STORMWATER POLLUTION PREVENTION PLAN /
STORMWATER MANAGEMENT REPORT
FOR 921 SOUNDVIEW DRIVE

Village of Mamaroneck, New York
Date: December 12, 2022 (revised)

Prepared by: Alan L. Pilch, PE, RLA
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INTRODUCTION:

The subject property is 22,998.8 square feet in size and is located on the east side of Soundview Drive. The lot is bounded by Soundview Drive on the west, existing residential properties on the north and south, Creek Road (a paper street) and Otter Creek to the east.

The project consists of the following:

- Construction of a new single family residential dwelling in the western portion of the property, with driveway access from Soundview Drive;
- Construction of a pool and pool deck to the east of the house.
- Construction of a stormwater management facility to manage the changes in stormwater runoff from the property.

The limits of disturbance are shown on drawing C-103. The drawing shows that the area of disturbance is 13,600 square feet (0.3122 acres). The proposed land disturbance involves the removal of some of the existing woods and brush areas on the property and the construction of the house, pool, pool deck, as well as the stormwater management facility.

STORMWATER MANAGEMENT PLAN

Stormwater Management Plan Requirements - The project stormwater management plan has been designed in accordance with Chapter 294 of the Code of the Village of Mamaroneck and the 2015 New York State *Stormwater Management Design Manual*. Since the land disturbance activity has been calculated to be about 13,650 square feet, as per Chapter 294-8 B.2, the stormwater management plan is to provide stormwater quality and quantity controls (post-construction stormwater runoff controls). And since the land disturbance area is less than one acre, a SPDES General Permit for Stormwater Runoff from Construction Activity from the NYSDEC will *not* be required.

At present, the property is vacant. With the construction of the house, driveway, pool and pool deck, the total amount of impervious surfaces will be 4,346 s.f. (this number includes the proposed pool deck as impervious to be very conservative). The remainder of the disturbed area will be lawn and landscaped areas.

There are no stormwater management controls on the property at present. Runoff from the entire property is presently conveyed to the east flowing toward Otter Creek. For purposes of analysis, the Design Line is defined as the eastern property line (see **Figures 3 and 4**).

To manage runoff from the property, it is proposed to install a subsurface stormwater management practice (infiltration facility) on the property. The proposed Stormwater Management Practice is to consist of 7 Cultec C-4HD chambers arranged as seven rows of a single chamber. The stormwater management practice will provide water quantity control (i.e., peak rate attenuation) of the runoff discharged from the property to Otter Crook as well as water quality improvement by capturing and treating the water quality volume.

The runoff from the driveway that is to be conveyed to the chambers will be conveyed first to a pre-treatment facility to remove any coarse sediment or floatables from the runoff. Following this initial treatment, the runoff will be conveyed to the chambers for treatment and peak rate attenuation. Runoff from the south side of the house which will contain only roof runoff will be conveyed to a catch basin with a sump and hooded invert for pre-treatment.

The calculations show that the peak rate of runoff to the design line will be less than the existing rate of runoff from the property for all of the modeled storm events.

The text below describes the compliance of the stormwater management plan with Chapter 294 of the Code of the Village of Mamaroneck.

B. Contents of stormwater pollution prevention plans.

(1) All SWPPPs shall provide the following background information and erosion and sediment controls:

(a) Background information about the scope of the project, including location, type and size of project;

The project scope includes:

- Construction of a 2,430 square foot house in the western portion of the property;
- Construction of a 40-foot length paved driveway to the house garage.
- Construction of a stormwater drainage system to consist of a trench drain, catch basins, a stormwater management facility to consist of subsurface chambers, and a pop-up emitter to manage the outflow of runoff.

(b) Site map/construction drawing(s) at a scale not smaller than one inch equals 50 feet, or as otherwise approved by the SMO, for the project, including a general location map. At a minimum, the site map should show the total site area; all improvements; areas of disturbance;

areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharges(s);

The project drawings depict the required elements of the project, as follows: (i) the total site area is depicted on drawing C-101, (ii) all proposed site improvements may be referenced on drawing C-101 and C-102, (iii) areas of disturbance and areas that will not be disturbed may be found on drawing C-103, (iv) general areas of existing vegetation and the location of surveyed trees may be found on drawing C-101, (v) runoff from the project site currently and in the future will be conveyed into Otter Creek which lies to the east of the property; (vii) existing and final slopes may be found on drawing C-102, (viii) the project does not propose to locate any material, waste, or borrow areas off the property; equipment storage areas during construction may be found on drawing C-103.

(c) Description of the soil(s) present at the site;

According to the Soils Survey of Putnam and Westchester Counties (Web Soil Survey), the soils over the portion of the property to be impacted by the proposed work consist of Urban land-Charlton-Chatfield complex, rolling, very rocky. The wetland soils consist of Ipswich mucky peat, 0 to 2 percent slopes, very frequently flooded. The Charlton component of the Urban land-Charlton-Chatfield complex soils consist of loam and sandy loam to depth of 60" or so. Chatfield soils consist of loam and flaggy silt loam; the depth to the restrictive layer is 20 to 40 inches. Both soils are in Hydrologic Soils Group B. Group B soils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

A third deep hole test were conducted on December 8, 2022 within the footprint of the currently proposed chambers. The deep hole test found 6" of topsoil followed by 2'-6" of sandy loam, then 2'-3" of coarse sands and small boulders. The excavation reached a depth of 5'-3" below grade with refusal on bedrock. There were no seeps, redoximorphic features and no groundwater encountered. The two other deep hole test pits that were conducted within the footprints of the formerly proposed chambers found 12" of topsoil, followed by 36" of a medium brown sandy loam. The excavation had reached a depth of 4'-0" in depth with refusal on bedrock. There were no seeps, redoximorphic features and no groundwater encountered either. In that the 12/08 deep hole test pit found rock at 5'-3" below grade, that depth to bedrock was used in the calculations.

Two soil percolation tests were performed on April 28 (pre-soak) and April 29, 2022 (percolation testing). A 30-inch long, 4-inch PVC pipe diameter casing was installed within the footprint of each stormwater practice. Within Stormwater Management Practice #1, the top of

the casing was set at an elevation of 19 feet; the bottom of the casing was therefore at elevation 16.5 feet, about 2 feet below the stone invert of Field A. Within Stormwater Management Practice #2, the top of the casing was set at an elevation of 18.5 feet; the bottom of the casing was therefore at elevation 16 feet, or about 2 feet below the stone invert of Field A. The casings was filled with water on 4/28 at 1:30 pm for the pre-soak. The percolation test holes were dry at the commencement of the percolation testing. Four runs were performed at each percolation hole. At Percolation Test Hole #1, a rate of 16" per hour was observed; the rate at Percolation Test Hole #2 was 14" per hour. The HydroCAD modeling of the currently proposed chambers was done using a soil rate of 3" per hour in order to be very conservative given the soil that was encountered on the property.

(d) Construction phasing plan describing the intended sequence of construction activities, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance. Consistent with the New York Standards and Specifications for Erosion and Sediment Control (Erosion Control Manual), not more than five acres shall be disturbed at any one time unless pursuant to an approved SWPPP;

The construction phasing plan may be found on drawing C-103. As noted above, the total area of disturbance is calculated to be 13,650 square feet (0.313 acres), well below the five acre threshold, and well below 1 acre of disturbance that would trigger the need for a SPDES General Permit.

(e) Description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a pollutant source in stormwater runoff;

The Erosion and Sediment Control Plan incorporates a variety of measures designed to control litter, construction chemicals, and construction debris from becoming a source of pollution. The plan requires the staking of the clearing and grading limit line before the commencement of construction activity. Following the demarcation of the limits of disturbance, a variety of erosion and sediment control measures are to installed in accordance with the plans, including, but not limited to, silt fences and a stabilized construction entrance.

Each contractor and subcontractor who will be involved in soil disturbance and/or stormwater management practice installation shall sign and date a copy of the following certification statement before undertaking any land development activity: "I certify under penalty of law that I understand and agree to comply with the terms and conditions of the stormwater pollution prevention plan. I also understand that it is unlawful for any person to cause or contribute to a violation of water quality standards." The SMO shall provide a form for the contractor/ subcontractor certification statement which shall be signed and returned to the SMO prior to any work taking place.

The certification must include the name and title of the person providing the signature, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

The certification statement(s) shall become part of the SWPPP for the land development activity.

A copy of the SWPPP shall be retained at the site of the land development activity during construction from the date of initiation of construction activities to the date of final stabilization.

As for construction materials, they will be stored in the locations shown on the erosion and sediment control plan, and will be protected by construction fencing as a containment.

Litter control is largely provided by having the maintenance and trash facilities placed inside a fenced-in area. This will reduce the risk of such materials from being washed by rain or blown by wind into the storm drainage system, the public street or toward neighboring properties.

In addition, the construction equipment and material storage area will be located within the portion of the site that is enclosed by the proposed erosion and sediment control measures.

(f) Description of construction and waste materials expected to be stored on-site with updates as appropriate, and a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;

Construction materials expected to be stored temporarily on site include, but are not limited to, soil stockpiles, stone aggregate for the footings and foundation of the building and pavement, and sod and/or seed to establish lawn for the disturbed areas. These items are not sources of pollution in the short term.

(g) Temporary and permanent structural and vegetative measures to be used for soil stabilization, runoff control and sediment control for each stage of the project from initial land clearing and grubbing to project closeout;

Permanent vegetative measures to be used for soil stabilization may be referenced on the drawings. In the event that site work for the construction is completed at a time of the year that the installation of permanent plantings is not feasible (i.e. late fall, winter and early spring, essentially corresponding to December 1 through April 15), temporary measures are to be installed to prevent erosion, as detailed on drawing C-103 will be implemented.

Temporary Critical Area Plantings, in the event that permanent vegetation cannot be established due to the time of year (i.e. December 1 through April 15), then the seed mixes so noted on

drawing C-103 are to be used to stabilize the ground surface until such time as permanent stabilization can be achieved.

(h) A site map/construction drawing(s) specifying the location(s), size(s) and length(s) of each erosion and sediment control practice;

Drawing C-103 depicts the location, size and length of each erosion and sediment control measure to be implemented during construction.

(i) Dimensions, material specifications and installation details for all erosion and sediment control practices, including the sitting and sizing of any temporary sediment basins;

Dimensions, material specifications and installation details for all erosion and sediment control practices may be referenced on drawing C-103. Temporary sediment basins are not proposed for the site construction.

(j) Temporary practices that will be converted to permanent control measures;

There are no temporary practices that will be converted to permanent control measures.

(k) Implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and duration that each practice should remain in place;

The erosion control narrative on drawing C-103 provides the implementation schedule for the staging temporary erosion and sediment control practices, describes the time when practices will be placed and the duration that each practice is to remain in place. The work described in the narrative will occur in a single phase.

(l) Maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practice;

The erosion control narrative on drawing C-103 provides the maintenance schedule for each erosion and sediment control practice.

(m) Name(s) of the receiving water(s);

All runoff from the subject property is conveyed to Otter Creek.

(n) Delineation of SWPPP implementation responsibilities for each part of the site;

Implementation of the SWPPP erosion control measures will be the responsibility of the property owner.

(o) Description of structural practices designed to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable; and

There are no structural practices being proposed to divert runoff flow around the construction area.

(p) Any existing data that describes the stormwater runoff at the site.

This stormwater management plan has been developed for the property that quantifies the existing and future condition site runoff. No other existing data is available which quantifies the flows from the property.

(2) Post-construction runoff controls for new development and redevelopment projects.

As noted above, all runoff from the subject property is conveyed directly into Otter Creek. The project will result in an increase of about 3,975 s.f. in the amount of impervious surfaces following the work (for purposes of this calculation, the deck is considered to be impervious).

Runoff from the impervious surfaces (house roof and driveway) will be collected via roof drain leaders and in a trench drain and directed into the chambers via underground storm drainage pipes. Any overflow from the chambers will be conveyed to a 6-inch diameter pop-up emitter at each infiltration facility. Precipitation on the pool deck would be treated by infiltration in the 4-inch depth of ¾" crushed stone to be placed below the deck.

(a) All information in § 294-7 of this chapter;

See above for the description of the requirements of § 294-7.

(b) Description of each post-construction stormwater management practice (practices shall be as approved in Chapter 4 of the New York State DEC Stormwater Design Manual);

It is proposed to install a single subsurface stormwater management practice (infiltration facilities) on the property. The Stormwater Management Practice chambers are stepped with the grade and are labeled as Fields A through H.

With the deeper rock at the location of the proposed chambers, the elevations of the chambers have been designed so that the top of each of the chambers is slightly below the existing grade.

(c) Site map/construction drawing(s) showing the specific location(s) and size(s) of each post-construction stormwater management practice;

The location of the subsurface infiltration chambers may be referenced on drawing C-102.

(d) Hydrologic and hydraulic analysis for all structural components of the stormwater management system for the applicable design storms;

The storm pipe table on sheet C-102 shows that for each segment of pipe to be installed the capacity will exceed the anticipated flows for the 25-year storm event.

(e) Comparison of post-development stormwater runoff conditions with pre-development conditions;

Appendix A provides the calculations which compare the pre-development conditions and the post-development conditions.

Table 1. Flows to Design Point

	Existing Condition	Future Condition
1-year storm	0.08	0.07
2-year storm	0.22	0.19
10-year storm	0.81	0.65
25-year storm	1.38	1.08
100-year storm	2.68	2.26

As can be seen in the calculations, the peak rates of runoff from the property to the Design Point will decrease over all of the modeled storm event. This will have the beneficial impact on runoff flows to the Otter Creek.

The water quality volume calculation for the drainage area that conveys runoff to the stormwater management practices is shown in Table 1. This shows that the water quality volume for drainage area FDA-2 is calculated to be 490.5 cubic feet.

The proposed Stormwater Management Practice will contain 365.6 cubic feet of runoff to the elevation of the pop-up emitter (i.e. elevation 17.25'). Infiltration of runoff conveyed to the chambers will also occur. With a conservative soil percolation rate of 3.00 inches per hour, the volume of percolation is calculated to be 0.524 cubic feet per square foot per day. The bed area of the installed chambers will be 393.75 square feet. Therefore, the volume of percolation is calculated to be (393.75 square feet x 0.524 cubic feet per square foot per day) 206.2 cubic feet.

The chambers will capture and treat (365.6 c.f. + 206.2 c.f.) 571.8 c.f. of runoff which is well over the water quality volume of 490.5 cubic feet. 6" of drawdown from the pool equates to (27' x 13' x 0.5') 175.5 cubic feet. This volume would be readily contained in the Stormwater Management Practice.

(f) Dimensions, material specifications and installation details for each post-construction stormwater management practice;

Cultec chambers are constructed of high density polyethylene. Each chamber is 8.5 feet in length by 48 inches in width and 8.5 inches in height. When installed, the Stormwater Management Practice will be 10.5 feet in length by 37.5 feet in width.

(g) Maintenance schedule to ensure continuous and effective operation of each post-construction stormwater management practice;

The maintenance schedule may be referenced in the SWPPP report (see **Appendix B**) and on Sheet C-112 of the drawings.

(h) Maintenance easements, if applicable, to ensure access to all stormwater management practices at the site for the purpose of inspection and repair. Easements shall be recorded on the plan and shall remain in effect with transfer of title to the property;

Maintenance easements are not required or proposed.

(i) Inspection and maintenance agreement binding on all subsequent landowners served by the on-site stormwater management practices in accordance with § 294-9 of this chapter;

Inspection and maintenance agreements would be made part of the approvals of the project.

(j) The SWPPP shall be prepared by a New York State licensed professional engineer, certified professional in erosion and sediment control (CPESC), or licensed landscape architect and must be signed by the professional preparing the plan, who shall certify that the design of all stormwater management practices meets the requirements in this chapter.
[Amended 9-22-2014 by L.L. No. 17-2014, effective 10-30-2014]

The SWPPP has been prepared by a professional engineer and landscape architect and certifies that the design of all stormwater management practices meets the requirements.

FIGURES

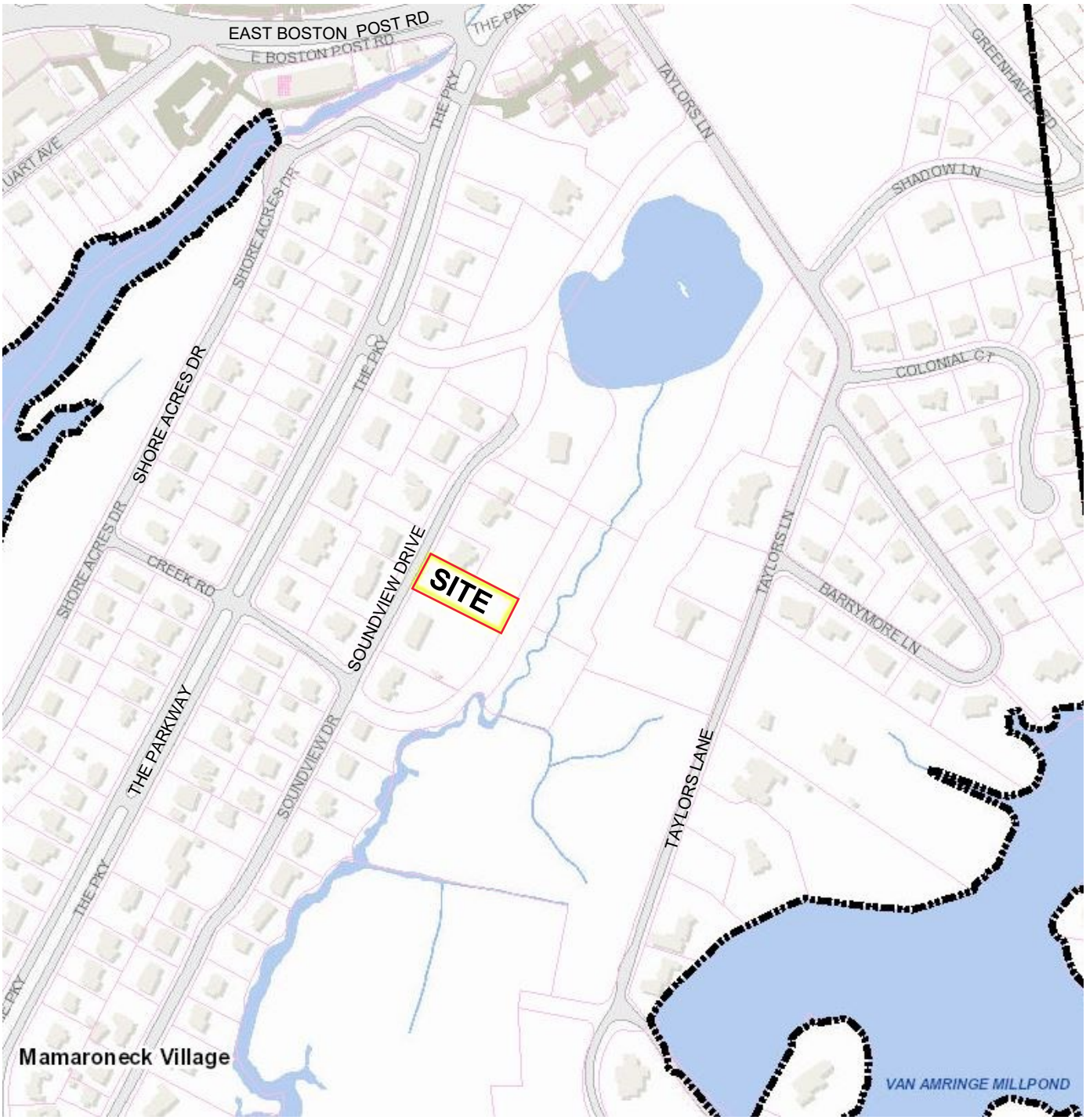


Figure 1

SITE LOCATION MAP

Scale: Not to Scale

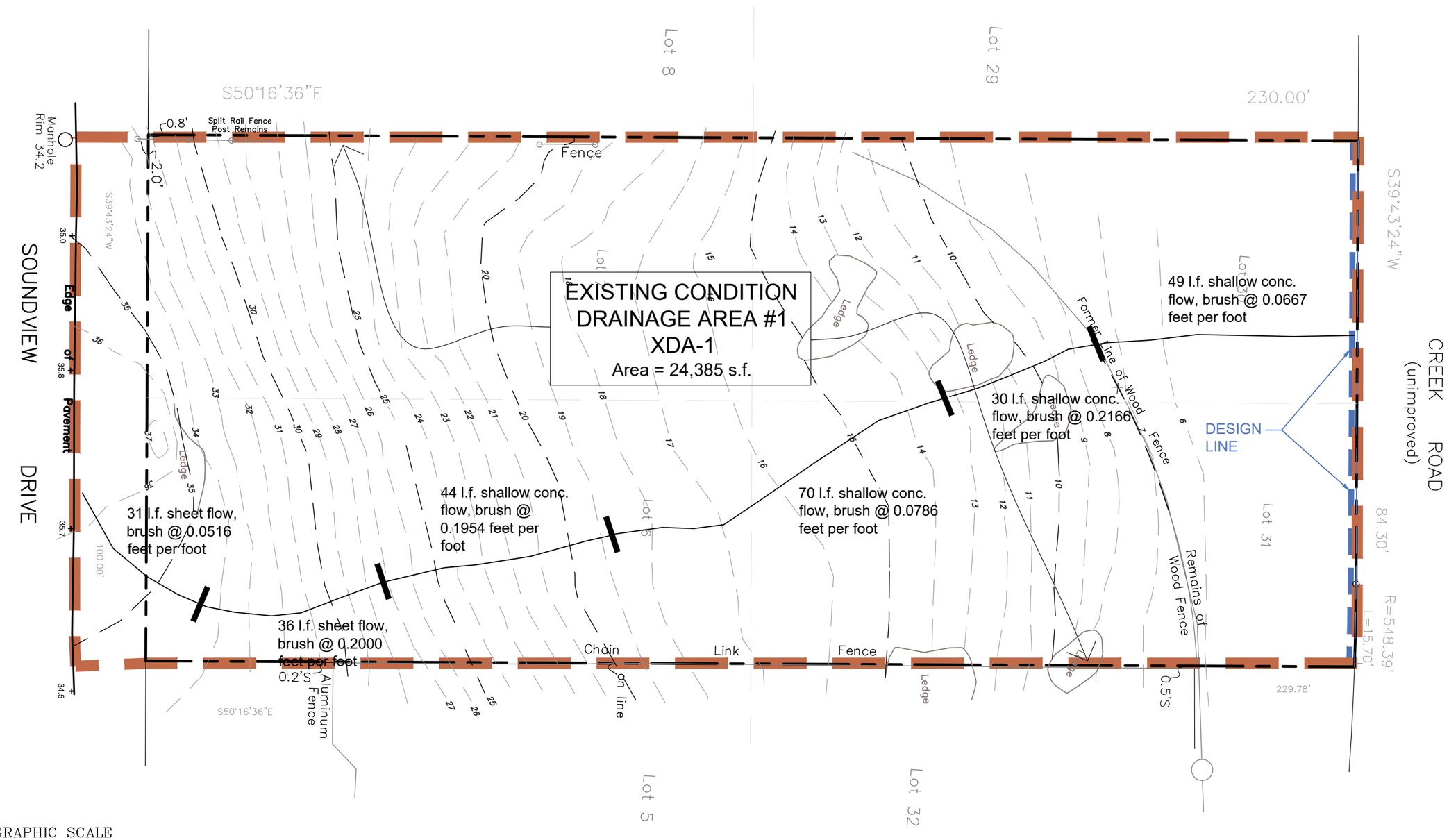
SOILS MAP LEGEND

UIC—Urban land-Charlton-Chatfield complex, rolling, very rocky
Ip—Ipswich mucky peat, 0 to 2 percent slopes, very frequently flooded

Figure 2

SOILS MAP

Scale: Not to Scale



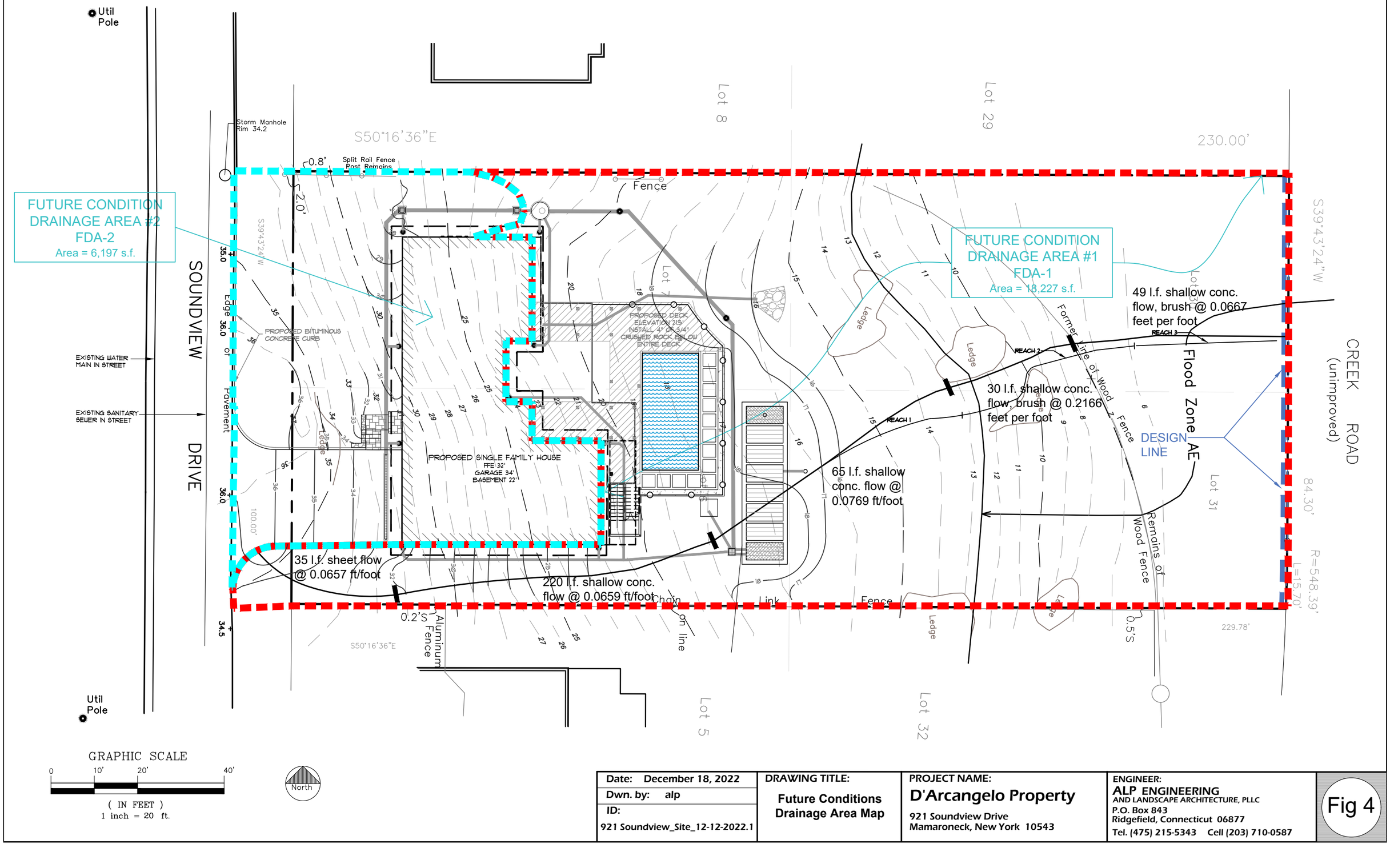
GRAPHIC SCALE

0 10' 20' 40'

(IN FEET)
1 inch = 20 ft.

North

Date: December 29, 2021 Dwn. by: alp ID: 921 Soundview_Site_12-24-2021	DRAWING TITLE: **Existing Conditions Drainage Area Map**	PROJECT NAME: **D'Arcangelo Property** 921 Soundview Drive Mamaroneck, New York 10543	ENGINEER: **ALP ENGINEERING** AND LANDSCAPE ARCHITECTURE, PLLC P.O. Box 843 Ridgefield, Connecticut 06877 Tel. (475) 215-5343 Cell (203) 710-0587	Fig 3



Date: December 18, 2022 Dwn. by: alp ID: 921 Soundview_Site_12-12-2022.1	DRAWING TITLE: **Future Conditions Drainage Area Map**	PROJECT NAME: **D'Arcangelo Property** 921 Soundview Drive Mamaroneck, New York 10543	ENGINEER: **ALP ENGINEERING** AND LANDSCAPE ARCHITECTURE, PLLC P.O. Box 843 Ridgefield, Connecticut 06877 Tel. (475) 215-5343 Cell (203) 710-0587	Fig 4

SUPPORTING DOCUMENTATION

Table 1
921 Soundview Drive
Water Quality Volume Calculation

FDA-2 TO SW PRACTICE	Area (in sq feet)
Impervious surfaces	783
Lawn, good, HSG B	3,299
Impervious surfaces	3,174
TOTAL	7,256

WQv Calculation

FDA-2 TO SW PRACTICE

Rainfall Depth =	1.5	inches
Drainage Area =	7,256	s.f.
Impervious Area =	3,957	s.f.
% Impervious =	54.5	%
Rv =	0.54	
WQv =	0.011	ac-feet
WQv =	490.5	cu feet

Table 2
921 Soundview Drive
Infiltration Volume of Percolation Calculation

Stormwater Infiltration Facility

SWM Facility #1	Consists of:	8	***Cultec C4-HD chambers***
			Remarks
Vw, total volume in chambers	**413.6**	cubic feet	*As per calculation*
Bed Width =	**33.00**	feet	*As per design*
Bed Length =	**10.50**	feet	*As per design*
Bed Area (bottom surface area) =	**393.75**	sq feet	*As per design*
Soil Percolation rate =	**0.524**	cf/sf/day	*In cubic feet per square foot per day*
Vp, Volume of percolation	**206.2**	cubic feet/day	*Calculated as bottom surface surface area x soil perc rate, Sr*
Plus volume captured in chambers	**413.6**	cubic feet	*Volume in chambers below invert elevation of lowest orifice*
Total volume captured and treated	**619.8**	cubic feet	*Sum*
Compare to WQv	**490.5**	cubic feet	

Table 3
921 Soundview Drive
Volume of Percolation Calculation

Determine soil percolation rate for stormwater modeling purposes

Using a percolation test hole with the following parameters:				*Remarks*
Percolation Casing Diameter =		4	inches	*casing diameter*
Depth of percolation hole =		30	inches	*as constructed*
Bottom surface area =		0.087	square feet	*calculated (pi x radius^2)*
Percolation Rates as per testing:				
P-1		16	inches in 1 hour	*as per test*
	use	3	inches in 1 hour	*conservative*
Volume of Percolation		0.022	cu feet per sq foot per hour	*Vol = pi x d x h*
		0.524	cu feet per sq foot per day	
Percolation Rates as per testing:				
P-2		14	inches in 1 hour	*as per test*
	use	3	inches in 1 hour	*conservative*
Volume of Percolation		0.022	cu feet per sq foot per hour	*Vol = pi x d x h*
		0.524	cu feet per sq foot per day	

ALP ENGINEERING LANDSCAPE ARCHITECTURE, PLLC
P.O. Box 843, Ridgefield CT 06877

TEST DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES

DEPTH	HOLE #1 3/18/2022	HOLE # 2 3/18/2022	HOLE # 3 12/8/2022	HOLE # _____
GROUND				
0'-6"	12" Topsoil	12" Topsoil	12" Topsoil	
1'-0"				
1'-6"				
2'-0"	Medium brown	Medium brown	Medium brown	
2'-6"	sandy loam	sandy loam	sandy loam	
3'-0"				
3'-6"				
4'-0"			Coarse sands	
4'-6"	Refusal on rock	Refusal on rock	and small boulders	
5'-0"	at 48" below grade	at 48" below grade		
5'-6"			Refusal on rock	
6'-0"			at 63" below grade	
6'-6"				
7'-0"				
7'-6"				
8'-0"				
8'-6"				
G.W.				
ROCK				

TESTS MADE BY: Alan L. Pilch, PE DATE: 3/18/2022
12/8/2022

NAME: ALP Engineering
ADDRESS: P.O. Box 843
Ridgefield, CT 06877

PERCOLATION TEST DATA SHEET

Test Performed by:
Alan L. Pilch, P.E., R.L.A., ALP Engineering & Landscape Architecture, PLLC
P.O. Box 843, Ridgefield, CT 06877

PROPERTY INFORMATION:

Owner: D'Arcangelo Property

Address: 921 Soundview Drive — Sec. 154.60
Block 1
Located at (Street): near Creek Road — Lot 21

Municipality Mamaroneck (V)
Watershed Otter Creek

SOIL PERCOLATION TEST DATA:
Pre-soak performed on: 4/28/2022
Percolation testing performed on: 4/29/2022

Hole #1	Clock Time				Percolation			
Hole Number	Run Number	Start Time	Stop Time	Elapsed Time (min.)	Depth of Water from Top of Casing		Drop in Inches	Soil Rate (inches per hour)
					Start In.'s	Stop In.'s		
1	1	1:11 PM	2:11 PM	60	6	26	20	20.00
	2	2:11 PM	3:11 PM	60	6	24	18	18.00
	3	3:11 PM	4:11 PM	60	6	23	17	17.00
	4	4:11 PM	5:11 PM	60	6	22	16	16.00

Hole #2	Clock Time				Percolation			
Hole Number	Run Number	Start Time	Stop Time	Elapsed Time (min.)	Depth of Water from Top of Casing		Drop in Inches	Soil Rate (inches per hour)
					Start In.'s	Stop In.'s		
2	1	1:12 PM	2:12 PM	60	6	23	17	17.00
	2	2:13 PM	3:13 PM	60	6	21	15	15.00
	3	3:13 PM	4:13 PM	60	6	21	15	15.00
	4	4:13 PM	5:13 PM	60	6	20	14	14.00

Procedure:
Pre-soak: Fill casing with clean water to a depth of 24" and allow pre-soak for 24 hrs.
Percolation Test: Refill casing with another 24" of clean water and monitor water level (measured from top of the casing) for one hour. Repeat this procedure (filling the casing each time) three additional times, for a total of four observations. Soil rate is the rate achieved at the fourth run.
The final rate shall be reported in inches per hour.
Casing size: Diameter 4", length 30"

Westchester County, New York

Ip—Ipswich mucky peat, 0 to 2 percent slopes, very frequently flooded

Map Unit Setting

National map unit symbol: 2tyqj
Elevation: 0 to 10 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Ipswich and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ipswich

Setting

Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Partially- decomposed herbaceous organic material

Typical profile

Oe - 0 to 42 inches: mucky peat
Oa - 42 to 59 inches: muck

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.14 to 99.90 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to strongly saline (0.7 to 111.6 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Very high (about 26.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded
Hydric soil rating: Yes

Minor Components

Pawcatuck
Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded
Hydric soil rating: Yes

Westbrook
Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 16, Jun 11, 2020

Westchester County, New York

UIC—Urban land-Charlton-Chatfield complex, rolling, very rocky

Map Unit Setting

National map unit symbol: bd7n
Elevation: 0 to 1,000 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 40 percent
Charlton and similar soils: 20 percent
Chatfield and similar soils: 15 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Hills, ridges, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy till derived mainly from schist, gneiss, or granite

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 24 inches: sandy loam
H3 - 24 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Chatfield

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from granite, gneiss, or schist

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 24 inches: flaggy silt loam
H3 - 24 to 28 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

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

Minor Components

Sutton

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

Leicester

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

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Udorthents

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

Hollis

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

Sun

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

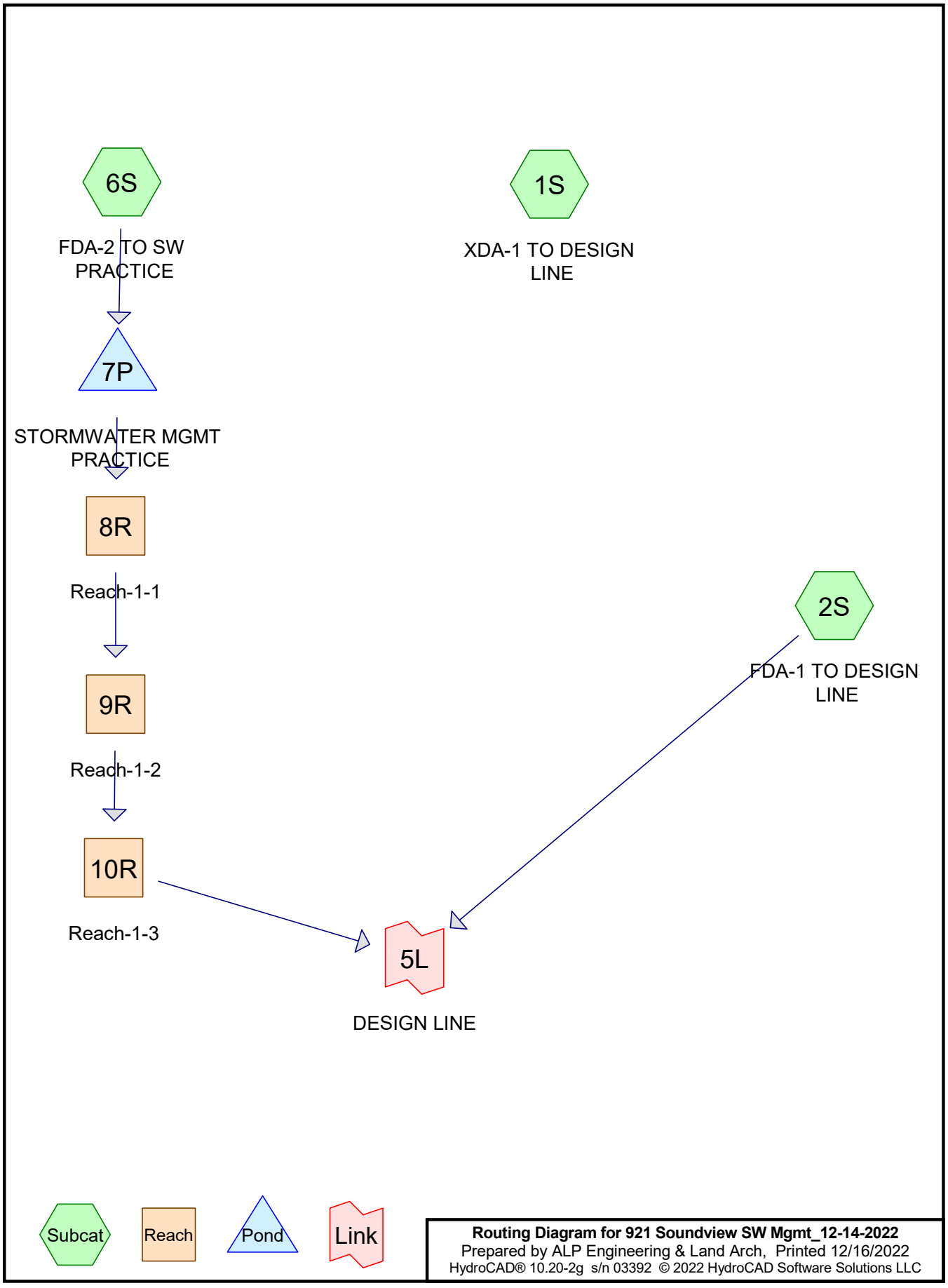
Percent of map unit: 1 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 16, Jun 11, 2020

Appendix A

Stormwater Management Report
Hydrographs and Routings



Routing Diagram for 921 Soundview SW Mgmt_12-14-2022
Prepared by ALP Engineering & Land Arch, Printed 12/16/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-year	Type III 24-hr		Default	24.00	1	2.86	2
2	2-year	Type III 24-hr		Default	24.00	1	3.45	2
3	10-year	Type III 24-hr		Default	24.00	1	5.12	2
4	25-year	Type III 24-hr		Default	24.00	1	6.41	2
5	100-year	Type III 24-hr		Default	24.00	1	9.03	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.195	61	>75% Grass cover, Good, HSG B (2S, 6S)
0.445	56	Brush, Fair, HSG B (1S)
0.138	48	Brush, Good, HSG B (2S)
0.231	73	Brush, Good, HSG D (1S, 2S)
0.018	61	Deck (use lawn for under deck), HSG B (2S)
0.023	98	Impervious surfaces, HSG B (6S)
0.009	98	Pool, HSG B (2S)
0.001	98	Roof, HSG B (2S)
0.059	98	Roofs, HSG B (6S)
0.003	98	Stepping Stones around Pool, HSG B (2S)
1.121	**63**	**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
0.000	0.195	0.000	0.000	0.000	0.195	>75% Grass cover, Good	2S, 6S
0.000	0.445	0.000	0.000	0.000	0.445	Brush, Fair	1S
0.000	0.138	0.000	0.231	0.000	0.368	Brush, Good	1S, 2S
0.000	0.018	0.000	0.000	0.000	0.018	Deck (use lawn for under deck)	2S
0.000	0.023	0.000	0.000	0.000	0.023	Impervious surfaces	6S
0.000	0.009	0.000	0.000	0.000	0.009	Pool	2S
0.000	0.001	0.000	0.000	0.000	0.001	Roof	2S
0.000	0.059	0.000	0.000	0.000	0.059	Roofs	6S
0.000	0.003	0.000	0.000	0.000	0.003	Stepping Stones around Pool	2S
0.000	**0.890**	**0.000**	**0.231**	**0.000**	**1.121**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=24,402 sf 0.00% Impervious Runoff Depth=0.28"
Flow Length=260' Tc=6.0 min CN=60 Runoff=0.08 cfs 0.013 af

Subcatchment 2S: FDA-1 TO DESIGN LINE Runoff Area=18,227 sf 3.06% Impervious Runoff Depth=0.31"
Flow Length=399' Tc=6.0 min CN=61 Runoff=0.07 cfs 0.011 af

Subcatchment 6S: FDA-2 TO SW PRACTICE Runoff Area=6,197 sf 57.24% Impervious Runoff Depth=1.27"
Tc=6.0 min CN=82 Runoff=0.21 cfs 0.015 af

Reach 8R: Reach-1-1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=34.0' S=0.0676 '/' Capacity=1.65 cfs Outflow=0.00 cfs 0.000 af

Reach 9R: Reach-1-2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=45.0' S=0.1578 '/' Capacity=4.24 cfs Outflow=0.00 cfs 0.000 af

Reach 10R: Reach-1-3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.040 L=32.0' S=0.0156 '/' Capacity=3.19 cfs Outflow=0.00 cfs 0.000 af

Pond 7P: STORMWATER MGMT PRACTICE Peak Elev=16.37' Storage=162 cf Inflow=0.21 cfs 0.015 af
Discarded=0.06 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.015 af

Link 5L: DESIGN LINE Inflow=0.07 cfs 0.011 af
Primary=0.07 cfs 0.011 af

Total Runoff Area = 1.121 ac Runoff Volume = 0.039 af Average Runoff Depth = 0.42"
91.59% Pervious = 1.027 ac 8.41% Impervious = 0.094 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE

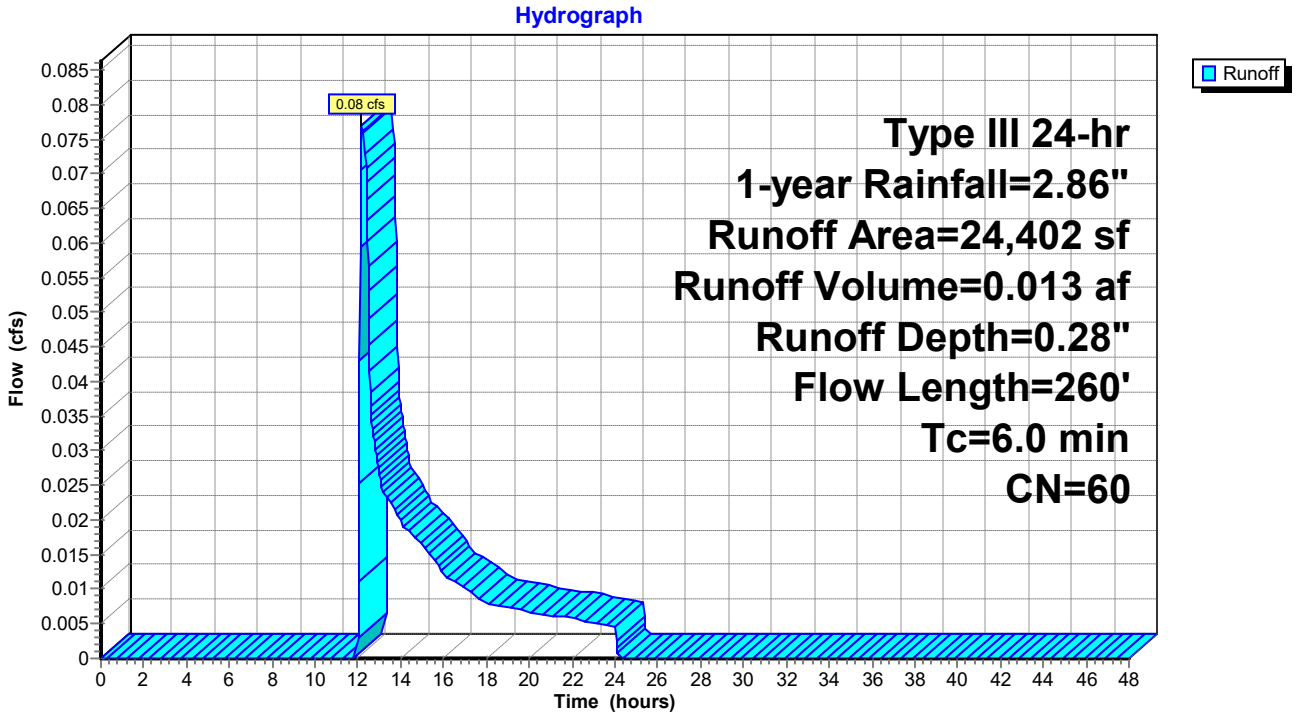
Runoff = 0.08 cfs @ 12.16 hrs, Volume= 0.013 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-year Rainfall=2.86"

Area (sf)	CN	Description
5,028	73	Brush, Good, HSG D
19,374	56	Brush, Fair, HSG B
24,402	60	Weighted Average
24,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	31	0.0516	0.14		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.45"
0.2	36	0.2000	3.13		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.2	44	0.1954	3.09		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	70	0.0786	1.96		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.9					**Direct Entry, Tc Factor**
6.0	260	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE



Summary for Subcatchment 2S: FDA-1 TO DESIGN LINE

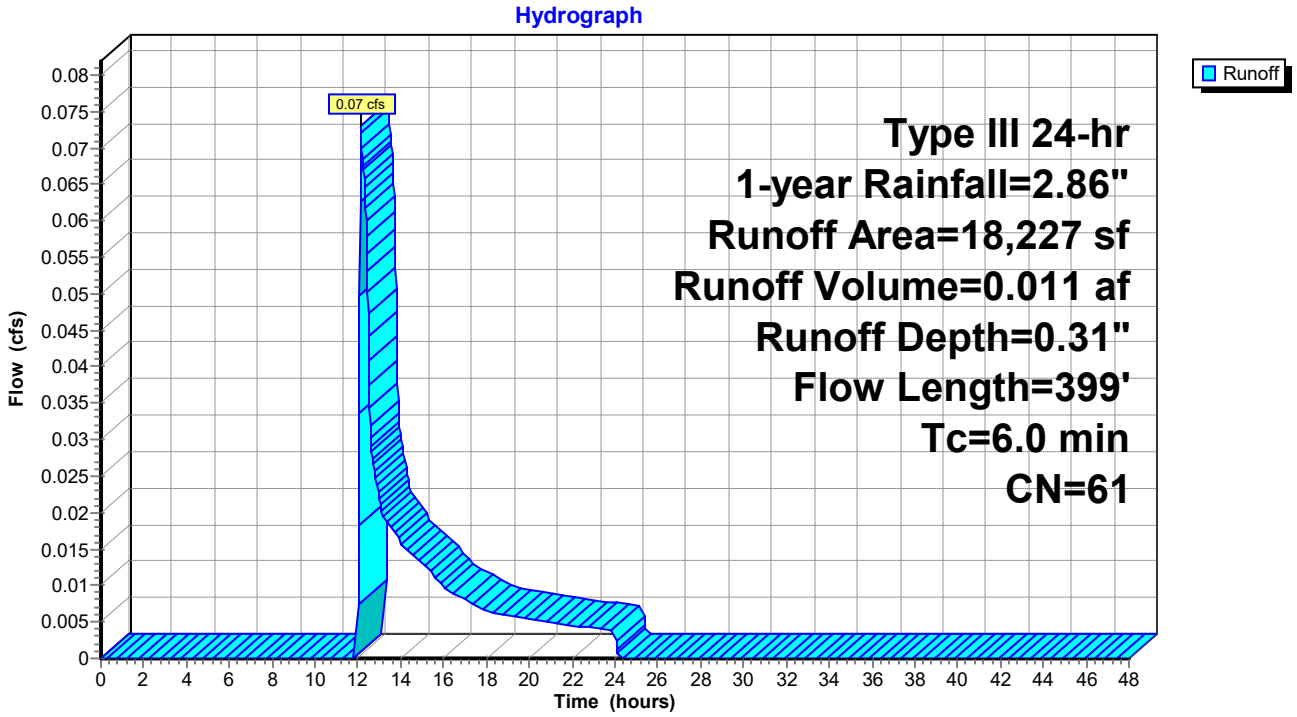
Runoff = 0.07 cfs @ 12.14 hrs, Volume= 0.011 af, Depth= 0.31"
Routed to Link 5L : DESIGN LINE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-year Rainfall=2.86"

	Area (sf)	CN	Description
	5,028	73	Brush, Good, HSG D
	5,993	48	Brush, Good, HSG B
	5,856	61	>75% Grass cover, Good, HSG B
*	793	61	Deck (use lawn for under deck), HSG B
*	392	98	Pool, HSG B
*	117	98	Stepping Stones around Pool, HSG B
*	48	98	Roof, HSG B
	18,227	61	Weighted Average
	17,670		96.94% Pervious Area
	557		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	35	0.0657	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.45"
1.0	220	0.0659	3.85		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	65	0.0769	4.16		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.6					**Direct Entry, Tc Factor**
6.0	399	Total			

Subcatchment 2S: FDA-1 TO DESIGN LINE



Summary for Subcatchment 6S: FDA-2 TO SW PRACTICE

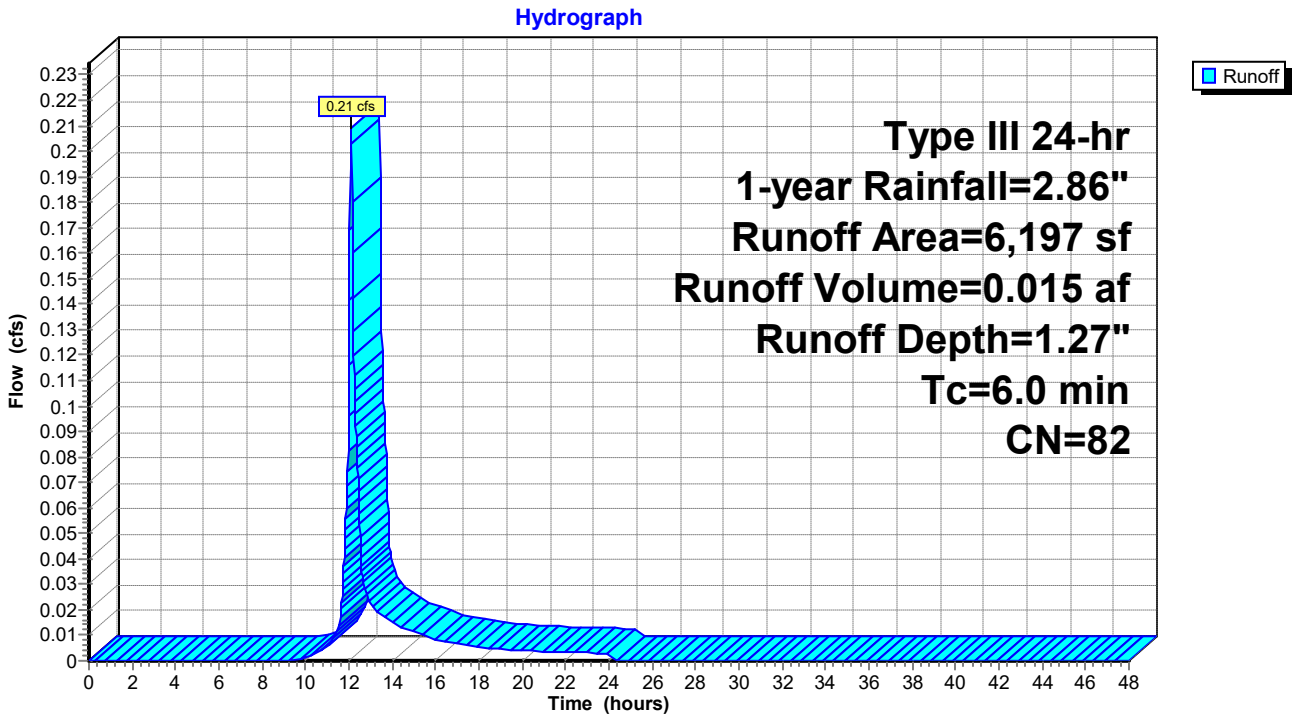
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth= 1.27"
Routed to Pond 7P : STORMWATER MGMT PRACTICE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-year Rainfall=2.86"

	Area (sf)	CN	Description
*	985	98	Impervious surfaces, HSG B
	2,650	61	>75% Grass cover, Good, HSG B
	2,562	98	Roofs, HSG B
	6,197	82	Weighted Average
	2,650		42.76% Pervious Area
	3,547		57.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: FDA-2 TO SW PRACTICE



Summary for Reach 8R: Reach-1-1

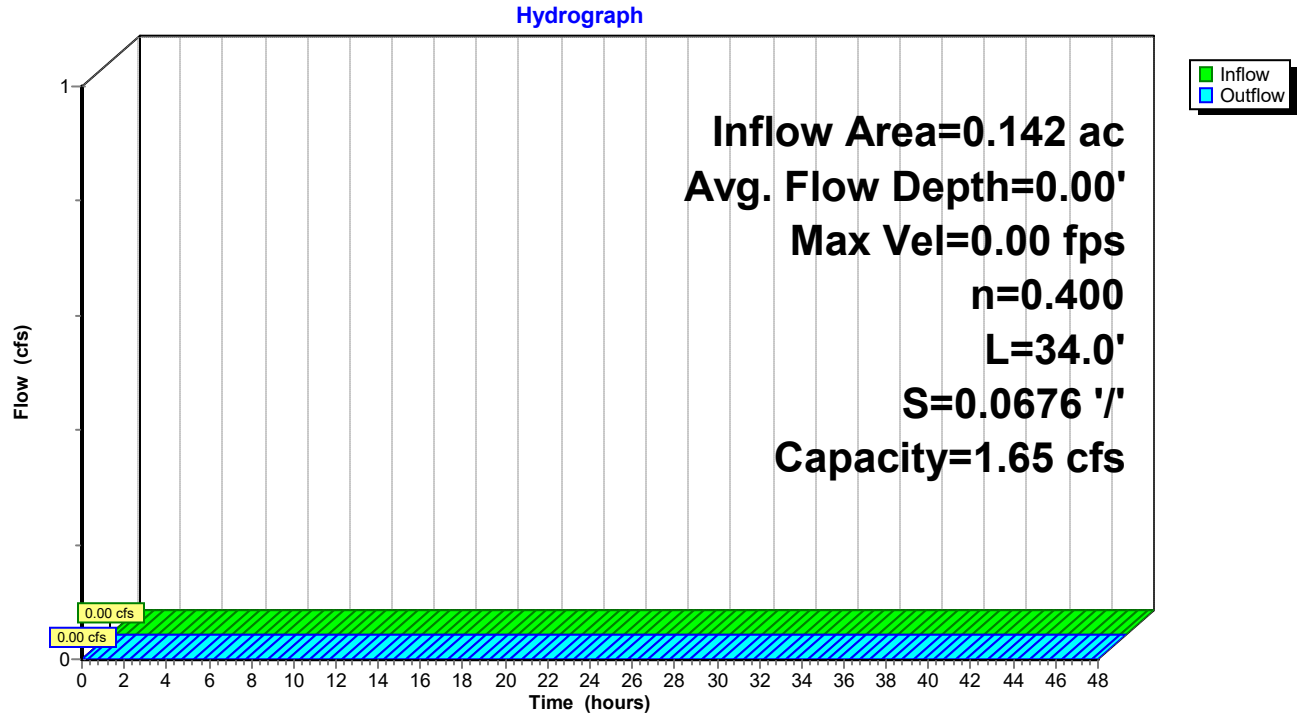
Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.00" for 1-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Reach-1-2

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

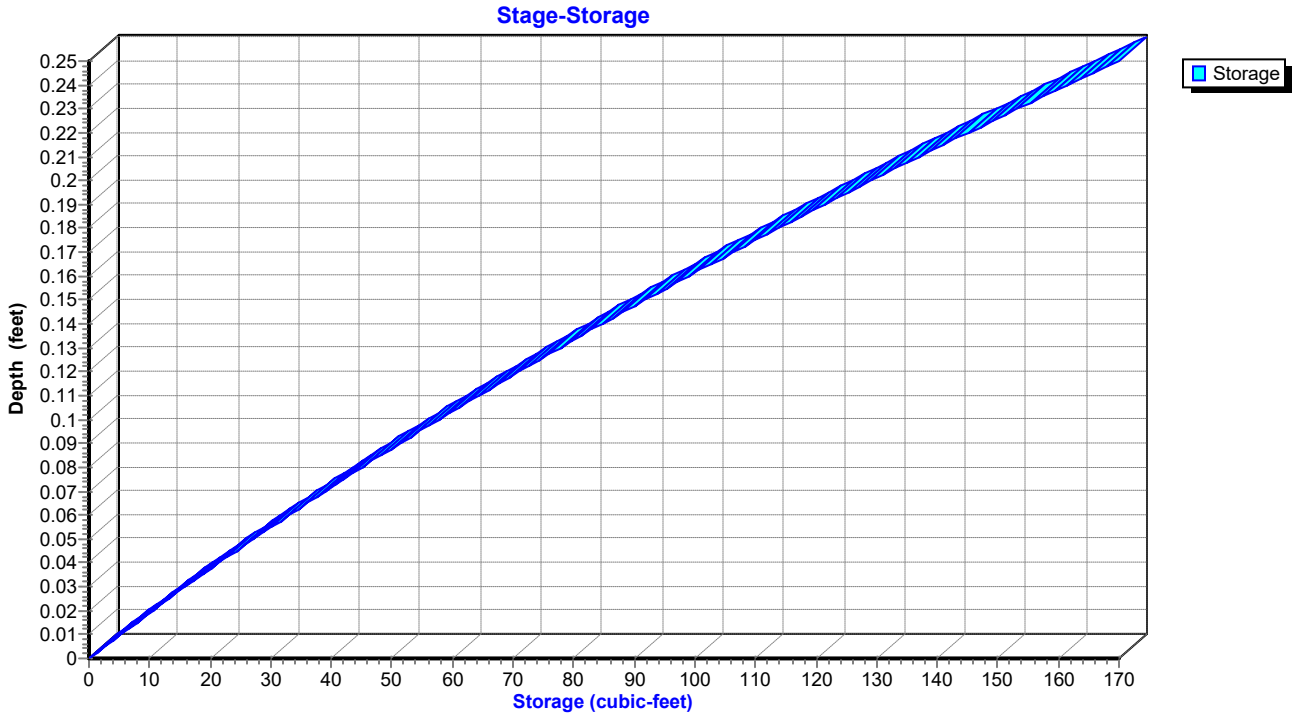
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 5.0 sf, Capacity= 1.65 cfs

15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 25.00'
Length= 34.0' Slope= 0.0676 '/'
Inlet Invert= 15.50', Outlet Invert= 13.20'

‡



Reach 8R: Reach-1-1



Summary for Reach 9R: Reach-1-2

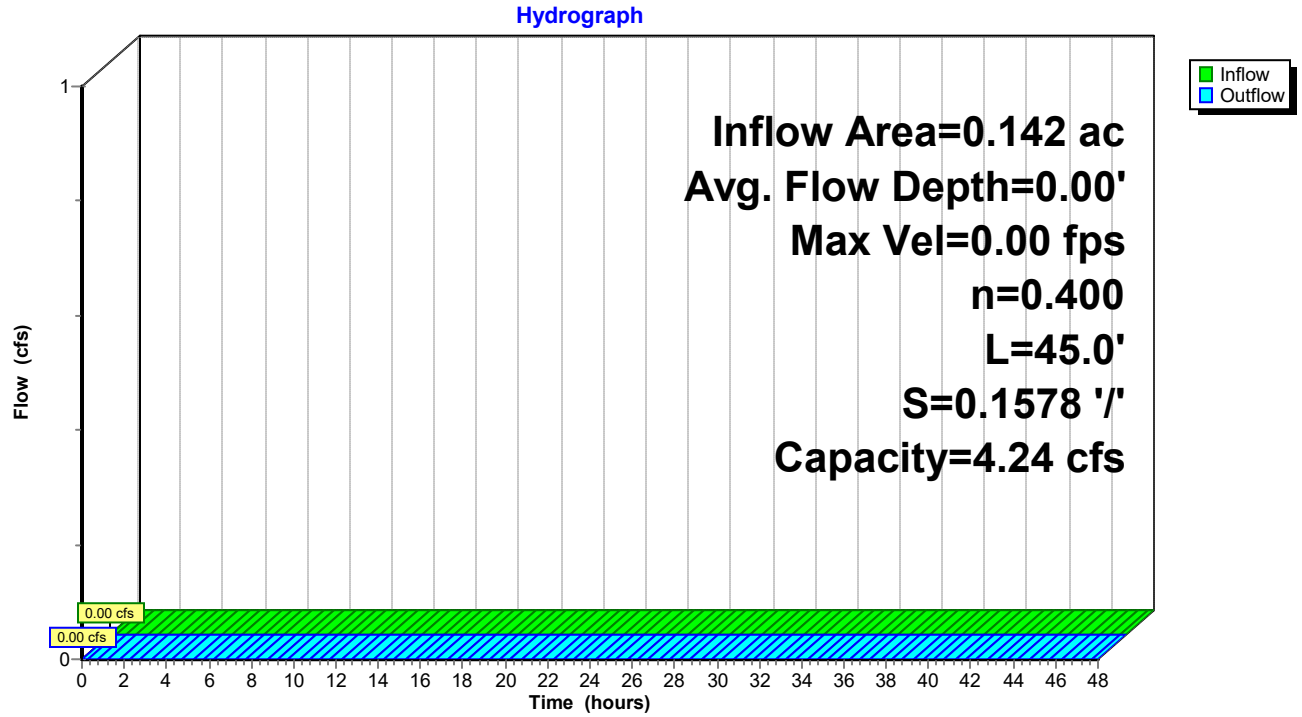
Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.00" for 1-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 10R : Reach-1-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

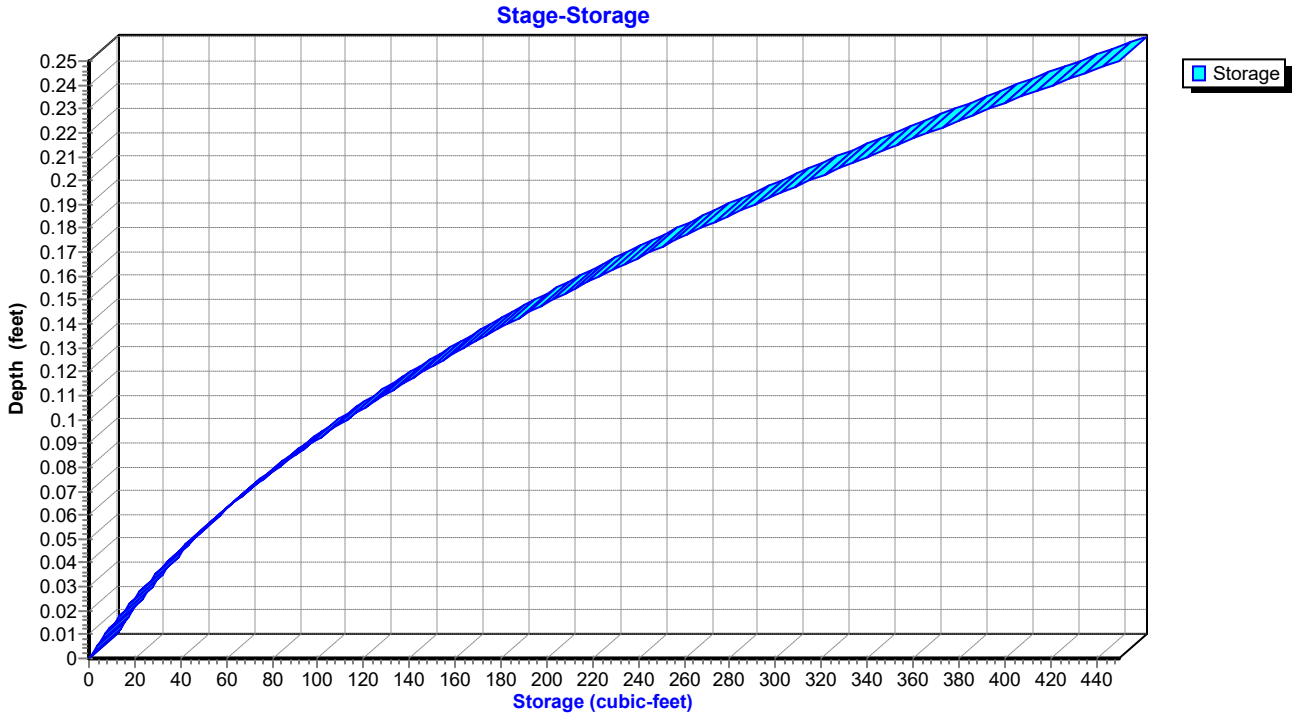
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 10.0 sf, Capacity= 4.24 cfs

15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 65.00'
Length= 45.0' Slope= 0.1578 '/'
Inlet Invert= 13.10', Outlet Invert= 6.00'

‡



Reach 9R: Reach-1-2



Summary for Reach 10R: Reach-1-3

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.00" for 1-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 5L : DESIGN LINE

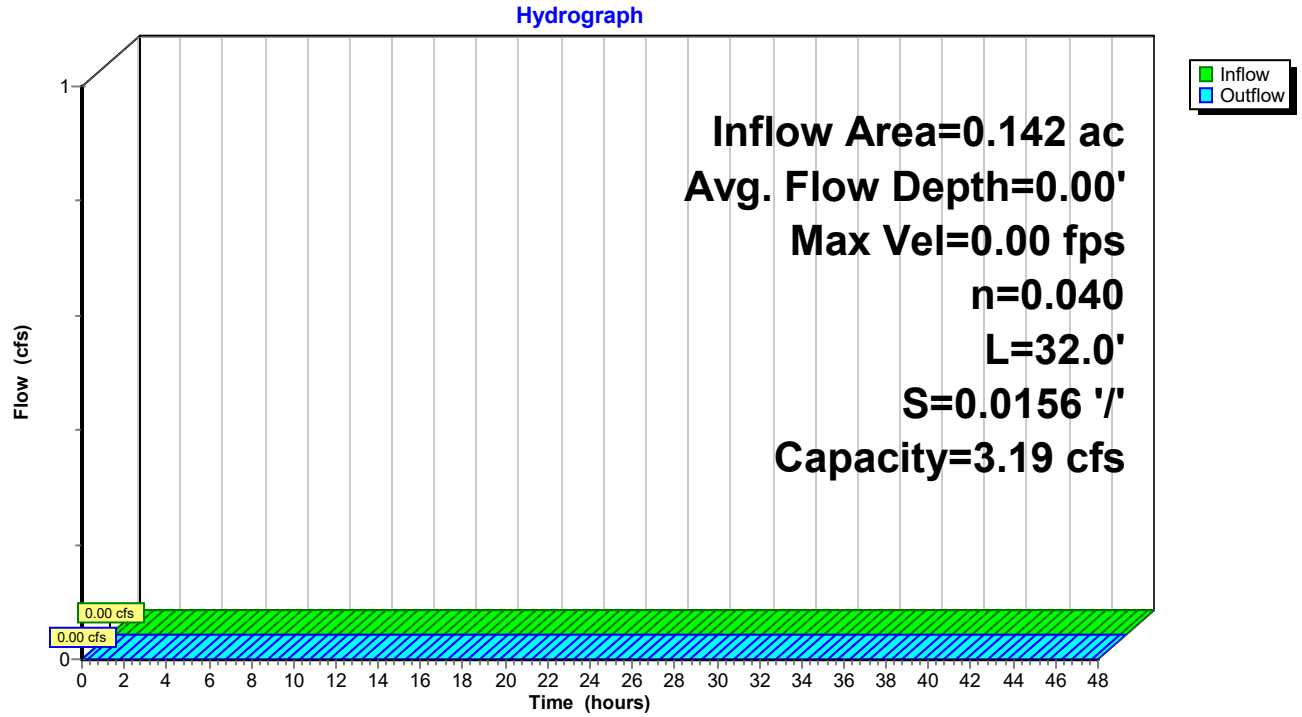
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.15' Flow Area= 2.7 sf, Capacity= 3.19 cfs

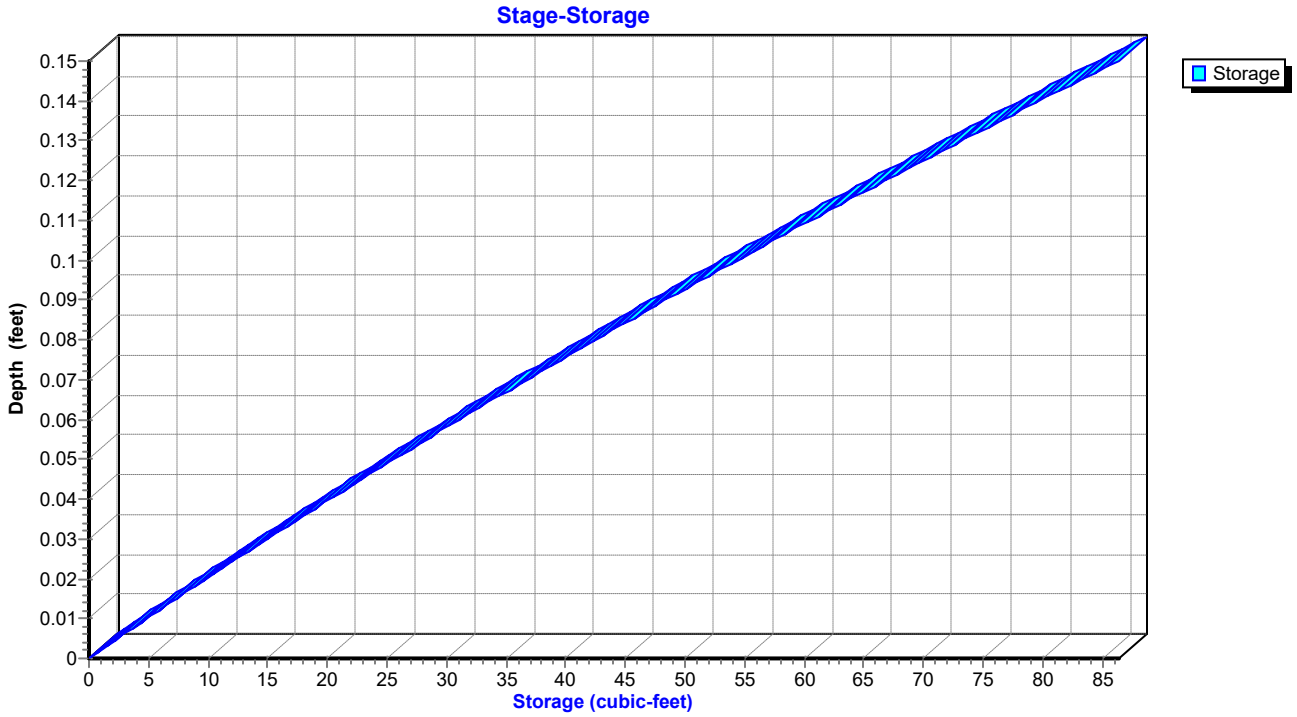
15.00' x 0.15' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 21.00'
Length= 32.0' Slope= 0.0156 '/'
Inlet Invert= 6.00', Outlet Invert= 5.50'

‡

Reach 10R: Reach-1-3



Reach 10R: Reach-1-3



Summary for Pond 7P: STORMWATER MGMT PRACTICE

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 1.27" for 1-year event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.06 cfs @ 12.12 hrs, Volume= 0.015 af, Atten= 72%, Lag= 1.7 min
Discarded = 0.06 cfs @ 12.12 hrs, Volume= 0.015 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 8R : Reach-1-1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 16.37' @ 12.48 hrs Surf.Area= 504 sf Storage= 162 cf

Plug-Flow detention time= 21.3 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 20.7 min (862.6 - 841.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.10'	37 cf	**6.00'W x 10.50'L x 1.71'H Field A** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#2A	16.60'	14 cf	**Cultec FD C-4** Inside #1 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#3B	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field B** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#4B	16.50'	14 cf	**Cultec FD C-4** Inside #3 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#5C	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field C** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#6C	16.50'	14 cf	**Cultec FD C-4** Inside #5 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#7D	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field D** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#8D	16.25'	14 cf	**Cultec FD C-4** Inside #7 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#9E	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field E** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#10E	16.25'	14 cf	**Cultec FD C-4** Inside #9 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#11F	15.50'	37 cf	**6.00'W x 10.50'L x 1.71'H Field F** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#12F	16.00'	14 cf	**Cultec FD C-4** Inside #11 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

#13G	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field G** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#14G	15.75'	14 cf	**Cultec FD C-4** Inside #13 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#15H	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field H** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#16H	15.75'	14 cf	**Cultec FD C-4** Inside #15 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
		412 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard
Storage Group E created with Chamber Wizard
Storage Group F created with Chamber Wizard
Storage Group G created with Chamber Wizard
Storage Group H created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	15.25'	**5.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.06 cfs @ 12.12 hrs HW=16.13' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.25' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field A

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

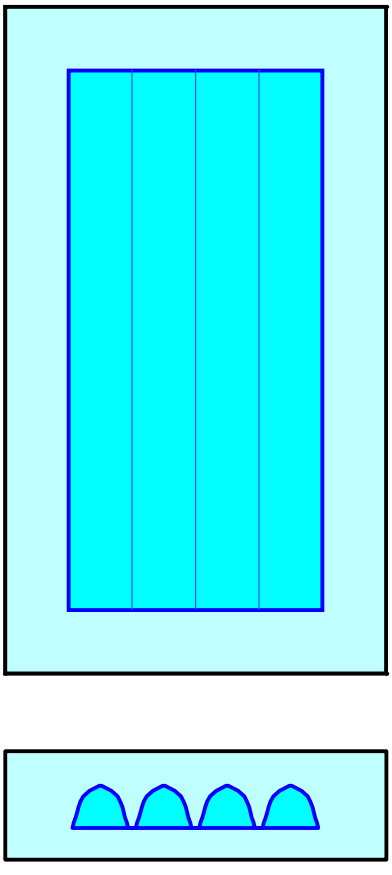
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field B

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

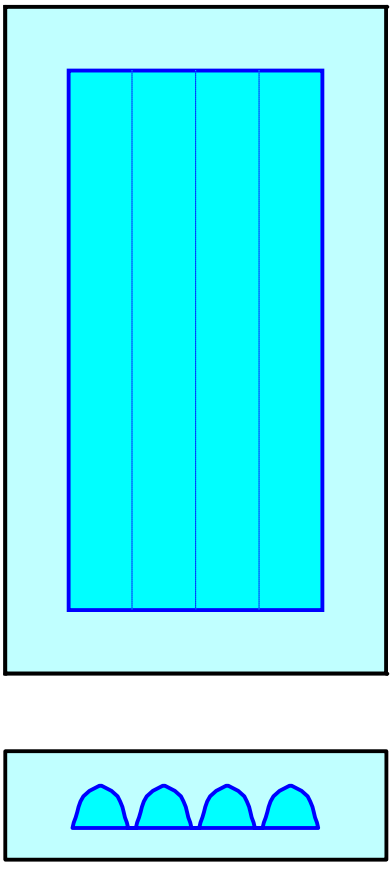
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field C

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

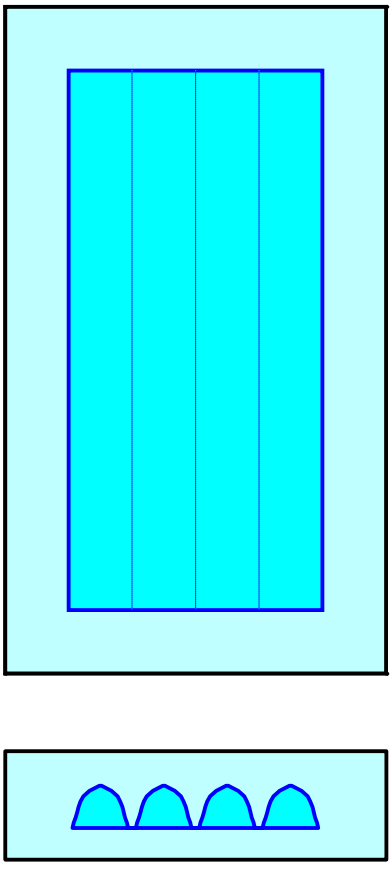
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field D

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

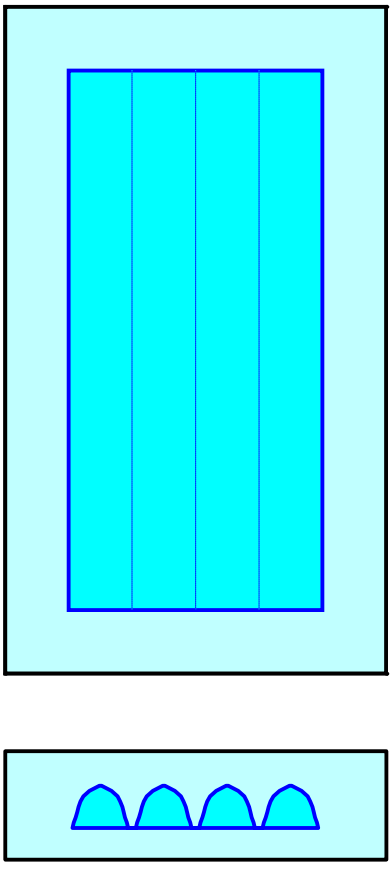
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field E

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

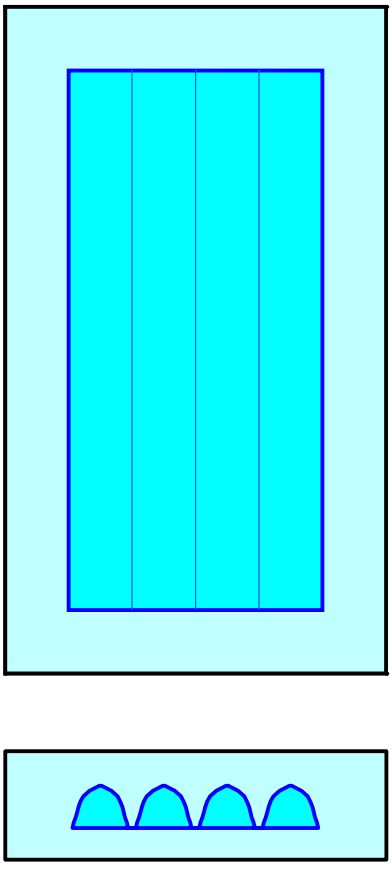
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field F

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

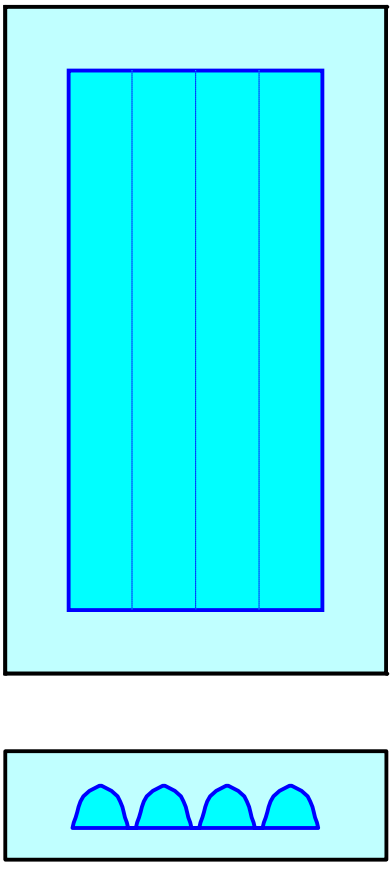
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field G

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

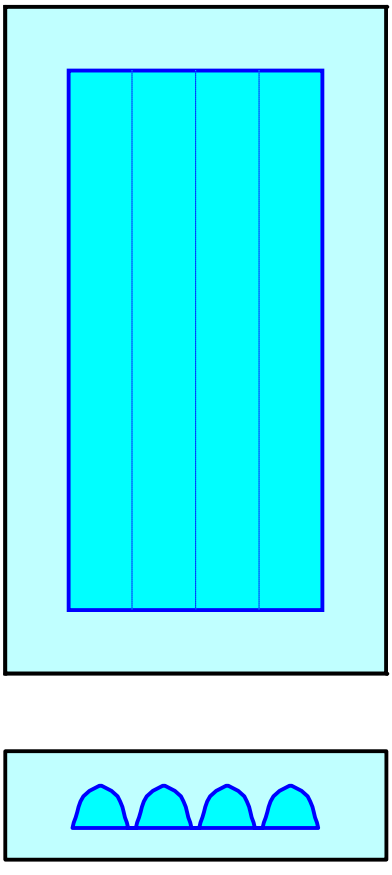
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field H

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

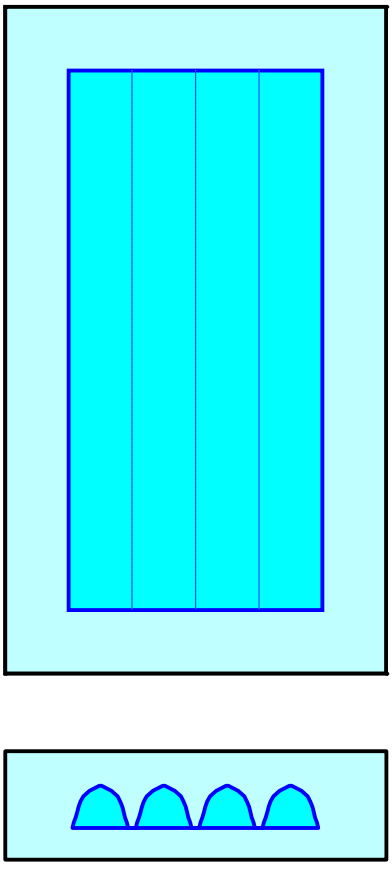
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

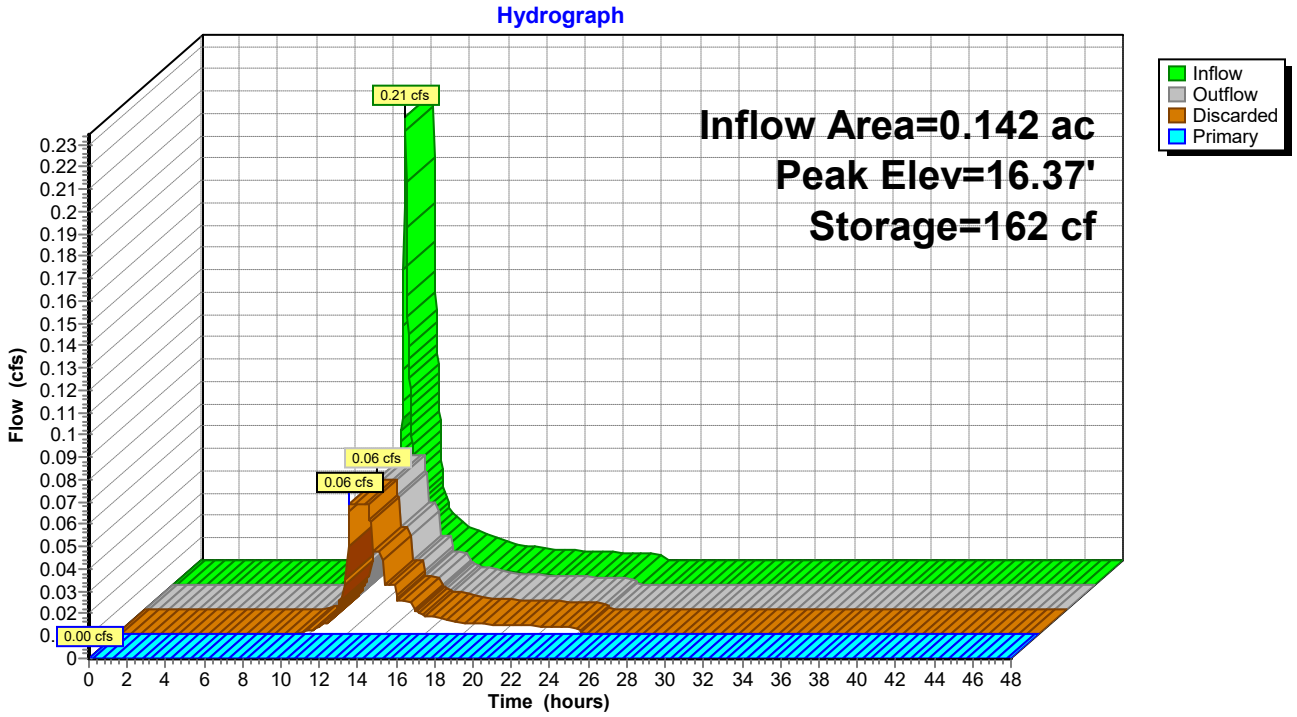
107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

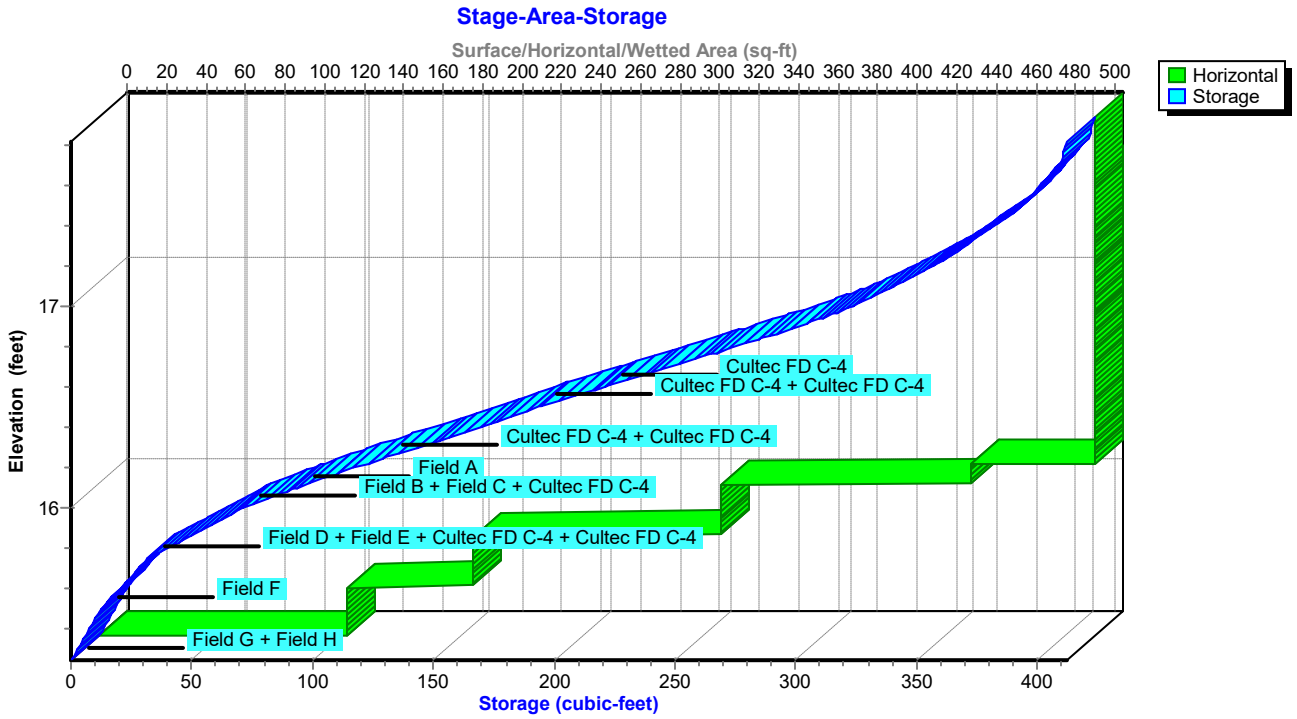
1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE



Pond 7P: STORMWATER MGMT PRACTICE

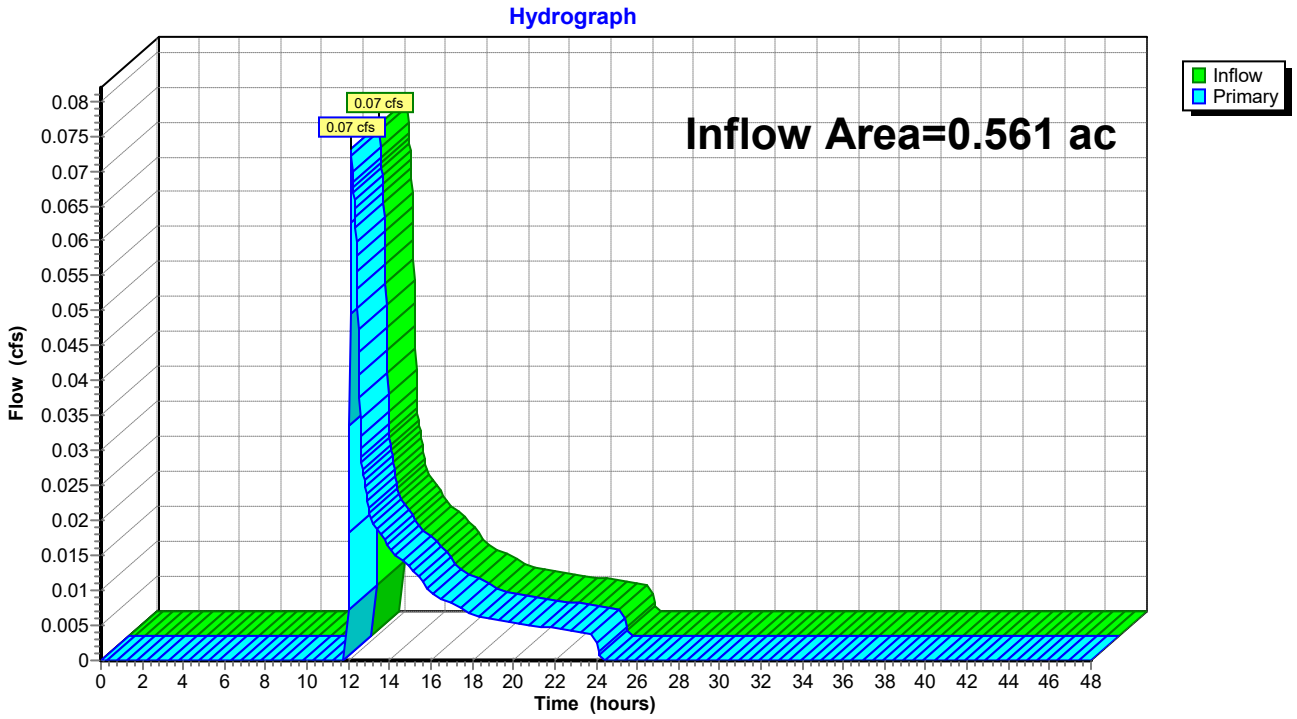


Summary for Link 5L: DESIGN LINE

Inflow Area = 0.561 ac, 16.80% Impervious, Inflow Depth = 0.23" for 1-year event
Inflow = 0.07 cfs @ 12.14 hrs, Volume= 0.011 af
Primary = 0.07 cfs @ 12.14 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 5L: DESIGN LINE



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=24,402 sf 0.00% Impervious Runoff Depth=0.51"
Flow Length=260' Tc=6.0 min CN=60 Runoff=0.22 cfs 0.024 af

Subcatchment 2S: FDA-1 TO DESIGN LINE Runoff Area=18,227 sf 3.06% Impervious Runoff Depth=0.55"
Flow Length=399' Tc=6.0 min CN=61 Runoff=0.19 cfs 0.019 af

Subcatchment 6S: FDA-2 TO SW PRACTICE Runoff Area=6,197 sf 57.24% Impervious Runoff Depth=1.74"
Tc=6.0 min CN=82 Runoff=0.29 cfs 0.021 af

Reach 8R: Reach-1-1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=34.0' S=0.0676 '/' Capacity=1.65 cfs Outflow=0.00 cfs 0.000 af

Reach 9R: Reach-1-2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=45.0' S=0.1578 '/' Capacity=4.24 cfs Outflow=0.00 cfs 0.000 af

Reach 10R: Reach-1-3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.040 L=32.0' S=0.0156 '/' Capacity=3.19 cfs Outflow=0.00 cfs 0.000 af

Pond 7P: STORMWATER MGMT PRACTICE Peak Elev=16.76' Storage=266 cf Inflow=0.29 cfs 0.021 af
Discarded=0.06 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.021 af

Link 5L: DESIGN LINE Inflow=0.19 cfs 0.019 af
Primary=0.19 cfs 0.019 af

Total Runoff Area = 1.121 ac Runoff Volume = 0.064 af Average Runoff Depth = 0.68"
91.59% Pervious = 1.027 ac 8.41% Impervious = 0.094 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE

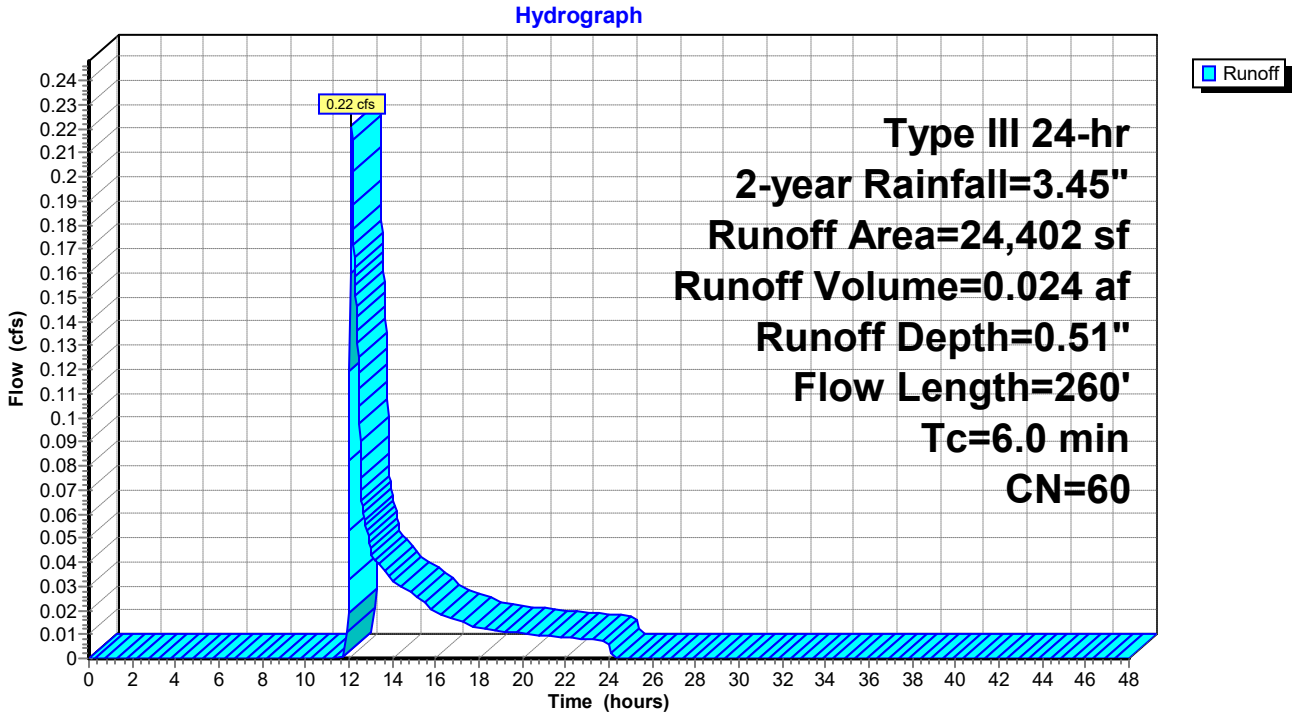
Runoff = 0.22 cfs @ 12.12 hrs, Volume= 0.024 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.45"

Area (sf)	CN	Description
5,028	73	Brush, Good, HSG D
19,374	56	Brush, Fair, HSG B
24,402	60	Weighted Average
24,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	31	0.0516	0.14		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.45"
0.2	36	0.2000	3.13		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.2	44	0.1954	3.09		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	70	0.0786	1.96		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.9					**Direct Entry, Tc Factor**
6.0	260	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE



Summary for Subcatchment 2S: FDA-1 TO DESIGN LINE

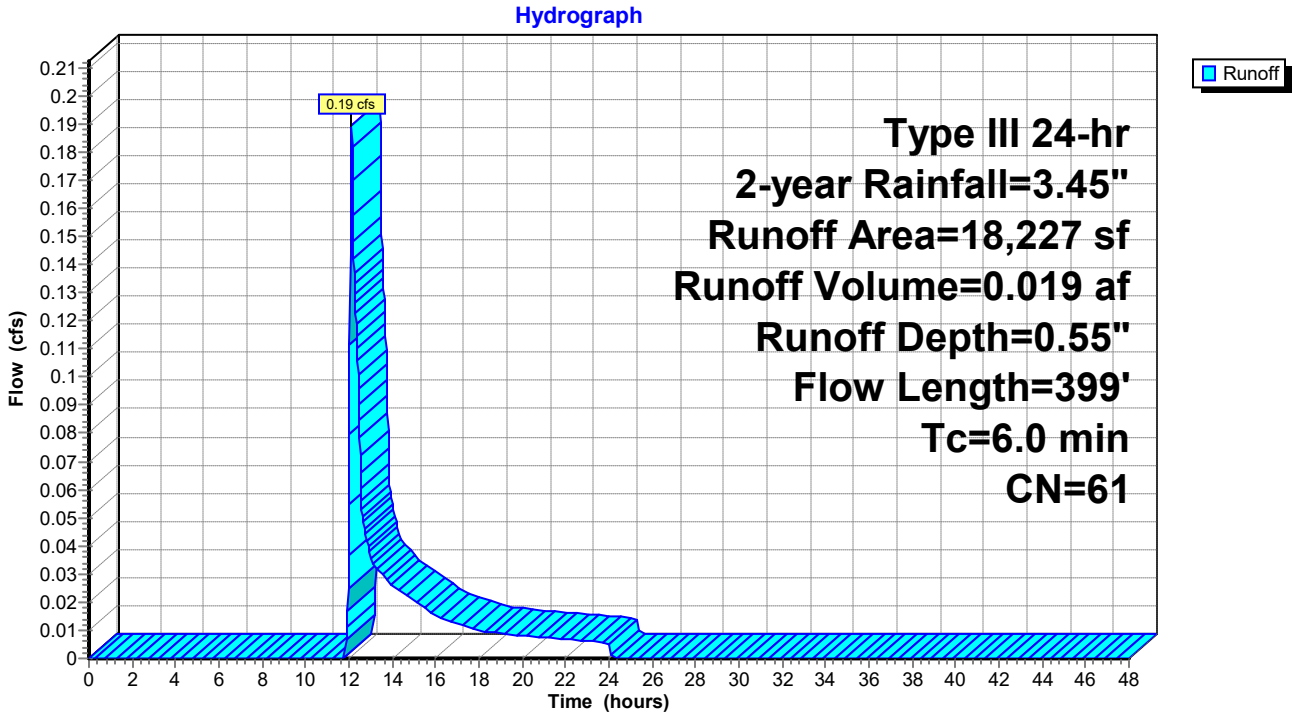
Runoff = 0.19 cfs @ 12.12 hrs, Volume= 0.019 af, Depth= 0.55"
Routed to Link 5L : DESIGN LINE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.45"

	Area (sf)	CN	Description
	5,028	73	Brush, Good, HSG D
	5,993	48	Brush, Good, HSG B
	5,856	61	>75% Grass cover, Good, HSG B
*	793	61	Deck (use lawn for under deck), HSG B
*	392	98	Pool, HSG B
*	117	98	Stepping Stones around Pool, HSG B
*	48	98	Roof, HSG B
	18,227	61	Weighted Average
	17,670		96.94% Pervious Area
	557		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	35	0.0657	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.45"
1.0	220	0.0659	3.85		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	65	0.0769	4.16		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.6					**Direct Entry, Tc Factor**
6.0	399	Total			

Subcatchment 2S: FDA-1 TO DESIGN LINE



Summary for Subcatchment 6S: FDA-2 TO SW PRACTICE

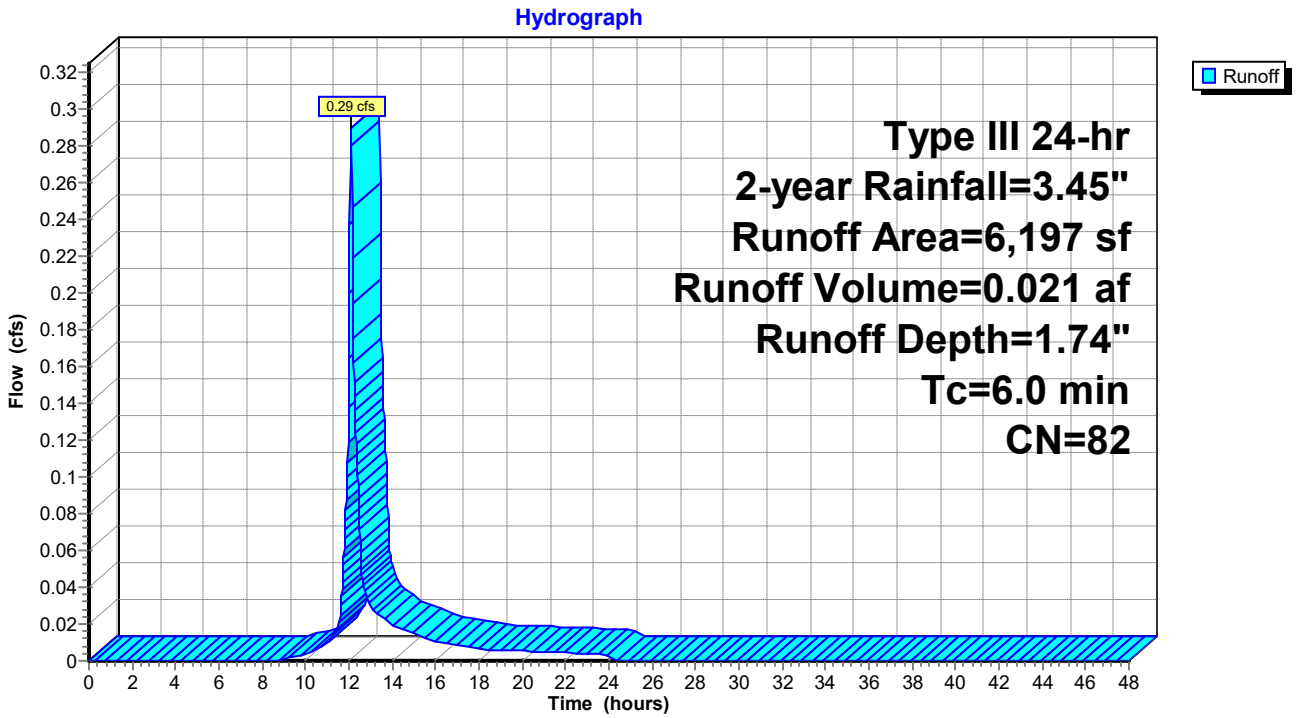
Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 1.74"
Routed to Pond 7P : STORMWATER MGMT PRACTICE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.45"

	Area (sf)	CN	Description
*	985	98	Impervious surfaces, HSG B
	2,650	61	>75% Grass cover, Good, HSG B
	2,562	98	Roofs, HSG B
	6,197	82	Weighted Average
	2,650		42.76% Pervious Area
	3,547		57.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: FDA-2 TO SW PRACTICE



Summary for Reach 8R: Reach-1-1

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Reach-1-2

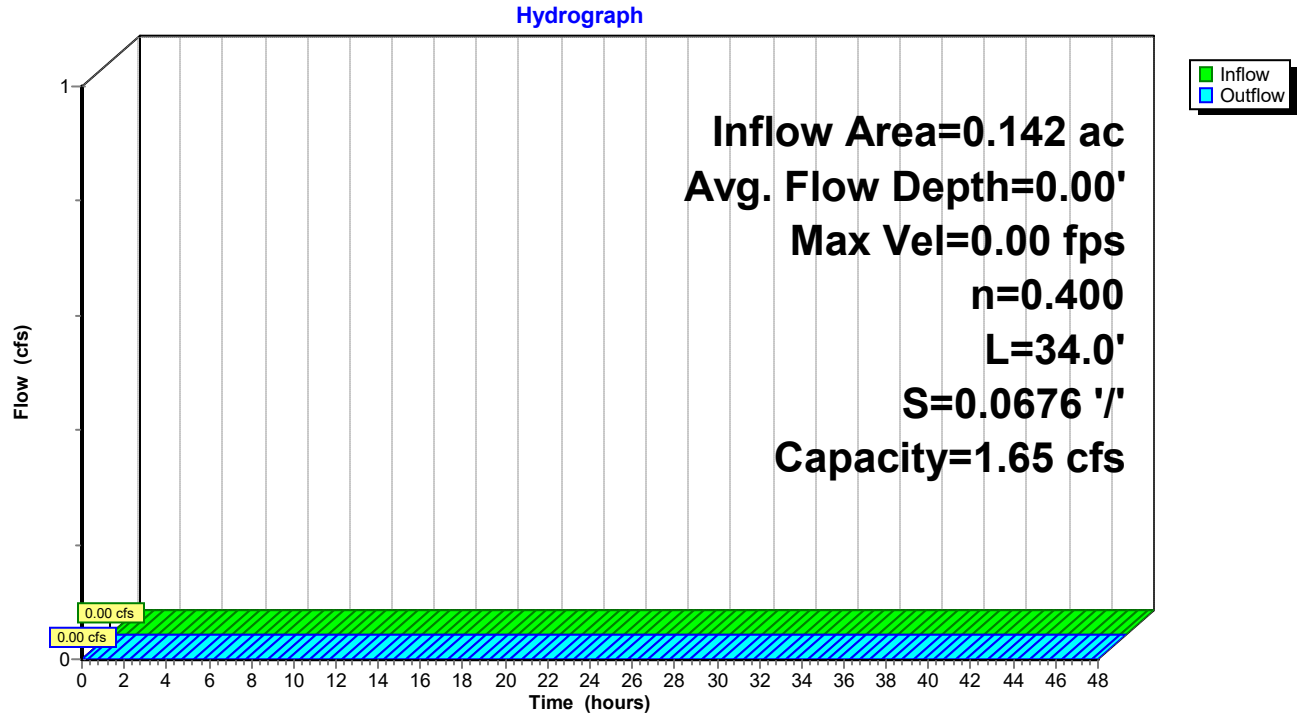
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 5.0 sf, Capacity= 1.65 cfs

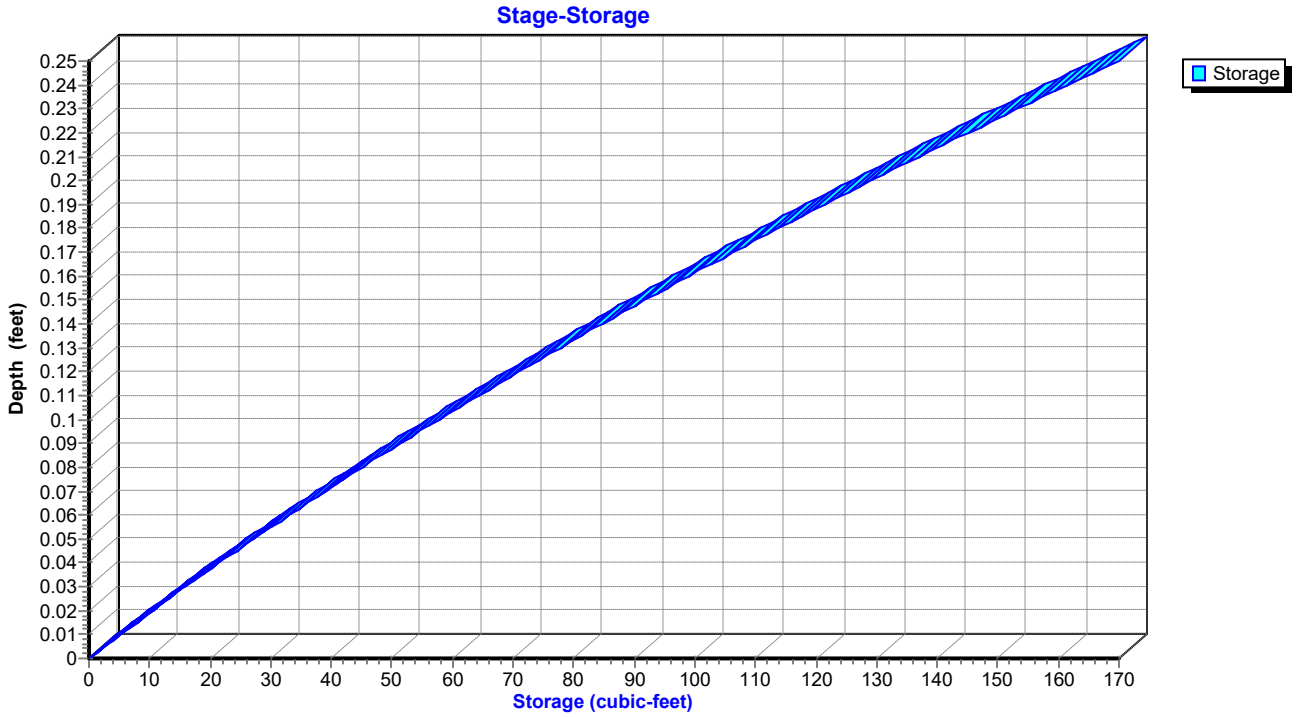
15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 25.00'
Length= 34.0' Slope= 0.0676 '/'
Inlet Invert= 15.50', Outlet Invert= 13.20'

‡

Reach 8R: Reach-1-1



Reach 8R: Reach-1-1



Summary for Reach 9R: Reach-1-2

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 10R : Reach-1-3

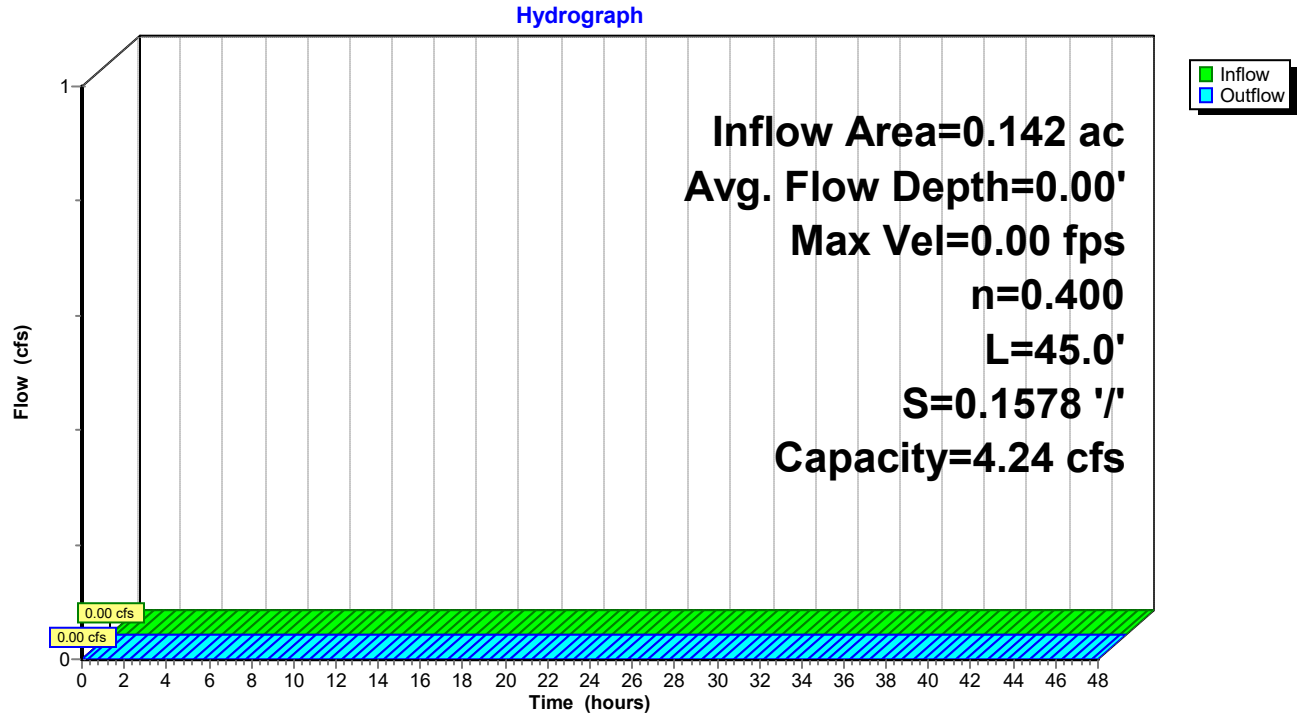
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 10.0 sf, Capacity= 4.24 cfs

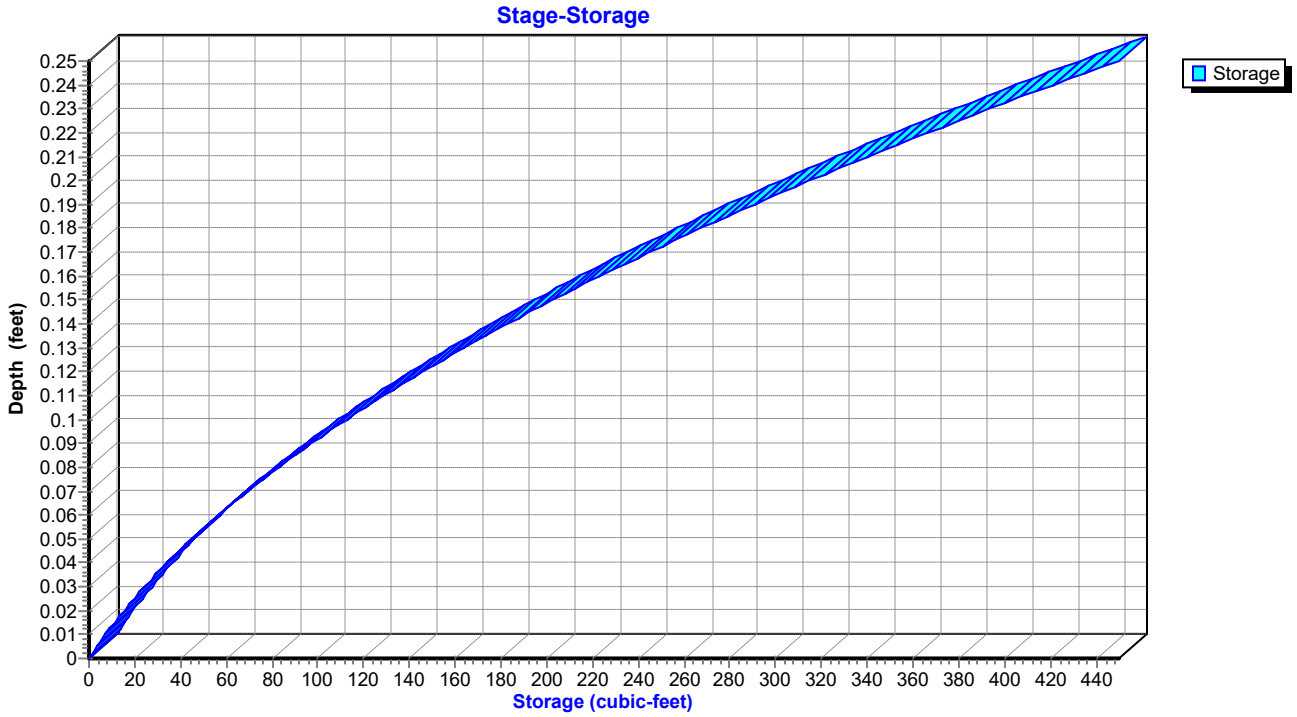
15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 65.00'
Length= 45.0' Slope= 0.1578 '/'
Inlet Invert= 13.10', Outlet Invert= 6.00'

‡

Reach 9R: Reach-1-2



Reach 9R: Reach-1-2



Summary for Reach 10R: Reach-1-3

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link 5L : DESIGN LINE

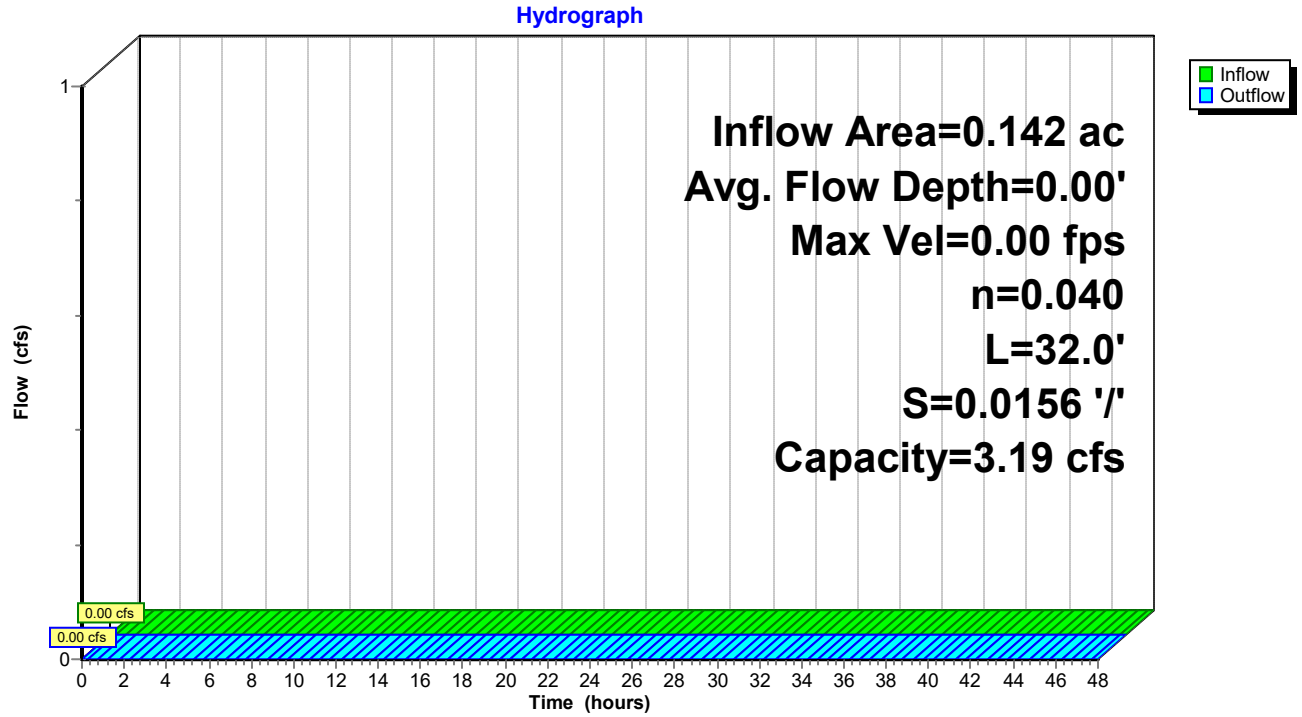
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.15' Flow Area= 2.7 sf, Capacity= 3.19 cfs

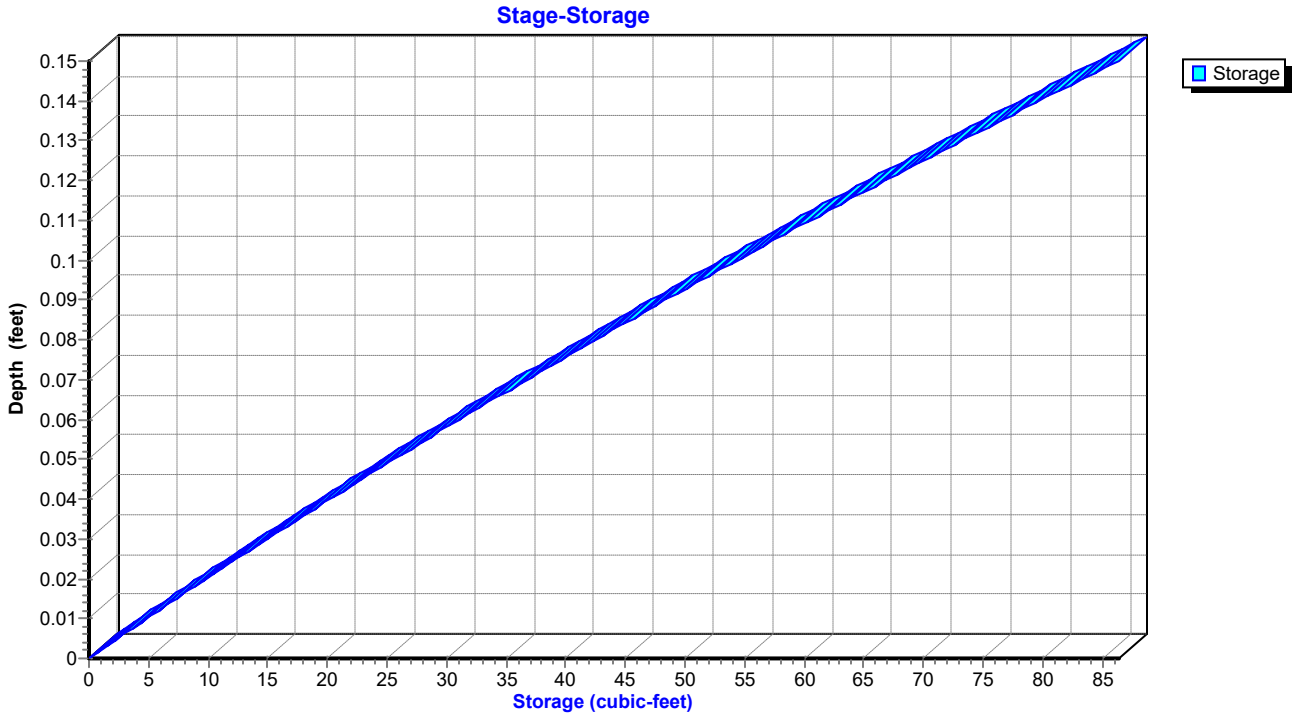
15.00' x 0.15' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 21.00'
Length= 32.0' Slope= 0.0156 '/'
Inlet Invert= 6.00', Outlet Invert= 5.50'

‡

Reach 10R: Reach-1-3



Reach 10R: Reach-1-3



Summary for Pond 7P: STORMWATER MGMT PRACTICE

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 1.74" for 2-year event
Inflow = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.06 cfs @ 12.06 hrs, Volume= 0.021 af, Atten= 80%, Lag= 0.0 min
Discarded = 0.06 cfs @ 12.06 hrs, Volume= 0.021 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 8R : Reach-1-1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 16.76' @ 12.54 hrs Surf.Area= 504 sf Storage= 266 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 32.8 min (865.5 - 832.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.10'	37 cf	**6.00'W x 10.50'L x 1.71'H Field A** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#2A	16.60'	14 cf	**Cultec FD C-4** Inside #1 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#3B	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field B** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#4B	16.50'	14 cf	**Cultec FD C-4** Inside #3 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#5C	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field C** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#6C	16.50'	14 cf	**Cultec FD C-4** Inside #5 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#7D	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field D** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#8D	16.25'	14 cf	**Cultec FD C-4** Inside #7 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#9E	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field E** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#10E	16.25'	14 cf	**Cultec FD C-4** Inside #9 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#11F	15.50'	37 cf	**6.00'W x 10.50'L x 1.71'H Field F** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#12F	16.00'	14 cf	**Cultec FD C-4** Inside #11 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

#13G	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field G** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#14G	15.75'	14 cf	**Cultec FD C-4** Inside #13 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#15H	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field H** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#16H	15.75'	14 cf	**Cultec FD C-4** Inside #15 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
		412 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard
Storage Group E created with Chamber Wizard
Storage Group F created with Chamber Wizard
Storage Group G created with Chamber Wizard
Storage Group H created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	15.25'	**5.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.06 cfs @ 12.06 hrs HW=16.15' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.25' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field A

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

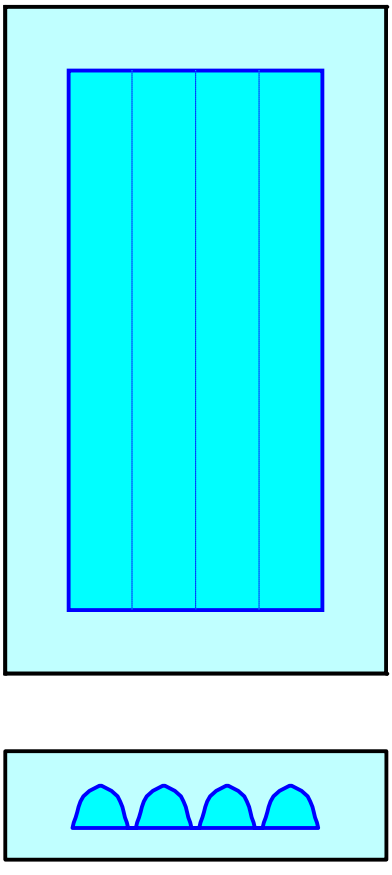
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field B

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

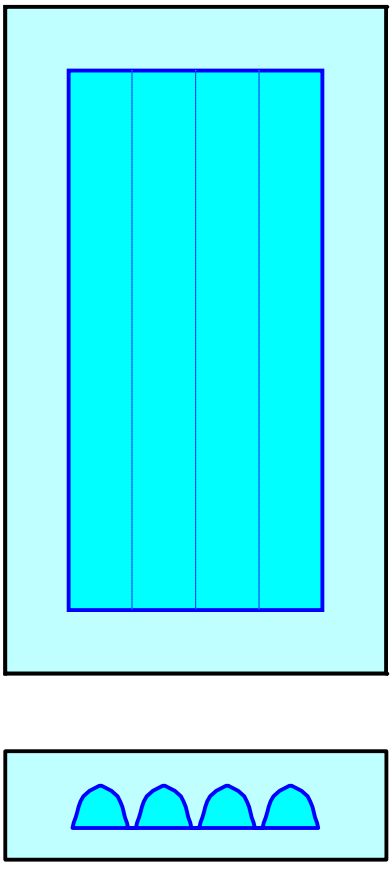
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field C

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

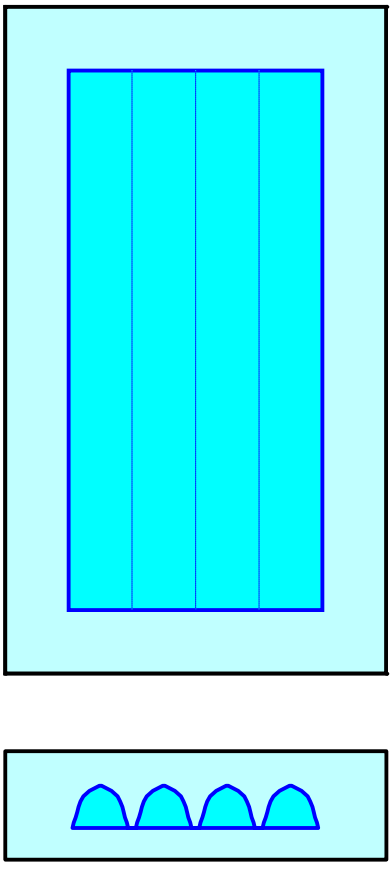
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field D

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

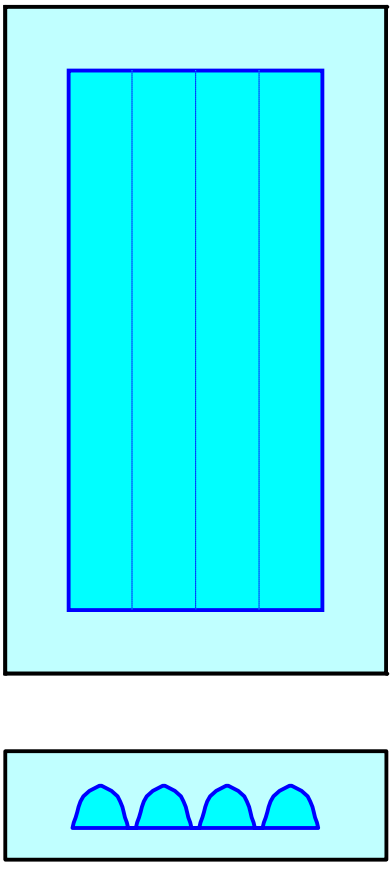
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field E

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

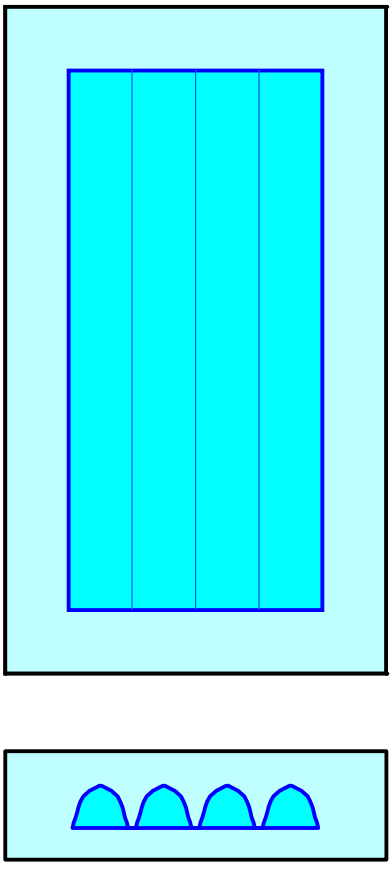
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field F

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

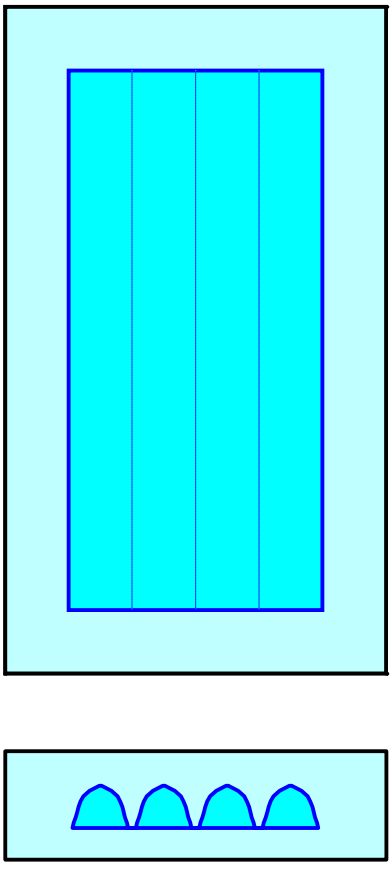
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field G

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

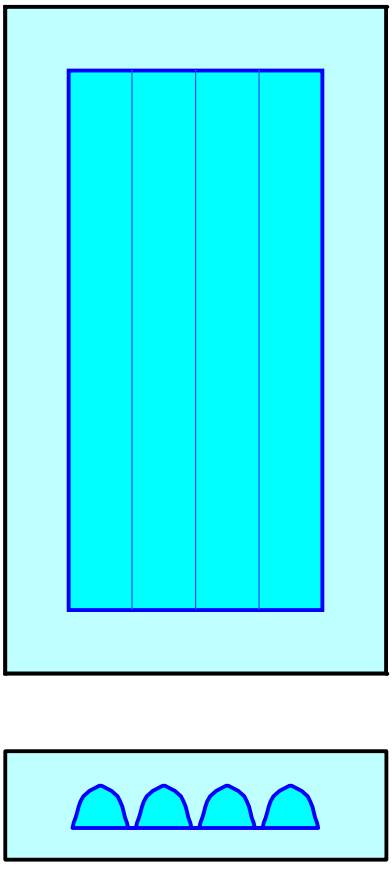
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field H

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

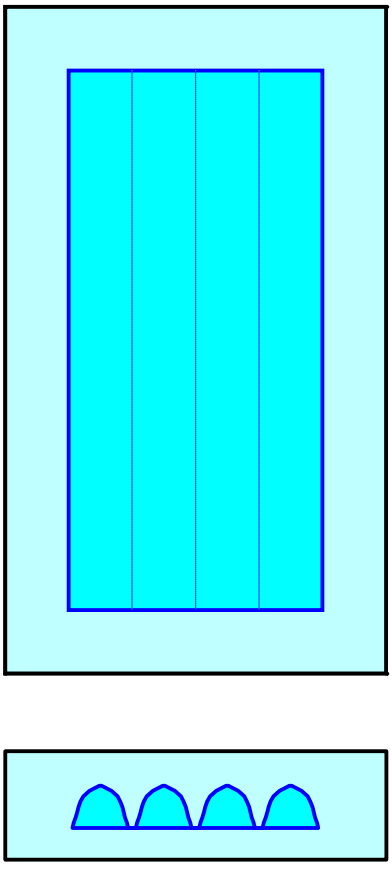
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

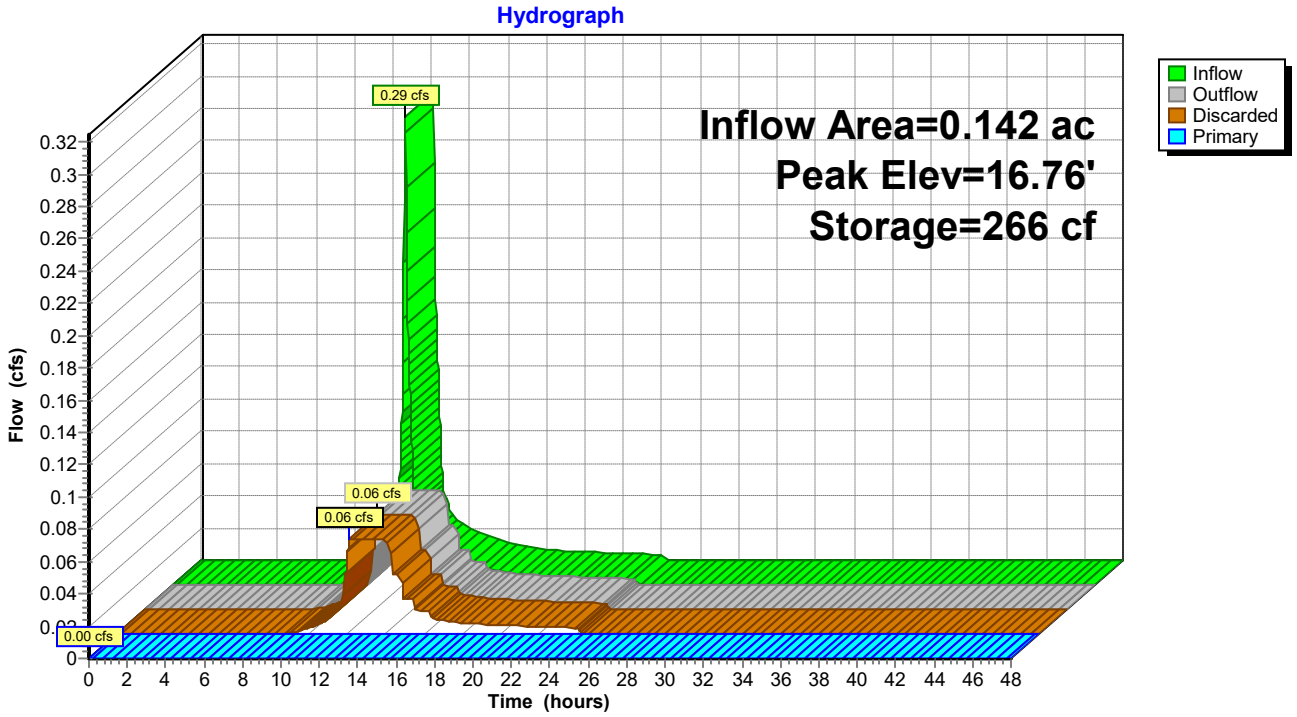
107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

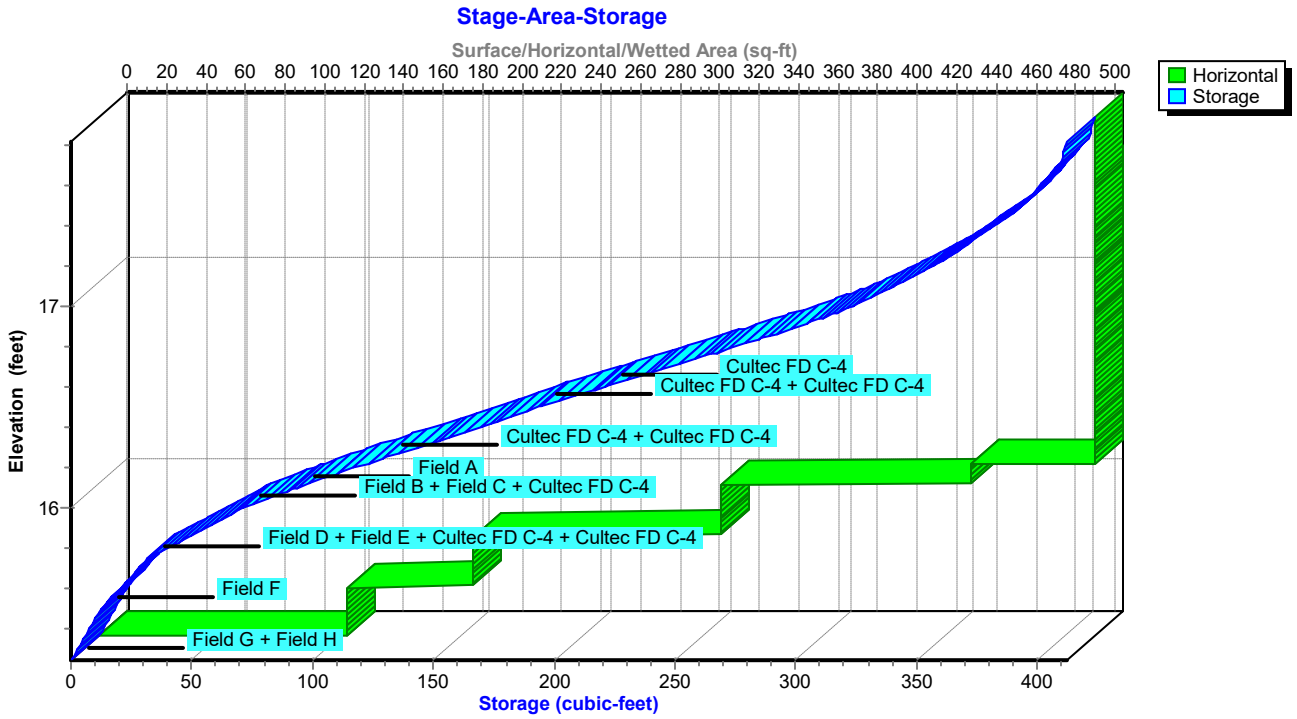
1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE



Pond 7P: STORMWATER MGMT PRACTICE

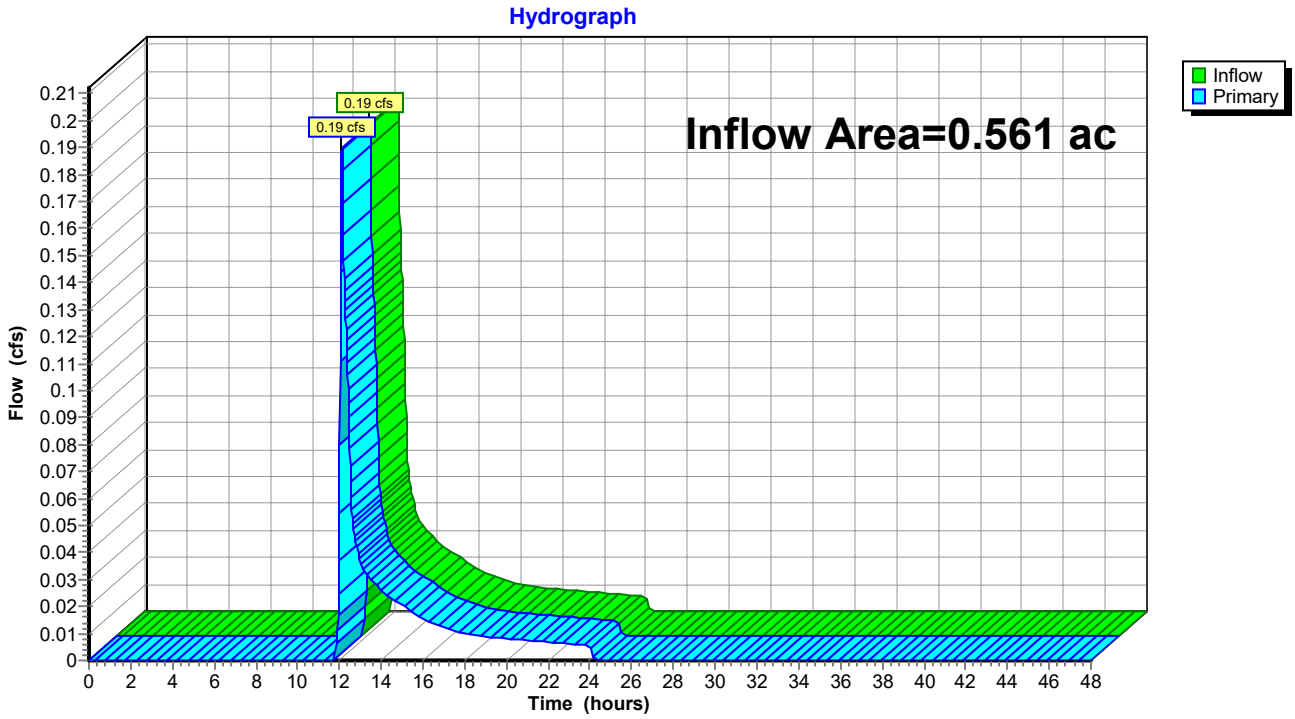


Summary for Link 5L: DESIGN LINE

Inflow Area = 0.561 ac, 16.80% Impervious, Inflow Depth = 0.41" for 2-year event
Inflow = 0.19 cfs @ 12.12 hrs, Volume= 0.019 af
Primary = 0.19 cfs @ 12.12 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 5L: DESIGN LINE



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=24,402 sf 0.00% Impervious Runoff Depth=1.37"
Flow Length=260' Tc=6.0 min CN=60 Runoff=0.81 cfs 0.064 af

Subcatchment 2S: FDA-1 TO DESIGN LINE Runoff Area=18,227 sf 3.06% Impervious Runoff Depth=1.44"
Flow Length=399' Tc=6.0 min CN=61 Runoff=0.65 cfs 0.050 af

Subcatchment 6S: FDA-2 TO SW PRACTICE Runoff Area=6,197 sf 57.24% Impervious Runoff Depth=3.19"
Tc=6.0 min CN=82 Runoff=0.53 cfs 0.038 af

Reach 8R: Reach-1-1 Avg. Flow Depth=0.08' Max Vel=0.17 fps Inflow=0.34 cfs 0.006 af
n=0.400 L=34.0' S=0.0676 '/' Capacity=1.65 cfs Outflow=0.23 cfs 0.006 af

Reach 9R: Reach-1-2 Avg. Flow Depth=0.05' Max Vel=0.18 fps Inflow=0.23 cfs 0.006 af
n=0.400 L=45.0' S=0.1578 '/' Capacity=4.24 cfs Outflow=0.19 cfs 0.006 af

Reach 10R: Reach-1-3 Avg. Flow Depth=0.03' Max Vel=0.42 fps Inflow=0.19 cfs 0.006 af
n=0.040 L=32.0' S=0.0156 '/' Capacity=3.19 cfs Outflow=0.19 cfs 0.006 af

Pond 7P: STORMWATER MGMT PRACTICE Peak Elev=17.39' Storage=382 cf Inflow=0.53 cfs 0.038 af
Discarded=0.06 cfs 0.032 af Primary=0.34 cfs 0.006 af Outflow=0.40 cfs 0.038 af

Link 5L: DESIGN LINE Inflow=0.65 cfs 0.056 af
Primary=0.65 cfs 0.056 af

Total Runoff Area = 1.121 ac Runoff Volume = 0.152 af Average Runoff Depth = 1.63"
91.59% Pervious = 1.027 ac 8.41% Impervious = 0.094 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE

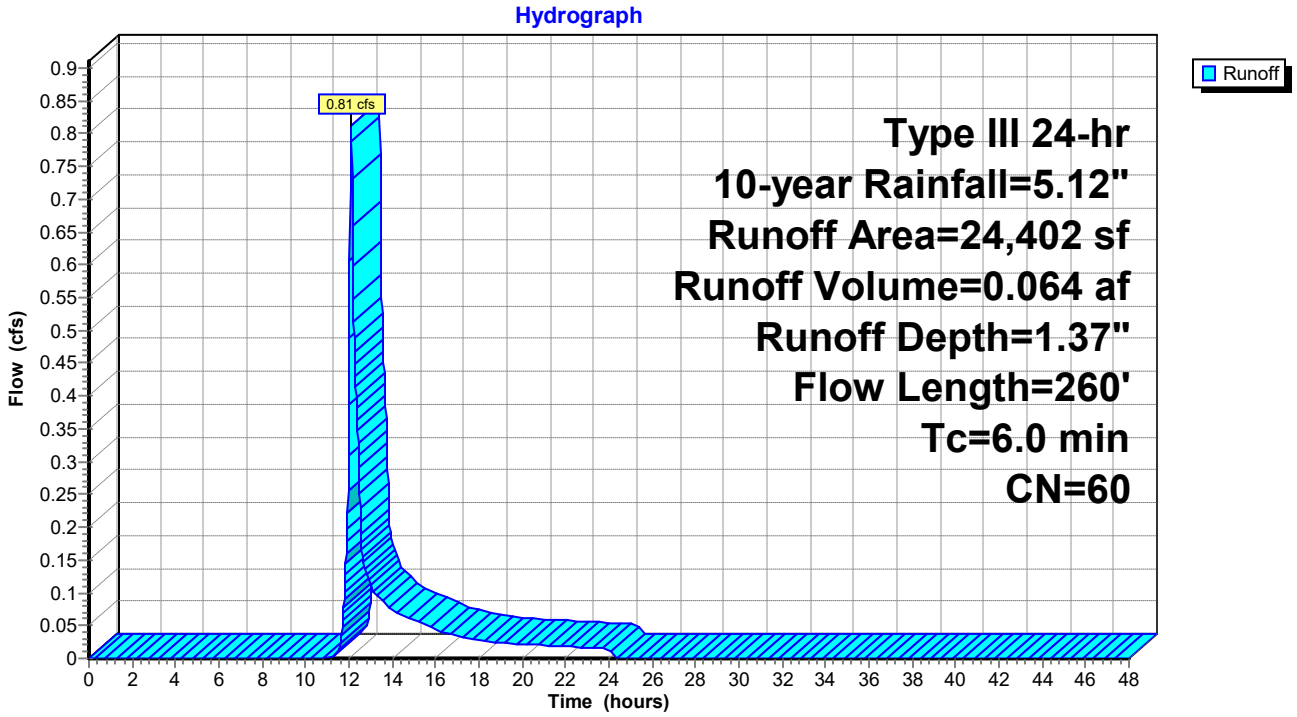
Runoff = 0.81 cfs @ 12.10 hrs, Volume= 0.064 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-year Rainfall=5.12"

Area (sf)	CN	Description
5,028	73	Brush, Good, HSG D
19,374	56	Brush, Fair, HSG B
24,402	60	Weighted Average
24,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	31	0.0516	0.14		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.45"
0.2	36	0.2000	3.13		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.2	44	0.1954	3.09		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	70	0.0786	1.96		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.9					**Direct Entry, Tc Factor**
6.0	260	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE



Summary for Subcatchment 2S: FDA-1 TO DESIGN LINE

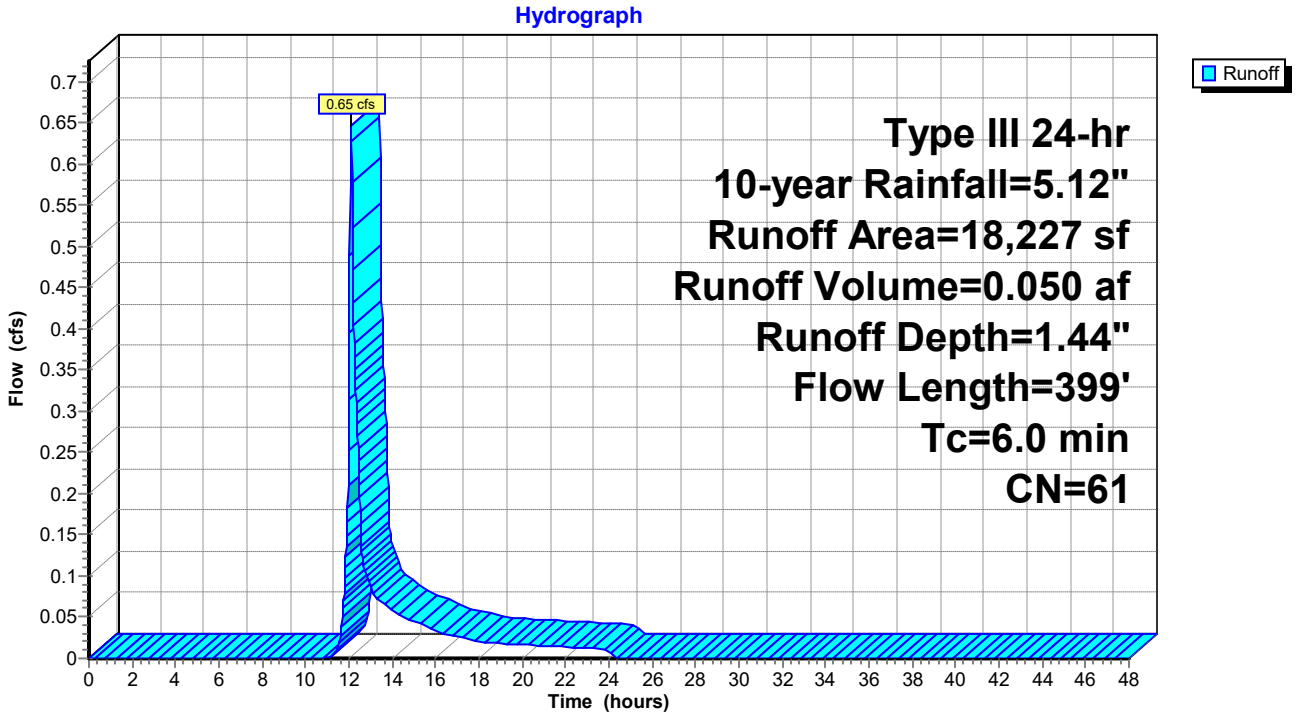
Runoff = 0.65 cfs @ 12.10 hrs, Volume= 0.050 af, Depth= 1.44"
Routed to Link 5L : DESIGN LINE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-year Rainfall=5.12"

	Area (sf)	CN	Description
	5,028	73	Brush, Good, HSG D
	5,993	48	Brush, Good, HSG B
	5,856	61	>75% Grass cover, Good, HSG B
*	793	61	Deck (use lawn for under deck), HSG B
*	392	98	Pool, HSG B
*	117	98	Stepping Stones around Pool, HSG B
*	48	98	Roof, HSG B
	18,227	61	Weighted Average
	17,670		96.94% Pervious Area
	557		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	35	0.0657	0.16		**Sheet Flow, A-B**
					Grass: Dense n= 0.240 P2= 3.45"
1.0	220	0.0659	3.85		**Shallow Concentrated Flow, B-C**
					Grassed Waterway Kv= 15.0 fps
0.3	65	0.0769	4.16		**Shallow Concentrated Flow, C-D**
					Grassed Waterway Kv= 15.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F**
					Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G**
					Grassed Waterway Kv= 15.0 fps
0.6					**Direct Entry, Tc Factor**
6.0	399	Total			

Subcatchment 2S: FDA-1 TO DESIGN LINE



Summary for Subcatchment 6S: FDA-2 TO SW PRACTICE

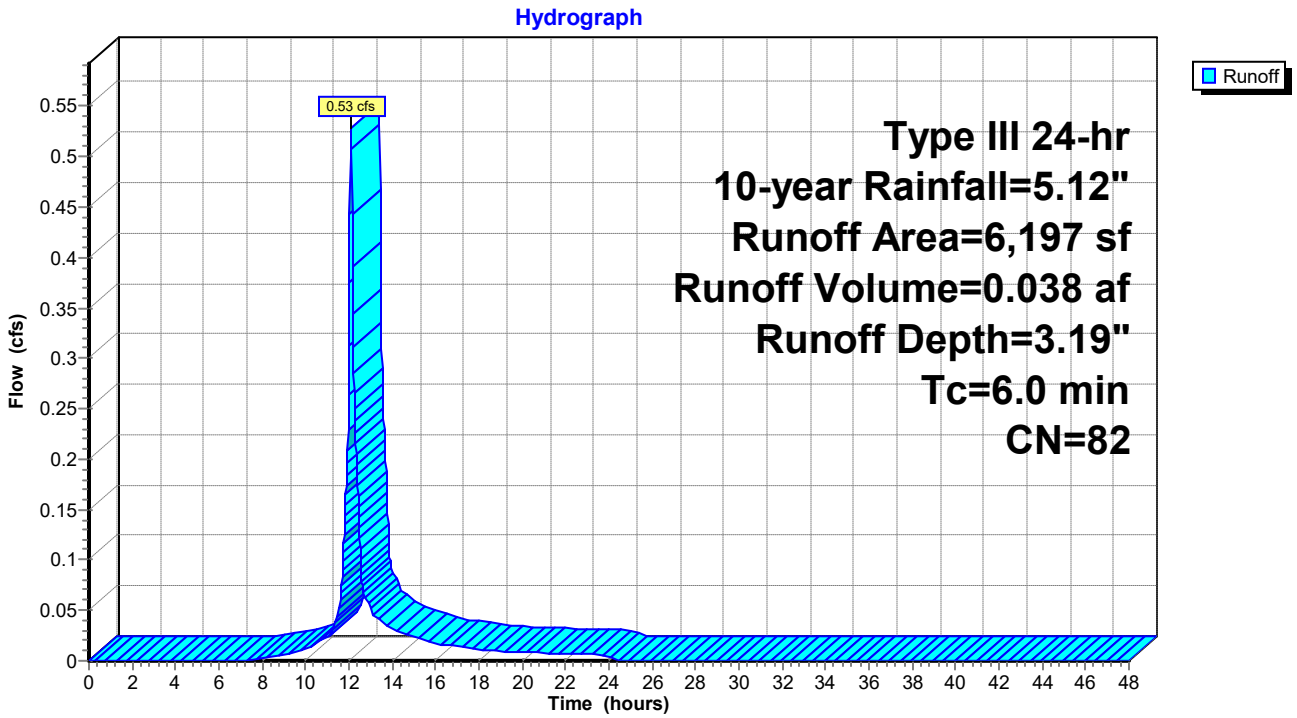
Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 3.19"
Routed to Pond 7P : STORMWATER MGMT PRACTICE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-year Rainfall=5.12"

	Area (sf)	CN	Description
*	985	98	Impervious surfaces, HSG B
	2,650	61	>75% Grass cover, Good, HSG B
	2,562	98	Roofs, HSG B
	6,197	82	Weighted Average
	2,650		42.76% Pervious Area
	3,547		57.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: FDA-2 TO SW PRACTICE



Summary for Reach 8R: Reach-1-1

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.50" for 10-year event
Inflow = 0.34 cfs @ 12.17 hrs, Volume= 0.006 af
Outflow = 0.23 cfs @ 12.29 hrs, Volume= 0.006 af, Atten= 33%, Lag= 7.2 min
Routed to Reach 9R : Reach-1-2

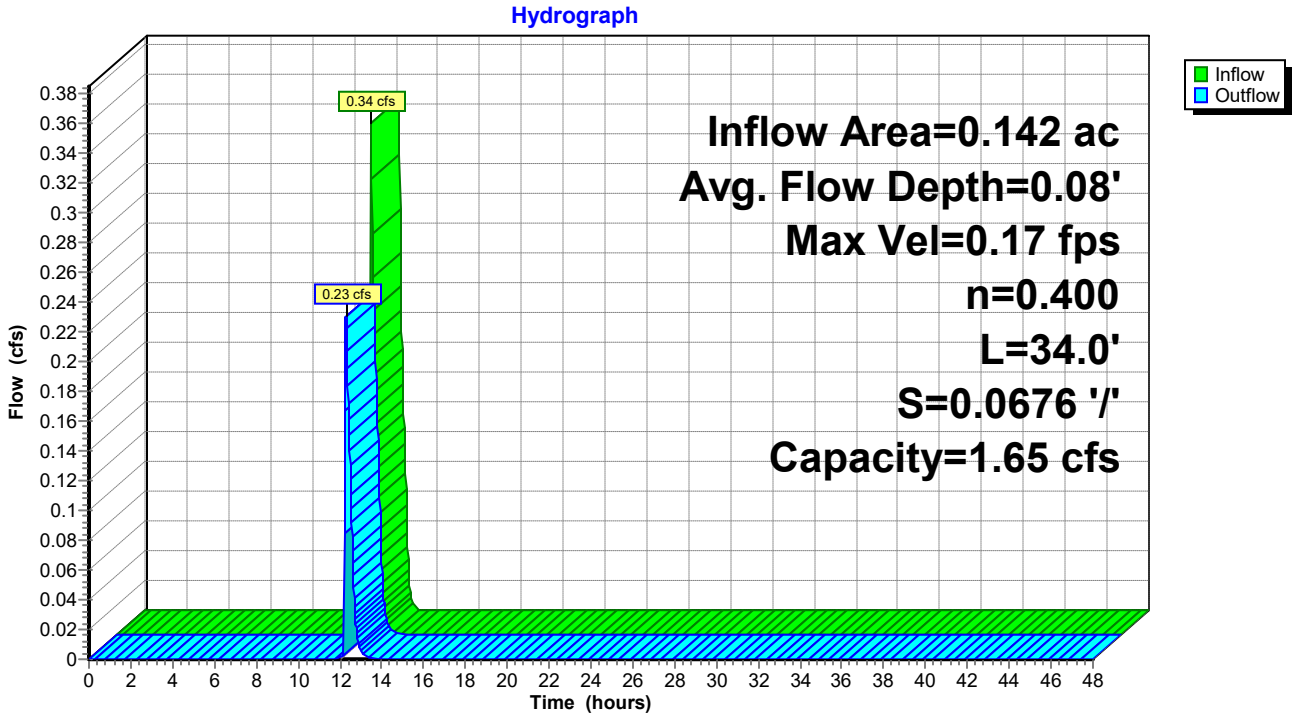
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.17 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.03 fps, Avg. Travel Time= 16.3 min

Peak Storage= 46 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 18.25'
Bank-Full Depth= 0.25' Flow Area= 5.0 sf, Capacity= 1.65 cfs

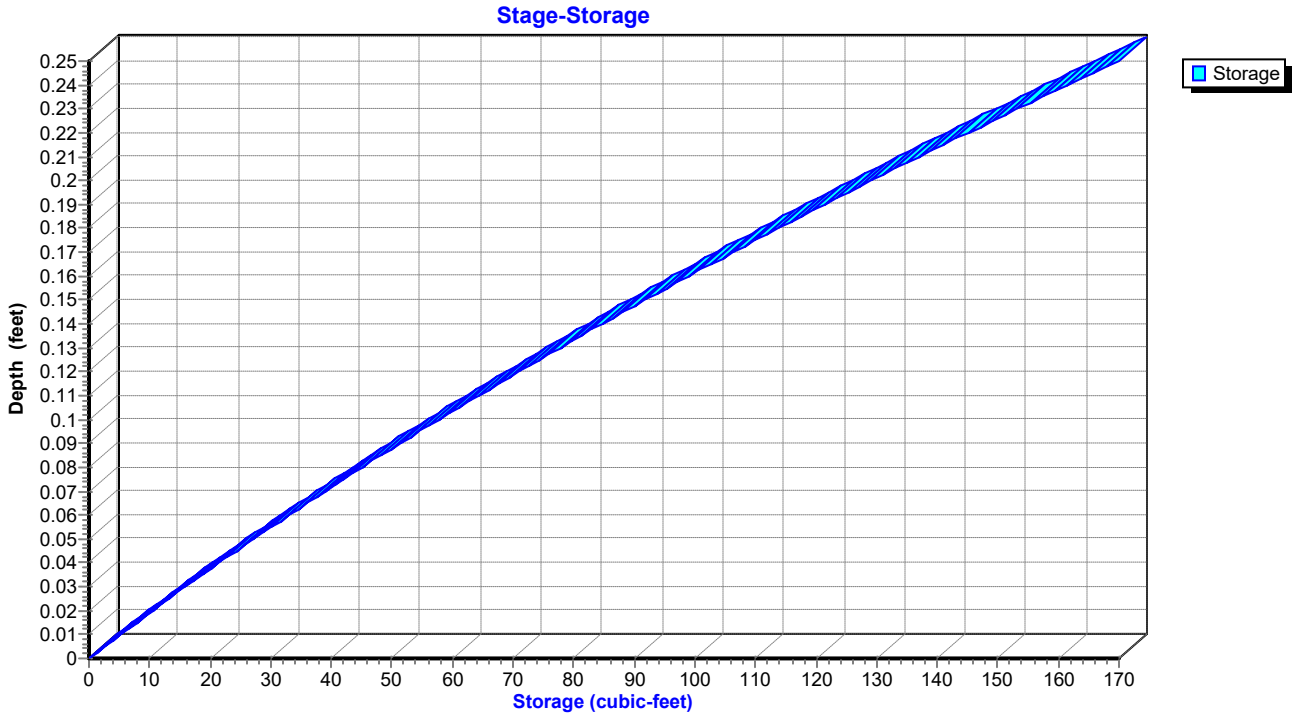
15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 25.00'
Length= 34.0' Slope= 0.0676 '/'
Inlet Invert= 15.50', Outlet Invert= 13.20'

‡

Reach 8R: Reach-1-1



Reach 8R: Reach-1-1



Summary for Reach 9R: Reach-1-2

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.50" for 10-year event
Inflow = 0.23 cfs @ 12.29 hrs, Volume= 0.006 af
Outflow = 0.19 cfs @ 12.44 hrs, Volume= 0.006 af, Atten= 18%, Lag= 9.2 min
Routed to Reach 10R : Reach-1-3

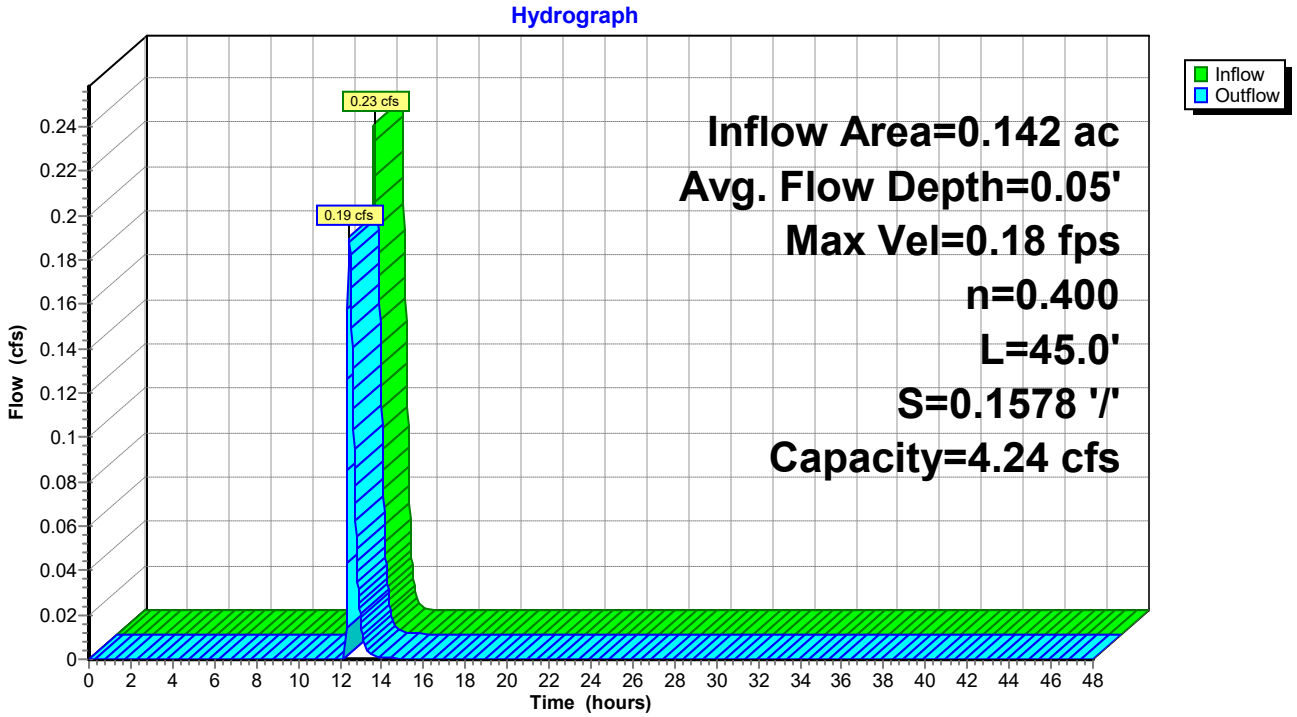
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.18 fps, Min. Travel Time= 4.2 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 16.8 min

Peak Storage= 48 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.05' , Surface Width= 25.56'
Bank-Full Depth= 0.25' Flow Area= 10.0 sf, Capacity= 4.24 cfs

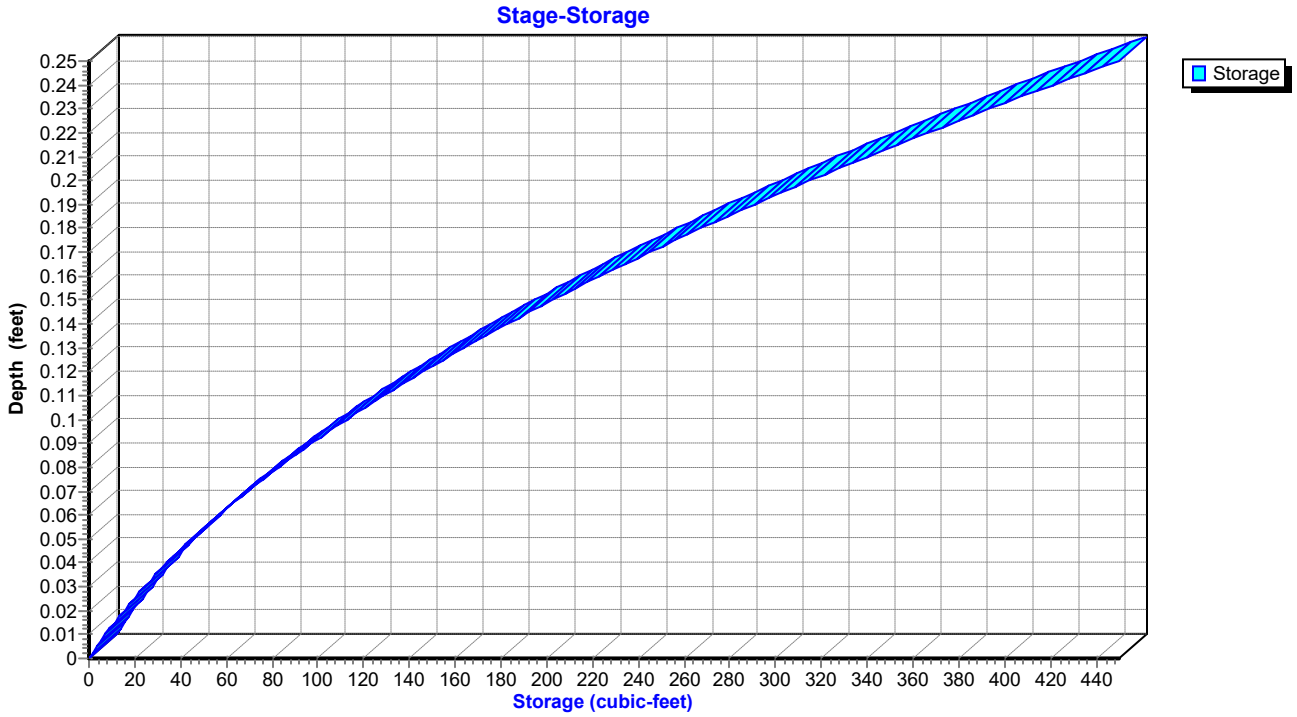
15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 65.00'
Length= 45.0' Slope= 0.1578 '/'
Inlet Invert= 13.10', Outlet Invert= 6.00'

‡

Reach 9R: Reach-1-2



Reach 9R: Reach-1-2



Summary for Reach 10R: Reach-1-3

[61] Hint: Exceeded Reach 9R outlet invert by 0.03' @ 12.46 hrs

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 0.50" for 10-year event
Inflow = 0.19 cfs @ 12.44 hrs, Volume= 0.006 af
Outflow = 0.19 cfs @ 12.48 hrs, Volume= 0.006 af, Atten= 1%, Lag= 2.2 min
Routed to Link 5L : DESIGN LINE

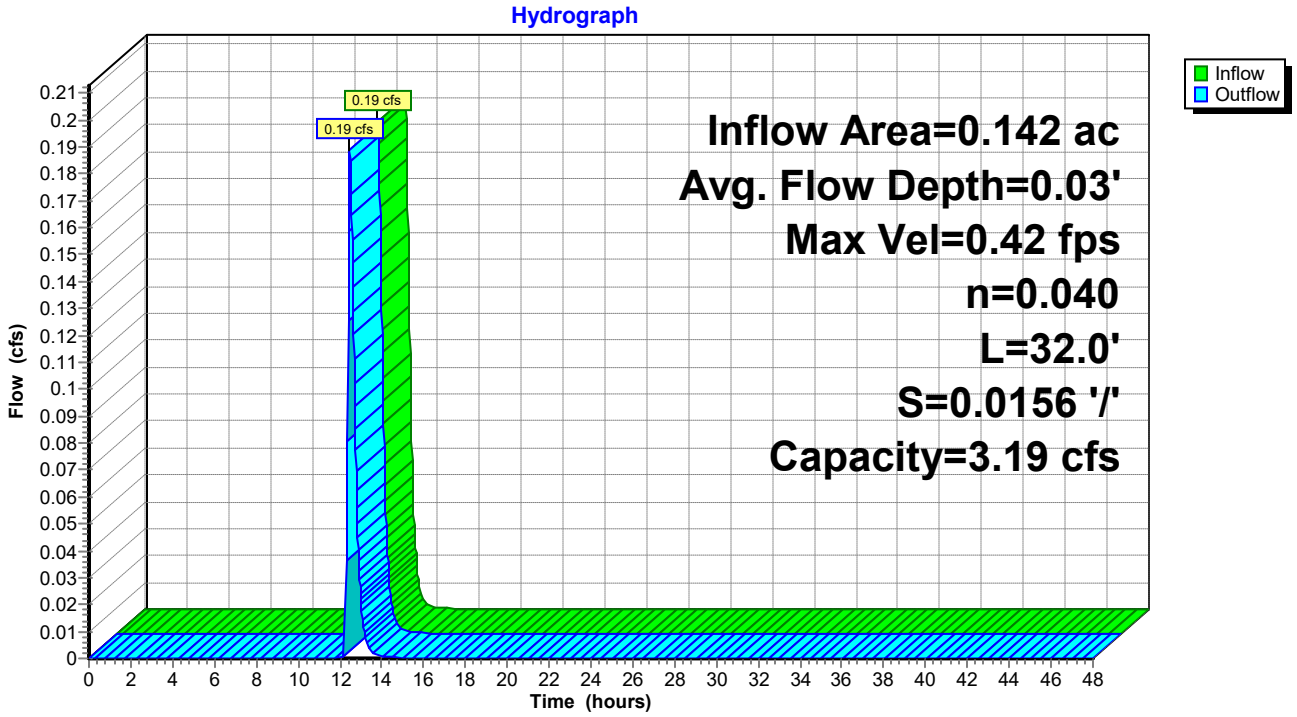
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.42 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 5.2 min

Peak Storage= 14 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 16.14'
Bank-Full Depth= 0.15' Flow Area= 2.7 sf, Capacity= 3.19 cfs

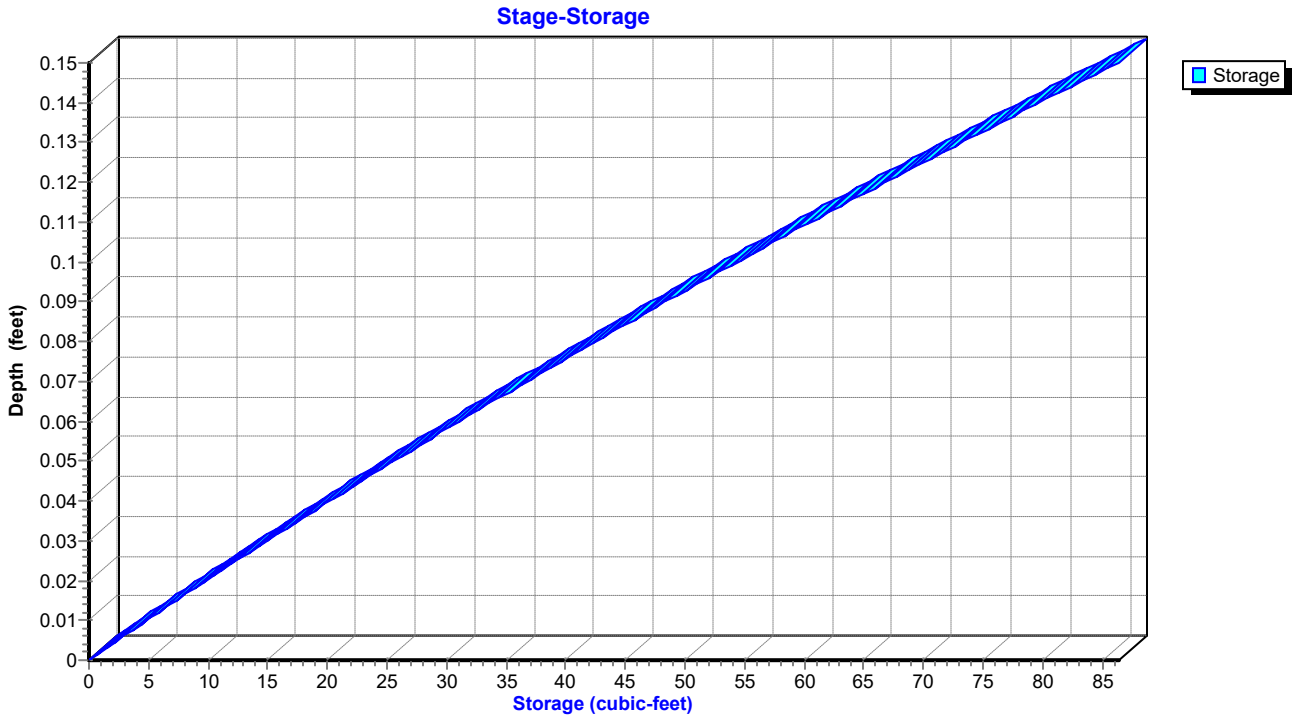
15.00' x 0.15' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 21.00'
Length= 32.0' Slope= 0.0156 '/'
Inlet Invert= 6.00', Outlet Invert= 5.50'

‡

Reach 10R: Reach-1-3



Reach 10R: Reach-1-3



Summary for Pond 7P: STORMWATER MGMT PRACTICE

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 3.19" for 10-year event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.40 cfs @ 12.17 hrs, Volume= 0.038 af, Atten= 24%, Lag= 4.8 min
Discarded = 0.06 cfs @ 11.86 hrs, Volume= 0.032 af
Primary = 0.34 cfs @ 12.17 hrs, Volume= 0.006 af
Routed to Reach 8R : Reach-1-1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 17.39' @ 12.17 hrs Surf.Area= 504 sf Storage= 382 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 42.2 min (857.5 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.10'	37 cf	**6.00'W x 10.50'L x 1.71'H Field A** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#2A	16.60'	14 cf	**Cultec FD C-4** Inside #1 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#3B	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field B** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#4B	16.50'	14 cf	**Cultec FD C-4** Inside #3 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#5C	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field C** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#6C	16.50'	14 cf	**Cultec FD C-4** Inside #5 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#7D	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field D** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#8D	16.25'	14 cf	**Cultec FD C-4** Inside #7 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#9E	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field E** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#10E	16.25'	14 cf	**Cultec FD C-4** Inside #9 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#11F	15.50'	37 cf	**6.00'W x 10.50'L x 1.71'H Field F** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#12F	16.00'	14 cf	**Cultec FD C-4** Inside #11 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

#13G	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field G** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#14G	15.75'	14 cf	**Cultec FD C-4** Inside #13 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#15H	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field H** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#16H	15.75'	14 cf	**Cultec FD C-4** Inside #15 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
		412 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard
Storage Group E created with Chamber Wizard
Storage Group F created with Chamber Wizard
Storage Group G created with Chamber Wizard
Storage Group H created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	15.25'	**5.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.06 cfs @ 11.86 hrs HW=16.11' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.32 cfs @ 12.17 hrs HW=17.38' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 0.32 cfs @ 1.18 fps)

Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field A

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

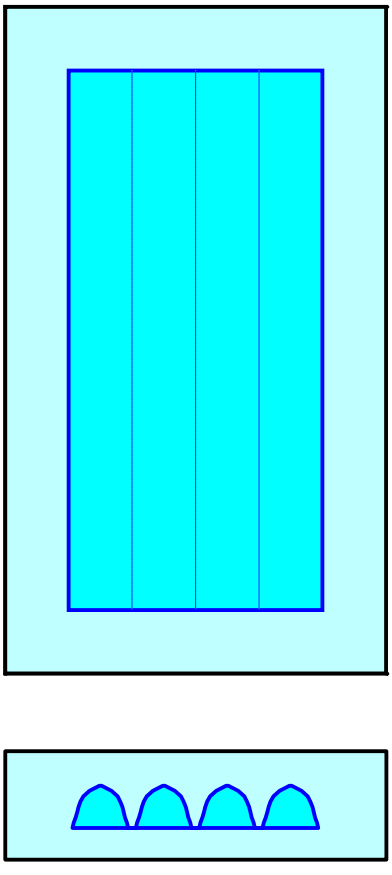
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field B

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

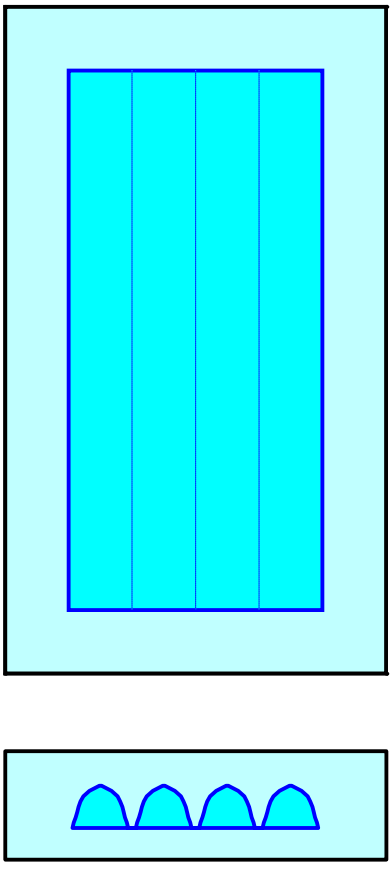
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field C

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

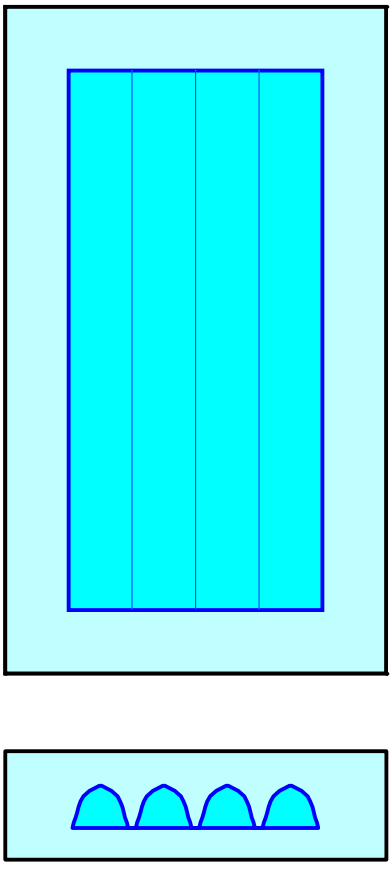
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field D

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

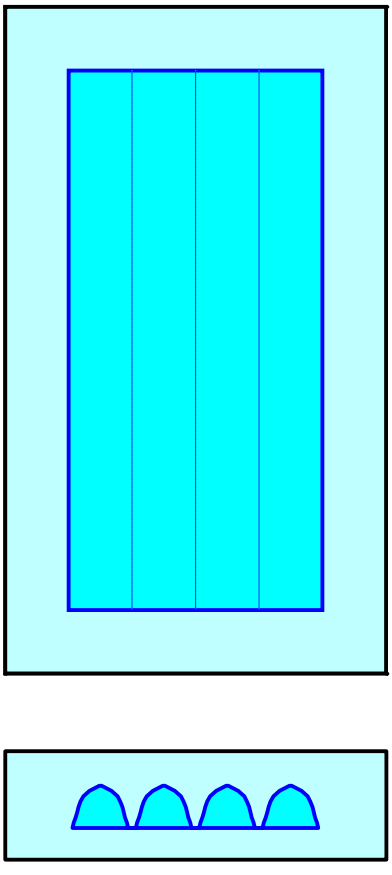
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field E

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

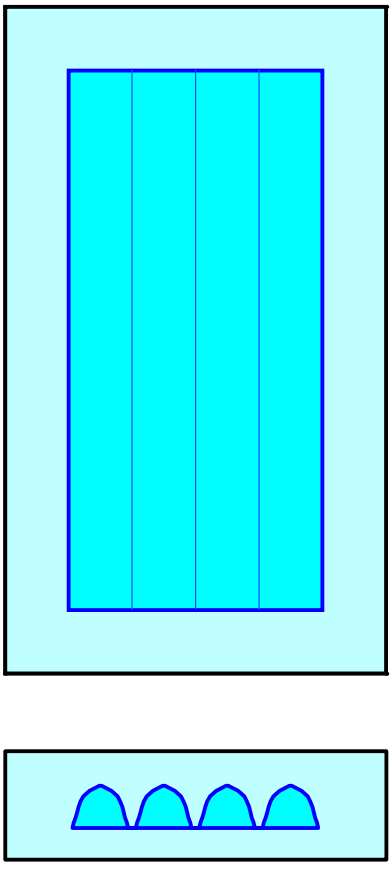
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field F

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

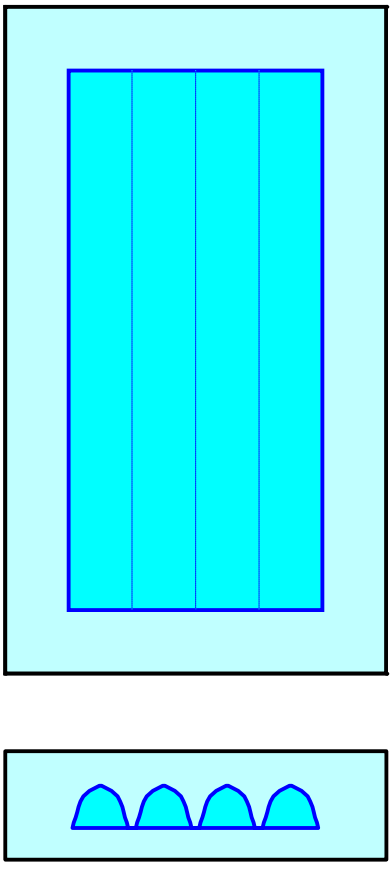
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field G

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

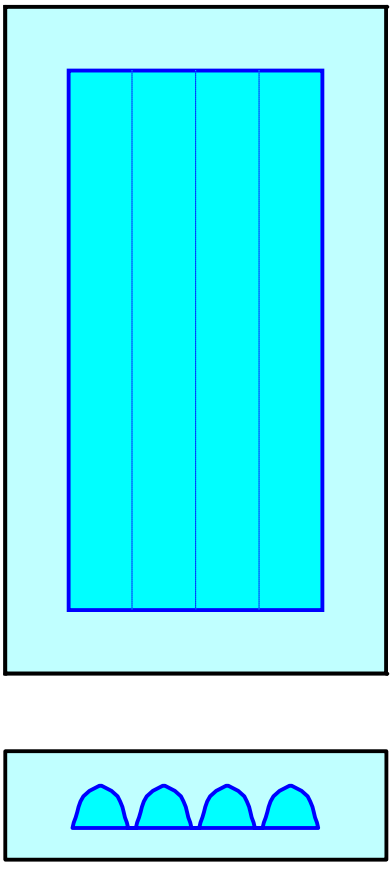
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field H

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

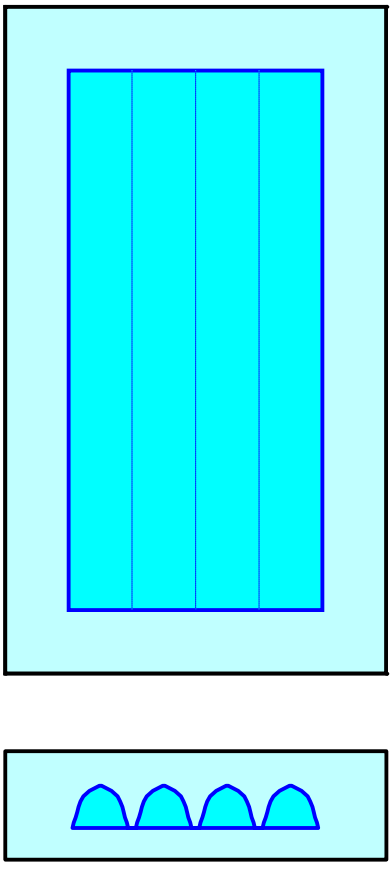
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

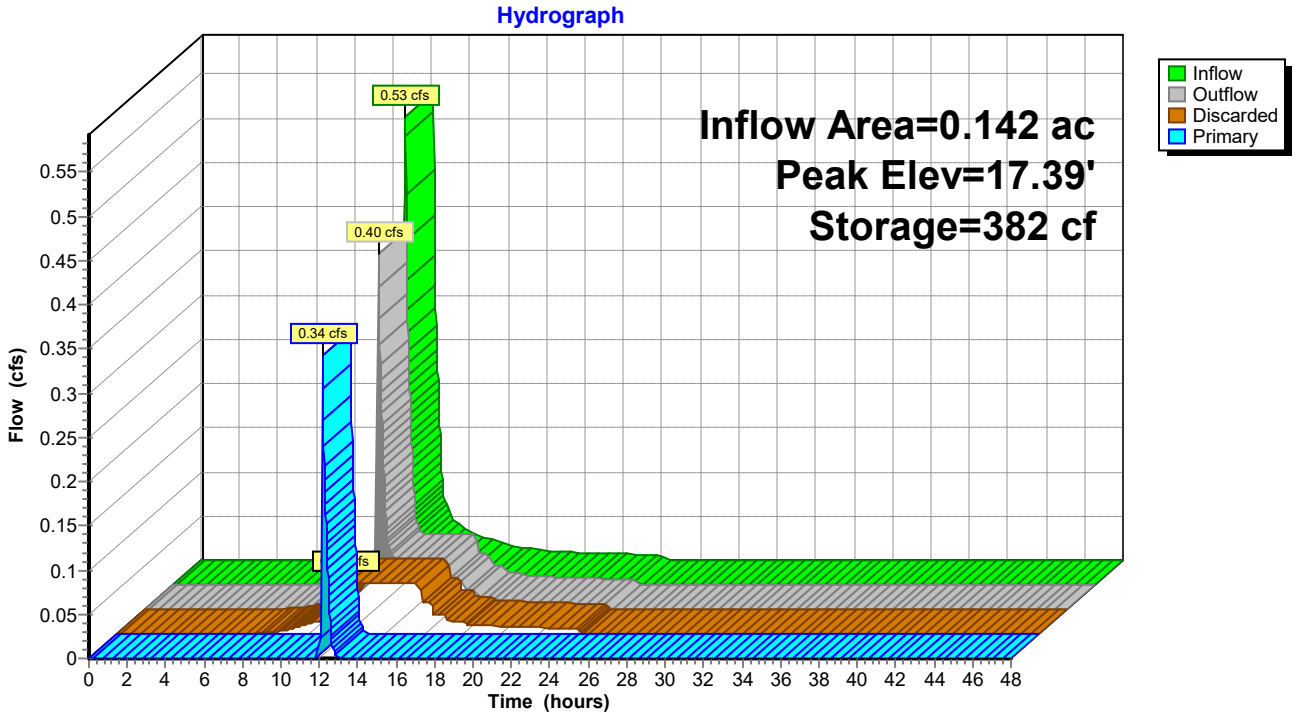
107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

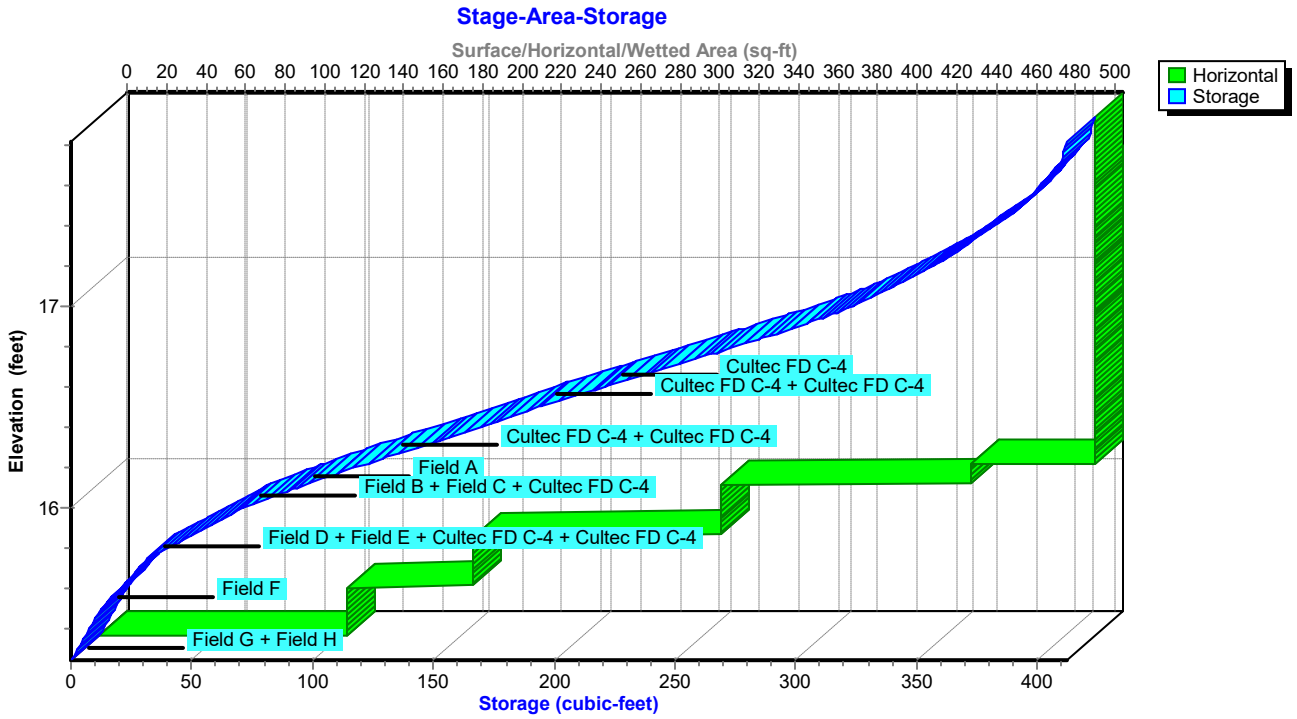
1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE



Pond 7P: STORMWATER MGMT PRACTICE

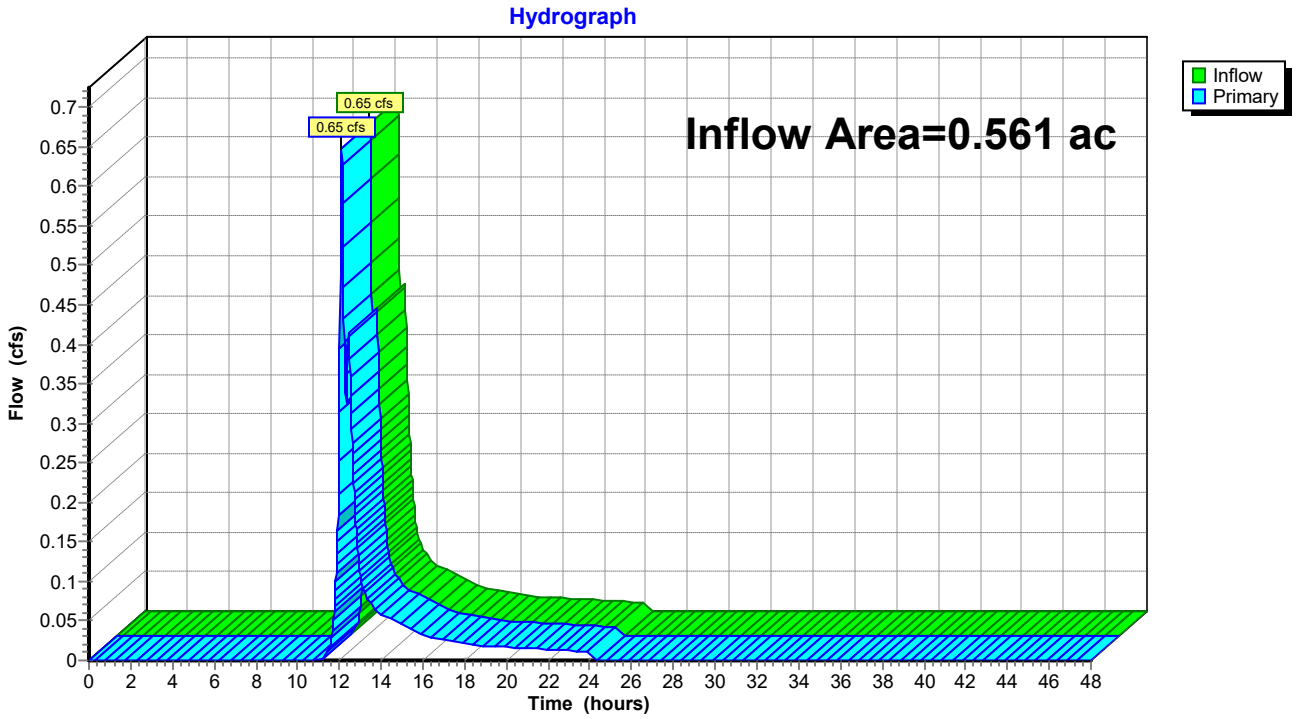


Summary for Link 5L: DESIGN LINE

Inflow Area = 0.561 ac, 16.80% Impervious, Inflow Depth = 1.20" for 10-year event
Inflow = 0.65 cfs @ 12.10 hrs, Volume= 0.056 af
Primary = 0.65 cfs @ 12.10 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 5L: DESIGN LINE



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=24,402 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=260' Tc=6.0 min CN=60 Runoff=1.38 cfs 0.102 af

Subcatchment 2S: FDA-1 TO DESIGN LINE Runoff Area=18,227 sf 3.06% Impervious Runoff Depth=2.28"
Flow Length=399' Tc=6.0 min CN=61 Runoff=1.08 cfs 0.080 af

Subcatchment 6S: FDA-2 TO SW PRACTICE Runoff Area=6,197 sf 57.24% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=82 Runoff=0.72 cfs 0.052 af

Reach 8R: Reach-1-1 Avg. Flow Depth=0.14' Max Vel=0.23 fps Inflow=0.65 cfs 0.013 af
n=0.400 L=34.0' S=0.0676 '/' Capacity=1.65 cfs Outflow=0.56 cfs 0.013 af

Reach 9R: Reach-1-2 Avg. Flow Depth=0.08' Max Vel=0.23 fps Inflow=0.56 cfs 0.013 af
n=0.400 L=45.0' S=0.1578 '/' Capacity=4.24 cfs Outflow=0.46 cfs 0.013 af

Reach 10R: Reach-1-3 Avg. Flow Depth=0.05' Max Vel=0.59 fps Inflow=0.46 cfs 0.013 af
n=0.040 L=32.0' S=0.0156 '/' Capacity=3.19 cfs Outflow=0.45 cfs 0.013 af

Pond 7P: STORMWATER MGMT PRACTICE Peak Elev=17.46' Storage=391 cf Inflow=0.72 cfs 0.052 af
Discarded=0.06 cfs 0.038 af Primary=0.65 cfs 0.013 af Outflow=0.71 cfs 0.052 af

Link 5L: DESIGN LINE Inflow=1.08 cfs 0.093 af
Primary=1.08 cfs 0.093 af

Total Runoff Area = 1.121 ac Runoff Volume = 0.234 af Average Runoff Depth = 2.50"
91.59% Pervious = 1.027 ac 8.41% Impervious = 0.094 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE

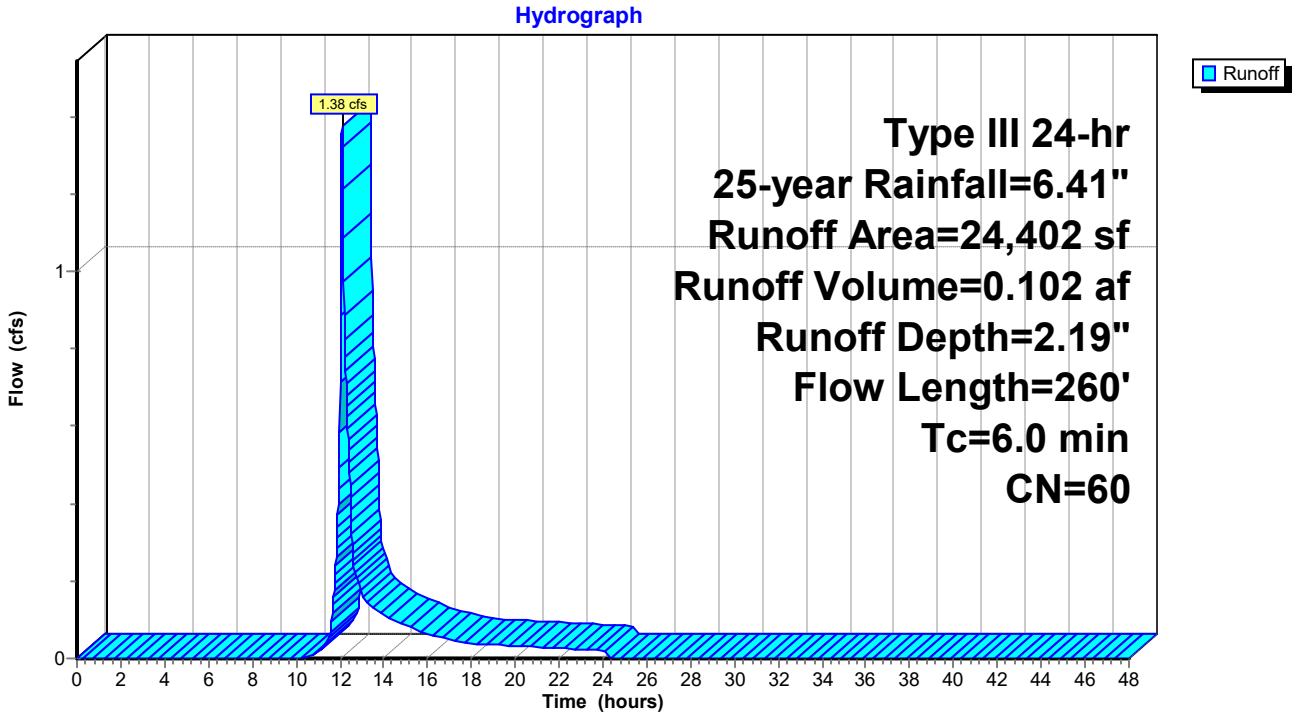
Runoff = 1.38 cfs @ 12.10 hrs, Volume= 0.102 af, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=6.41"

Area (sf)	CN	Description
5,028	73	Brush, Good, HSG D
19,374	56	Brush, Fair, HSG B
24,402	60	Weighted Average
24,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	31	0.0516	0.14		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.45"
0.2	36	0.2000	3.13		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.2	44	0.1954	3.09		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	70	0.0786	1.96		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.9					**Direct Entry, Tc Factor**
6.0	260	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE



Summary for Subcatchment 2S: FDA-1 TO DESIGN LINE

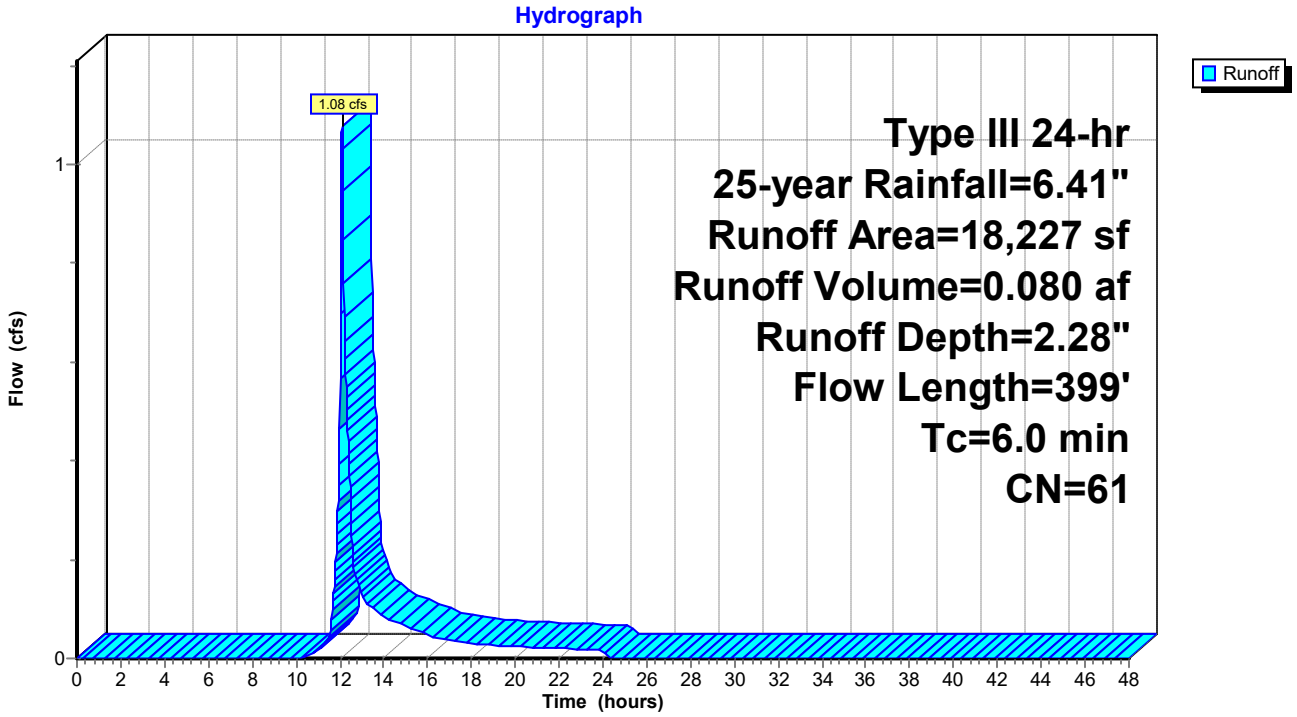
Runoff = 1.08 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 2.28"
Routed to Link 5L : DESIGN LINE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=6.41"

	Area (sf)	CN	Description
	5,028	73	Brush, Good, HSG D
	5,993	48	Brush, Good, HSG B
	5,856	61	>75% Grass cover, Good, HSG B
*	793	61	Deck (use lawn for under deck), HSG B
*	392	98	Pool, HSG B
*	117	98	Stepping Stones around Pool, HSG B
*	48	98	Roof, HSG B
	18,227	61	Weighted Average
	17,670		96.94% Pervious Area
	557		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	35	0.0657	0.16		**Sheet Flow, A-B**
					Grass: Dense n= 0.240 P2= 3.45"
1.0	220	0.0659	3.85		**Shallow Concentrated Flow, B-C**
					Grassed Waterway Kv= 15.0 fps
0.3	65	0.0769	4.16		**Shallow Concentrated Flow, C-D**
					Grassed Waterway Kv= 15.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F**
					Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G**
					Grassed Waterway Kv= 15.0 fps
0.6					**Direct Entry, Tc Factor**
6.0	399	Total			

Subcatchment 2S: FDA-1 TO DESIGN LINE



Summary for Subcatchment 6S: FDA-2 TO SW PRACTICE

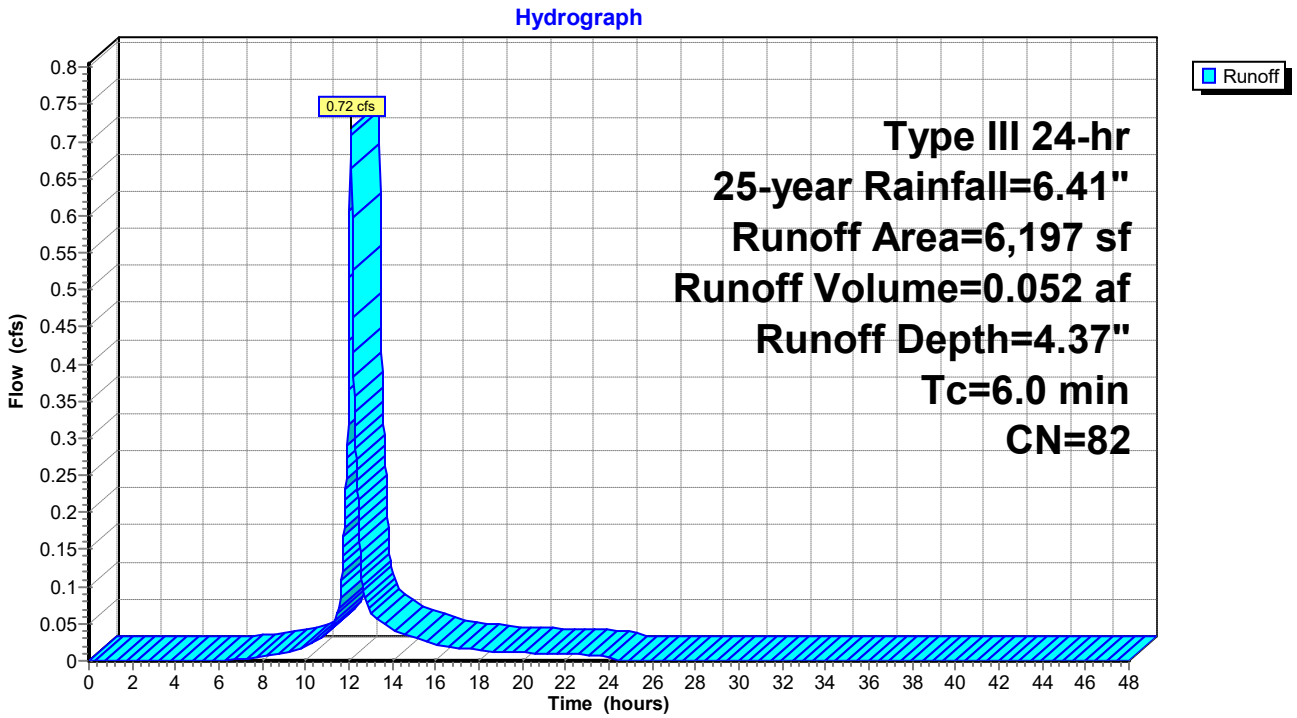
Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.052 af, Depth= 4.37"
Routed to Pond 7P : STORMWATER MGMT PRACTICE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=6.41"

	Area (sf)	CN	Description
*	985	98	Impervious surfaces, HSG B
	2,650	61	>75% Grass cover, Good, HSG B
	2,562	98	Roofs, HSG B
	6,197	82	Weighted Average
	2,650		42.76% Pervious Area
	3,547		57.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: FDA-2 TO SW PRACTICE



Summary for Reach 8R: Reach-1-1

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 1.14" for 25-year event
Inflow = 0.65 cfs @ 12.10 hrs, Volume= 0.013 af
Outflow = 0.56 cfs @ 12.19 hrs, Volume= 0.013 af, Atten= 15%, Lag= 5.2 min
Routed to Reach 9R : Reach-1-2

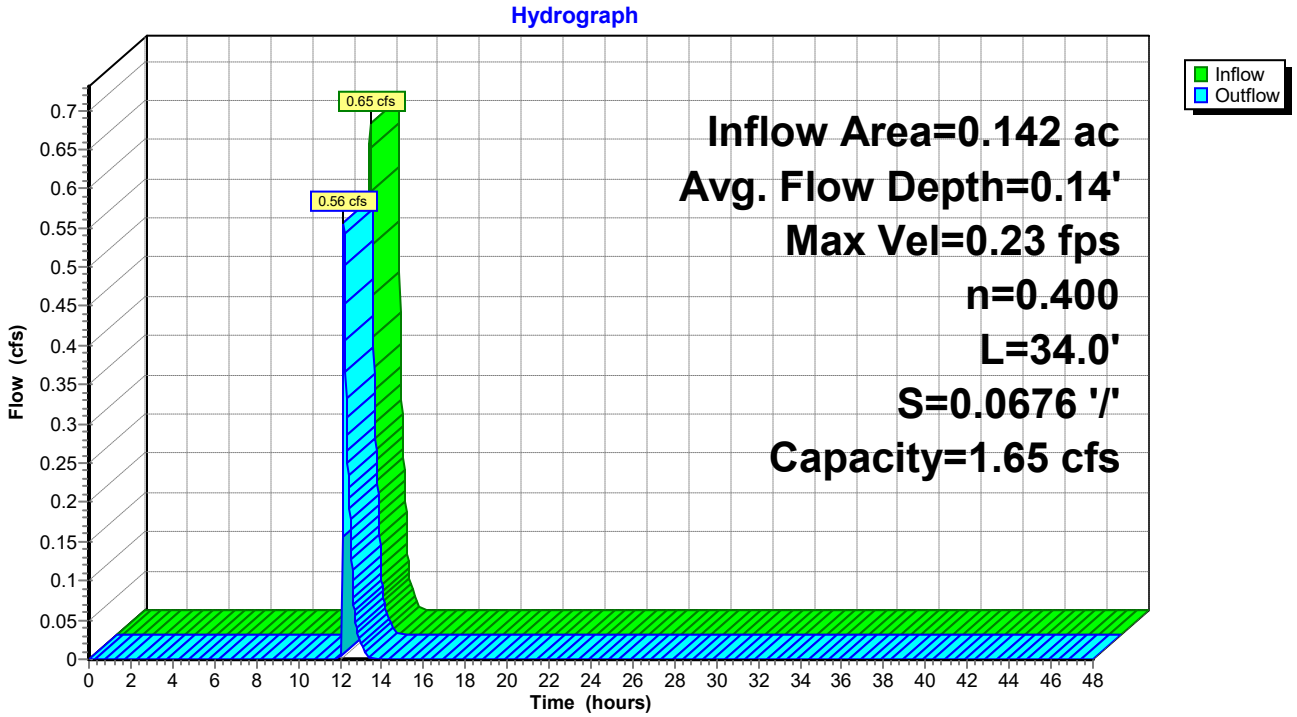
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 13.0 min

Peak Storage= 82 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 20.42'
Bank-Full Depth= 0.25' Flow Area= 5.0 sf, Capacity= 1.65 cfs

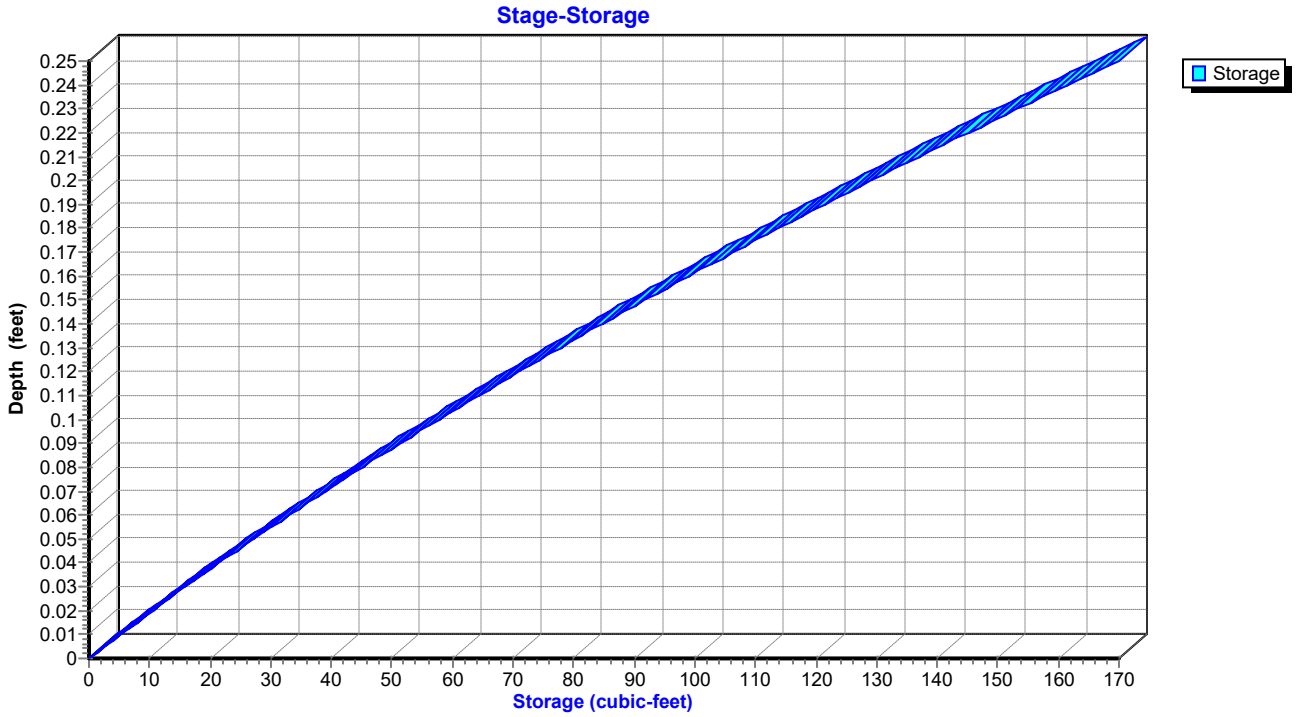
15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 25.00'
Length= 34.0' Slope= 0.0676 '/'
Inlet Invert= 15.50', Outlet Invert= 13.20'

‡

Reach 8R: Reach-1-1



Reach 8R: Reach-1-1



Summary for Reach 9R: Reach-1-2

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 1.14" for 25-year event
Inflow = 0.56 cfs @ 12.19 hrs, Volume= 0.013 af
Outflow = 0.46 cfs @ 12.29 hrs, Volume= 0.013 af, Atten= 18%, Lag= 6.5 min
Routed to Reach 10R : Reach-1-3

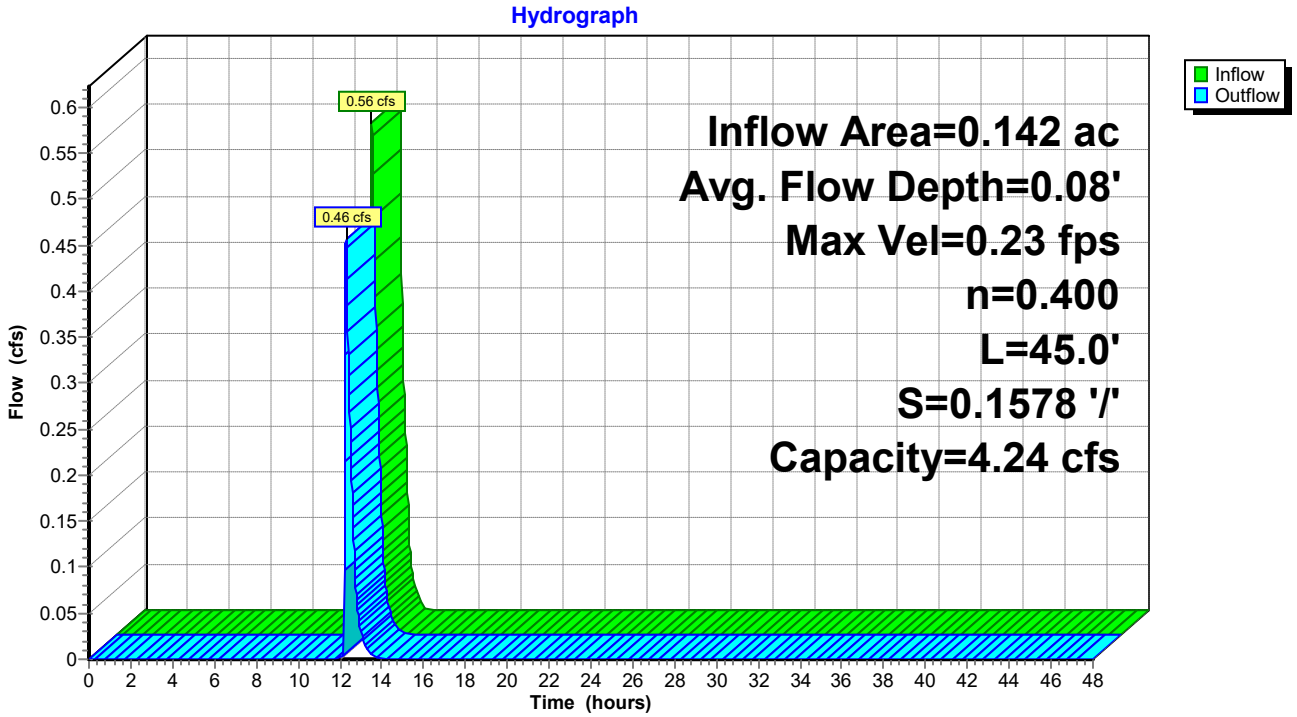
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 14.3 min

Peak Storage= 89 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 31.93'
Bank-Full Depth= 0.25' Flow Area= 10.0 sf, Capacity= 4.24 cfs

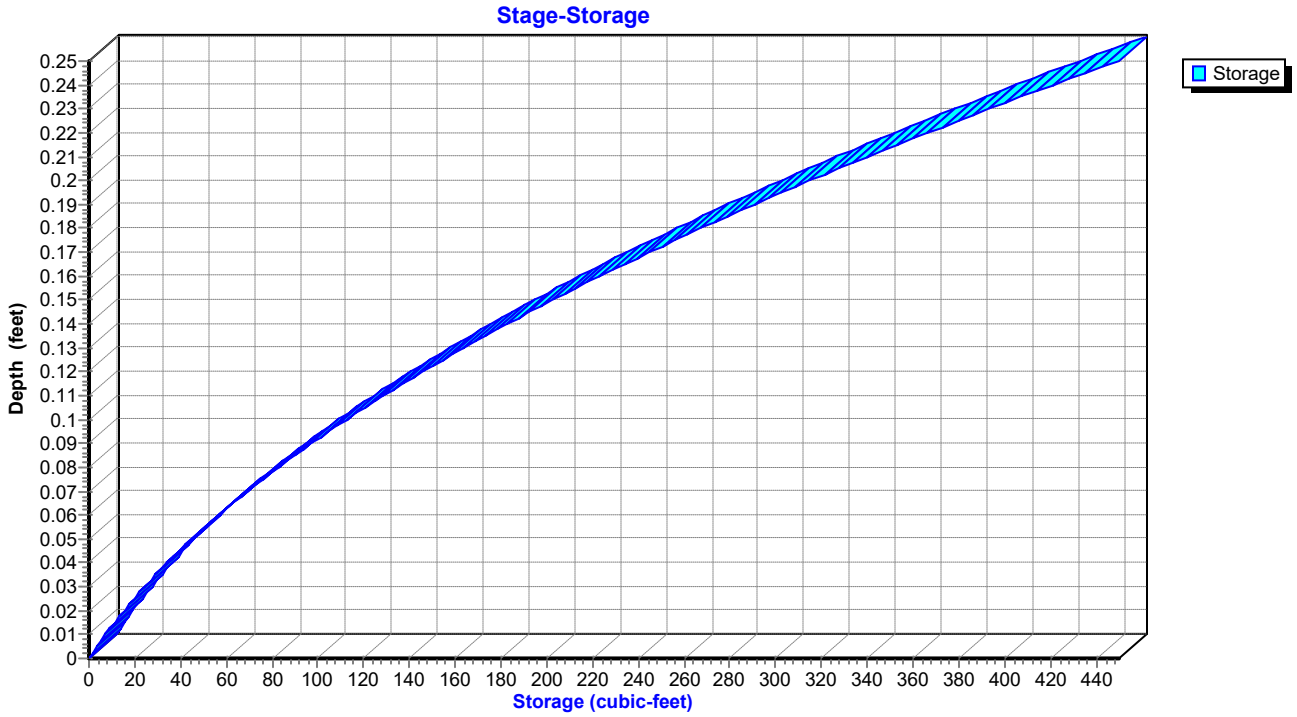
15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 65.00'
Length= 45.0' Slope= 0.1578 '/'
Inlet Invert= 13.10', Outlet Invert= 6.00'

‡

Reach 9R: Reach-1-2



Reach 9R: Reach-1-2



Summary for Reach 10R: Reach-1-3

[61] Hint: Exceeded Reach 9R outlet invert by 0.05' @ 12.30 hrs

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 1.14" for 25-year event
Inflow = 0.46 cfs @ 12.29 hrs, Volume= 0.013 af
Outflow = 0.45 cfs @ 12.32 hrs, Volume= 0.013 af, Atten= 1%, Lag= 1.6 min
Routed to Link 5L : DESIGN LINE

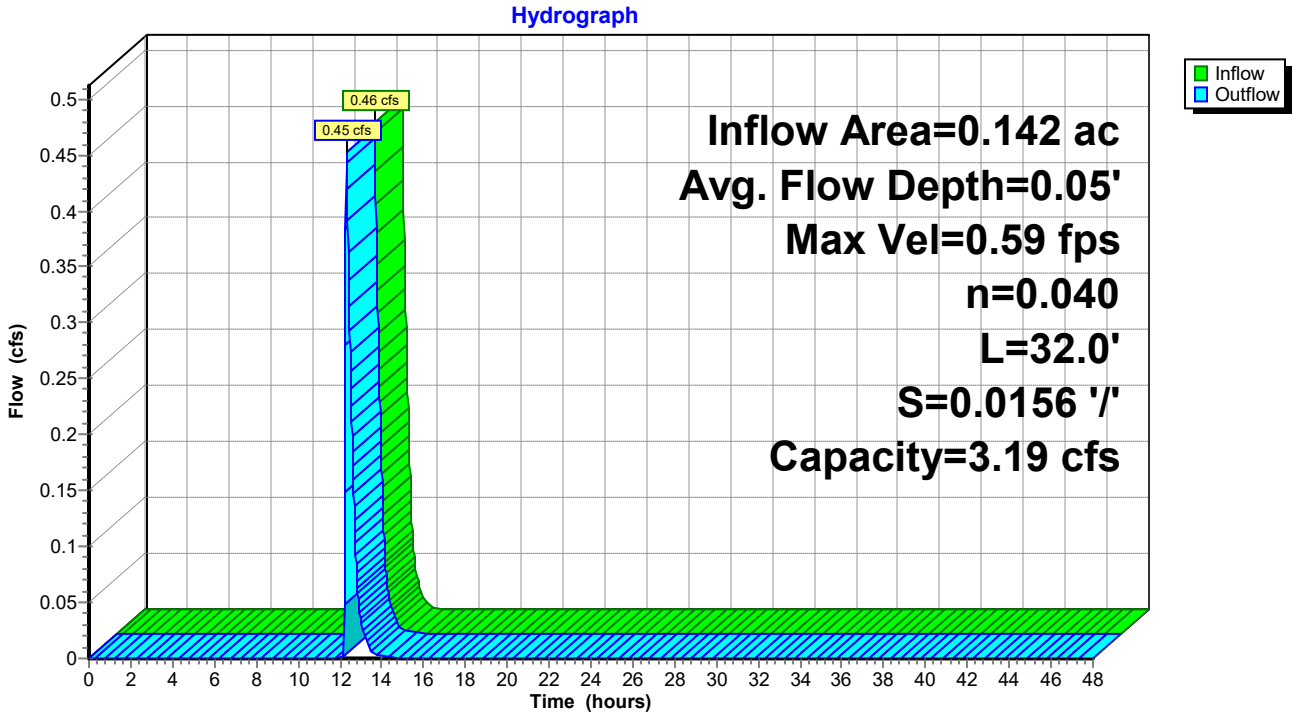
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.59 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 4.3 min

Peak Storage= 25 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.05' , Surface Width= 16.93'
Bank-Full Depth= 0.15' Flow Area= 2.7 sf, Capacity= 3.19 cfs

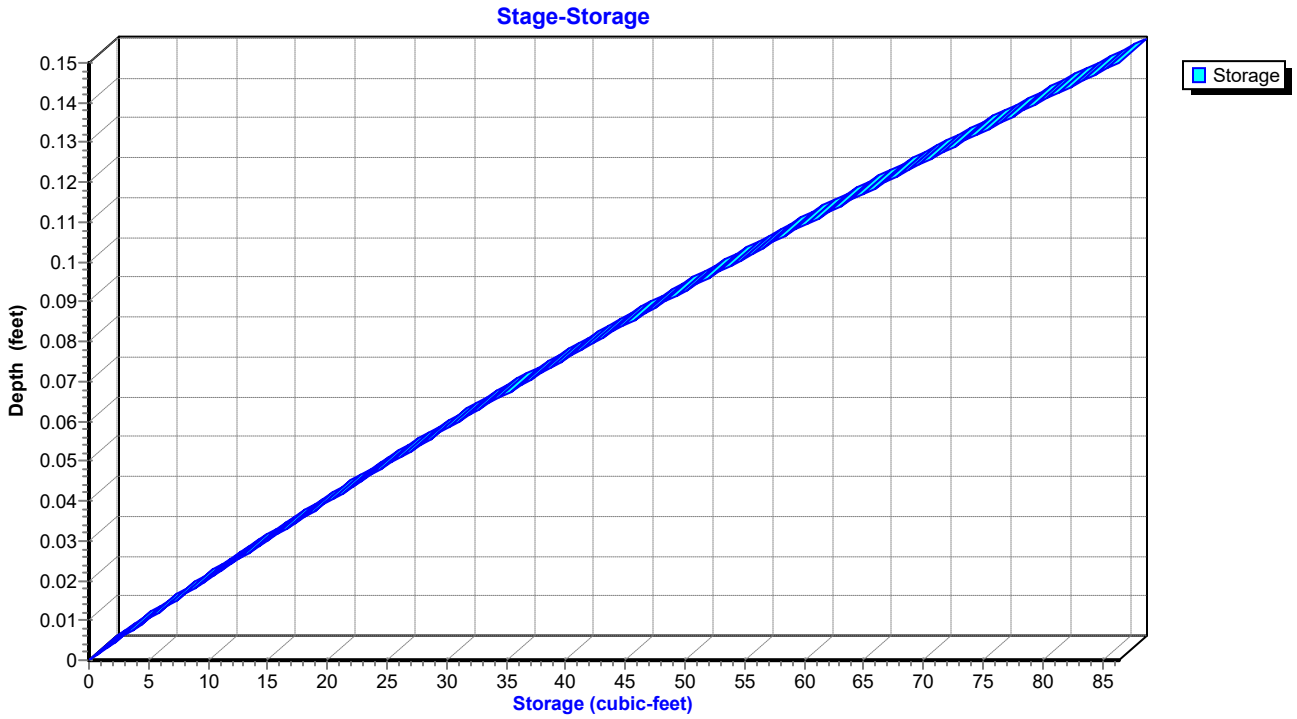
15.00' x 0.15' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 21.00'
Length= 32.0' Slope= 0.0156 '/'
Inlet Invert= 6.00', Outlet Invert= 5.50'

‡

Reach 10R: Reach-1-3



Reach 10R: Reach-1-3



Summary for Pond 7P: STORMWATER MGMT PRACTICE

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 4.37" for 25-year event
Inflow = 0.72 cfs @ 12.09 hrs, Volume= 0.052 af
Outflow = 0.71 cfs @ 12.10 hrs, Volume= 0.052 af, Atten= 1%, Lag= 0.8 min
Discarded = 0.06 cfs @ 11.74 hrs, Volume= 0.038 af
Primary = 0.65 cfs @ 12.10 hrs, Volume= 0.013 af
Routed to Reach 8R : Reach-1-1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 17.46' @ 12.10 hrs Surf.Area= 504 sf Storage= 391 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 39.3 min (845.7 - 806.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.10'	37 cf	**6.00'W x 10.50'L x 1.71'H Field A** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#2A	16.60'	14 cf	**Cultec FD C-4** Inside #1 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#3B	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field B** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#4B	16.50'	14 cf	**Cultec FD C-4** Inside #3 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#5C	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field C** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#6C	16.50'	14 cf	**Cultec FD C-4** Inside #5 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#7D	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field D** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#8D	16.25'	14 cf	**Cultec FD C-4** Inside #7 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#9E	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field E** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#10E	16.25'	14 cf	**Cultec FD C-4** Inside #9 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#11F	15.50'	37 cf	**6.00'W x 10.50'L x 1.71'H Field F** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#12F	16.00'	14 cf	**Cultec FD C-4** Inside #11 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

#13G	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field G** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#14G	15.75'	14 cf	**Cultec FD C-4** Inside #13 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#15H	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field H** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#16H	15.75'	14 cf	**Cultec FD C-4** Inside #15 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
		412 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard
Storage Group E created with Chamber Wizard
Storage Group F created with Chamber Wizard
Storage Group G created with Chamber Wizard
Storage Group H created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	15.25'	**5.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.06 cfs @ 11.74 hrs HW=16.12' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.65 cfs @ 12.10 hrs HW=17.46' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 0.65 cfs @ 1.49 fps)

Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field A

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

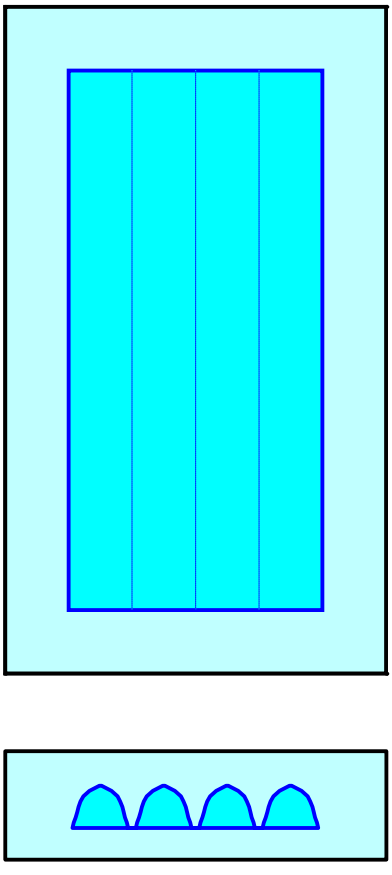
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field B

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

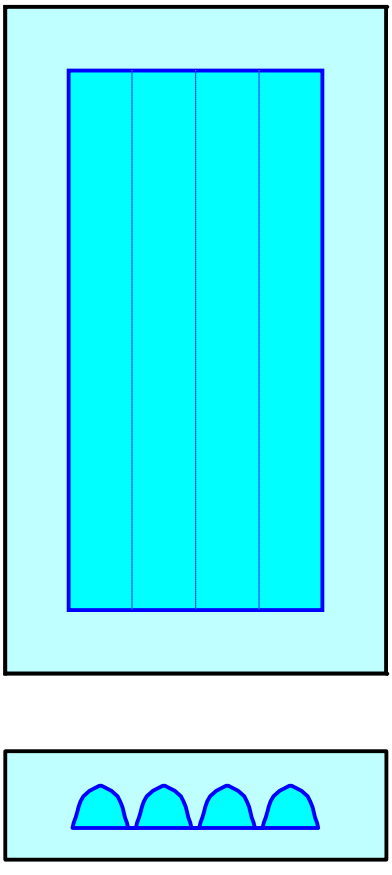
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field C

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

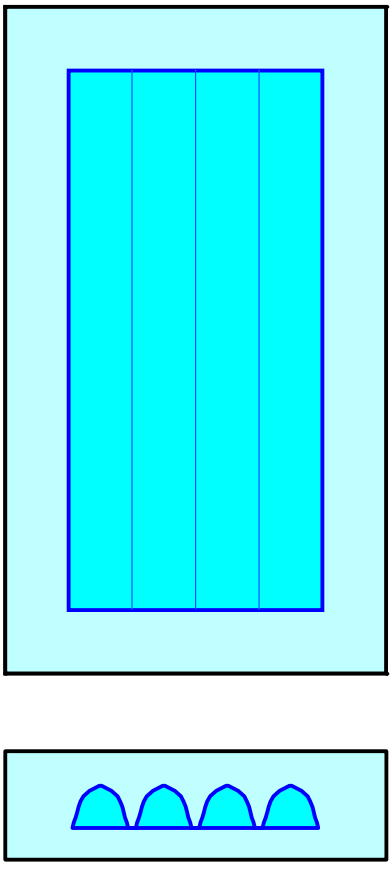
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field D

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

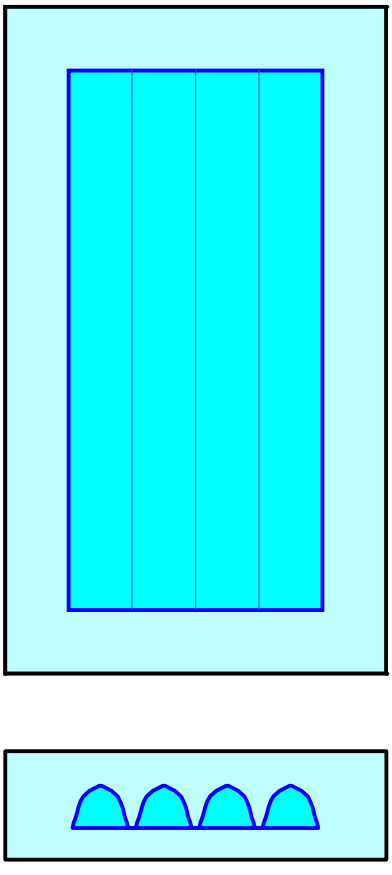
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field E

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

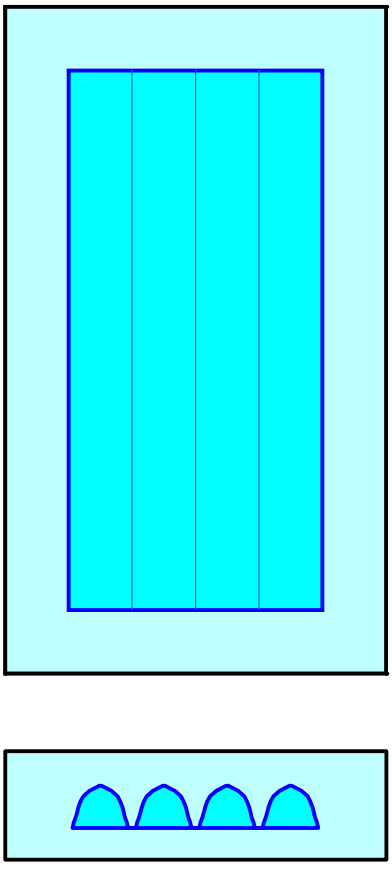
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field F

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

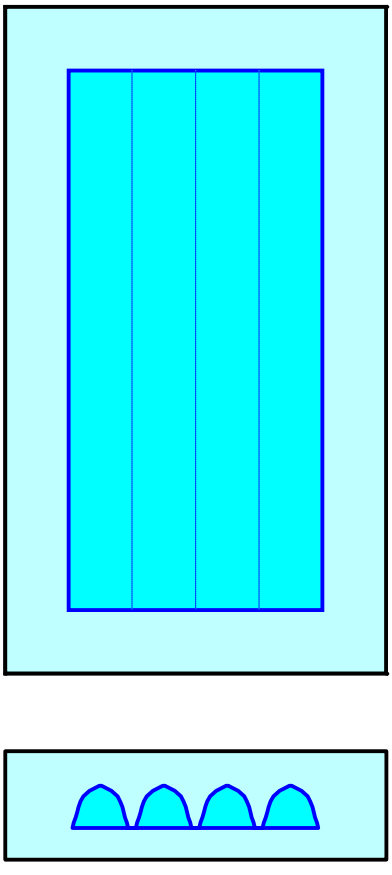
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field G

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

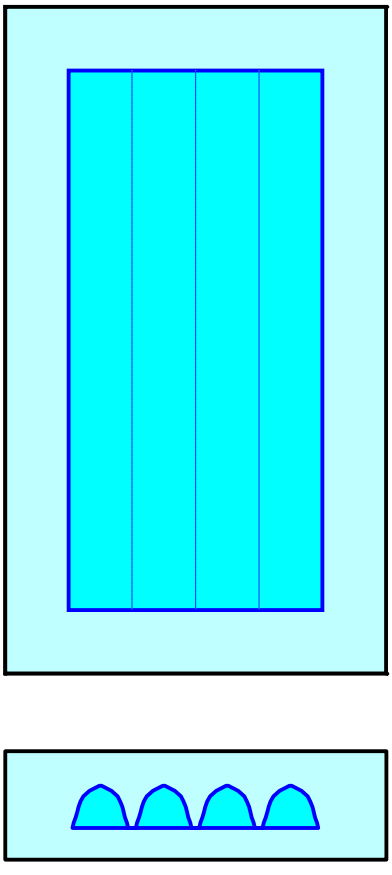
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field H

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

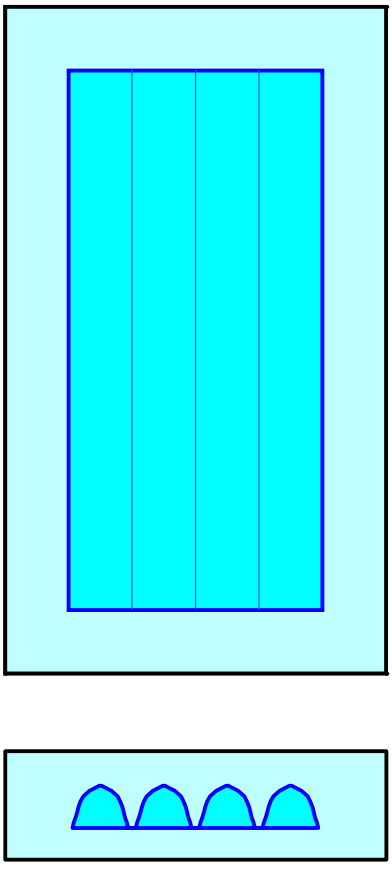
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

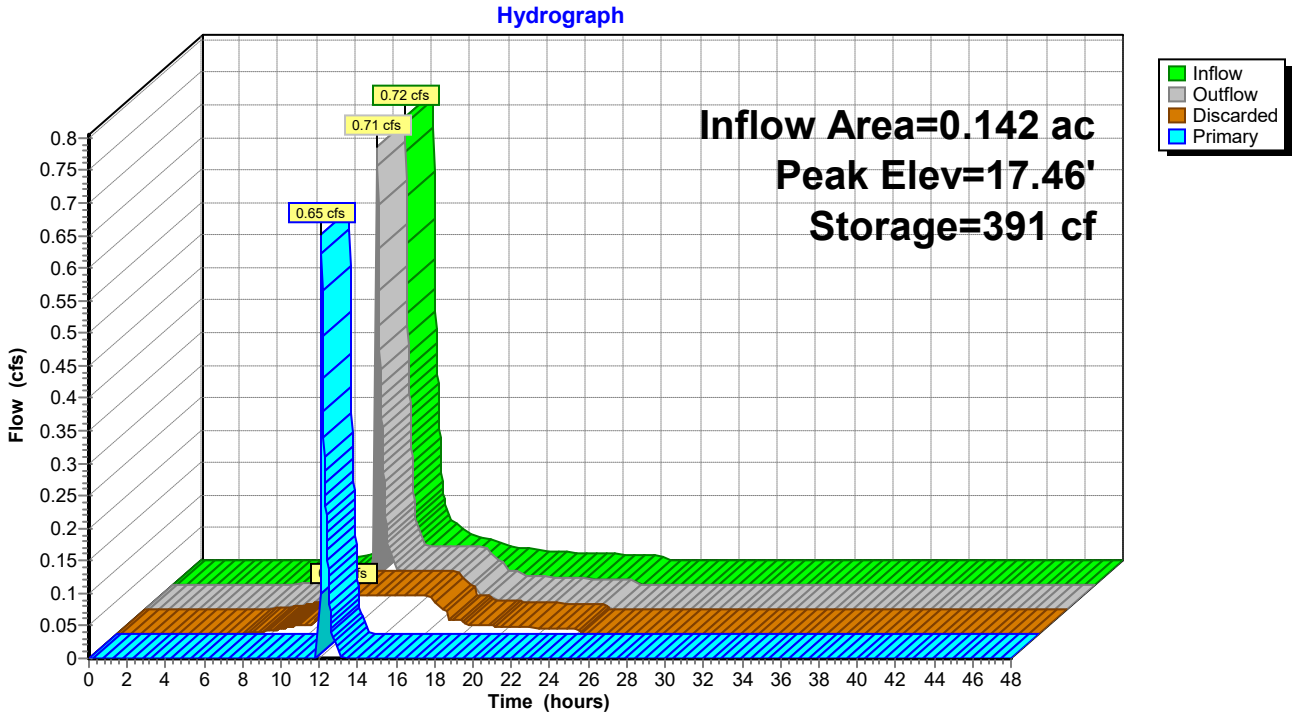
107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

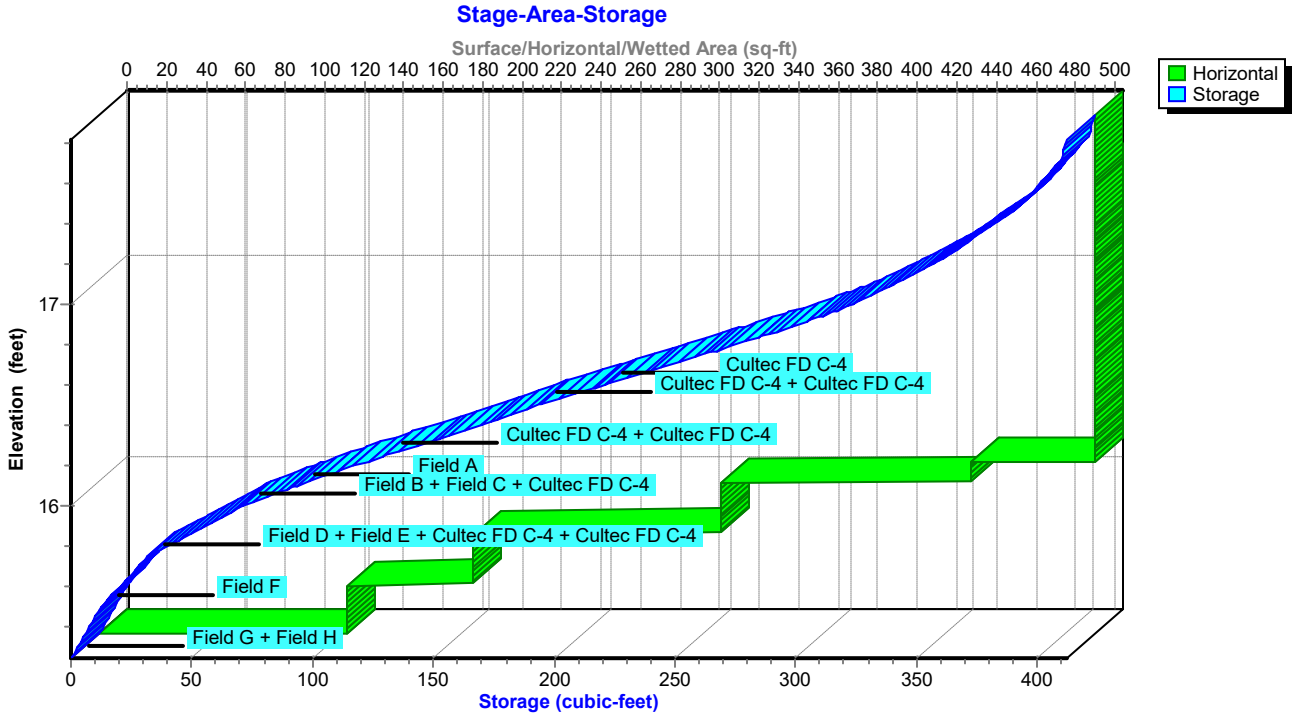
1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE



Pond 7P: STORMWATER MGMT PRACTICE

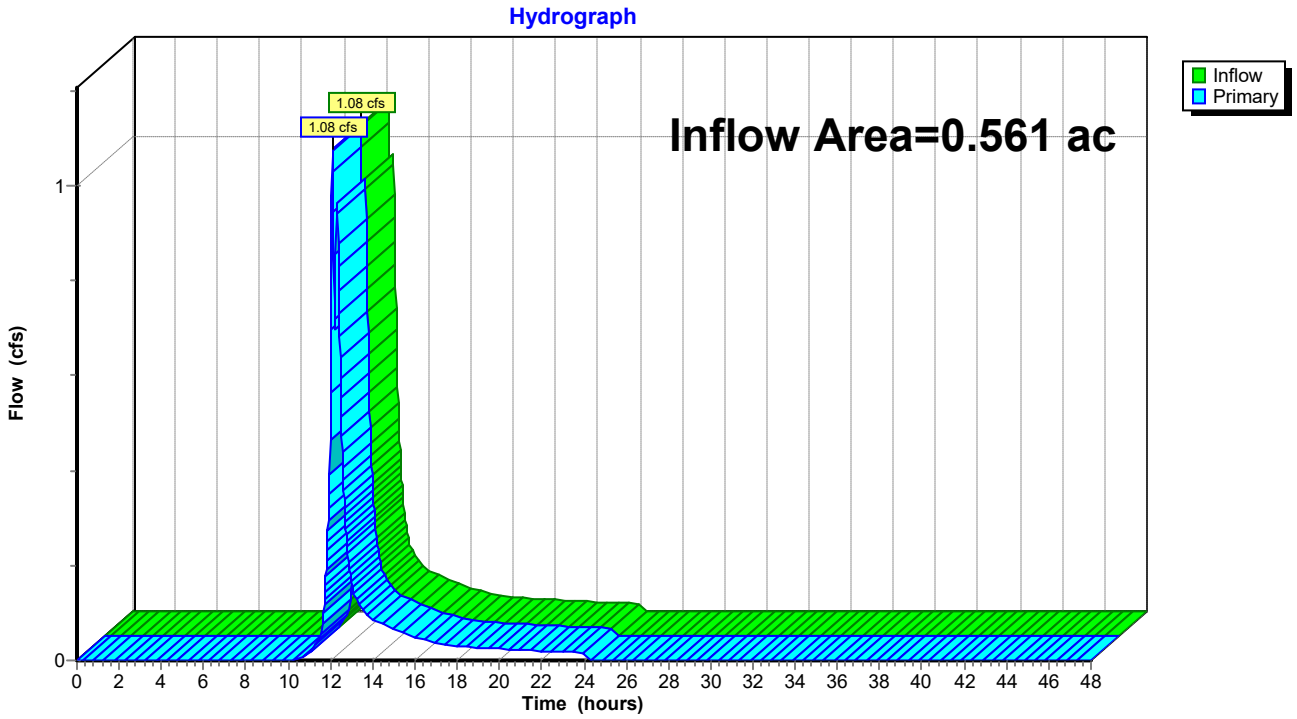


Summary for Link 5L: DESIGN LINE

Inflow Area = 0.561 ac, 16.80% Impervious, Inflow Depth = 1.99" for 25-year event
Inflow = 1.08 cfs @ 12.09 hrs, Volume= 0.093 af
Primary = 1.08 cfs @ 12.09 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 5L: DESIGN LINE



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=24,402 sf 0.00% Impervious Runoff Depth=4.12"
Flow Length=260' Tc=6.0 min CN=60 Runoff=2.68 cfs 0.193 af

Subcatchment 2S: FDA-1 TO DESIGN LINE Runoff Area=18,227 sf 3.06% Impervious Runoff Depth=4.25"
Flow Length=399' Tc=6.0 min CN=61 Runoff=2.07 cfs 0.148 af

Subcatchment 6S: FDA-2 TO SW PRACTICE Runoff Area=6,197 sf 57.24% Impervious Runoff Depth=6.84"
Tc=6.0 min CN=82 Runoff=1.11 cfs 0.081 af

Reach 8R: Reach-1-1 Avg. Flow Depth=0.19' Max Vel=0.28 fps Inflow=1.03 cfs 0.031 af
n=0.400 L=34.0' S=0.0676 '/' Capacity=1.65 cfs Outflow=0.99 cfs 0.031 af

Reach 9R: Reach-1-2 Avg. Flow Depth=0.12' Max Vel=0.28 fps Inflow=0.99 cfs 0.031 af
n=0.400 L=45.0' S=0.1578 '/' Capacity=4.24 cfs Outflow=0.93 cfs 0.031 af

Reach 10R: Reach-1-3 Avg. Flow Depth=0.07' Max Vel=0.77 fps Inflow=0.93 cfs 0.031 af
n=0.040 L=32.0' S=0.0156 '/' Capacity=3.19 cfs Outflow=0.92 cfs 0.031 af

Pond 7P: STORMWATER MGMT PRACTICE Peak Elev=17.62' Storage=403 cf Inflow=1.11 cfs 0.081 af
Discarded=0.06 cfs 0.050 af Primary=1.03 cfs 0.031 af Outflow=1.09 cfs 0.081 af

Link 5L: DESIGN LINE Inflow=2.26 cfs 0.179 af
Primary=2.26 cfs 0.179 af

Total Runoff Area = 1.121 ac Runoff Volume = 0.422 af Average Runoff Depth = 4.52"
91.59% Pervious = 1.027 ac 8.41% Impervious = 0.094 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE

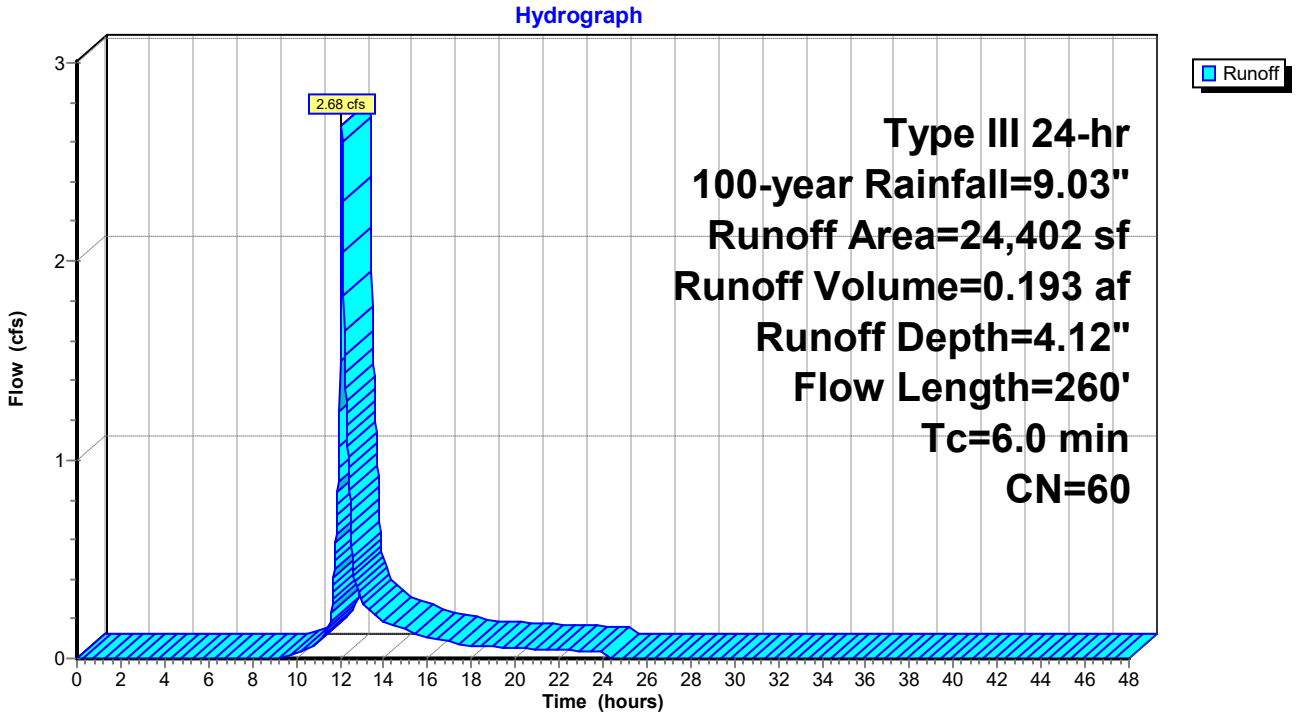
Runoff = 2.68 cfs @ 12.09 hrs, Volume= 0.193 af, Depth= 4.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-year Rainfall=9.03"

Area (sf)	CN	Description
5,028	73	Brush, Good, HSG D
19,374	56	Brush, Fair, HSG B
24,402	60	Weighted Average
24,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	31	0.0516	0.14		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.45"
0.2	36	0.2000	3.13		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.2	44	0.1954	3.09		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.6	70	0.0786	1.96		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.9					**Direct Entry, Tc Factor**
6.0	260	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE



Summary for Subcatchment 2S: FDA-1 TO DESIGN LINE

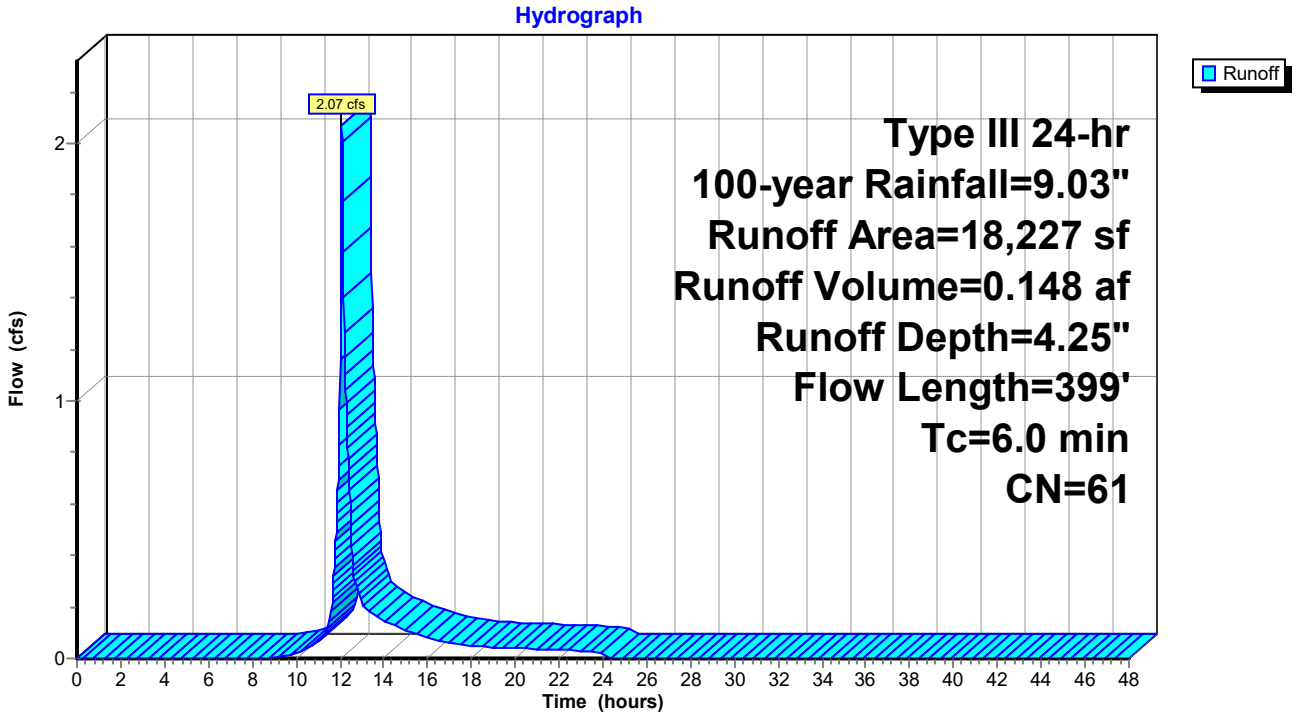
Runoff = 2.07 cfs @ 12.09 hrs, Volume= 0.148 af, Depth= 4.25"
Routed to Link 5L : DESIGN LINE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-year Rainfall=9.03"

	Area (sf)	CN	Description
	5,028	73	Brush, Good, HSG D
	5,993	48	Brush, Good, HSG B
	5,856	61	>75% Grass cover, Good, HSG B
*	793	61	Deck (use lawn for under deck), HSG B
*	392	98	Pool, HSG B
*	117	98	Stepping Stones around Pool, HSG B
*	48	98	Roof, HSG B
	18,227	61	Weighted Average
	17,670		96.94% Pervious Area
	557		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	35	0.0657	0.16		**Sheet Flow, A-B**
					Grass: Dense n= 0.240 P2= 3.45"
1.0	220	0.0659	3.85		**Shallow Concentrated Flow, B-C**
					Grassed Waterway Kv= 15.0 fps
0.3	65	0.0769	4.16		**Shallow Concentrated Flow, C-D**
					Grassed Waterway Kv= 15.0 fps
0.2	30	0.2166	3.26		**Shallow Concentrated Flow, E-F**
					Short Grass Pasture Kv= 7.0 fps
0.2	49	0.0667	3.87		**Shallow Concentrated Flow, F-G**
					Grassed Waterway Kv= 15.0 fps
0.6					**Direct Entry, Tc Factor**
6.0	399	Total			

Subcatchment 2S: FDA-1 TO DESIGN LINE



Summary for Subcatchment 6S: FDA-2 TO SW PRACTICE

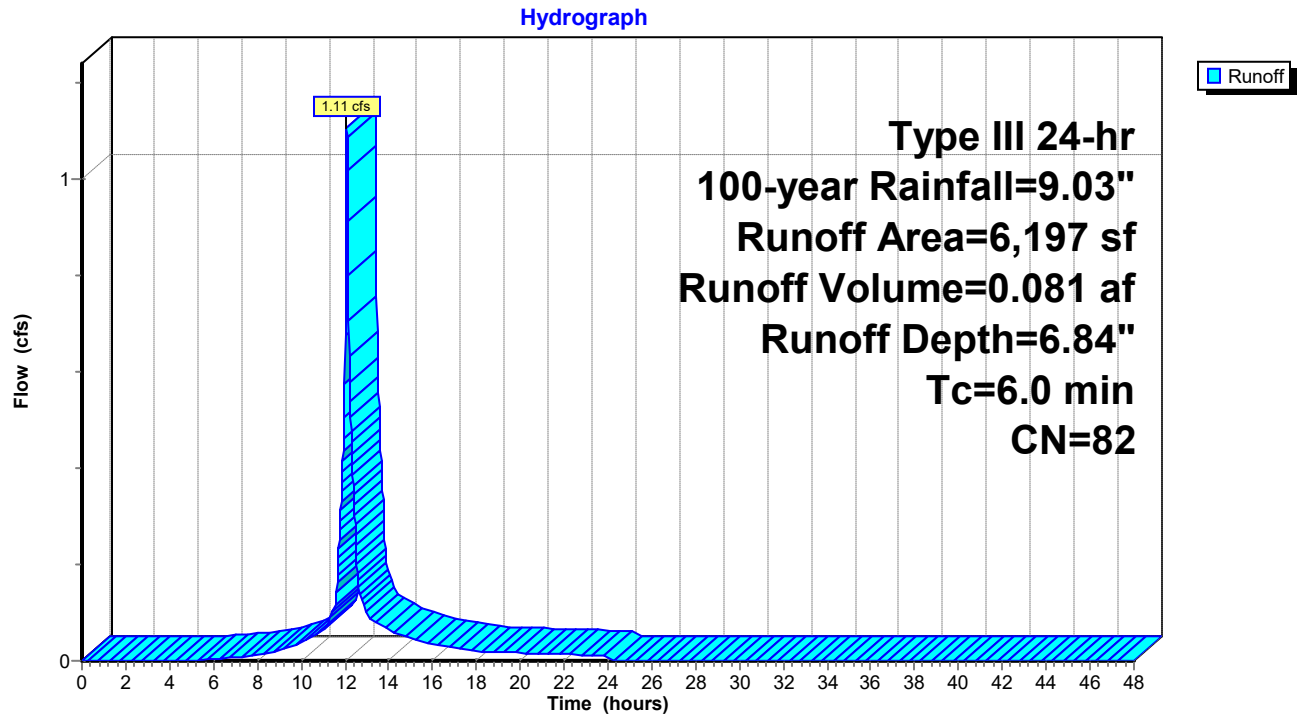
Runoff = 1.11 cfs @ 12.09 hrs, Volume= 0.081 af, Depth= 6.84"
Routed to Pond 7P : STORMWATER MGMT PRACTICE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-year Rainfall=9.03"

	Area (sf)	CN	Description
*	985	98	Impervious surfaces, HSG B
	2,650	61	>75% Grass cover, Good, HSG B
	2,562	98	Roofs, HSG B
	6,197	82	Weighted Average
	2,650		42.76% Pervious Area
	3,547		57.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: FDA-2 TO SW PRACTICE



Summary for Reach 8R: Reach-1-1

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 2.63" for 100-year event
Inflow = 1.03 cfs @ 12.10 hrs, Volume= 0.031 af
Outflow = 0.99 cfs @ 12.15 hrs, Volume= 0.031 af, Atten= 4%, Lag= 3.3 min
Routed to Reach 9R : Reach-1-2

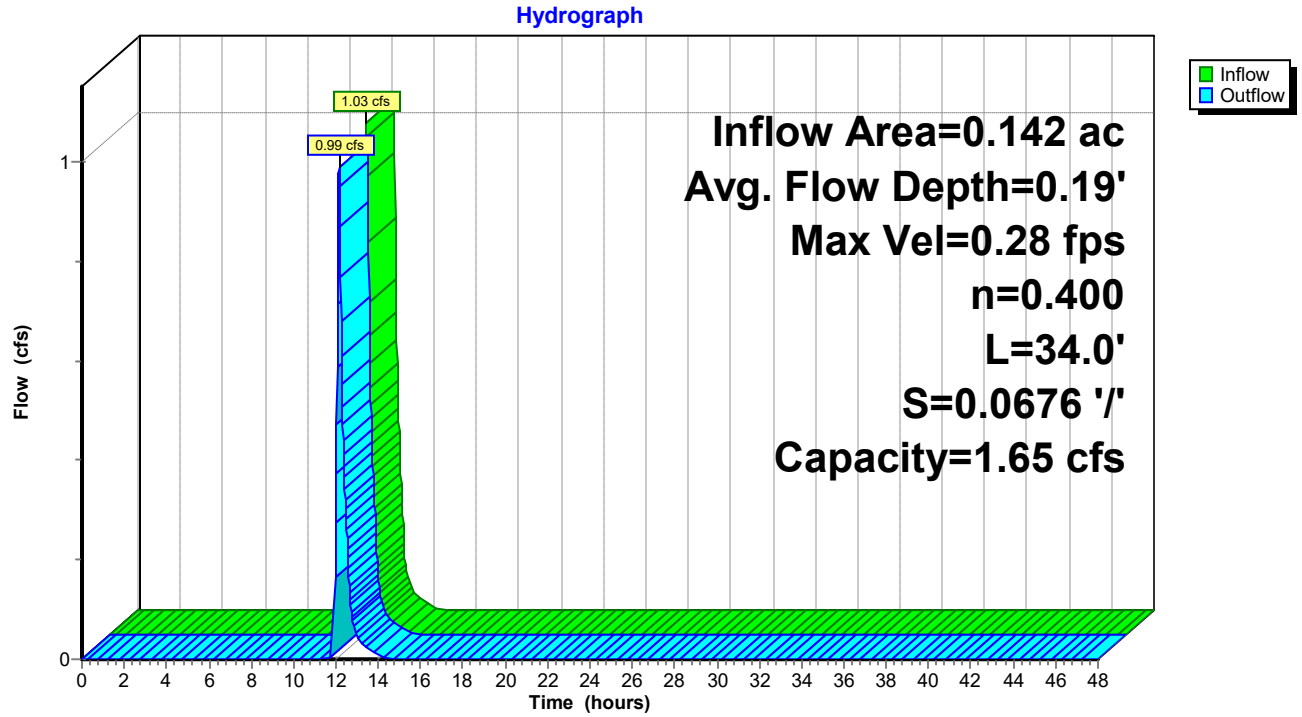
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.28 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 9.9 min

Peak Storage= 120 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 22.54'
Bank-Full Depth= 0.25' Flow Area= 5.0 sf, Capacity= 1.65 cfs

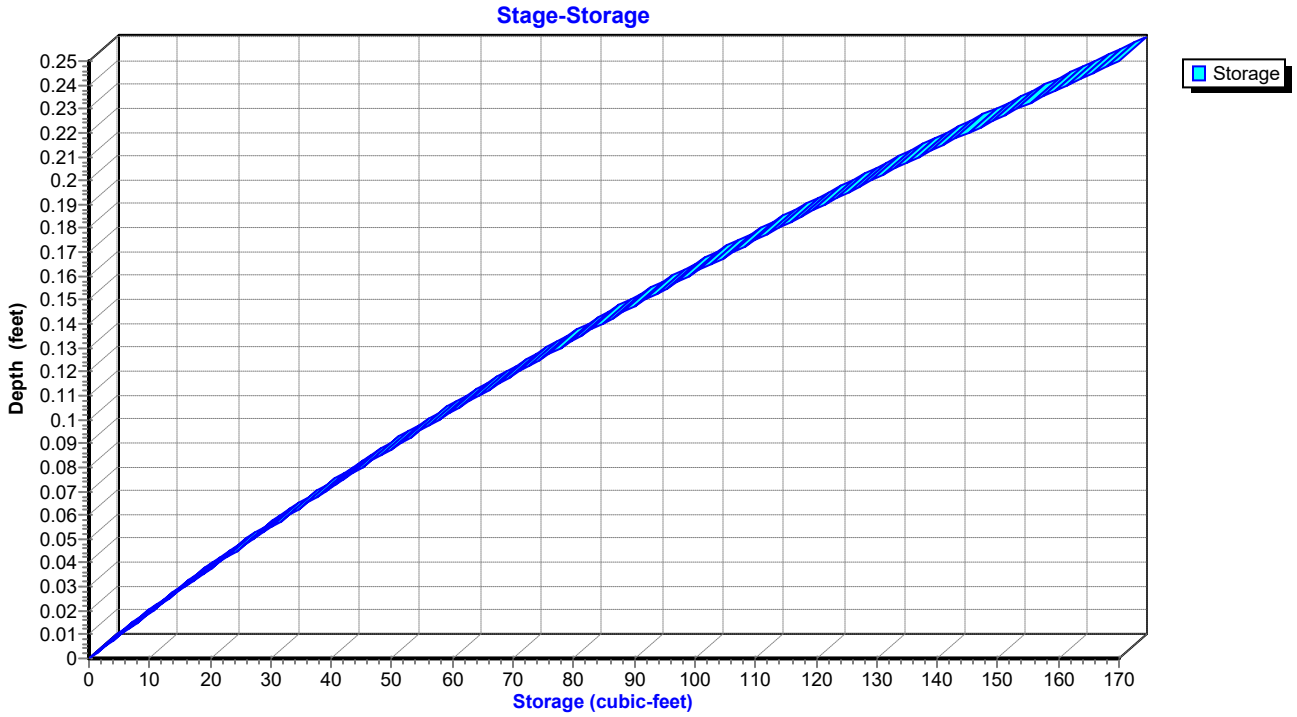
15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 25.00'
Length= 34.0' Slope= 0.0676 '/'
Inlet Invert= 15.50', Outlet Invert= 13.20'

‡

Reach 8R: Reach-1-1



Reach 8R: Reach-1-1



Summary for Reach 9R: Reach-1-2

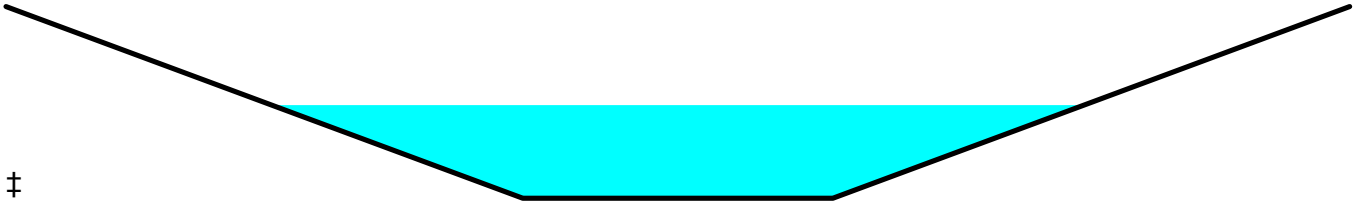
[61] Hint: Exceeded Reach 8R outlet invert by 0.02' @ 12.18 hrs

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 2.63" for 100-year event
Inflow = 0.99 cfs @ 12.15 hrs, Volume= 0.031 af
Outflow = 0.93 cfs @ 12.23 hrs, Volume= 0.031 af, Atten= 6%, Lag= 4.5 min
Routed to Reach 10R : Reach-1-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.28 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 11.5 min

Peak Storage= 148 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 39.29'
Bank-Full Depth= 0.25' Flow Area= 10.0 sf, Capacity= 4.24 cfs

15.00' x 0.25' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 65.00'
Length= 45.0' Slope= 0.1578 '/'
Inlet Invert= 13.10', Outlet Invert= 6.00'



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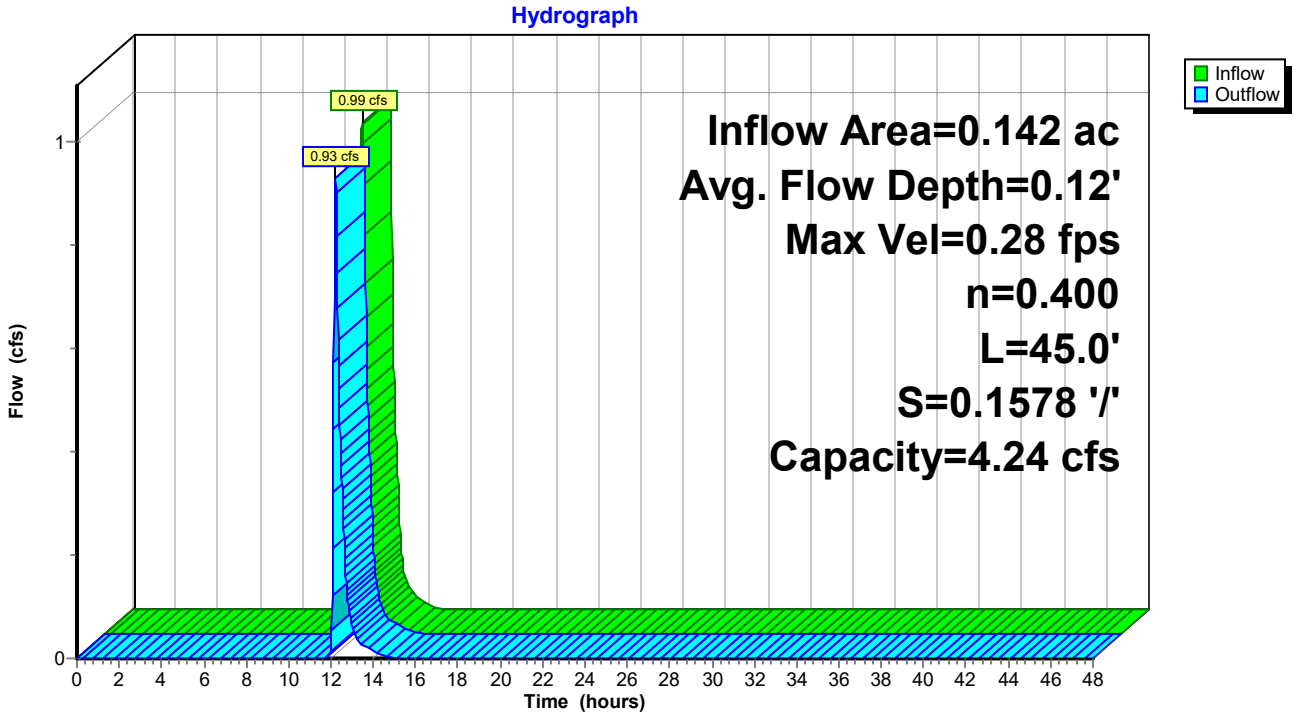
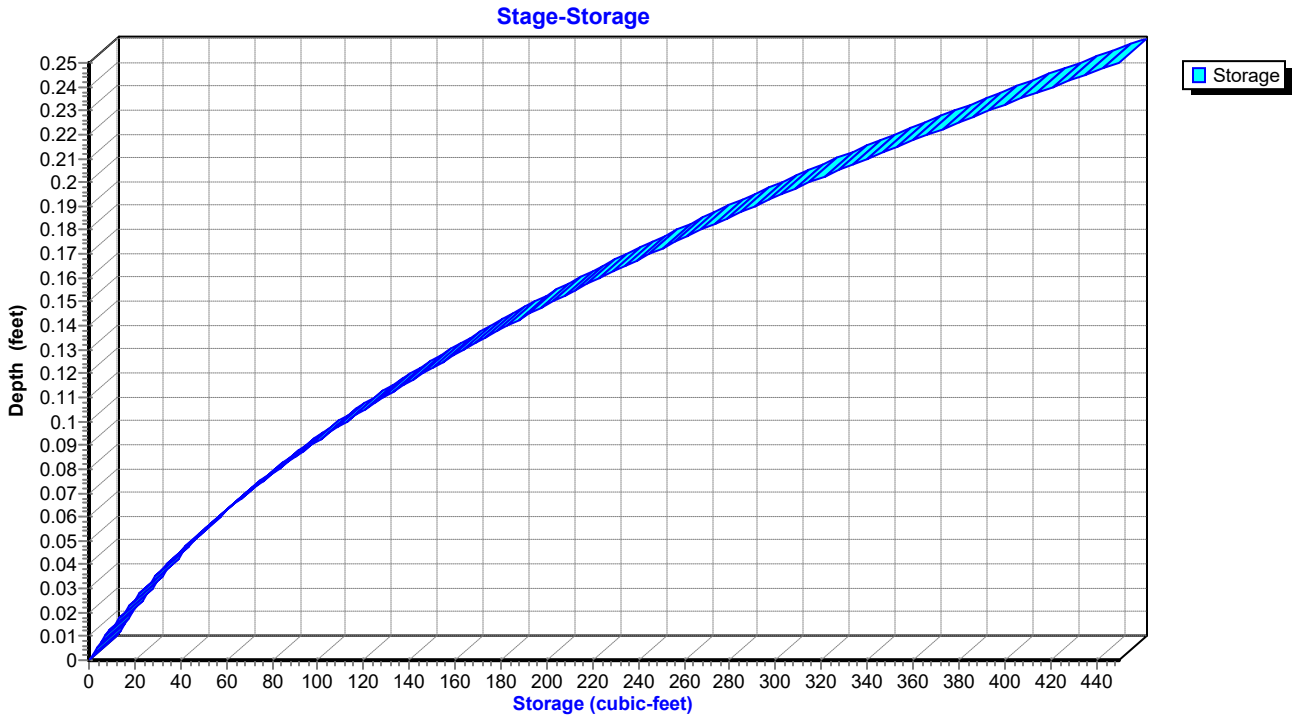
Reach 9R: Reach-1-2



Reach 9R: Reach-1-2



Summary for Reach 10R: Reach-1-3

[61] Hint: Exceeded Reach 9R outlet invert by 0.07' @ 12.24 hrs

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 2.63" for 100-year event
Inflow = 0.93 cfs @ 12.23 hrs, Volume= 0.031 af
Outflow = 0.92 cfs @ 12.25 hrs, Volume= 0.031 af, Atten= 1%, Lag= 1.2 min
Routed to Link 5L : DESIGN LINE

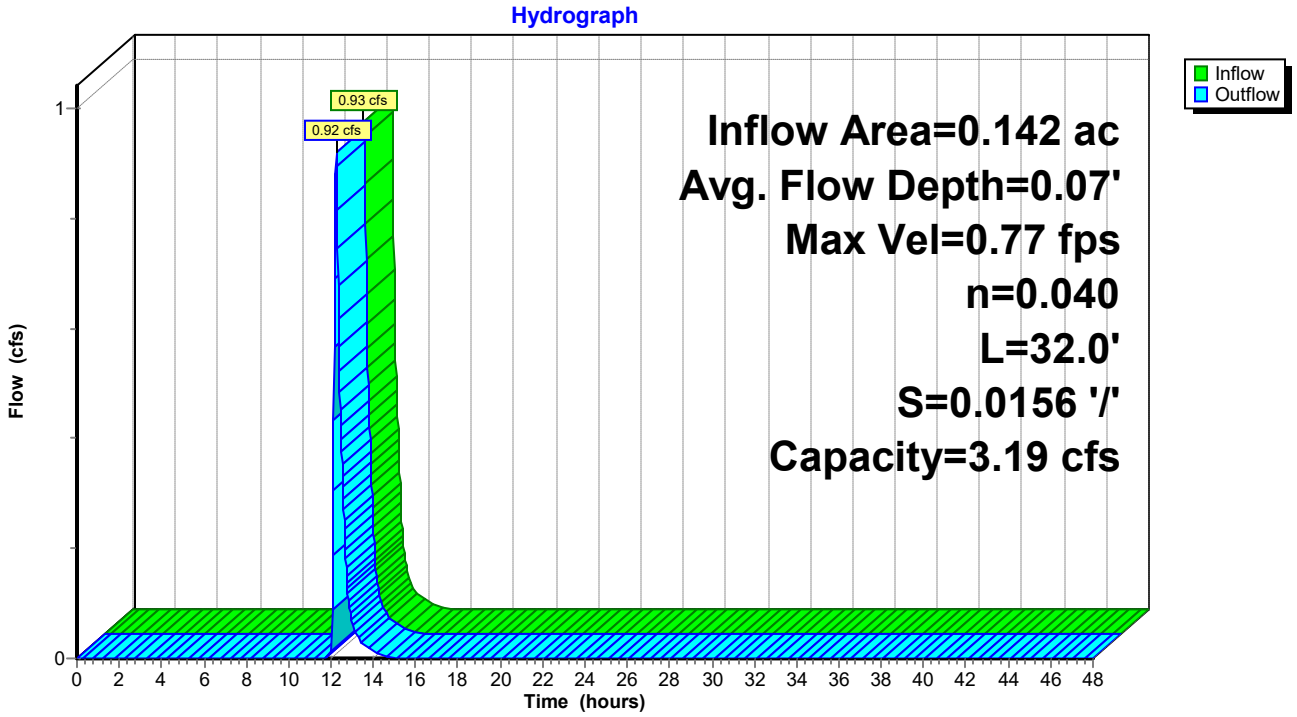
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 3.4 min

Peak Storage= 39 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.07' , Surface Width= 17.93'
Bank-Full Depth= 0.15' Flow Area= 2.7 sf, Capacity= 3.19 cfs

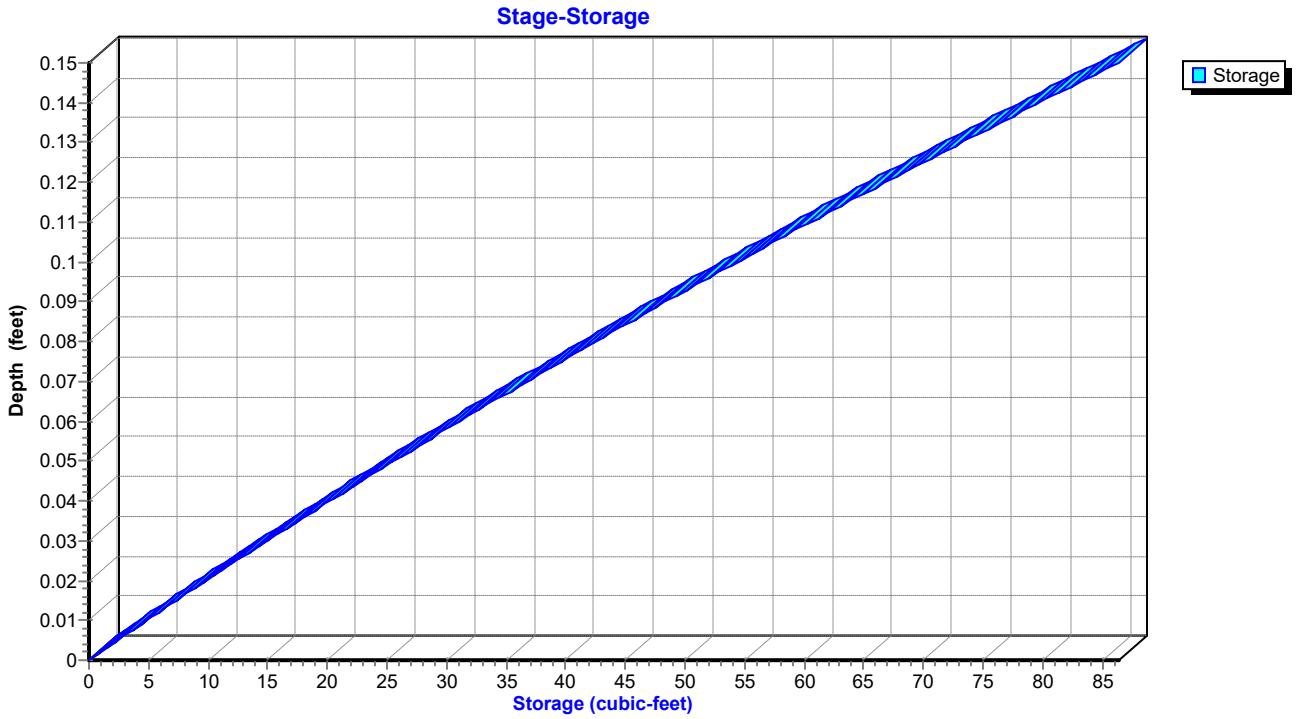
15.00' x 0.15' deep channel, n= 0.040
Side Slope Z-value= 20.0 '/' Top Width= 21.00'
Length= 32.0' Slope= 0.0156 '/'
Inlet Invert= 6.00', Outlet Invert= 5.50'

‡

Reach 10R: Reach-1-3



Reach 10R: Reach-1-3



Summary for Pond 7P: STORMWATER MGMT PRACTICE

Inflow Area = 0.142 ac, 57.24% Impervious, Inflow Depth = 6.84" for 100-year event
Inflow = 1.11 cfs @ 12.09 hrs, Volume= 0.081 af
Outflow = 1.09 cfs @ 12.10 hrs, Volume= 0.081 af, Atten= 2%, Lag= 0.8 min
Discarded = 0.06 cfs @ 11.28 hrs, Volume= 0.050 af
Primary = 1.03 cfs @ 12.10 hrs, Volume= 0.031 af
Routed to Reach 8R : Reach-1-1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 17.62' @ 12.10 hrs Surf.Area= 504 sf Storage= 403 cf

Plug-Flow detention time= 36.1 min calculated for 0.081 af (100% of inflow)
Center-of-Mass det. time= 35.9 min (829.7 - 793.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.10'	37 cf	**6.00'W x 10.50'L x 1.71'H Field A** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#2A	16.60'	14 cf	**Cultec FD C-4** Inside #1 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#3B	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field B** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#4B	16.50'	14 cf	**Cultec FD C-4** Inside #3 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#5C	16.00'	37 cf	**6.00'W x 10.50'L x 1.71'H Field C** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#6C	16.50'	14 cf	**Cultec FD C-4** Inside #5 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#7D	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field D** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#8D	16.25'	14 cf	**Cultec FD C-4** Inside #7 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#9E	15.75'	37 cf	**6.00'W x 10.50'L x 1.71'H Field E** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#10E	16.25'	14 cf	**Cultec FD C-4** Inside #9 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#11F	15.50'	37 cf	**6.00'W x 10.50'L x 1.71'H Field F** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#12F	16.00'	14 cf	**Cultec FD C-4** Inside #11 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

#13G	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field G** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#14G	15.75'	14 cf	**Cultec FD C-4** Inside #13 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
#15H	15.25'	37 cf	**6.00'W x 10.50'L x 1.71'H Field H** 108 cf Overall - 14 cf Embedded = 93 cf x 40.0% Voids
#16H	15.75'	14 cf	**Cultec FD C-4** Inside #15 Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.67 sf x 1 rows
		412 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard
Storage Group E created with Chamber Wizard
Storage Group F created with Chamber Wizard
Storage Group G created with Chamber Wizard
Storage Group H created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	15.25'	**5.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.06 cfs @ 11.28 hrs HW=16.10' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=1.03 cfs @ 12.10 hrs HW=17.62' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.03 cfs @ 2.94 fps)

Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field A

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

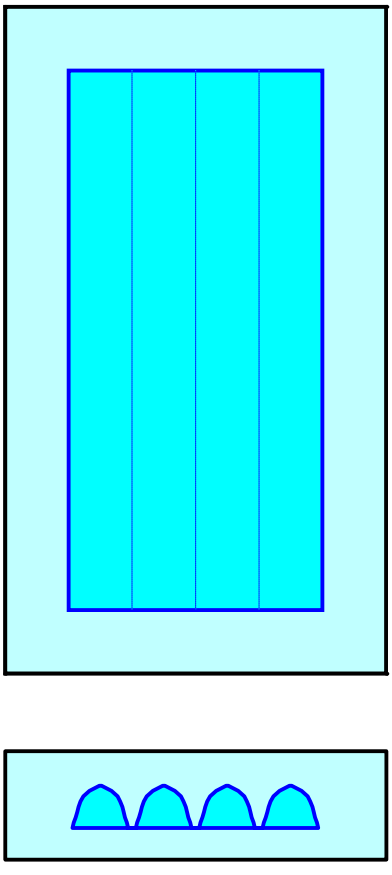
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field B

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

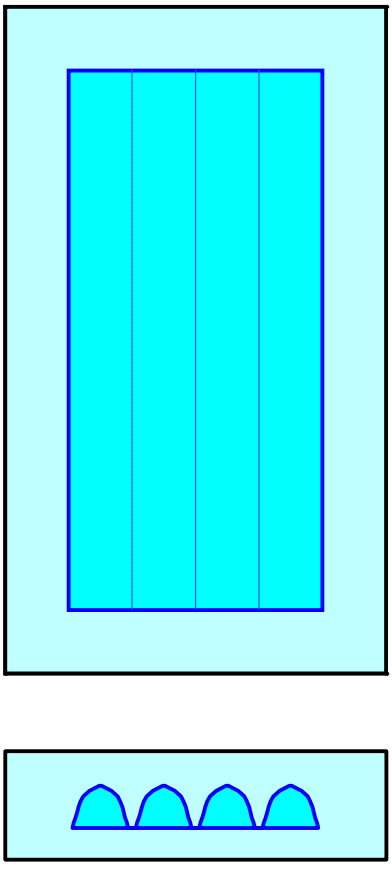
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field C

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

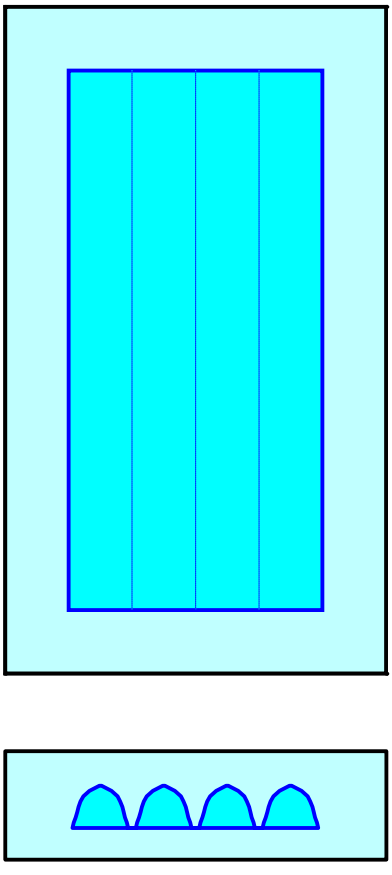
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field D

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

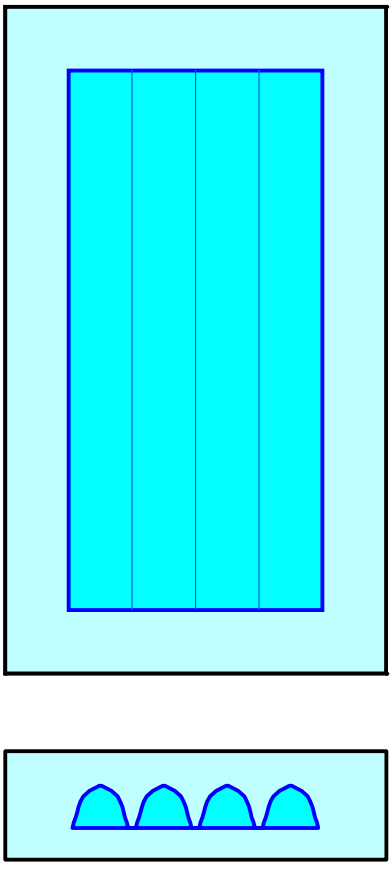
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field E

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

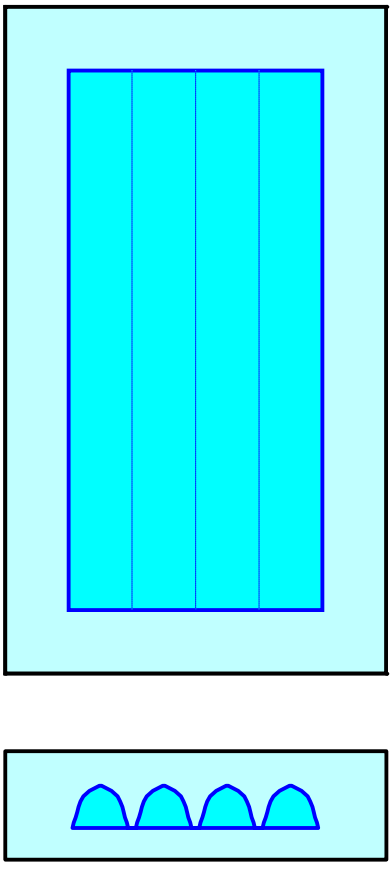
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field F

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

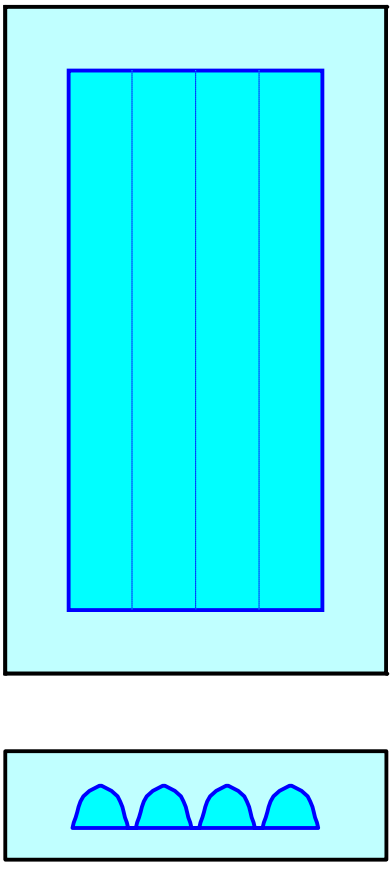
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field G

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

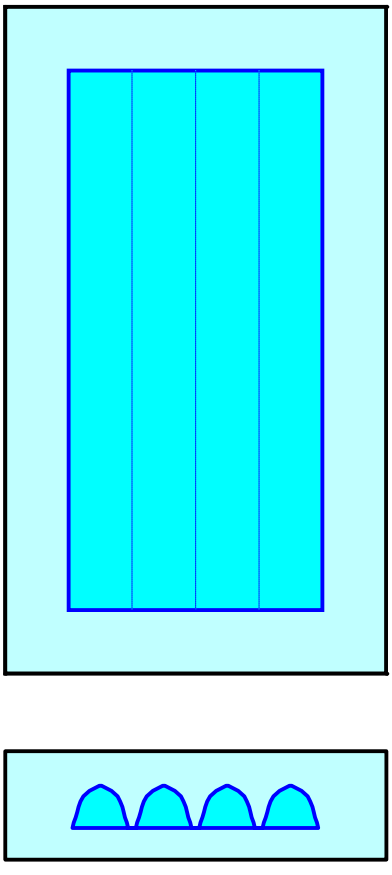
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE - Chamber Wizard Field H

Chamber Model = Cultec FD C-4 (Cultec Contactor® Field Drain C-4)
Effective Size= 42.0"W x 8.0"H => 1.67 sf x 8.00'L = 13.3 cf
Overall Size= 48.0"W x 8.5"H x 8.50'L with 0.50' Overlap
Row Length Adjustment= +0.50' x 1.67 sf x 1 rows

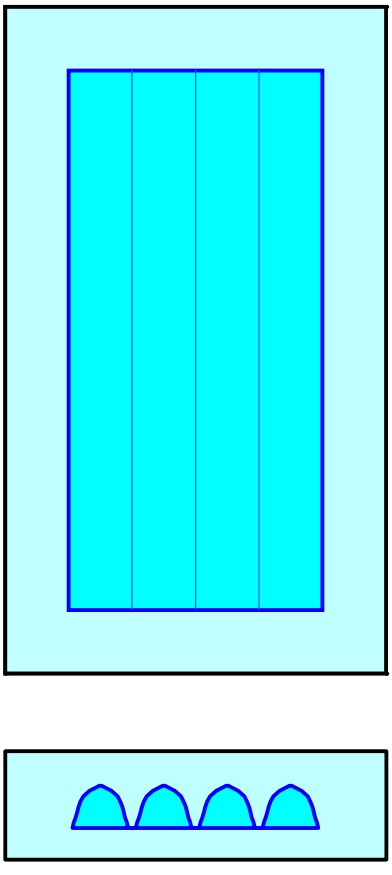
1 Chambers/Row x 8.00' Long +0.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
1 Rows x 48.0" Wide + 12.0" Side Stone x 2 = 6.00' Base Width
6.0" Stone Base + 8.5" Chamber Height + 6.0" Stone Cover = 1.71' Field Height

1 Chambers x 13.3 cf +0.50' Row Adjustment x 1.67 sf x 1 Rows = 14.2 cf Chamber Storage

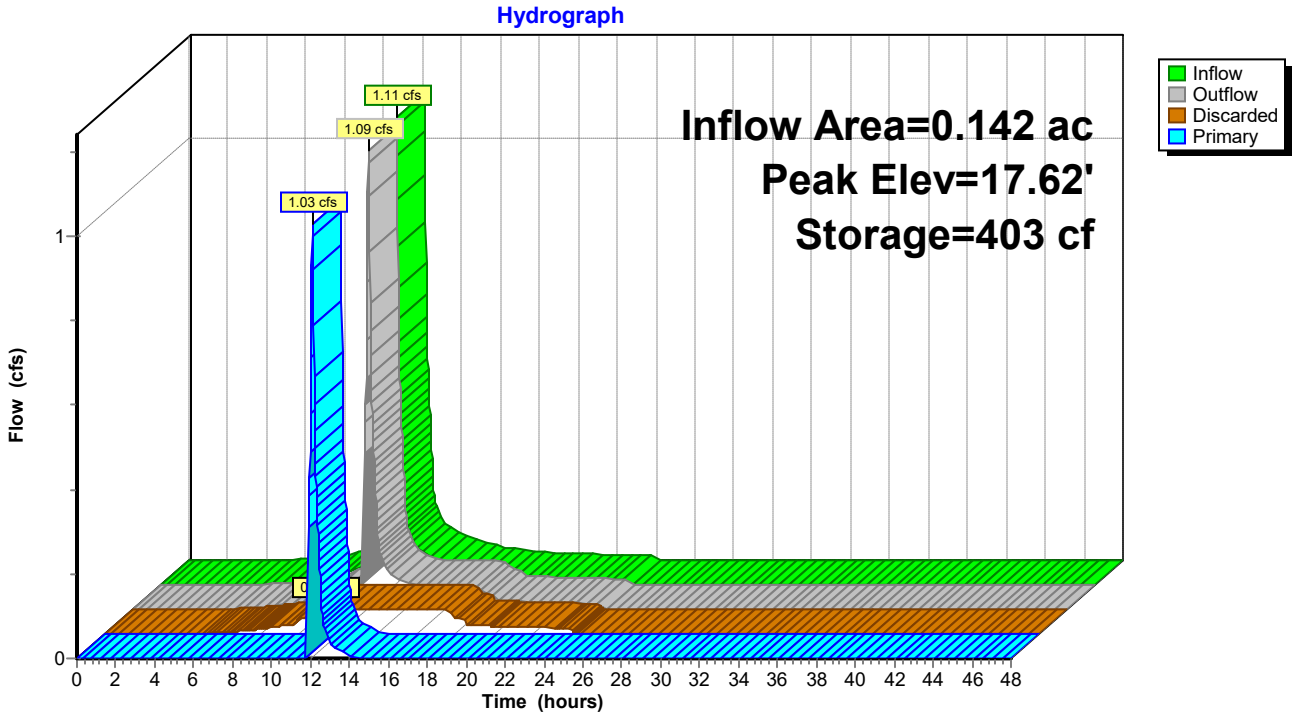
107.6 cf Field - 14.2 cf Chambers = 93.5 cf Stone x 40.0% Voids = 37.4 cf Stone Storage

Chamber Storage + Stone Storage = 51.5 cf = 0.001 af
Overall Storage Efficiency = 47.9%
Overall System Size = 10.50' x 6.00' x 1.71'

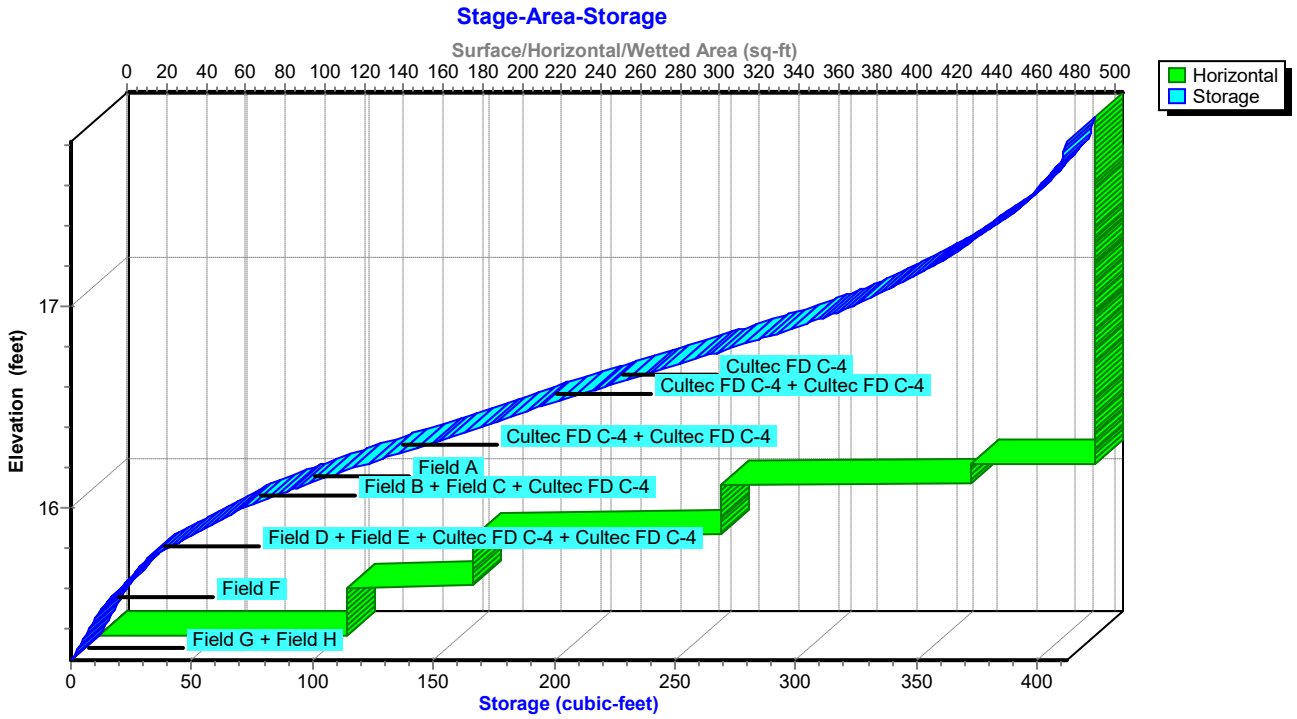
1 Chambers
4.0 cy Field
3.5 cy Stone



Pond 7P: STORMWATER MGMT PRACTICE



Pond 7P: STORMWATER MGMT PRACTICE

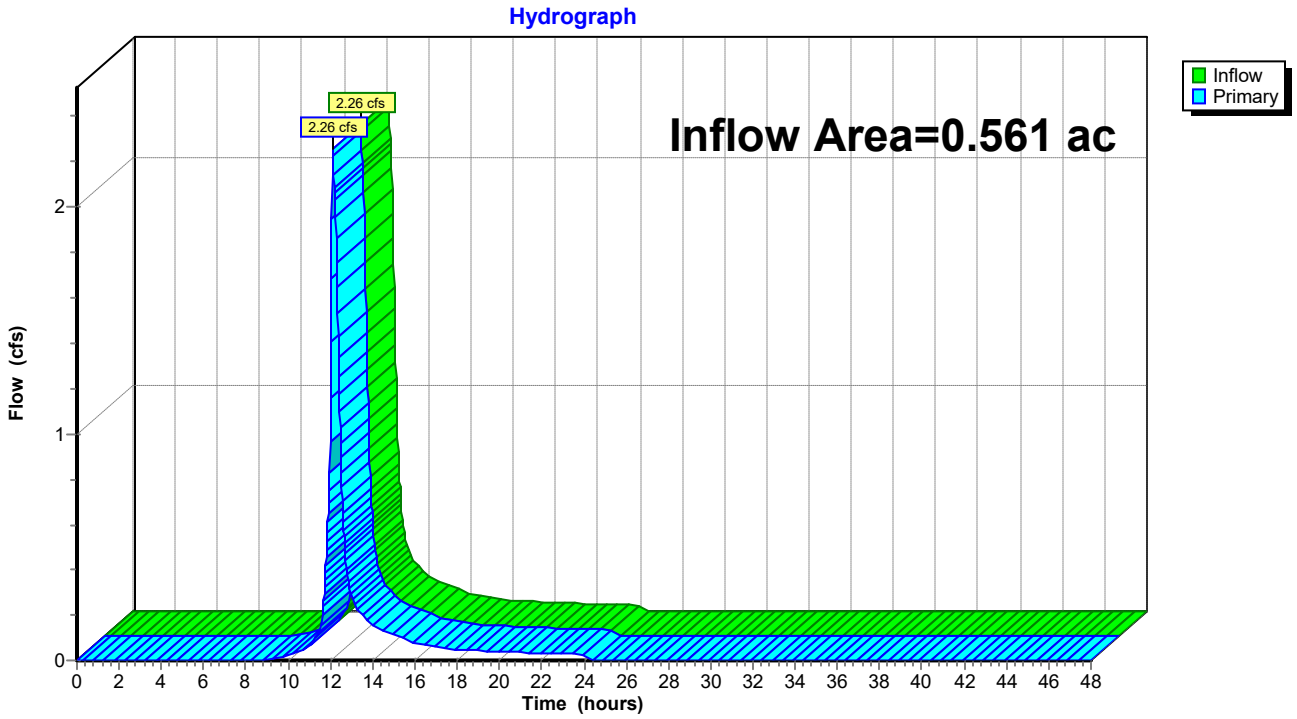


Summary for Link 5L: DESIGN LINE

Inflow Area = 0.561 ac, 16.80% Impervious, Inflow Depth = 3.84" for 100-year event
Inflow = 2.26 cfs @ 12.11 hrs, Volume= 0.179 af
Primary = 2.26 cfs @ 12.11 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 5L: DESIGN LINE



Appendix B

Maintenance of Stormwater Drainage and Management Practices

MAINTENANCE OF STORMWATER DRAINAGE AND MANAGEMENT PRACTICES

Subsurface Chambers - The proposed subsurface chambers do not provide a direct means of access to the facility, although catch basins and observation ports will be provided to provide access to the chambers for maintenance, inspection and removal of accumulated sediment.

STORMWATER MANAGEMENT PRACTICE	MAINTENANCE AND INSPECTION MEASURES
Subsurface Chambers	Inspect for: (i) Depth of sediment, if any, through inspection via the installed observation port on each row of the chambers during the first 2 to 3 months of operation, and thereafter on an annual basis. (ii) The rate of dewatering of the infiltration facility following a precipitation event. The chambers should fully dewater within 48 hours of the end of the precipitation event.
	Maintenance Measures include: (i) Observation of the depth of sediment, if any, through inspection via the installed observation port on each row of the chambers during the first 2 to 3 months of operation, and thereafter on an annual basis. (ii) Remove sediment from pre-treatment facility when the depth of sediment reaches 50% of capacity of the facility. (iii) Remove sediment from chambers when the depth of sediment is 3" in depth. (iv) The manufacturer of the chambers recommends cleaning of the stormwater management chambers every 9 years after installation and every 9 years thereafter. (v) The manufacturer also recommends that 45 years after installation, the chambers be inspected using closed circuit television (CCTV) or other comparable technique to determine the condition of the interior of the chambers, and rehabilitate or replace as may be necessary.
Catch Basins	Inspection Procedures: Inspect the catch basins annually in the spring or summer. Inspect for: (i) sediment deposition or floatables in the structure, and (ii) structural integrity.
	Maintenance Tasks include: • Remove grate or cover • Skim off oils and floatables • Using a yardstick, measure the depth of sediment • If sediment is at a depth greater than 6", then vacuum or manually remove sediment. If not replace grate or cover. • Record depth & date when the work is done.

<table>
<tr><td>Hydrodynamic Separators Maintenance Procedures</td><td><u>Inspection Procedures:</u> Inspect the hydrodynamic separator annually in the spring. Inspect for: (i) sediment deposition or floatables in the structure, and (ii) structural integrity.</td></tr>
<tr><td></td><td><u>Maintenance Tasks</u> include:
Clean out the unit once the sediment depth reaches the recommended maintenance sediment depth, which is approximately 15% of the unit's total storage capacity (see table below). The frequency may be adjusted based on historical inspection results due to variable site sediment loading.

<table><tr><td>STC Model</td><td>Maintenance Sediment Depth (in inches)</td></tr><tr><td>STC 450i</td><td>8</td></tr></table>
Equipment is typically required for inspection includes:
Manhole access cover lifting tool
Oil dipstick / Sediment probe with ball valve (typically ¾-inch to 1-inch diameter)
Flashlight
Camera
Data log / Inspection Report
Safety cones and caution tape
Hard hat, safety shoes, safety glasses, and chemical-resistant gloves</td></tr>
<tr><td>Hydrodynamic Separators Maintenance Procedures</td><td>Stormceptor is to be inspected from grade through a standard surface manhole access cover. Sediment and oil depth inspections are performed with a sediment probe and oil dipstick.
Oil depth is measured through the oil inspection port, either a 4-inch or 6-inch diameter port.
Sediment depth can be measured through the oil inspection port or the 24-inch diameter outlet riser pipe.
Inspections also involve a visual inspection of the internal components of the system
Ideally maintenance should be conducted during dry weather conditions when no flow is entering the unit.
Stormceptor is to be maintained through a standard surface manhole access cover.
Insert the oil dipstick into the oil inspection port. If oil is present, pump off the oil layer into separate containment using a small pump and tubing.
Maintenance cleaning of accumulated sediment is performed with a vacuum truck.
For 6-ft diameter models and larger, the vacuum hose is inserted into the lower chamber via the 24-inch outlet riser pipe.
For 4-ft diameter model, the removable drop tee is lifted out, and the vacuum hose is inserted into the lower chamber via the 12-inch drop tee hole.</td></tr>
</table>

APPENDIX C

CONTRACTOR CERTIFICATION

As established in the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-20-001, Issued Pursuant to Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law:

Prior to the commencement of construction activity, the owner or operator must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The owner or operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the trained contractor. The owner or operator shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed.
The owner or operator shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any construction activity:

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations".

_____ _____

Contractor Name and Signature Date

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the construction site. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.