow Concentrated Flow, C-D STREET** Paved Kv= 20.3 fps
1.7	605	0.0150	6.02	4.73	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.8	462	0.0215	9.44	16.69	**Pipe Channel, E-F PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.7	481	0.0215	11.44	35.94	**Pipe Channel, F-G PIPE** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.4	1,796	Total			

Summary for Subcatchment E1-4: Flow to Swale

Runoff = 15.18 cfs @ 12.09 hrs, Volume= 1.120 af, Depth> 2.47"

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=3.53"

Area (ac)	CN	Description
3.000	98	Paved parking, HSG D
2.050	79	50-75% Grass cover, Fair, HSG C
0.380	84	50-75% Grass cover, Fair, HSG D
5.430	90	Weighted Average
2.430		44.75% Pervious Area
3.000		55.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Summary for Subcatchment E2: Flow to Pond

Runoff = 37.50 cfs @ 12.20 hrs, Volume= 3.493 af, Depth> 1.96"

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=3.53"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
5.830	79	Woods, Fair, HSG D
4.080	60	Woods, Fair, HSG B
2.040	84	50-75% Grass cover, Fair, HSG D
5.280	98	Paved parking, HSG D
21.420	84	Weighted Average
16.140		75.35% Pervious Area
5.280		24.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Summary for Reach 36": Flow to 36" Pipe

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

Inflow Area = 22.060 ac, 23.62% Impervious, Inflow Depth > 1.35" for 2-Year event
Inflow = 18.32 cfs @ 12.21 hrs, Volume= 2.475 af
Outflow = 18.32 cfs @ 12.21 hrs, Volume= 2.475 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach TS: Total Site

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

Inflow Area = 59.540 ac, 31.86% Impervious, Inflow Depth > 1.71" for 2-Year event
Inflow = 55.07 cfs @ 12.14 hrs, Volume= 8.462 af
Outflow = 55.07 cfs @ 12.14 hrs, Volume= 8.462 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond PD: Pond

Inflow Area = 21.420 ac, 24.65% Impervious, Inflow Depth > 1.96" for 2-Year event
Inflow = 37.50 cfs @ 12.20 hrs, Volume= 3.493 af
Outflow = 14.31 cfs @ 12.59 hrs, Volume= 2.981 af, Atten= 62%, Lag= 23.0 min
Primary = 14.31 cfs @ 12.59 hrs, Volume= 2.981 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 650.36' @ 12.59 hrs Surf.Area= 3.860 ac Storage= 1.390 af

Plug-Flow detention time= 135.9 min calculated for 2.981 af (85% of inflow)
Center-of-Mass det. time= 73.1 min (904.6 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=14.29 cfs @ 12.59 hrs HW=650.36' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 14.29 cfs @ 1.29 fps)

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

SubcatchmentE1-1A: Flow to 36" RCP Runoff Area=18.450 ac 8.67% Impervious Runoff Depth>2.49"
Flow Length=986' Tc=12.3 min CN=69 Runoff=42.79 cfs 3.828 af

SubcatchmentE1-1B: Track & Field Runoff Area=3.610 ac 100.00% Impervious Runoff Depth>5.45"
Flow Length=725' Slope=0.0050 '/' Tc=45.1 min CN=98 Runoff=9.53 cfs 1.639 af

SubcatchmentE1-2: Flow to 18" RCP Runoff Area=3.380 ac 58.28% Impervious Runoff Depth>4.79"
Flow Length=553' Tc=6.0 min CN=92 Runoff=17.46 cfs 1.350 af

SubcatchmentE1-3: Flow to 24" RCP Runoff Area=7.250 ac 48.41% Impervious Runoff Depth>3.83"
Flow Length=1,796' Tc=10.4 min CN=83 Runoff=27.59 cfs 2.312 af

SubcatchmentE1-4: Flow to Swale Runoff Area=5.430 ac 55.25% Impervious Runoff Depth>4.57"
Flow Length=599' Tc=6.0 min CN=90 Runoff=27.21 cfs 2.068 af

SubcatchmentE2: Flow to Pond Runoff Area=21.420 ac 24.65% Impervious Runoff Depth>3.93"
Flow Length=875' Tc=14.6 min CN=84 Runoff=74.44 cfs 7.008 af

Reach 36": Flow to 36" Pipe Inflow=47.47 cfs 5.467 af
Outflow=47.47 cfs 5.467 af

Reach TS: Total Site Inflow=128.82 cfs 17.634 af
Outflow=128.82 cfs 17.634 af

Pond PD: Pond Peak Elev=650.60' Storage=2.317 af Inflow=74.44 cfs 7.008 af
Outflow=39.37 cfs 6.438 af

Total Runoff Area = 59.540 ac Runoff Volume = 18.203 af Average Runoff Depth = 3.67"
68.14% Pervious = 40.570 ac 31.86% Impervious = 18.970 ac

Summary for Subcatchment E1-1A: Flow to 36" RCP

Runoff = 42.79 cfs @ 12.18 hrs, Volume= 3.828 af, Depth> 2.49"

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=5.72"

Area (ac)	CN	Description
1.600	98	Paved parking, HSG D
0.080	49	50-75% Grass cover, Fair, HSG A
7.800	79	50-75% Grass cover, Fair, HSG C
2.300	84	50-75% Grass cover, Fair, HSG D
6.020	45	Woods, Poor, HSG A
0.650	60	Woods, Fair, HSG B
18.450	69	Weighted Average
16.850		91.33% Pervious Area
1.600		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0200	0.18		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
1.4	199	0.0210	2.33		**Shallow Concentrated Flow, B-C FIELD** Unpaved Kv= 16.1 fps
1.5	687	0.0250	7.77	6.10	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
12.3	986	Total			

Summary for Subcatchment E1-1B: Track & Field

Runoff = 9.53 cfs @ 12.59 hrs, Volume= 1.639 af, Depth> 5.45"

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=5.72"

	Area (ac)	CN	Description
*	3.610	98	Track & Field
	3.610		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Summary for Subcatchment E1-2: Flow to 18" RCP

Runoff = 17.46 cfs @ 12.09 hrs, Volume= 1.350 af, Depth> 4.79"

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=5.72"

Area (ac)	CN	Description
1.970	98	Paved parking, HSG D
0.010	79	50-75% Grass cover, Fair, HSG C
1.400	84	50-75% Grass cover, Fair, HSG D
3.380	92	Weighted Average
1.410		41.72% Pervious Area
1.970		58.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0900	0.32		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
0.8	453	0.0215	9.44	16.69	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
6.0	553	Total			

Summary for Subcatchment E1-3: Flow to 24" RCP

Runoff = 27.59 cfs @ 12.15 hrs, Volume= 2.312 af, Depth> 3.83"

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=5.72"

Area (ac)	CN	Description
3.510	98	Paved parking, HSG D
2.150	84	50-75% Grass cover, Fair, HSG D
0.630	36	Woods, Fair, HSG A
0.960	60	Woods, Fair, HSG B
7.250	83	Weighted Average
3.740		51.59% Pervious Area
3.510		48.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.3300	0.25		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.3	112	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.2	36	0.0300	3.52		**Shallow Concentrated Flow, C-D STREET** Paved Kv= 20.3 fps
1.7	605	0.0150	6.02	4.73	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.8	462	0.0215	9.44	16.69	**Pipe Channel, E-F PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.7	481	0.0215	11.44	35.94	**Pipe Channel, F-G PIPE** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.4	1,796	Total			

Summary for Subcatchment E1-4: Flow to Swale

Runoff = 27.21 cfs @ 12.09 hrs, Volume= 2.068 af, Depth> 4.57"

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=5.72"

Area (ac)	CN	Description
3.000	98	Paved parking, HSG D
2.050	79	50-75% Grass cover, Fair, HSG C
0.380	84	50-75% Grass cover, Fair, HSG D
5.430	90	Weighted Average
2.430		44.75% Pervious Area
3.000		55.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Summary for Subcatchment E2: Flow to Pond

Runoff = 74.44 cfs @ 12.20 hrs, Volume= 7.008 af, Depth> 3.93"

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=5.72"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
5.830	79	Woods, Fair, HSG D
4.080	60	Woods, Fair, HSG B
2.040	84	50-75% Grass cover, Fair, HSG D
5.280	98	Paved parking, HSG D
21.420	84	Weighted Average
16.140		75.35% Pervious Area
5.280		24.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Summary for Reach 36": Flow to 36" Pipe

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

Inflow Area = 22.060 ac, 23.62% Impervious, Inflow Depth > 2.97" for 10-Year event
Inflow = 47.47 cfs @ 12.18 hrs, Volume= 5.467 af
Outflow = 47.47 cfs @ 12.18 hrs, Volume= 5.467 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach TS: Total Site

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

Inflow Area = 59.540 ac, 31.86% Impervious, Inflow Depth > 3.55" for 10-Year event
Inflow = 128.82 cfs @ 12.15 hrs, Volume= 17.634 af
Outflow = 128.82 cfs @ 12.15 hrs, Volume= 17.634 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond PD: Pond

Inflow Area = 21.420 ac, 24.65% Impervious, Inflow Depth > 3.93" for 10-Year event
Inflow = 74.44 cfs @ 12.20 hrs, Volume= 7.008 af
Outflow = 39.37 cfs @ 12.46 hrs, Volume= 6.438 af, Atten= 47%, Lag= 15.9 min
Primary = 39.37 cfs @ 12.46 hrs, Volume= 6.438 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 650.60' @ 12.46 hrs Surf.Area= 3.913 ac Storage= 2.317 af

Plug-Flow detention time= 97.0 min calculated for 6.425 af (92% of inflow)
Center-of-Mass det. time= 56.9 min (868.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=39.29 cfs @ 12.46 hrs HW=650.60' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 39.29 cfs @ 1.86 fps)

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

SubcatchmentE1-1A: Flow to 36" RCP Runoff Area=18.450 ac 8.67% Impervious Runoff Depth>3.58"
Flow Length=986' Tc=12.3 min CN=69 Runoff=62.63 cfs 5.504 af

SubcatchmentE1-1B: Track & Field Runoff Area=3.610 ac 100.00% Impervious Runoff Depth>6.81"
Flow Length=725' Slope=0.0050 '/' Tc=45.1 min CN=98 Runoff=11.83 cfs 2.048 af

SubcatchmentE1-2: Flow to 18" RCP Runoff Area=3.380 ac 58.28% Impervious Runoff Depth>6.14"
Flow Length=553' Tc=6.0 min CN=92 Runoff=22.05 cfs 1.729 af

SubcatchmentE1-3: Flow to 24" RCP Runoff Area=7.250 ac 48.41% Impervious Runoff Depth>5.10"
Flow Length=1,796' Tc=10.4 min CN=83 Runoff=36.44 cfs 3.084 af

SubcatchmentE1-4: Flow to Swale Runoff Area=5.430 ac 55.25% Impervious Runoff Depth>5.91"
Flow Length=599' Tc=6.0 min CN=90 Runoff=34.65 cfs 2.673 af

SubcatchmentE2: Flow to Pond Runoff Area=21.420 ac 24.65% Impervious Runoff Depth>5.21"
Flow Length=875' Tc=14.6 min CN=84 Runoff=97.84 cfs 9.307 af

Reach 36": Flow to 36" Pipe Inflow=67.93 cfs 7.552 af
Outflow=67.93 cfs 7.552 af

Reach TS: Total Site Inflow=178.06 cfs 23.745 af
Outflow=178.06 cfs 23.745 af

Pond PD: Pond Peak Elev=650.72' Storage=2.793 af Inflow=97.84 cfs 9.307 af
Outflow=55.83 cfs 8.706 af

Total Runoff Area = 59.540 ac Runoff Volume = 24.345 af Average Runoff Depth = 4.91"
68.14% Pervious = 40.570 ac 31.86% Impervious = 18.970 ac

Summary for Subcatchment E1-1A: Flow to 36" RCP

Runoff = 62.63 cfs @ 12.17 hrs, Volume= 5.504 af, Depth> 3.58"

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=7.09"

Area (ac)	CN	Description
1.600	98	Paved parking, HSG D
0.080	49	50-75% Grass cover, Fair, HSG A
7.800	79	50-75% Grass cover, Fair, HSG C
2.300	84	50-75% Grass cover, Fair, HSG D
6.020	45	Woods, Poor, HSG A
0.650	60	Woods, Fair, HSG B
18.450	69	Weighted Average
16.850		91.33% Pervious Area
1.600		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0200	0.18		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
1.4	199	0.0210	2.33		**Shallow Concentrated Flow, B-C FIELD** Unpaved Kv= 16.1 fps
1.5	687	0.0250	7.77	6.10	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
12.3	986	Total			

Summary for Subcatchment E1-1B: Track & Field

Runoff = 11.83 cfs @ 12.59 hrs, Volume= 2.048 af, Depth> 6.81"

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=7.09"

	Area (ac)	CN	Description
*	3.610	98	Track & Field
	3.610		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Summary for Subcatchment E1-2: Flow to 18" RCP

Runoff = 22.05 cfs @ 12.09 hrs, Volume= 1.729 af, Depth> 6.14"

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=7.09"

Area (ac)	CN	Description
1.970	98	Paved parking, HSG D
0.010	79	50-75% Grass cover, Fair, HSG C
1.400	84	50-75% Grass cover, Fair, HSG D
3.380	92	Weighted Average
1.410		41.72% Pervious Area
1.970		58.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0900	0.32		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
0.8	453	0.0215	9.44	16.69	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
6.0	553	Total			

Summary for Subcatchment E1-3: Flow to 24" RCP

Runoff = 36.44 cfs @ 12.15 hrs, Volume= 3.084 af, Depth> 5.10"

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=7.09"

Area (ac)	CN	Description
3.510	98	Paved parking, HSG D
2.150	84	50-75% Grass cover, Fair, HSG D
0.630	36	Woods, Fair, HSG A
0.960	60	Woods, Fair, HSG B
7.250	83	Weighted Average
3.740		51.59% Pervious Area
3.510		48.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.3300	0.25		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.3	112	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.2	36	0.0300	3.52		**Shallow Concentrated Flow, C-D STREET** Paved Kv= 20.3 fps
1.7	605	0.0150	6.02	4.73	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.8	462	0.0215	9.44	16.69	**Pipe Channel, E-F PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.7	481	0.0215	11.44	35.94	**Pipe Channel, F-G PIPE** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.4	1,796	Total			

Summary for Subcatchment E1-4: Flow to Swale

Runoff = 34.65 cfs @ 12.09 hrs, Volume= 2.673 af, Depth> 5.91"

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=7.09"

Area (ac)	CN	Description
3.000	98	Paved parking, HSG D
2.050	79	50-75% Grass cover, Fair, HSG C
0.380	84	50-75% Grass cover, Fair, HSG D
5.430	90	Weighted Average
2.430		44.75% Pervious Area
3.000		55.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Summary for Subcatchment E2: Flow to Pond

Runoff = 97.84 cfs @ 12.20 hrs, Volume= 9.307 af, Depth> 5.21"

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=7.09"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
5.830	79	Woods, Fair, HSG D
4.080	60	Woods, Fair, HSG B
2.040	84	50-75% Grass cover, Fair, HSG D
5.280	98	Paved parking, HSG D
21.420	84	Weighted Average
16.140		75.35% Pervious Area
5.280		24.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Summary for Reach 36": Flow to 36" Pipe

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

Inflow Area = 22.060 ac, 23.62% Impervious, Inflow Depth > 4.11" for 25-Year event
Inflow = 67.93 cfs @ 12.18 hrs, Volume= 7.552 af
Outflow = 67.93 cfs @ 12.18 hrs, Volume= 7.552 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach TS: Total Site

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

Inflow Area = 59.540 ac, 31.86% Impervious, Inflow Depth > 4.79" for 25-Year event
Inflow = 178.06 cfs @ 12.15 hrs, Volume= 23.745 af
Outflow = 178.06 cfs @ 12.15 hrs, Volume= 23.745 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond PD: Pond

Inflow Area = 21.420 ac, 24.65% Impervious, Inflow Depth > 5.21" for 25-Year event
Inflow = 97.84 cfs @ 12.20 hrs, Volume= 9.307 af
Outflow = 55.83 cfs @ 12.43 hrs, Volume= 8.706 af, Atten= 43%, Lag= 14.0 min
Primary = 55.83 cfs @ 12.43 hrs, Volume= 8.706 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 650.72' @ 12.43 hrs Surf.Area= 3.939 ac Storage= 2.793 af

Plug-Flow detention time= 85.7 min calculated for 8.706 af (94% of inflow)
Center-of-Mass det. time= 51.9 min (855.7 - 803.9)

Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=55.71 cfs @ 12.43 hrs HW=650.72' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 55.71 cfs @ 2.13 fps)

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

SubcatchmentE1-1A: Flow to 36" RCP Runoff Area=18.450 ac 8.67% Impervious Runoff Depth>5.37"
Flow Length=986' Tc=12.3 min CN=69 Runoff=94.28 cfs 8.264 af

SubcatchmentE1-1B: Track & Field Runoff Area=3.610 ac 100.00% Impervious Runoff Depth>8.90"
Flow Length=725' Slope=0.0050 '/' Tc=45.1 min CN=98 Runoff=15.38 cfs 2.679 af

SubcatchmentE1-2: Flow to 18" RCP Runoff Area=3.380 ac 58.28% Impervious Runoff Depth>8.23"
Flow Length=553' Tc=6.0 min CN=92 Runoff=29.07 cfs 2.317 af

SubcatchmentE1-3: Flow to 24" RCP Runoff Area=7.250 ac 48.41% Impervious Runoff Depth>7.12"
Flow Length=1,796' Tc=10.4 min CN=83 Runoff=50.05 cfs 4.301 af

SubcatchmentE1-4: Flow to Swale Runoff Area=5.430 ac 55.25% Impervious Runoff Depth>7.98"
Flow Length=599' Tc=6.0 min CN=90 Runoff=46.02 cfs 3.613 af

SubcatchmentE2: Flow to Pond Runoff Area=21.420 ac 24.65% Impervious Runoff Depth>7.24"
Flow Length=875' Tc=14.6 min CN=84 Runoff=133.75 cfs 12.918 af

Reach 36": Flow to 36" Pipe Inflow=101.65 cfs 10.943 af
Outflow=101.65 cfs 10.943 af

Reach TS: Total Site Inflow=256.61 cfs 33.448 af
Outflow=256.61 cfs 33.448 af

Pond PD: Pond Peak Elev=650.90' Storage=3.479 af Inflow=133.75 cfs 12.918 af
Outflow=80.39 cfs 12.275 af

Total Runoff Area = 59.540 ac Runoff Volume = 34.092 af Average Runoff Depth = 6.87"
68.14% Pervious = 40.570 ac 31.86% Impervious = 18.970 ac

Summary for Subcatchment E1-1A: Flow to 36" RCP

Runoff = 94.28 cfs @ 12.17 hrs, Volume= 8.264 af, Depth> 5.37"

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 100-Year Rainfall=9.20"

Area (ac)	CN	Description
1.600	98	Paved parking, HSG D
0.080	49	50-75% Grass cover, Fair, HSG A
7.800	79	50-75% Grass cover, Fair, HSG C
2.300	84	50-75% Grass cover, Fair, HSG D
6.020	45	Woods, Poor, HSG A
0.650	60	Woods, Fair, HSG B
18.450	69	Weighted Average
16.850		91.33% Pervious Area
1.600		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0200	0.18		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
1.4	199	0.0210	2.33		**Shallow Concentrated Flow, B-C FIELD** Unpaved Kv= 16.1 fps
1.5	687	0.0250	7.77	6.10	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
12.3	986	Total			

Summary for Subcatchment E1-1B: Track & Field

Runoff = 15.38 cfs @ 12.59 hrs, Volume= 2.679 af, Depth> 8.90"

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 100-Year Rainfall=9.20"

	Area (ac)	CN	Description
*	3.610	98	Track & Field
	3.610		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Summary for Subcatchment E1-2: Flow to 18" RCP

Runoff = 29.07 cfs @ 12.09 hrs, Volume= 2.317 af, Depth> 8.23"

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 100-Year Rainfall=9.20"

Area (ac)	CN	Description
1.970	98	Paved parking, HSG D
0.010	79	50-75% Grass cover, Fair, HSG C
1.400	84	50-75% Grass cover, Fair, HSG D
3.380	92	Weighted Average
1.410		41.72% Pervious Area
1.970		58.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0900	0.32		**Sheet Flow, A-B FIELD** Grass: Short n= 0.150 P2= 3.47"
0.8	453	0.0215	9.44	16.69	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
6.0	553	Total			

Summary for Subcatchment E1-3: Flow to 24" RCP

Runoff = 50.05 cfs @ 12.14 hrs, Volume= 4.301 af, Depth> 7.12"

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 100-Year Rainfall=9.20"

Area (ac)	CN	Description
3.510	98	Paved parking, HSG D
2.150	84	50-75% Grass cover, Fair, HSG D
0.630	36	Woods, Fair, HSG A
0.960	60	Woods, Fair, HSG B
7.250	83	Weighted Average
3.740		51.59% Pervious Area
3.510		48.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.3300	0.25		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.3	112	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.2	36	0.0300	3.52		**Shallow Concentrated Flow, C-D STREET** Paved Kv= 20.3 fps
1.7	605	0.0150	6.02	4.73	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.8	462	0.0215	9.44	16.69	**Pipe Channel, E-F PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.7	481	0.0215	11.44	35.94	**Pipe Channel, F-G PIPE** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.4	1,796	Total			

Summary for Subcatchment E1-4: Flow to Swale

Runoff = 46.02 cfs @ 12.09 hrs, Volume= 3.613 af, Depth> 7.98"

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 100-Year Rainfall=9.20"

Area (ac)	CN	Description
3.000	98	Paved parking, HSG D
2.050	79	50-75% Grass cover, Fair, HSG C
0.380	84	50-75% Grass cover, Fair, HSG D
5.430	90	Weighted Average
2.430		44.75% Pervious Area
3.000		55.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Summary for Subcatchment E2: Flow to Pond

Runoff = 133.75 cfs @ 12.20 hrs, Volume= 12.918 af, Depth> 7.24"

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 100-Year Rainfall=9.20"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
5.830	79	Woods, Fair, HSG D
4.080	60	Woods, Fair, HSG B
2.040	84	50-75% Grass cover, Fair, HSG D
5.280	98	Paved parking, HSG D
21.420	84	Weighted Average
16.140		75.35% Pervious Area
5.280		24.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Summary for Reach 36": Flow to 36" Pipe

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

Inflow Area = 22.060 ac, 23.62% Impervious, Inflow Depth > 5.95" for 100-Year event
Inflow = 101.65 cfs @ 12.17 hrs, Volume= 10.943 af
Outflow = 101.65 cfs @ 12.17 hrs, Volume= 10.943 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach TS: Total Site

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

Inflow Area = 59.540 ac, 31.86% Impervious, Inflow Depth > 6.74" for 100-Year event
Inflow = 256.61 cfs @ 12.15 hrs, Volume= 33.448 af
Outflow = 256.61 cfs @ 12.15 hrs, Volume= 33.448 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond PD: Pond

Inflow Area = 21.420 ac, 24.65% Impervious, Inflow Depth > 7.24" for 100-Year event
Inflow = 133.75 cfs @ 12.20 hrs, Volume= 12.918 af
Outflow = 80.39 cfs @ 12.41 hrs, Volume= 12.275 af, Atten= 40%, Lag= 12.8 min
Primary = 80.39 cfs @ 12.41 hrs, Volume= 12.275 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 650.90' @ 12.41 hrs Surf.Area= 3.977 ac Storage= 3.479 af

Plug-Flow detention time= 73.9 min calculated for 12.249 af (95% of inflow)
Center-of-Mass det. time= 46.9 min (841.8 - 794.9)

Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

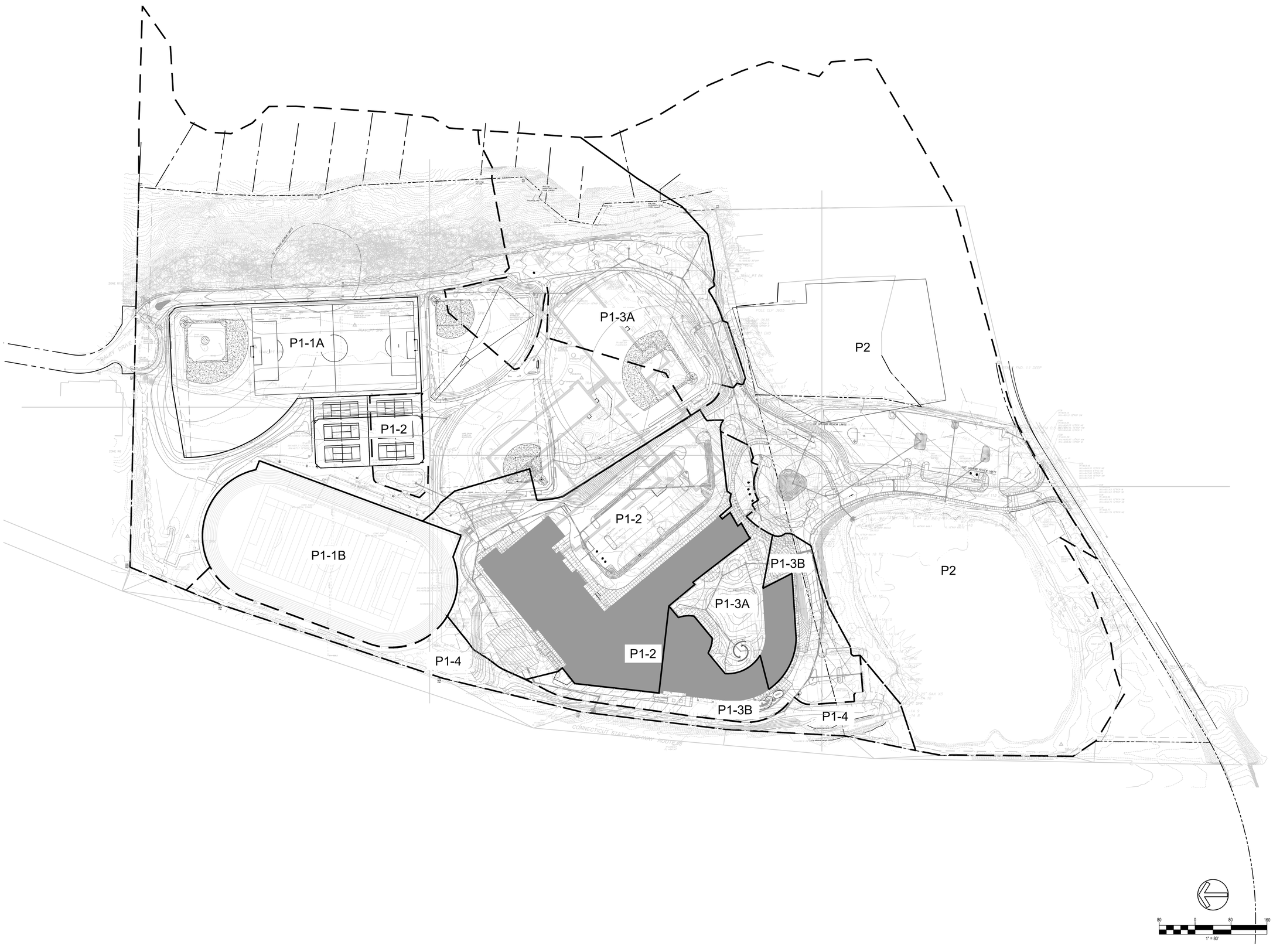
Primary OutFlow Max=80.25 cfs @ 12.41 hrs HW=650.90' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 80.25 cfs @ 2.40 fps)

APPENDIX B

PROPOSED WATERSHED DATA

Proposed Watershed Cover Characteristics
Torrington High School - Torrington, CT
Project # 70683.00

Watershed	Total Area (ac)	Track & Field	Tennis Courts	Impervious (ac)	Fair Grass "A"	Fair Grass "B"	Fair Grass "C"	Fair Grass "D"	Fair Woods "A"	Fair Woods "B"	Fair Woods "D"	Pond "W"	CN	Tc (min)
P1-1A	17.90	-	-	2.70	3.58		7.19	1.25	1.93	1.25			71	11.2
P1-1B	3.62	3.62	-										98	45.1
P1-2	6.03	-	0.41	4.51	1.06			0.05					88	6
P1-3A	6.88	-	-	2.06	0.23		0.07	3.15	0.51	0.87			84	8
P1-3B	2.15	-	-	1.75				0.40					94	8
P1-4	1.90	-	-	0.23			0.38	1.29					85	6
P2	21.05	-	-	4.50				5.64	1.15	2.98	2.59	4.19	83	14.6
TOTAL	59.54	3.62	0.41	15.75	4.87	0.00	7.64	11.78	3.58	5.10	2.59	4.19		



SLAM
The S/L/A/M Collaborative
80 Glastonbury Boulevard
Glastonbury, CT 06033-4410
Phone: 860 657.8077
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Drawn
GSL
Checked
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benesch
Alfred Benesch & Company • www.benesch.com
120 Hebron Avenue • Glastonbury, Connecticut 06033
Phone: (860) 633-8341 • Fax: (860) 633-1068

Torrington

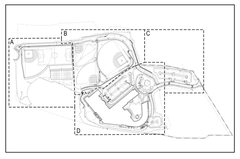
Middle/ High School & Central Administration Building

PHASE 2 OF 4: SITE & BUILDING CONSTRUCTION AND ABATEMENT & DEMOLITION OF EXISTING BUILDING

Torrington Public Schools

50 Major Besse Drive
Torrington, CT 06790

STATE PROJECT NO: 143-0076 N



KEYPLAN

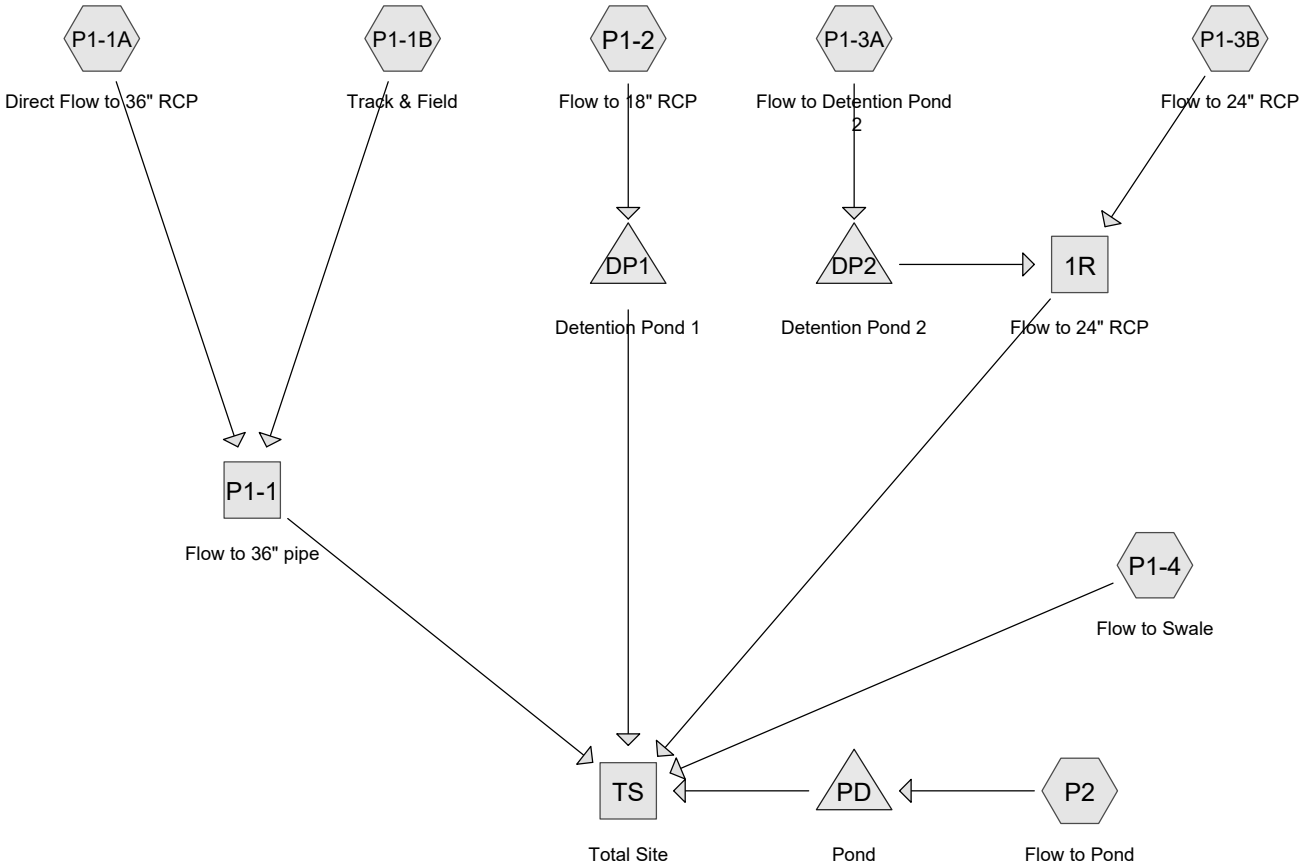
Number	Date	Issued For
		100% REVISED DESIGN DEVELOPMENT SUBMISSION
	02/02/2022	REGULATORY SUBMISSION

PROGRESS PRINT NOT FOR CONSTRUCTION

PROPOSED WATERSHED AREA MAP

Date
02/02/2022
Scale
As indicated
Proj. Number
19351.00

Drawing Number
PWAM



Subcat Reach Pond Link

Routing Diagram for 70683_Proposed HydroCAD
Prepared by {enter your company name here}, Printed 1/31/2022

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.53	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.72	2
3	25-Year	Type III 24-hr		Default	24.00	1	7.09	2
4	100-Year	Type III 24-hr		Default	24.00	1	9.20	2

Summary for Subcatchment P1-1A: Direct Flow to 36" RCP

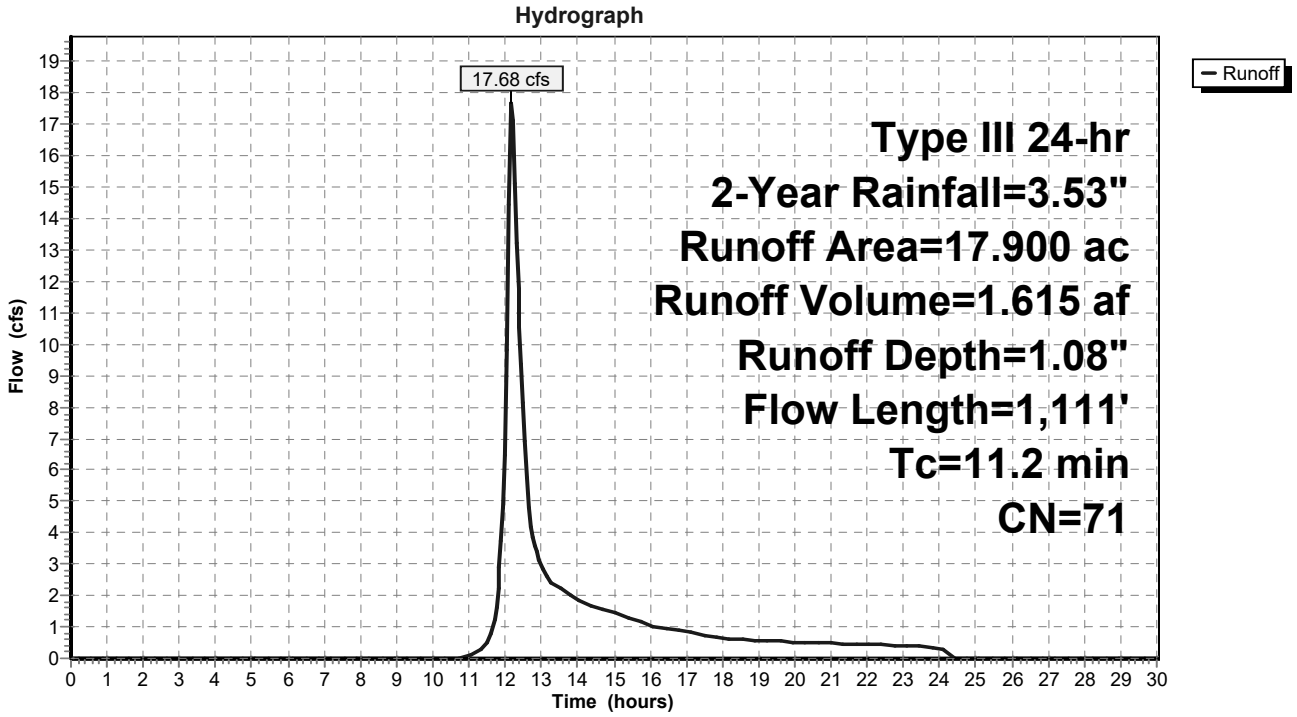
Runoff = 17.68 cfs @ 12.17 hrs, Volume= 1.615 af, Depth= 1.08"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.53"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG D
3.580	49	50-75% Grass cover, Fair, HSG A
7.190	79	50-75% Grass cover, Fair, HSG C
1.250	84	50-75% Grass cover, Fair, HSG D
1.930	45	Woods, Poor, HSG A
1.250	60	Woods, Fair, HSG B
17.900	71	Weighted Average
15.200		84.92% Pervious Area
2.700		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1400	0.18		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.9	324	0.1500	6.24		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.8	687	0.0200	14.46	102.19	**Pipe Channel, C-D PIPE** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.2	1,111	Total			

Subcatchment P1-1A: Direct Flow to 36" RCP



Summary for Subcatchment P1-1B: Track & Field

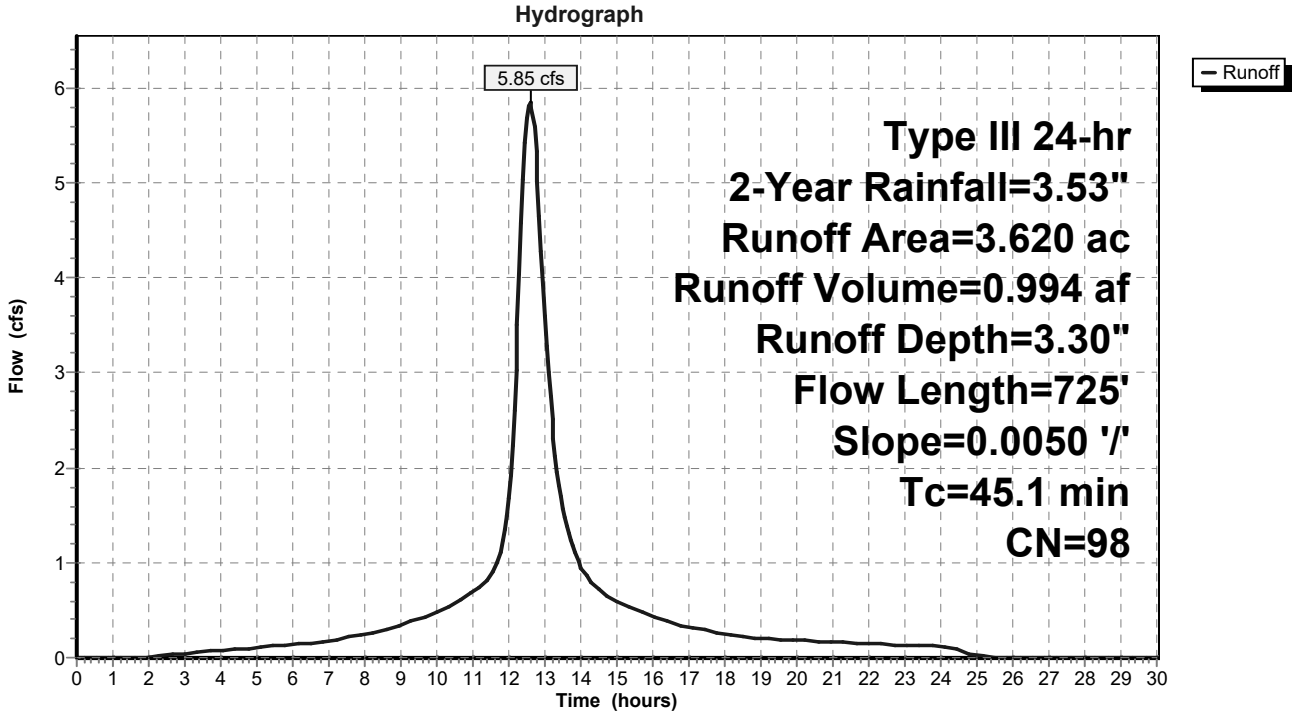
Runoff = 5.85 cfs @ 12.59 hrs, Volume= 0.994 af, Depth= 3.30"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.53"

	Area (ac)	CN	Description
*	3.620	98	Track & Field
	3.620		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Subcatchment P1-1B: Track & Field



Summary for Subcatchment P1-2: Flow to 18" RCP

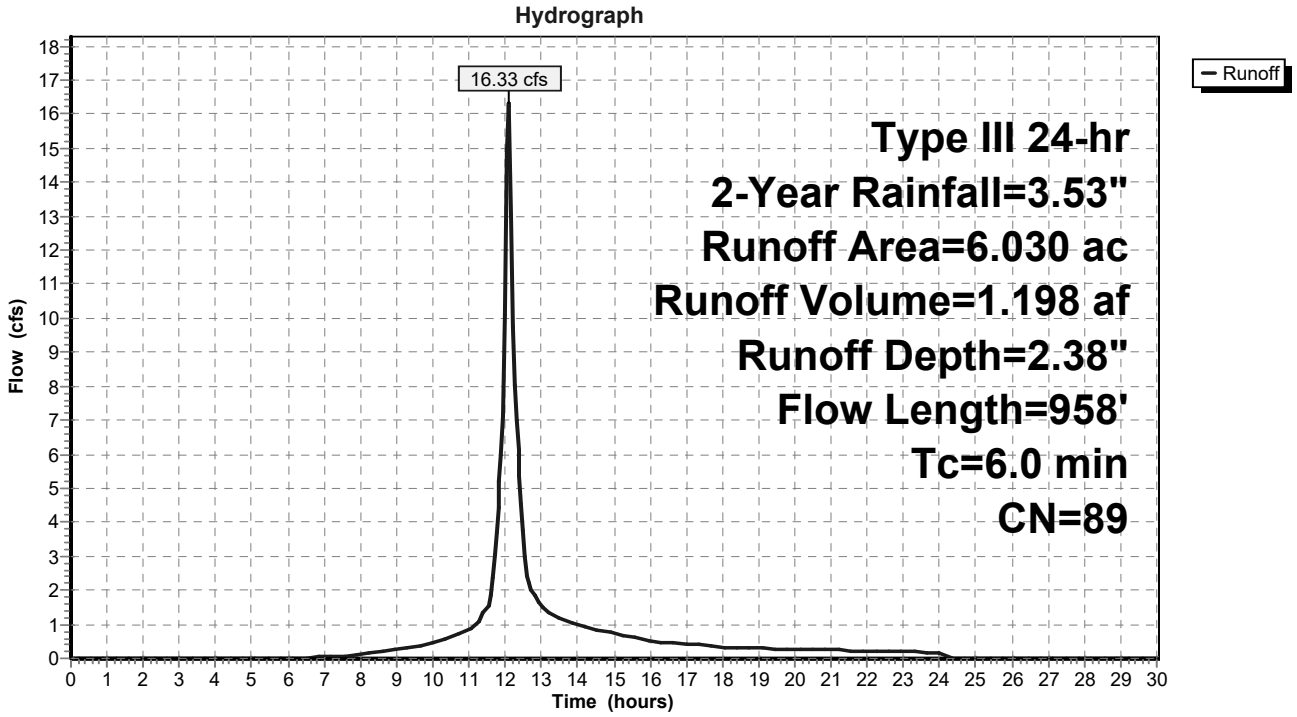
Runoff = 16.33 cfs @ 12.09 hrs, Volume= 1.198 af, Depth= 2.38"
Routed to Pond DP1 : Detention Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.53"

	Area (ac)	CN	Description
	4.510	98	Paved parking, HSG D
*	0.410	98	Tennis Courts
	1.060	49	50-75% Grass cover, Fair, HSG A
	0.050	84	50-75% Grass cover, Fair, HSG D
	6.030	89	Weighted Average
	1.110		18.41% Pervious Area
	4.920		81.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.43		**Sheet Flow, A-B PAVED** Smooth surfaces n= 0.011 P2= 3.47"
0.5	50	0.0100	1.61		**Shallow Concentrated Flow, B-C RAIN GARDEN** Unpaved Kv= 16.1 fps
3.3	808	0.0050	4.03	4.95	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
1.0					**Direct Entry, TO MEET MIN**
6.0	958	Total			

Subcatchment P1-2: Flow to 18" RCP



Summary for Subcatchment P1-3A: Flow to Detention Pond 2

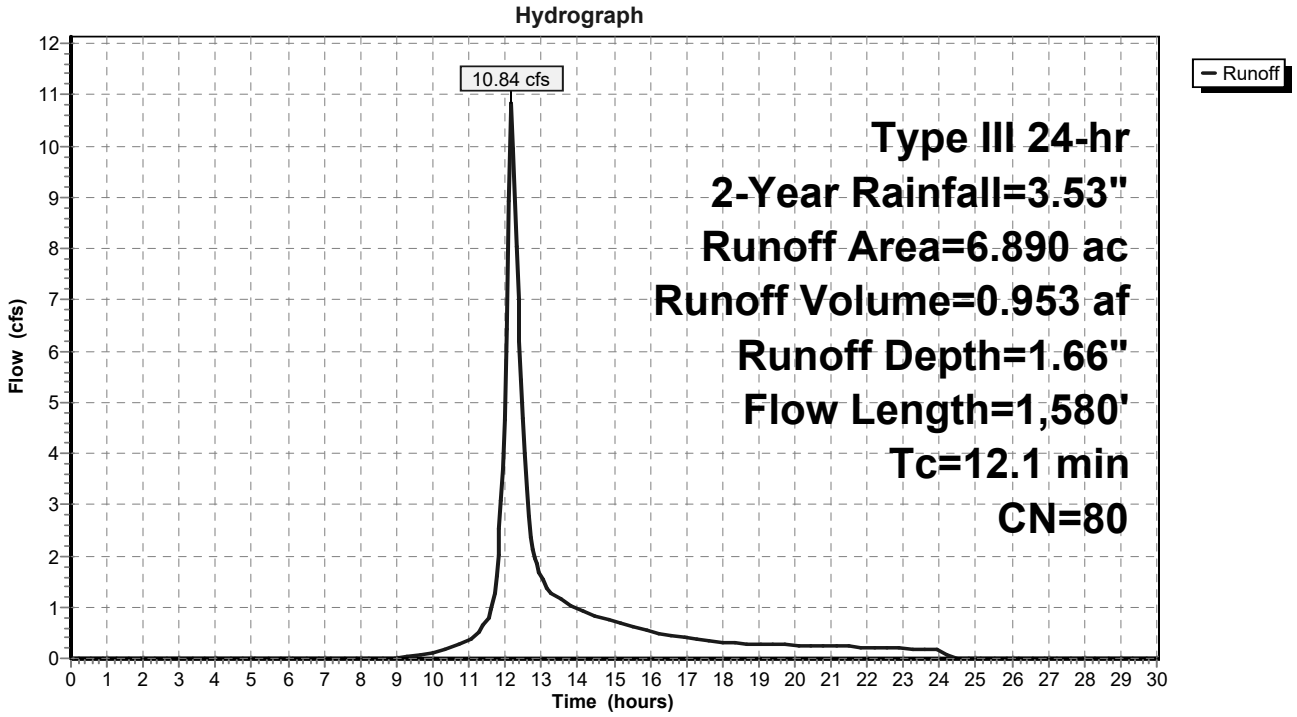
Runoff = 10.84 cfs @ 12.17 hrs, Volume= 0.953 af, Depth= 1.66"
Routed to Pond DP2 : Detention Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.53"

Area (ac)	CN	Description
2.060	98	Paved parking, HSG D
3.150	84	50-75% Grass cover, Fair, HSG D
0.510	36	Woods, Fair, HSG A
0.870	60	Woods, Fair, HSG B
0.070	79	50-75% Grass cover, Fair, HSG C
0.230	49	50-75% Grass cover, Fair, HSG A
6.890	80	Weighted Average
4.830		70.10% Pervious Area
2.060		29.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.2500	0.22		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
12.1	1,580	Total			

Subcatchment P1-3A: Flow to Detention Pond 2



Summary for Subcatchment P1-3B: Flow to 24" RCP

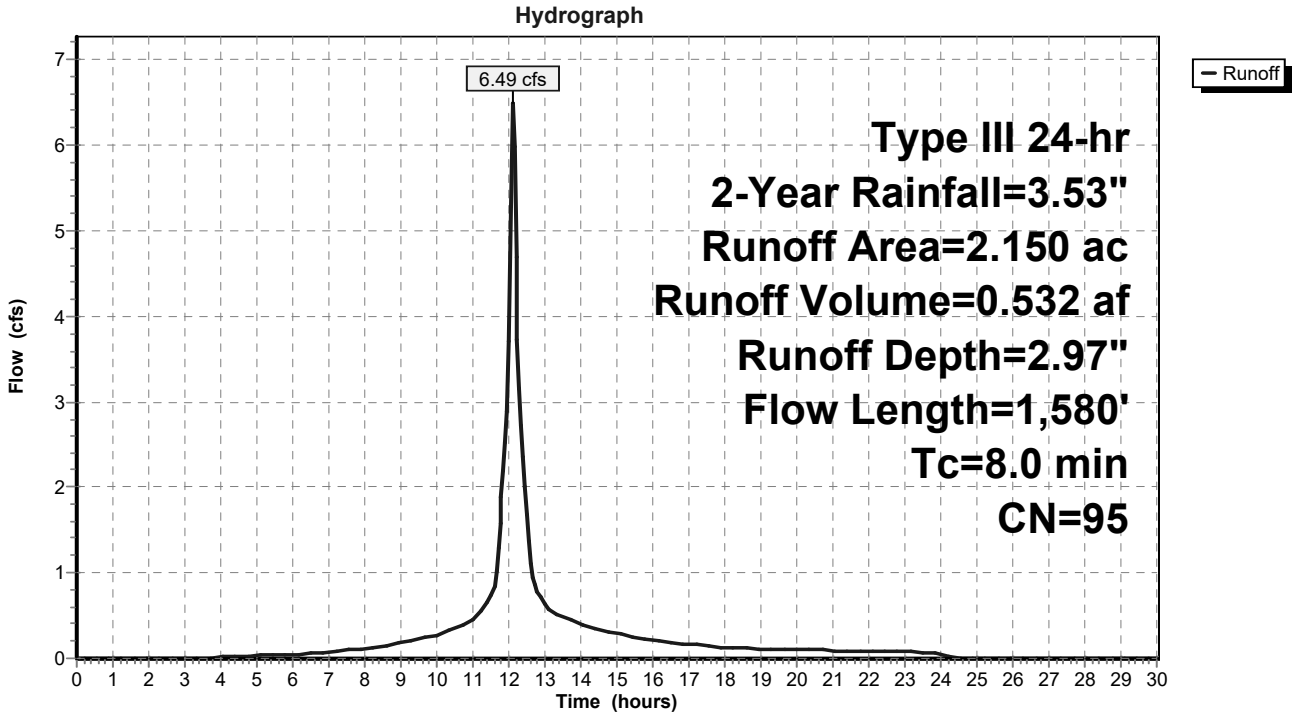
Runoff = 6.49 cfs @ 12.11 hrs, Volume= 0.532 af, Depth= 2.97"
Routed to Reach 1R : Flow to 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.53"

Area (ac)	CN	Description
1.750	98	Paved parking, HSG D
0.400	84	50-75% Grass cover, Fair, HSG D
2.150	95	Weighted Average
0.400		18.60% Pervious Area
1.750		81.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2500	0.49		**Sheet Flow, A-B HILL** Grass: Short n= 0.150 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
8.0	1,580	Total			

Subcatchment P1-3B: Flow to 24" RCP



Summary for Subcatchment P1-4: Flow to Swale

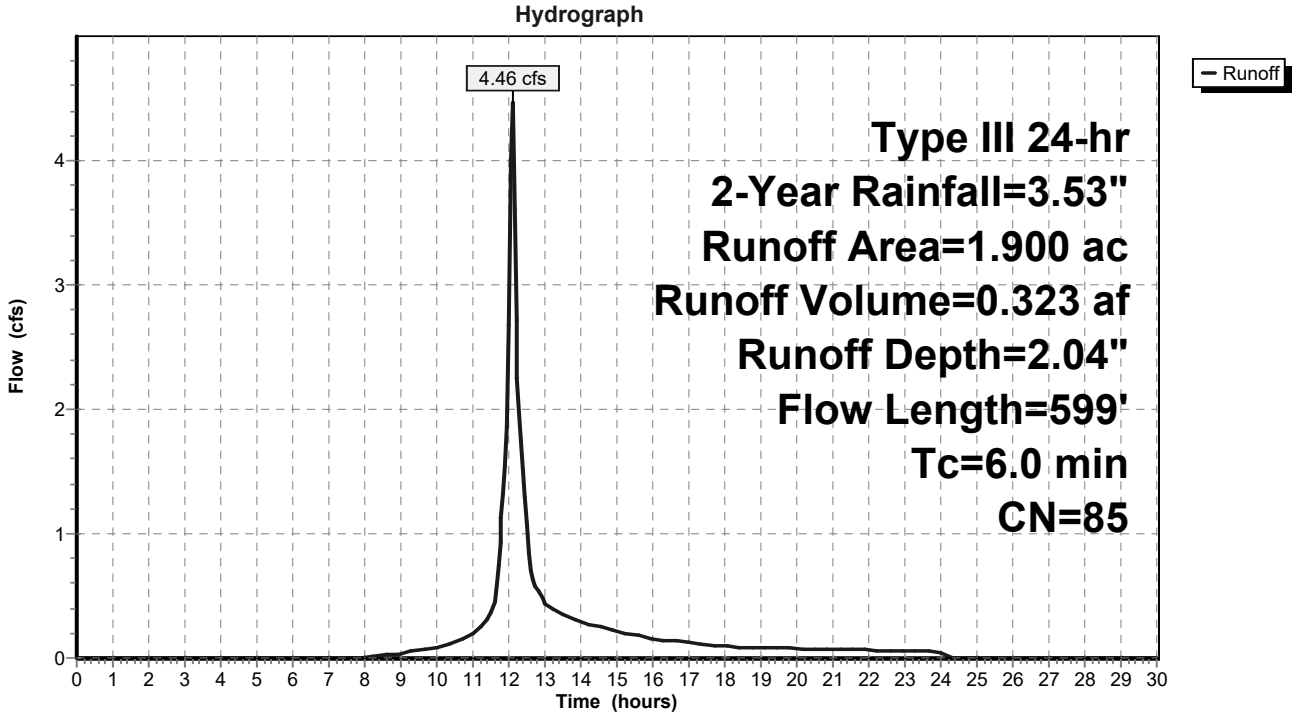
Runoff = 4.46 cfs @ 12.09 hrs, Volume= 0.323 af, Depth= 2.04"
Routed to Reach TS : Total Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.53"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
0.380	79	50-75% Grass cover, Fair, HSG C
1.290	84	50-75% Grass cover, Fair, HSG D
1.900	85	Weighted Average
1.670		87.89% Pervious Area
0.230		12.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Subcatchment P1-4: Flow to Swale



Summary for Subcatchment P2: Flow to Pond

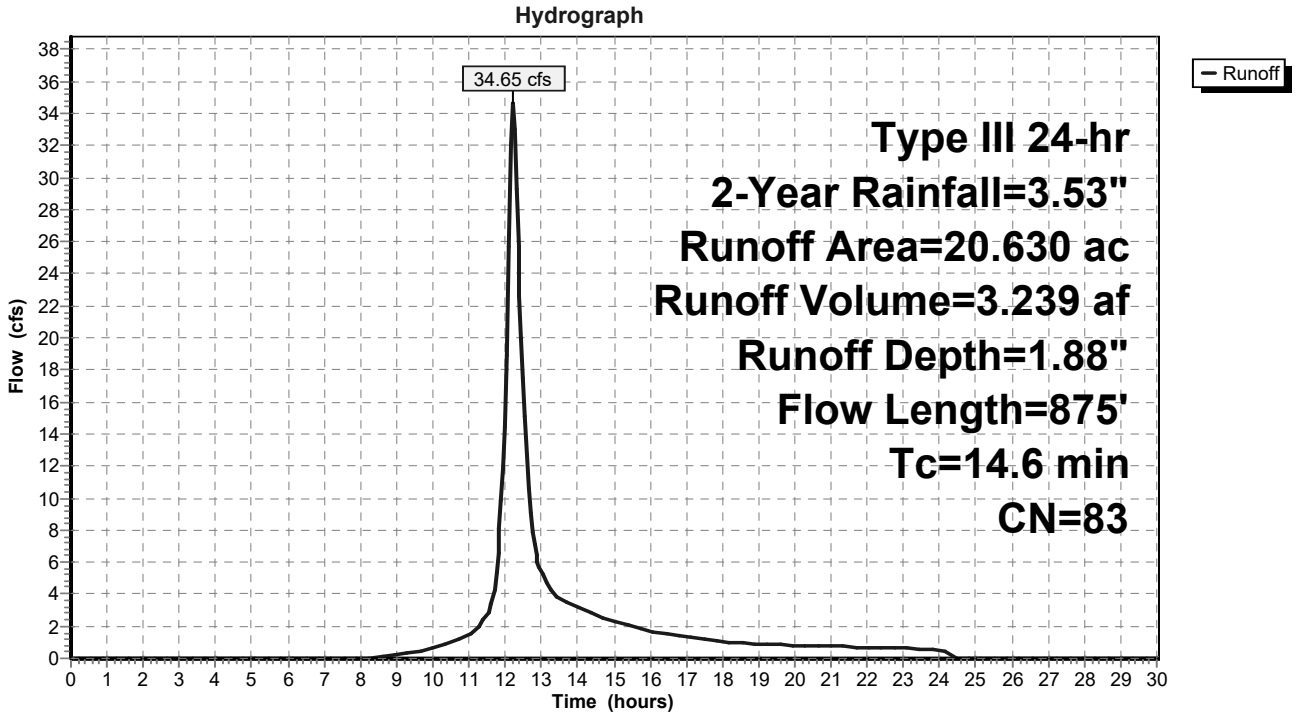
Runoff = 34.65 cfs @ 12.21 hrs, Volume= 3.239 af, Depth= 1.88"
Routed to Pond PD : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.53"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
2.590	79	Woods, Fair, HSG D
2.980	60	Woods, Fair, HSG B
5.220	84	50-75% Grass cover, Fair, HSG D
4.500	98	Paved parking, HSG D
1.150	36	Woods, Fair, HSG A
20.630	83	Weighted Average
16.130		78.19% Pervious Area
4.500		21.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Subcatchment P2: Flow to Pond

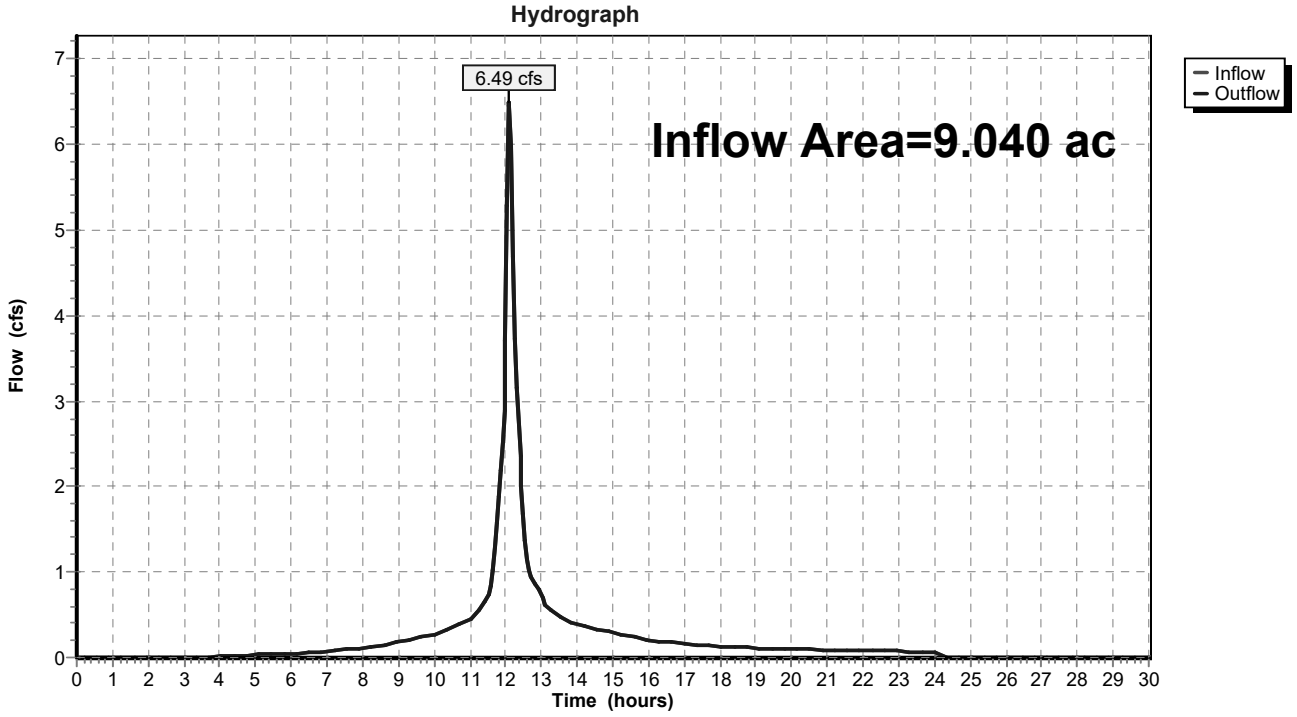


Summary for Reach 1R: Flow to 24" RCP

Inflow Area = 9.040 ac, 42.15% Impervious, Inflow Depth = 0.71" for 2-Year event
Inflow = 6.49 cfs @ 12.11 hrs, Volume= 0.537 af
Outflow = 6.49 cfs @ 12.11 hrs, Volume= 0.537 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 1R: Flow to 24" RCP

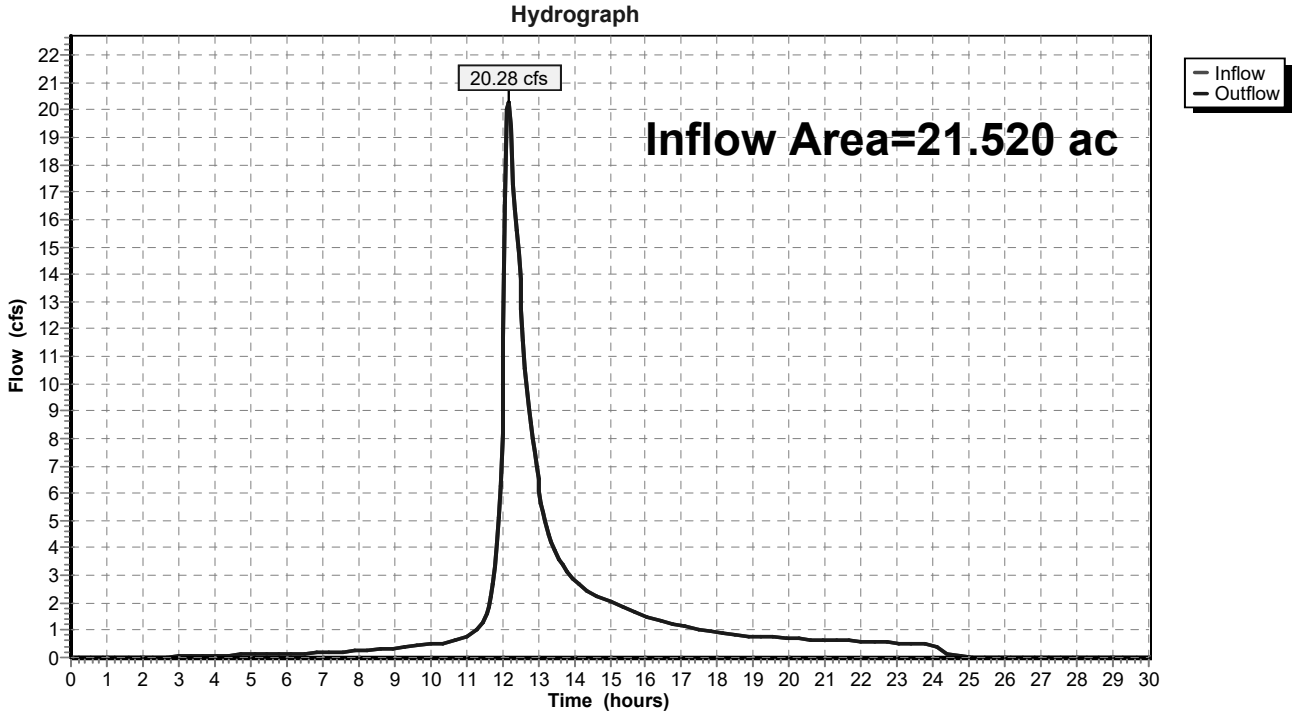


Summary for Reach P1-1: Flow to 36" pipe

Inflow Area = 21.520 ac, 29.37% Impervious, Inflow Depth = 1.46" for 2-Year event
Inflow = 20.28 cfs @ 12.18 hrs, Volume= 2.610 af
Outflow = 20.28 cfs @ 12.18 hrs, Volume= 2.610 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach P1-1: Flow to 36" pipe

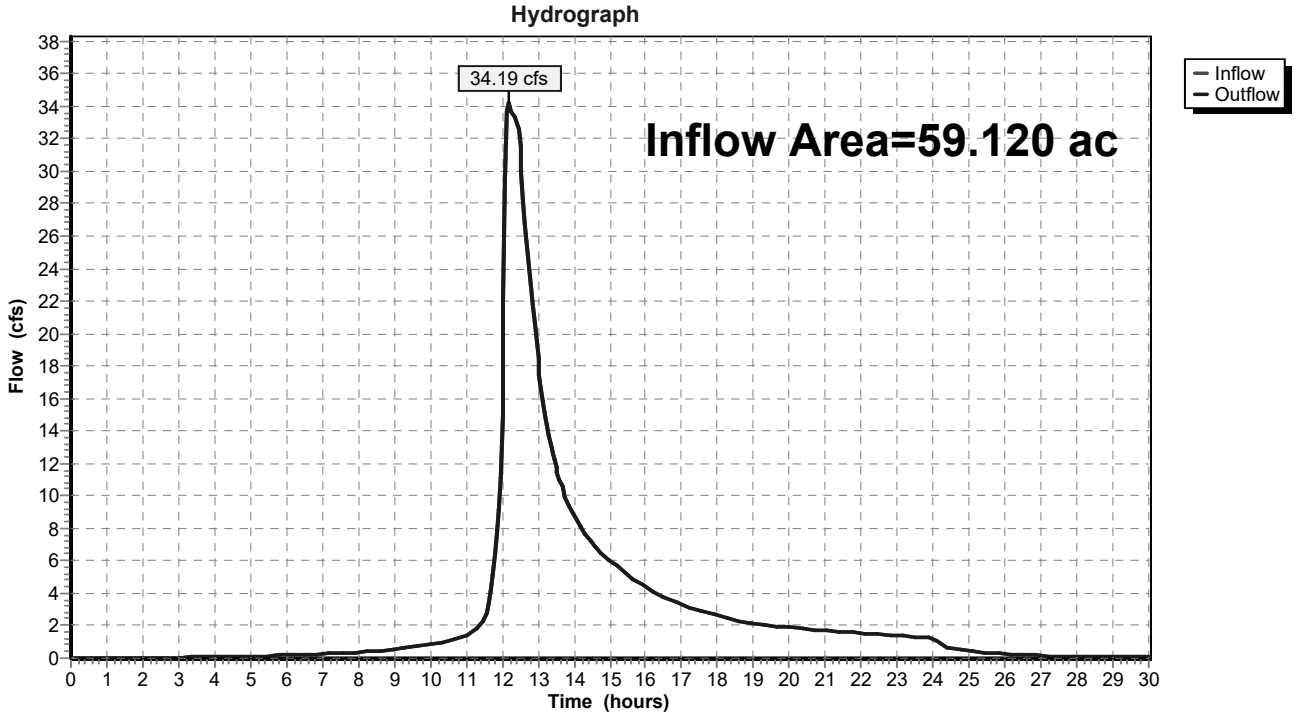


Summary for Reach TS: Total Site

Inflow Area = 59.120 ac, 33.46% Impervious, Inflow Depth > 1.31" for 2-Year event
Inflow = 34.19 cfs @ 12.20 hrs, Volume= 6.472 af
Outflow = 34.19 cfs @ 12.20 hrs, Volume= 6.472 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach TS: Total Site



Summary for Pond DP1: Detention Pond 1

Inflow Area = 6.030 ac, 81.59% Impervious, Inflow Depth = 2.38" for 2-Year event
Inflow = 16.33 cfs @ 12.09 hrs, Volume= 1.198 af
Outflow = 5.50 cfs @ 12.39 hrs, Volume= 1.198 af, Atten= 66%, Lag= 18.1 min
Discarded = 2.35 cfs @ 12.39 hrs, Volume= 1.031 af
Primary = 3.15 cfs @ 12.39 hrs, Volume= 0.167 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 660.92' @ 12.39 hrs Surf.Area= 0.190 ac Storage= 0.343 af

Plug-Flow detention time= 39.9 min calculated for 1.196 af (100% of inflow)
Center-of-Mass det. time= 39.8 min (847.1 - 807.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.00'	0.322 af	**73.92'W x 111.77'L x 7.00'H Field A** 1.328 af Overall - 0.522 af Embedded = 0.806 af x 40.0% Voids
#2A	659.50'	0.522 af	**ADS_StormTech MC-4500 +Cap** x 208 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 208 Chambers in 8 Rows Cap Storage= 35.7 cf x 2 x 8 rows = 571.2 cf
		0.844 af	Total Available Storage

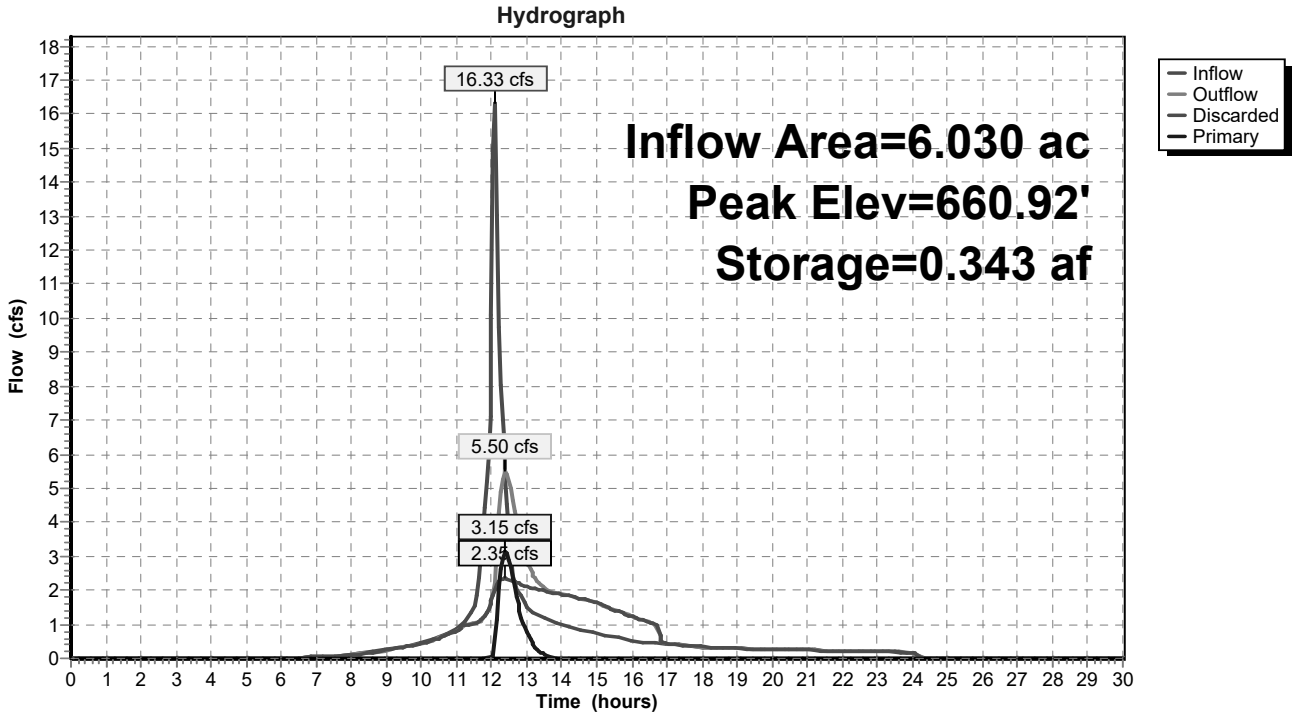
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	658.40'	**24.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 658.40' / 656.05' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	660.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	662.35'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	664.90'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.7' Crest Height
#5	Discarded	658.00'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 656.00'

Discarded OutFlow Max=2.35 cfs @ 12.39 hrs HW=660.92' (Free Discharge)
└**5=Exfiltration** (Controls 2.35 cfs)

Primary OutFlow Max=3.14 cfs @ 12.39 hrs HW=660.92' (Free Discharge)
└**1=Culvert** (Passes 3.14 cfs of 18.63 cfs potential flow)
  ├**2=15" Orifice** (Orifice Controls 3.14 cfs @ 3.26 fps)
  ├**3=24" Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DP1: Detention Pond 1



Summary for Pond DP2: Detention Pond 2

Inflow Area = 6.890 ac, 29.90% Impervious, Inflow Depth = 1.66" for 2-Year event
Inflow = 10.84 cfs @ 12.17 hrs, Volume= 0.953 af
Outflow = 1.90 cfs @ 12.82 hrs, Volume= 0.953 af, Atten= 82%, Lag= 39.1 min
Discarded = 1.78 cfs @ 12.82 hrs, Volume= 0.948 af
Primary = 0.12 cfs @ 12.82 hrs, Volume= 0.005 af
Routed to Reach 1R : Flow to 24" RCP

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 661.64' @ 12.82 hrs Surf.Area= 0.186 ac Storage= 0.333 af

Plug-Flow detention time= 73.1 min calculated for 0.952 af (100% of inflow)
Center-of-Mass det. time= 73.0 min (916.4 - 843.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.50'	0.348 af	**63.83'W x 126.87'L x 7.50'H Field A** 1.394 af Overall - 0.525 af Embedded = 0.869 af x 40.0% Voids
#2A	660.50'	0.525 af	**ADS_StormTech MC-4500 +Cap** x 210 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 210 Chambers in 7 Rows Cap Storage= 35.7 cf x 2 x 7 rows = 499.8 cf
		0.873 af	Total Available Storage

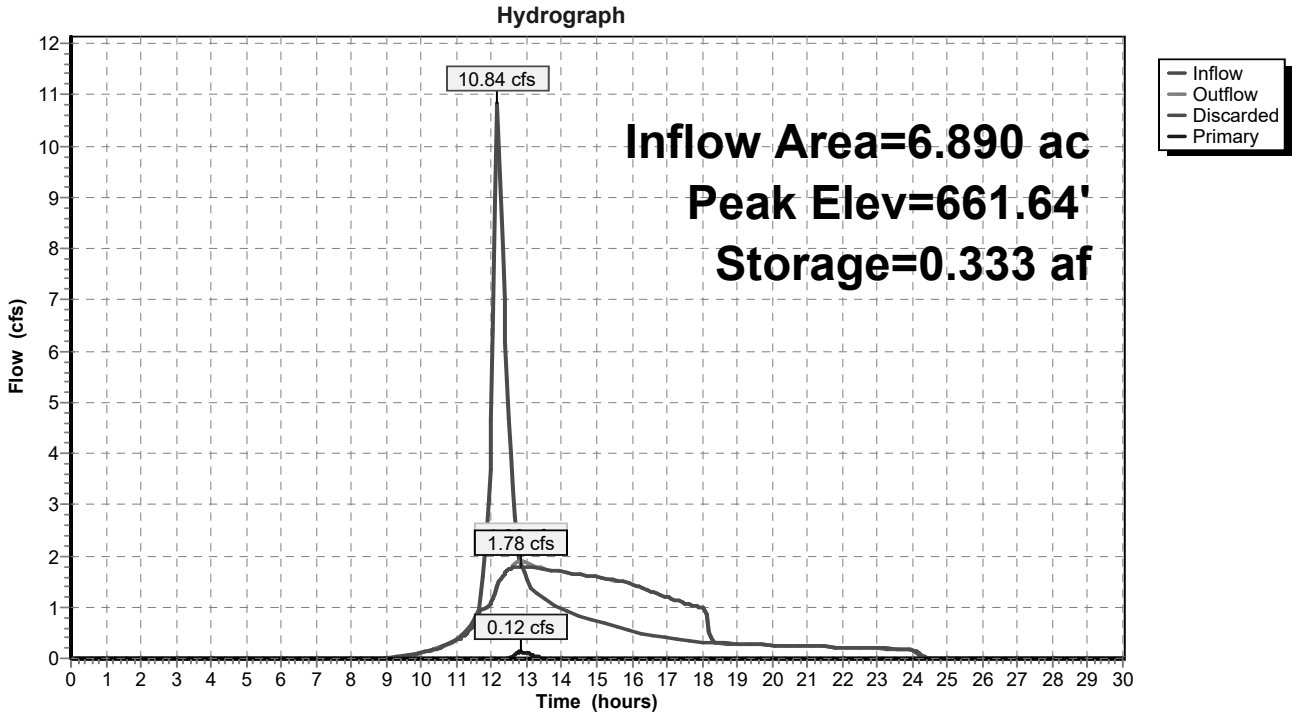
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	661.50'	**24.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 661.50' / 660.65' S= 0.0243 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	663.00'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#5	Discarded	658.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 655.00'

Discarded OutFlow Max=1.78 cfs @ 12.82 hrs HW=661.64' (Free Discharge)
└**5=Exfiltration** (Controls 1.78 cfs)

Primary OutFlow Max=0.12 cfs @ 12.82 hrs HW=661.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.12 cfs @ 1.26 fps)
├**2=15" Orifice** (Passes < 1.12 cfs potential flow)
├**3=15" Orifice** (Passes < 1.12 cfs potential flow)
└**4=24" Orifice** (Controls 0.00 cfs)

Pond DP2: Detention Pond 2



Summary for Pond PD: Pond

Inflow Area = 20.630 ac, 21.81% Impervious, Inflow Depth = 1.88" for 2-Year event
Inflow = 34.65 cfs @ 12.21 hrs, Volume= 3.239 af
Outflow = 12.46 cfs @ 12.61 hrs, Volume= 2.835 af, Atten= 64%, Lag= 24.2 min
Primary = 12.46 cfs @ 12.61 hrs, Volume= 2.835 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 650.34' @ 12.61 hrs Surf.Area= 3.855 ac Storage= 1.303 af

Plug-Flow detention time= 156.5 min calculated for 2.835 af (88% of inflow)
Center-of-Mass det. time= 99.3 min (935.7 - 836.4)

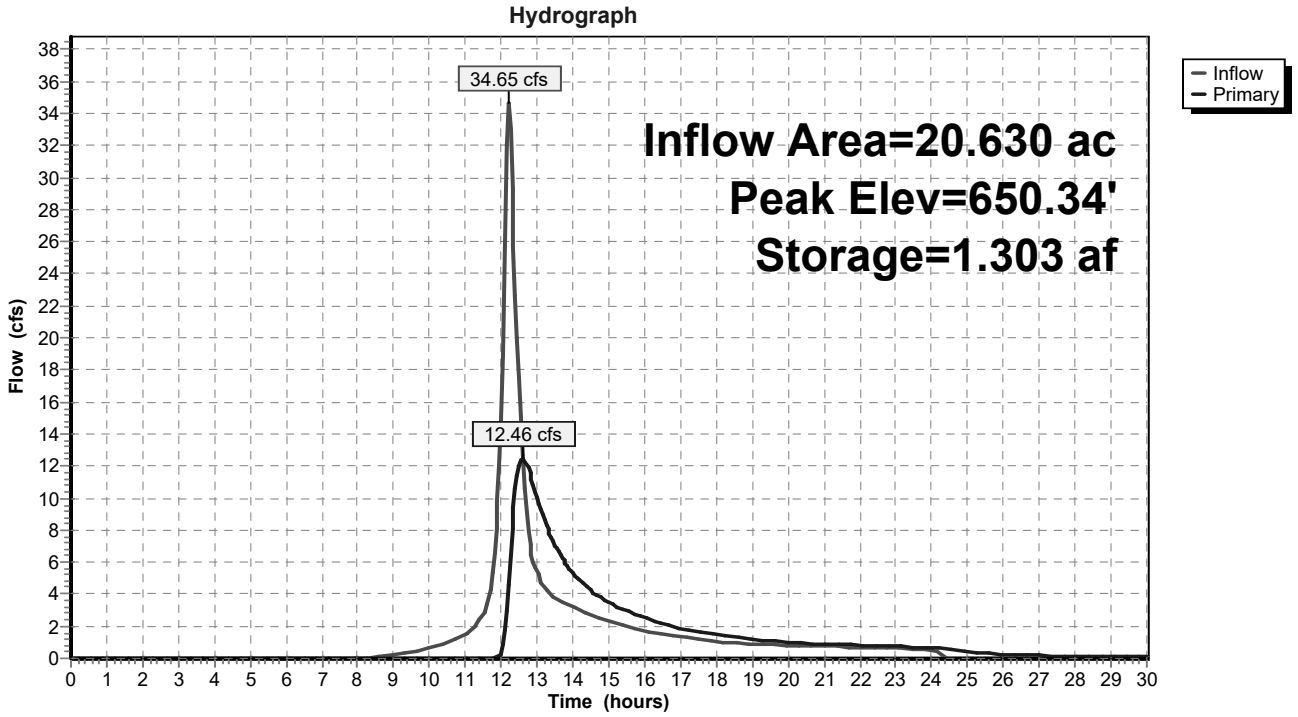
Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=12.45 cfs @ 12.61 hrs HW=650.34' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 12.45 cfs @ 1.23 fps)

Pond PD: Pond


Hydrograph
34.65 cfs
12.46 cfs
Inflow Area=20.630 ac
Peak Elev=650.34'
Storage=1.303 af
Inflow
Primary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38
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 25 26 27 28 29 30

Summary for Subcatchment P1-1A: Direct Flow to 36" RCP

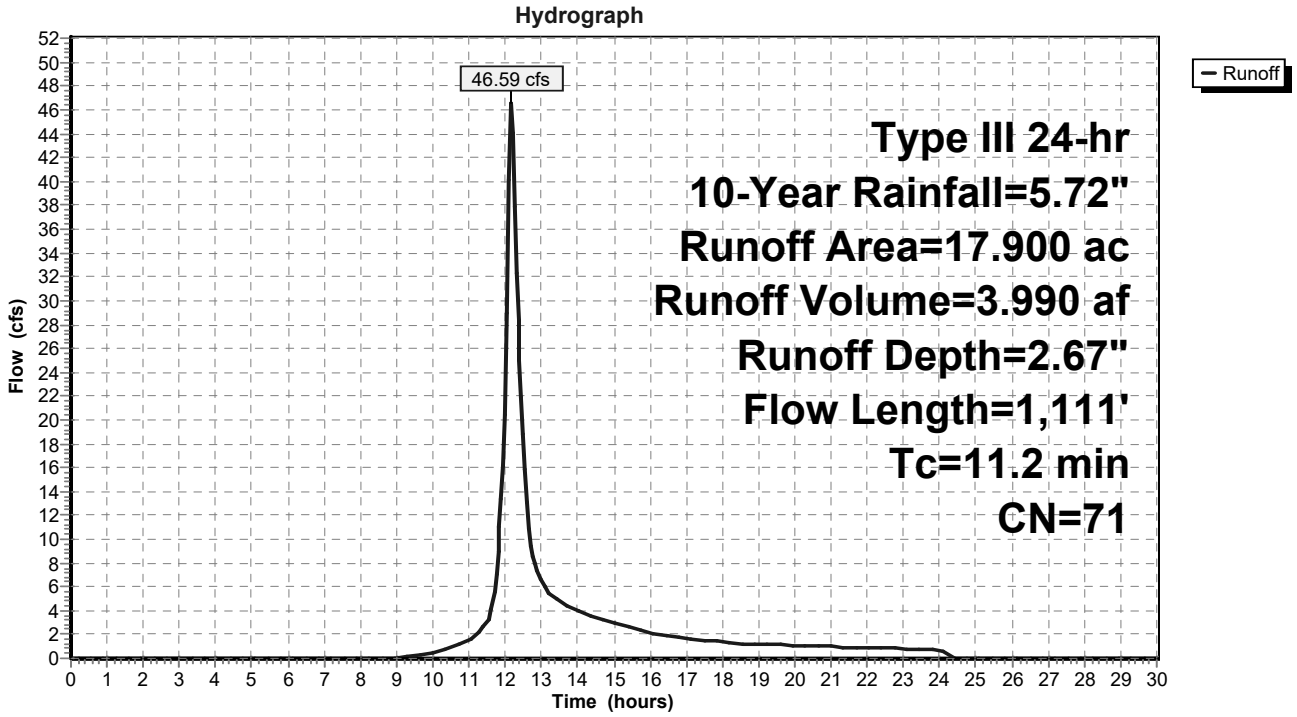
Runoff = 46.59 cfs @ 12.16 hrs, Volume= 3.990 af, Depth= 2.67"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.72"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG D
3.580	49	50-75% Grass cover, Fair, HSG A
7.190	79	50-75% Grass cover, Fair, HSG C
1.250	84	50-75% Grass cover, Fair, HSG D
1.930	45	Woods, Poor, HSG A
1.250	60	Woods, Fair, HSG B
17.900	71	Weighted Average
15.200		84.92% Pervious Area
2.700		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1400	0.18		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.9	324	0.1500	6.24		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.8	687	0.0200	14.46	102.19	**Pipe Channel, C-D PIPE** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.2	1,111	Total			

Subcatchment P1-1A: Direct Flow to 36" RCP



Summary for Subcatchment P1-1B: Track & Field

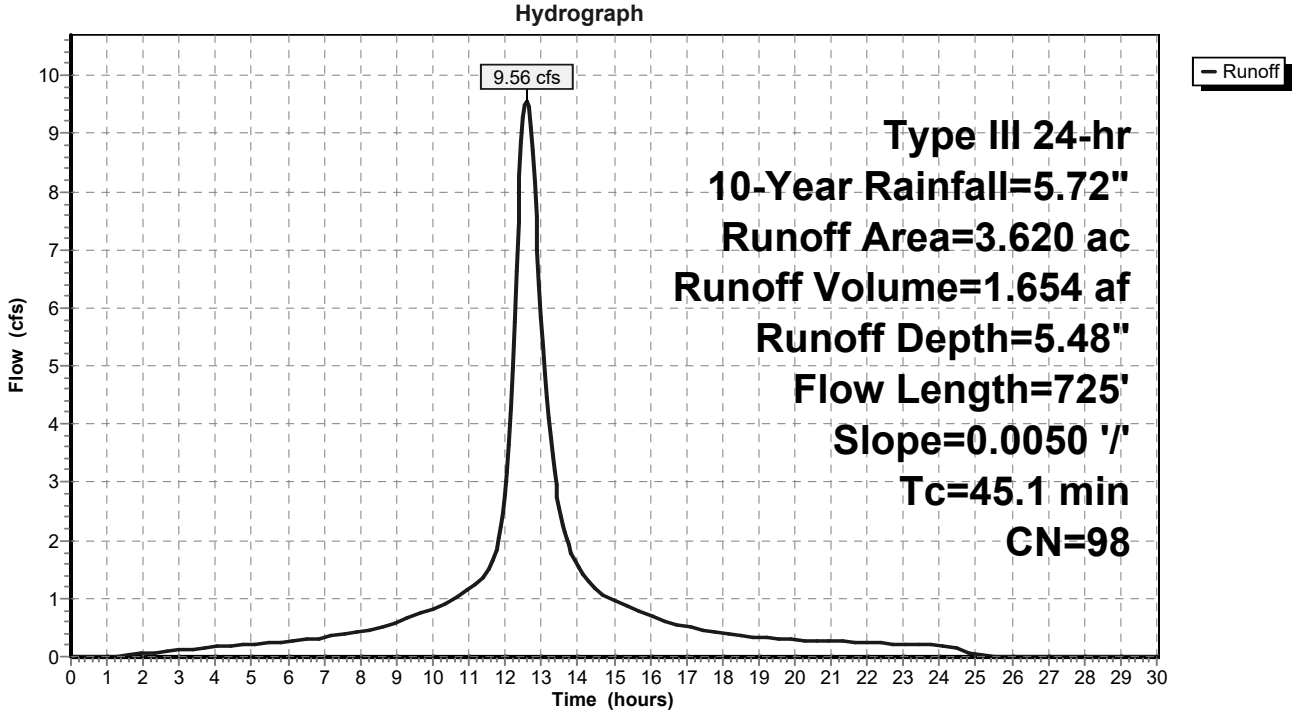
Runoff = 9.56 cfs @ 12.59 hrs, Volume= 1.654 af, Depth= 5.48"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.72"

	Area (ac)	CN	Description
*	3.620	98	Track & Field
	3.620		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Subcatchment P1-1B: Track & Field



Summary for Subcatchment P1-2: Flow to 18" RCP

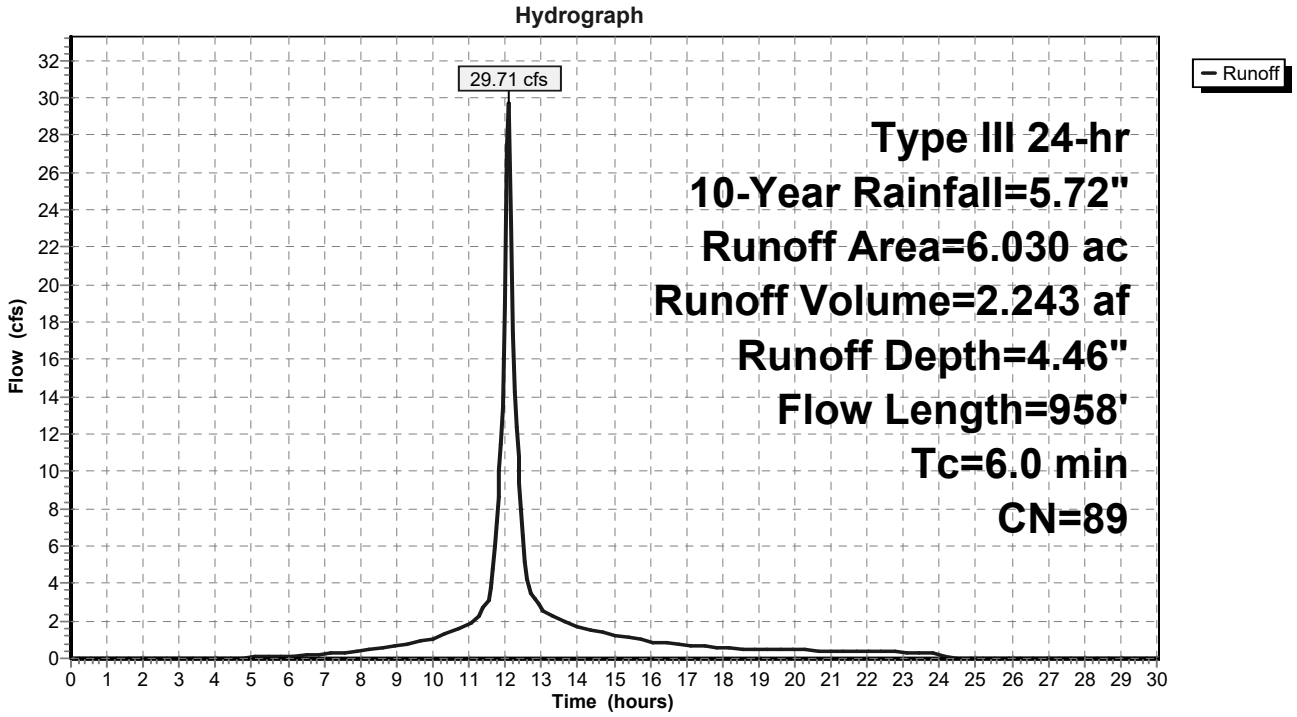
Runoff = 29.71 cfs @ 12.09 hrs, Volume= 2.243 af, Depth= 4.46"
Routed to Pond DP1 : Detention Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.72"

	Area (ac)	CN	Description
	4.510	98	Paved parking, HSG D
*	0.410	98	Tennis Courts
	1.060	49	50-75% Grass cover, Fair, HSG A
	0.050	84	50-75% Grass cover, Fair, HSG D
	6.030	89	Weighted Average
	1.110		18.41% Pervious Area
	4.920		81.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.43		**Sheet Flow, A-B PAVED** Smooth surfaces n= 0.011 P2= 3.47"
0.5	50	0.0100	1.61		**Shallow Concentrated Flow, B-C RAIN GARDEN** Unpaved Kv= 16.1 fps
3.3	808	0.0050	4.03	4.95	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
1.0					**Direct Entry, TO MEET MIN**
6.0	958	Total			

Subcatchment P1-2: Flow to 18" RCP



Summary for Subcatchment P1-3A: Flow to Detention Pond 2

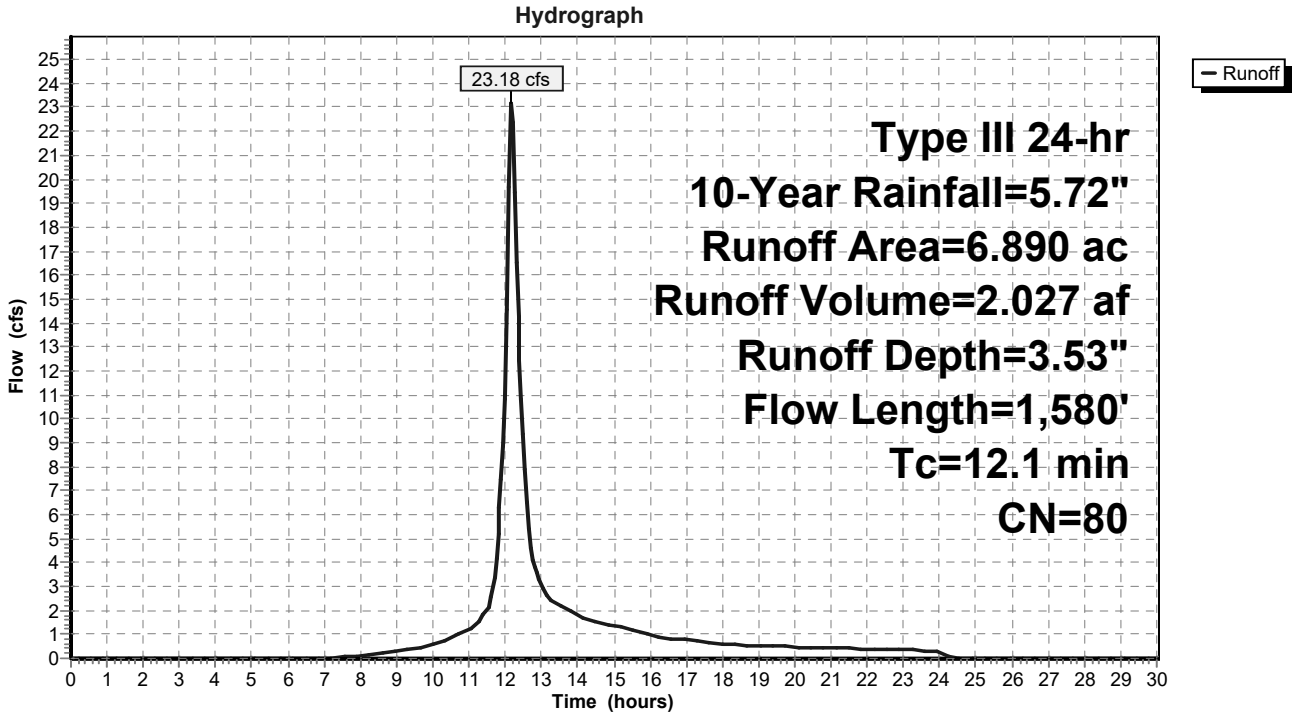
Runoff = 23.18 cfs @ 12.17 hrs, Volume= 2.027 af, Depth= 3.53"
Routed to Pond DP2 : Detention Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.72"

Area (ac)	CN	Description
2.060	98	Paved parking, HSG D
3.150	84	50-75% Grass cover, Fair, HSG D
0.510	36	Woods, Fair, HSG A
0.870	60	Woods, Fair, HSG B
0.070	79	50-75% Grass cover, Fair, HSG C
0.230	49	50-75% Grass cover, Fair, HSG A
6.890	80	Weighted Average
4.830		70.10% Pervious Area
2.060		29.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.2500	0.22		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
12.1	1,580	Total			

Subcatchment P1-3A: Flow to Detention Pond 2



Summary for Subcatchment P1-3B: Flow to 24" RCP

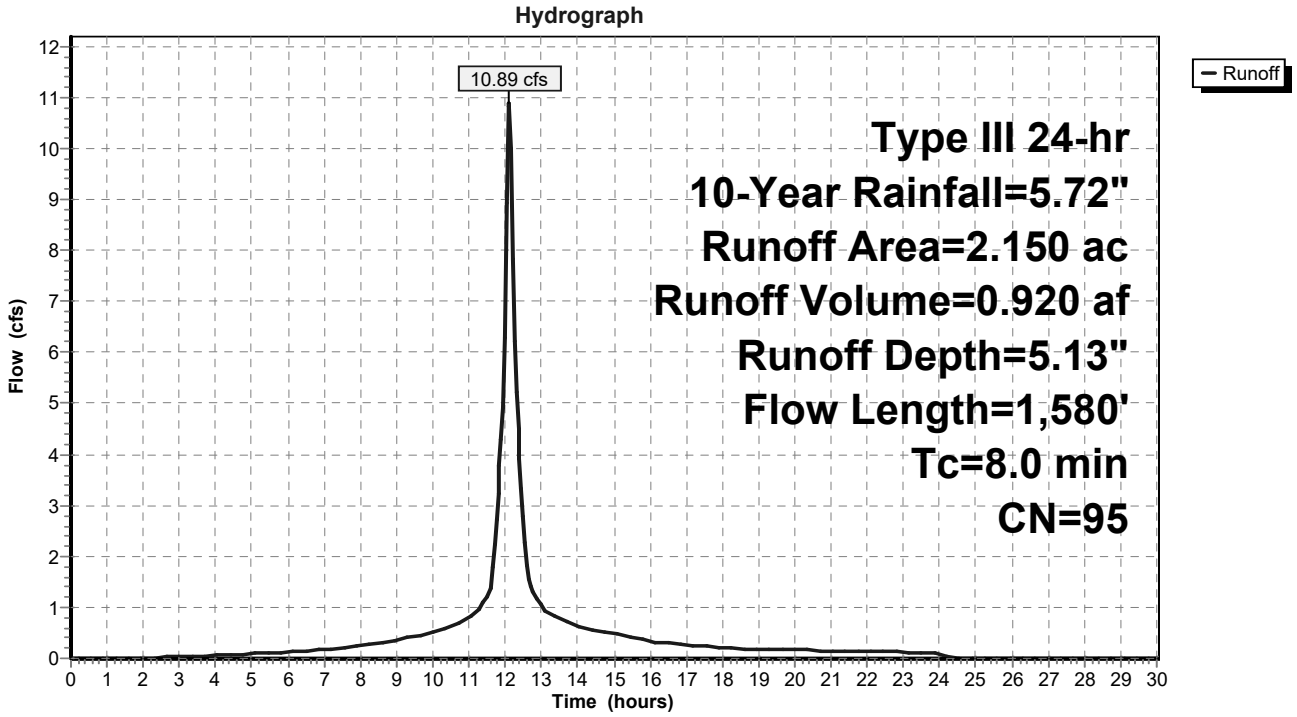
Runoff = 10.89 cfs @ 12.11 hrs, Volume= 0.920 af, Depth= 5.13"
Routed to Reach 1R : Flow to 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.72"

Area (ac)	CN	Description
1.750	98	Paved parking, HSG D
0.400	84	50-75% Grass cover, Fair, HSG D
2.150	95	Weighted Average
0.400		18.60% Pervious Area
1.750		81.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2500	0.49		**Sheet Flow, A-B HILL** Grass: Short n= 0.150 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
8.0	1,580	Total			

Subcatchment P1-3B: Flow to 24" RCP



Summary for Subcatchment P1-4: Flow to Swale

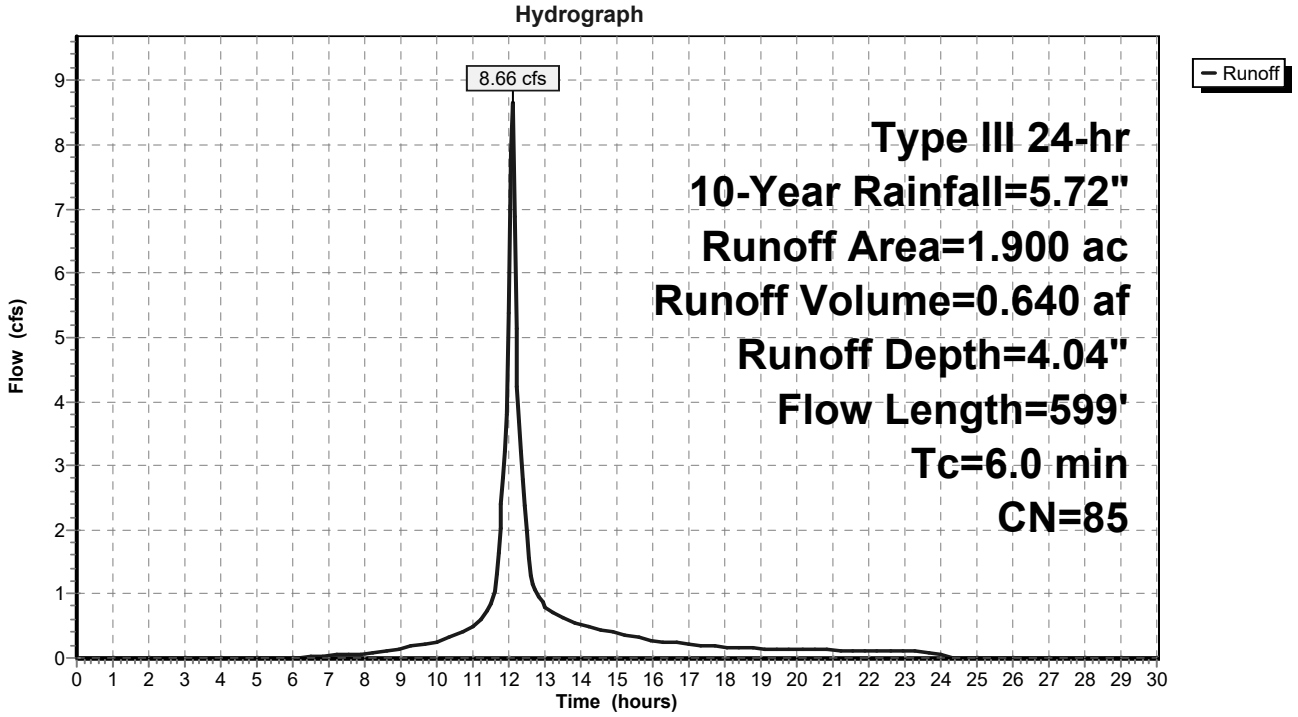
Runoff = 8.66 cfs @ 12.09 hrs, Volume= 0.640 af, Depth= 4.04"
Routed to Reach TS : Total Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.72"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
0.380	79	50-75% Grass cover, Fair, HSG C
1.290	84	50-75% Grass cover, Fair, HSG D
1.900	85	Weighted Average
1.670		87.89% Pervious Area
0.230		12.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Subcatchment P1-4: Flow to Swale



Summary for Subcatchment P2: Flow to Pond

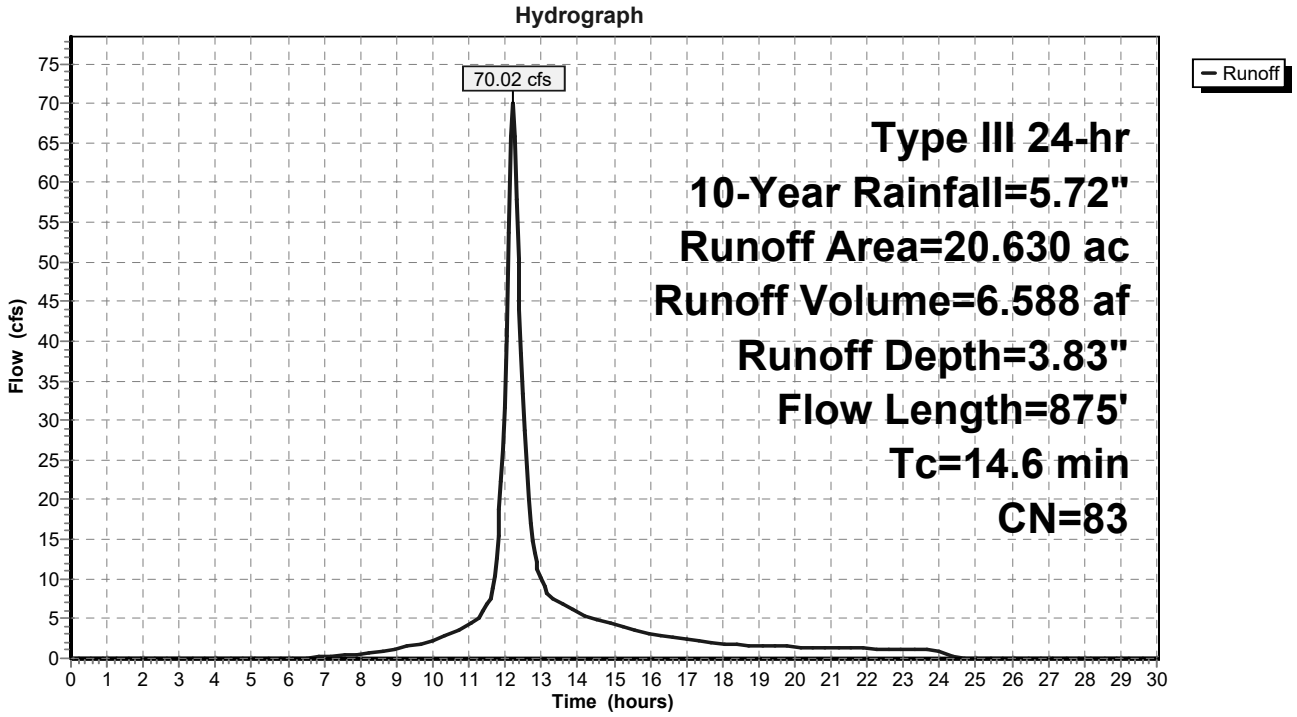
Runoff = 70.02 cfs @ 12.20 hrs, Volume= 6.588 af, Depth= 3.83"
Routed to Pond PD : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.72"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
2.590	79	Woods, Fair, HSG D
2.980	60	Woods, Fair, HSG B
5.220	84	50-75% Grass cover, Fair, HSG D
4.500	98	Paved parking, HSG D
1.150	36	Woods, Fair, HSG A
20.630	83	Weighted Average
16.130		78.19% Pervious Area
4.500		21.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Subcatchment P2: Flow to Pond

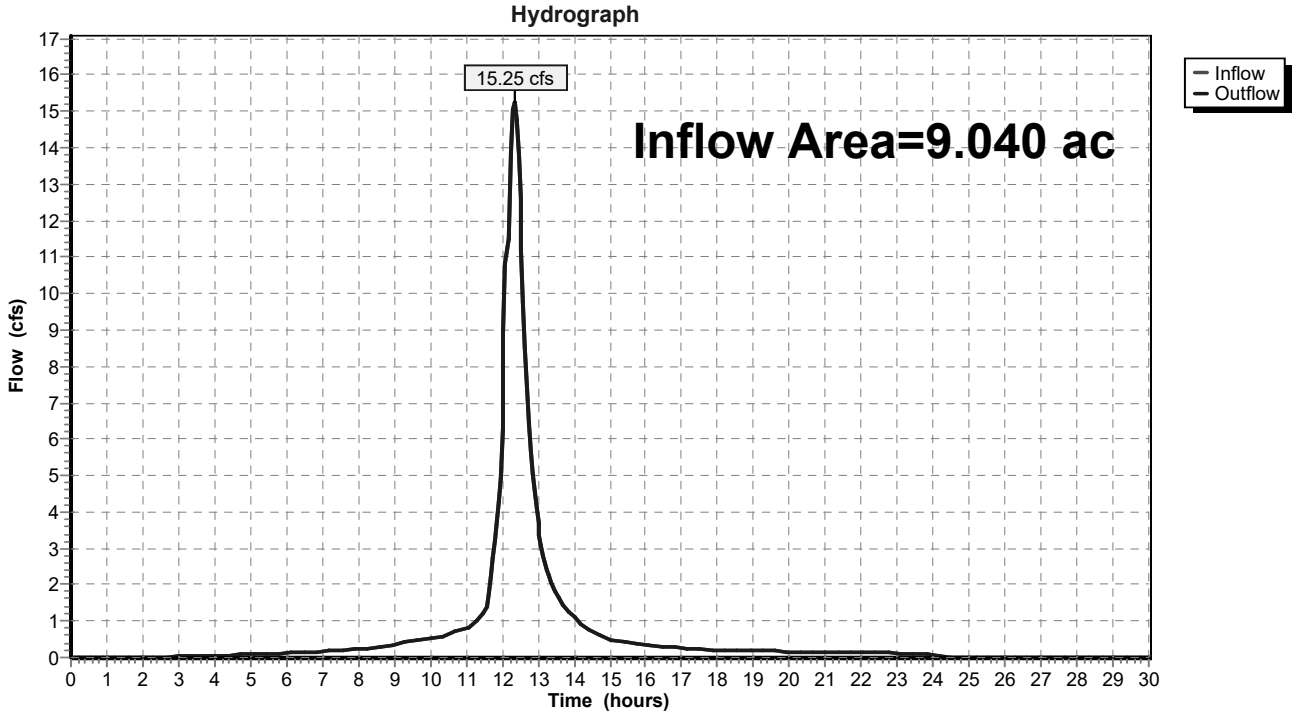


Summary for Reach 1R: Flow to 24" RCP

Inflow Area = 9.040 ac, 42.15% Impervious, Inflow Depth = 2.00" for 10-Year event
Inflow = 15.25 cfs @ 12.34 hrs, Volume= 1.510 af
Outflow = 15.25 cfs @ 12.34 hrs, Volume= 1.510 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 1R: Flow to 24" RCP

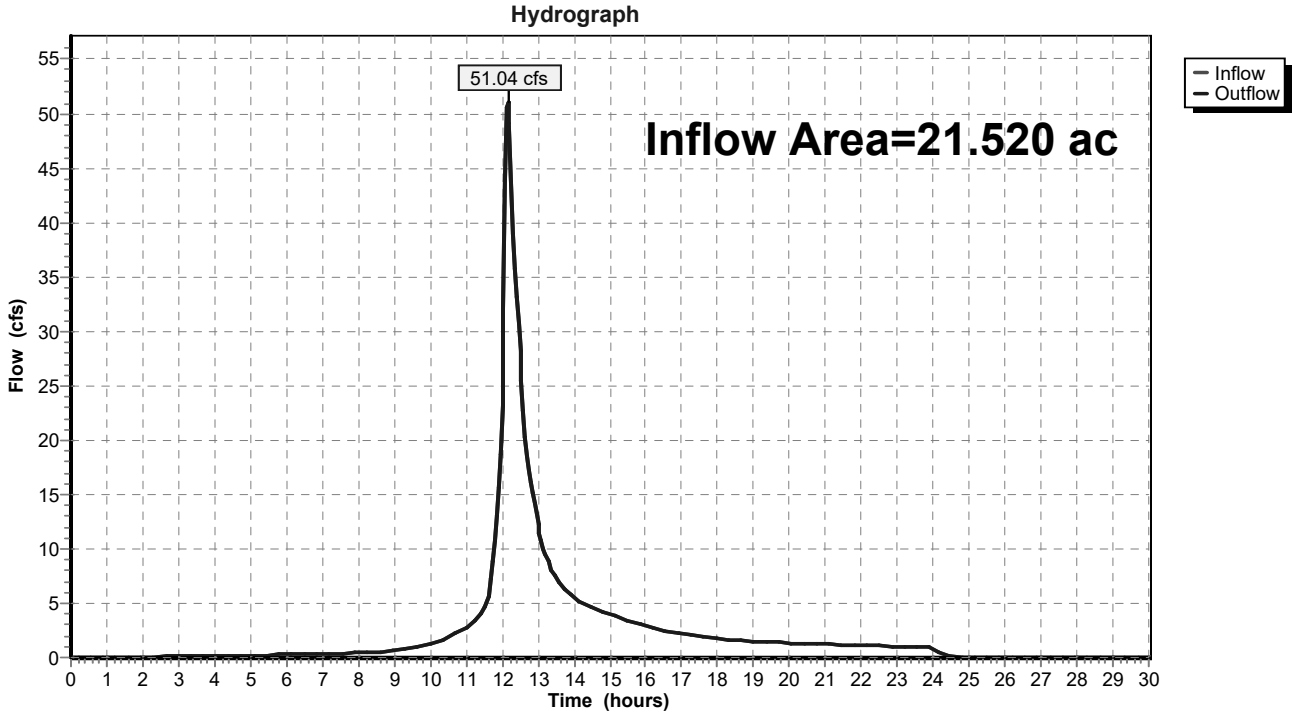


Summary for Reach P1-1: Flow to 36" pipe

Inflow Area = 21.520 ac, 29.37% Impervious, Inflow Depth = 3.15" for 10-Year event
Inflow = 51.04 cfs @ 12.17 hrs, Volume= 5.644 af
Outflow = 51.04 cfs @ 12.17 hrs, Volume= 5.644 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach P1-1: Flow to 36" pipe

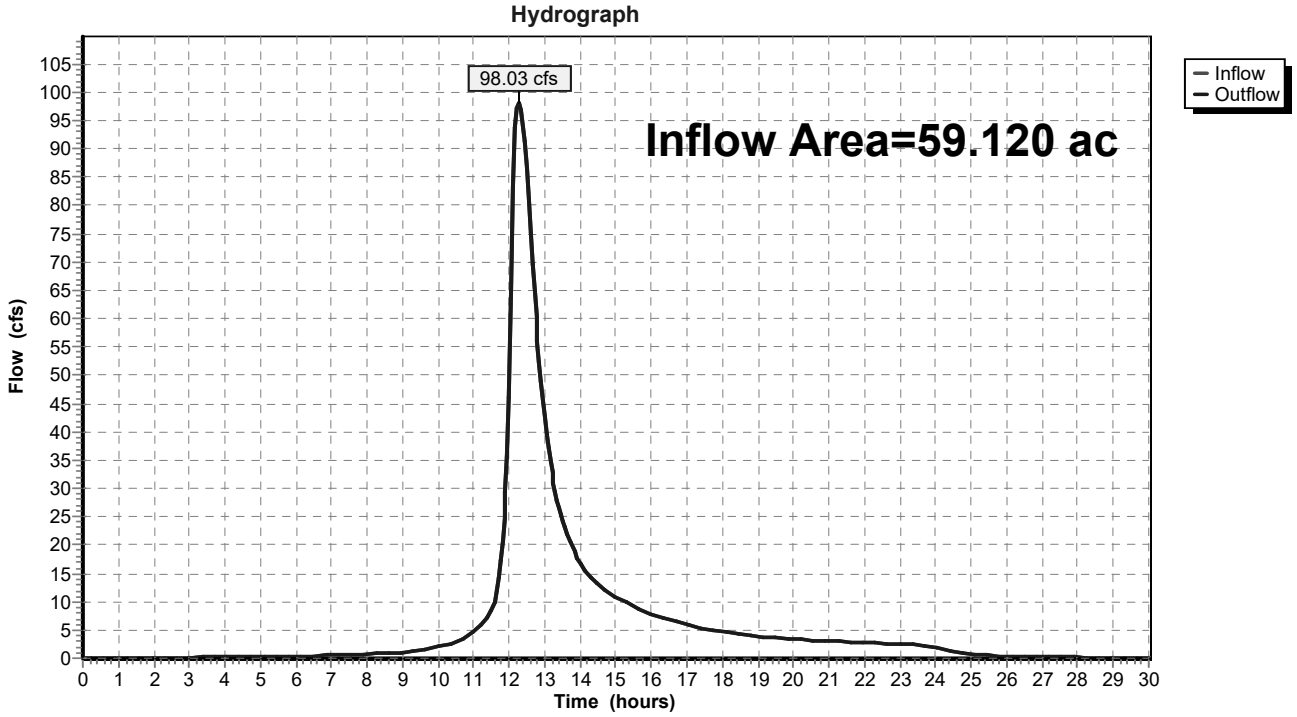


Summary for Reach TS: Total Site

Inflow Area = 59.120 ac, 33.46% Impervious, Inflow Depth > 2.98" for 10-Year event
Inflow = 98.03 cfs @ 12.28 hrs, Volume= 14.667 af
Outflow = 98.03 cfs @ 12.28 hrs, Volume= 14.667 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach TS: Total Site



Summary for Pond DP1: Detention Pond 1

Inflow Area = 6.030 ac, 81.59% Impervious, Inflow Depth = 4.46" for 10-Year event
Inflow = 29.71 cfs @ 12.09 hrs, Volume= 2.243 af
Outflow = 12.33 cfs @ 12.31 hrs, Volume= 2.243 af, Atten= 58%, Lag= 13.0 min
Discarded = 3.19 cfs @ 12.31 hrs, Volume= 1.550 af
Primary = 9.14 cfs @ 12.31 hrs, Volume= 0.693 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 662.68' @ 12.31 hrs Surf.Area= 0.190 ac Storage= 0.605 af

Plug-Flow detention time= 38.9 min calculated for 2.240 af (100% of inflow)
Center-of-Mass det. time= 38.8 min (828.6 - 789.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.00'	0.322 af	**73.92'W x 111.77'L x 7.00'H Field A** 1.328 af Overall - 0.522 af Embedded = 0.806 af x 40.0% Voids
#2A	659.50'	0.522 af	**ADS_StormTech MC-4500 +Cap** x 208 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 208 Chambers in 8 Rows Cap Storage= 35.7 cf x 2 x 8 rows = 571.2 cf
		0.844 af	Total Available Storage

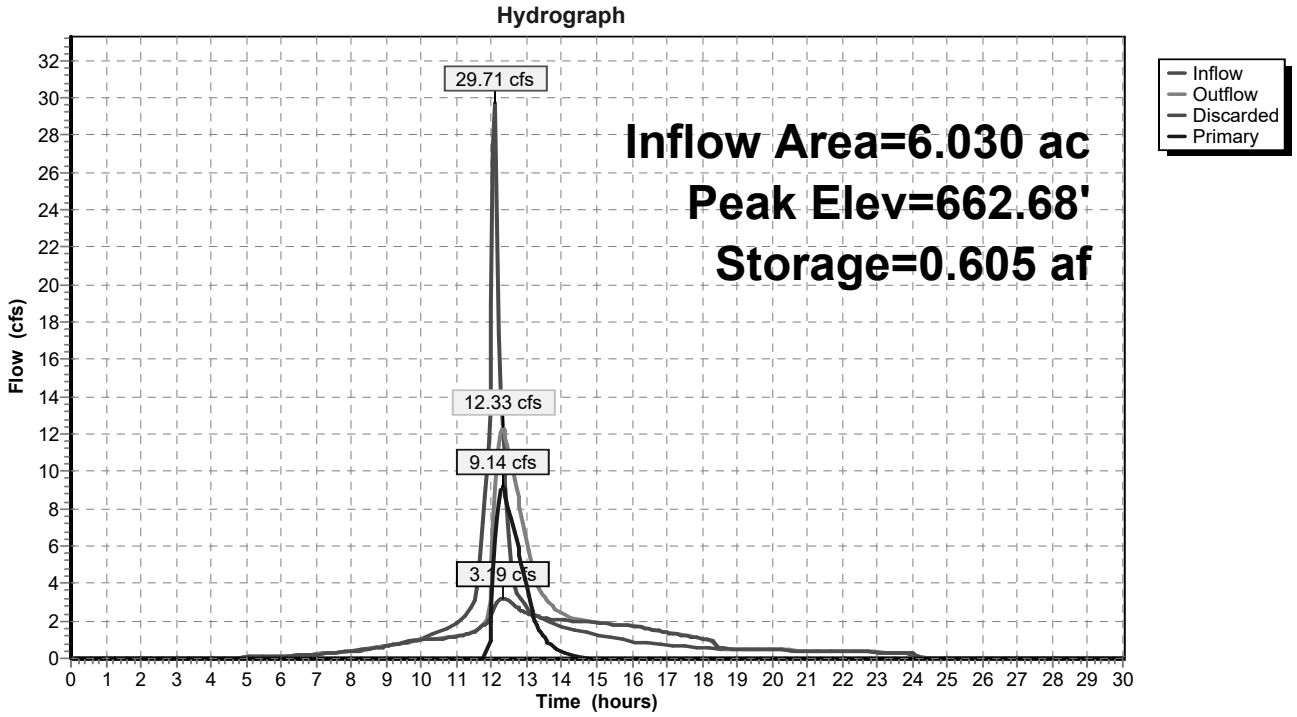
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	658.40'	**24.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 658.40' / 656.05' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	660.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	662.35'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	664.90'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.7' Crest Height
#5	Discarded	658.00'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 656.00'

Discarded OutFlow Max=3.19 cfs @ 12.31 hrs HW=662.68' (Free Discharge)
└**5=Exfiltration** (Controls 3.19 cfs)

Primary OutFlow Max=9.12 cfs @ 12.31 hrs HW=662.68' (Free Discharge)
└**1=Culvert** (Passes 9.12 cfs of 27.39 cfs potential flow)
  ├**2=15" Orifice** (Orifice Controls 8.47 cfs @ 6.90 fps)
  ├**3=24" Orifice** (Orifice Controls 0.66 cfs @ 1.95 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DP1: Detention Pond 1



Summary for Pond DP2: Detention Pond 2

Inflow Area = 6.890 ac, 29.90% Impervious, Inflow Depth = 3.53" for 10-Year event
Inflow = 23.18 cfs @ 12.17 hrs, Volume= 2.027 af
Outflow = 13.02 cfs @ 12.39 hrs, Volume= 2.027 af, Atten= 44%, Lag= 13.2 min
Discarded = 2.15 cfs @ 12.39 hrs, Volume= 1.436 af
Primary = 10.87 cfs @ 12.39 hrs, Volume= 0.591 af
Routed to Reach 1R : Flow to 24" RCP

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 663.03' @ 12.39 hrs Surf.Area= 0.186 ac Storage= 0.545 af

Plug-Flow detention time= 62.8 min calculated for 2.023 af (100% of inflow)
Center-of-Mass det. time= 62.7 min (884.5 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.50'	0.348 af	**63.83'W x 126.87'L x 7.50'H Field A** 1.394 af Overall - 0.525 af Embedded = 0.869 af x 40.0% Voids
#2A	660.50'	0.525 af	**ADS_StormTech MC-4500 +Cap** x 210 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 210 Chambers in 7 Rows Cap Storage= 35.7 cf x 2 x 7 rows = 499.8 cf
		0.873 af	Total Available Storage

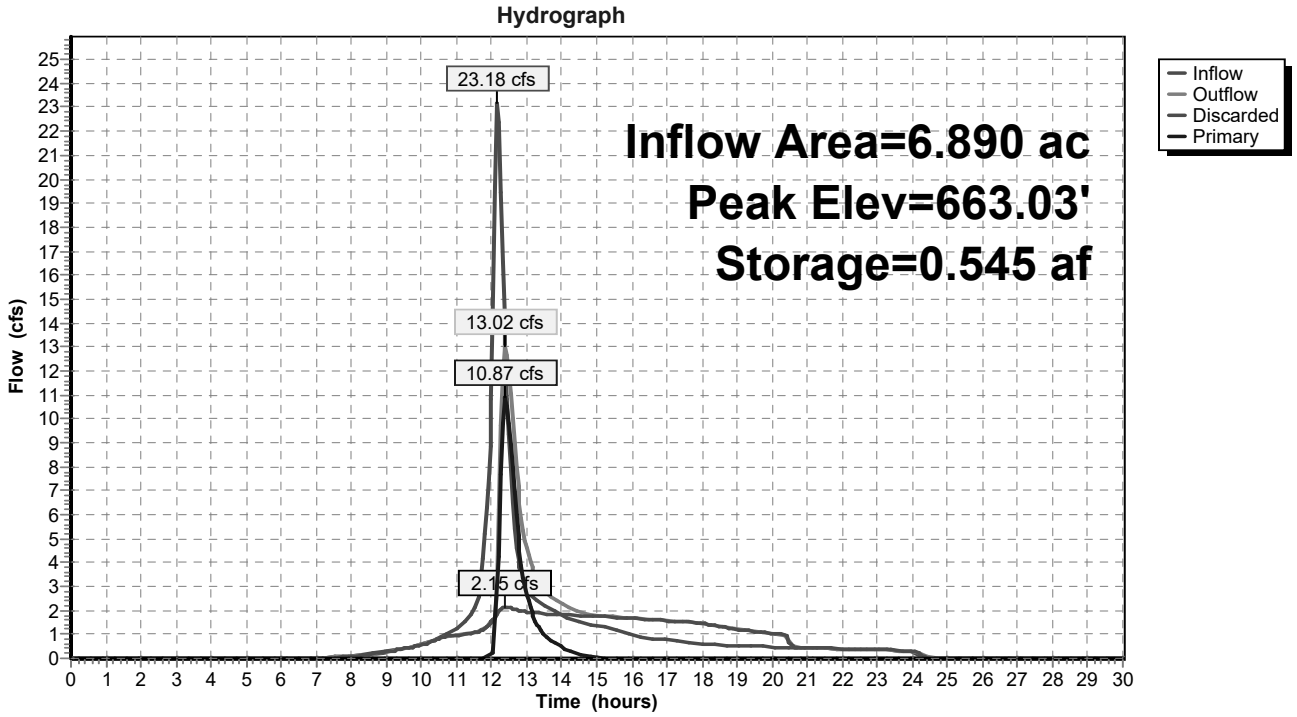
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	661.50'	**24.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 661.50' / 660.65' S= 0.0243 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	663.00'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#5	Discarded	658.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 655.00'

Discarded OutFlow Max=2.15 cfs @ 12.39 hrs HW=663.03' (Free Discharge)
└─**5=Exfiltration** (Controls 2.15 cfs)

Primary OutFlow Max=10.83 cfs @ 12.39 hrs HW=663.03' (Free Discharge)
└─**1=Culvert** (Inlet Controls 10.83 cfs @ 4.21 fps)
  ├─**2=15" Orifice** (Passes < 7.00 cfs potential flow)
  ├─**3=15" Orifice** (Passes < 7.00 cfs potential flow)
  └─**4=24" Orifice** (Passes < 0.00 cfs potential flow)

Pond DP2: Detention Pond 2



Summary for Pond PD: Pond

Inflow Area = 20.630 ac, 21.81% Impervious, Inflow Depth = 3.83" for 10-Year event
Inflow = 70.02 cfs @ 12.20 hrs, Volume= 6.588 af
Outflow = 36.19 cfs @ 12.47 hrs, Volume= 6.180 af, Atten= 48%, Lag= 16.4 min
Primary = 36.19 cfs @ 12.47 hrs, Volume= 6.180 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 650.58' @ 12.47 hrs Surf.Area= 3.907 ac Storage= 2.218 af

Plug-Flow detention time= 107.2 min calculated for 6.169 af (94% of inflow)
Center-of-Mass det. time= 74.9 min (890.9 - 816.1)

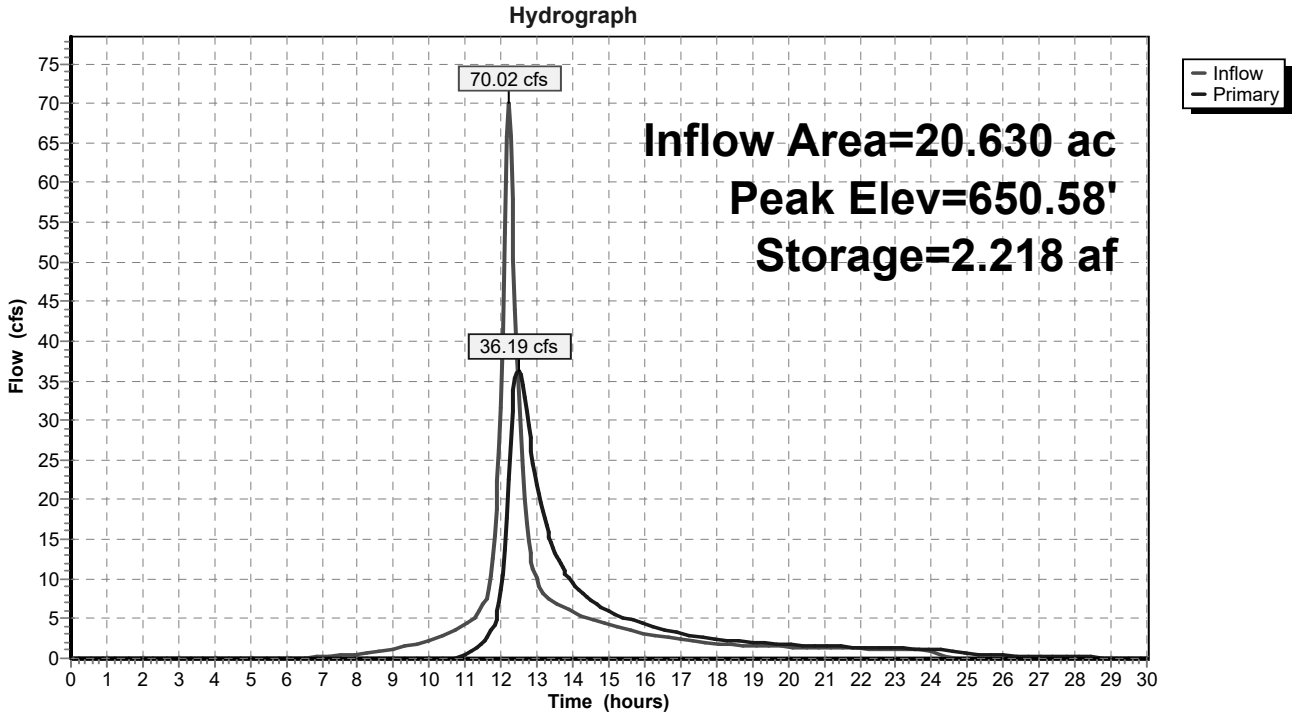
Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=36.09 cfs @ 12.47 hrs HW=650.58' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 36.09 cfs @ 1.80 fps)

Pond PD: Pond


Hydrograph
70.02 cfs
36.19 cfs
Inflow Area=20.630 ac
Peak Elev=650.58'
Storage=2.218 af
Inflow
Primary
Flow (cfs)
Time (hours)
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
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 25 26 27 28 29 30

Summary for Subcatchment P1-1A: Direct Flow to 36" RCP

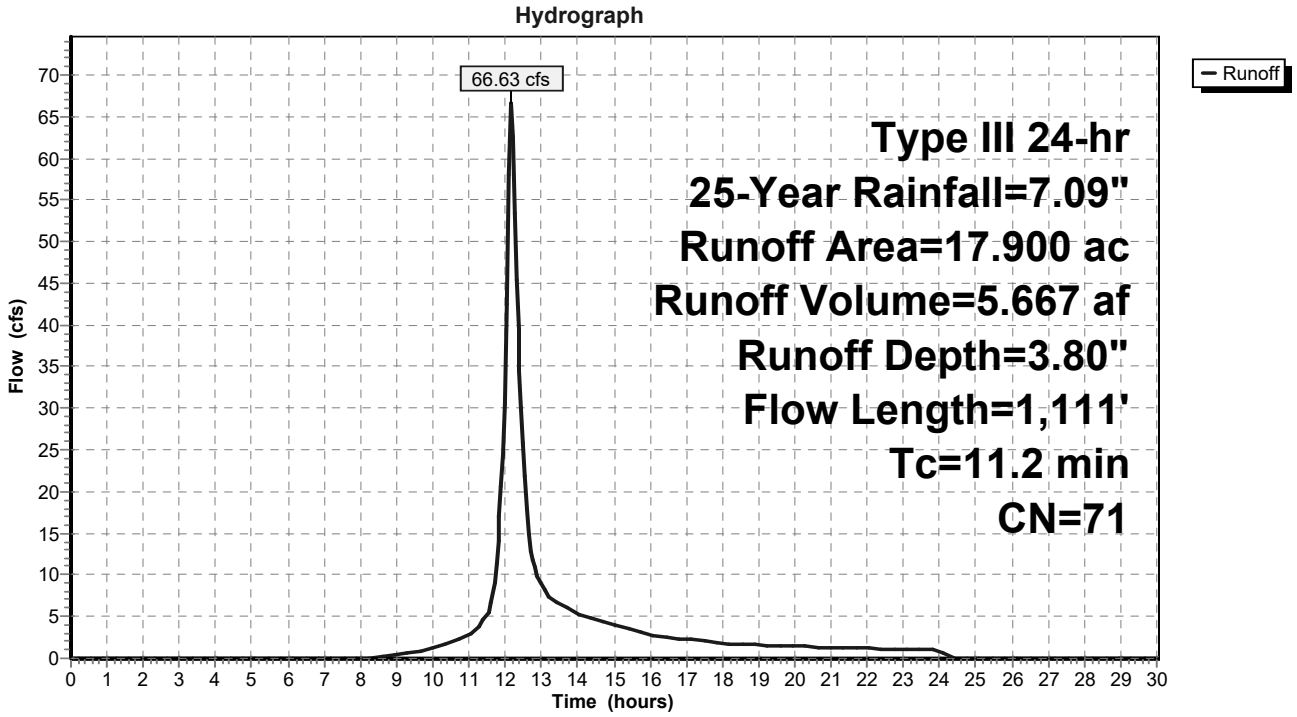
Runoff = 66.63 cfs @ 12.16 hrs, Volume= 5.667 af, Depth= 3.80"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=7.09"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG D
3.580	49	50-75% Grass cover, Fair, HSG A
7.190	79	50-75% Grass cover, Fair, HSG C
1.250	84	50-75% Grass cover, Fair, HSG D
1.930	45	Woods, Poor, HSG A
1.250	60	Woods, Fair, HSG B
17.900	71	Weighted Average
15.200		84.92% Pervious Area
2.700		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1400	0.18		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.9	324	0.1500	6.24		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.8	687	0.0200	14.46	102.19	**Pipe Channel, C-D PIPE** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.2	1,111	Total			

Subcatchment P1-1A: Direct Flow to 36" RCP



Summary for Subcatchment P1-1B: Track & Field

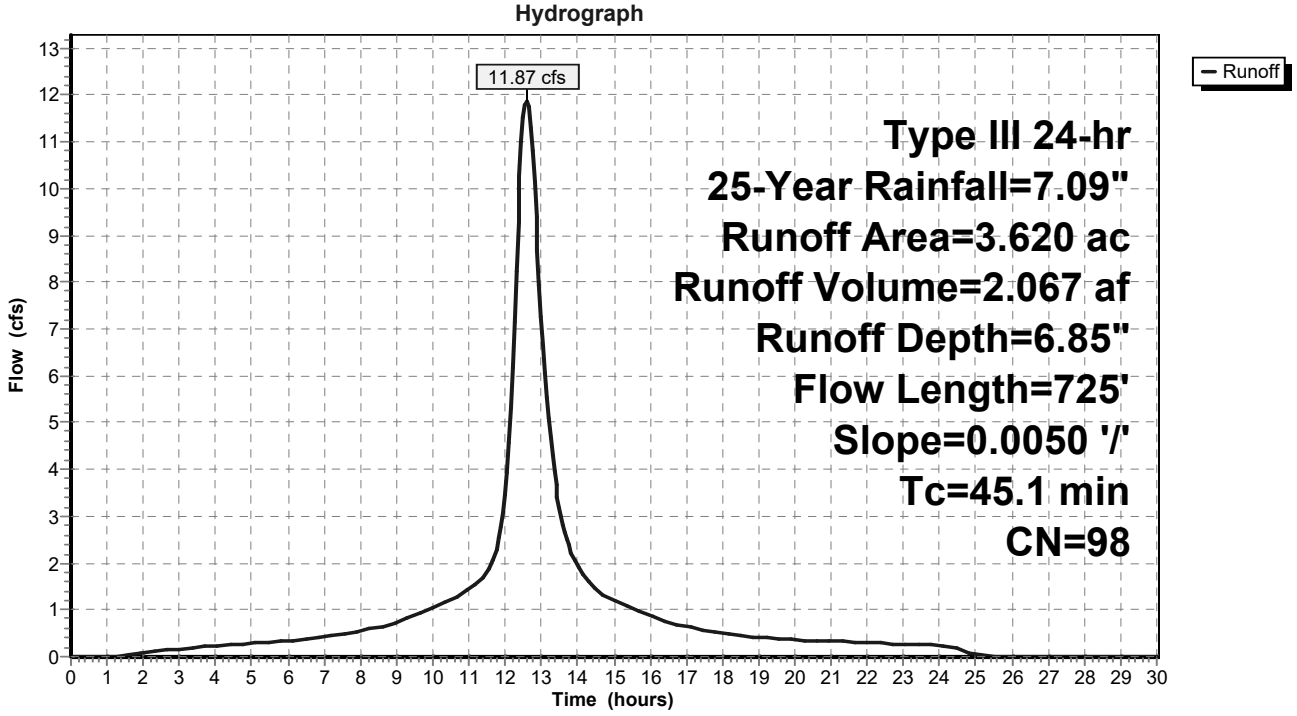
Runoff = 11.87 cfs @ 12.59 hrs, Volume= 2.067 af, Depth= 6.85"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=7.09"

	Area (ac)	CN	Description
*	3.620	98	Track & Field
	3.620		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Subcatchment P1-1B: Track & Field



Summary for Subcatchment P1-2: Flow to 18" RCP

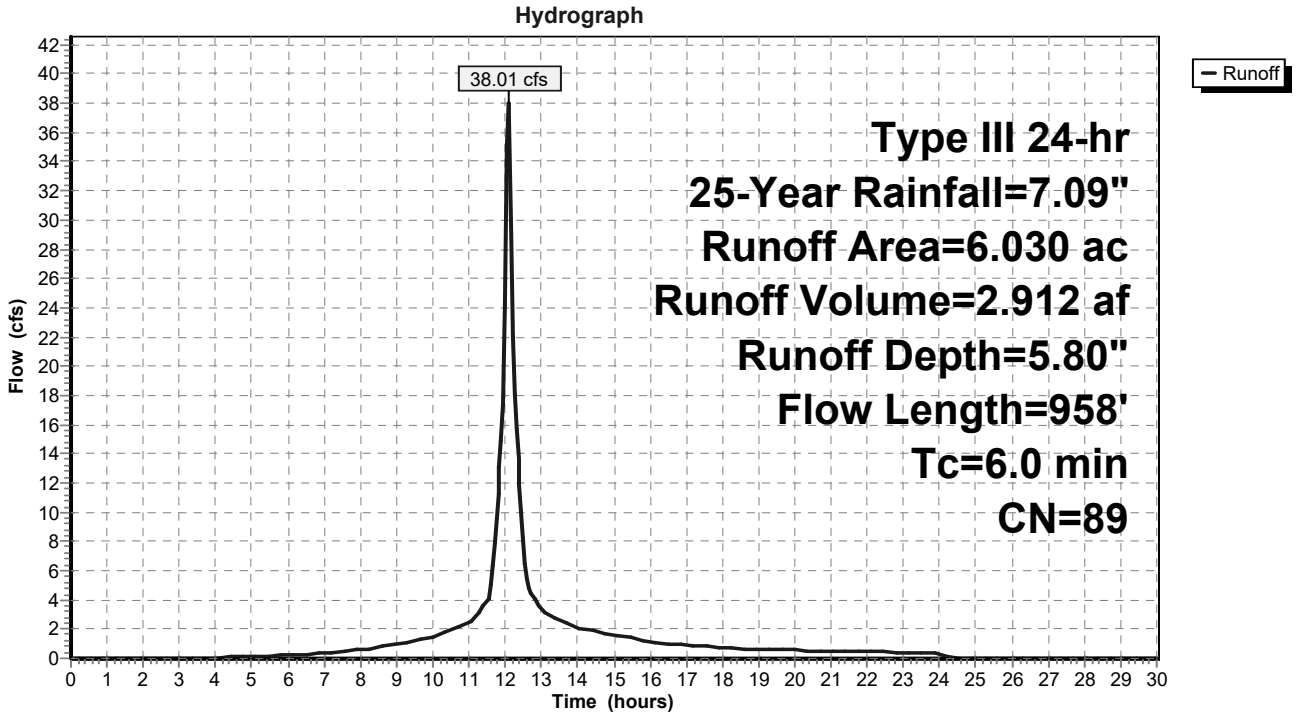
Runoff = 38.01 cfs @ 12.09 hrs, Volume= 2.912 af, Depth= 5.80"
Routed to Pond DP1 : Detention Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=7.09"

	Area (ac)	CN	Description
	4.510	98	Paved parking, HSG D
*	0.410	98	Tennis Courts
	1.060	49	50-75% Grass cover, Fair, HSG A
	0.050	84	50-75% Grass cover, Fair, HSG D
	6.030	89	Weighted Average
	1.110		18.41% Pervious Area
	4.920		81.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.43		**Sheet Flow, A-B PAVED** Smooth surfaces n= 0.011 P2= 3.47"
0.5	50	0.0100	1.61		**Shallow Concentrated Flow, B-C RAIN GARDEN** Unpaved Kv= 16.1 fps
3.3	808	0.0050	4.03	4.95	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
1.0					**Direct Entry, TO MEET MIN**
6.0	958	Total			

Subcatchment P1-2: Flow to 18" RCP



Summary for Subcatchment P1-3A: Flow to Detention Pond 2

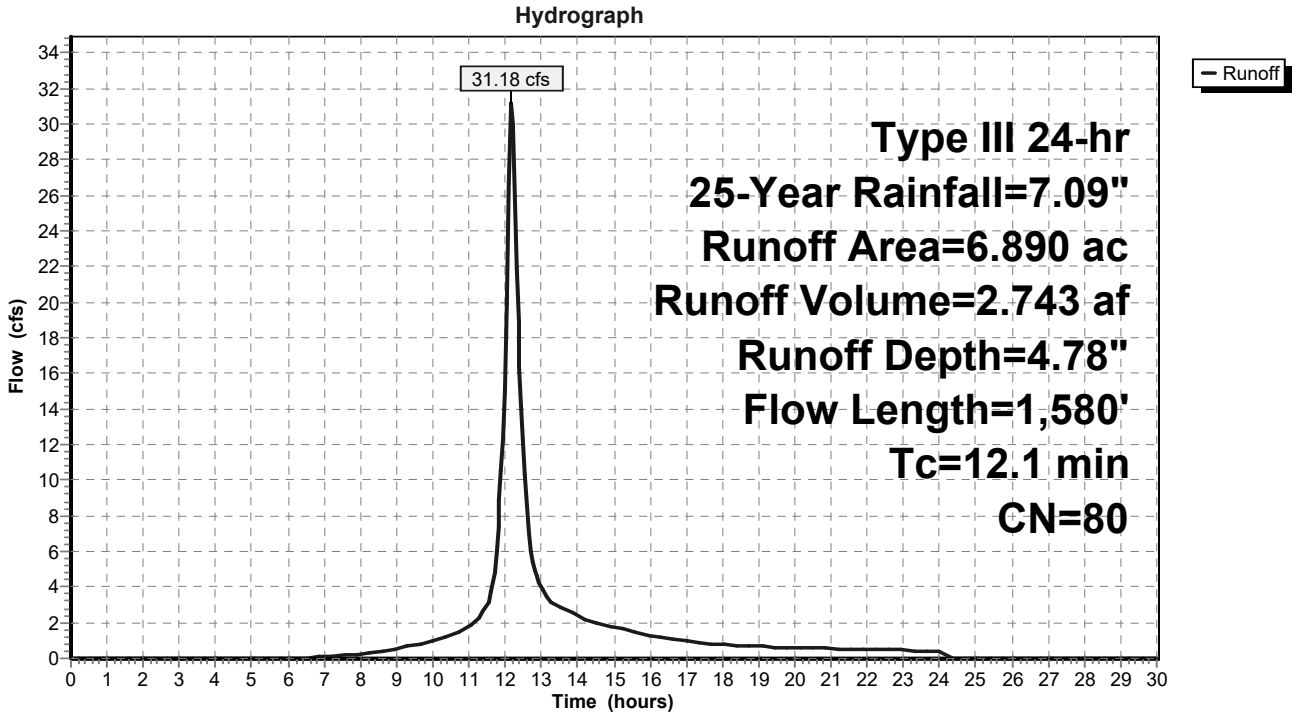
Runoff = 31.18 cfs @ 12.17 hrs, Volume= 2.743 af, Depth= 4.78"
Routed to Pond DP2 : Detention Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=7.09"

Area (ac)	CN	Description
2.060	98	Paved parking, HSG D
3.150	84	50-75% Grass cover, Fair, HSG D
0.510	36	Woods, Fair, HSG A
0.870	60	Woods, Fair, HSG B
0.070	79	50-75% Grass cover, Fair, HSG C
0.230	49	50-75% Grass cover, Fair, HSG A
6.890	80	Weighted Average
4.830		70.10% Pervious Area
2.060		29.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.2500	0.22		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
12.1	1,580	Total			

Subcatchment P1-3A: Flow to Detention Pond 2



Summary for Subcatchment P1-3B: Flow to 24" RCP

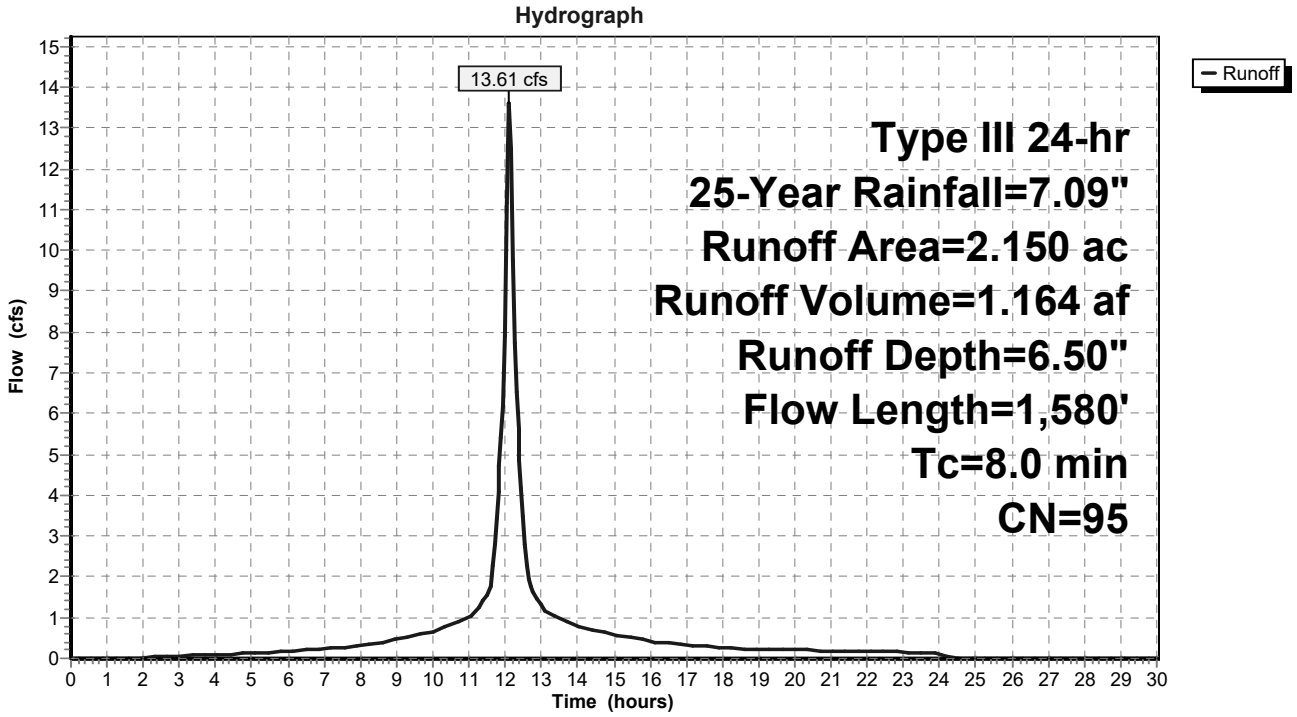
Runoff = 13.61 cfs @ 12.11 hrs, Volume= 1.164 af, Depth= 6.50"
Routed to Reach 1R : Flow to 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=7.09"

Area (ac)	CN	Description
1.750	98	Paved parking, HSG D
0.400	84	50-75% Grass cover, Fair, HSG D
2.150	95	Weighted Average
0.400		18.60% Pervious Area
1.750		81.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2500	0.49		**Sheet Flow, A-B HILL** Grass: Short n= 0.150 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
8.0	1,580	Total			

Subcatchment P1-3B: Flow to 24" RCP



Summary for Subcatchment P1-4: Flow to Swale

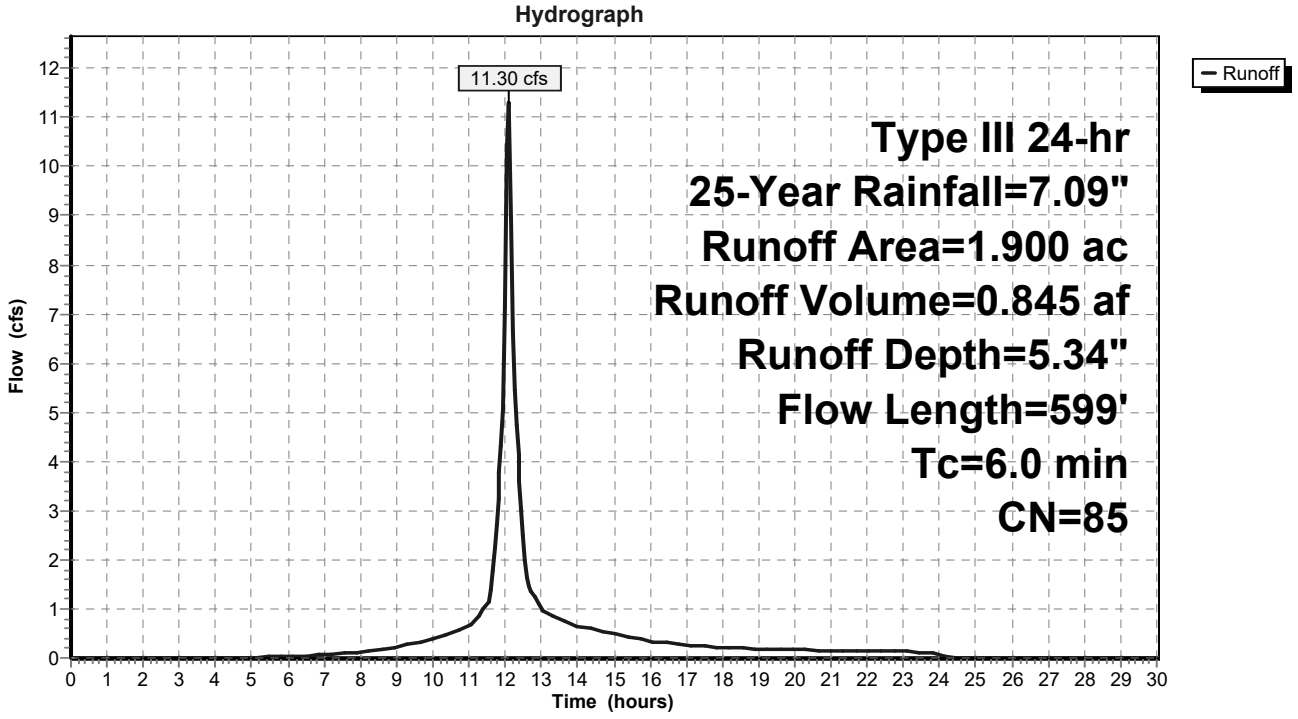
Runoff = 11.30 cfs @ 12.09 hrs, Volume= 0.845 af, Depth= 5.34"
Routed to Reach TS : Total Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=7.09"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
0.380	79	50-75% Grass cover, Fair, HSG C
1.290	84	50-75% Grass cover, Fair, HSG D
1.900	85	Weighted Average
1.670		87.89% Pervious Area
0.230		12.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Subcatchment P1-4: Flow to Swale



Summary for Subcatchment P2: Flow to Pond

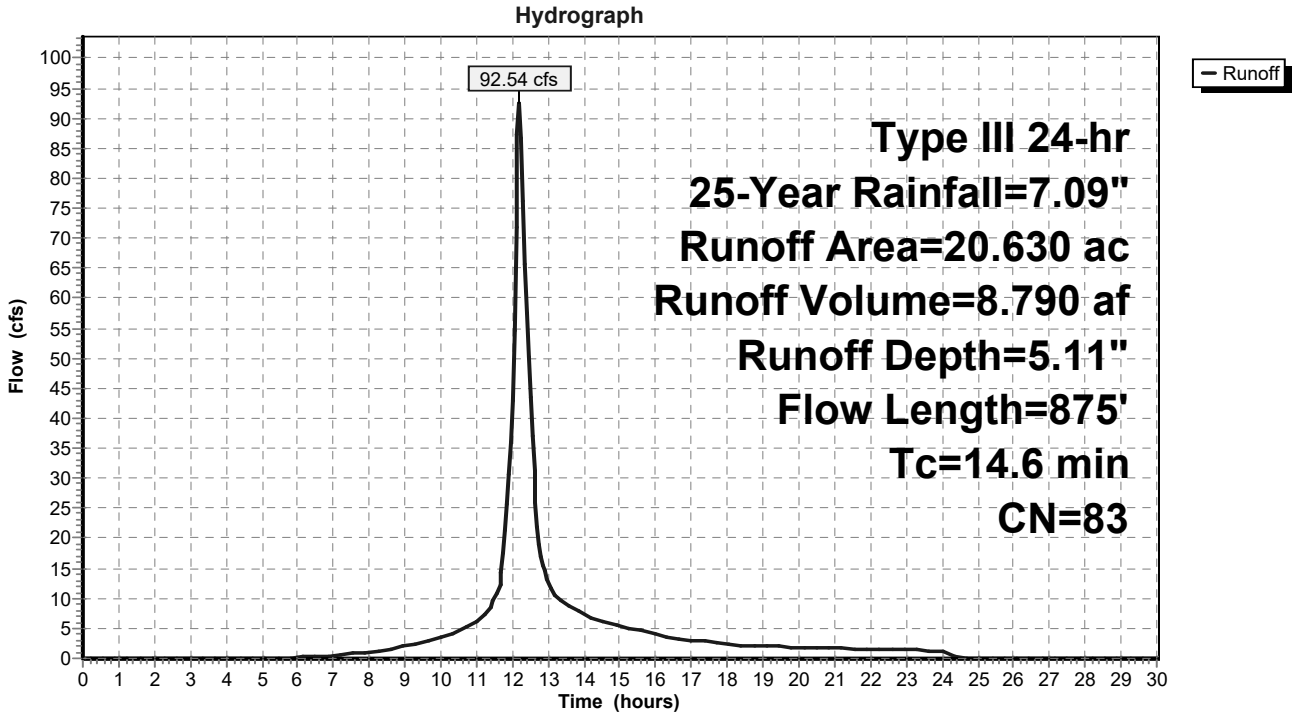
Runoff = 92.54 cfs @ 12.20 hrs, Volume= 8.790 af, Depth= 5.11"
Routed to Pond PD : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=7.09"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
2.590	79	Woods, Fair, HSG D
2.980	60	Woods, Fair, HSG B
5.220	84	50-75% Grass cover, Fair, HSG D
4.500	98	Paved parking, HSG D
1.150	36	Woods, Fair, HSG A
20.630	83	Weighted Average
16.130		78.19% Pervious Area
4.500		21.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Subcatchment P2: Flow to Pond

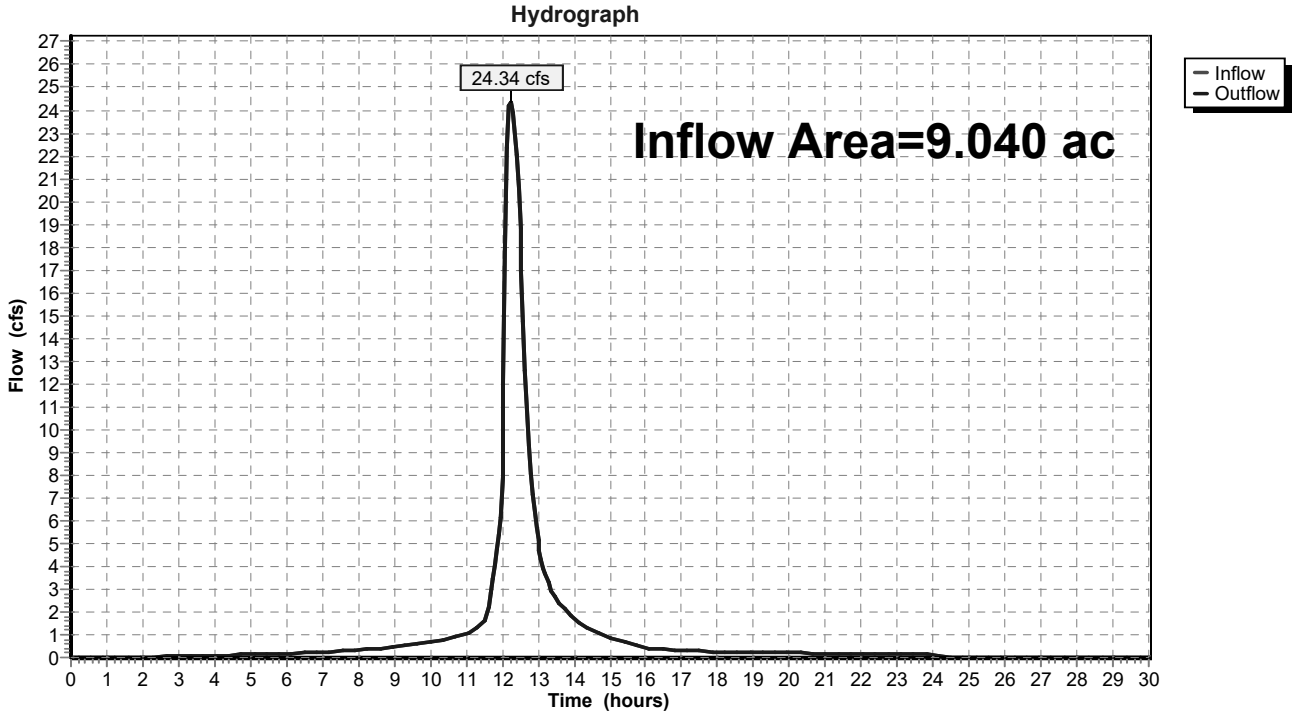


Summary for Reach 1R: Flow to 24" RCP

Inflow Area = 9.040 ac, 42.15% Impervious, Inflow Depth = 2.96" for 25-Year event
Inflow = 24.34 cfs @ 12.24 hrs, Volume= 2.230 af
Outflow = 24.34 cfs @ 12.24 hrs, Volume= 2.230 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 1R: Flow to 24" RCP

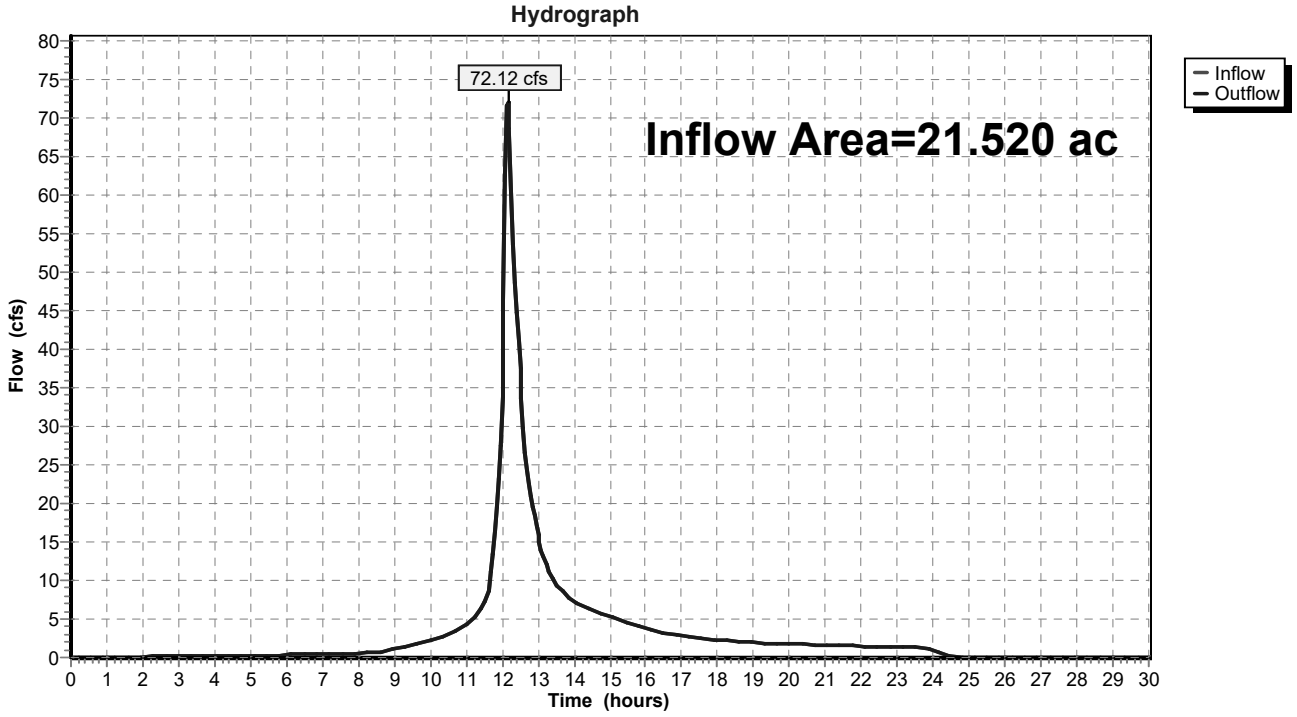


Summary for Reach P1-1: Flow to 36" pipe

Inflow Area = 21.520 ac, 29.37% Impervious, Inflow Depth = 4.31" for 25-Year event
Inflow = 72.12 cfs @ 12.16 hrs, Volume= 7.734 af
Outflow = 72.12 cfs @ 12.16 hrs, Volume= 7.734 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach P1-1: Flow to 36" pipe

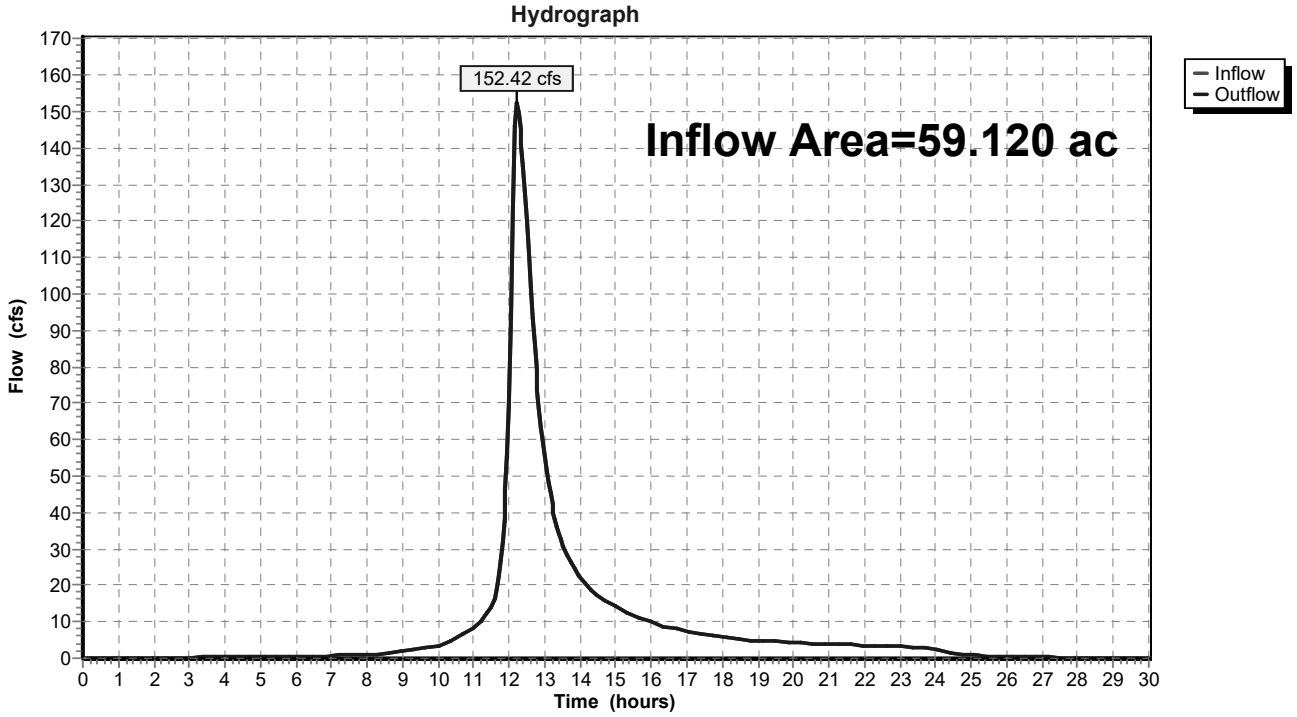


Summary for Reach TS: Total Site

Inflow Area = 59.120 ac, 33.46% Impervious, Inflow Depth > 4.12" for 25-Year event
Inflow = 152.42 cfs @ 12.21 hrs, Volume= 20.275 af
Outflow = 152.42 cfs @ 12.21 hrs, Volume= 20.275 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach TS: Total Site



Summary for Pond DP1: Detention Pond 1

Inflow Area = 6.030 ac, 81.59% Impervious, Inflow Depth = 5.80" for 25-Year event
Inflow = 38.01 cfs @ 12.09 hrs, Volume= 2.912 af
Outflow = 21.47 cfs @ 12.22 hrs, Volume= 2.912 af, Atten= 44%, Lag= 7.8 min
Discarded = 3.63 cfs @ 12.22 hrs, Volume= 1.825 af
Primary = 17.84 cfs @ 12.22 hrs, Volume= 1.087 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 663.58' @ 12.22 hrs Surf.Area= 0.190 ac Storage= 0.720 af

Plug-Flow detention time= 37.8 min calculated for 2.908 af (100% of inflow)
Center-of-Mass det. time= 37.8 min (820.6 - 782.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.00'	0.322 af	**73.92'W x 111.77'L x 7.00'H Field A** 1.328 af Overall - 0.522 af Embedded = 0.806 af x 40.0% Voids
#2A	659.50'	0.522 af	**ADS_StormTech MC-4500 +Cap** x 208 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 208 Chambers in 8 Rows Cap Storage= 35.7 cf x 2 x 8 rows = 571.2 cf
		0.844 af	Total Available Storage

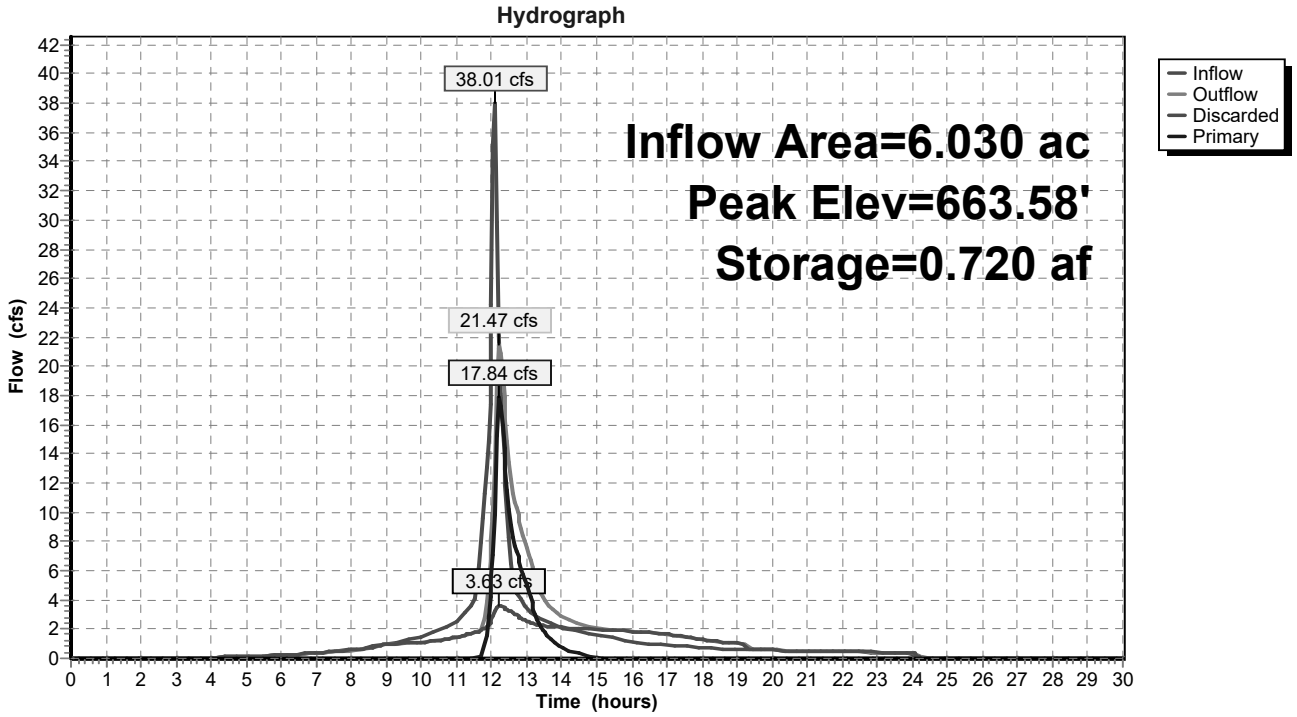
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	658.40'	**24.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 658.40' / 656.05' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	660.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	662.35'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	664.90'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.7' Crest Height
#5	Discarded	658.00'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 656.00'

Discarded OutFlow Max=3.61 cfs @ 12.22 hrs HW=663.56' (Free Discharge)
└**5=Exfiltration** (Controls 3.61 cfs)

Primary OutFlow Max=17.51 cfs @ 12.22 hrs HW=663.56' (Free Discharge)
└**1=Culvert** (Passes 17.51 cfs of 30.84 cfs potential flow)
  ├**2=15" Orifice** (Orifice Controls 10.12 cfs @ 8.24 fps)
  ├**3=24" Orifice** (Orifice Controls 7.40 cfs @ 3.74 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DP1: Detention Pond 1



Summary for Pond DP2: Detention Pond 2

Inflow Area = 6.890 ac, 29.90% Impervious, Inflow Depth = 4.78" for 25-Year event
Inflow = 31.18 cfs @ 12.17 hrs, Volume= 2.743 af
Outflow = 20.03 cfs @ 12.33 hrs, Volume= 2.743 af, Atten= 36%, Lag= 10.1 min
Discarded = 2.37 cfs @ 12.33 hrs, Volume= 1.677 af
Primary = 17.65 cfs @ 12.33 hrs, Volume= 1.066 af
Routed to Reach 1R : Flow to 24" RCP

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 663.86' @ 12.33 hrs Surf.Area= 0.186 ac Storage= 0.661 af

Plug-Flow detention time= 57.5 min calculated for 2.739 af (100% of inflow)
Center-of-Mass det. time= 57.5 min (870.6 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.50'	0.348 af	**63.83'W x 126.87'L x 7.50'H Field A** 1.394 af Overall - 0.525 af Embedded = 0.869 af x 40.0% Voids
#2A	660.50'	0.525 af	**ADS_StormTech MC-4500 +Cap** x 210 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 210 Chambers in 7 Rows Cap Storage= 35.7 cf x 2 x 7 rows = 499.8 cf
		0.873 af	Total Available Storage

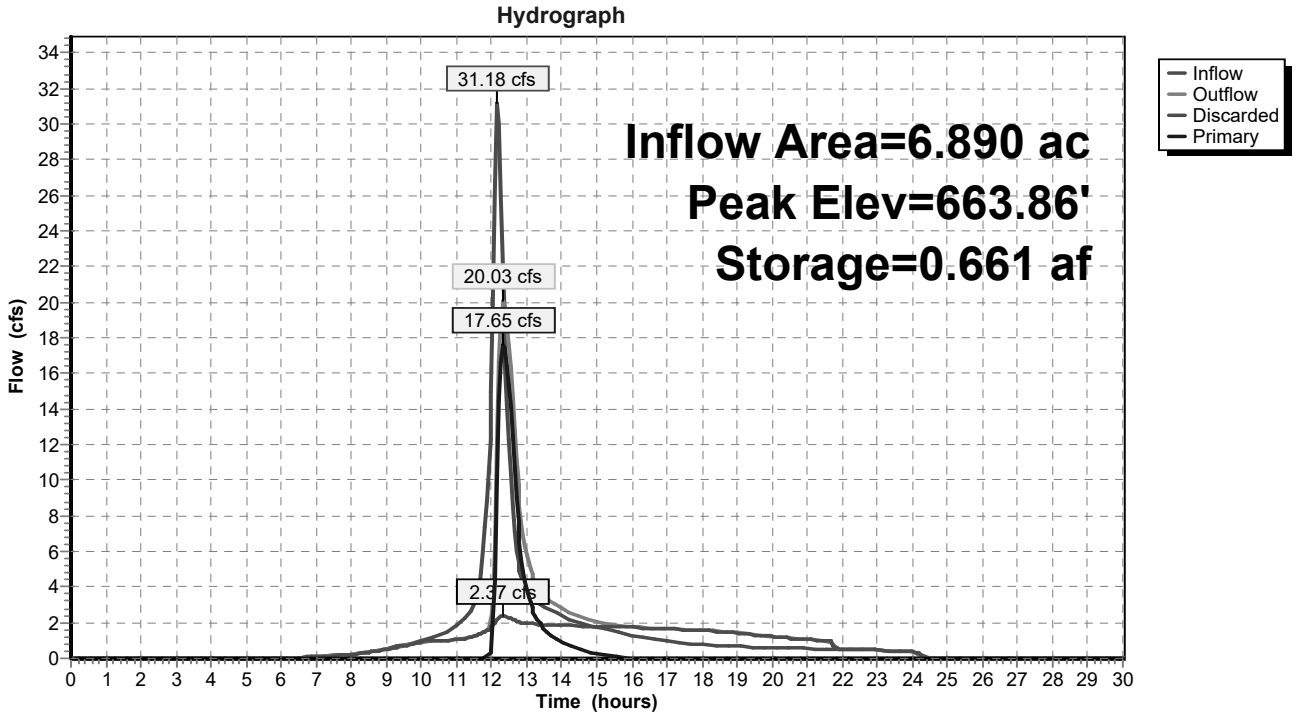
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	661.50'	**24.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 661.50' / 660.65' S= 0.0243 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	663.00'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#5	Discarded	658.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 655.00'

Discarded OutFlow Max=2.37 cfs @ 12.33 hrs HW=663.85' (Free Discharge)
└**5=Exfiltration** (Controls 2.37 cfs)

Primary OutFlow Max=17.60 cfs @ 12.33 hrs HW=663.85' (Free Discharge)
└**1=Culvert** (Inlet Controls 17.60 cfs @ 5.60 fps)
├**2=15" Orifice** (Passes < 8.82 cfs potential flow)
├**3=15" Orifice** (Passes < 8.82 cfs potential flow)
└**4=24" Orifice** (Passes < 4.02 cfs potential flow)

Pond DP2: Detention Pond 2



Summary for Pond PD: Pond

Inflow Area = 20.630 ac, 21.81% Impervious, Inflow Depth = 5.11" for 25-Year event
Inflow = 92.54 cfs @ 12.20 hrs, Volume= 8.790 af
Outflow = 52.21 cfs @ 12.44 hrs, Volume= 8.379 af, Atten= 44%, Lag= 14.3 min
Primary = 52.21 cfs @ 12.44 hrs, Volume= 8.379 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 650.70' @ 12.44 hrs Surf.Area= 3.933 ac Storage= 2.687 af

Plug-Flow detention time= 93.8 min calculated for 8.379 af (95% of inflow)
Center-of-Mass det. time= 67.7 min (875.6 - 808.0)

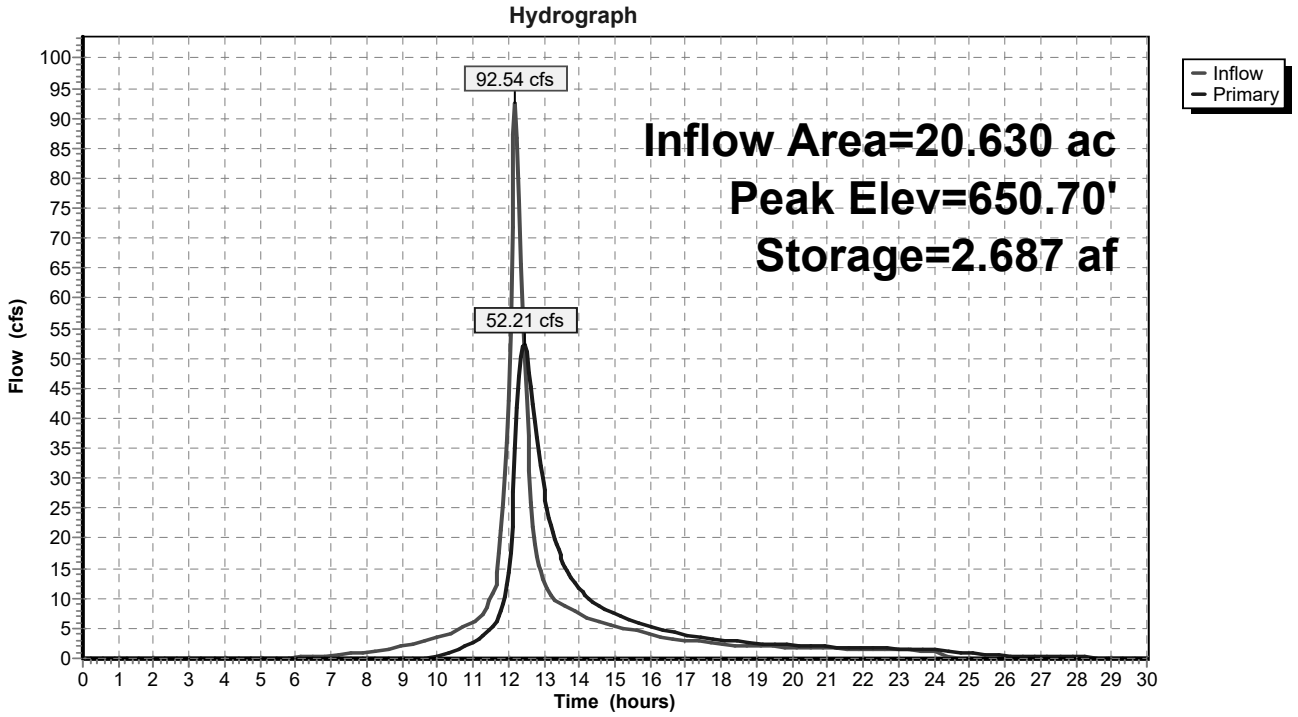
Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=52.12 cfs @ 12.44 hrs HW=650.70' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 52.12 cfs @ 2.08 fps)

Pond PD: Pond


Hydrograph
92.54 cfs
52.21 cfs
Inflow Area=20.630 ac
Peak Elev=650.70'
Storage=2.687 af
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Subcatchment P1-1A: Direct Flow to 36" RCP

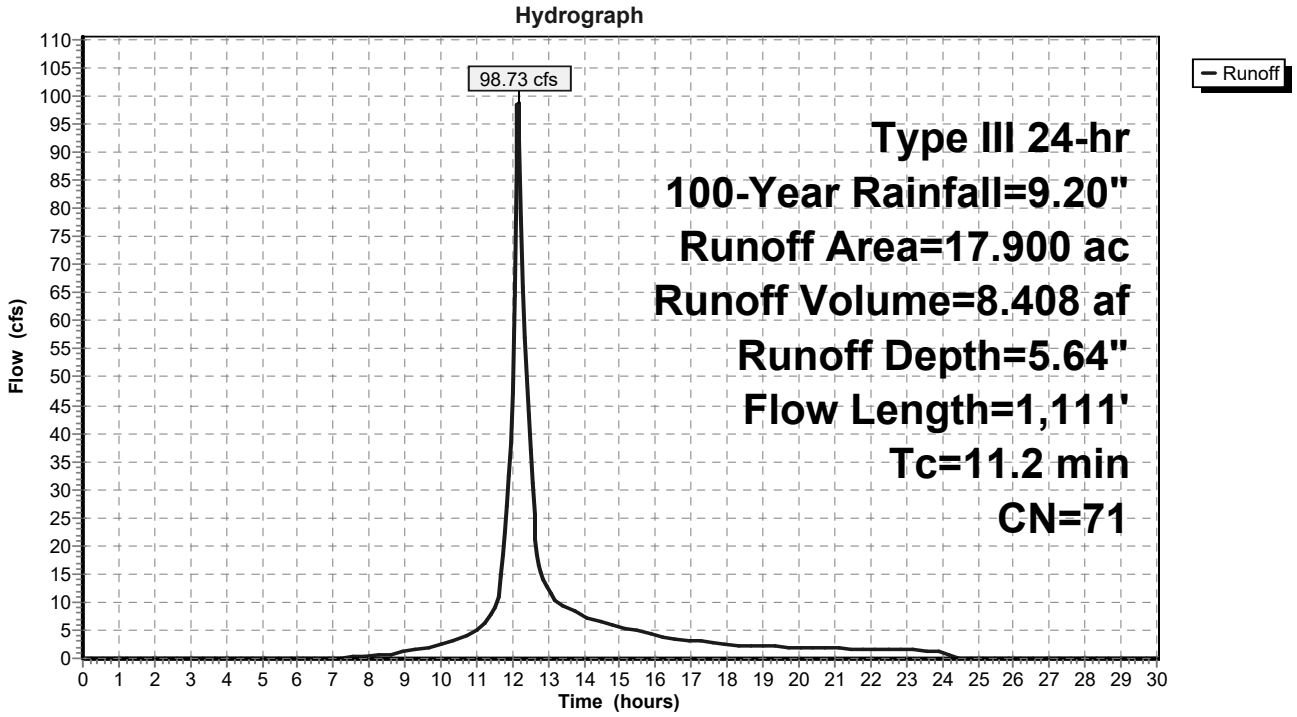
Runoff = 98.73 cfs @ 12.16 hrs, Volume= 8.408 af, Depth= 5.64"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.20"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG D
3.580	49	50-75% Grass cover, Fair, HSG A
7.190	79	50-75% Grass cover, Fair, HSG C
1.250	84	50-75% Grass cover, Fair, HSG D
1.930	45	Woods, Poor, HSG A
1.250	60	Woods, Fair, HSG B
17.900	71	Weighted Average
15.200		84.92% Pervious Area
2.700		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1400	0.18		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.9	324	0.1500	6.24		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
0.8	687	0.0200	14.46	102.19	**Pipe Channel, C-D PIPE** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
11.2	1,111	Total			

Subcatchment P1-1A: Direct Flow to 36" RCP



Summary for Subcatchment P1-1B: Track & Field

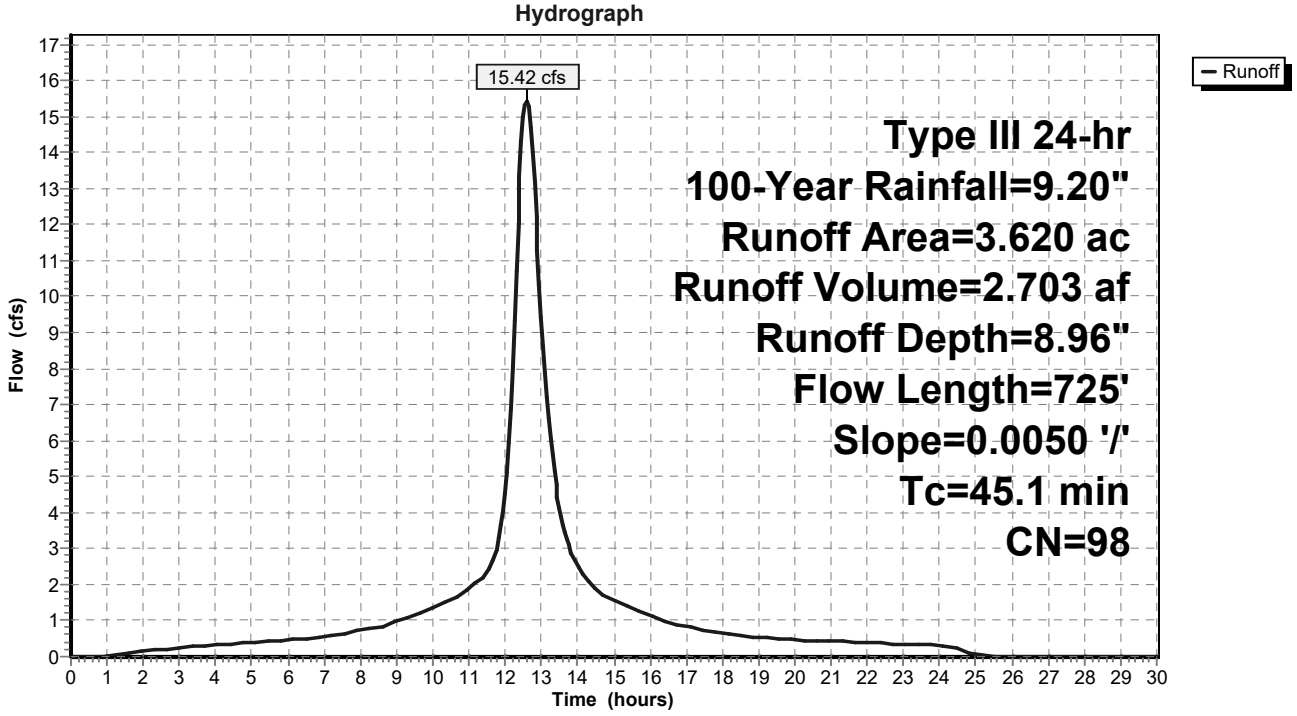
Runoff = 15.42 cfs @ 12.59 hrs, Volume= 2.703 af, Depth= 8.96"
Routed to Reach P1-1 : Flow to 36" pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.20"

	Area (ac)	CN	Description
*	3.620	98	Track & Field
	3.620		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, Vertical Through Turf**
8.0					**Direct Entry, Vertical Through Stone**
20.6	25	0.0050	0.02		**Sheet Flow, Horizontal Through Stone Base** Woods: Dense underbrush n= 0.800 P2= 3.47"
5.6	200	0.0050	0.60	0.05	**Pipe Channel, Flow Through Flat Panel** 12.0" x 1.0" Box Area= 0.1 sf Perim= 2.2' r= 0.04' n= 0.020 Corrugated PE, corrugated interior
3.4	500	0.0050	2.45	0.85	**Pipe Channel, Flow Through Collector Trench** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
45.1	725	Total			

Subcatchment P1-1B: Track & Field



Summary for Subcatchment P1-2: Flow to 18" RCP

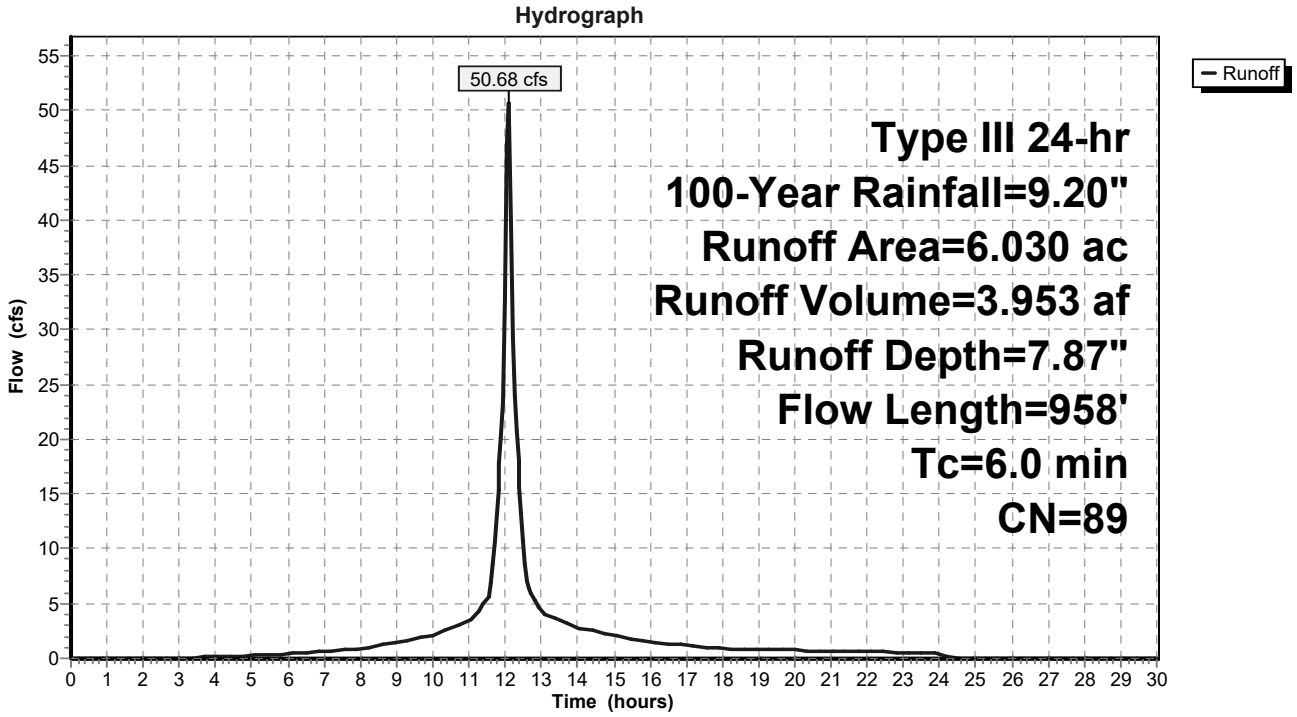
Runoff = 50.68 cfs @ 12.09 hrs, Volume= 3.953 af, Depth= 7.87"
Routed to Pond DP1 : Detention Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.20"

	Area (ac)	CN	Description
	4.510	98	Paved parking, HSG D
*	0.410	98	Tennis Courts
	1.060	49	50-75% Grass cover, Fair, HSG A
	0.050	84	50-75% Grass cover, Fair, HSG D
	6.030	89	Weighted Average
	1.110		18.41% Pervious Area
	4.920		81.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.43		**Sheet Flow, A-B PAVED** Smooth surfaces n= 0.011 P2= 3.47"
0.5	50	0.0100	1.61		**Shallow Concentrated Flow, B-C RAIN GARDEN** Unpaved Kv= 16.1 fps
3.3	808	0.0050	4.03	4.95	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
1.0					**Direct Entry, TO MEET MIN**
6.0	958	Total			

Subcatchment P1-2: Flow to 18" RCP



Summary for Subcatchment P1-3A: Flow to Detention Pond 2

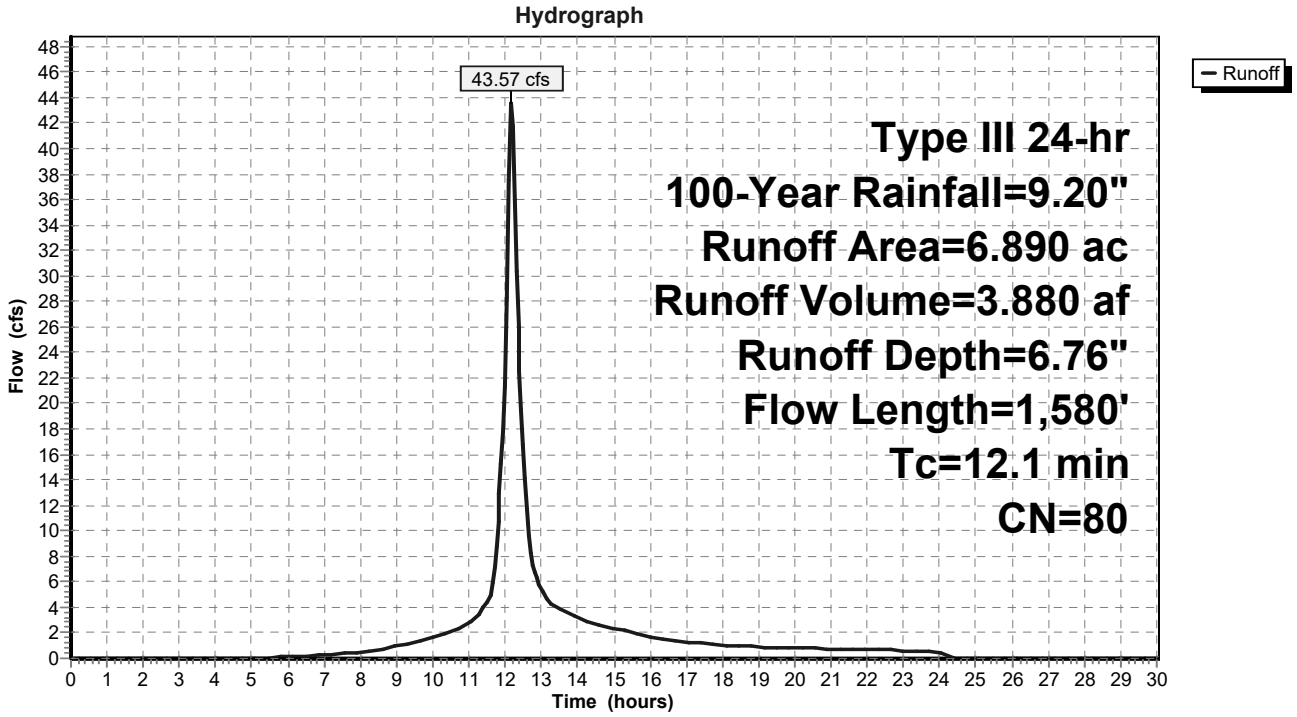
Runoff = 43.57 cfs @ 12.16 hrs, Volume= 3.880 af, Depth= 6.76"
Routed to Pond DP2 : Detention Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.20"

Area (ac)	CN	Description
2.060	98	Paved parking, HSG D
3.150	84	50-75% Grass cover, Fair, HSG D
0.510	36	Woods, Fair, HSG A
0.870	60	Woods, Fair, HSG B
0.070	79	50-75% Grass cover, Fair, HSG C
0.230	49	50-75% Grass cover, Fair, HSG A
6.890	80	Weighted Average
4.830		70.10% Pervious Area
2.060		29.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.2500	0.22		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
12.1	1,580	Total			

Subcatchment P1-3A: Flow to Detention Pond 2



Summary for Subcatchment P1-3B: Flow to 24" RCP

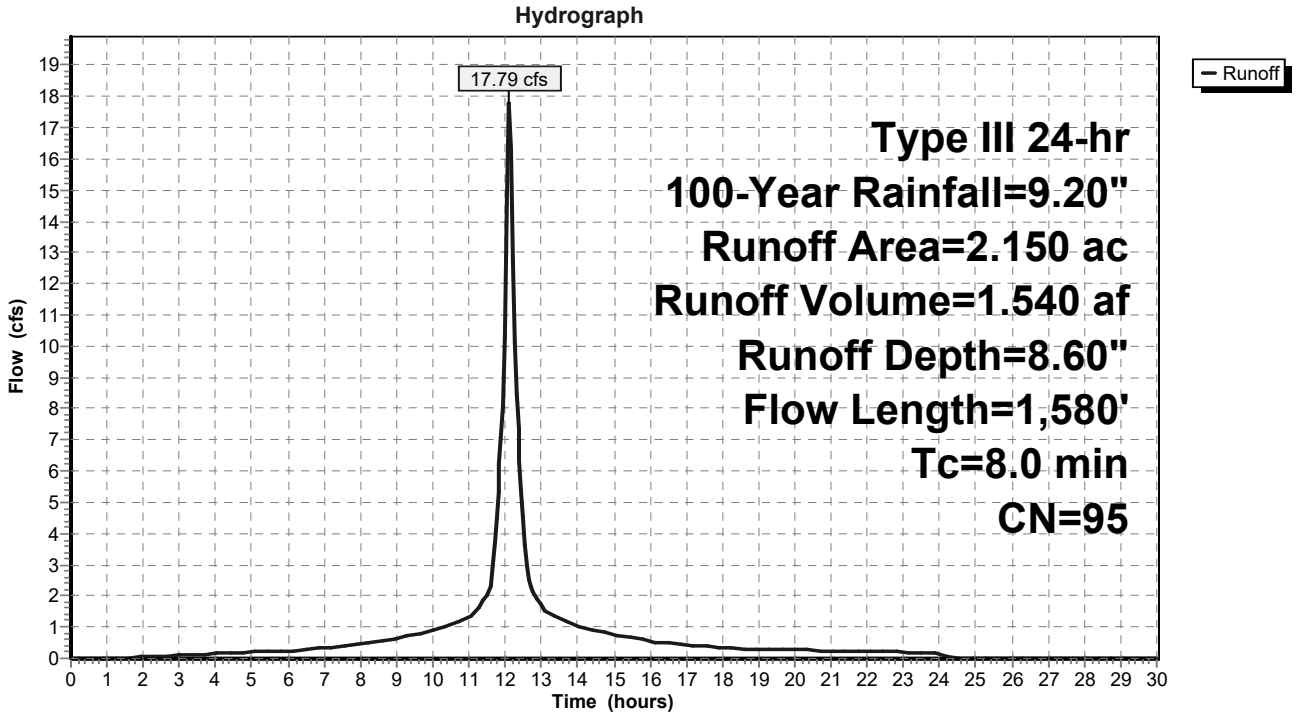
Runoff = 17.79 cfs @ 12.11 hrs, Volume= 1.540 af, Depth= 8.60"
Routed to Reach 1R : Flow to 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.20"

Area (ac)	CN	Description
1.750	98	Paved parking, HSG D
0.400	84	50-75% Grass cover, Fair, HSG D
2.150	95	Weighted Average
0.400		18.60% Pervious Area
1.750		81.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2500	0.49		**Sheet Flow, A-B HILL** Grass: Short n= 0.150 P2= 3.47"
0.2	90	0.2000	7.20		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.2	205	0.0200	2.87		**Shallow Concentrated Flow, C-D PAVED** Paved Kv= 20.3 fps
3.2	1,185	0.0100	6.22	7.63	**Pipe Channel, C-D PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
8.0	1,580	Total			

Subcatchment P1-3B: Flow to 24" RCP



Summary for Subcatchment P1-4: Flow to Swale

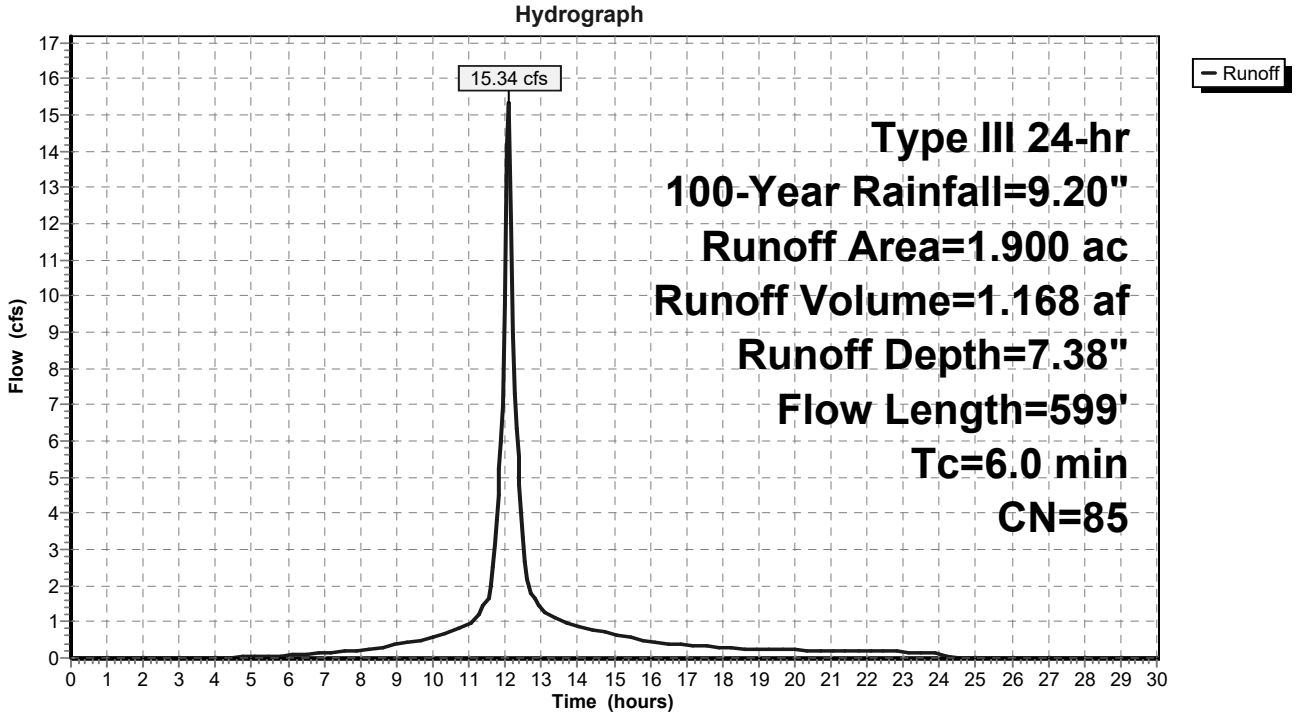
Runoff = 15.34 cfs @ 12.09 hrs, Volume= 1.168 af, Depth= 7.38"
Routed to Reach TS : Total Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.20"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG D
0.380	79	50-75% Grass cover, Fair, HSG C
1.290	84	50-75% Grass cover, Fair, HSG D
1.900	85	Weighted Average
1.670		87.89% Pervious Area
0.230		12.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.1000	2.73		**Sheet Flow, A-B MIXED** Smooth surfaces n= 0.011 P2= 3.47"
2.9	499	0.0200	2.87		**Shallow Concentrated Flow, B-C PARKING** Paved Kv= 20.3 fps
2.5					**Direct Entry, MINIMUM**
6.0	599	Total			

Subcatchment P1-4: Flow to Swale



Summary for Subcatchment P2: Flow to Pond

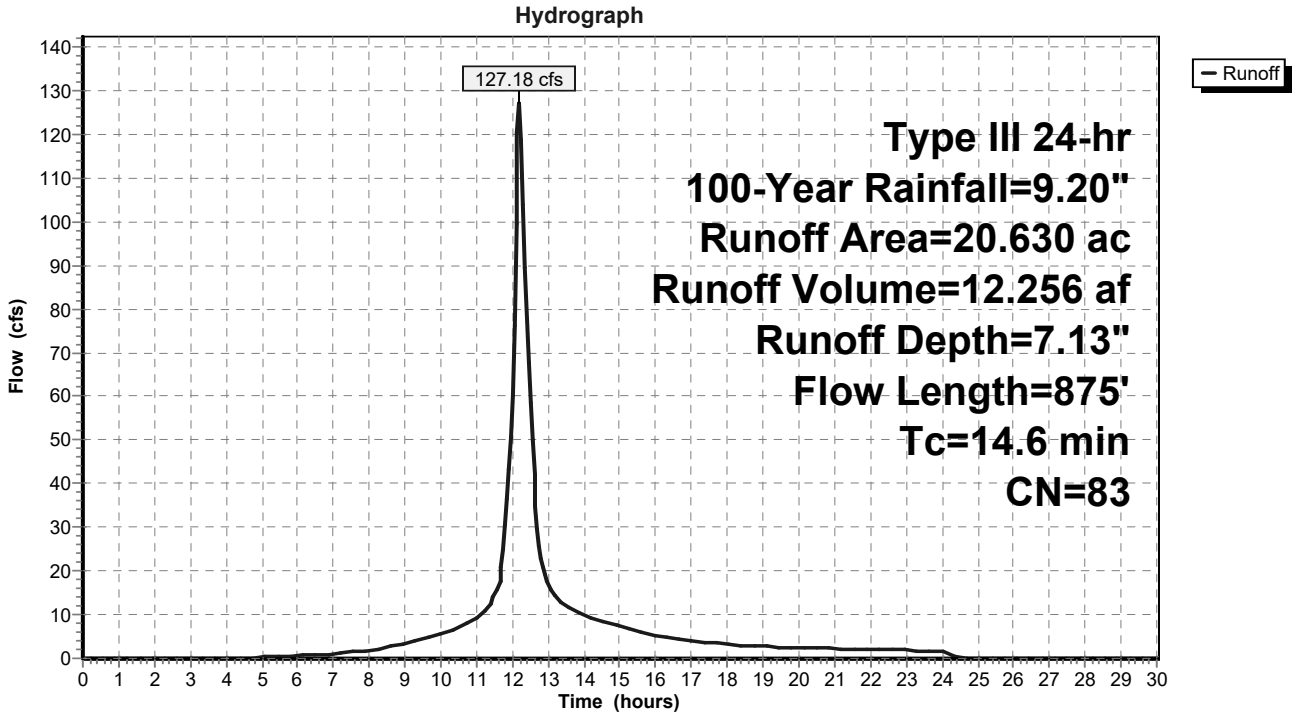
Runoff = 127.18 cfs @ 12.20 hrs, Volume= 12.256 af, Depth= 7.13"
Routed to Pond PD : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.20"

Area (ac)	CN	Description
4.190	98	Water Surface, 0% imp, HSG A
2.590	79	Woods, Fair, HSG D
2.980	60	Woods, Fair, HSG B
5.220	84	50-75% Grass cover, Fair, HSG D
4.500	98	Paved parking, HSG D
1.150	36	Woods, Fair, HSG A
20.630	83	Weighted Average
16.130		78.19% Pervious Area
4.500		21.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1000	0.15		**Sheet Flow, A-B HILL** Woods: Light underbrush n= 0.400 P2= 3.47"
1.7	281	0.0300	2.79		**Shallow Concentrated Flow, B-C HILL** Unpaved Kv= 16.1 fps
1.6	242	0.0200	2.53	3.54	**Channel Flow, C-D STREAM** Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.040 Winding stream, pools & shoals
0.5	252	0.0100	7.80	24.51	**Pipe Channel, D-E PIPE FLOW** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
14.6	875	Total			

Subcatchment P2: Flow to Pond

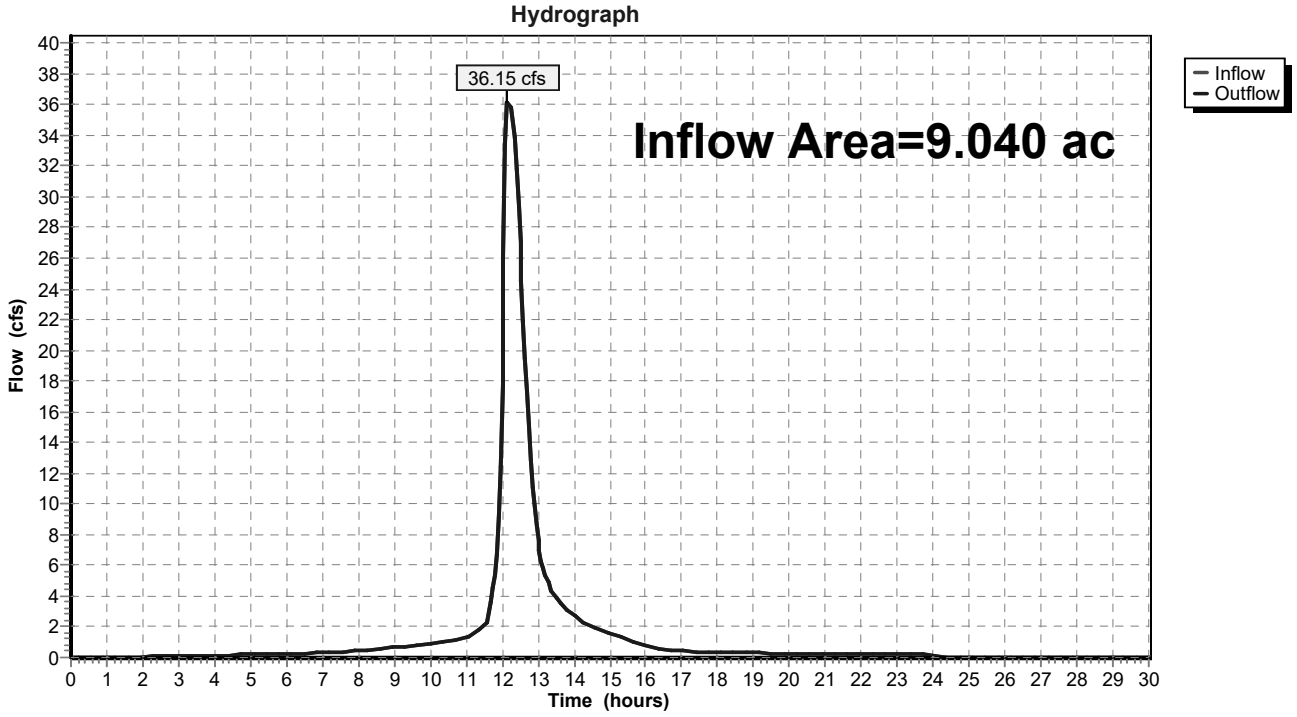


Summary for Reach 1R: Flow to 24" RCP

Inflow Area = 9.040 ac, 42.15% Impervious, Inflow Depth = 4.54" for 100-Year event
Inflow = 36.15 cfs @ 12.15 hrs, Volume= 3.418 af
Outflow = 36.15 cfs @ 12.15 hrs, Volume= 3.418 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 1R: Flow to 24" RCP

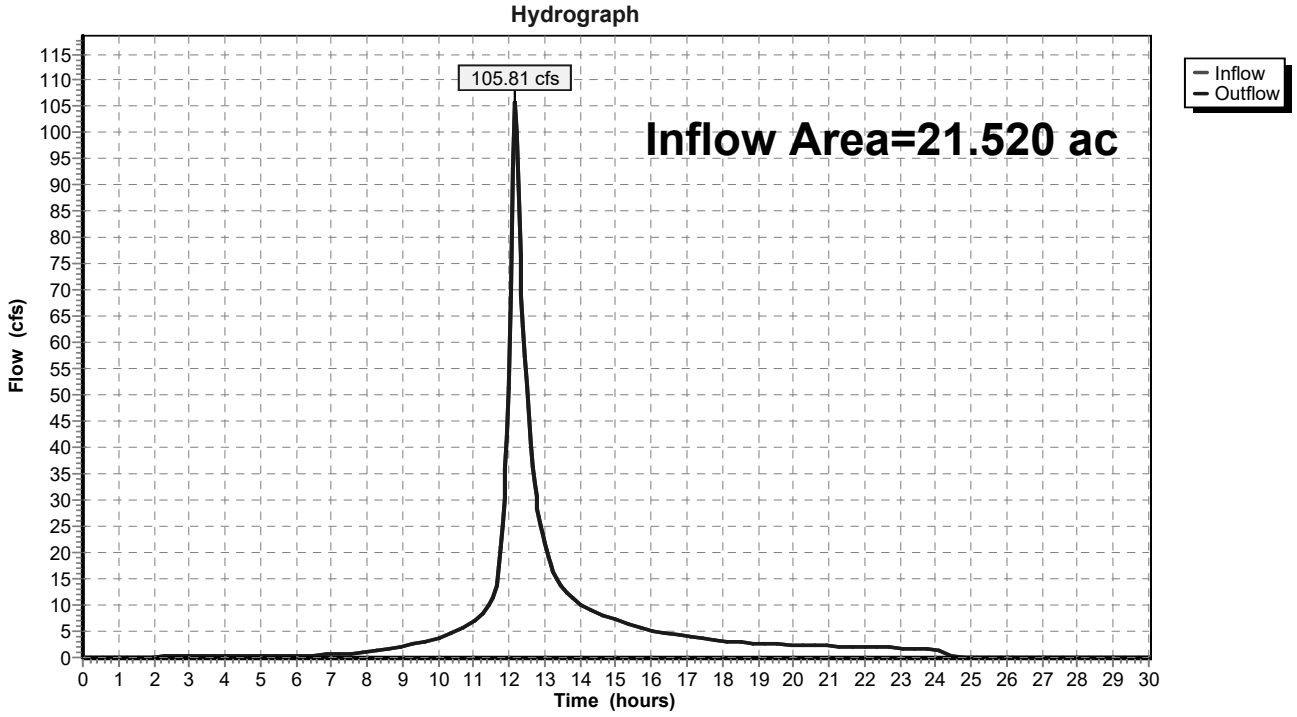


Summary for Reach P1-1: Flow to 36" pipe

Inflow Area = 21.520 ac, 29.37% Impervious, Inflow Depth = 6.20" for 100-Year event
Inflow = 105.81 cfs @ 12.16 hrs, Volume= 11.111 af
Outflow = 105.81 cfs @ 12.16 hrs, Volume= 11.111 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TS : Total Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach P1-1: Flow to 36" pipe

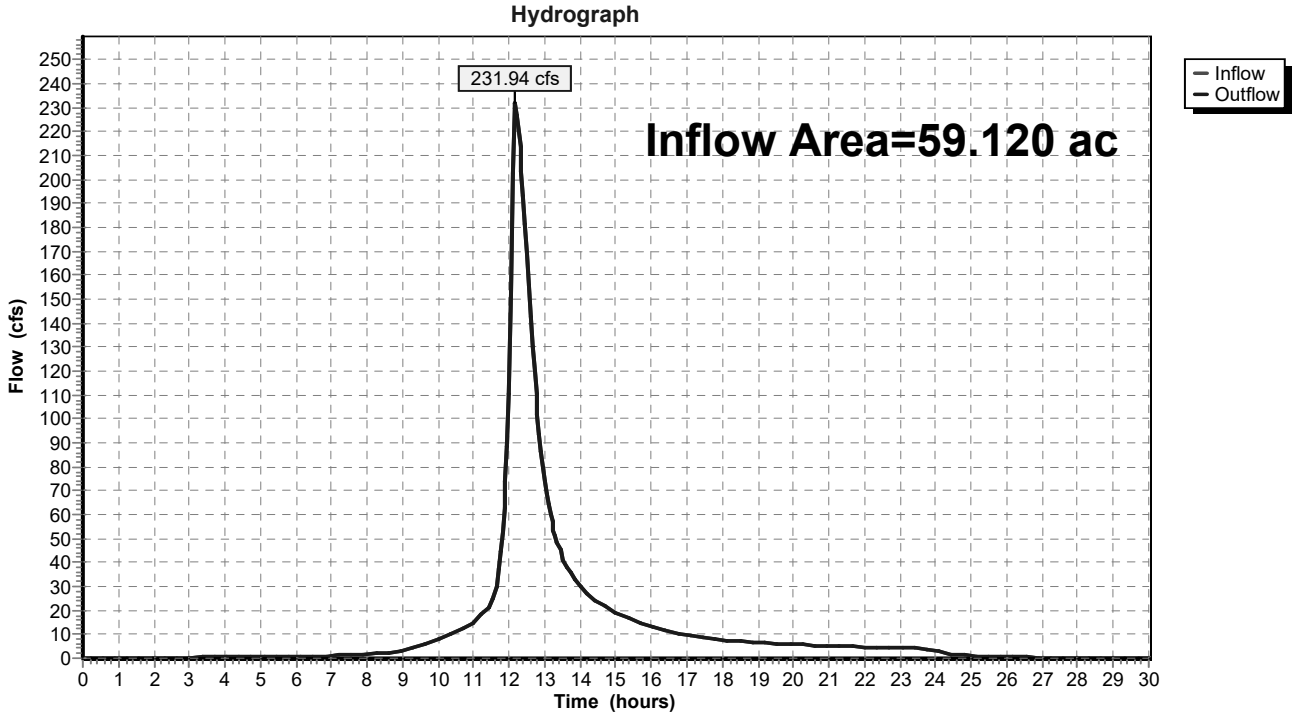


Summary for Reach TS: Total Site

Inflow Area = 59.120 ac, 33.46% Impervious, Inflow Depth > 5.95" for 100-Year event
Inflow = 231.94 cfs @ 12.18 hrs, Volume= 29.294 af
Outflow = 231.94 cfs @ 12.18 hrs, Volume= 29.294 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach TS: Total Site



Summary for Pond DP1: Detention Pond 1

Inflow Area = 6.030 ac, 81.59% Impervious, Inflow Depth = 7.87" for 100-Year event
Inflow = 50.68 cfs @ 12.09 hrs, Volume= 3.953 af
Outflow = 36.17 cfs @ 12.17 hrs, Volume= 3.953 af, Atten= 29%, Lag= 5.0 min
Discarded = 4.30 cfs @ 12.17 hrs, Volume= 2.199 af
Primary = 31.87 cfs @ 12.17 hrs, Volume= 1.754 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 664.99' @ 12.17 hrs Surf.Area= 0.190 ac Storage= 0.844 af

Plug-Flow detention time= 36.5 min calculated for 3.953 af (100% of inflow)
Center-of-Mass det. time= 36.4 min (811.4 - 774.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.00'	0.322 af	**73.92'W x 111.77'L x 7.00'H Field A** 1.328 af Overall - 0.522 af Embedded = 0.806 af x 40.0% Voids
#2A	659.50'	0.522 af	**ADS_StormTech MC-4500 +Cap** x 208 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 208 Chambers in 8 Rows Cap Storage= 35.7 cf x 2 x 8 rows = 571.2 cf
		0.844 af	Total Available Storage

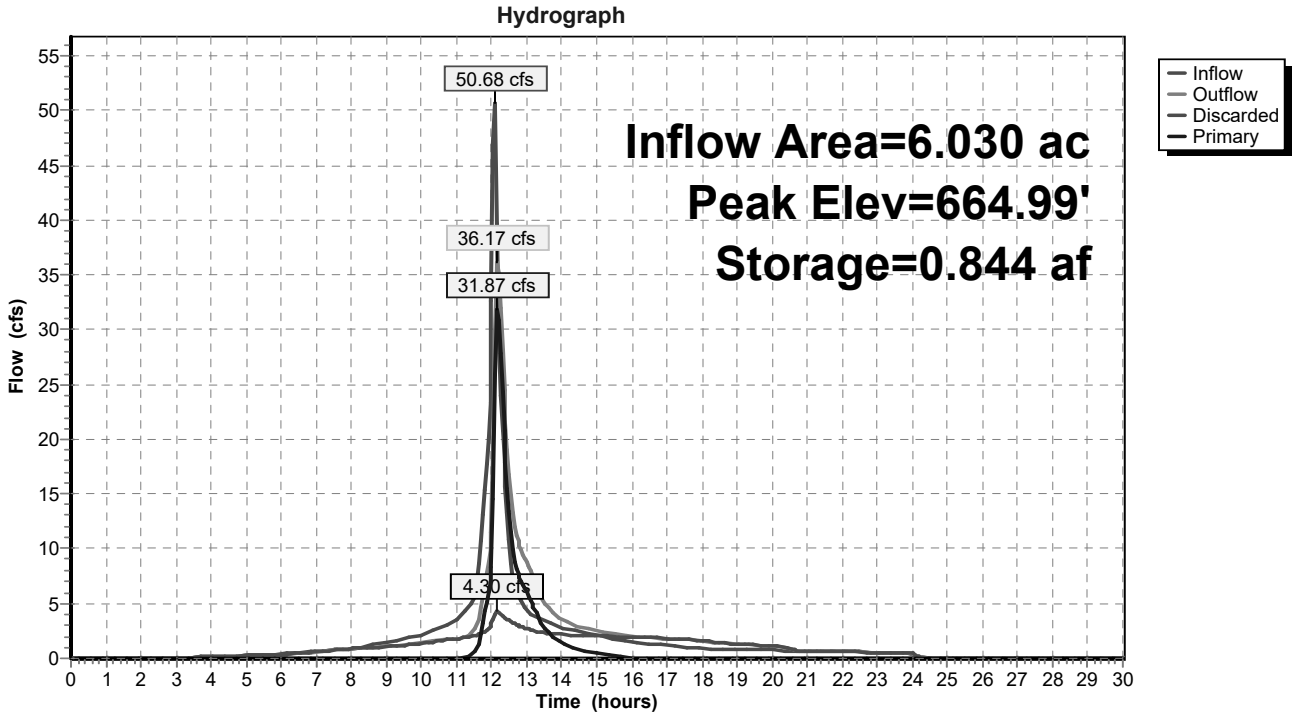
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	658.40'	**24.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 658.40' / 656.05' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	660.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	662.35'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	664.90'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.7' Crest Height
#5	Discarded	658.00'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 656.00'

Discarded OutFlow Max=4.26 cfs @ 12.17 hrs HW=664.91' (Free Discharge)
└**5=Exfiltration** (Controls 4.26 cfs)

Primary OutFlow Max=31.12 cfs @ 12.17 hrs HW=664.91' (Free Discharge)
└**1=Culvert** (Passes 31.12 cfs of 35.50 cfs potential flow)
  ├**2=15" Orifice** (Orifice Controls 12.23 cfs @ 9.96 fps)
  ├**3=24" Orifice** (Orifice Controls 18.88 cfs @ 6.01 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.01 cfs @ 0.29 fps)

Pond DP1: Detention Pond 1



Summary for Pond DP2: Detention Pond 2

Inflow Area = 6.890 ac, 29.90% Impervious, Inflow Depth = 6.76" for 100-Year event
Inflow = 43.57 cfs @ 12.16 hrs, Volume= 3.880 af
Outflow = 29.74 cfs @ 12.31 hrs, Volume= 3.880 af, Atten= 32%, Lag= 8.9 min
Discarded = 2.85 cfs @ 12.31 hrs, Volume= 2.003 af
Primary = 26.89 cfs @ 12.31 hrs, Volume= 1.878 af
Routed to Reach 1R : Flow to 24" RCP

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 665.66' @ 12.31 hrs Surf.Area= 0.186 ac Storage= 0.847 af

Plug-Flow detention time= 53.2 min calculated for 3.874 af (100% of inflow)
Center-of-Mass det. time= 53.1 min (856.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	658.50'	0.348 af	**63.83'W x 126.87'L x 7.50'H Field A** 1.394 af Overall - 0.525 af Embedded = 0.869 af x 40.0% Voids
#2A	660.50'	0.525 af	**ADS_StormTech MC-4500 +Cap** x 210 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 210 Chambers in 7 Rows Cap Storage= 35.7 cf x 2 x 7 rows = 499.8 cf
		0.873 af	Total Available Storage

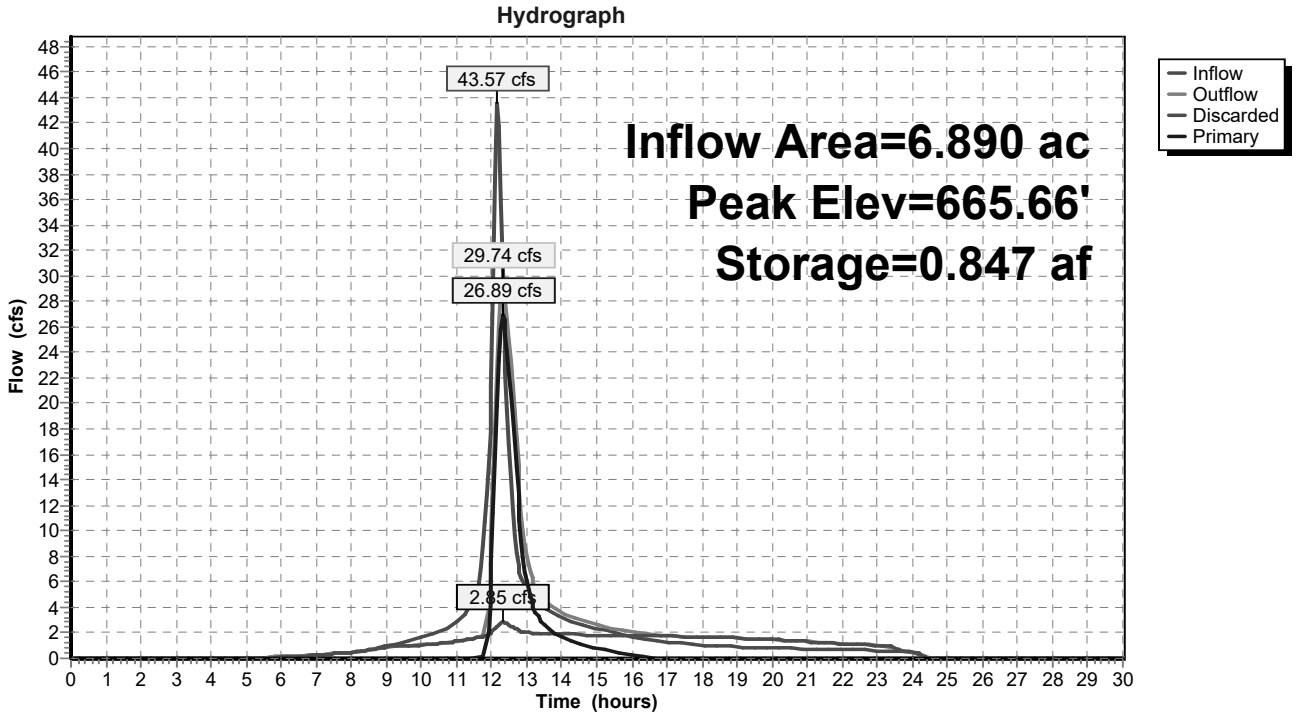
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	661.50'	**24.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 661.50' / 660.65' S= 0.0243 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	661.00'	**15.0" Vert. 15" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	663.00'	**24.0" Vert. 24" Orifice** C= 0.600 Limited to weir flow at low heads
#5	Discarded	658.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 655.00'

Discarded OutFlow Max=2.85 cfs @ 12.31 hrs HW=665.63' (Free Discharge)
└**5=Exfiltration** (Controls 2.85 cfs)

Primary OutFlow Max=26.77 cfs @ 12.31 hrs HW=665.63' (Free Discharge)
└**1=Culvert** (Inlet Controls 26.77 cfs @ 8.52 fps)
├**2=15" Orifice** (Passes < 11.83 cfs potential flow)
├**3=15" Orifice** (Passes < 11.83 cfs potential flow)
└**4=24" Orifice** (Passes < 19.32 cfs potential flow)

Pond DP2: Detention Pond 2



Summary for Pond PD: Pond

Inflow Area = 20.630 ac, 21.81% Impervious, Inflow Depth = 7.13" for 100-Year event
Inflow = 127.18 cfs @ 12.20 hrs, Volume= 12.256 af
Outflow = 75.80 cfs @ 12.41 hrs, Volume= 11.843 af, Atten= 40%, Lag= 13.0 min
Primary = 75.80 cfs @ 12.41 hrs, Volume= 11.843 af
Routed to Reach TS : Total Site

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 650.87' @ 12.41 hrs Surf.Area= 3.971 ac Storage= 3.356 af

Plug-Flow detention time= 80.3 min calculated for 11.843 af (97% of inflow)
Center-of-Mass det. time= 60.6 min (859.4 - 798.8)

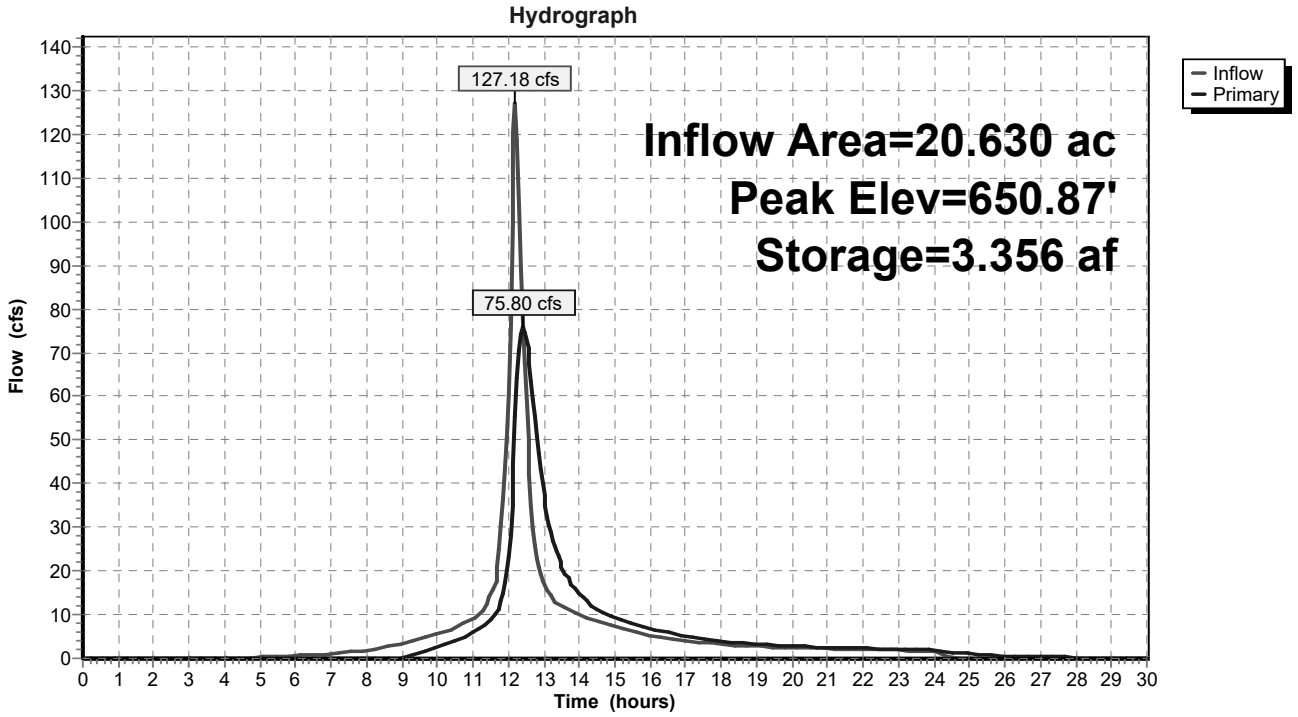
Volume	Invert	Avail.Storage	Storage Description
#1	650.00'	3.890 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
650.00	3.780	0.000	0.000
651.00	4.000	3.890	3.890

Device	Routing	Invert	Outlet Devices
#1	Primary	650.10'	**42.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=75.63 cfs @ 12.41 hrs HW=650.86' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 75.63 cfs @ 2.35 fps)

Pond PD: Pond


Hydrograph
127.18 cfs
75.80 cfs
Inflow Area=20.630 ac
Peak Elev=650.87'
Storage=3.356 af
Inflow
Primary
Flow (cfs)
Time (hours)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
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 25 26 27 28 29 30

Events for Subcatchment P1-1A: Direct Flow to 36" RCP

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.53	17.68	1.615	1.08
10-Year	5.72	46.59	3.990	2.67
25-Year	7.09	66.63	5.667	3.80
100-Year	**9.20**	**98.73**	**8.408**	**5.64**

Events for Subcatchment P1-1B: Track & Field

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.53	5.85	0.994	3.30
10-Year	5.72	9.56	1.654	5.48
25-Year	7.09	11.87	2.067	6.85
100-Year	**9.20**	**15.42**	**2.703**	**8.96**

Events for Subcatchment P1-2: Flow to 18" RCP

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.53	16.33	1.198	2.38
10-Year	5.72	29.71	2.243	4.46
25-Year	7.09	38.01	2.912	5.80
100-Year	**9.20**	**50.68**	**3.953**	**7.87**

Events for Subcatchment P1-3A: Flow to Detention Pond 2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.53	10.84	0.953	1.66
10-Year	5.72	23.18	2.027	3.53
25-Year	7.09	31.18	2.743	4.78
100-Year	**9.20**	**43.57**	**3.880**	**6.76**

Events for Subcatchment P1-3B: Flow to 24" RCP

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.53	6.49	0.532	2.97
10-Year	5.72	10.89	0.920	5.13
25-Year	7.09	13.61	1.164	6.50
100-Year	**9.20**	**17.79**	**1.540**	**8.60**

Events for Subcatchment P1-4: Flow to Swale

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.53	4.46	0.323	2.04
10-Year	5.72	8.66	0.640	4.04
25-Year	7.09	11.30	0.845	5.34
100-Year	**9.20**	**15.34**	**1.168**	**7.38**

Events for Subcatchment P2: Flow to Pond

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.53	34.65	3.239	1.88
10-Year	5.72	70.02	6.588	3.83
25-Year	7.09	92.54	8.790	5.11
100-Year	**9.20**	**127.18**	**12.256**	**7.13**

Events for Reach 1R: Flow to 24" RCP

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	6.49	6.49	**0.00**	**0**
10-Year	15.25	15.25	0.00	0
25-Year	24.34	24.34	0.00	0
100-Year	**36.15**	**36.15**	0.00	0

Events for Reach P1-1: Flow to 36" pipe

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	20.28	20.28	**0.00**	**0**
10-Year	51.04	51.04	0.00	0
25-Year	72.12	72.12	0.00	0
100-Year	**105.81**	**105.81**	0.00	0

Events for Reach TS: Total Site

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	34.19	34.19	**0.00**	**0**
10-Year	98.03	98.03	0.00	0
25-Year	152.42	152.42	0.00	0
100-Year	**231.94**	**231.94**	0.00	0

Events for Pond DP1: Detention Pond 1

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year	16.33	5.50	2.35	3.15	660.92	0.343
10-Year	29.71	12.33	3.19	9.14	662.68	0.605
25-Year	38.01	21.47	3.63	17.84	663.58	0.720
100-Year	**50.68**	**36.17**	**4.30**	**31.87**	**664.99**	**0.844**

Events for Pond DP2: Detention Pond 2

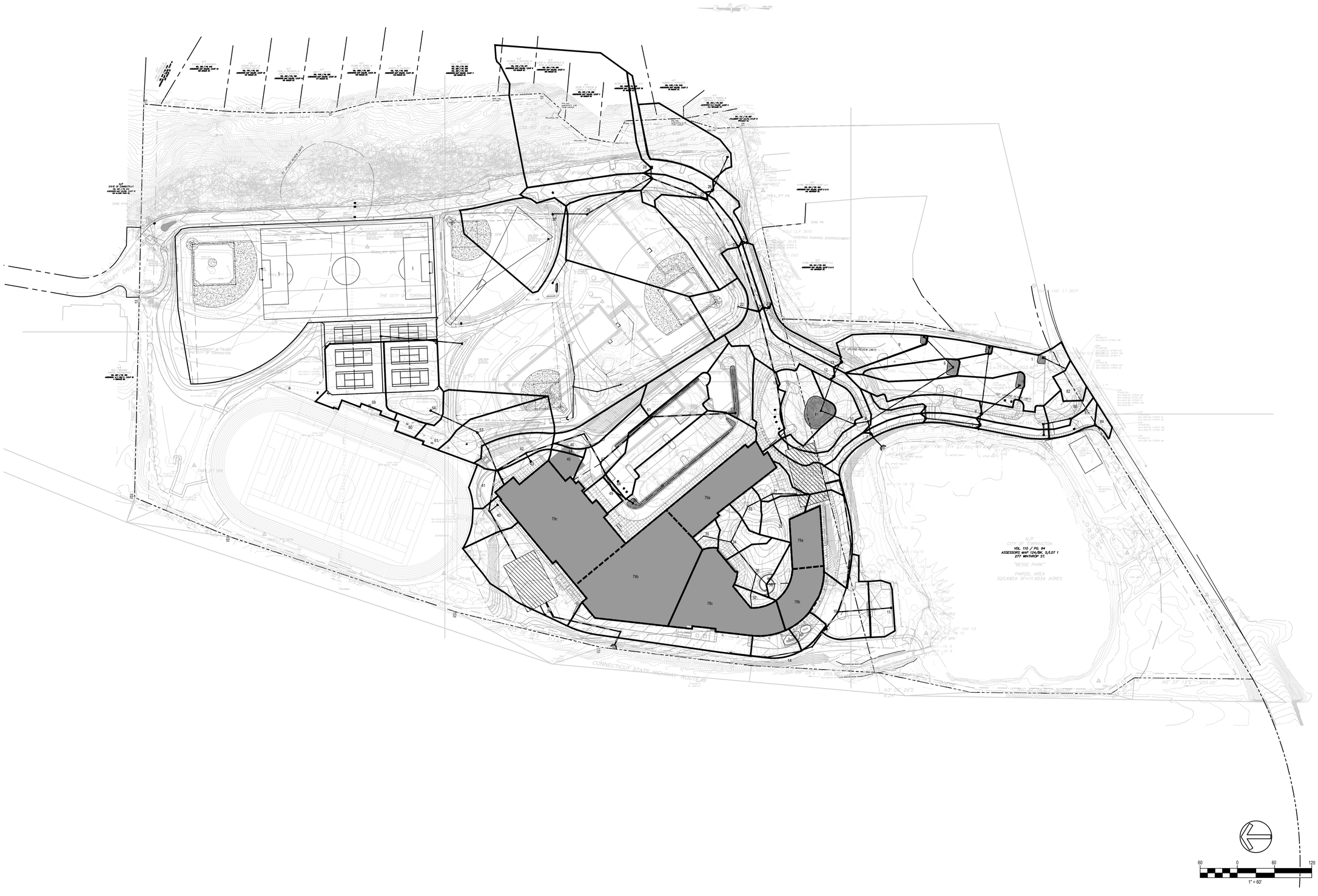
Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year	10.84	1.90	1.78	0.12	661.64	0.333
10-Year	23.18	13.02	2.15	10.87	663.03	0.545
25-Year	31.18	20.03	2.37	17.65	663.86	0.661
100-Year	**43.57**	**29.74**	**2.85**	**26.89**	**665.66**	**0.847**

Events for Pond PD: Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year	34.65	12.46	650.34	1.303
10-Year	70.02	36.19	650.58	2.218
25-Year	92.54	52.21	650.70	2.687
100-Year	**127.18**	**75.80**	**650.87**	**3.356**

APPENDIX C

HYDRAULIC COMPUTATIONS



SLAM
The S/L/A/M Collaborative
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Glastonbury, CT 06033-4410
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benesch
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Torrington

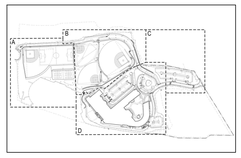
Middle/ High School & Central Administration Building

PHASE 2 OF 4: SITE & BUILDING CONSTRUCTION AND ABATEMENT & DEMOLITION OF EXISTING BUILDING

Torrington Public Schools

50 Major Besse Drive
Torrington, CT 06790

STATE PROJECT NO: 143-0076 N



KEYPLAN

Number	Date	Issued For
		100% REVISED DESIGN DEVELOPMENT SUBMISSION
		PROGRESS PRINT NOT FOR CONSTRUCTION
	02/02/2022	REGULATORY SUBMISSION

CATCHMENT AREA MAP

Date
02/02/2022
Scale
1" = 60'
Proj. Number
19351.00

Drawing Number
CATCH

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
70	End	63.000	0.38	0.38	0.70	0.27	0.27	6.0	6.0	8.4	2.24	3.86	4.22	12	1.00	651.30	651.93	651.94	652.57	654.15	654.97	
69	68	21.000	0.08	0.08	0.90	0.07	0.07	6.0	6.0	8.4	0.61	3.86	1.87	12	1.00	657.29	657.50	658.02	657.82	660.00	660.00	CB2-7
68	64	113.000	0.06	0.14	0.90	0.05	0.13	6.0	6.2	8.3	1.05	3.86	1.47	12	1.00	656.06	657.19	657.88	657.96	657.16	660.00	
67	65	101.000	0.36	0.36	0.90	0.32	0.32	6.0	6.0	8.4	2.73	3.78	3.47	12	0.96	652.78	653.75	659.02	659.53	657.17	656.00	
66	65	141.000	0.20	0.20	0.87	0.17	0.17	6.0	6.0	8.4	1.47	3.86	1.87	12	1.00	652.78	654.19	659.02	659.22	657.17	656.75	
65	64	21.000	0.24	0.80	0.63	0.15	0.65	6.0	7.3	7.7	5.01	3.86	6.38	12	1.00	652.47	652.68	657.88	658.24	657.16	657.17	
64	63	6.000	0.06	1.00	0.90	0.05	0.83	6.0	7.4	7.6	6.33	3.86	8.06	12	1.00	652.31	652.37	656.21	656.37	657.60	657.16	(2)
63	End	21.000	0.00	1.00	0.00	0.00	0.83	0.0	7.4	7.6	6.32	10.62	8.05	12	7.57	650.72	652.31	655.49	656.05	655.00	657.60	
62	61	84.000	0.22	0.22	0.76	0.17	0.17	6.0	6.0	8.4	1.41	3.86	1.79	12	1.00	654.66	655.50	664.31	664.42	657.50	657.50	
61	56	212.000	0.36	0.58	0.78	0.28	0.45	6.0	6.8	8.0	3.57	7.00	2.91	15	1.00	652.54	654.66	663.56	664.11	663.96	657.50	
60	59	31.000	0.12	0.12	0.82	0.10	0.10	6.0	6.0	8.4	0.83	7.00	0.68	15	1.00	662.69	663.00	664.45	664.46	667.05	667.05	
59	58	76.000	0.30	0.42	0.62	0.19	0.28	6.0	6.8	8.0	2.27	7.00	1.85	15	1.00	661.83	662.59	664.35	664.43	666.50	667.05	
58	57	75.000	0.32	0.74	0.68	0.22	0.50	6.0	7.5	7.6	3.82	7.00	3.12	15	1.00	660.98	661.73	663.90	664.12	665.05	666.50	
57	56	32.210	0.23	0.97	0.80	0.18	0.69	6.0	7.9	7.4	5.09	6.29	4.15	15	0.81	660.62	660.88	663.56	663.73	663.96	665.05	
56	55	24.000	0.20	1.75	0.77	0.15	1.29	6.0	8.0	7.4	9.48	11.38	5.37	18	1.00	654.07	654.31	662.44	662.61	664.28	663.96	
55	54	7.000	0.06	1.81	0.90	0.05	1.34	6.0	8.1	7.3	9.83	11.37	5.56	18	1.00	653.90	653.97	662.15	662.20	664.85	664.28	
54	End	33.000	0.00	1.81	0.00	0.00	1.34	6.0	8.1	7.3	9.82	16.33	5.56	18	2.06	650.74	651.42	661.82	662.07	660.00	664.85	
53	47	75.000	0.42	0.42	0.30	0.13	0.13	7.0	7.0	7.8	0.99	2.71	2.73	12	0.49	673.26	673.63	673.80	674.05	677.03	675.75	
52	48	20.000	1.65	1.65	0.37	0.61	0.61	6.0	6.0	8.4	5.14	11.38	4.34	18	1.00	674.38	674.58	675.44	675.45	679.21	679.46	
51	39	62.000	0.43	0.43	0.90	0.39	0.39	6.0	6.0	8.4	3.26	2.37	5.98	10	1.00	664.87	665.49	669.79	670.96	670.33	673.00	
50	49	72.000	0.68	0.68	0.31	0.21	0.21	6.0	6.0	8.4	1.77	7.00	3.07	15	1.00	676.02	676.74	676.71	677.27	679.00	678.80	
49	48	154.000	1.04	1.72	0.30	0.31	0.52	6.0	6.4	8.2	4.28	8.04	4.57	18	0.50	675.15	675.92	675.93	676.71	679.21	679.00	(2)
48	45	122.000	0.23	3.60	0.88	0.20	1.34	6.0	7.0	7.9	10.51	24.50	5.49	24	1.00	673.06	674.28	674.25	675.44	677.06	679.21	
47	45	20.000	0.17	0.59	0.85	0.14	0.27	6.0	7.5	7.6	2.06	11.38	2.48	18	1.00	673.06	673.26	674.25	673.80	677.06	677.03	
46	44	19.000	0.07	0.07	0.88	0.06	0.06	6.0	6.0	8.4	0.52	11.38	0.29	18	1.00	669.18	669.37	672.81	672.81	674.92	674.94	
45	44	122.000	0.12	4.31	0.77	0.09	1.70	6.0	7.6	7.5	12.82	43.13	5.04	24	3.10	669.18	672.96	672.81	674.25	674.92	677.06	
44	41	141.000	0.43	4.81	0.47	0.20	1.96	6.0	8.0	7.4	14.44	24.50	4.60	24	1.00	667.67	669.08	671.83	672.32	671.70	674.92	
43	41	19.000	0.07	0.07	0.81	0.06	0.06	6.0	6.0	8.4	0.48	24.50	0.15	24	1.00	667.67	667.86	671.83	671.83	671.70	671.70	
42	41	43.000	0.22	0.22	0.41	0.09	0.09	6.0	6.0	8.4	0.76	34.95	1.71	15	24.95	667.67	678.40	671.83	678.74	671.70	681.40	
41	40	163.000	0.11	5.21	0.61	0.07	2.18	6.0	8.5	7.1	15.53	24.50	4.95	24	1.00	665.94	667.57	670.43	671.08	669.00	671.70	(2)
40	39	97.000	0.23	5.44	0.75	0.17	2.35	6.0	9.1	6.9	16.24	24.50	5.17	24	1.00	664.87	665.84	669.79	670.22	670.33	669.00	
39	End	48.000	0.00	5.87	0.00	0.00	2.74	6.0	9.4	6.8	18.59	25.75	5.92	24	1.10	664.24	664.77	668.97	669.25	669.00	670.33	
38	34	50.000	0.57	0.57	0.90	0.51	0.51	6.0	6.0	8.4	4.32	3.86	5.50	12	1.00	667.40	667.90	670.43	671.06	669.80	670.50	
37	36	50.000	0.20	0.20	0.90	0.18	0.18	6.0	6.0	8.4	1.52	3.86	1.93	12	1.00	666.90	667.40	670.11	670.19	670.00	671.50	ROOF
36	33	31.000	0.08	0.28	0.58	0.05	0.23	6.0	6.4	8.2	1.85	7.00	1.51	15	1.00	666.44	666.75	670.07	670.09	669.00	670.00	
35	32	58.000	0.05	0.05	0.52	0.03	0.03	6.0	6.0	8.4	0.22	7.00	0.18	15	1.00	665.49	666.07	669.28	669.28	669.40	669.40	
34	33	47.000	0.22	0.79	0.38	0.08	0.60	6.0	6.2	8.3	4.97	7.00	4.05	15	1.00	666.44	666.91	670.07	670.31	669.00	669.80	Inserted Line
33	32	85.000	0.22	1.29	0.46	0.10	0.92	6.0	6.8	8.0	7.36	11.38	4.17	18	1.00	665.49	666.34	669.28	669.64	669.40	669.00	

Torrington High School

Number of lines: 70

Run Date: 2/1/2022

NOTES:Intensity = 42.16 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
32	30	84.000	0.16	1.50	0.48	0.08	1.03	6.0	11.4	6.1	6.29	11.38	3.56	18	1.00	664.55	665.39	668.62	668.88	670.90	669.40	
31	29	64.000	0.16	0.16	0.47	0.08	0.08	6.0	6.0	8.4	0.63	7.00	0.52	15	1.00	663.89	664.53	668.28	668.28	670.90	669.70	
30	29	56.000	0.09	1.59	0.55	0.05	1.08	6.0	11.8	6.0	6.47	11.38	3.66	18	1.00	663.89	664.45	668.28	668.46	670.90	670.90	
29	End	79.000	0.11	1.86	0.57	0.06	1.21	6.0	12.1	5.9	7.21	11.38	4.08	18	1.00	663.00	663.79	667.57	667.89	671.00	670.90	
28	27	70.000	0.04	0.04	0.90	0.04	0.04	6.0	6.0	8.4	0.30	7.00	1.73	15	1.00	652.95	653.65	653.26	653.86	656.80	656.90	
27	26	74.000	0.11	0.15	0.90	0.10	0.14	0.0	6.7	8.0	1.08	7.00	2.82	15	1.00	652.11	652.85	652.58	653.26	655.90	656.80	
26	19	21.000	0.11	0.26	0.90	0.10	0.23	6.0	7.1	7.8	1.82	3.86	4.37	12	1.00	651.80	652.01	652.28	652.58	656.75	655.90	
25	21	111.000	0.13	0.13	0.81	0.11	0.11	6.0	6.0	8.4	0.89	11.63	1.98	18	1.05	651.34	652.50	652.02	652.85	656.00	656.00	
24	23	104.000	0.17	0.17	0.44	0.07	0.07	6.0	6.0	8.4	0.63	56.45	3.72	24	5.31	656.75	662.27	656.92	662.54	660.75	665.50	
23	22	86.000	0.00	0.17	0.00	0.00	0.07	0.0	6.5	8.1	0.61	50.75	1.96	24	4.29	652.96	656.65	653.34	656.92	656.96	660.75	Inserted Line
22	21	55.000	0.28	0.45	0.60	0.17	0.24	6.0	7.2	7.7	1.88	30.64	4.34	24	1.56	652.00	652.86	652.34	653.34	656.00	656.96	Inserted Line
21	20	53.134	0.33	0.91	0.90	0.30	0.65	6.0	7.4	7.6	4.93	30.07	4.80	24	1.51	650.44	651.24	651.12	652.02	658.95	656.00	(2)
20	19	7.000	0.00	0.91	0.00	0.00	0.65	0.0	7.6	7.5	4.87	24.50	5.20	24	1.00	650.27	650.34	650.87	651.12	656.75	658.95	
19	End	38.000	0.05	1.22	0.90	0.05	0.92	6.0	7.6	7.5	6.97	53.92	8.25	24	4.84	642.90	644.74	643.39	645.68	644.90	656.75	
18	5	108.000	0.45	0.45	0.74	0.33	0.33	6.0	6.0	8.4	2.80	11.38	3.56	18	1.00	672.88	673.96	673.63	674.60	677.00	676.50	
17	11	32.000	0.63	0.63	0.90	0.57	0.57	6.0	6.0	8.4	4.77	3.92	6.08	12	1.03	666.67	667.00	668.76	669.25	670.00	671.90	ROOF
16	14	49.000	0.82	0.82	0.74	0.61	0.61	6.0	6.0	8.4	5.11	24.50	1.64	24	1.00	666.51	667.00	668.91	668.93	670.00	670.00	
15	12	182.000	0.31	0.31	0.71	0.22	0.22	6.0	6.0	8.4	1.85	24.50	0.89	24	1.00	665.98	667.80	668.79	668.79	670.00	670.80	
14	13	33.000	0.07	0.89	0.47	0.03	0.64	6.0	6.2	8.3	5.32	24.50	1.69	24	1.00	666.08	666.41	668.85	668.86	670.40	670.00	
13	11	32.000	0.43	1.32	0.80	0.34	0.98	6.0	6.3	8.2	8.08	24.50	2.57	24	1.00	665.66	665.98	668.76	668.79	670.00	670.40	
12	11	140.000	0.22	0.53	0.60	0.13	0.35	6.0	7.6	7.6	2.66	24.50	0.85	24	1.00	664.48	665.88	668.76	668.78	670.00	670.00	
11	7	66.000	0.23	2.71	0.82	0.19	2.09	6.0	10.8	6.3	13.16	24.50	4.19	24	1.00	663.72	664.38	668.16	668.35	670.90	670.00	
10	7	11.000	0.20	0.20	0.36	0.07	0.07	6.0	6.0	8.4	0.61	24.50	0.19	24	1.00	665.76	665.87	668.16	668.16	670.90	669.20	
9	7	19.000	0.07	0.07	0.76	0.05	0.05	6.0	6.0	8.4	0.45	24.50	0.14	24	1.00	666.03	666.22	668.16	668.16	670.90	670.90	
8	6	19.000	0.09	0.09	0.90	0.08	0.08	6.0	6.0	8.4	0.68	11.37	3.08	18	1.00	668.03	668.22	668.28	668.53	671.22	671.22	
7	6	86.000	0.02	3.00	0.90	0.02	2.23	6.0	11.1	6.2	13.86	24.50	4.41	24	1.00	662.86	663.72	667.29	667.57	671.22	670.90	
6	3	62.000	0.19	3.28	0.82	0.16	2.47	6.0	11.5	6.1	15.06	24.50	4.80	24	1.00	662.14	662.76	666.52	666.76	671.04	671.22	
5	4	38.000	0.35	0.80	0.47	0.16	0.50	6.0	6.5	8.1	4.04	11.38	5.16	18	1.00	672.48	672.86	673.10	673.63	674.02	677.00	(2)
4	3	48.000	0.00	0.80	0.00	0.00	0.50	0.0	6.6	8.0	4.00	11.38	5.15	18	1.00	667.78	668.26	668.39	669.03	671.04	674.02	
3	2	54.000	0.00	4.08	0.00	0.00	2.97	6.0	11.8	6.0	17.89	24.50	5.70	24	1.00	661.50	662.04	665.73	666.02	670.85	671.04	
2	1	76.000	0.11	4.19	0.90	0.10	3.07	6.0	11.9	6.0	18.34	24.50	5.84	24	1.00	660.64	661.40	664.66	665.09	670.28	670.85	
1	End	98.000	0.14	4.33	0.51	0.07	3.14	6.0	12.2	5.9	18.56	24.50	5.91	24	1.00	659.56	660.54	663.83	664.39	669.05	670.28	

Torrington High School | Number of lines: 70 | Run Date: 2/1/2022

NOTES:Intensity = 42.16 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
70	CB1-5	2.24	0.00	2.24	0.00	Grate	0.0	0.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.18	6.19	0.35	6.19	2.0	Off
69		0.61	0.00	0.61	0.00	Comb	4.0	4.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.05	1.61	0.21	1.61	2.0	Off
68	CB2-6	0.45	0.00	0.45	0.00	Comb	4.0	4.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.04	1.54	0.20	1.54	2.0	Off
67	CB2-3	2.73	0.00	2.73	0.00	Grate	0.0	0.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.22	7.90	0.38	7.90	2.0	Off
66	CB2-4	1.47	0.00	1.47	0.00	Grate	0.0	0.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.12	3.19	0.29	3.19	2.0	Off
65	CB2-2	1.27	0.00	1.27	0.00	Comb	4.0	4.00	4.83	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.12	2.99	0.29	2.99	2.0	Off
64	CB2-1	0.45	0.00	0.44	0.02	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.12	3.11	0.20	0.71	2.0	Off
63	HDS2-1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
62	CB3-7	1.41	0.00	1.41	0.00	Grate	0.0	0.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.013	0.12	2.95	0.29	2.95	2.0	Off
61	CB3-8	2.36	0.00	2.36	0.00	Grate	0.0	0.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.19	6.64	0.36	6.64	2.0	Off
60	CB3-6	0.83	0.00	0.73	0.09	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.15	4.48	0.23	1.37	2.0	56
59	CB3-5	1.57	0.00	1.20	0.37	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.18	6.18	0.28	2.67	2.0	56
58	CB3-4	1.83	0.00	1.83	0.00	Grate	0.0	0.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.15	4.67	0.32	4.67	2.0	Off
57	CB3-3	1.55	0.00	1.19	0.36	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.18	6.14	0.28	2.63	2.0	55
56	CB3-2	1.30	0.46	1.30	0.46	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.19	6.52	0.29	3.12	2.0	55
55	CB3-1	0.45	0.82	1.03	0.25	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.17	5.59	0.26	1.95	2.0	Off
54	HDS3-1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
53	CB4-17	0.99	0.00	0.99	0.00	Grate	0.0	0.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.013	0.08	1.86	0.25	1.86	2.0	47
52	CB4-14	5.14	0.00	2.45	2.69	Grate	0.0	0.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.27	10.35	0.38	7.88	2.0	47
51	ROOF	3.26	0.00	3.26	0.00	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
50	CB4-16	1.77	0.00	1.77	0.00	Grate	0.0	0.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.15	4.44	0.32	4.44	2.0	Off
49	CB4-15	2.63	0.00	2.63	0.00	Grate	0.0	0.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.21	7.56	0.38	7.56	2.0	Off
48	CB4-13	1.70	0.00	1.25	0.45	Comb	4.0	4.00	0.00	3.00	1.61	0.010	2.00	0.050	0.020	0.013	0.21	7.51	0.30	3.88	2.0	45

Torrington High School | Number of lines: 70 | Run Date: 2/1/2022

NOTES: Inlet N-Values = 0.016; Intensity = 42.16 / (Inlet time + 3.60) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	CB4-12	1.22	2.69	2.04	1.86	Grate	0.0	0.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.24	9.23	0.36	6.69	2.0	46
46	CB4-10	0.52	1.86	1.61	0.76	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.21	7.47	0.31	4.28	2.0	43
45	CB4-11	0.78	0.45	1.00	0.23	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.17	5.50	0.26	1.90	2.0	44
44	CB4-9	1.70	0.23	1.39	0.54	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.20	6.80	0.30	3.48	2.0	Off
43	CB4-8	0.48	0.76	1.24	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.12	2.88	0.28	2.88	2.0	Off
42	YD4-9	0.76	0.00	0.76	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.050	0.020	0.013	0.08	1.85	0.25	1.85	2.0	Off
41	CB4-7	0.57	0.00	0.53	0.03	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.13	3.59	0.21	0.92	2.0	Off
40	CB4-6	1.45	0.00	1.13	0.32	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.18	5.96	0.27	2.38	2.0	Off
39	DMH4-4	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
38	ROOF	4.32	0.00	4.32	0.00	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
37	ROOF	1.52	0.00	1.52	0.00	Curb	4.0	4.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.26	9.79	0.42	9.79	2.0	Off
36	YD4-7	0.39	0.00	0.39	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.050	0.020	0.000	0.02	1.41	0.19	1.41	2.0	Off
35	YD4-5	0.22	0.00	0.22	0.00	Grate	0.0	0.00	1.76	1.50	1.50	Sag	2.00	0.050	0.020	0.000	-0.04	0.96	0.13	0.96	2.0	Off
34	YD4-8	0.70	0.00	0.70	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.050	0.020	0.000	0.07	1.80	0.24	1.80	2.0	Off
33	YD4-6	0.85	0.00	0.85	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.020	0.020	0.000	0.07	3.46	0.24	3.46	2.0	Off
32	YD4-4	0.65	0.00	0.65	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.050	0.020	0.000	0.07	1.74	0.23	1.74	2.0	Off
31	YD4-2	0.63	0.00	0.63	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.050	0.020	0.000	0.06	1.72	0.23	1.72	2.0	Off
30	YD4-3	0.42	0.00	0.42	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.050	0.020	0.000	0.03	1.47	0.20	1.47	2.0	Off
29	YD4-1	0.53	0.00	0.53	0.00	Grate	0.0	0.00	2.25	1.50	1.50	Sag	2.00	0.050	0.020	0.000	0.05	1.61	0.22	1.61	2.0	Off
28	CB4-B	0.30	0.00	0.30	0.00	Comb	4.0	4.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.013	0.00	1.24	0.17	1.24	2.0	27
27	CB4-A	0.00	0.00	-nan(ind)	nan(ind)	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.00	0.00	0.17	0.00	2.0	26
26	HDS4-1	0.83	-nan(ind)	nan(ind)	0.00	Comb	4.0	4.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.013	4.97	245.33	5.13	245.33	2.0	19
25	CB4-2	0.89	0.00	0.89	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.013	0.08	1.88	0.25	1.88	2.0	Off

Torrington High School | Number of lines: 70 | Run Date: 2/1/2022

NOTES: Inlet N-Values = 0.016; Intensity = 42.16 / (Inlet time + 3.60) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	CB4-5	0.63	0.00	0.59	0.04	Comb	4.0	4.00	0.00	3.00	1.61	0.030	2.00	0.050	0.020	0.013	0.13	3.38	0.21	0.90	2.0	22
23	DMH4-1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
22	CB4-4	1.41	0.04	1.16	0.29	Comb	4.0	4.00	0.00	3.00	1.61	0.030	2.00	0.050	0.020	0.013	0.17	5.40	0.26	1.94	2.0	21
21	CB4-3	2.50	0.29	2.80	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.013	0.21	7.35	0.37	7.35	2.0	20
20	HDS4-2	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
19	DMH4-1	0.38	0.00	0.00	0.38	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
18	CB5-4A	2.80	0.00	2.80	0.00	Grate	0.0	0.00	2.00	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.22	8.16	0.39	8.16	2.0	Off
17		4.77	0.00	4.77	0.00	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
16	CB5-13	5.11	0.00	5.11	0.00	Grate	0.0	0.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.36	15.11	0.53	15.11	2.0	Off
15	CB5-15	1.85	0.00	1.85	0.00	Grate	0.0	0.00	4.59	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.15	4.75	0.32	4.75	2.0	Off
14	CB5-12	0.28	0.00	0.25	0.02	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.10	2.11	0.21	0.81	2.0	13
13	CB5-11	2.90	0.02	2.92	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.21	7.67	0.38	7.67	2.0	Off
12	CB5-14	1.11	0.00	0.92	0.20	Comb	4.0	4.00	0.00	3.00	1.61	0.015	2.00	0.050	0.020	0.013	0.17	5.61	0.26	1.89	2.0	11
11	CB5-10	1.59	0.20	1.32	0.47	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.19	6.56	0.29	3.17	2.0	7
10	YD5-1	0.61	0.00	0.61	0.00	Grate	0.0	0.00	1.76	1.50	1.50	Sag	2.00	0.050	0.020	0.000	0.06	1.70	0.23	1.70	2.0	Off
9	CB5-9	0.45	0.00	0.45	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.04	1.53	0.20	1.53	2.0	Off
8	CB5-7	0.68	0.00	0.68	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.05	1.62	0.22	1.62	2.0	Off
7	CB5-8	0.15	0.47	0.62	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.05	1.61	0.21	1.61	2.0	Off
6	CB5-6	1.31	0.00	1.31	0.00	Comb	4.0	4.00	4.59	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.12	3.12	0.29	3.12	2.0	Off
5	CB5-4	1.39	0.00	1.39	0.00	Grate	0.0	0.00	4.59	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.12	2.86	0.28	2.86	2.0	Off
4	New	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	DMH5-2	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	CB5-3	0.83	0.00	0.83	0.00	Comb	4.0	4.00	4.74	3.00	1.61	Sag	2.00	0.050	0.020	0.000	0.08	1.82	0.24	1.82	2.0	Off

Torrington High School | Number of lines: 70 | Run Date: 2/1/2022

NOTES: Inlet N-Values = 0.016; Intensity = 42.16 / (Inlet time + 3.60) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB5-2	0.60	0.00	0.56	0.04	Comb	4.0	4.00	0.00	3.00	1.61	0.020	2.00	0.050	0.020	0.013	0.13	3.73	0.22	0.99	2.0	Off

Torrington High School | Number of lines: 70 | Run Date: 2/1/2022

NOTES: Inlet N-Values = 0.016; Intensity = 42.16 / (Inlet time + 3.60) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

APPENDIX D

WATER QUALITY VOLUME COMPUTATIONS

Water Quality Volume Computations
Torrington High School, Torrington CT
Project # 70683.00

Watershed	Description	Total Area (ac)	Total Impervious Area (ac)	Impervious Coverage (%)	Volumetric Runoff Coefficient (R)	WQV (ac-ft, apply 1")	Required WQV (cf)	WQV From…	Provided WQV (cf)
					R = 0.05 + 0.009*(I)	WQV = (1")*(R)*(A)/12			
P1-1A	Flow to 36" RCP	NO WQV Provided - Field Areas and Driveway to Remain Relatively Unchanged Track & Field to Remain Undisturbed							
P1-1B	Track & Field								
P1-2	Flow to Detention Pond 1 (and 18" RCP)	6.03	4.92	81.59	0.78	0.394	17,168	18" Stone Storage below MC-4500 Chambers	14,044
								6" Storage below 15" Orifice (El. 660.00)	3,000
								Storage in Rain Gardens	2,100
P1-3A	Flow to Detention Pond 2 (and 24" RCP)	6.55	2.88	43.97	0.45	0.243	10,598	24" Stone Storage below MC-4500 Chambers	15,150
								6" Storage below 15" Orifice (El. 661.00)	4,032
P2	Flow to Bioretention Area1	0.43	0.24	55.81	0.55	0.020	862	Bioretention Area1	4,781
	Flow to Bioretention Areas 2,3,4	0.55	0.44	80.00	0.77	0.035	1,537	Bioretention Areas 2,3,4	510
	Total =	12.58	7.80	62.00	-	0.64	**27,766**		**38,326**

Water Quality Flow Computations
See Hydroworks Hydrodynamic Separator Sizing Program Outputs

P1-3B	Flow to Separator 4-1	0.54	0.33	61.11	0.60	0.027	1,176	See Hydroworks Sizing Output
P1-3B	Flow to Separator 4-2	3.75	2.46	65.60	0.64	0.200	8,717	See Hydroworks Sizing Output
P2[1] (North)	Untreated Flow to Separator 3-1[2]	1.86	1.32	70.97	0.69	0.107	4,650	See Hydroworks Sizing Output
P2[1] (South)	Untreated Flow to Separator 2-1[2]	0.74	0.40	54.05	0.54	0.033	1,441	See Hydroworks Sizing Output

Notes:
1) The water quality computation for Area P2 includes only the disturbed and developed portion of the project - not the entire P2. Dashed lines indicate the area of WQV for P2 shown on the PWAM.
2) A portion of the flow in P2 that flows to Separator 3-1 and 2-1 has already been treated in Bioretention Areas 1-4 and as such, is not included in the computation for water quality flow for Separator 3-1 and 2-1.

Hydroworks Sizing Summary

Torrington High School
Separator 2-1

09-09-2021

Recommended Size: HG 4

A Hydroguard HG 4 is recommended to provide 80 % annual TSS removal based on a drainage area of .74 (ac) with an imperviousness of 40 % and Norfolk 2 Sw, Connecticut rainfall for the NJDEP particle size distribution.

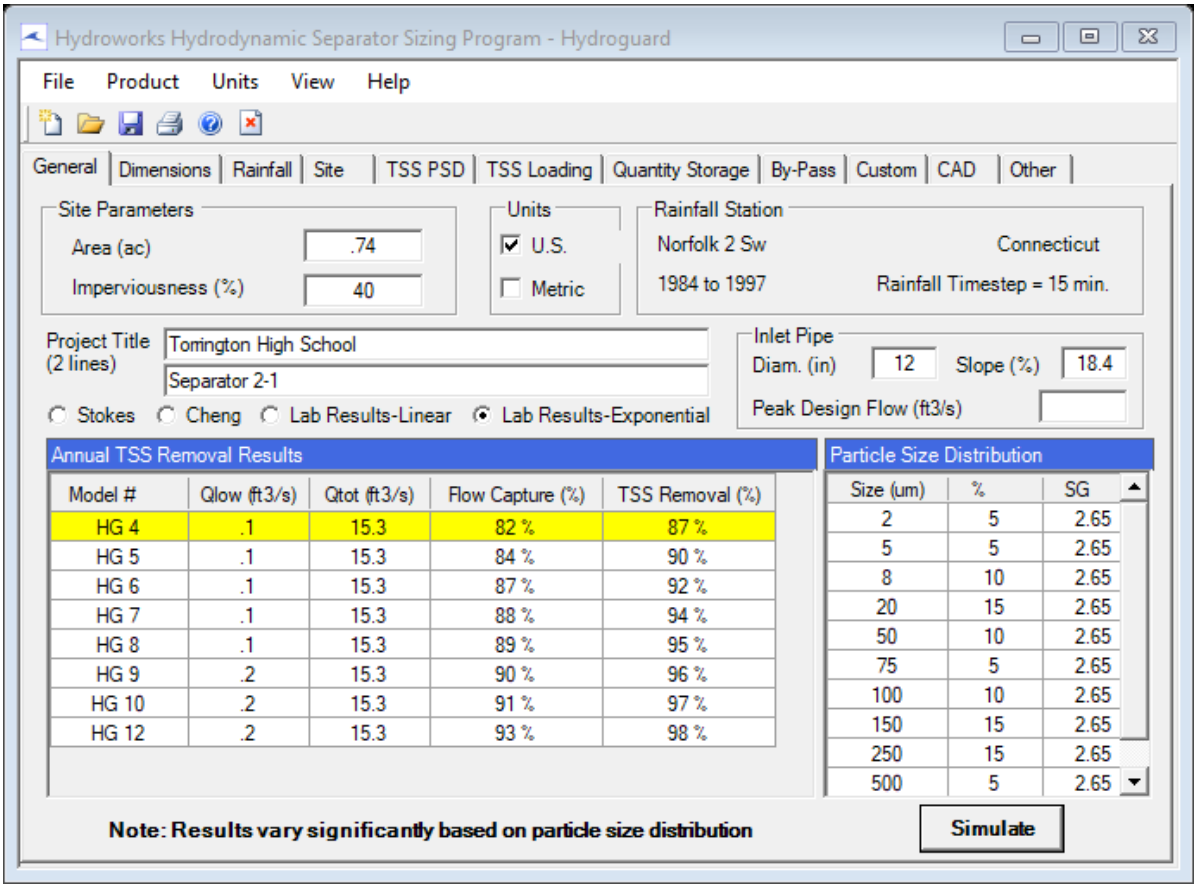
The recommended Hydroguard HG 4 treats 82 % of the annual runoff and provides 87 % annual TSS removal for the Norfolk 2 Sw rainfall records and NJDEP particle size distribution.

The Hydroguard has a headloss coefficient (K) of 1.6. Since a peak flow was not specified, headloss was calculated using the full pipe flow of 15.28 (ft3/s) for the given 12 (in) pipe diameter at 18.4% slope. The headloss was calculated to be 113 (in) based on a flow depth of 12 (in) (full pipe flow).

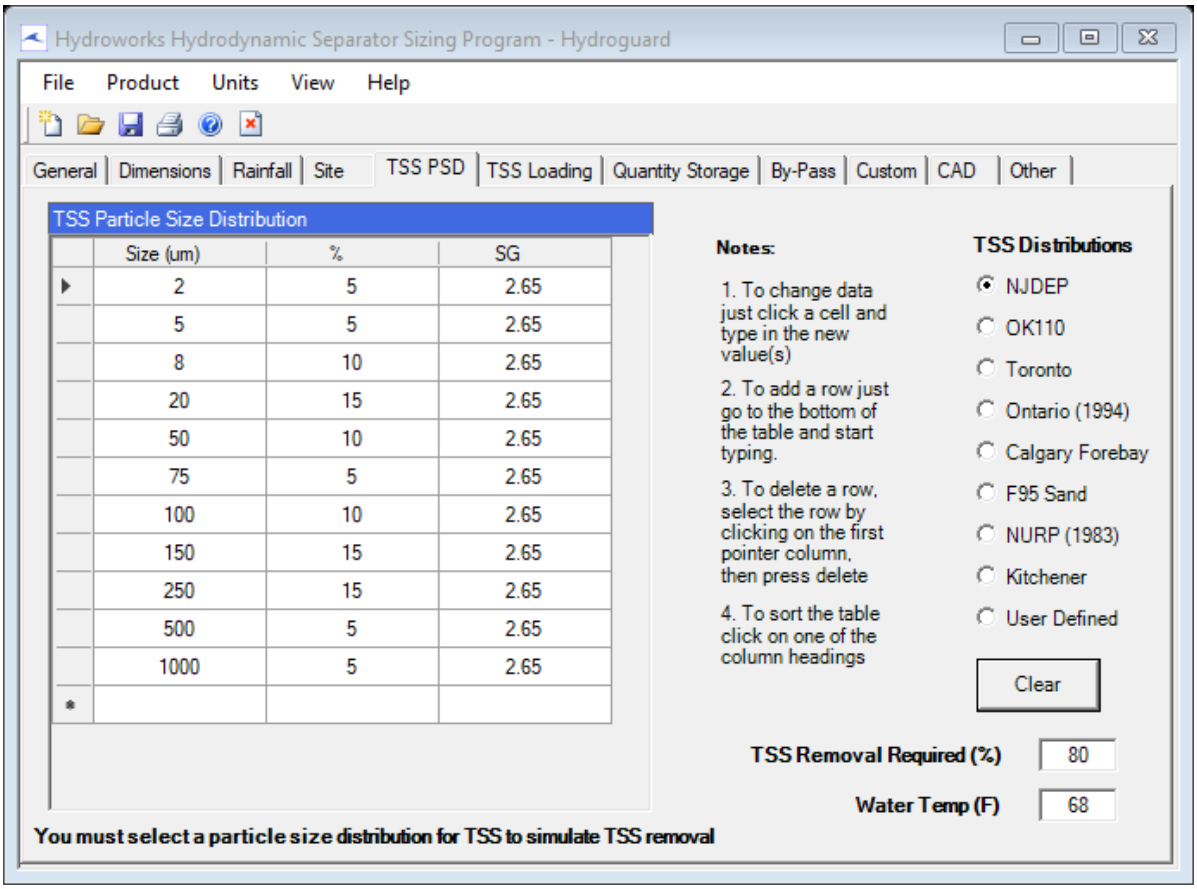
This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

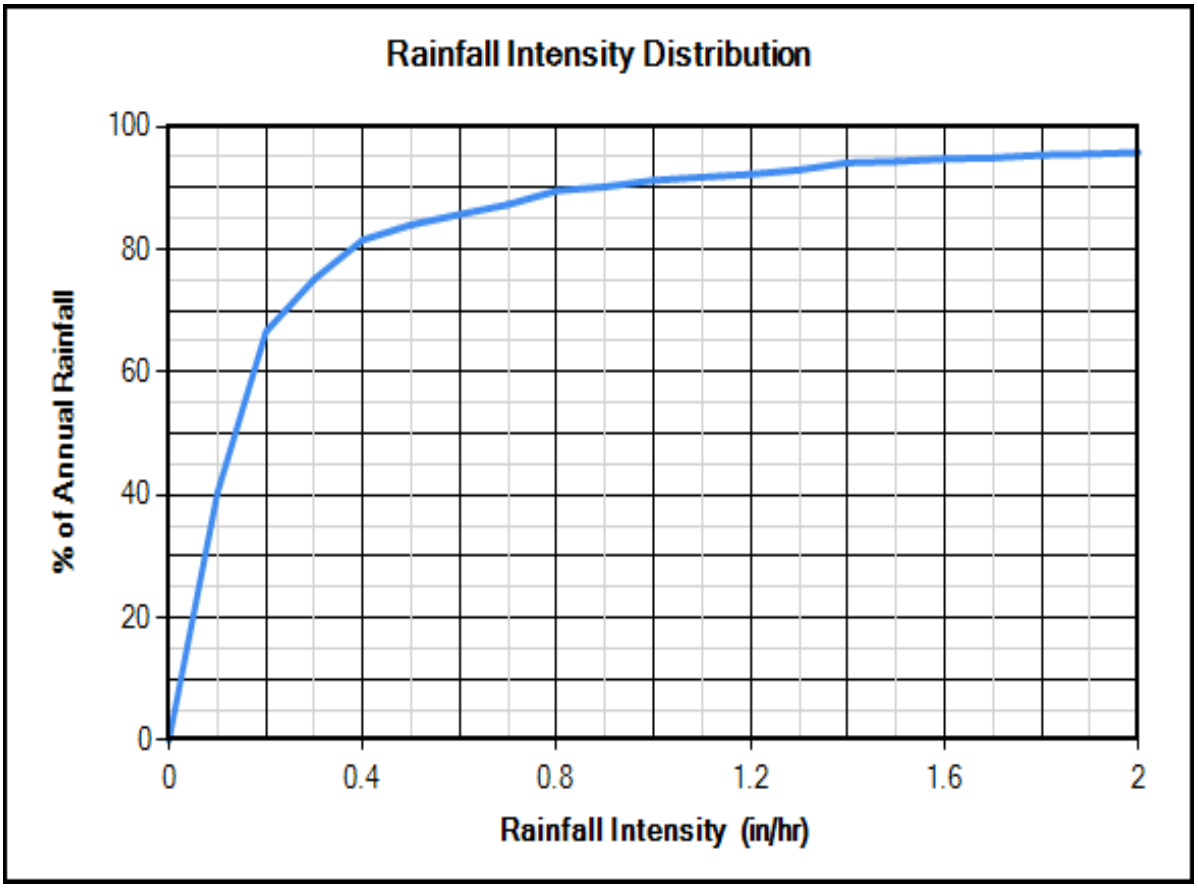
TSS Removal Sizing Summary



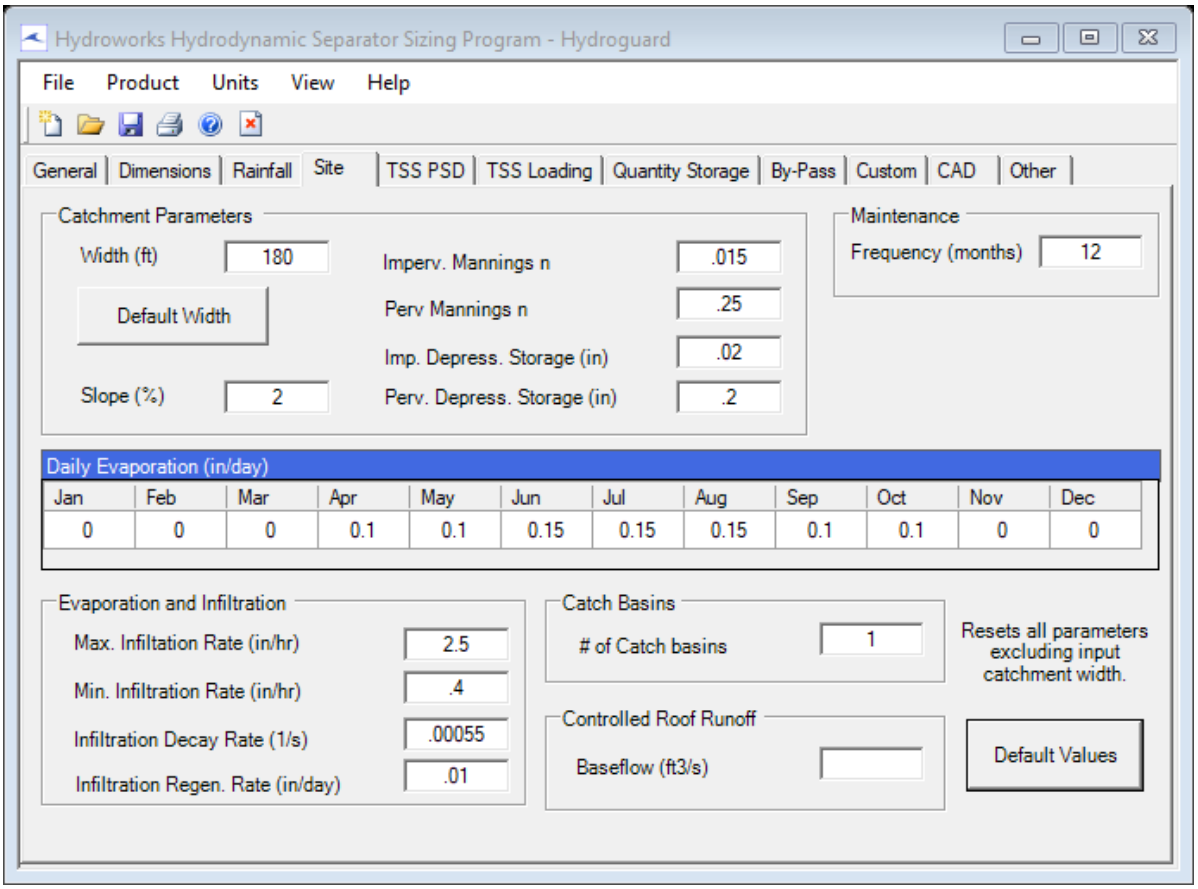
TSS Particle Size Distribution



Rainfall Station - Norfolk 2 Sw, Connecticut(1984 to 1997)



Site Physical Characteristics



Dimensions And Capacities

Hydroworks Hydrodynamic Separator Sizing Program - Hydroguard

File Product Units View Help

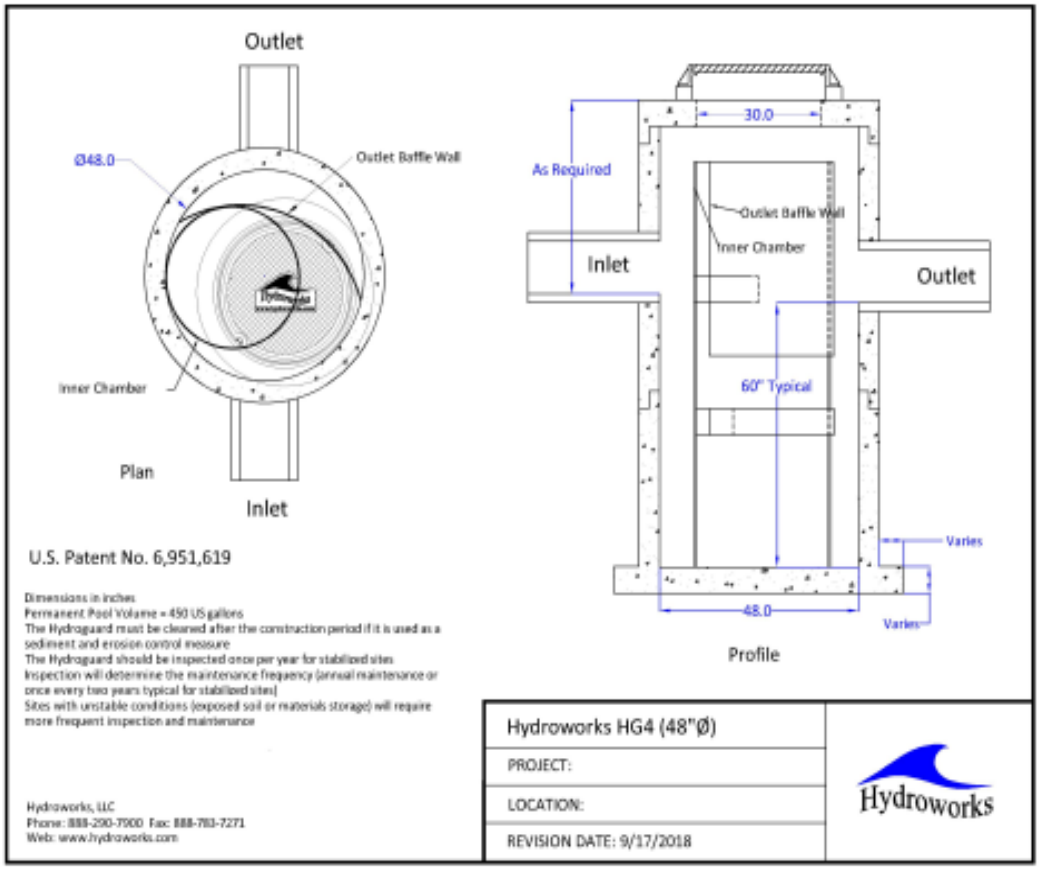
General | Dimensions | Rainfall | Site | TSS PSD | TSS Loading | Quantity Storage | By-Pass | Custom | CAD | Other

Dimensions and Capacities

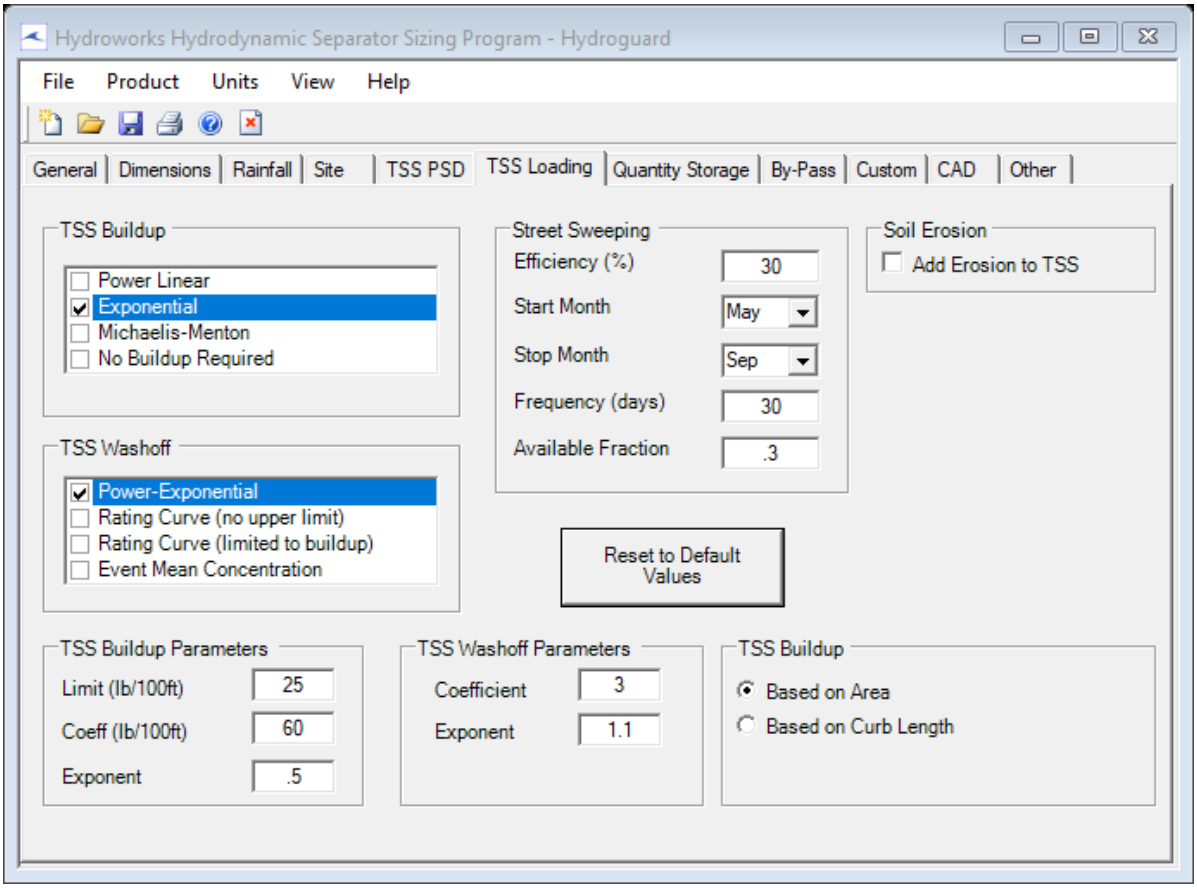
Model	Diam. (ft)	Depth (ft)	Float. Vol. (gal)	Sediment Vol. (ft3)	Total Vol. (gal)
HG 4	4	5	73	39	470
HG 5	5	5.5	134	67	808
HG 6	6	6	220	106	1269
HG 7	7	6.5	337	157	1871
HG 8	8	7	489	222	2632
HG 9	9	8	711	329	3807
HG 10	10	9	955	471	5288
HG 12	12	11	1760	839	9306

Depth = Depth from outlet invert to inside bottom of tank

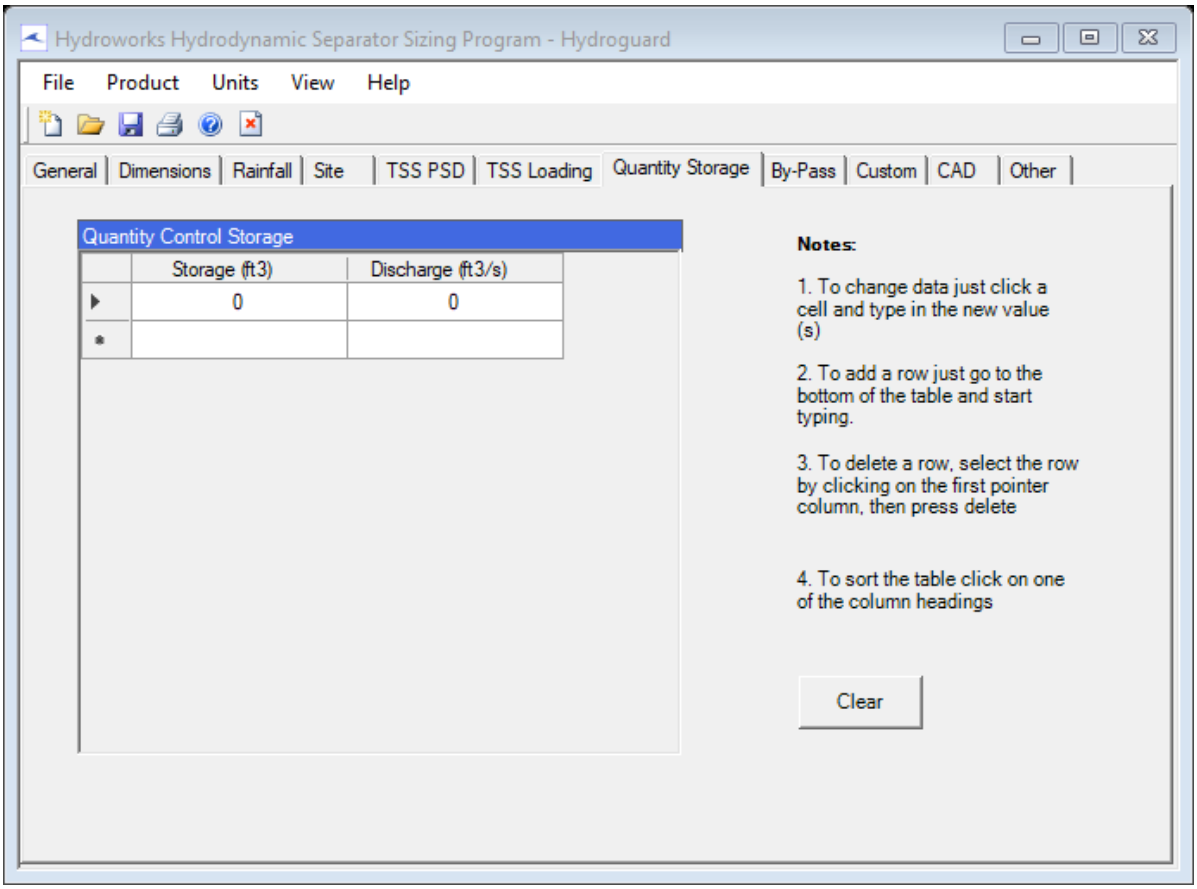
Generic HG 4 CAD Drawing



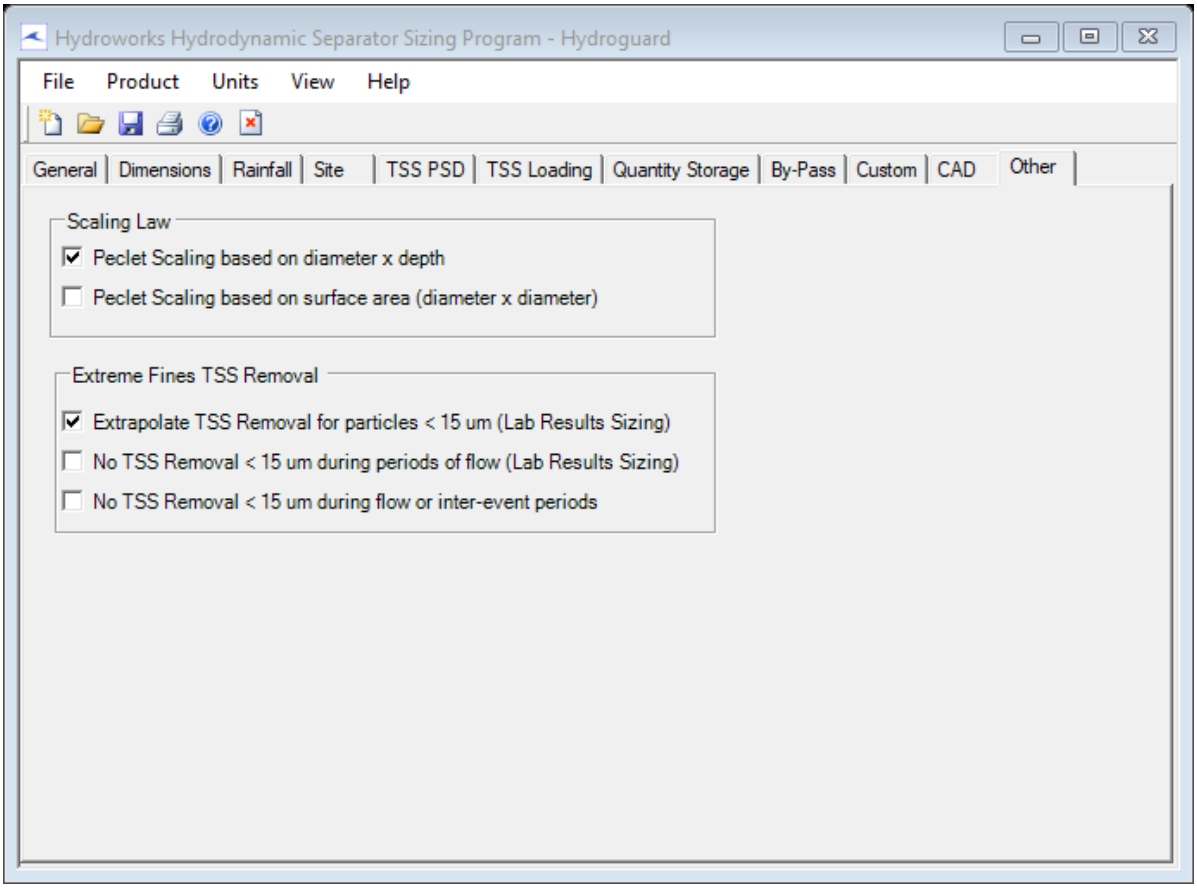
TSS Buildup And Washoff



Upstream Quantity Storage



Other Parameters



Hydroworks Sizing Program - Version 4.9

Hydroworks Sizing Summary

Torrington High School
Separator 3-1

09-09-2021

Recommended Size: HG 6

A Hydroguard HG 6 is recommended to provide 80 % annual TSS removal based on a drainage area of 1.86 (ac) with an imperviousness of 71 % and Norfolk 2 Sw, Connecticut rainfall for the NJDEP particle size distribution.

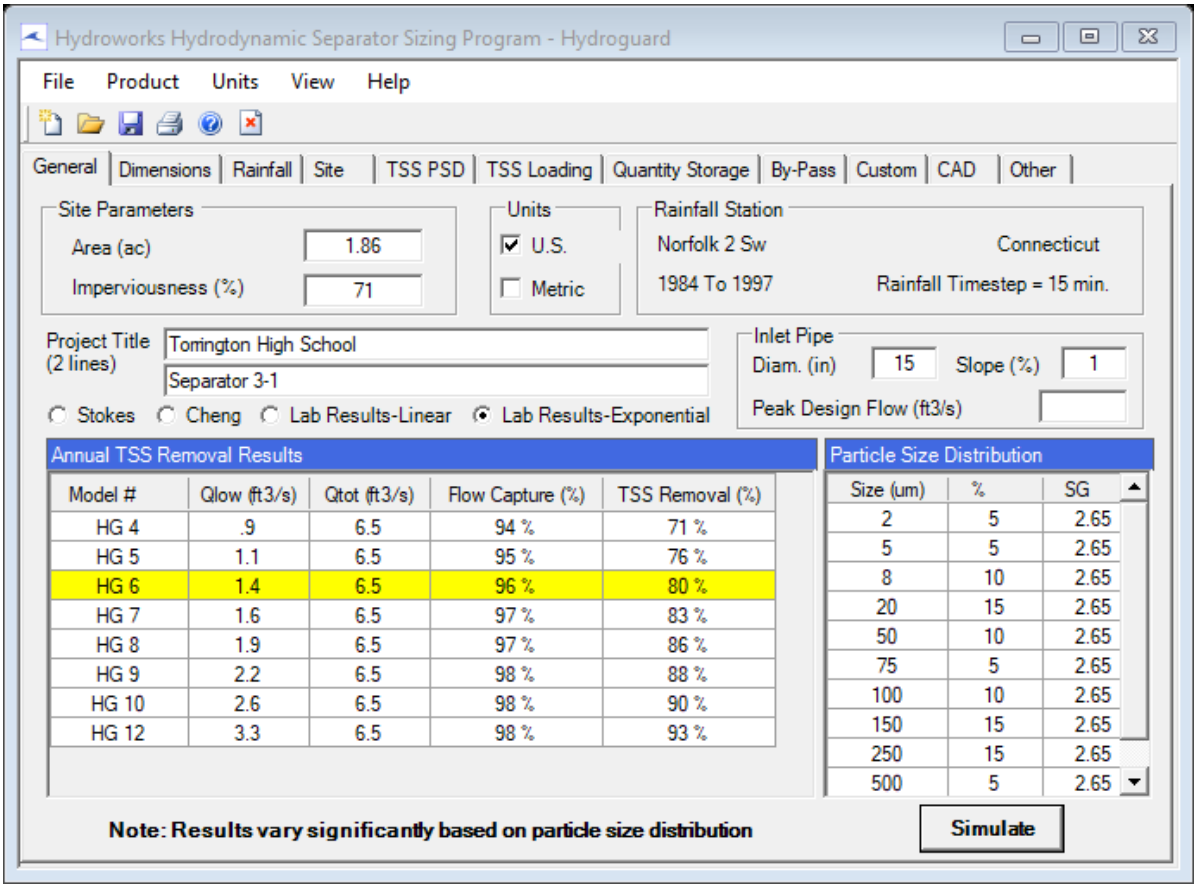
The recommended Hydroguard HG 6 treats 96 % of the annual runoff and provides 80 % annual TSS removal for the Norfolk 2 Sw rainfall records and NJDEP particle size distribution.

The Hydroguard has a headloss coefficient (K) of 1.6. Since a peak flow was not specified, headloss was calculated using the full pipe flow of 6.46 (ft3/s) for the given 15 (in) pipe diameter at 1% slope. The headloss was calculated to be 8 (in) based on a flow depth of 15 (in) (full pipe flow).

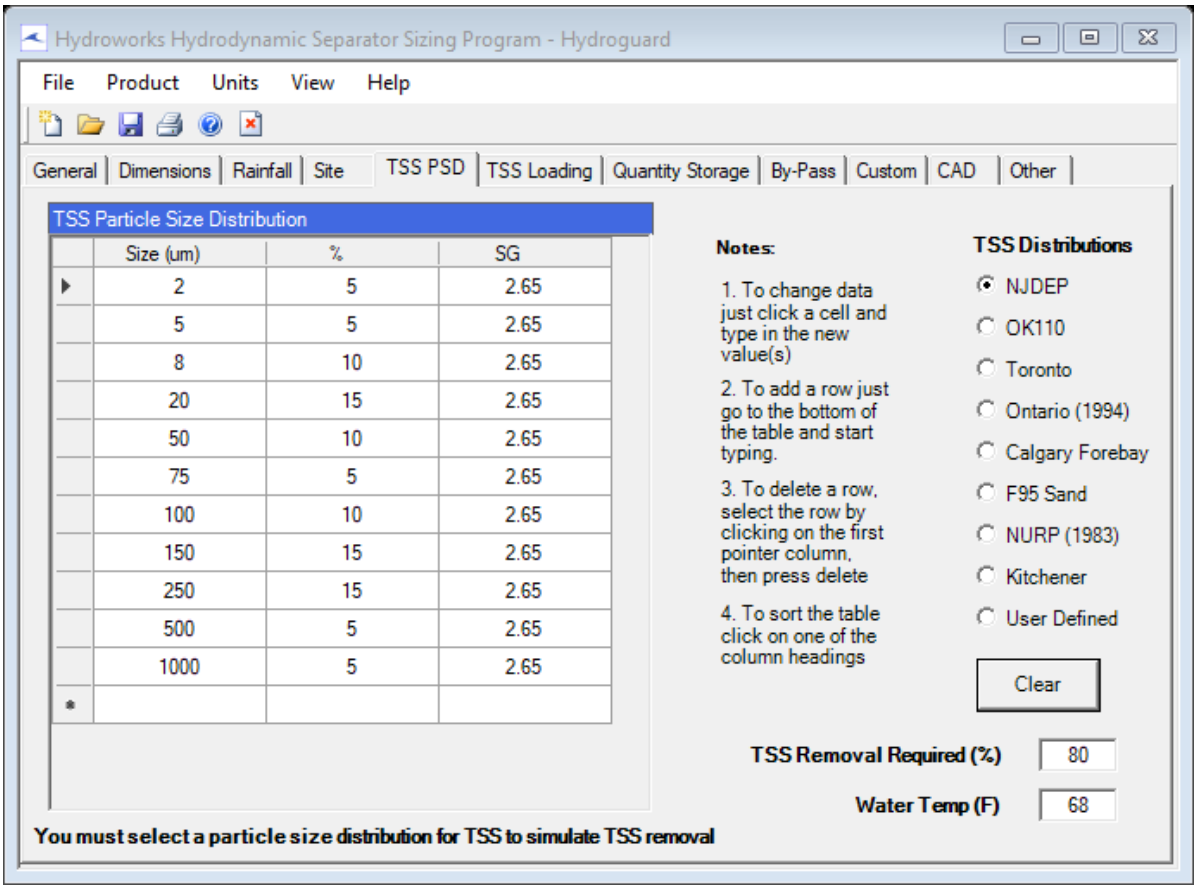
This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

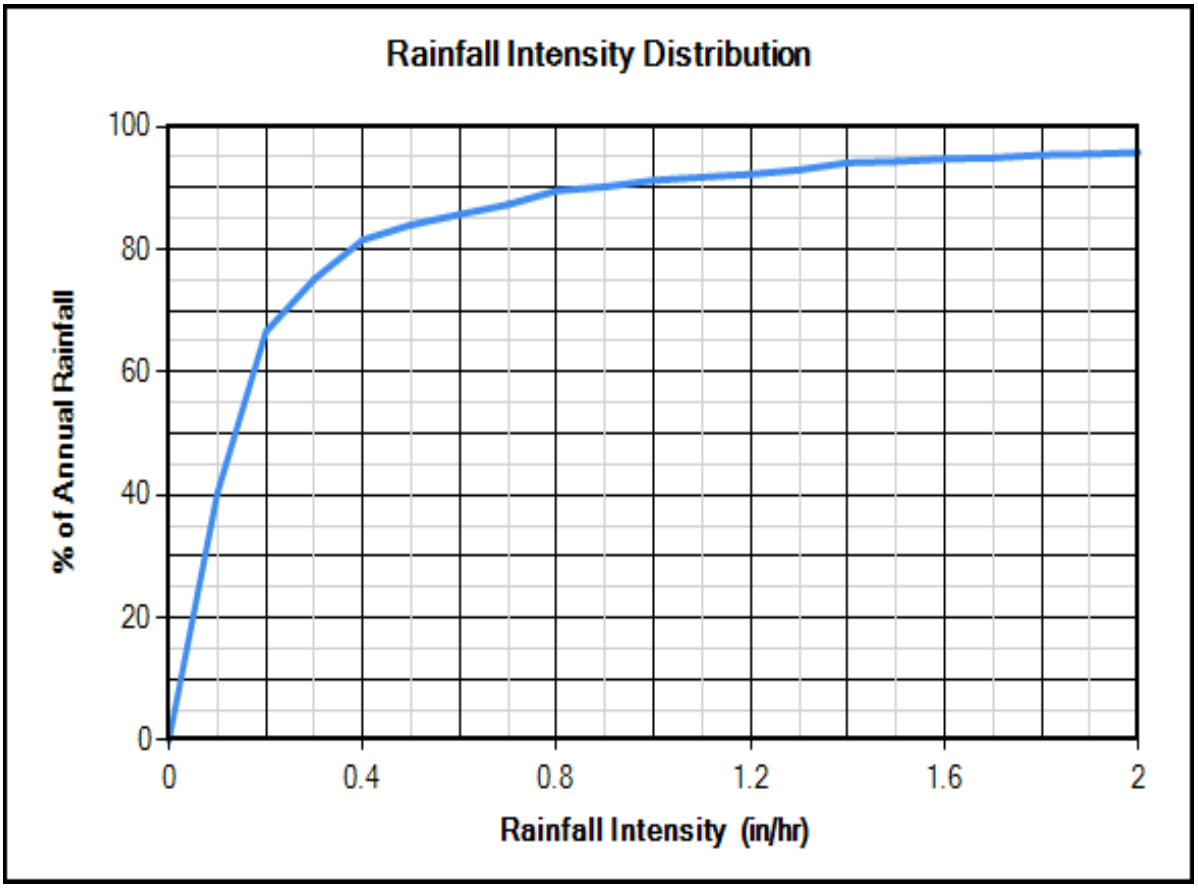
TSS Removal Sizing Summary



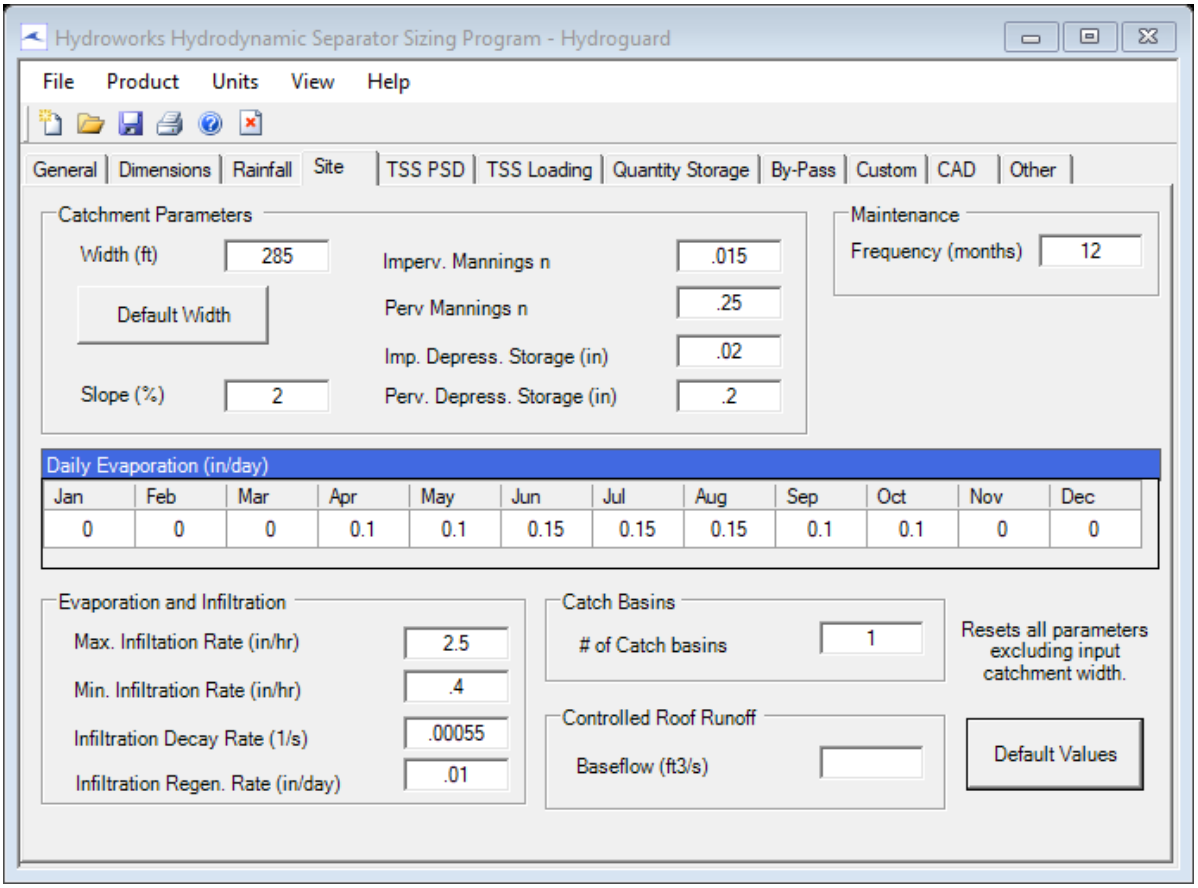
TSS Particle Size Distribution



Rainfall Station - Norfolk 2 Sw, Connecticut(1984 To 1997)



Site Physical Characteristics



Dimensions And Capacities

Hydroworks Hydrodynamic Separator Sizing Program - Hydroguard

File Product Units View Help

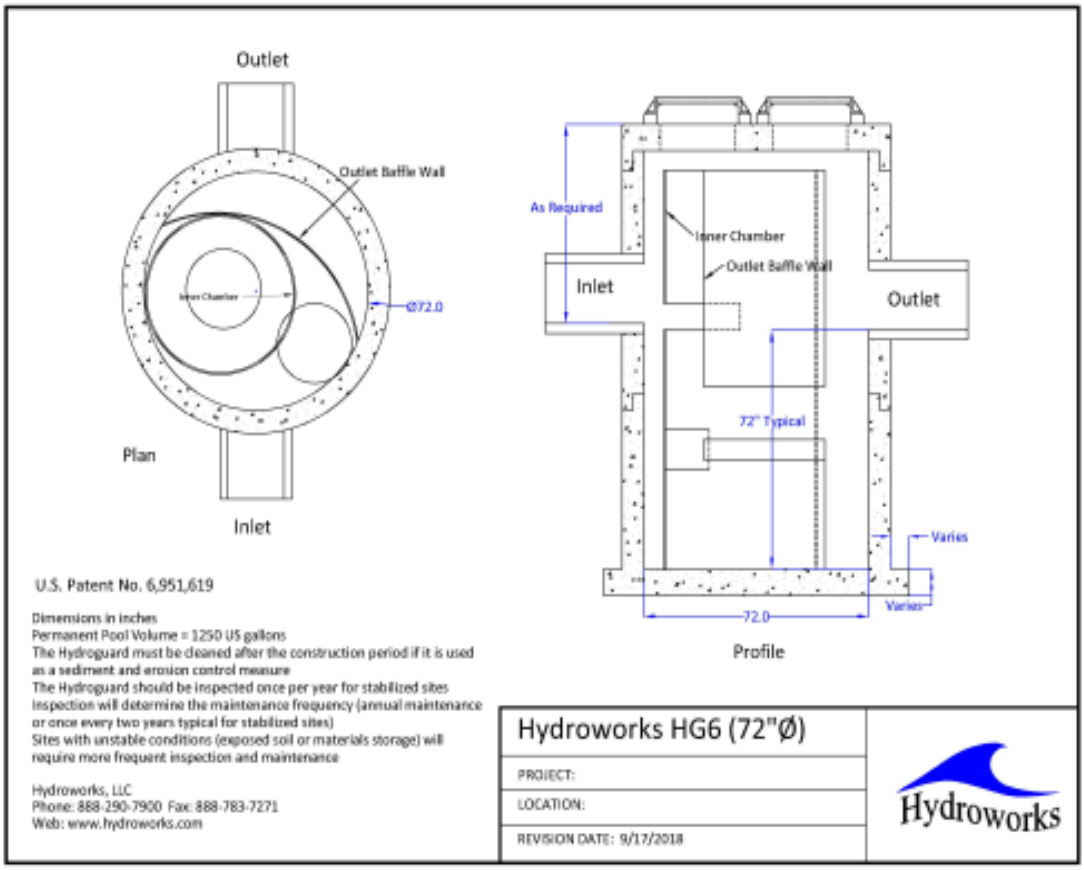
General | Dimensions | Rainfall | Site | TSS PSD | TSS Loading | Quantity Storage | By-Pass | Custom | CAD | Other

Dimensions and Capacities

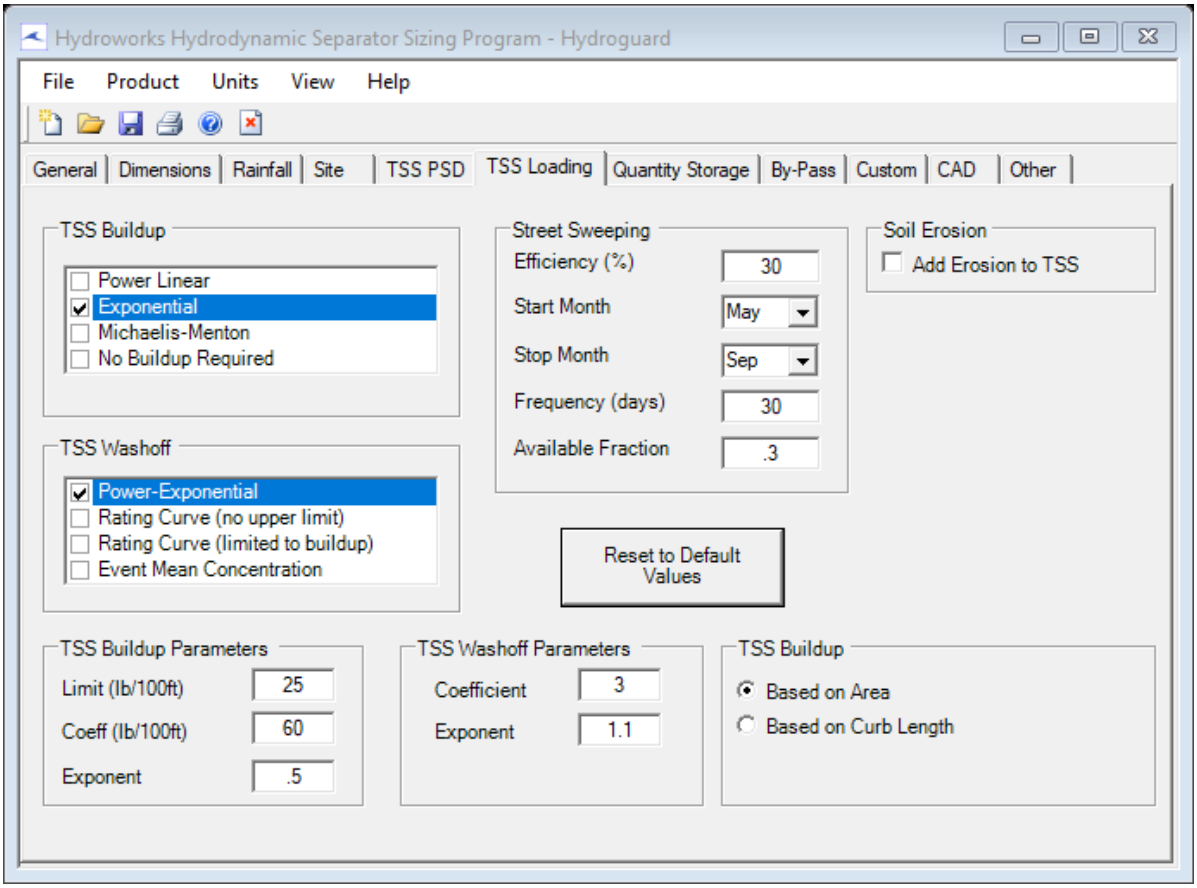
Model	Diam. (ft)	Depth (ft)	Float. Vol. (gal)	Sediment Vol. (ft3)	Total Vol. (gal)
HG 4	4	5	73	36	470
HG 5	5	5.5	134	62	808
HG 6	6	6	220	99	1269
HG 7	7	6.5	337	148	1871
HG 8	8	7	489	209	2632
HG 9	9	8	711	313	3807
HG 10	10	9	955	452	5288
HG 12	12	11	1760	811	9306

Depth = Depth from outlet invert to inside bottom of tank

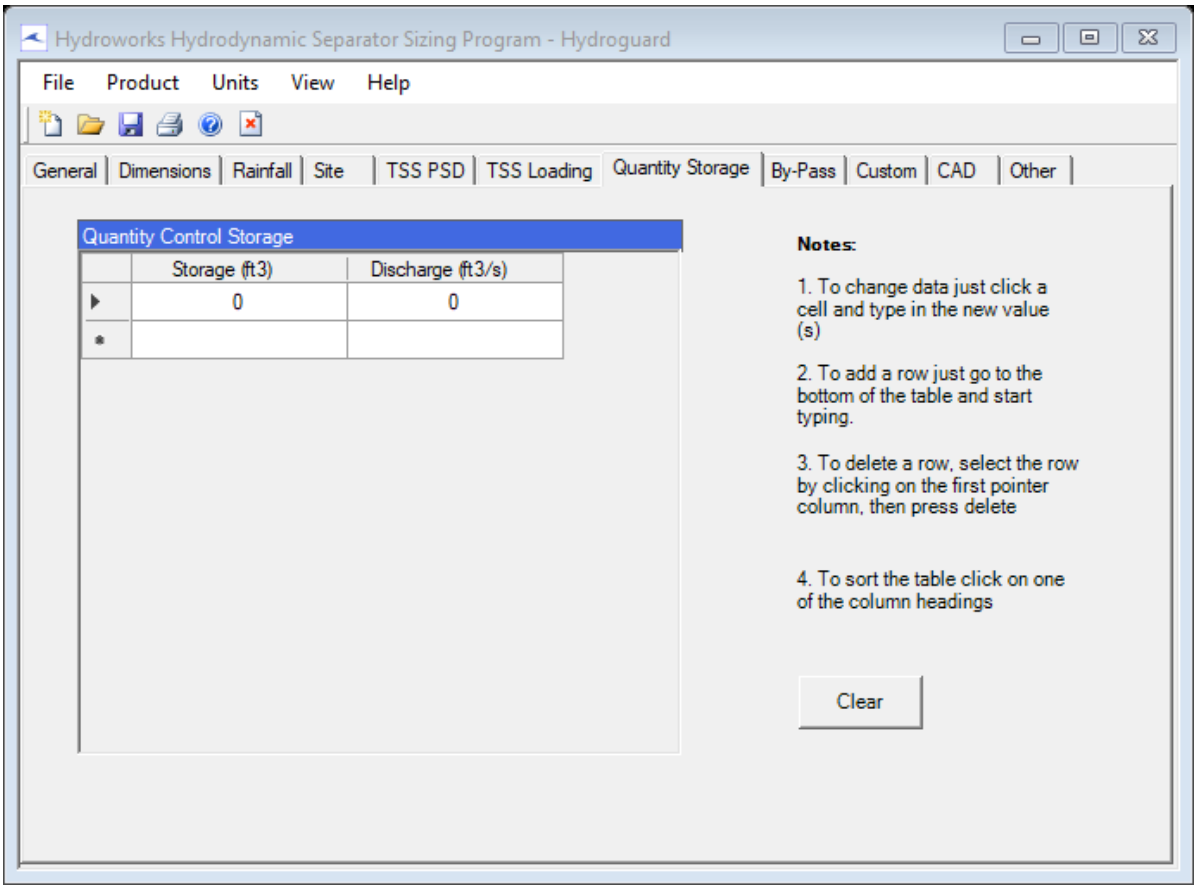
Generic HG 6 CAD Drawing



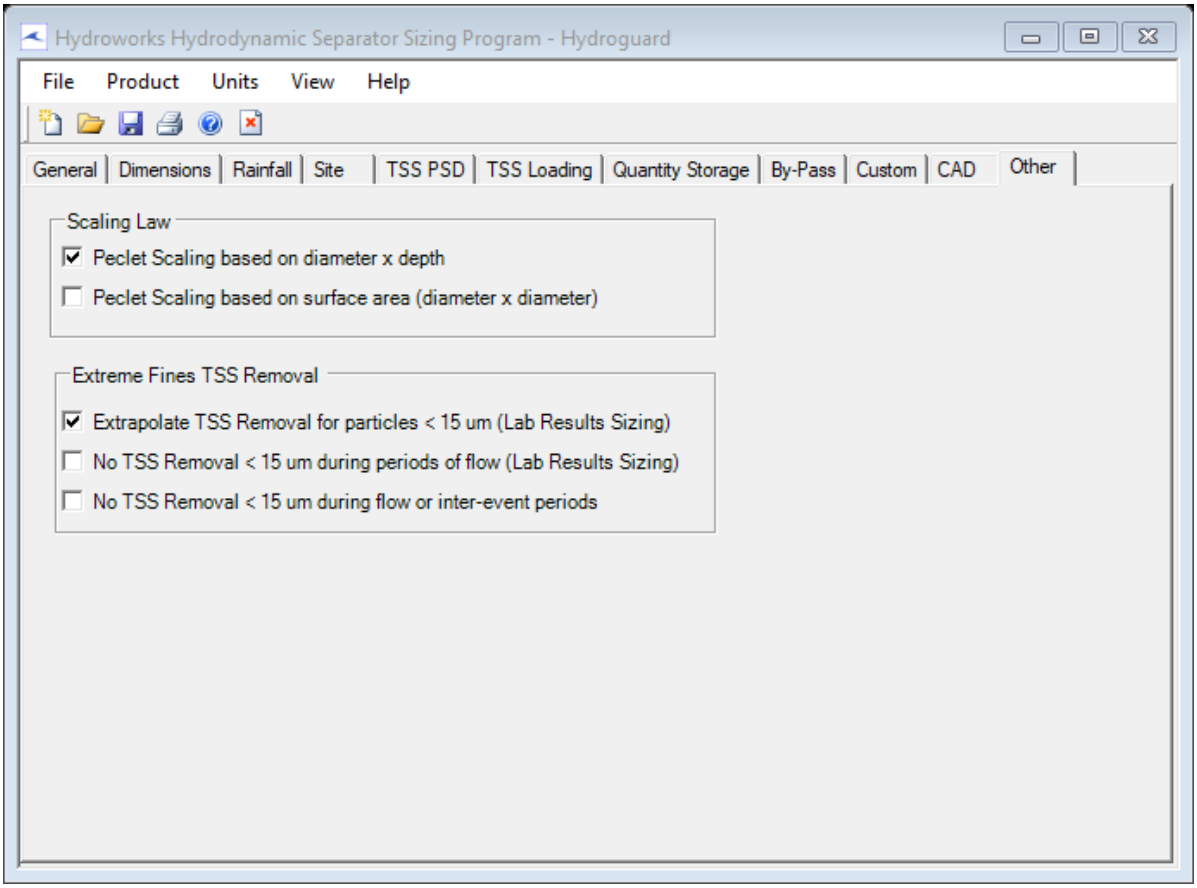
TSS Buildup And Washoff



Upstream Quantity Storage



Other Parameters



Hydroworks Sizing Program - Version 4.9

Hydroworks Sizing Summary

Torrington High School
Separator 4-1

09-08-2021

Recommended Size: HG 4i

A Hydroguard HG 4i is recommended to provide 80 % annual TSS removal based on a drainage area of .54 (ac) with an imperviousness of 61.11 % and Norfolk 2 Sw, Connecticut rainfall for the NJDEP particle size distribution.

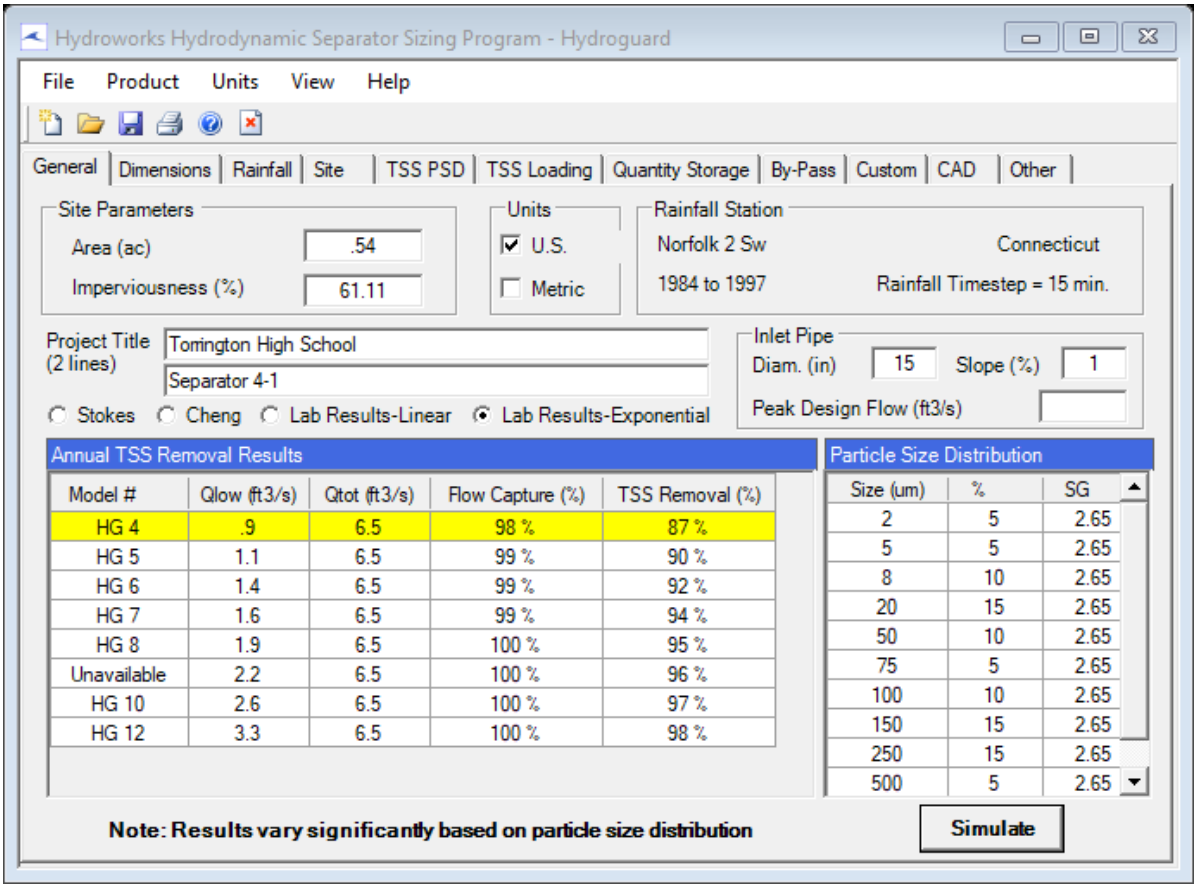
The recommended Hydroguard HG 4i treats 98 % of the annual runoff and provides 87 % annual TSS removal for the Norfolk 2 Sw rainfall records and NJDEP particle size distribution.

The Hydroguard has a headloss coefficient (K) of 1.6. Since a peak flow was not specified, headloss was calculated using the full pipe flow of 6.46 (ft3/s) for the given 15 (in) pipe diameter at 1% slope. The headloss was calculated to be 8 (in) based on a flow depth of 15 (in) (full pipe flow).

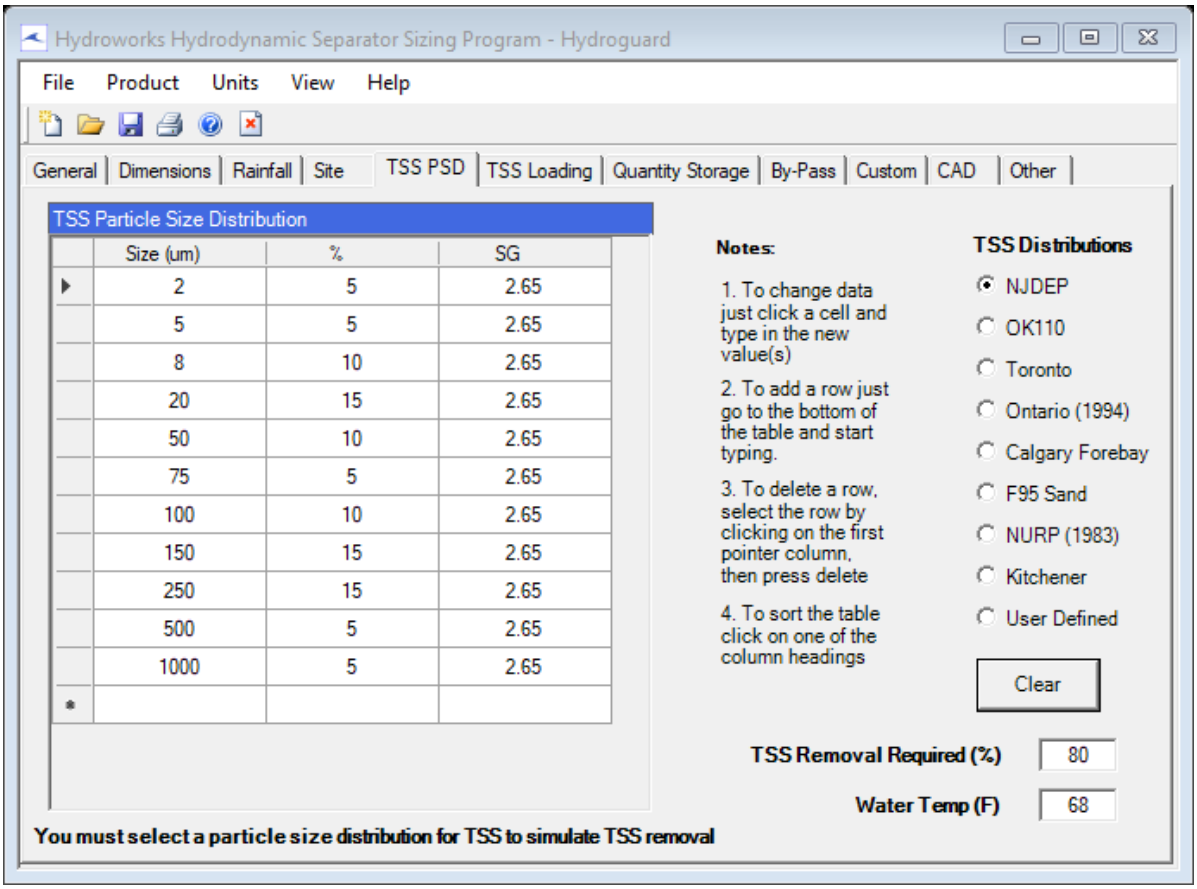
This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

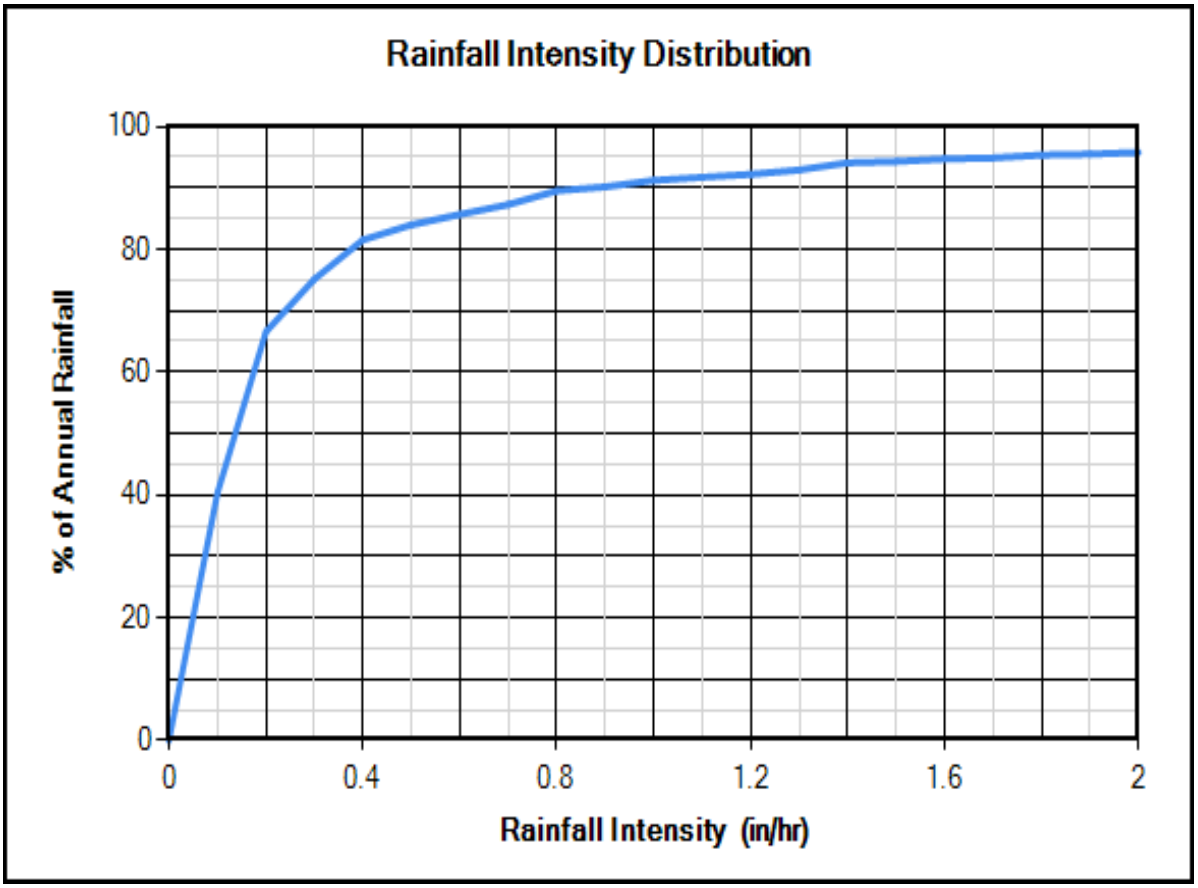
TSS Removal Sizing Summary



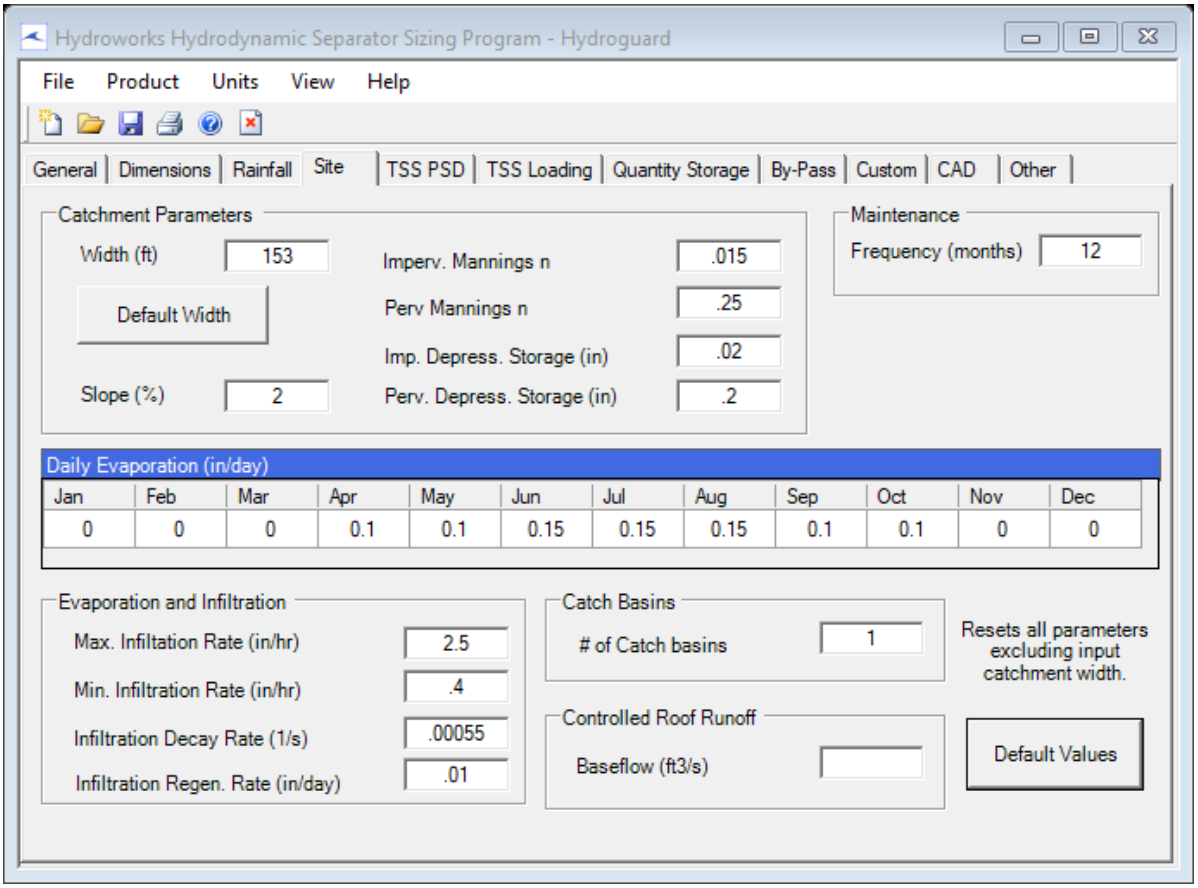
TSS Particle Size Distribution



Rainfall Station - Norfolk 2 Sw, Connecticut(1984 to 1997)



Site Physical Characteristics



Dimensions And Capacities

Hydroworks Hydrodynamic Separator Sizing Program - Hydroguard

File Product Units View Help

General | Dimensions | Rainfall | Site | TSS PSD | TSS Loading | Quantity Storage | By-Pass | Custom | CAD | Other

Dimensions and Capacities

Model	Diam. (ft)	Depth (ft)	Float. Vol. (gal)	Sediment Vol. (ft3)	Total Vol. (gal)
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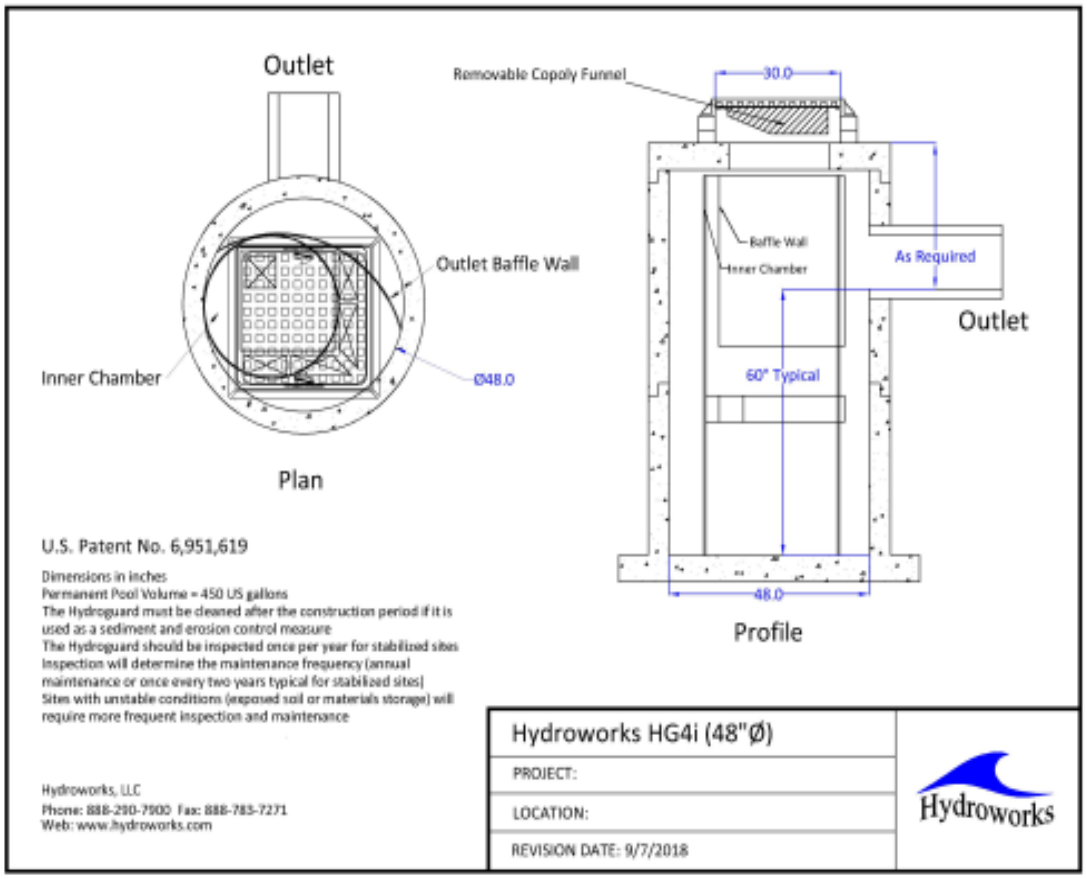
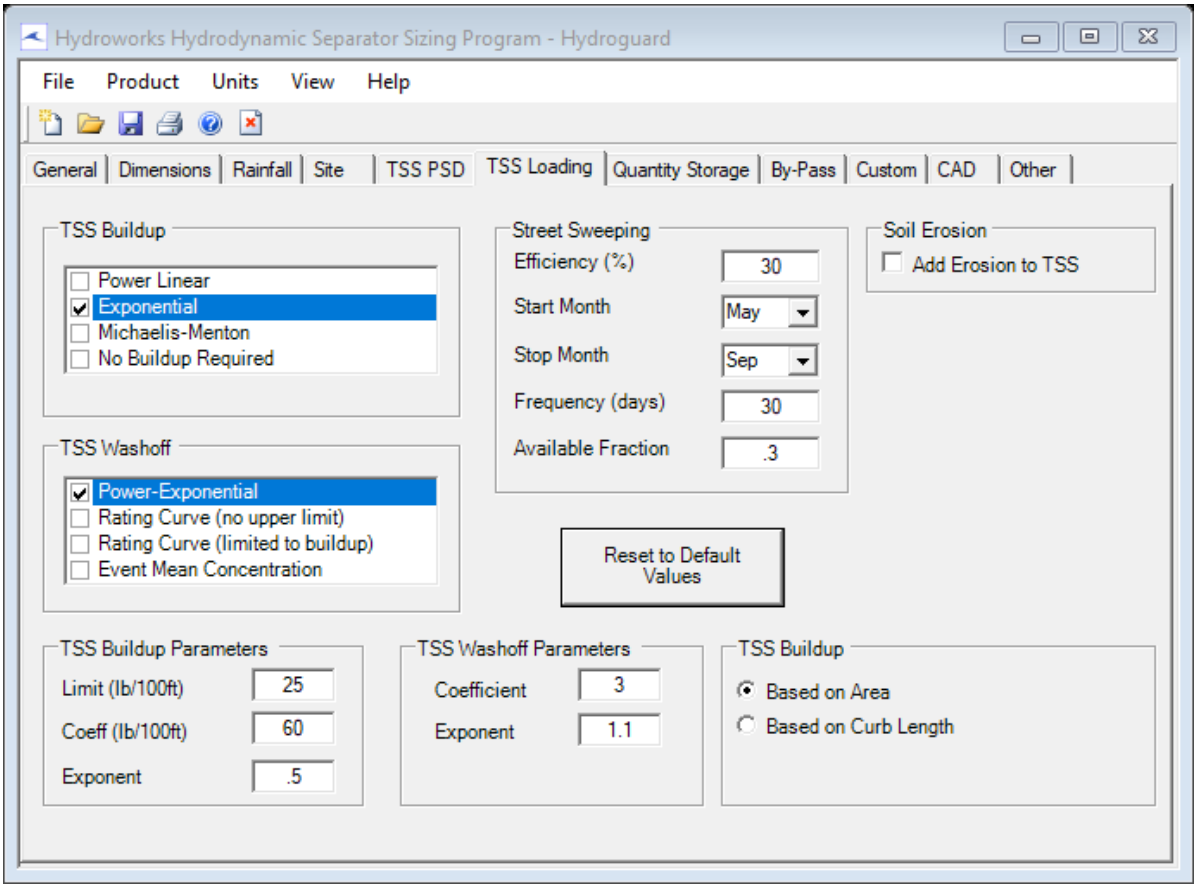
HG 6	6	6	220	92	1269
HG 7	7	6.5	337	128	1871
HG 8	8	7	489	172	2632
HG 9	9	8	711	244	3807
HG 10	10	9	955	340	5288
HG 12	12	11	1760	603	9306

Depth = Depth from outlet invert to inside bottom of tank

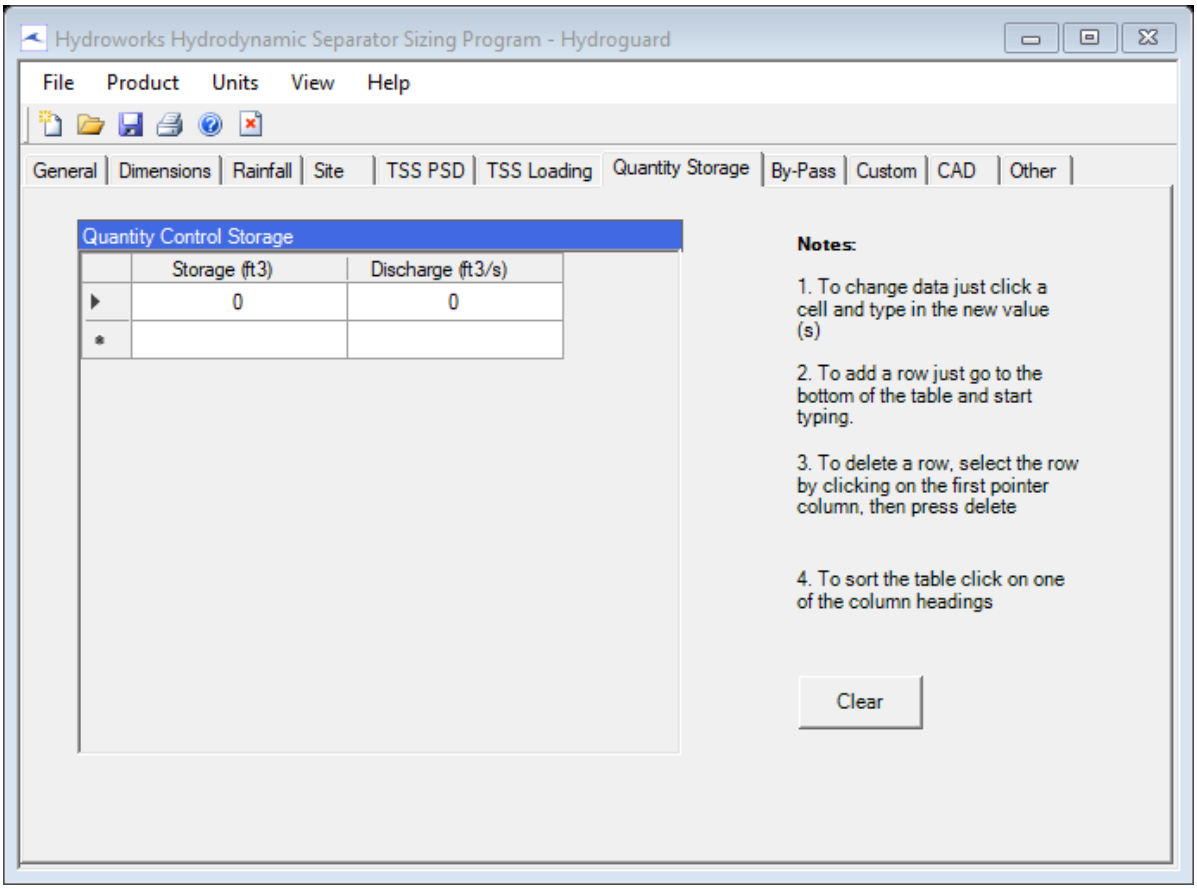
Generic HG 4i CAD Drawing



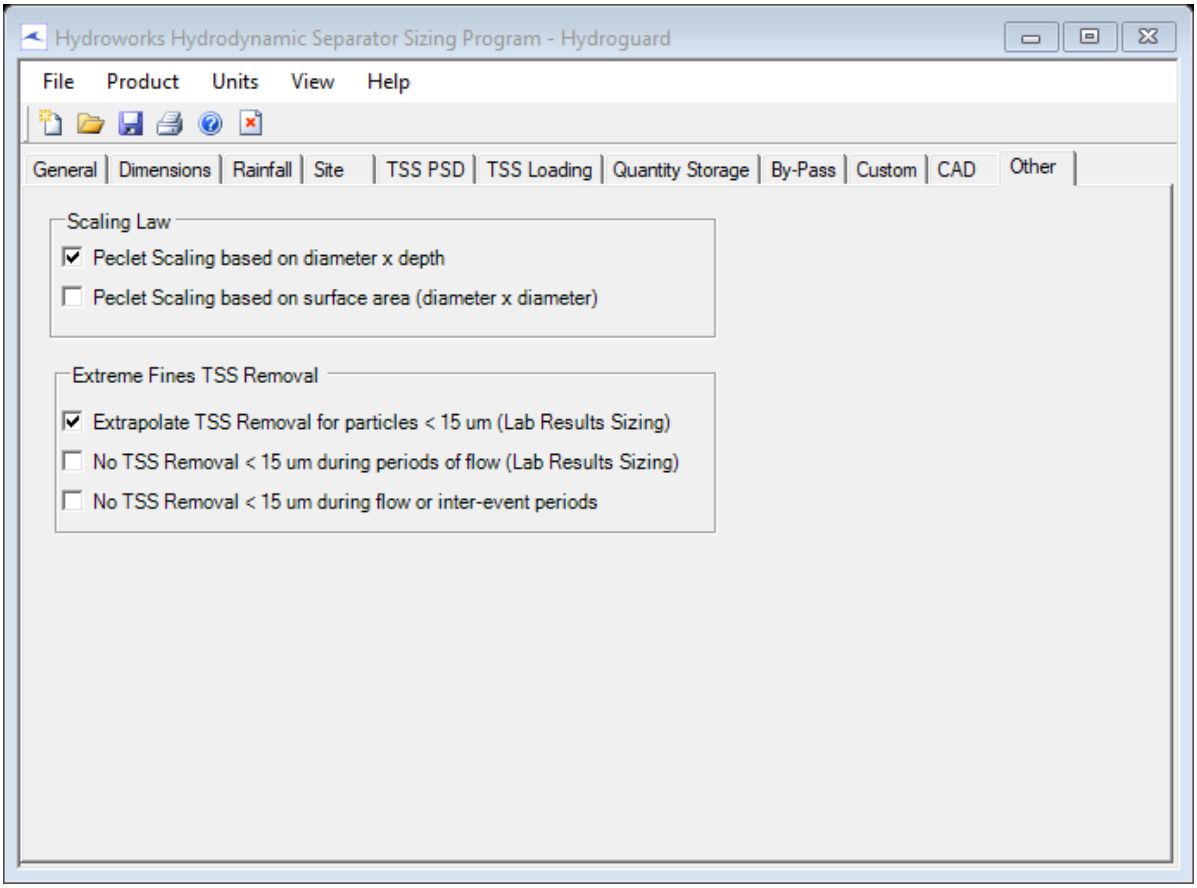
TSS Buildup And Washoff



Upstream Quantity Storage



Other Parameters



Hydroworks Sizing Program - Version 4.9

Hydroworks Sizing Summary

Torrington High School
Separator 4-2

09-08-2021

Recommended Size: HG 10

A Hydroguard HG 10 is recommended to provide 80 % annual TSS removal based on a drainage area of 3.75 (ac) with an imperviousness of 65.60 % and Norfolk 2 Sw, Connecticut rainfall for the NJDEP particle size distribution.

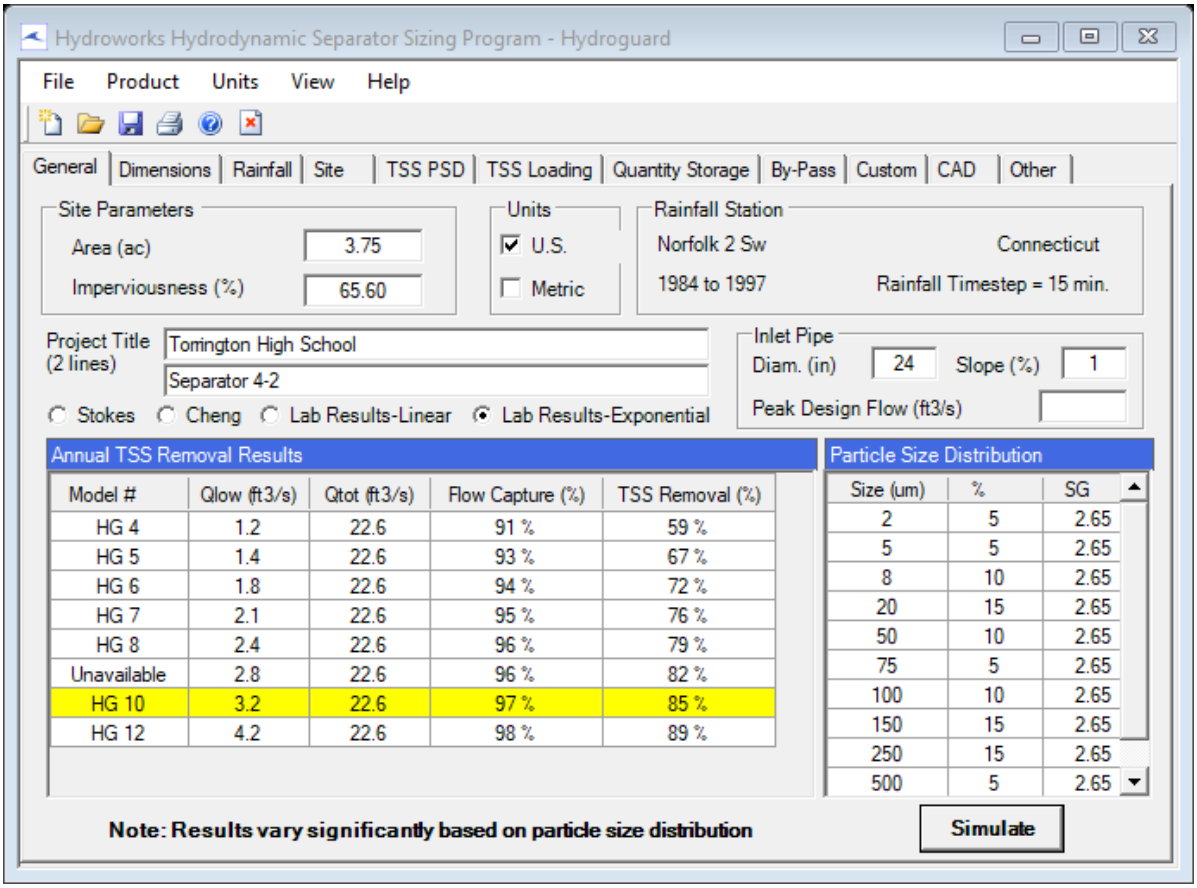
The recommended Hydroguard HG 10 treats 97 % of the annual runoff and provides 85 % annual TSS removal for the Norfolk 2 Sw rainfall records and NJDEP particle size distribution.

The Hydroguard has a headloss coefficient (K) of 1.6. Since a peak flow was not specified, headloss was calculated using the full pipe flow of 22.62 (ft3/s) for the given 24 (in) pipe diameter at 1% slope. The headloss was calculated to be 15 (in) based on a flow depth of 24 (in) (full pipe flow).

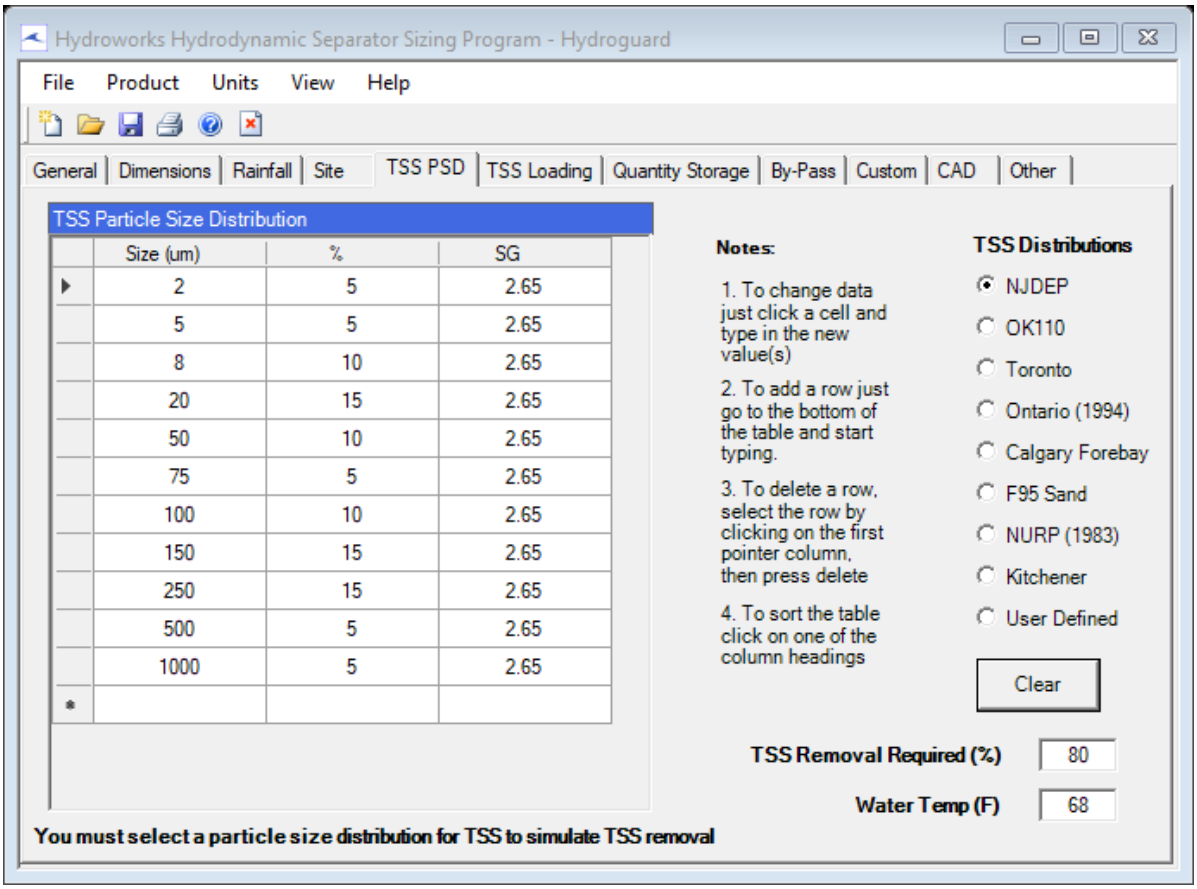
This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

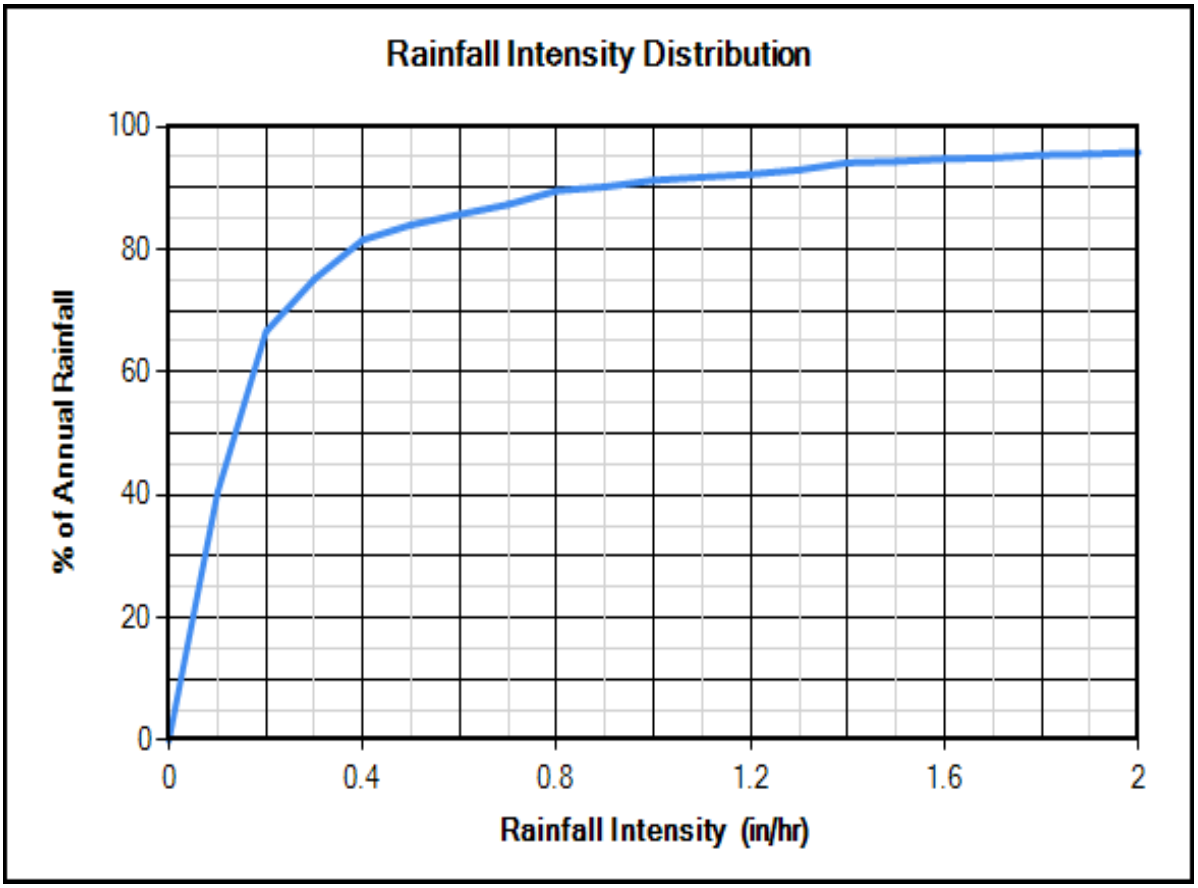
TSS Removal Sizing Summary



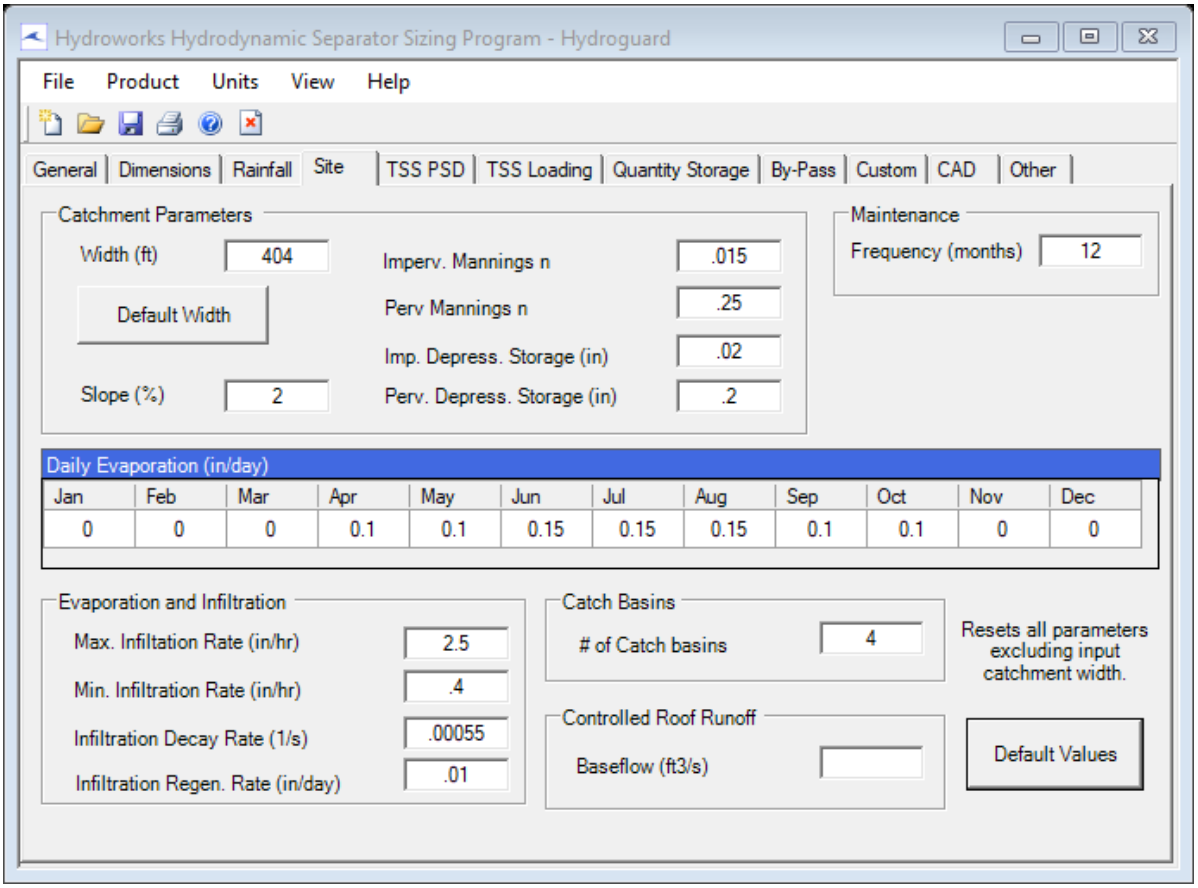
TSS Particle Size Distribution



Rainfall Station - Norfolk 2 Sw, Connecticut(1984 to 1997)



Site Physical Characteristics



Dimensions And Capacities

Hydroworks Hydrodynamic Separator Sizing Program - Hydroguard

File Product Units View Help

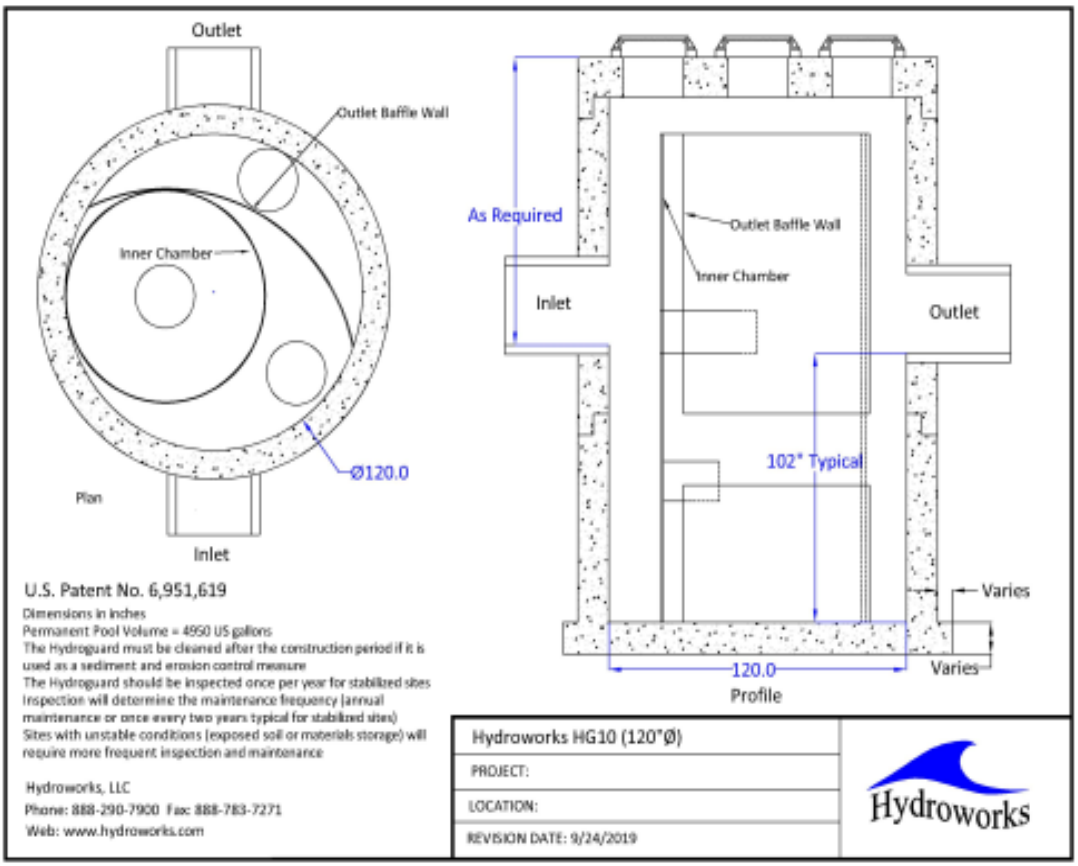
General | Dimensions | Rainfall | Site | TSS PSD | TSS Loading | Quantity Storage | By-Pass | Custom | CAD | Other

Dimensions and Capacities

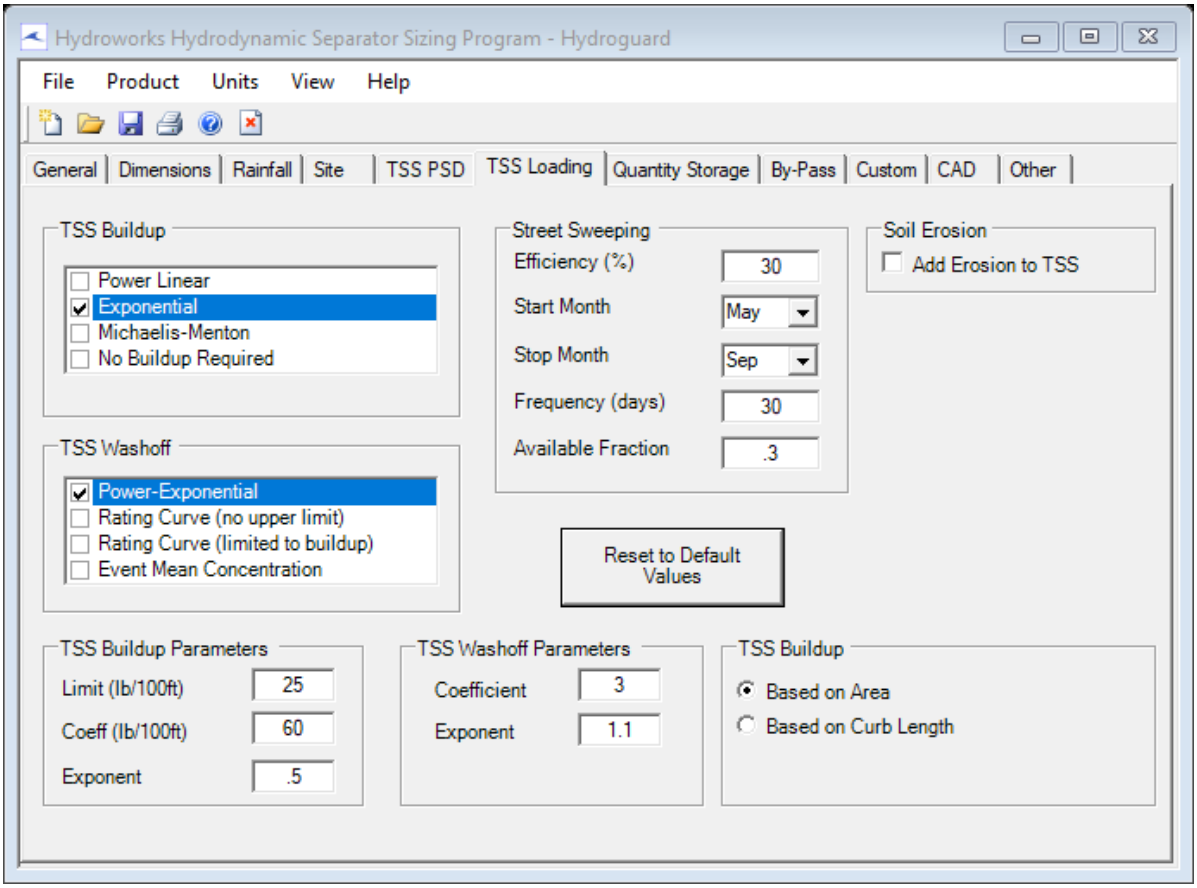
Model	Diam. (ft)	Depth (ft)	Float. Vol. (gal)	Sediment Vol. (ft3)	Total Vol. (gal)
HG 4	4	5	73	38	470
HG 5	5	5.5	134	62	808
HG 6	6	6	220	92	1269
HG 7	7	6.5	337	128	1871
HG 8	8	7	489	172	2632
HG 9	9	8	711	244	3807
HG 10	10	9	955	340	5288
HG 12	12	11	1760	603	9306

Depth = Depth from outlet invert to inside bottom of tank

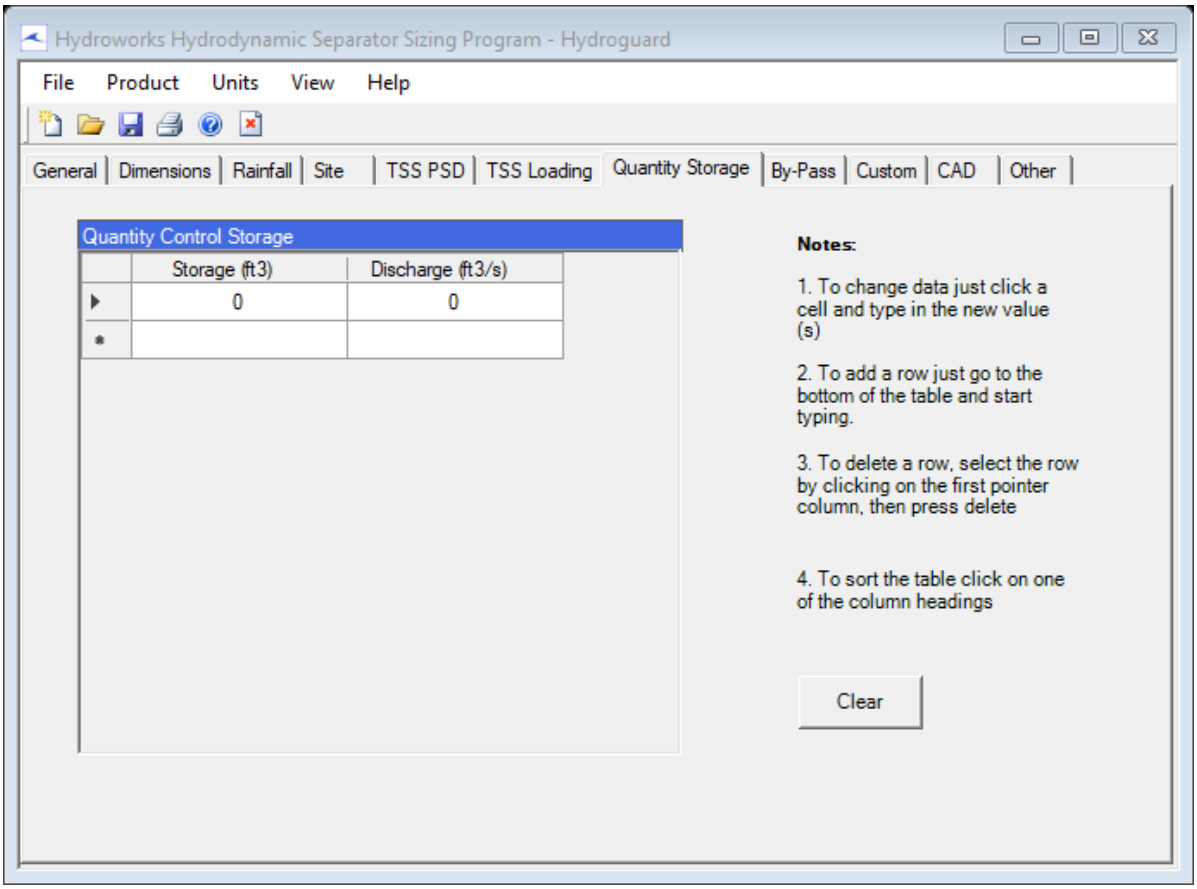
Generic HG 10 CAD Drawing



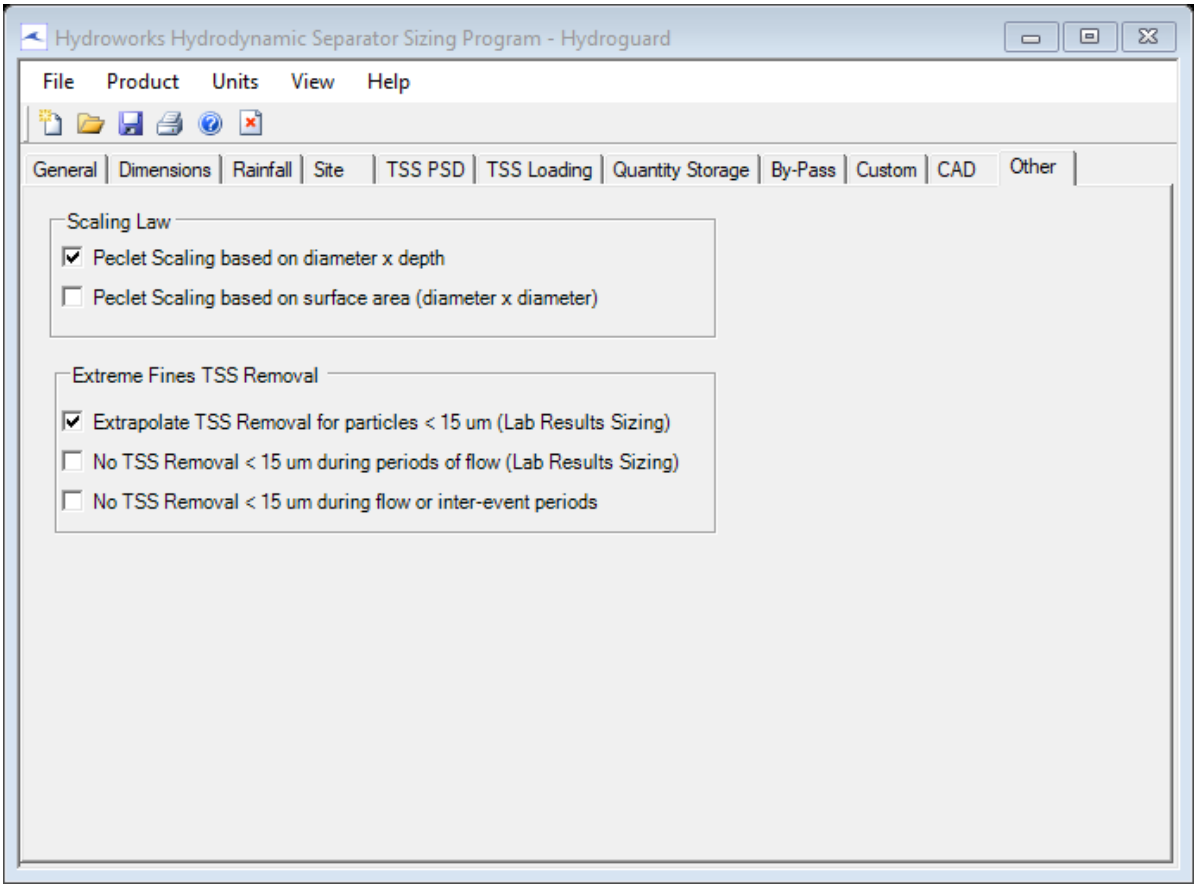
TSS Buildup And Washoff



Upstream Quantity Storage



Other Parameters



Hydroworks Sizing Program - Version 4.9

APPENDIX E

NATURAL RESOURCES CONSERVATION SERVICE

SOIL MAPPING

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut

Torrington High School

July 28, 2021

Contents

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,810 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jun 12, 2020—Sep 15, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38E	Hinckley loamy sand, 15 to 45 percent slopes	4.7	8.7%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	3.0	5.5%
306	Udorthents-Urban land complex	31.1	57.1%
308	Udorthents, smoothed	11.6	21.3%
W	Water	4.0	7.3%
Totals for Area of Interest		**54.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut

38E—Hinckley loamy sand, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 2svmj
Elevation: 0 to 1,280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Kames, eskers, kame terraces, outwash plains, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A

Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash deltas, moraines, kames, eskers, kame terraces, outwash plains, outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, linear, convex
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Agawam

Percent of map unit: 3 percent
Landform: Kames, moraines, outwash terraces, outwash deltas, kame terraces, eskers, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 2 percent
Landform: Eskers, kames, moraines, outwash terraces, kame terraces, outwash plains, outwash deltas
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

62D—Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w81r
Elevation: 0 to 1,640 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, extremely stony, and similar soils: 55 percent
Charlton, extremely stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Extremely Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton, Extremely Stony

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chatfield, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Hollis, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Sutton, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Drift

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 54 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent
Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 5 percent
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Hydric soil rating: No

308—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9lmj
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 24 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 7 percent
Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 7 percent
Hydric soil rating: No

Urban land

Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent

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

APPENDIX F

BORING LOG DATA

WELTI GEOTECHNICAL, P.C.

227 Williams Street · P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

June 9, 2021

Ms. Amy Samuelson, AIA, LEED AP
Associate Principal
The S/L/A/M Collaborative
80 Glastonbury Boulevard
Glastonbury, CT 06033*o*

Re: Interim Geotechnical Study for Proposed New Torrington Middle/High School
50 Major Besse Drive, Torrington, CT

Dear Amy:

1.0 Herewith are boring data pertaining to the above. Twenty one borings were drilled in the general area of the proposed new school building to a maximum depth of 51.5 feet. Five of the borings were cored into the bedrock. Thirteen borings were drilled to a maximum depth of 11.5 feet in areas of site development. The number of borings and the boring locations were provided by others. The boring data are provided in the Appendix. *The borings were drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

1.1 Laboratory testing included 12 grain size gradation tests and water contents. The reports for those tests are in the Appendix.

2.0 The **Subject Project** will include the construction of a new school building with four floors and a footprint of about 140,000 sf. The site of the proposed building is to the southwest of the existing high school in an existing parking area and atop the existing tennis courts. The topography prior to construction of the existing high school building consisted of terrain up to about Elev.700 (approximate location of the existing buildings) sloping to the southwest, were much of the area abutting Besse Park Pond was close to Elev. 650. This lower area had a water level close to that of the pond. The area of the existing school buildings was apparently cut down by up to 30± feet to about Elev. 670 and the excavated material was placed in the part of site, where the new Middle/High School is proposed.

2.1 The **site work** will include: (1) paved driveways and parking lots, (2) new athletic facilities and (3) site retaining walls along the proposed access drives, parking and at the south end of the building with total length of about 2,200 feet and a maximum exposed height up to 12± feet.

2.1.1 The **proposed new pavements** include: (1) the entry drive and adjacent parking lot with 165 spaces (Boring S-1), (2) a parking lot adjacent to and south of the proposed school with 61 spaces (Boring S-2), (3) a parking lot to the north east of the building with 110 spaces (see borings S-4 and S-5), (4) a peripheral road around the proposed school (see borings S-6, S-7, S-9, S-14, B2, B-5, B-6 and B-13), (5) a peripheral road to the south of the existing school (see borings S-3 and S-13) with 108 parking spaces around the Baseball field and (6) an extension of the peripheral road adjacent to a proposed Softball field and to the north property line along an existing athletic fields (see borings S-11 and S-12).

2.1.2 The **new athletic facilities** include: (1) a new baseball field to be constructed after the existing building is removed (see borings S-3, S-10 and S-13), (2) a new softball field to the north of the baseball field (see borings S-10 and S-11), (3) six tennis courts (see boring S-10) and (4) a mini ballfield (see boring S-10).

2.1.3 The construction of the athletic facilities to northeast and north of the proposed school (at Elev. 680 to Elev 683) versus the proposed grading around the school at about Elev. 670 will require a retaining wall about 900 feet in length and up to 11.5± feet in height (see borings S-3, S-4 and S-6). A second wall with length of about 450 feet and height up to 12.5± feet will be required to the south and east of the access driveway (see borings S-3 and S-13).

3.0 The **Geologic Origin** of the natural inorganic soils at the site are from glacial moraine deposits. These deposits consist of a mix of fine to coarse sand and gravel with little to some silt and occasional cobbles and boulders. The soils in the area of the existing school and to the north of the existing school, above Elev. 680, are natural moraine deposits. The terrain to the southwest of the existing school, below about Elev. 670, is atop previously placed fills from excavation at the existing school. The underlying material beneath the existing fill and localized thin strata of organic soils or buried subsoils is a well graded moraine.

3.1 Th**e Soils Cross Section** from the borings is generally as follows**:**

At the Proposed Building: (see borings B-1 thru B-13, B-15 thru B-21, B-4A & B-12A)
Note: The proposed boring B-14, which was located within the existing tennis courts, was not drilled.

Bituminous Concrete to 2" to 6"; or Topsoil to 6"

FILL; fine to coarse SAND, some Gravel, little to some Silt with varying Cobble and Boulder contents to 7 to 20 feet, medium compact to dense with localized loose zones

Locally Buried Subsoils; fine SAND and SILT, trace Roots to 1 to 5 feet below FILL, loose to medium compact
Locally (see borings B-6, B-12 & B-13); Thin (4" or less) layer of Organic SILT or PEAT overlying natural soils

Moraine; fine to coarse SAND, some Gravel, little to some Silt, few Cobbles and Boulders to the top of rock at 16 to 26 feet below grade, medium compact to very dense

Bedrock; Hoosac Schist

Ground water was observed at 8 to 16.5 feet below the existing grades at the completion of the borings (Elev.646 to Elev.655.5) . The water elevation would be close to the pond elevation.

Geologic Cross Sections thru the proposed building footprint are included in the Appendix.

In Areas of Proposed Site Development: (see boring S-2 thru S-14)
Note: The proposed boring S-1, which was located within the existing skate park, was not drilled.

Site Development around Proposed Building (see borings S-2 thru S-9 and S-14)

Bituminous Concrete to about 2"; or Topsoil 2" to 7"

FILL; fine to coarse SAND, some Gravel, little to some Silt with varying Cobble and Boulder contents to 2 to10+ feet, medium compact to dense

Locally Subsoils (see boring S-3 and S-14); fine SAND and SILT to 2 to 3 feet below natural ground or existing fills, loose

Moraine; fine to coarse SAND, some Gravel, little to some Silt, few Cobbles and Boulders to auger refusal on possible bedrock or boulders at 3 to 11+ feet, medium compact to very dense

Ground water, where evident in the boreholes, was at about 8 feet below the existing grades (Elev.650) The water elevation would be close to the pond elevation.

Site Development to the East of the Existing Building (see borings S-10 thru S-13)

Bituminous Concrete to about 1.5"; or Topsoil 6"

FILL; fine to coarse SAND, little to some Silt and Gravel to 1 to 7.5 feet, medium compact to dense

Locally; fine to medium SAND, some Silt to 12"

Moraine; fine to coarse SAND, little to some Silt and Gravel, few Cobbles to 11+ feet, medium compact to very dense

Ground water, where evident in the boreholes, was at 5.5 to 10.5 feet below the existing grades (Elev.670.5 to Elev.673.5). ***Based on historical USGS mapping the northeast portion of the***

school site was once a wetlands area at about Elev.675 and the area east of the existing Pond to the toe of slope on the east side of the site was a wetlands at about Elev.655.

4.0 The **Criteria for Structure Foundation Type and Loading** are as follows:

1. The maximum total settlement should not exceed 3/4" and the maximum differential settlement should not exceed ½ the maximum settlement.

2. The foundation must address the seismic section of the building code

3. The Slab on Grade must not settle differentially more than ½" in excess of the structure subsidence.

These criteria are those normally applied to structures of similar character. If the structural engineer or owner has other criteria, the writer should be notified for possible supplemental input.

4.1 Regarding item 2 (above) the Seismic Site Soil Profile Classification is C. The mapped MCE Spectral Acceleration values for Torrington, CT are as follows; For short periods $\mathbf{S_S}$ **=0.182** and for one second value $\mathbf{S_1}$**=0.065.** For transfer of ground shear into the soil the friction factor between the concrete and the soil can be **0.6.**

5.0 The **Foundations** for the proposed building could be with spread footing type foundations. The footings should be (1) on the natural inorganic soils, (2) on a controlled/structural fill placed after the removal of all existing fills, subsoils and organic soils or (3) atop aggregate piers or other approved ground improvement. These options would also apply to retaining wall foundations. The controlled fill and ground improvement options would also provide support for a slab on grade floor slab.

5.0.1 Controlled/Structural Fills: The controlled fills should conform generally to section 6.0 below and should extend outside of the footprint for a distance equal to at least the depth of fill beneath the foundations.

5.0.2 Aggregate Piers: The aggregate piers, which would provide improvement to the existing fills and a more uniform subgrade across the building footprint, would be done by a design/build contractor. The piers would have to support the structural frame, floor loading plus loads from substantial new fill loading over the areas where the combined new fill and existing fill would exceed 20 feet. The process would include placement of stone piers thru the existing fill at 8 to 10 feet on centers under the slab on grade and at closer spacing under the columns and walls. Typically there would be a minimum 2± feet of controlled fill under the slab area. The controlled fill is to provide "bridging" between the Aggregate Piers. ***To provide proposals for this work the design/build contractors would require a copy of this report, a site grading plan with the floor elevation, the foundation plan and the column and floor loading.*** There would be some areas where boulders would have to be excavated prior to installing the piers. This excavation could cause substantial delay costs for the aggregate pier crews. An initial fill with on site excavation to about

Elev. 665 could be placed, from which most of the aggregate piers would be installed. The exterior walls in the southwest corner would obviously be lower than Elev. 665 to address substantial soil retention on those walls. The floor loading on the aggregate piers would generally be about 700 psf from the fill (Elev. 665 to Elev. 671) plus the normal floor loading and the structural frame. The aggregate piers would vary in length from about 15 to about 30 feet. This option should initially be shown to possible aggregate pier contractors to assess the feasibility of the option versus the excavation/fill option..

5.1 The **Allowable Bearing Pressure** on the on natural moraine soil could be 3 Tons/sf. The allowable bearing pressure on the controlled fill placed after removal of existing fill or atop fill over aggregate piers can be 2 Tons/sf. The allowable loading can be increased by 1/3 for seismic or wind loading. At retaining walls the maximum pressure on the toe can be 50% higher than the average pressures, cited above.

5.2 Lateral soil loading on retaining walls which are part of the building should be with at rest pressure with the coefficient cited below. Lateral loading on retaining walls apart from the building (assumed level backfill) can be designed with the active coefficient. The sliding coefficient for retaining walls on soil will be 0.6.

5.2.1 Seismic lateral loading for retaining walls that are part of the building should be with a total lateral force (seismic plus static at-rest pressure) equal to $24H^2$ lb/ft located at ½H above the bottom. The above value is based on the Mononobe-Okabe solution for the case with level backfill, no wall friction and no hydrostatic pressure. This value excludes the inertia of the soil and wall mass. The requirements for the seismic analyses of earth retention structures as part of the building shall be determined from the Connecticut Building Code (IBC) or the ASCE-7.

5.3 The **Frost Protection Depth** for areas exposed to the weather is 3.5 feet below finish grades.

5.4 Summary of design parameters:

Parameter	Value
Allowable Bearing Pressure on the Natural Moraine Soils	3 Tons/sf
Allowable Bearing Pressure on Controlled Fill or atop Controlled Fills supported by Aggregate Piers	2 Tons/sf
Soil Unit Weight *	125 pcf
At rest coefficient *	0.45
Active coefficient*	0.28
Sliding Coefficient	0.6

Subgrade Modulus beneath slabs	200 pci
Frost Protection Depth	3.5 feet
Seismic Site Soil Profile Classification	C
Mapped MCE Spectral Acceleration for Short Periods S_S	0.182
Mapped MCE Spectral Acceleration for One Second Periods S_1	0.065

* The above values are based on the material cited below in section 6.0

6.0 Regarding **Controlled Fill, Backfill of Retaining Walls and Excavations at Columns and Walls, plus Slab on Grade Underlayment** (to 6" below the slab on grade, or as noted in section the material should conform to the following or be 3/8" crushed stone:

Percent Passing	Sieve Size
100	3.5"
50 - 100	3/4"
25 - 75	No.4

The fraction, passing the No.4 sieve should have less than 20%, passing the No. 200 sieve.

All backfill and fill must be compacted to at least 95% of modified optimum density in accordance with ASTM D-1557.

Sorted on site excavation, combined with boulder crushings, might approximate the above gradation.

6.1 The 6" immediately beneath the slab on grade should be 3/4" minus crushed stone conforming to the following gradation:

Percent Passing	Sieve Size
100	1.25"
90 - 100	1"
75 - 100	3/4"
10 - 35	1/4"

3 - 12	No. 100
0 - 5	No 200

A vapor barrier retarder is required under slabs on grade.

7.0 The **Proposed Site Work** will include the various pavements cited in section 2.1.1, the athletic fields in section 2.1.2 and the retaining wall between the proposed building (first floor at about Elev.672) and the future ballfields at Elev. 680± in section 2.1.3.

7.0.1 Regarding **earthwork**, this will be primarily in soils, which would fall in OSHA Type C. This will require sloping excavations, which are not shored and exceed 5 feet in height, to be cut back to less than 34° from horizontal (1.5H : 1V). Long term earth slopes in cuts or fills should be at 2H:1V or flatter.

7.0.2 As noted above the soil profile throughout the site is either on existing fills, which are composed of excavated moraine soils, or on natural compact silty moraine. The natural moraine soils are generally frost susceptible and have a moderate permeability. These properties will have to be addressed future pavements and athletic field. With this profile the only way to avoid saturated soils is to provide material with sufficient permeability to direct storm recharge into under drains. In Bituminous Concrete Portland Cement Concrete Pavements there will be requirement for a frost free section (Surface, Base and Subbase of at least 20"). In general the subbase should be at least 12" thick.

7.1 For **bituminous concrete pavements** the recommended sections above the subbase are as follows:

1. Passenger Car Parking: 3.5" of Bituminous Concrete on 6" of Processed Stone Base

2. Truck & Bus Access: 4.5" of Bituminous Concrete on 8" of Processed Stone Base

7.2 The **recommended preparation under other pavement surfaces** are as follows:

1. Concrete Pavements should have 16" of Gravel Subbase

2.Pavers should have 18" of Gravel Subbase beneath bedding and pavers

7.3 Areas in cuts or in fills less than 1.5 feet in height should have edge drains , placed about 12" below the bottom of the subbase. The drains could be perforated ADS piping enveloped in crushed 3/8" stone carried to the top of the subbase.

7.4 From the boring data it is probable that most areas above Elev. 675 on the site would have potential wet season water tables within 5 feet of grade. With minimal voids capacity in the soils, storm water recharge causes the water to rise toward the ground surface in wet seasons. In general

Athletic Field grassed areas should have at least 16" of sand or sand and gravel beneath the topsoil. Under drains are recommended on 30 feet centers in irrigated fields .

7.5 The proposed site retaining walls, cited in section 2.1.3 will vary in height from bottom footing to top of wall from about 6 feet to about14 feet. The area of 900 foot long wall to the north of the parking area appears to fall largely over natural soils, although construction of the existing school may have left shallow fills. Footings for that wall should be on the natural soils or on a controlled structural fill. Gravel Backfill of the wall should extend laterally for distance equal or greater than the wall height and conform to the material in section 6.0 or CTDOT specification 818 Section M.02.06 Grading B. Foundation design of the site retaining walls should apply the preparation options cited in section 5.0 and should apply the design parameters cited in section 5.4 above. If the footings are on natural soils, a 6" layer of crushed stone is recommended beneath footings.

8.0 This report has been prepared for specific application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. In the event that any changes in the nature, design and location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations submitted in this report are based in part upon data obtained from referenced explorations. The extent of variations between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

Welti Geotechnical, P.C., should perform a general review of the final design and specifications in order that geotechnical design recommendations may be properly interpreted and implemented as they were intended.

If you have any questions please call me.

Very truly yours

Max Welti

Max Welti, P. E.
President, Welti Geotechnical, P.C.

Clarence Welti

Clarence Welti, PhD, P.E.
Vice President

APPENDIX

Test Boring Location Plans
+
Test Boring Data
+
Laboratory Test Data
+
Summary Sheet of Boring Data
+
Geologic Cross Sections thru Building Footprint
+
USGS 1948 & 1956 Topographic Mapping of the Site

SLAM
The S/L/A/M Collaborative
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Glastonbury, CT 06033-4410
Phone: 860 657.8077
www.slamcoll.com

Drawn
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Checked
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Torrington

Middle/ High School & Central Office Building

PHASE 1 OF 3: NEW SITE & BUILDING CONSTRUCTION AND ABATEMENT & DEMOLITION OF EXISTING BUILDING

Torrington Public Schools

50 Major Besse Drive
Torrington, CT 06790

STATE PROJECT NO:

KEYPLAN

Number	Date	Issued For
		100% SCHEMATIC DESIGN SUBMISSION

PROGRESS PRINT NOT FOR CONSTRUCTION

SITE GRADING

Date

Scale
1" = 30'
Proj. Number

Drawing Number
L301A

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A B C D E

TEST BORING LOCATIONS
S-9 THRU S-11 & S-13
CLARENCE WELTI ASSOCIATES, INC.
6/4

SLAM
The S/L/A/M Collaborative
80 Glastonbury Boulevard
Glastonbury, CT 06033-4410
Phone: 860 657.8077
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Torrington

Middle/ High School & Central Office Building

PHASE 1 OF 3: NEW SITE & BUILDING CONSTRUCTION AND ABATEMENT & DEMOLITION OF EXISTING BUILDING

Torrington Public Schools
50 Major Besse Drive
Torrington, CT 06790

STATE PROJECT NO:

KEYPLAN

Number	Date	Issued For
		100% SCHEMATIC DESIGN SUBMISSION
		PROGRESS PRINT NOT FOR CONSTRUCTION

SITE GRADING

Date

Scale
1" = 30'
Proj. Number

Drawing Number
L301B

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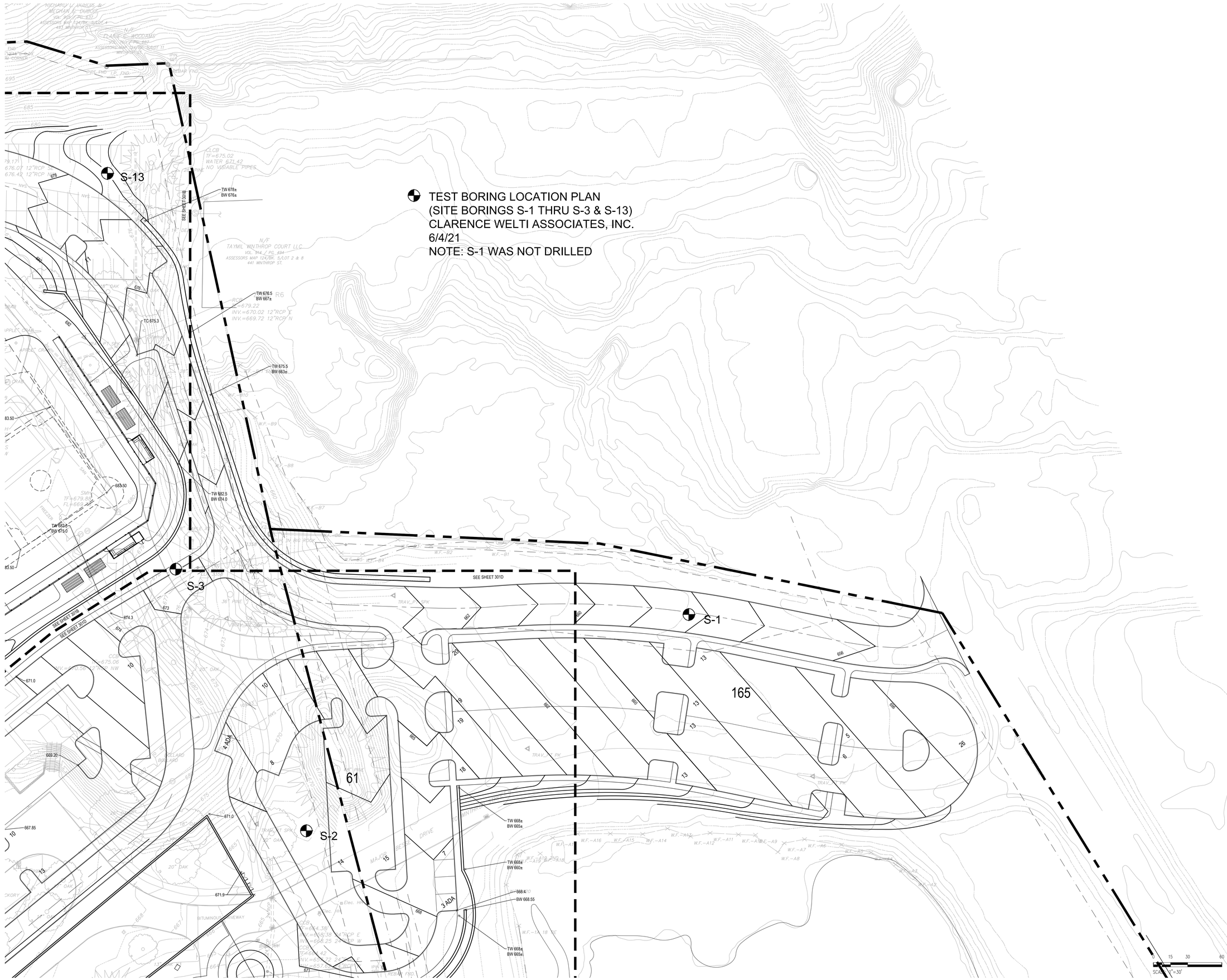

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80 Glastonbury Boulevard
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Phone: 860 657.8077
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Torrington

Middle/ High School & Central Office Building

PHASE 1 OF 3: NEW SITE & BUILDING CONSTRUCTION AND ABATEMENT & DEMOLITION OF EXISTING BUILDING

Torrington Public Schools

50 Major Besse Drive Torrington, CT 06790

STATE PROJECT NO:

KEYPLAN

Number	Date	Issued For
		100% SCHEMATIC DESIGN SUBMISSION

PROGRESS PRINT NOT FOR CONSTRUCTION

SITE GRADING

Date

Scale
1" = 30'
Proj. Number

Drawing Number
L301C

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- TEST BORING LOCATIONS
  B-1 THRU B-21
  CLARENCE WELTI ASSOCIATES, INC.
  6/4/21
  NOTE: BORING B-14 WAS NO DRILLED

SCALE: 1"=30'

SLAM
The S/L/A/M Collaborative
80 Glastonbury Boulevard
Glastonbury, CT 06033-4410
Phone: 860 657.8077
www.slamcoll.com

Drawn
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Checked
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Torrington

Middle/ High School & Central Office Building

PHASE 1 OF 3: NEW SITE & BUILDING CONSTRUCTION AND ABATEMENT & DEMOLITION OF EXISTING BUILDING

Torrington Public Schools
50 Major Besse Drive
Torrington, CT 06790

STATE PROJECT NO:

KEYPLAN

Number	Date	Issued For
		100% SCHEMATIC DESIGN SUBMISSION

PROGRESS PRINT NOT FOR CONSTRUCTION

SITE GRADING

Date
Scale
1" = 30'
Proj. Number

Drawing Number
L301D

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CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 670
HOLE NO. B-1

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/11/21
FINISH DATE 5/11/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	670
	1	5-9-9-7	1.0'-3.0'		GREY/DARK BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, TRACE ASPHALT & WOOD - FILL	
	2	10-16-32-26	3.0'-5.0'			
5	3	11-22-24-13	5.0'-7.0'			665
					9.0	
10	4	60	10.0'-10.5'		GREY FINE-CRS.SAND, GRAVEL, COBBLES AND BOULDERS, LITTLE TO SOME SILT	660
15	5	60	15.0'-15.3'			655
					16.5	
					BOTTOM OF BORING @ 16.5' (AUGER REFUSAL)	
20						650
25						645
30						640
35						635

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-1**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 665.5

HOLE NO. B-2

GROUND WATER OBSERVATIONS
AT 15.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/11/21
FINISH DATE 5/11/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.50	665
	1	8-20-60	1.0'-2.3'		GREY/BR.FINE-CRS.SAND, SOME GRAVEL & COBBLES, LITTLE SILT, FEW BOULDERS - FILL	
5	2	13-10-23-24	5.0'-7.0'			660
10	3	5-7-5	10.0'-11.5'			655
					BR.SILT AND FINE SAND 13.0	
15	4	60	15.0'-15.4'		GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT 15.0	650
					BOTTOM OF BORING @ 18.0' (AUGER REFUSAL) 18.0	
20						645
25						640
30						635
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **B-2**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	NQ
SIZE I.D.	3.75"		1.375"	2.0"
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 670.5

HOLE NO. B-3

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/17/21
FINISH DATE 5/17/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.40	670
	1	11-18-13-16	1.0'-3.0'		BR.FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL, FEW COBBLES - FILL	
	2	20-21-60	3.0'-4.4'			
5	3	60	5.0'-5.3'			665
					6.5 BR.FINE-MED.SAND, SOME SILT, TRACE WOOD & PEAT - FILL	
10	4	24-18-18-38	10.0'-12.0'			660
					11.5 GREY FINE-CRS.SAND, SOME GRAVEL, COBBLES & BOULDERS, LITTLE SILT	
15	5	8-10-45	15.0'-16.5'			655
					16.0 CORED BEDROCK - GNEISS AND SCHIST	
					RUN #1 16.0' - 21.0' RECOVERED 18" RQD=0%	
					RUN #2 21.0' - 26.0' RECOVERED 60" RQD=57%	
20						650
25						645
					26.0 BOTTOM OF BORING @ 26.0'	
30						640
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-3**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 666
HOLE NO. B-4

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/10/21
FINISH DATE 5/10/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	11-25-60	1.0'-2.5'		LIGHT GREY FINE-CRS.SAND, SOME GRAVEL & COBBLES, LITTLE TO SOME SILT, FEW BOULDERS - FILL	665
	2	7-8-10-25	3.0'-5.0'			
5	3	22-22-20-12	5.0'-7.0'			660
10	4	18-28-60	10.0'-11.5'		GREY/BR.FINE-MED.SAND, SOME GRAVEL, LITTLE SILT - FILL 10.0	655
					BOTTOM OF BORING @ 13.0' (AUGER REFUSAL) 13.0	
15						650
20						645
25						640
30						635
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-4**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	NQ
SIZE I.D.	3.75"		1.375"	2.0"
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 666

HOLE NO. B-4A

GROUND WATER OBSERVATIONS
AT 16.5 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/21/21
FINISH DATE 5/21/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
					LIGHT GREY FINE-CRS.SAND, SOME GRAVEL & COBBLES, LITTLE TO SOME SILT, FEW BOULDERS - FILL	665
5						660
10						655
					13.5 BR.SILT, LITTLE FINE SAND	
15	1	60	15.0'-15.3'		15.5 BR.FINE-CRS.SAND, SOME SILT & GRAVEL	650
20	2	11-60	20.0'-21.0'			645
					23.0 CORED BEDROCK - SCHIST	
25					RUN #1 23.0' - 28.0' RECOVERED 40" RQD=10%	640
					28.0 BOTTOM OF BORING @ 28.0'	
30						635
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **B-4A**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 662.5
HOLE NO. B-5

GROUND WATER OBSERVATIONS
AT 13.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/6/21
FINISH DATE 5/6/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	8-13-13-18	1.0'-3.0'		BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT,FEW COBBLES - FILL	660
	2	7-12-13-25	3.0'-5.0'			
5	3	17-18-13-9	5.0'-7.0'			
					6.5 GREY/BR.FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL - FILL	655
10	4	9-8-6	10.0'-11.5'			650
15	5	7-5-60	15.0'-16.4'		15.5 GREY SILT, LITTLE FINE SAND	
					16.4 WEATHERED ROCK	645
					16.7 BOTTOM OF BORING @ 16.7' (AUGER REFUSAL)	
20						640
25						635
30						630
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-5**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 659
HOLE NO. B-6

GROUND WATER OBSERVATIONS
AT 12.5 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/6/21
FINISH DATE 5/6/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.25	
	1	10-10-15-30	1.0'-3.0'		BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE TO SOME SILT, FEW COBBLES - FILL	
	2	24-17-9-8	3.0'-5.0'			655
5	3	6-13-15-18	5.0'-7.0'		6.0	
					GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT - FILL	
					NOTE: TRACE ORGANICS IN SAMPLE AT 15'	650
10	4	14-10-5	10.0'-11.5'			
						645
15	5	1-1-60	15.0'-16.3'		16.0	
					GREY/BR.FINE-MED.SAND, SOME SILT & GRAVEL	640
20	6	15-60	20.0'-21.0'		21.0	
					BOTTOM OF BORING @ 21.0'	635
25						
						630
30						
						625
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-6**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 661.5
HOLE NO. B-7

GROUND WATER OBSERVATIONS
AT 13.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/6/21
FINISH DATE 5/6/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	10-10-15-30	1.0'-3.0'		GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES - FILL	660
	2	24-17-9-8	3.0'-5.0'			
5	3	6-13-15-18	5.0'-7.0'			655
					8.5	
					GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT WITH LITTLE SILTY FINE SAND LAYERS	
10	4	14-10-5	10.0'-11.5'			650
15	5	13-13-60	15.0'-16.3'			645
20	6	15-60	20.0'-21.0'		20.5 GREY FINE-MED.SAND, SOME SILT 21.0	
					BOTTOM OF BORING @ 21.0'	640
25						635
30						630
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-7**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 664.5
HOLE NO. B-8

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/7/21
FINISH DATE 5/7/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	12-30-60	1.0'-2.2'		BR.FINE-CRS.SAND, GRAVEL AND COBBLES, LITTLE TO SOME SILT, FEW BOULDERS - FILL	
	2	6-10-12-60	3.0'-4.7'			
5	3	17-32-29-35	5.0'-7.0'			660
					GREY/BR.FINE-CRS.SAND, SOME GRAVEL, TRACE SILT 7.0	
10	4	15-26-20	10.0'-11.5'			655
					BOTTOM OF BORING @ 14.0' (AUGER REFUSAL) 14.0	650
15						
20						645
25						640
30						635
35						630

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-8**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 669
HOLE NO. B-9

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/18/21
FINISH DATE 5/18/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.25	
	1	8-9-60	1.0'-2.2'		BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT & COBBLES - FILL	
					4.0	665
5	2	3-2-1-1	5.0'-7.0'		BR.FINE-CRS.SAND, LITTLE SILT & GRAVEL - FILL	
						660
10	3	8-60	10.0'-10.8'		10.5	
					GREY/BR.FINE-CRS.SAND, SOME GRAVEL, COBBLES & BOULDERS LITTLE TO SOME SILT	
					13.0	
					BOTTOM OF BORING @ 13.0' (AUGER REFUSAL)	655
15						
						650
20						
						645
25						
						640
30						
						635
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-9**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 664
HOLE NO. B-10

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/7/21
FINISH DATE 5/7/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.10	
	1	20-20-27-32	1.0'-3.0'		BR.FINE-CRS.SAND AND GRAVEL, TRACE SILT, FEW COBBLES - FILL	
	2	60	3.0'-3.4'		4.0 BOTTOM OF BORING @ 4.0' (AUGER REFUSAL)	660
5						655
10						650
15						645
20						640
25						635
30						630
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-10**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 661.5

HOLE NO. B-11

GROUND WATER OBSERVATIONS
AT 10.5 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/6/21
FINISH DATE 5/6/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	6-7-7-10	1.0'-3.0'		GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE TO SOME SILT, FEW COBBLES & BOULDERS - POSSIBLE FILL	660
	2	8-9-12-21	3.0'-5.0'			
5	3	16-17-18-14	5.0'-7.0'			655
10	4	7-7-10	10.0'-11.5'			650
15					GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT 16.0	645
20	5	60	20.0'-20.3'		BOTTOM OF BORING @ 20.3' 20.3	640
25						635
30						630
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **B-11**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 658.5

HOLE NO. B-12

GROUND WATER OBSERVATIONS
AT 12.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/5/21
FINISH DATE 5/5/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.25	
					GREY FINE-CRS.SAND AND GRAVEL, LITTLE SILT - FILL 0.75	
	1	11-11-14-15	1.0'-3.0'		GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES & BOULDERS - FILL	
						655
	2	5-10-9-10	3.0'-5.0'			
5						
	3	8-7-4-2	5.0'-7.0'			
						650
10						
	4	5-6-4	10.0'-11.5'			
						645
15						
	5	6-7-2	15.0'-16.5'			
					BOTTOM OF BORING @ 16.5' (AUGER REFUSAL) 16.5	
						640
20						
						635
25						
						630
30						
						625
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **B-12**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	NQ
SIZE I.D.	3.75"		1.375"	2.0"
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 658.5
HOLE NO. B-12A

GROUND WATER OBSERVATIONS
AT 12.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/19/21
FINISH DATE 5/19/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.25	
					GREY FINE-CRS.SAND AND GRAVEL, LITTLE SILT - FILL 0.75	
					GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES & BOULDERS - FILL	
						655
5						
						650
10						
						645
15	1	2-1-0	15.0'-16.5'		GREY/BR.FINE-CRS.SAND, SOME SILT, LITTLE GRAVEL - FILL 15.0	
	2	1-1-2-1	16.5'-18.5'			
					18.0	
	3	6-26-60	18.5'-19.9'		BR.SILT, LITTLE ROOTS	640
					GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT 19.0	
20					CORED BOULDERS OR WEATHERED ROCK 20.0	
					RUN #1 20.0' - 25.0' RECOVERED 27"	
					RUN #2 25.0' - 30.0' RECOVERED 35"	
					RUN #3 30.0' - 35.0' RECOVERED 9"	635
25					RUN #4 35.0' - 40.0' RECOVERED 20"	
					RUN #5 40.0' - 45.0' RECOVERED 29"	
						630
30						
						625
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT SLAM	PROJECT NAME PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL LOCATION 150 MAJOR BESSE DRIVE, TORRNGTON, CT

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
40						620
45						615
					CORED BEDROCK - GNEISS	48.0 610
50					RUN# 6 45.0' - 50.0' RECOVERED 29"	
					BOTTOM OF BORING @ 50.0'	50.0
55						605
60						600
65						595
70						590
75						585

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 2 OF 2 | HOLE NO. **B-12A**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 656
HOLE NO. B-13

GROUND WATER OBSERVATIONS
AT 9.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/6/21
FINISH DATE 5/6/21

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	15-11-8-7	1.0'-3.0'		GREY/BR. FINE-CRS.SAND, SOME GRAVEL, LITTLE TO SOME SILT, FEW COBBLES - FILL	655
	2	3-5-18-12	3.0'-5.0'			
5	3	26-23-6-5	5.0'-7.0'		6.0	650
					GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT - FILL	
10	4	10-9-4	10.0'-11.5'			645
15	5	9-9-8	15.0'-16.5'			640
20	6	4-9-20	20.0'-21.5'		20.5 BR. PEAT, TRACE WOOD 21.0 BR.FINE-MED.SAND, SOME SILT & GRAVEL 21.5 BOTTOM OF BORING @ 21.5'	635
25						630
30						625
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-13**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 659
HOLE NO. B-15

GROUND WATER OBSERVATIONS
AT 9.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/10/21
FINISH DATE 5/10/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	10-26-10-10	1.0'-3.0'		GREY/BR. FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES & BOULDERS - FILL	
	2	7-8-22-13	3.0'-5.0'			655
5	3	17-13-13-13	5.0'-7.0'			
						650
10					11.0	
					GREY FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL	645
15	4	12-60	15.0'-15.8'			
						640
20	5	8-10-11	20.0'-21.5'		21.5	
					BOTTOM OF BORING @ 21.5'	635
25						
						630
30						
						625
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-15**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 658

HOLE NO. B-16

GROUND WATER OBSERVATIONS
AT 8.2 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/10/21
FINISH DATE 5/10/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	6-8-8-7	1.0'-3.0'		GREY/BR. FINE-CRS.SAND, SOME GRAVEL & COBBLES, LITTLE SILT, FEW BOULDERS - FILL	
	2	6-6-9-12	3.0'-5.0'			655
5	3	10-10-14-16	5.0'-7.0'			
						650
10	4	12-60	10.0'-10.8'		9.5 GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE TO SOME SILT	
						645
15	5	6-13-13	15.0'-16.5'			
						640
20	6	9-23-25	20.0'-21.5'			
					23.0 BOTTOM OF BORING @ 23.0' (AUGER REFUSAL)	635
25						
						630
30						
						625
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-16**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 660.5
HOLE NO. B-17

GROUND WATER OBSERVATIONS
AT 8.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/7/21
FINISH DATE 5/7/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.10	660
	1	7-13-20-60	1.0'-2.8'		GREY/BR. FINE-CRS.SAND, SOME GRAVEL & COBBLES, LITTLE SILT, FEW BOULDERS - FILL	
	2	60	3.0'-3.5'			
5	3	8-16-16-14	5.0'-7.0'			655
					8.0	
					BR.FINE-CRS.SAND, SOME SILT, TRACE ROOTS & GRAVEL - FILL	
10	4	1-2-1	10.0'-11.5'			650
15	5	12-27-28	15.0'-16.5'		15.5	645
					GREY FINE-CRS.SAND AND GRAVEL, LITTLE TO SOME SILT	
20	6	17-19-14	20.0'-21.5'			640
25	7	27-60	25.0'-25.6'		25.5	635
					BOTTOM OF BORING @ 25.5' (AUGER REFUSAL)	
30						630
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-17**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	NQ
SIZE I.D.	3.75"		1.375"	2.0"
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 668.5

HOLE NO. B-18

GROUND WATER OBSERVATIONS
AT 13.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/14/21
FINISH DATE 5/14/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	10-21-22-31	1.0'-3.0'		BR. FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL, FEW COBBLES & BOULDERS - FILL	
	2	28-60	3.0'-3.8'			665
5	3	13-9-9=11	5.0'-7.0'			
						660
10	4	4-2-2-7	10.0'-12.0'			
					13.0 BR.FINE-MED.SAND, SOME SILT, TRACE ROOTS	655
15	5	7-5-8	15.0'-16.5'			
					18.5 GREY/BR. FINE-CRS.SAND, SOME SILT & GRAVEL	650
20	6	12-15-20	20.0'-21.5'			
					23.0 CORED BEDROCK - SCHIST	645
25					RUN# 1 23.0' - 28.0' RECOVERED 27" RQD=0%	
					28.0 BOTTOM OF BORING @ 28.0'	640
30						
						635
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-18**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 665.5
HOLE NO. B-19

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/17/21
FINISH DATE 5/17/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-8-9-12	0.0'-2.0'		TOPSOIL 0.50	665
					GREY/BR. FINE-MED.SAND, LITTLE TO SOME SILT, TRACE GRAVEL	
	2	8-12-15-20	2.0'-4.0'			
5	3	11-19-35-52	5.0'-7.0'		6.0	660
					GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT	
10	4	60	10.0'-10.3'		10.5	655
					BOTTOM OF BORING @ 10.5' (AUGER REFUSAL)	
15						650
20						645
25						640
30						635
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-19**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 665
HOLE NO. B-20

GROUND WATER OBSERVATIONS
AT 10.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/18/21
FINISH DATE 5/18/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.25	665
	1	11-18-13-16	1.0'-3.0'		GREY FINE-CRS.SAND AND GRAVEL, LITTLE SILT, FEW COBBLES - FILL	
	2	20-21-60	3.0'-4.4'			
5	3	60	5.0'-5.3'			660
10	4	24-18-18-38	10.0'-12.0'			655
					12.0	
					CORED BOULDER - FILL	
					13.0	
					GREY FINE SAND, SOME SILT	
15	5	8-10-45	15.0'-16.5'		15.5	650
					GREY FINE-CRS.SAND, SOME SILT & GRAVEL, FEW COBBLES & BOULDERS	
20	6	40-45-23	20.0'-21.5'			645
25	7	44-60	25.0'-25.8'			640
					26.0	
					CORED BEDROCK - GNEISS AND SCHIST	
					RUN #1 26.0' - 31.0' RECOVERED 60" RQD=53%	
30						635
					31.0	
					BOTTOM OF BORING @ 31.0'	
35						630

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-20**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 662
HOLE NO. B-21

GROUND WATER OBSERVATIONS
AT 10.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/7/21
FINISH DATE 5/7/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	11-16-60	1.0'-2.2'		LIGHT GREY FINE-CRS.SAND AND GRAVEL, LITTLE SILT, FEW COBBLES & BOULDERS - FILL	660
	2	30-60	3.0'-4.0'			
5	3	50-60	5.0'-6.0'			655
10	4	60	10.0'-10.5'			650
					GREY FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL 14.0	
15	5	20-26-23	15.0'-16.5'			645
20	6	25-28-50	20.0'-21.5'			
					BOTTOM OF BORING @ 21.5' 21.5	640
25						635
30						630
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-21**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 665
HOLE NO. S-2

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/14/21
FINISH DATE 5/14/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	4-60	0.0'-1.0'		TOPSOIL 0.20	665
					BR.FINE-CRS.SAND, SOME GRAVEL, COBBLES & BOULDERS, TRACE SILT - FILL	
	2	10-60	3.0'-4.0'			
5	3	40-60	5.0'-5.8'			660
10					BOTTOM OF BORING @ 10.0' (AUGER REFUSAL) 10.0	655
15						650
20						645
25						640
30						635
35						630

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-2**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 678
HOLE NO. S-3

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/20/21
FINISH DATE 5/20/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-2-2-8	0.0'-2.0'		TOPSOIL 0.30	
					BR.FINE SAND AND SILT	
	2	10-12-15-25	2.0'-4.0'		3.0	675
					GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES	
5	3	29-60	5.0'-5.8'			
						670
10	4	14-21-32	10.0'-11.5'		11.5	
					BOTTOM OF BORING @ 11.5'	665
15						
						660
20						
						655
25						
						650
30						
						645
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-3**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 670.5
HOLE NO. S-4

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/20/21
FINISH DATE 5/20/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	8-9-6-9	0.0'-2.0'		ASPHALT 0.10	670
					BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES & BOULDLERS - FILL	
	2	15-8-6-14	3.0'-5.0'			
5	3	20-25-35-44	5.0'-7.0'			665
10	4	60	10.0'-10.5'		10.5 BOTTOM OF BORING @ 10.5'	660
15						655
20						650
25						645
30						640
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-4**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 670
HOLE NO. S-5

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/14/21
FINISH DATE 5/14/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-6-14-20	0.0'-2.0'		TOPSOIL 0.25	670
					BR.FINE-CRS.SAND, SOME GRAVEL, COBBLES & BOULDERS, LITTLE SILT - FILL	
	2	13-60	2.0'-2.8'			
5					BOTTOM OF BORING @ 5.0' (AUGER REFUSAL) 5.0	665
10						660
15						655
20						650
25						645
30						640
35						635

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-5**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL
LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 658
HOLE NO. S-6

GROUND WATER OBSERVATIONS
AT 8.2 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/10/21
FINISH DATE 5/10/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	4-6-60	0.0'-1.1'		TOPSOIL 0.30	
					GREY/BR.FINE-MED.SAND, SOME SILT, LITTLE GRAVEL - FILL	
						655
	2	10-10-8-13	3.0'-5.0'			
5					5.0	
	3	15-60	5.0'-5.8'		GREY/BR.FINE-MED.SAND, SOME SILT & GRAVEL	
						650
10	4	20-30-60	10.0'-11.1'		11.1	
					BOTTOM OF BORING @ 11.1'	
						645
15						
						640
20						
						635
25						
						630
30						
						625
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-6**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 668

HOLE NO. S-7

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/21/21
FINISH DATE 5/21/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-4-10-60	0.0'-1.8'		TOPSOIL 0.20	
					BR.FIME-MED.SAND AND SILT, TRACE ROOTS & GRAVEL - FILL 1.5	
					BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE TO SOME SILT, FEW COBBLES - FILL	665
	2	11-12-13-12	3.0'-5.0'			
5	3	12-12-16-60	5.0'-6.6'			
					GREY FINE-CRS.SAND, SOME SILT & GRAVEL, FEW COBBLES & BOULDERS - FILL 7.0	660
10	4	60	10.0'-10.4'		BOTTOM OF BORING @ 10.4' 10.4	
						655
15						
						650
20						
						645
25						
						640
30						
						635
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **S-7**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 675.5

HOLE NO. S-8

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/21/21
FINISH DATE 5/21/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-6-27-60	0.0'-2.0'		TOPSOIL 0.60	675
					GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES & BOULDERS - FILL	
					3.0	
	2	60	3.0'-3.3'		BOTTOM OF BORING @ 3.0' (AUGER REFUSAL)	
5						670
10						665
15						660
20						655
25						650
30						645
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-8**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 671.5

HOLE NO. S-9

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/20/21
FINISH DATE 5/20/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	9-18-16-26	1.0'-3.0'		GREY/BR.FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT, FEW COBBLES - FILL	670
	2	14-31-60	3.0'-4.5'			
5	3	60	5.0'-5.5'		6.0	
					BOTTOM OF BORING @ 6.0' (AUGER REFUSAL)	665
10						660
15						655
20						650
25						645
30						640
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-9**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 681

HOLE NO. S-10

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/26/21
FINISH DATE 5/26/21

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	7-13-21-25	0.0'-2.0'		TOPSOIL 0.50	
					BR.FINE-MED.SAND, LITTLE TO SOME SILT 1.0	680
					GREY/BR. FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT	
	2	5-12-18-12	3.0'-5.0'			
5	3	21-31-60	5.0'-6.3'			675
10	4	60	10.0'-10.4'		BOTTOM OF BORING @ 10.5' 10.5	670
15						665
20						660
25						655
30						650
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-10**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT

SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 683

HOLE NO. S-11

GROUND WATER OBSERVATIONS
AT 9.5 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/20/21
FINISH DATE 5/20/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.10	
	1	9-8-8-4	1.0'-3.0'		GREY FINE-CRS.SAND, SOME GRAVEL, LITTLE SILT - FILL 1.0	
					GREY/BR. FINE-CRS.SAND, SOME SILT & GRAVEL, FEW COBBLES	680
	2	6-2-3-6	3.0'-5.0'			
5	3	6-9-11-15	5.0'-7.0'			675
10	4	60	10.0'-10.4'		BOTTOM OF BORING @ 10.4' 10.4	670
15						665
20						660
25						655
30						650
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **S-11**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 680.5

HOLE NO. S-12

GROUND WATER OBSERVATIONS
AT 10.5 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/26/21
FINISH DATE 5/26/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	8-18-18-60	0.0'-1.8'		TOPSOIL 0.50	680
					BR.FINE-MED.SAND, LITTLE TO SOME SILT, LITTLE GRAVEL - FILL 1.5	
					GREY/BR. FINE-CRS.SAND, SOME GRAVEL, LITTLE TO SOME SILT	
	2	28-60	3.0'-3.8'			
5	3	17-21-60	5.0'-6.1'			675
					8.0	
					BR.FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL	
10	4	17-21-20	10.0'-11.5'			670
					11.5	
					BOTTOM OF BORING @ 11.5'	
15						665
20						660
25						655
30						650
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **S-12**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 676

HOLE NO. S-13

GROUND WATER OBSERVATIONS
AT 5.5 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/20/21
FINISH DATE 5/20/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.10	
	1	3-4-14-21	1.0'-3.0'		BR.FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL - FILL	675
	2	16-18-22-18	3.0'-5.0'			
5	3	16-20-22-28	5.0'-7.0'			670
					7.5	
					GREY/BR. FINE-CRS.SAND, SOME SILT & GRAVEL	
10	4	9-19-34	10.0'-11.5'			665
					11.5	
					BOTTOM OF BORING @ 11.5'	
15						660
20						655
25						650
30						645
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **S-13**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
SLAM

PROJECT NAME
PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

LOCATION
150 MAJOR BESSE DRIVE, TORRNGTON, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV. 667

HOLE NO. S-14

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 5/11/21
FINISH DATE 5/11/21

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-11-17-26	0.0'-2.0'		TOPSOIL 0.30	
					LIGHT BR.FINE-CRS.SAND, LITTLE TO SOME SILT & GRAVEL, FEW COBBLES, TRACE ROOTS - FILL	665
	2	12-12-16-7	2.0'-4.0'			
5	3	6-5-2-1	5.0'-7.0'			
	4	1-12-23-2	7.0'-9.0'		7.0 GREY/BR.SILT AND FINE SAND, LITTLE GRAVEL	660
					9.0 BR.FINE-MED.SAND, SOME SILT, LITTLE GRAVEL	
10	5	8-7-7	10.0'-11.5'		11.5 BOTTOM OF BORING @ 11.5'	655
15						650
20						645
25						640
30						635
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

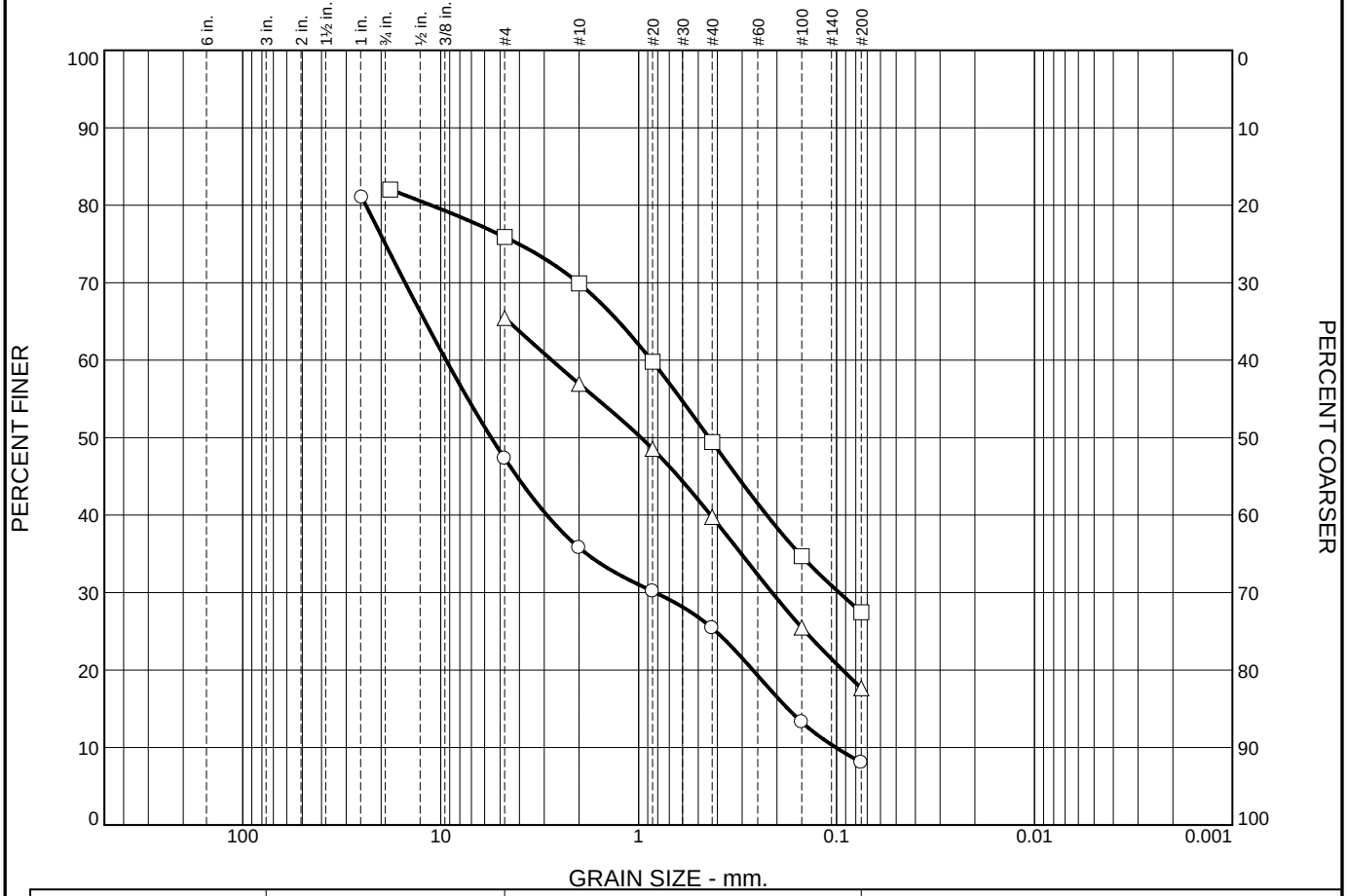
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **S-14**

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○			27.7	11.5	10.4	17.3	8.1	
□				6.0	20.5	21.9	27.5	
△				8.5	17.1	22.1	17.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○				9.3902	5.5512	0.8235	0.1760	0.1008	0.72	93.16
□				0.8622	0.4408	0.0971				
△				2.7464	0.9716	0.2117				

	Material Description	USCS	AASHTO
○			
□			
△			

Project No. **Client:** SLAM

Project: PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

○ **Source of Sample:** B-1 **Depth:** 5.0 **Sample Number:** 3

□ **Source of Sample:** B-3 **Depth:** 10.0

△ **Source of Sample:** B-4 **Depth:** 10.0

Remarks:

○water content = 7.1%

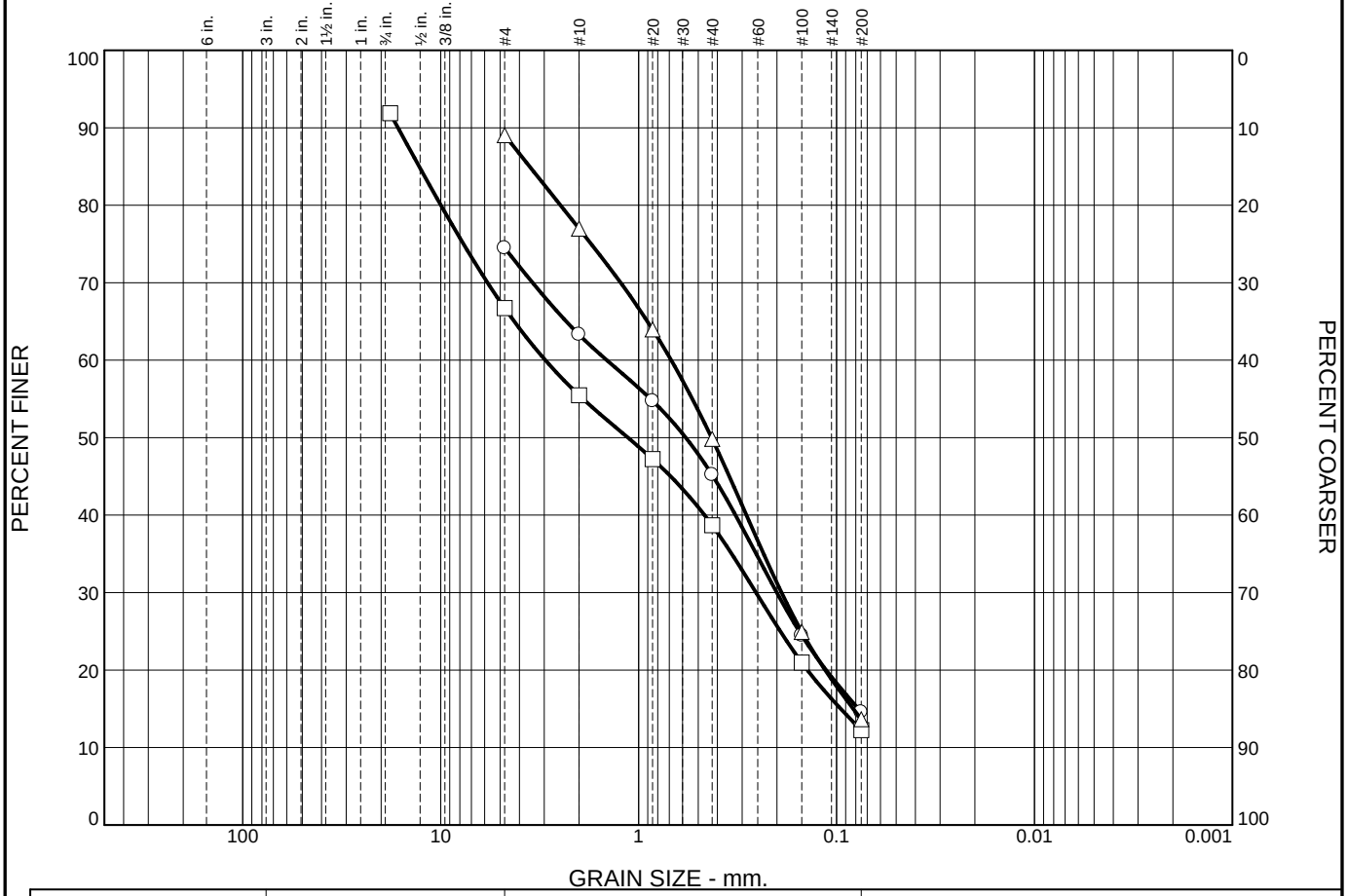
□water content = 22.8%

△water content = 11.6%

CLARENCE WELTI ASSOCIATES, INC.

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○				11.2	18.1	30.6	14.6	
□				11.2	16.8	26.5	12.2	
△				12.0	27.2	36.1	13.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○				1.4480	0.5773	0.2004	0.0776			
□			12.8367	2.9569	1.1322	0.2552	0.0953			
△			3.5510	0.6847	0.4279	0.1897	0.0823			

	Material Description	USCS	AASHTO
○			
□			
△			

Project No. **Client:** SLAM

Project: PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

○ **Source of Sample:** B-6 **Depth:** 10.0 **Sample Number:** 4

□ **Source of Sample:** B-7 **Depth:** 5.0 **Sample Number:** 3

△ **Source of Sample:** B-9 **Depth:** 5.0 **Sample Number:** 2

Remarks:

○water content = 7.0%

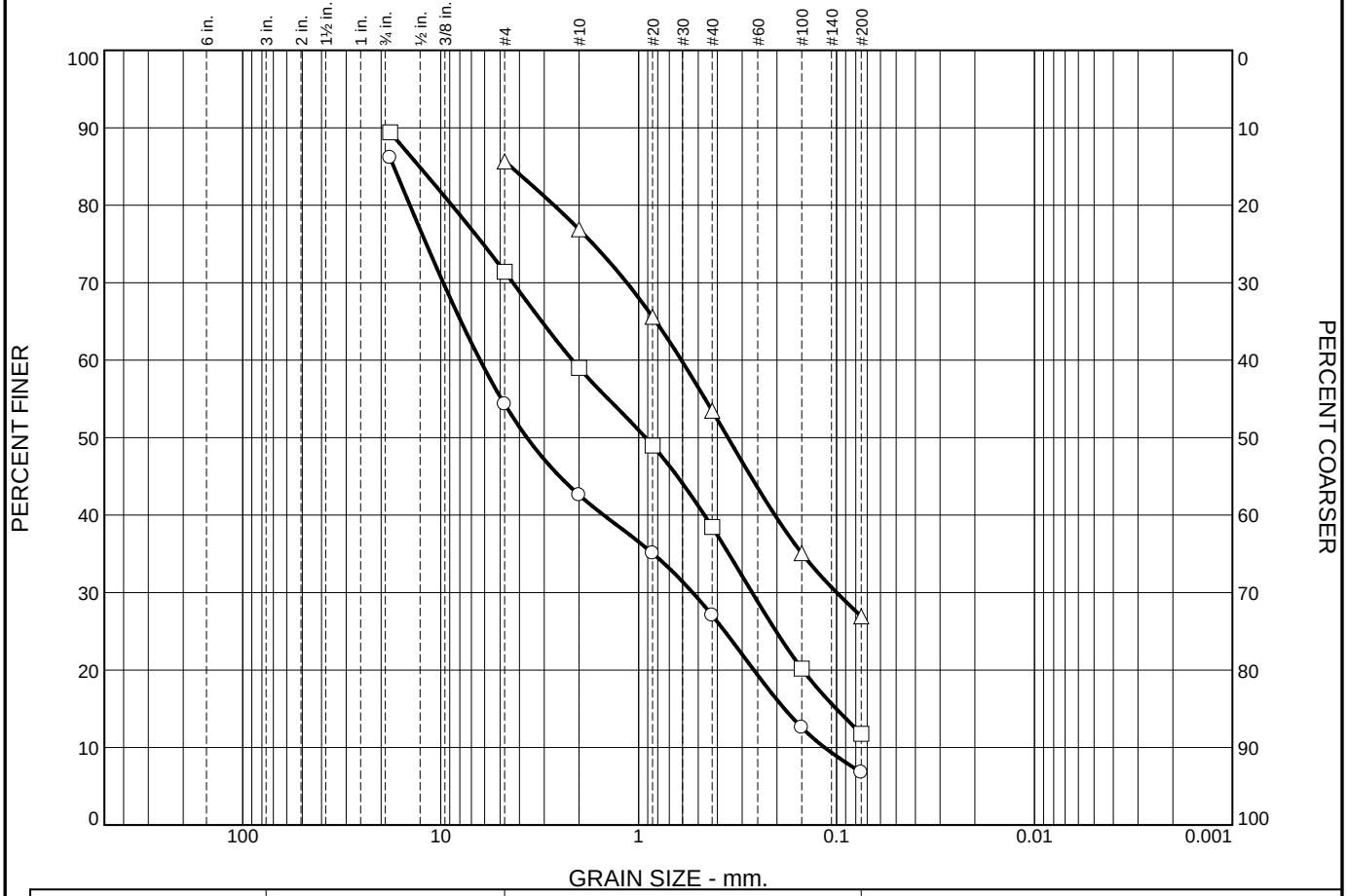
□water content = 3.8%

△water content = 7.5%

CLARENCE WELTI ASSOCIATES, INC.

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○				11.7	15.5	20.3	6.8	
□				12.4	20.5	26.7	11.8	
△				8.8	23.4	26.6	26.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			17.2560	6.3221	3.6621	0.5328	0.1834	0.1150	0.39	55.00
□			12.8132	2.1599	0.9219	0.2669	0.1004			
△			4.4352	0.6077	0.3537	0.0999				

	Material Description	USCS	AASHTO
○			
□			
△			

Project No. **Client:** SLAM

Project: PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

○ **Source of Sample:** B-12 **Depth:** 15.0 **Sample Number:** 5

□ **Source of Sample:** B-16 **Depth:** 5.0 **Sample Number:** 3

△ **Source of Sample:** B-17 **Depth:** 10.0 **Sample Number:** 4

Remarks:

○water content = 6.2%

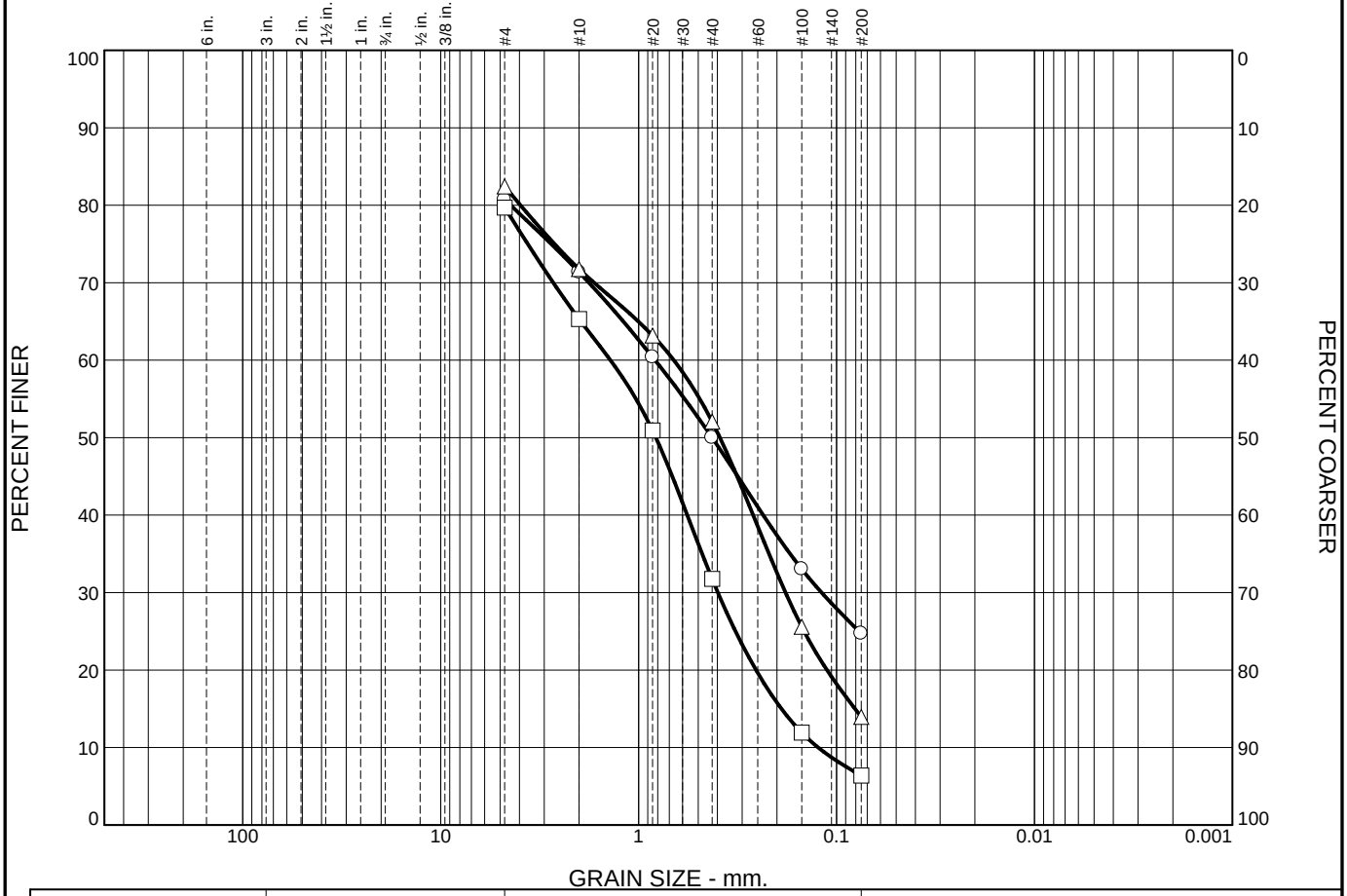
□water content = 6.8%

△water content = 18.8%

CLARENCE WELTI ASSOCIATES, INC.

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○				9.3	21.4	25.3	24.7	
□				14.4	33.5	25.4	6.4	
△				10.6	19.7	38.1	14.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○				0.8264	0.4250	0.1191				
□				1.3888	0.8178	0.3975	0.1899	0.1239	0.92	11.21
△				0.6640	0.3881	0.1811	0.0807			

	Material Description	USCS	AASHTO
○			
□			
△			

Project No. **Client:** SLAM

Project: PROPOSED NEW HIGH SCHOOL & MIDDLE SCHOOL

○ **Source of Sample:** B-18 **Depth:** 15.0 **Sample Number:** 5

□ **Source of Sample:** B-20 **Depth:** 10.0 **Sample Number:** 4

△ **Source of Sample:** B-12 **Depth:** 10.0 **Sample Number:** 4

Remarks:

○water content = 16.6%

□water content = 2.2%

△water content = 10.0%

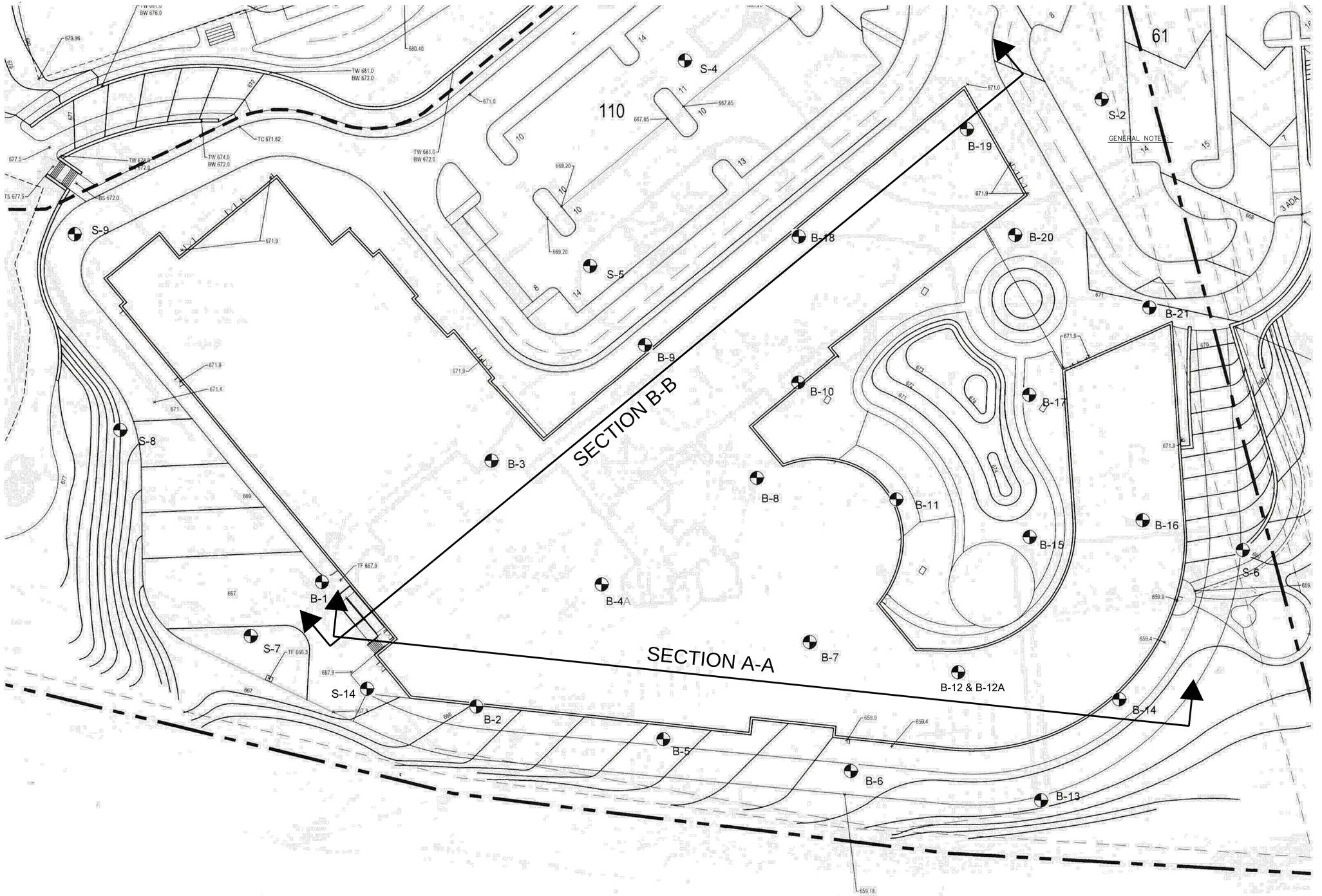
CLARENCE WELTI ASSOCIATES, INC.

Figure

Table. 1
Summary Sheet of Test Boring Data

Boring Number	Approx. Existing Grade Elevation	Bottom of Boring Depth	Bottom of Boring Elevation	Existing Fill Depth	Exisitng Fill Elevation	Buried Subsoils or Organic Soils to Depth/Elev.	Depth to Bedrock	Estimated Top of Rock Elevation	Cored Bedrock	Groundwater Depth/Elev.	Comments
B-1	670	16.5	653.5	9.0	661.0					none	auger refusal at 16.5 fbg
B-2	665.5	18.0	647.5	13.0	652.5					15.0/650	auger refusal at 18.0 fbg
B-3	670.5	26.0	644.5	11.5	659.0		16.0	654.5	16.0' to 26.0'	none	bottom of boring at 26.0 fbg
B-4	666	13.0	653	13.0	653.0					none	auger refusal at 13.0 fbg
B-4A	666	28.0	638	13.0	653.0	15.5/647	23.0	643	23.0' to 28.0'	16.5/649.5	bottom of boring at 28.0 fbg
B-5	662.5	16.7	645.8	15.5	647.0	15.5/647				13.0/649	auger refusal at 16.7 fbg
B-6	659	21.0	638	16.0	643.0					12.5/646.5	bottom of boring at 21.0 fbg, no refusal
B-7	661.5	21.0	640.5	8.5	653.0					13.0/648.5	bottom of boring at 21.0 fbg, no refusal
B-8	664.5	14.0	650.5	7.0	657.5					none	auger refusal at 14.0 fbg
B-9	669	13.0	656	10.5	658.5					none	auger refusal at 13.0 fbg
B-10	664	4.0	660	4.0	660.0					none	auger refusal at 4.0 fbg
B-11	661.5	20.3	641.2	16.0	645.5					10.5/651	bottom of boring at 20.3 fbg, no refusal
B-12	658.5	16.5	642	16.5	642.0					12.0/646	auger refusal at 16.5 fbg
B-12A	658.5	50.0	608.5	18.0	640.5	19.0/639.5	48.0	638.5	20.0' to 50.0'	12.0/646.5	bottom of boring at 50.0 fbg , cored weathered/fractured rock or boulders from 20.0' to 48.0' and sound bedrock below that level
B-13	656	21.5	634.5	20.5	635.5					9.0/647	bottom of boring at 21.5 fbg, no refusal
B-14											this boring was not drilled: The location is shown inside of existing tennis courts fence
B-15	659	21.5	637.5	11.0	648.0					9.0/650	bottom of boring at 21.5 fbg, no refusal
B-16	658	23.0	635.0	9.5	648.5					8.2/650	auger refusal at 23.0 fbg
B-17	660.5	25.5	635.0	15.5	645.0					8.0/652.5	auger refusal at 25.5 fbg
B-18	668.5	28.0	640.5	18.5	650.0		23.0	645.5	23.0' to 28.0'	13.0/655.5	bottom of boring at 28.0 fbg
B-19	665.5	10.5	655.0		665.5					none	auger refusal at 10.5 fbg
B-20	665	31.0	634.0	13.0	652.0		26.0	639.5	26.0' to 31.0'	10.0/655.5	bottom of boring at 31.0 fbg
B-21	662	21.5	640.5	14.0	648.0					10.0/652	bottom of boring at 21.5 fbg, no refusal
S-1											this boring was not drilled: The location is shown inside of existing skate park

S-2	665	10.0	655.0	10.0	655.0					none	auger refusal at 10.0 fbg
S-3	678	11.5	666.5		678.0	3.0/675				none	auger refusal at 11.5 fbg
S-4	670.5	10.5	660.0	10.5	660.0					none	bottom of boring at 10.5'
S-5	670	5.0	665.0	5.0	665.0					none	auger refusal at 5.0 fbg
S-6	658	11.1	646.9	5.0	653.0					8.2/650	bottom of boring at 11.1'
S-7	668	10.4	657.6	10.4	657.6					none	bottom of boring at 10.4'
S-8	675.5	3.0	672.5	3.0	672.5					none	auger refusal at 3.0 fbg
S-9	671.5	6.0	665.5	6.0	665.5					none	auger refusal at 6.0 fbg
S-10	681	10.5	670.5							none	bottom of boring at 10.5'
S-11	683	10.4	672.6							9.5/673.5	bottom of boring at 10.4 fbg, no refusal
S-12	680.5	11.5	669	1.5	679.0					10.5/670	
S-13	676	11.5	664.5	7.5	668.5					5.5/670.5	bottom of boring at 11.5 fbg, no refusal
S-14	667	11.5	667		667.0					none	bottom of boring at 11.5 fbg, no refusal



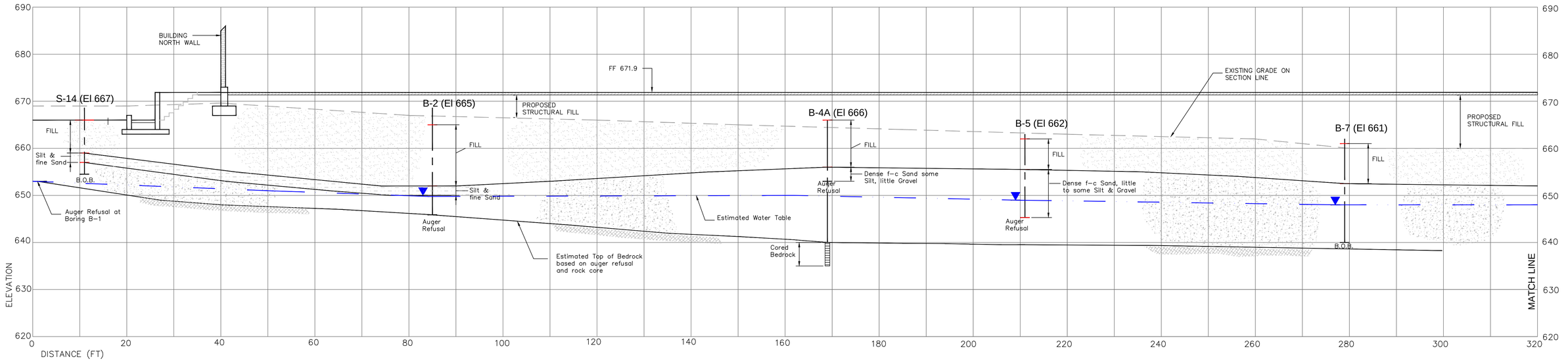
TORRINGTON NEW MIDDLE/ HIGH SCHOOL
& CENTRAL OFFICE BUILDING
50 MAJOR BESSE DR., TORRINGTON, CT

SCHEMATIC GEOLOGIC PROFILES

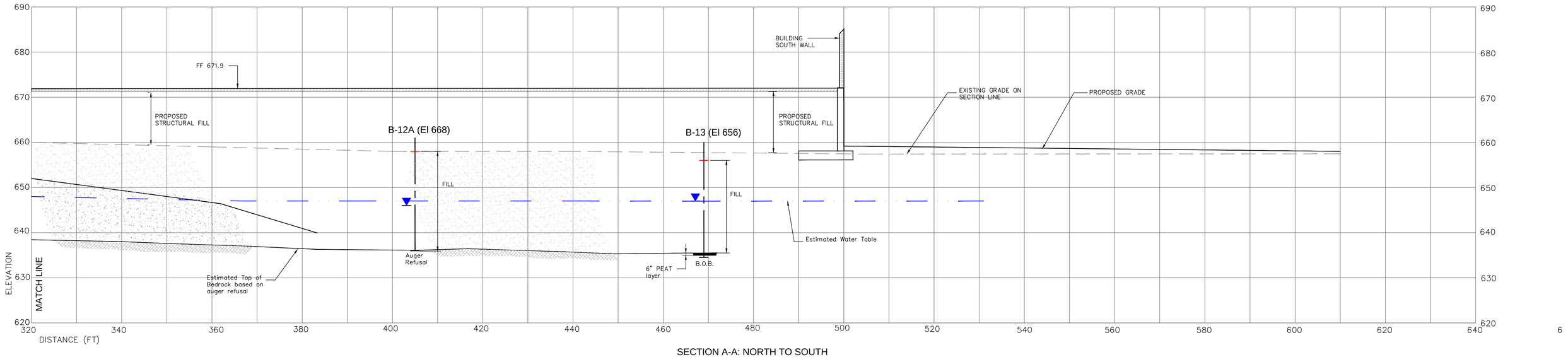
NOT TO SCALE	DATE: JUNE 7, 2021	REVISED: NONE

WELTI GEOTECHNICAL, P.C.
227 WILLIAMS STREET, P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033

SHEET S1



SECTION A-A: NORTH TO SOUTH



SECTION A-A: NORTH TO SOUTH

E.O.B. = END OF BORING

▼ = GROUNDWATER READING

= ESTIMATED WATER TABLE

= EXISTING GRADE

= EXISTING FILLS

= DENSE NATURAL SOIL

= SILT & FINE SAND

= ESTIMATED BEDROCK BASED ON AUGER REFUSAL AND CORES

GENERAL NOTES:

1. THE ELEVATIONS AND TOPOGRAPHY SHOWN HEREON ARE GIVEN IN FEET AND WERE APPROXIMATED FROM THE SITE GRADING PLAN L301D PREPARED BY S.L.A.M., DATED MAY, 2021.

2. THE SECTIONS ARE ORIENTED IN A NORTH TO SOUTH DIRECTION.

3. THE SOIL AND ROCK PROFILES WERE INTERPOLATED FROM THE TEST BORINGS DRILLED BY CLARENCE WELTI ASSOCIATES IN MAY, 2021. THE TEST BORINGS INDICATED HEREON WERE LOCATED AT VARYING DISTANCES TO THE EAST AND WEST SIDES OF THE CROSS SECTION LINES. THE ACTUAL GEOLOGIC PROFILES MAY VARY FROM THOSE DEPICTED HEREON.

4. AUGER REFUSAL GENERAL MEANS THE DEPTH AT WHICH THE 3.75" DIAMETER HOLLOW STEM AUGER RESISTED FURTHER SIGNIFICANT PENETRATION AFTER 60 BLOWS OF THE HAMMER.

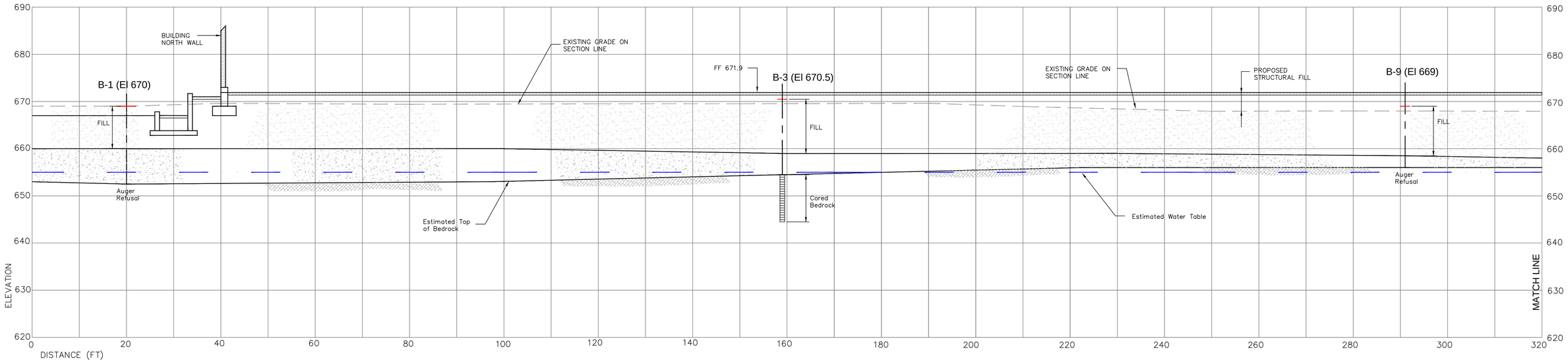
TORRINGTON NEW MIDDLE/ HIGH SCHOOL
& CENTRAL OFFICE BUILDING
50 MAJOR BESSE DR., TORRINGTON, CT

SCHEMATIC GEOLOGIC PROFILES

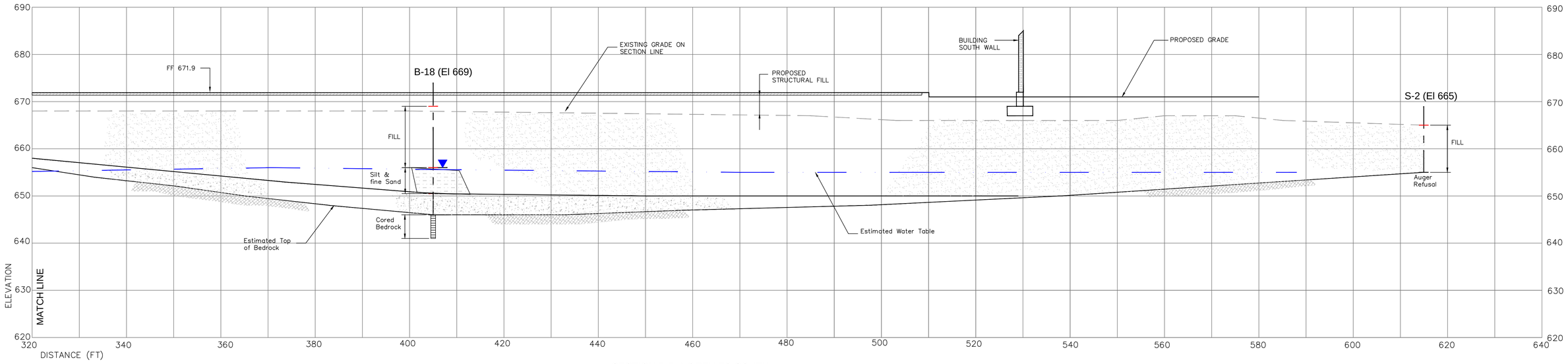
SCALE: 1" = 10'	DATE: JUNE 7, 2021	REVISED: NONE

WELTI GEOTECHNICAL, P.C.
227 WILLIAMS STREET, P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033

SHEET S2



SECTION B-B: NORTH TO SOUTH



SECTION B-B: NORTH TO SOUTH

TORRINGTON NEW MIDDLE/ HIGH SCHOOL
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50 MAJOR BESSE DR., TORRINGTON, CT

SCHEMATIC GEOLOGIC PROFILES

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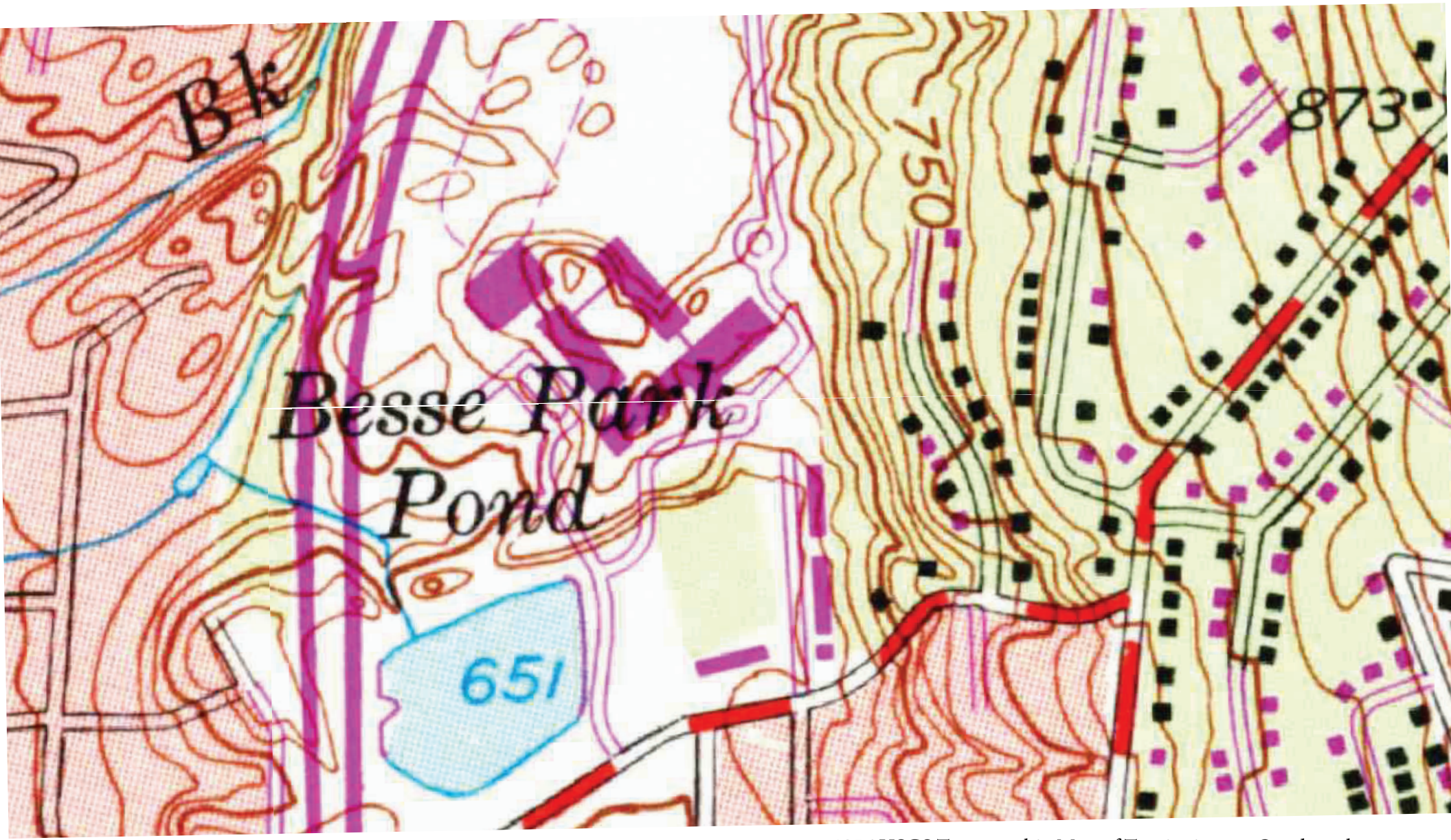
GLASTONBURY, CONNECTICUT 06033

SHEET S3

Welti Geotechnical, P.C.
6/9/2021

1948 USGS Topographic Map of the Torrington Quadrangle: This shows the grades prior to the High School construction. The pond is larger than shown on the 1956 USGS map and there wetlands areas depicted to east of the pond and in the existing High School athletic field area



Welti Geotechnical, P.C.
6/9/21

1956 USGS Topographic Map of Torringington Quadrangle: This shows existing High School Building and approximate grades prior to construction of the school. The grades was up to Elev.710 in the existing school area and as low as Elev. 635 on the west side of the proposed school building.