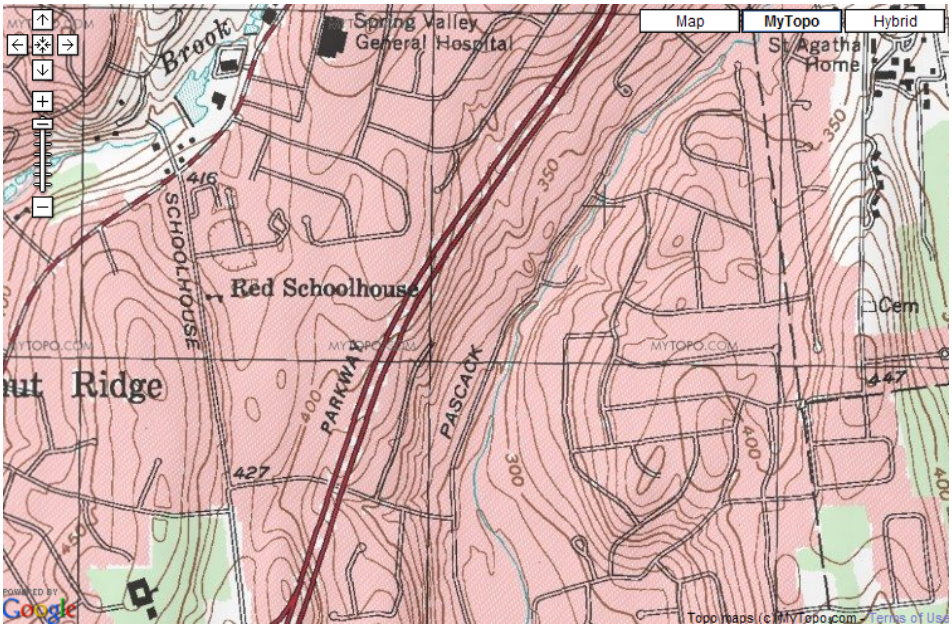
Appendix D

Stormwater Pollution Prevention Plan

STORMWATER POLLUTION PREVENTION PLAN
FOR FOSTER CHURCH INC.
BRETHREN GOSPEL HALL

FEBRUARY 2011



Prepared by

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Foster Church Inc. property is located on the west side of South Pascack Road in the Village of Chestnut Ridge (See Figure A-1 Location Map). The lots involved are tax lots 63.18-1-4 and 63.17-2-19 as shown on the Town of Ramapo tax map and currently totals 6.09 acres. Currently there are two residential dwellings as well as driveways and accessory structures on the two lots. The proposed plan includes a 780 seat Worship Hall with a parking lot and a residential dwelling.

Construction of the new building and paved parking areas will cause a change in the site. Currently the site has two residential dwellings with driveways and accessory structures. Proposed drainage improvements include a series of catch basins for collection and discharge into a water quality basin. The basin will treat the water for quality and detain it to monitor the discharge from the site. The undisturbed portion of the site will bypass the water quality basin via swales to follow existing drainage patterns. The residence will have a small rain garden for quality treatment purposes.

1 Introduction and Site Description

This study is a preliminary stormwater management plan, prepared in conjunction with the Applicant's application for preliminary site plan approval.

The project consists of constructing an approximate 16,100 square feet proposed house of worship and associated parking areas located in a residential area on South Pascack Road with a residential dwelling on an adjoining lot. The fellowship hall will have 780 seats, of which a full hall is expected only 2 or 3 times a year. The existing dwellings and ancillary structures will be demolished as part of the development project.

The 5.90 acre project site (tax lots 63.18-1-4 & 63.17-2-19) is located on the west side of South Pascack Road in the Village of Chestnut Ridge, Town of Ramapo, County of Rockland, New York, and is bordered by Pascack Road to the east and private residences on the north, south and west sides, with a small portion of the site fronting Nicole Way to the west. The existing property is primarily covered with woods and open spaces surrounding existing dwellings located along South Pascack Road. No wetlands are located on the project site.

2 Site Drainage and Drainage Basin Description

The site currently discharges to the east and sheet flows across South Pascack Road into the Pascack Brook as shown in Figure A-2 Existing Drainage Areas Map. The

existing area is covered with woods, open spaces and the existing residences, driveways and accessory structures.

Under the proposed development (see Map A-3), the site is divided into 2 drainage subbasins. The existing drainage area is subdivided into Proposed Drainage Area 1 and 2. Drainage Area 1 is the portion to be treated while area 2 bypasses treatment. Portions of the undeveloped area (2) are diverted to swales and directed to catch basins which direct the water to combine with the water being discharged from the water quality basin so all water may continue to discharge on the opposite side of Pascack Road and all the water to flow to the Pascack Brook to maintain current drainage patterns. The residential lot will have a small rain garden to treat for quality and has been included in drainage area 2.

The water quality basin has been designed to meet NYSDEC standards. The basin has an 18" outlet pipe with a 3" orifice for quality control and an 18" orifice for quantity control in a 4'x4' riser. The orifice has been placed so that 20% of the water quality volume is in the permanent pool, below the orifice. A 10 foot broad crested weir is included as an emergency spillway as well. A summary is provided in Section 4 of this report.

The basin is designed as a P-1 Micropool Extended Detention Pond as per the New York State Stormwater Management Design Manual. The pond fits the design as the drainage area is less than 10 acres as suggested and 20% of the water quality volume will remain in the permanent pool.

All drainage components are designed in accordance with the NYSDEC Phase II stormwater regulations for treatment of the runoff to improve water quality.

According to the National Resource Conservation Service (NRCS), soils on the project area are WeB, WeC and WeD. These soils are Wethersfield gravelly silt loams with 3-8%, 8-15% and 15-25% slopes, respectively.

3 General Study Methodology

In the existing condition, stormwater runoff flows across the site towards the eastern property line and sheet flows across South Pascack Road towards the Pascack Brook. Under the proposed, developed condition, runoff from the developed area is collected via a system of catch basins and pipes and redirected to the proposed water quality basin where it is treated, and then allowed to combined with water collected via swales from the undeveloped portion of the site and discharged on the opposite side of South Pascack Road so it may flow towards the Pascack Brook to follow current drainage patterns. The undeveloped portion of the drainage area is directed partially through

swales and catch basins so it combines with the discharge from the water quality basin, however it does not go through the water quality basin. There is also a portion which maintains its current runoff pattern without entering the system.

WQv calculations were performed in accordance with the NYSDEC Stormwater Management Design Manual (SMDM) and can be found in Appendix B. Routing calculations were made using the Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2008 computer modeling program. This program uses standard SCS methods of overall hydrograph calculations (TR-20 and TR-55), and allows, for example, direct entry of sub-watershed characteristics to calculate Times of Concentration (TCs). The model description and calculation methodology is presented in Appendix C.

As previously mentioned, soils on the site are classified as Hydrologic Soil Group C. Composite Curve Number (CN) values were calculated for the site and can be found in Appendix B. CN values were based on the existing condition being comprised of wooded areas, open space, gravel from the driveways and impervious area from the existing residences and accessory structures. The proposed condition maintains some of the wooded area and converts most of the existing open space to lawn and landscaped areas.

Table 1 – Summary of Drainage Basin Characteristics

Site Basin	Total Area (Acres)	Impervious Area (Acres)	CN	TC (minutes)
Existing				
Drainage Area 1	7.16	0.45	72	15.1
Proposed				
Drainage Area 1	3.58	2.34	89	8.9
Drainage Area 2	3.58	0.34	75	11.9

TR-55 Methods were used for calculating Times of Concentration (TC), and are presented in the model output. The TC paths are also shown on the Existing Drainage Areas Map and the Proposed Drainage Areas Map.

4 Model Results

The following table presents the overall model results; details are presented in Appendix C. Refer to Figures A-2 and A-3 for the existing and proposed drainage areas, respectively. A schematic of the model routing can be found in Appendix C, Hydrology Model Results.

Table 2 – Summary of Model Results

Basin	Peak Flow, CFS		
(Hydr. #)	1-YR	10-YR	100-YR
Existing			
Drainage Area 1	3.43	13.51	26.51
Proposed			
Drainage Area 1	6.20	13.96	22.33
Drainage Area 2	2.48	8.51	16.04
Quality Basin	0.38	4.36	9.52
Combined Area	2.78	11.00	24.42
Difference	-0.65	-2.51	-2.09

For each storm event, there is a net decrease in peak flow.

5 Basin Sizing

The water quality basin was sized to safely pass the 100-year storm event. For discharge, the basin has an 18" outlet pipe exiting a riser. The riser is 4'x4' square. There is a 3" orifice for quality control and an 18" orifice that helps detain the water in larger storm events by controlling the discharge rate.

6 Quality Controls

NYSDEC Phase II regulations call for treatment of the water quality volume (WQv), which is assumed to control 90% of the storms and is defined as

WQv=	P*Rv*A/12
P=	Runoff Coefficient
A=	Area in acres
Rv=	0.05+0.009(I),
	Where I= percent Impervious Cover

Calculations can be found in Appendix B.

The required water quality volume (WQv) for the proposed area is 10,863 cubic feet. Twenty percent of the WQv will be held in the permanent pool below the orifice at elevation 309.20. During any storm deemed a 1 year storm or less, water will be detained to treat water quality by allowing the slow release through the orifice. A 3" orifice is used as that is the smallest allowed when 24 hour detention is not achieved.

Quality control for the residential lot will be through the use of a small rain garden.

7 Sediment and Erosion Controls

The implementation of erosion control measures remains the responsibility of the Contractor to be hired by the Applicant and shall be in accordance with the most recent NYSDEC and local regulations at the time of construction.

Because the disturbance is more than one acre, a SPDES permit for stormwater discharges from construction activities (GP-0-10-001) will be required, along with the submission of a notice of intent (NOI) form to the NYSDEC. The primary components of this plan are the control of incidental releases during construction. The area of disturbance will be less than 5 acres and will comply with NYSDEC regulations.

Should it be found that sediments have left the site; the contractor must take immediate measures to rectify the situation.

7.1 Temporary Erosion and Sediment Control Features

Table 3 presents a narrative of the construction sequence and erosion control plan. The significant components of this plan are as follows. At no time is any of the site to be left unprotected.

Inlet Protection – Once installed and building work begins, every catch basin in a paved area where construction traffic will travel is to have a protection of block and gravel or silt fence (in accordance with NYSDEC details). Sumps will also be provided around newly installed inlets.

Wheel Pad – Trucks must pass through a stone wheel pad prior to leaving the immediate construction area.

Silt Fences – Silt fences are proposed downhill of any soil disturbance and around all soil stockpile areas.

Haybales – Haybales are installed downstream of small catchment areas.

Potential impacts from sediment and erosion during construction would be mitigated by implementation of a detailed Soil Erosion and Sediment Control Plan prepared in accordance with “Guidelines for Urban Erosion and Sediment Control in New York”, latest edition. The objectives of the plan would be to:

Control erosion at its source with temporary control devices.

Minimize the runoff from areas of disturbance.

Remove sediments from stormwater runoff before discharging to the drainage systems.

These objectives would be achieved by implementing the following general soil erosion and control measures during grading and earthwork operations:

Minimize land disturbance.

Minimize the extent of cleared soil at any particular time.

Retain existing vegetation wherever feasible.

Stabilize disturbed areas that would not require further earthwork operations within 48 hours after the land has been cleared.

Minimize the extent of disturbed slopes.

Trap sediment on-site prior to discharge.

Soil erosion and sediment control during construction would be accomplished through a variety of measures, including silt fences, straw haybale dikes, stabilized construction entrances, sediment basins, storm drain inlet protection, and dust control. Additionally, the earthwork contractors would be required to follow the following control procedures:

Have an independent inspection of the effectiveness and condition of erosion control devices during storm events, after each rainfall of 0.5-inch magnitude or greater, prior to weekends, and prior to forecasted storms; at a minimum, every 7 days.

Repair or replace damaged erosion control devices immediately or in no case more than 4 hours after observing such deficiencies.

Be prepared to implement interim drainage controls and erosion control measures as may be necessary during the course of the construction.

Make available on-site all equipment, materials, and labor necessary to effect emergency erosion control and drainage improvement within 4 hours of any impending emergency situation.

Make a final inspection, clean all cross culverts, and sweep roadways.

Have on call at all times a responsible representative who, when authorized, would mobilize the necessary personnel, materials, and equipment and otherwise provide the required action when notified of any impending emergency situation.

Supply a telephone number to the Village Engineer so that the contractor may be contacted during the evenings and on weekends, if necessary.

Maintain a site log and certification of the practices and inspections.

The control measures for this site have been designed to minimize the impact of construction. The majority of the site work will be complete as quickly as possible, so that the building can then be constructed with minimal disturbance.

7.2 Permanent Erosion and Sediment Control Features

All catch basins have some ability to store the first flush of sediment. Water quality controls will have pretreatment as required by NYSDEC regulations.

8 Implementation Schedule and Maintenance

8.1 During Construction

Table 3 presents the schedule and sequence of sedimentation and erosion control features during construction. This is a suggested schedule and is subject to the Contractor's actual schedule, means, and methods.

8.2 After Construction

Table 3 presents the schedule and sequence of sediment and erosion control features after construction. The Owner is committed to maintaining its site facilities.

Table 3 - Stormwater Pollution Control Operations

Prior to Construction	
1.	Notify Village and NYSDEC. Develop list of contacts.
2.	Install Stabilized Construction Entrances, silt fences and hay bales
3.	Set up temporary sediment basins at permanent locations and others. Install diversion swales where necessary.
During Construction	
4.	Maintain and supplement erosion control measures as necessary. At a minimum, inspect all measures weekly and after storm events or incidents.
5.	Check filter fences weekly, and after rainfall events; clean and replace as

	necessary.
6.	Clean out sediment basins when sediment reaches a depth of 12 inches.
7.	Public streets to remain broom clean at the end of each day.
8.	Soil Stockpile areas to be maintained and not to exceed 2:1 slopes. Stockpiles not in use to be seeded and mulched.
After Construction	
9.	Remove erosion control measures and install landscaping as required by Village approvals.
10.	Remove temporary sediment basins.
11.	Monitor landscape restoration growth and dress up as necessary.
12.	Owner to check stormwater basins and controls monthly and after significant rainfall. Basins and controls to be cleaned and kept free of unwanted vegetation and litter

9 Pollution Prevention

Both during and after construction, pollution prevention is an important part of stormwater management. Without working to prevent pollution, stormwater is easily polluted with everyday occurrences even unintentionally. Pollutants can include paints, varnishes, solvents, oil and automotive fluids, solid waste, yard waste, refuse, litter, pesticides, fertilizers, sewage, cleaning solvents, asphalt products, and animal wastes.

The guidelines to help chemical spill prevention include the following (information from http://dnr.louisiana.gov/crm/coastmgt/interagencyaff/nonpoint/pdf/urban1.pdf):

- Properly handle, apply, store and dispose of pesticides.
- Persons mixing and applying these chemicals should be qualified applicators and should wear suitable protective clothing, in accordance with the law.
- Pesticides and herbicides should be used in conjunction with integrated pest management.
- When applying herbicides and pesticides, follow all label directions and additional information provided with the product. Take care not to exceed recommended rates or application.

- Pesticide storage areas on construction sites should be protected from the elements. Storage practices include:
    - Keep in an area that is locked, cool, dry and lined with plastic sheeting
    - Maintain a list of products in storage
    - Tightly close lids
    - Check containers periodically for leaks or deterioration
- Disposal of excess pesticides and pesticide-related wastes as directed on the labels and should be through a licensed waste management firm or a treatment, storage and disposal facility.
- Properly store, handle, use and dispose of petroleum products following subguidelines such as:
    - Line the storage area with a double layer of plastic sheeting
    - Create an impervious berm around the perimeter
    - Clearly label all products
    - Keep tanks off the ground
    - Keep lids securely fastened
    - Oily wastes should be disposed of in proper receptacles or recycled. Waste oil for recycling should not be mixed with degreasers, solvents, antifreeze or brake fluid.
- Provide sanitary facilities for construction workers.
- Store, cover and isolate from drainage courses all construction materials to keep these materials from washing into the water.
- Spill control components should include measures for: immediately stopping the source of the spill, containing any liquid, and covering the spill with absorbent material such as sawdust, kitty litter or kenaf absorbant (DO NOT USE STRAW). Properly dispose of the used absorbent and contaminated material.
- Have persons trained in spill handling on site or on call at all times. Post procedure information onsite. Keep materials for cleaning up spills onsite and readily available.
- Wash, clean or maintain equipment and machinery in confined areas specifically

designed to control runoff.

- Thinners or solvents should not be discharged into sanitary or storm sewer systems when cleaning machinery.
- Use alternative methods for cleaning larger equipment parts, such as high-pressure, high temperature water washes or steam cleaning.
- Equipment-washing detergents can be used and wash water may be discharged into sanitary sewers if solids are removed from the solution first (if the local sewer authority permits such action).
- Small parts can be cleaned with degreasing solvents, which can be reused or recycled. Do not discharge any solvents into sewers.
- Washout from concrete trucks should be disposed of into a designated area that will later be backfilled; an area where the concrete wash can harden, can be broken up, and then can be placed in a dumpster; or a location not subject to urban runoff and more than 50 feet away from a storm drain, open ditch or surface water.
- Provide adequate disposal facilities for solid waste, including asphalt, produced during construction.
- Educate construction workers about proper materials handling and spill response procedures. Distribute or post informational material regarding chemical control.

10 Certifications

10.1 Owner Certification

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

Signature:

_____

Owner

10.2 Contractor Certification

I hereby certify 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 Pollution 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 understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Construction site: Foster Church Inc. Brethren Gospel Church (AKA Lots 63.18-1-4 & 63.17-2-19)

Signature: Date:

_____ _____

Street address

Town, ST Zip Code

Phone number

Contracting Firm Name:_____

Address:_____

Telephone Number:_____

Name of Trained Contractor:_____

Title of Trained Contractor:_____

APPENDIX A - FIGURES

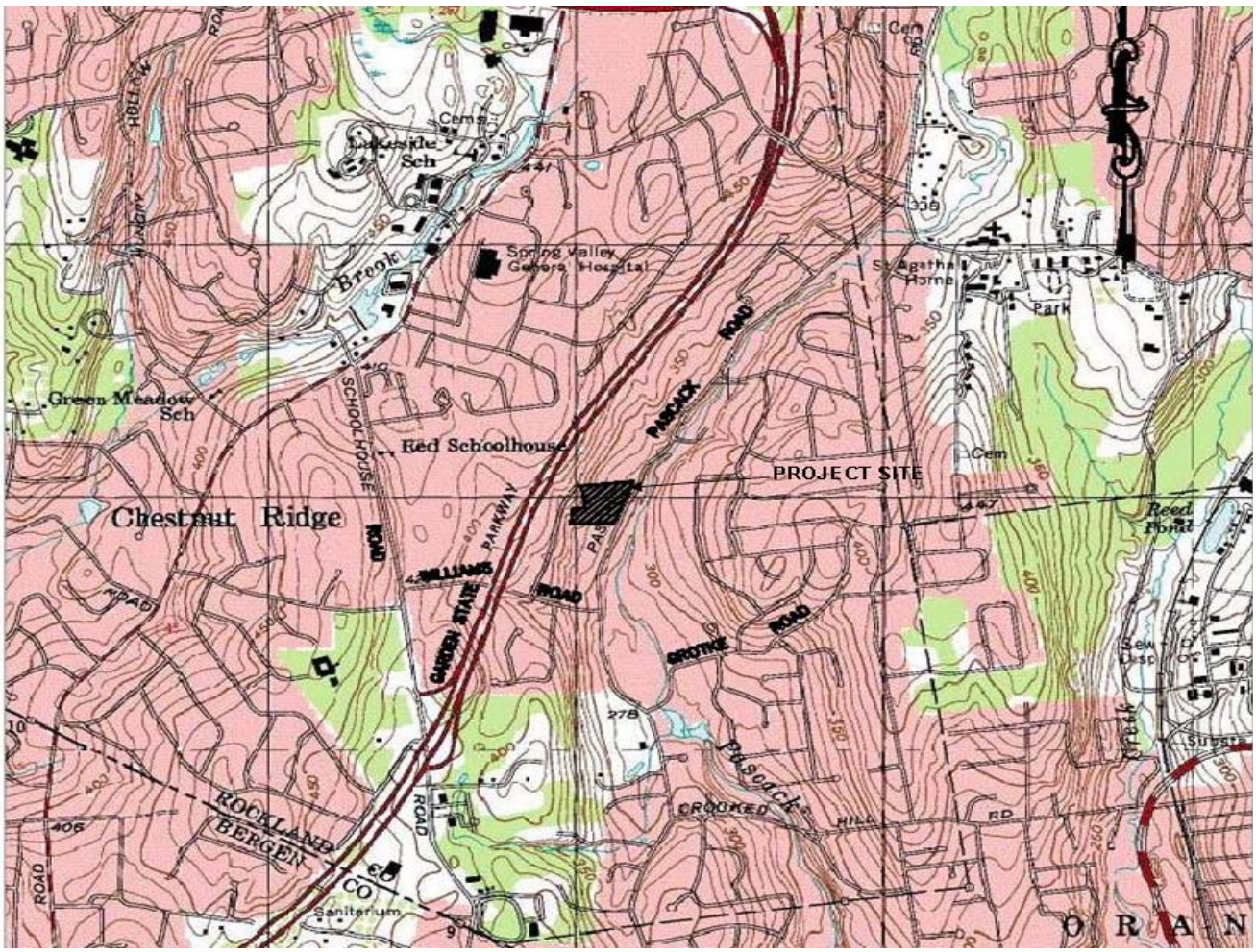

Figure 1 – Site Location Map

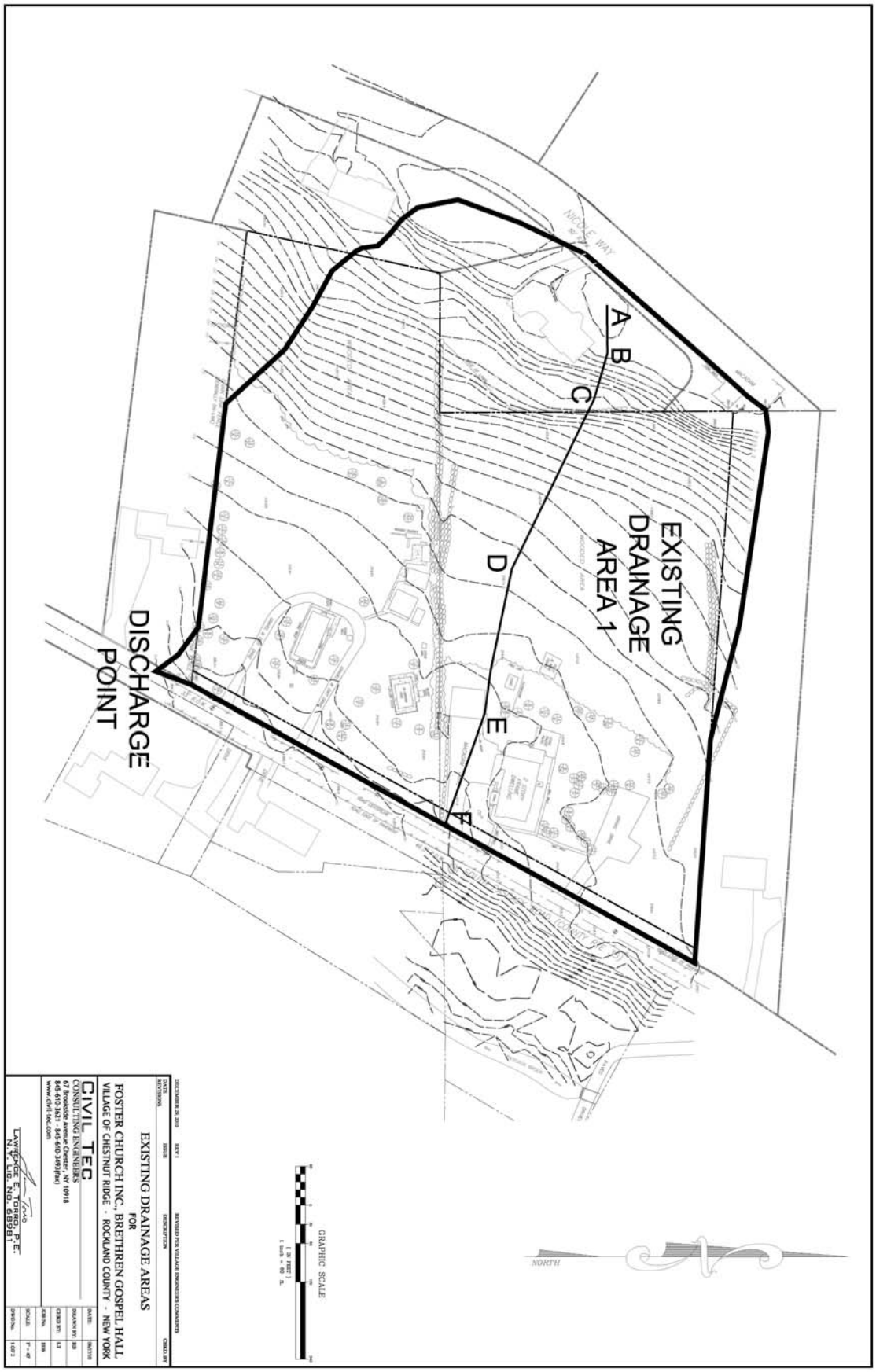

Figure 2 - Drainage Map - Existing Conditions

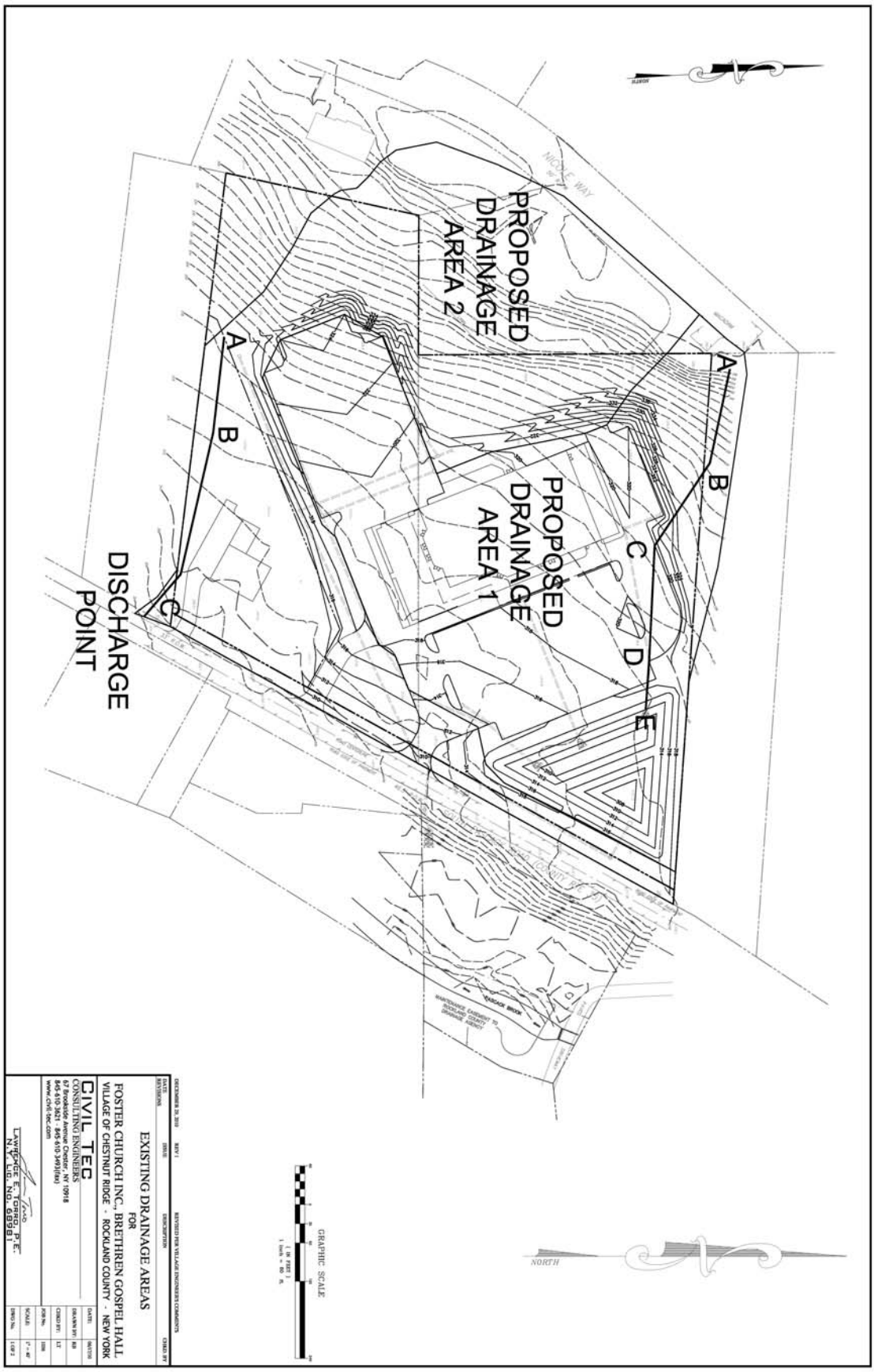

Figure 3 - Drainage Map - Proposed Conditions

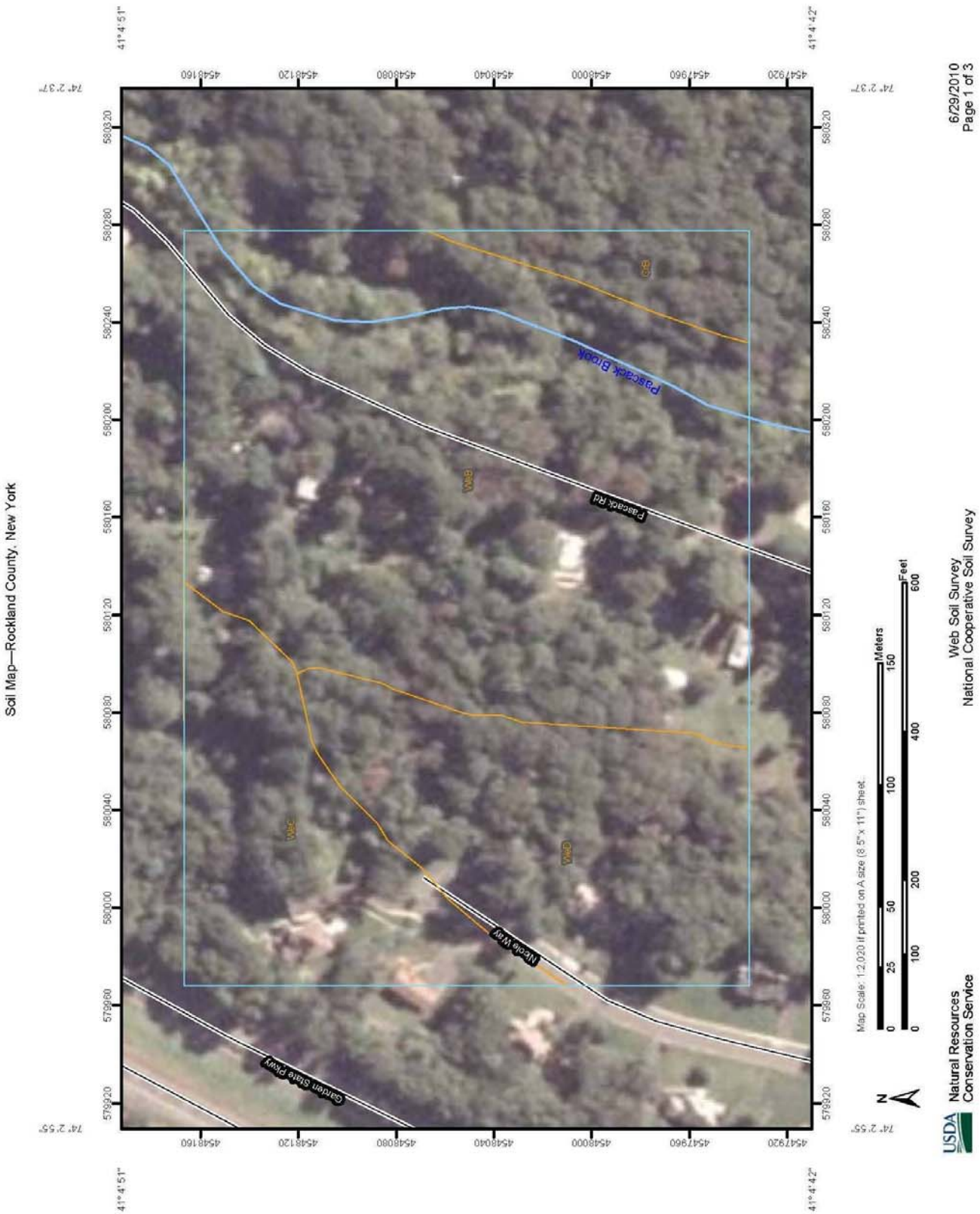

Figure 4 – Soil Map

APPENDIX B - CALCULATIONS

PROJECT NO.	1036
PROJECT NAME	Fosters Church

WATER QUALITY CALCULATIONS

Underground Storage

P (90% Rainfall Number)	1.3
I (Existing Impervious Cover) (SF)	19602
I (New Impervious Cover) (SF)	116741
I (New Impervious Cover) (%)	37.8%
Rv	0.39
Site (SF)	257004
Site (Ac.)	5.9
WQv (ac.-ft.)	0.249
WQv (cf)	***10863.2***

WATERSHED/ SUBBASIN ID	HYDROLOGIC GROUP	COVER TYPE	HYDROLOGIC COND.	TOTAL AREA(AC)	IMPERVIOUS AREA			PERVIOUS AREA			WEIGHTED CN
					AREA(AC)	CN	A * CN	AREA(AC)	CN	A * CN	
EW#1	C	Woods	Good	3.15	0.00	98	0.00	3.15	70	220.46	70
	C	Open Space	Good	3.42	0.00	98	0.00	3.42	74	252.71	74
	C	Gravel	Good	0.15	0.00	98	0.00	0.15	89	13.42	89
	C	Impervious	Good	0.45	0.45	98	43.62	0.00	98	0.00	98
TOTAL:				7.16	0.45		43.62	6.56		473.17	72
SW#1	C	Woods	Good	0.37	0.00	98	0.00	0.37	70	25.82	70
To the pond	C	Open Space/Lawn	Good	0.87	0.00	98	0.00	0.87	74	64.10	74
	C	Impervious	Good	2.34	2.34	98	229.32	0.00	98	0.00	98
TOTAL:				3.58	2.34		229.32	0.87		89.92	89
SW#2	C	Woods	Good	0.87	0.00	98	0.00	0.87	70	60.64	70
Not to the pond	C	Open Space/Lawn	Good	2.37	0.00	98	0.00	2.37	74	175.71	74
	C	Impervious	Good	0.34	0.34	98	33.32	0.00	98	0.00	98
TOTAL:				3.58	0.34		33.32	3.24		236.35	75

WATERSHED/ SUBBASIN ID	HYDROLOGIC GROUP	COVER TYPE	HYDROLOGIC COND.	TOTAL AREA(AC)	IMPERVIOUS AREA			PERVIOUS AREA			WEIGHTED CN
					AREA(AC)	CN	A * CN	AREA(AC)	CN	A * CN	
Swale 1	C	Woods	Good	0.20	0.00	98	0.00	0.20	70	14.02	70
Northwest of building	C	Open Space/Lawn	Good	0.44	0.00	98	0.00	0.44	74	32.89	74
	C	Impervious	Good	0.00	0.00	98	0.00	0.00	98	0.00	98
TOTAL:				0.64	0.00		0.00	0.64		46.91	73
Swale 2	C	Woods	Good	0.10	0.00	98	0.00	0.10	70	6.99	70
North of parking lot	C	Open Space/Lawn	Good	0.44	0.00	98	0.00	0.44	74	32.59	74
	C	Impervious	Good	0.05	0.05	98	4.74	0.00	98	0.00	98
TOTAL:				0.59	0.05		4.74	0.44		39.58	75
Swale 3	C	Woods	Good	0.28	0.00	98	0.00	0.28	70	19.56	70
Westof parking lot	C	Open Space/Lawn	Good	0.22	0.00	98	0.00	0.22	74	16.25	74
	C	Impervious	Good	0.00	0.00	98	0.00	0.00	98	0.00	98
TOTAL:				0.50	0.00		0.00	0.50		35.81	72

Civil Tec CONSULTING ENGINEERS
67 Brookside Avenue
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JOB FOSTER CHURCH
SHEET NO. 1 OF 3
CALCULATED BY RB DATE 2/2/11
CHECKED BY LT DATE 2/2/11
SCALE

SWALE 1 - NORTHWEST OF BUILDING

TOTAL AREA = 28087 SF = .64 AC
IMPERVIOUS = 0 SF = 0 AC
WOODS = 8725 SF = .20 AC
LAWN = 19362 SF = .44 AC

$$C = \frac{0 \times .9 + .2 \times .3 + .44 \times .1}{.64} = .16$$

i FOR 10 YR STORM = 5 IN

$$Q = CiA = .16 \times 5 \times .64 = .52 \text{ acin/hr} = .52 \text{ CFS}$$

CALCULATE MAX FLOW IN SWALE

WIDTH (b) = 2 FT
n = .15
$\theta = 63.43°$
S = .104 FT/FT
depth = 4" = .33 FT

$$V = \frac{1.49}{n} R^{2/3} \sqrt{S}$$

$$R = \frac{bd\sin\theta + d^2\cos\theta}{b\sin\theta + 2d} = \frac{2(.33)\sin 63.43 + .33^2 \cos 63.43}{2\sin 63.43 + 2(.33)}$$

$$R = .48$$

$$V = \frac{1.49}{.15} (.48)^{2/3} \sqrt{.104} = 1.97 \text{ ft/s}$$

$$Q = VA = 1.97 \text{ ft/s} \times (2 \times .33 + .33 \times \tfrac{1}{2} \times .33) = 1.41 \text{ CFS}$$

$.52 \text{ CFS} < 1.41 \text{ CFS}$ ✓

Civil Tec Consulting Engineers
67 Brookside Avenue
Chester, NY 10918

JOB FOSTER CHURCH
SHEET NO. 2 OF 3
CALCULATED BY RB DATE 2/2/11
CHECKED BY LT DATE 2/2/11
SCALE

SWALE 2 - NORTH OF PARKING LOT

TOTAL AREA = 25644 SF = .59AC
IMPERVIOUS = 2109 SF = .05AC
WOODS = 4352 SF = .10 AC
LAWN = 19183 SF = .44 AC

$$C = \frac{.05 \times .9 + .10 \times .3 + .44 \times .1}{.59} = .20$$

i FOR 10 YR STORM = 5 IN

$Q = CiA = .20 \times 5 \times .59 = .60 ac\text{-}in/hr = .60 CFS$

CALCULATE MAX FLOW IN SWALE

WIDTH (b) = 2FT
n = .15
$\theta = 63.43°$
S = .11 FT/FT
depth = 4" = .33 FT

$$V = \frac{1.49}{n} R^{2/3} \sqrt{S}$$

$$R = \frac{bd\sin\theta + d^2\cos\theta}{b\sin\theta + 2d} = \frac{2(.33)\sin 63.43 + .33^2\cos 63.43}{2\sin 63.43 + 2(.33)}$$

R = .48

$$V = \frac{1.49}{.15}(.48)^{2/3}\sqrt{.11} = 2.03 FT/S$$

$Q = VA = 2.03 ft/s\ (2 \times .33 + .33 \times 1/2 \times .33) = 1.47 CFS$

.60 CFS < 1.47 CFS ✓

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Chester, NY 10918

JOB FOSTER CHURCH
SHEET NO. 3 OF 3
CALCULATED BY RB DATE 2/2/11
CHECKED BY LT DATE 2/2/11
SCALE

SWALE 3 - WEST OF PARKING LOT

TOTAL AREA = 21736 SF = .50 AC
IMPERVIOUS = 0 SF = 0 AC
WOODS = 12172 SF = .28 AC
LAWN = 9564 SF = .22 AC

$$C = \frac{0 \times .9 + .28 \times .3 + .22 \times .1}{.50} = .21$$

i FOR 10 YR STORM = 5 IN

$$Q = CiA = .21 \times 5 \times .50 = .53 \text{ ac in/hr} = .53 \text{ CFS}$$

CALCULATE MAX FLOW IN SWALE

WIDTH (b) = 2 FT
n = .15
$\theta = 63.43°$
S = .128 FT/FT
depth = 4" = .33 FT

$$V = \frac{1.49}{n} R^{2/3} \sqrt{S}$$

$$R = \frac{bd\sin\theta + d^2\cos\theta}{b\sin\theta + 2d} = \frac{2(.33)\sin 63.43 + .33^2 \cos 63.43}{2\sin 63.43 + 2(.33)}$$

R = .48

$$V = \frac{1.49}{.15} (.48)^{2/3} \sqrt{.128} = 2.19 \text{ FT/S}$$

$$Q = VA = 2.19 \text{ FT/S} (2 \times .33 + .33 \times 1/2 \times .33) = 1.58 \text{ CFS}$$

.53 CFS < 1.58 CFS ✓

Civil Tec Consulting Engineers

STORM DRAINAGE PIPE DESIGN WORKSHEET

67 Brookside Ave.
Chester, NY 10918

WO. NO.	DATE	REVISED	SHEET
1036	01/11/11	03/25/11	OF

PROJECT TITLE	LOCATION	STORM FREQUENCY	PIPE TYPE
Foster Church	**Chestnut Ridge, NY**	**25**	**HDPE**

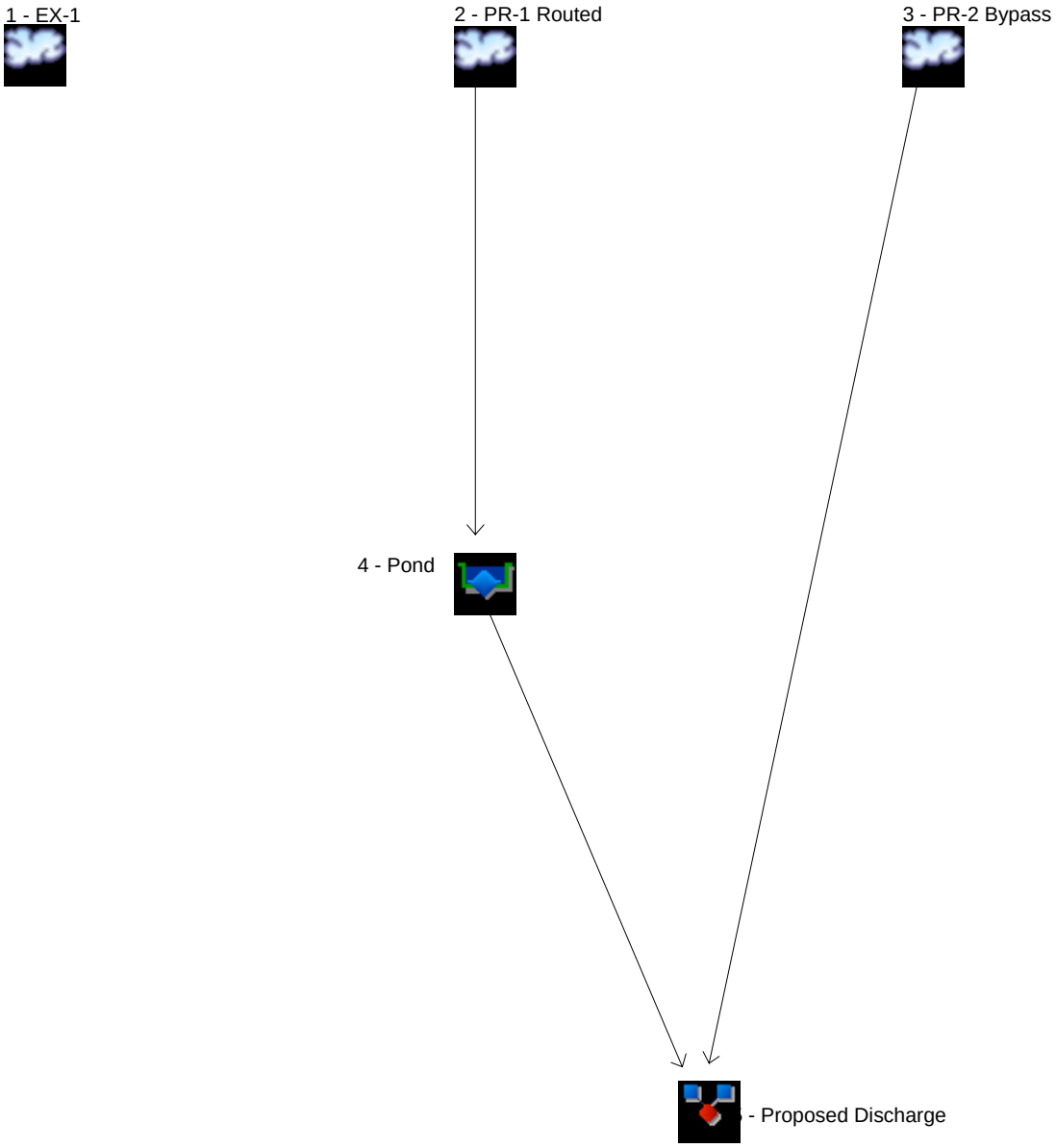
CALCULATED BY	APPROVED BY	REF DRAWING(S)	RAINFALL CURVE
RB	**LT**		

LOCATION		ROAD	ACRES					TIME CONC. - MIN				"Q"		PIPE								DROP	INV	INV	GRATE	Depth to	Cover	Cover
FROM	TO	STA:	SUB.	TOTAL	"C"	CA	ΣCA	Inlet	Pipe	TOTAL	"i"	Des.	Cap.	"n"	Size	Height	V Des	V Cap	Slope	Lgth.	Fall		Upper	Lower	Elev	INV	Upper	Lower
CB 1	CB 2		0.09 0.23	0.32	0.90 0.30	0.15	0.15	5.00	1.00	6.00	8.33	1.3	7.0	0.012	15	15	4.3	5.7	1.00	39	0.39		316.00	315.61	319.00	3.00	1.75	2.6
CB 2	CB 3		0.27 -	0.59	0.90 0.30	0.24	0.39	6.00	0.15	6.15	8.00	3.1	7.0	0.012	15	15	5.5	5.7	1.00	135	1.35	0.00	315.61	314.26	319.50	3.89	2.64	3.5
CB 3	FES 1		0.10 0.35	1.04	0.90 0.30	0.20	0.59	6.15	0.41	6.56	7.95	4.7	11.4	0.012	18	18	6.1	6.4	1.00	52	0.52	0.25	314.01	313.49	319.00	4.99	3.49	(1.0)
FES 1			- -	1.04	0.90 0.30																				314.00			
CB 4	CB 5		0.30 -	0.30	0.90 0.30	0.27	0.27	5.00	1.00	6.00	8.33	2.3	9.8	0.012	15	15	6.4	8.0	1.95	123	2.40	1.25	315.40	313.00	318.40	3.00	1.75	1.7
CB 5	FES 2		0.19 -	0.49	0.90 0.30	0.17	0.44	6.00	0.32	6.32	8.00	3.5	7.0	0.012	15	15	5.7	5.7	1.00	29	0.29	0.00	313.00	312.71	316.00	3.00	1.75	(1.3)
FES 2			- -	0.49	0.90 0.30																				312.70			
CB 6	CB 7		0.11 0.01	0.12	0.90 0.30	0.10	0.10	5.00	1.00	6.00	8.33	0.9	7.0	0.012	15	15	3.8	5.7	1.00	72	0.72	1.25	316.20	315.48	320.30	4.10	2.85	1.3
CB 7	CB 8		0.19 0.05	0.36	0.90 0.30	0.19	0.29	6.00	0.32	6.32	8.00	2.3	7.0	0.012	15	15	5.1	5.7	1.00	123	1.23	0.00	315.48	314.25	318.00	2.52	1.27	2.5
CB 8	CB 10		0.17 -	0.53	0.90 0.30	0.15	0.57	6.32	0.40	6.72	7.90	4.5	7.0	0.012	15	15	6.0	5.7	1.00	114	1.14	0.00	314.25	313.11	318.00	3.75	2.50	3.6
CB 10	CB 11		0.23 -	0.76	0.90 0.30	0.21	0.77	6.72	0.31	7.03	7.78	6.0	11.4	0.012	18	18	6.5	6.5	1.01	90	0.91	0.25	312.86	311.95	318.00	5.14	3.64	0.7
CB 11	CB 12		0.16 -	0.92	0.90 0.30	0.14	0.92	7.03	0.23	7.26	7.68	7.1	12.5	0.012	18	18	7.2	7.1	1.20	82	0.98	0.00	311.95	310.97	314.20	2.25	0.75	1.5
CB 12	FES 3		0.25 -	1.17	0.90 0.30	0.23	1.22	7.26	0.19	7.45	7.62	9.3	11.4	0.012	18	18	7.2	6.4	1.00	61	0.61	0.00	310.97	310.36	314.00	3.03	1.53	(0.4)
FES 3			- -	1.17	0.90 0.30																				311.50			
CB 9	CB 8		0.14 -	0.14	0.90 0.30	0.13	0.13	5.00	1.00	6.00	8.33	1.1	7.0	0.012	15	15	4.1	5.7	1.00	72	0.72	1.25	315.00	314.28	320.30	5.30	4.05	2.5
CB 8			- -	0.14	0.90 0.30																				318.00			
CB 13	CB 12		0.09 -	0.09	0.90 0.30	0.08	0.08	5.00	1.00	6.00	8.33	0.7	7.0	0.012	15	15	3.5	5.7	1.00	33	0.33	1.25	311.80	311.47	314.30	2.50	1.25	1.3

			-		0.90																								
CB 12			-	0.09	0.30																						314.00			
			0.05		0.90																								
FES 4	CB 14		0.54	0.59	0.30	0.21	0.21	5.00	1.00	6.00	8.33	1.7	35.0	0.012	15	15	14.7	28.5	25.00	18	4.50	1.25	319.50	315.00	319.50	-	(1.25)	2.8	
			0.05		0.90																								
CB 14	DMH 3		0.27	0.91	0.30	0.13	0.53	6.00	0.02	6.02	8.00	4.2	11.4	0.012	18	18	5.9	6.4	1.00	151	1.51	0.25	313.60	312.09	319.00	5.40	3.90	4.2	
			-		0.90																								
DMH 3	CB 16		-	0.91	0.30	-	0.98	6.02	0.42	6.44	7.99	7.8	14.4	0.012	18	18	8.3	8.2	1.61	267	4.30	0.00	312.09	307.79	317.80	5.71	4.21	0.7	
			0.03		0.90																								
CB 16	CB 17		-	0.94	0.30	0.03	1.00	6.44	0.54	6.98	7.86	7.9	16.1	0.012	18	18	9.0	9.1	2.00	21	0.42	0.00	307.79	307.37	310.00	2.21	0.71	1.1	
			0.07		0.90																								
CB 17	DMH 2		-	1.01	0.30	0.06	1.07	6.98	0.04	7.02	7.70	8.2	56.4	0.012	24	24	12.6	18.0	5.30	53	2.81	0.50	305.60	302.79	310.00	4.40	2.40	2.7	
			-		0.90																								
DMH 2	HW 1		-	1.01	0.30	-	1.07	7.02	0.07	7.09	7.69	8.2	17.3	0.012	24	24	5.4	5.5	0.50	19	0.10	0.00	302.60	302.51	307.50	4.90	2.90	(2.0)	
HW 1																									302.50				
			-		0.90																								
FES 5	CB 14		0.64	0.64	0.30	0.19	0.19	5.00	1.00	6.00	8.33	1.6	35.0	0.012	15	15	13.8	28.5	25.00	15	3.75	1.25	319.50	315.75	319.50	-	(1.25)	2.0	
CB 14																									319.00				
			0.50		0.90																								
CB 15	DMH 3		-	0.50	0.30	0.45	0.45	5.00	1.00	6.00	8.33	3.8	9.0	0.012	15	15	7.0	7.3	1.65	170	2.81	1.25	316.00	313.20	319.00	3.00	1.75	3.4	
DMH 3																									317.80				

APPENDIX C – HYDROLOGY MODEL RESULTS

Watershed Model Schematic



Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	3.433	-------	-------	-------	13.51	-------	-------	26.51	EX-1
2	SCS Runoff	-------	6.199	-------	-------	-------	13.96	-------	-------	22.33	PR-1 Routed
3	SCS Runoff	-------	2.480	-------	-------	-------	8.513	-------	-------	16.04	PR-2 Bypass
4	Reservoir	2	0.378	-------	-------	-------	4.361	-------	-------	9.524	Pond
5	Combine	3, 4	2.784	-------	-------	-------	11.00	-------	-------	24.42	Proposed Discharge

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	3.433	2	732	16,113	----	------	------	EX-1
2	SCS Runoff	6.199	2	726	21,195	----	------	------	PR-1 Routed
3	SCS Runoff	2.480	2	730	10,324	----	------	------	PR-2 Bypass
4	Reservoir	0.378	2	864	21,187	2	311.92	13,712	Pond
5	Combine	2.784	2	730	31,512	3, 4	------	------	Proposed Discharge

Hydrograph Report

Hyd. No. 1

EX-1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.433 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 16,113 cuft
Drainage area	= 7.160 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.1 min
Total precip.	= 2.70 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.07	2.048
12.10	2.554
12.13	2.998
12.17	3.303
12.20	3.433 <<
12.23	3.425
12.27	3.333
12.30	3.190
12.33	2.999
12.37	2.772
12.40	2.531
12.43	2.307
12.47	2.114
12.50	1.941
12.53	1.771

...End

TR55 Tc Worksheet

Hyd. No. 1

EX-1

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.240		0.011		
Flow length (ft)	= 50.0		50.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		3.50		0.00		
Land slope (%)	= 1.00		28.00		0.00		
Travel Time (min)	**= 10.34**	**+**	**2.73**	**+**	**0.00**	**=**	**13.07**
Shallow Concentrated Flow							
Flow length (ft)	= 195.00		153.00		122.00		
Watercourse slope (%)	= 13.30		3.00		3.00		
Surface description	= Unpaved		Unpaved		Paved		
Average velocity (ft/s)	= 5.88		2.79		3.52		
Travel Time (min)	**= 0.55**	**+**	**0.91**	**+**	**0.58**	**=**	**2.04**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	= 0.00		0.00		0.00		
Flow length (ft)	= 0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 15.11 min

Hydrograph Report

Hyd. No. 2

PR-1 Routed

Hydrograph type	= SCS Runoff	Peak discharge	= 6.199 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 21,195 cuft
Drainage area	= 3.580 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.9 min
Total precip.	= 2.70 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.00	3.853
12.03	4.890
12.07	5.800
12.10	6.199 <<
12.13	5.985
12.17	5.367
12.20	4.607
12.23	3.905
12.27	3.364

...End

TR55 Tc Worksheet

Hyd. No. 2

PR-1 Routed

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		0.00		0.00		
Land slope (%)	= 23.00		0.00		0.00		
Travel Time (min)	**= 7.73**	**+**	**0.00**	**+**	**0.00**	**=**	**7.73**
Shallow Concentrated Flow							
Flow length (ft)	= 103.00		117.00		0.00		
Watercourse slope (%)	= 13.00		2.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	= 5.82		2.87		0.00		
Travel Time (min)	**= 0.30**	**+**	**0.68**	**+**	**0.00**	**=**	**0.97**
Channel Flow							
X sectional flow area (sqft)	= 1.77		0.00		0.00		
Wetted perimeter (ft)	= 4.71		0.00		0.00		
Channel slope (%)	= 2.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	= 7.29		0.00		0.00		
Flow length (ft)	= 70.0		0.0		0.0		
Travel Time (min)	**= 0.16**	**+**	**0.00**	**+**	**0.00**	**=**	**0.16**

Total Travel Time, Tc ..... 8.90 min

Hydrograph Report

Hyd. No. 3

PR-2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 2.480 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 10,324 cuft
Drainage area	= 3.580 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.9 min
Total precip.	= 2.70 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.03	1.447
12.07	1.846
12.10	2.201
12.13	2.421
12.17	2.480 <<
12.20	2.419
12.23	2.291
12.27	2.127
12.30	1.939
12.33	1.749
12.37	1.582
12.40	1.449
12.43	1.338

...End

TR55 Tc Worksheet

Hyd. No. 3

PR-2 Bypass

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		0.00		0.00		
Land slope (%)	= 4.00		0.00		0.00		
Travel Time (min)	**= 10.34**	**+**	**0.00**	**+**	**0.00**	**=**	**10.34**
Shallow Concentrated Flow							
Flow length (ft)	= 209.00		0.00		0.00		
Watercourse slope (%)	= 2.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	= 2.28		0.00		0.00		
Travel Time (min)	**= 1.53**	**+**	**0.00**	**+**	**0.00**	**=**	**1.53**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	= 0.00		0.00		0.00		
Flow length (ft)	= 0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 11.90 min

Hydrograph Report

Hyd. No. 4

Pond

Hydrograph type	= Reservoir	Peak discharge	= 0.378 cfs
Storm frequency	= 1 yrs	Time to peak	= 14.40 hrs
Time interval	= 2 min	Hyd. volume	= 21,187 cuft
Inflow hyd. No.	= 2 - PR-1 Routed	Reservoir name	= Pond
Max. Elevation	= 311.92 ft	Max. Storage	= 13,712 cuft

Storage Indication method used. Wet pond routing start elevation = 309.20 ft.

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
11.60	0.686	310.01	0.200	0.189	-----	-----	-----	-----	-----	-----	-----	0.189
11.63	0.794	310.02	0.201	0.191	-----	-----	-----	-----	-----	-----	-----	0.191
11.67	0.930	310.03	0.202	0.193	-----	-----	-----	-----	-----	-----	-----	0.193
11.70	1.088	310.05	0.204	0.195	-----	-----	-----	-----	-----	-----	-----	0.195
11.73	1.263	310.07	0.205	0.198	-----	-----	-----	-----	-----	-----	-----	0.198
11.77	1.449	310.10	0.208	0.202	-----	-----	-----	-----	-----	-----	-----	0.202
11.80	1.643	310.13	0.210	0.206	-----	-----	-----	-----	-----	-----	-----	0.206
11.83	1.846	310.16	0.213	0.211	-----	-----	-----	-----	-----	-----	-----	0.211
11.87	2.057	310.20	0.217	0.216	-----	-----	-----	-----	-----	-----	-----	0.216
11.90	2.277	310.25	0.224	0.222	-----	-----	-----	-----	-----	-----	-----	0.222
11.93	2.565	310.30	0.233	0.228	-----	-----	-----	-----	-----	-----	-----	0.228
11.97	3.045	310.36	0.244	0.235	-----	-----	-----	-----	-----	-----	-----	0.235
12.00	3.853	310.43	0.254	0.244	-----	-----	-----	-----	-----	-----	-----	0.244
12.03	4.890	310.52	0.263	0.254	-----	-----	-----	-----	-----	-----	-----	0.254
12.07	5.800	310.64	0.274	0.266	-----	-----	-----	-----	-----	-----	-----	0.266
12.10	6.199 <<	310.77	0.287	0.280	-----	-----	-----	-----	-----	-----	-----	0.280
12.13	5.985	310.90	0.301	0.292	-----	-----	-----	-----	-----	-----	-----	0.292
12.17	5.367	311.02	0.314	0.304	-----	-----	-----	-----	-----	-----	-----	0.304
12.20	4.607	311.12	0.326	0.313	-----	-----	-----	-----	-----	-----	-----	0.313
12.23	3.905	311.21	0.334	0.321	-----	-----	-----	-----	-----	-----	-----	0.321
12.27	3.364	311.29	0.335	0.328	-----	-----	-----	-----	-----	-----	-----	0.328
12.30	3.007	311.35	0.336	0.333	-----	-----	-----	-----	-----	-----	-----	0.333
12.33	2.761	311.41	0.338	0.338	-----	-----	-----	-----	-----	-----	-----	0.338
12.37	2.550	311.46	0.344	0.342	-----	-----	-----	-----	-----	-----	-----	0.342
12.40	2.335	311.51	0.348	0.346	-----	-----	-----	-----	-----	-----	-----	0.346
12.43	2.117	311.55	0.353	0.350	-----	-----	-----	-----	-----	-----	-----	0.350
12.47	1.895	311.59	0.356	0.353	-----	-----	-----	-----	-----	-----	-----	0.353
12.50	1.670	311.62	0.360	0.355	-----	-----	-----	-----	-----	-----	-----	0.355
12.53	1.452	311.65	0.363	0.357	-----	-----	-----	-----	-----	-----	-----	0.357
12.57	1.258	311.67	0.366	0.359	-----	-----	-----	-----	-----	-----	-----	0.359
12.60	1.106	311.69	0.368	0.360	-----	-----	-----	-----	-----	-----	-----	0.360
12.63	1.000	311.71	0.370	0.362	-----	-----	-----	-----	-----	-----	-----	0.362
12.67	0.930	311.72	0.372	0.363	-----	-----	-----	-----	-----	-----	-----	0.363
12.70	0.887	311.73	0.373	0.364	-----	-----	-----	-----	-----	-----	-----	0.364
12.73	0.858	311.74	0.375	0.364	-----	-----	-----	-----	-----	-----	-----	0.364
12.77	0.835	311.76	0.376	0.365	-----	-----	-----	-----	-----	-----	-----	0.365
12.80	0.811	311.77	0.377	0.366	-----	-----	-----	-----	-----	-----	-----	0.366
12.83	0.788	311.78	0.379	0.367	-----	-----	-----	-----	-----	-----	-----	0.367
12.87	0.764	311.78	0.380	0.368	-----	-----	-----	-----	-----	-----	-----	0.368
12.90	0.740	311.79	0.381	0.368	-----	-----	-----	-----	-----	-----	-----	0.368
12.93	0.716	311.80	0.382	0.369	-----	-----	-----	-----	-----	-----	-----	0.369
12.97	0.692	311.81	0.382	0.369	-----	-----	-----	-----	-----	-----	-----	0.369

Continues on next page...

Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
13.00	0.668	311.82	0.382	0.370	-----	-----	-----	-----	-----	-----	-----	0.370
13.03	0.645	311.82	0.382	0.370	-----	-----	-----	-----	-----	-----	-----	0.370
13.07	0.624	311.83	0.382	0.371	-----	-----	-----	-----	-----	-----	-----	0.371
13.10	0.606	311.83	0.382	0.371	-----	-----	-----	-----	-----	-----	-----	0.371
13.13	0.593	311.84	0.382	0.372	-----	-----	-----	-----	-----	-----	-----	0.372
13.17	0.583	311.84	0.382	0.372	-----	-----	-----	-----	-----	-----	-----	0.372
13.20	0.575	311.85	0.382	0.372	-----	-----	-----	-----	-----	-----	-----	0.372
13.23	0.569	311.85	0.382	0.373	-----	-----	-----	-----	-----	-----	-----	0.373
13.27	0.563	311.86	0.382	0.373	-----	-----	-----	-----	-----	-----	-----	0.373
13.30	0.557	311.86	0.382	0.373	-----	-----	-----	-----	-----	-----	-----	0.373
13.33	0.551	311.87	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
13.37	0.544	311.87	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
13.40	0.538	311.87	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
13.43	0.532	311.88	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
13.47	0.526	311.88	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
13.50	0.520	311.88	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
13.53	0.514	311.89	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
13.57	0.508	311.89	0.383	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
13.60	0.501	311.89	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
13.63	0.495	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
13.67	0.489	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
13.70	0.483	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
13.73	0.476	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
13.77	0.470	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
13.80	0.464	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
13.83	0.457	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
13.87	0.451	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
13.90	0.445	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
13.93	0.438	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
13.97	0.432	311.92	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
14.00	0.426	311.92	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
14.03	0.419	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.07	0.414	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.10	0.408	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.13	0.404	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.17	0.400	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.20	0.397	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.23	0.394	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.27	0.391	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.30	0.388	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.33	0.385	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.37	0.382	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.40	0.379	311.92 <<	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378 <<
14.43	0.376	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.47	0.373	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.50	0.370	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.53	0.367	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.57	0.364	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.60	0.361	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.63	0.358	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.67	0.355	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.70	0.352	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.73	0.349	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.77	0.345	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.80	0.342	311.92	0.383	0.378	-----	-----	-----	-----	-----	-----	-----	0.378
14.83	0.339	311.92	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377

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Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
14.87	0.336	311.92	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
14.90	0.333	311.92	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
14.93	0.330	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
14.97	0.327	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
15.00	0.324	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
15.03	0.321	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
15.07	0.318	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
15.10	0.315	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
15.13	0.311	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
15.17	0.308	311.91	0.383	0.377	-----	-----	-----	-----	-----	-----	-----	0.377
15.20	0.305	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.23	0.302	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.27	0.299	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.30	0.296	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.33	0.293	311.90	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.37	0.290	311.89	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.40	0.287	311.89	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.43	0.283	311.89	0.383	0.376	-----	-----	-----	-----	-----	-----	-----	0.376
15.47	0.280	311.89	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
15.50	0.277	311.89	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
15.53	0.274	311.88	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
15.57	0.271	311.88	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
15.60	0.268	311.88	0.382	0.375	-----	-----	-----	-----	-----	-----	-----	0.375
15.63	0.264	311.88	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
15.67	0.261	311.87	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
15.70	0.258	311.87	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
15.73	0.255	311.87	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
15.77	0.252	311.87	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
15.80	0.249	311.86	0.382	0.374	-----	-----	-----	-----	-----	-----	-----	0.374
15.83	0.246	311.86	0.382	0.373	-----	-----	-----	-----	-----	-----	-----	0.373
15.87	0.242	311.86	0.382	0.373	-----	-----	-----	-----	-----	-----	-----	0.373
15.90	0.239	311.85	0.382	0.373	-----	-----	-----	-----	-----	-----	-----	0.373
15.93	0.236	311.85	0.382	0.373	-----	-----	-----	-----	-----	-----	-----	0.373
15.97	0.233	311.85	0.382	0.372	-----	-----	-----	-----	-----	-----	-----	0.372
16.00	0.230	311.85	0.382	0.372	-----	-----	-----	-----	-----	-----	-----	0.372
16.03	0.227	311.84	0.382	0.372	-----	-----	-----	-----	-----	-----	-----	0.372
16.07	0.224	311.84	0.382	0.372	-----	-----	-----	-----	-----	-----	-----	0.372
16.10	0.221	311.84	0.382	0.371	-----	-----	-----	-----	-----	-----	-----	0.371
16.13	0.219	311.83	0.382	0.371	-----	-----	-----	-----	-----	-----	-----	0.371
16.17	0.217	311.83	0.382	0.371	-----	-----	-----	-----	-----	-----	-----	0.371
16.20	0.216	311.83	0.382	0.371	-----	-----	-----	-----	-----	-----	-----	0.371
16.23	0.214	311.82	0.382	0.370	-----	-----	-----	-----	-----	-----	-----	0.370
16.27	0.213	311.82	0.382	0.370	-----	-----	-----	-----	-----	-----	-----	0.370
16.30	0.212	311.81	0.382	0.370	-----	-----	-----	-----	-----	-----	-----	0.370
16.33	0.210	311.81	0.382	0.370	-----	-----	-----	-----	-----	-----	-----	0.370
16.37	0.209	311.81	0.382	0.369	-----	-----	-----	-----	-----	-----	-----	0.369
16.40	0.207	311.80	0.382	0.369	-----	-----	-----	-----	-----	-----	-----	0.369
16.43	0.206	311.80	0.382	0.369	-----	-----	-----	-----	-----	-----	-----	0.369
16.47	0.205	311.80	0.381	0.368	-----	-----	-----	-----	-----	-----	-----	0.368
16.50	0.203	311.79	0.381	0.368	-----	-----	-----	-----	-----	-----	-----	0.368
16.53	0.202	311.79	0.380	0.368	-----	-----	-----	-----	-----	-----	-----	0.368
16.57	0.201	311.79	0.380	0.368	-----	-----	-----	-----	-----	-----	-----	0.368
16.60	0.199	311.78	0.379	0.367	-----	-----	-----	-----	-----	-----	-----	0.367
16.63	0.198	311.78	0.379	0.367	-----	-----	-----	-----	-----	-----	-----	0.367
16.67	0.197	311.77	0.378	0.367	-----	-----	-----	-----	-----	-----	-----	0.367
16.70	0.195	311.77	0.378	0.366	-----	-----	-----	-----	-----	-----	-----	0.366

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Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
16.73	0.194	311.77	0.377	0.366	-----	-----	-----	-----	-----	-----	-----	0.366
16.77	0.192	311.76	0.377	0.366	-----	-----	-----	-----	-----	-----	-----	0.366
16.80	0.191	311.76	0.376	0.366	-----	-----	-----	-----	-----	-----	-----	0.366
16.83	0.190	311.75	0.376	0.365	-----	-----	-----	-----	-----	-----	-----	0.365
16.87	0.188	311.75	0.376	0.365	-----	-----	-----	-----	-----	-----	-----	0.365
16.90	0.187	311.75	0.375	0.365	-----	-----	-----	-----	-----	-----	-----	0.365
16.93	0.185	311.74	0.375	0.364	-----	-----	-----	-----	-----	-----	-----	0.364
16.97	0.184	311.74	0.374	0.364	-----	-----	-----	-----	-----	-----	-----	0.364
17.00	0.183	311.73	0.374	0.364	-----	-----	-----	-----	-----	-----	-----	0.364
17.03	0.181	311.73	0.373	0.363	-----	-----	-----	-----	-----	-----	-----	0.363
17.07	0.180	311.73	0.373	0.363	-----	-----	-----	-----	-----	-----	-----	0.363
17.10	0.179	311.72	0.372	0.363	-----	-----	-----	-----	-----	-----	-----	0.363
17.13	0.177	311.72	0.372	0.362	-----	-----	-----	-----	-----	-----	-----	0.362
17.17	0.176	311.71	0.371	0.362	-----	-----	-----	-----	-----	-----	-----	0.362
17.20	0.174	311.71	0.371	0.362	-----	-----	-----	-----	-----	-----	-----	0.362
17.23	0.173	311.70	0.370	0.361	-----	-----	-----	-----	-----	-----	-----	0.361
17.27	0.172	311.70	0.369	0.361	-----	-----	-----	-----	-----	-----	-----	0.361
17.30	0.170	311.70	0.369	0.361	-----	-----	-----	-----	-----	-----	-----	0.361
17.33	0.169	311.69	0.368	0.360	-----	-----	-----	-----	-----	-----	-----	0.360
17.37	0.167	311.69	0.368	0.360	-----	-----	-----	-----	-----	-----	-----	0.360
17.40	0.166	311.68	0.367	0.360	-----	-----	-----	-----	-----	-----	-----	0.360
17.43	0.165	311.68	0.367	0.359	-----	-----	-----	-----	-----	-----	-----	0.359
17.47	0.163	311.67	0.366	0.359	-----	-----	-----	-----	-----	-----	-----	0.359
17.50	0.162	311.67	0.366	0.359	-----	-----	-----	-----	-----	-----	-----	0.359
17.53	0.160	311.67	0.365	0.358	-----	-----	-----	-----	-----	-----	-----	0.358
17.57	0.159	311.66	0.365	0.358	-----	-----	-----	-----	-----	-----	-----	0.358
17.60	0.158	311.66	0.364	0.358	-----	-----	-----	-----	-----	-----	-----	0.358
17.63	0.156	311.65	0.364	0.357	-----	-----	-----	-----	-----	-----	-----	0.357
17.67	0.155	311.65	0.363	0.357	-----	-----	-----	-----	-----	-----	-----	0.357
17.70	0.153	311.64	0.362	0.357	-----	-----	-----	-----	-----	-----	-----	0.357
17.73	0.152	311.64	0.362	0.356	-----	-----	-----	-----	-----	-----	-----	0.356
17.77	0.151	311.63	0.361	0.356	-----	-----	-----	-----	-----	-----	-----	0.356
17.80	0.149	311.63	0.361	0.356	-----	-----	-----	-----	-----	-----	-----	0.356
17.83	0.148	311.62	0.360	0.355	-----	-----	-----	-----	-----	-----	-----	0.355
17.87	0.146	311.62	0.360	0.355	-----	-----	-----	-----	-----	-----	-----	0.355
17.90	0.145	311.61	0.359	0.354	-----	-----	-----	-----	-----	-----	-----	0.354
17.93	0.144	311.61	0.358	0.354	-----	-----	-----	-----	-----	-----	-----	0.354
17.97	0.142	311.61	0.358	0.354	-----	-----	-----	-----	-----	-----	-----	0.354
18.00	0.141	311.60	0.357	0.353	-----	-----	-----	-----	-----	-----	-----	0.353
18.03	0.140	311.60	0.357	0.353	-----	-----	-----	-----	-----	-----	-----	0.353
18.07	0.138	311.59	0.356	0.353	-----	-----	-----	-----	-----	-----	-----	0.353
18.10	0.137	311.59	0.356	0.352	-----	-----	-----	-----	-----	-----	-----	0.352
18.13	0.136	311.58	0.355	0.352	-----	-----	-----	-----	-----	-----	-----	0.352
18.17	0.136	311.58	0.355	0.351	-----	-----	-----	-----	-----	-----	-----	0.351
18.20	0.135	311.57	0.354	0.351	-----	-----	-----	-----	-----	-----	-----	0.351
18.23	0.135	311.57	0.354	0.351	-----	-----	-----	-----	-----	-----	-----	0.351
18.27	0.134	311.56	0.353	0.350	-----	-----	-----	-----	-----	-----	-----	0.350
18.30	0.134	311.56	0.353	0.350	-----	-----	-----	-----	-----	-----	-----	0.350
18.33	0.134	311.55	0.352	0.349	-----	-----	-----	-----	-----	-----	-----	0.349
18.37	0.133	311.55	0.352	0.349	-----	-----	-----	-----	-----	-----	-----	0.349
18.40	0.133	311.54	0.351	0.349	-----	-----	-----	-----	-----	-----	-----	0.349
18.43	0.132	311.54	0.351	0.348	-----	-----	-----	-----	-----	-----	-----	0.348
18.47	0.132	311.53	0.350	0.348	-----	-----	-----	-----	-----	-----	-----	0.348
18.50	0.132	311.53	0.350	0.347	-----	-----	-----	-----	-----	-----	-----	0.347
18.53	0.131	311.52	0.349	0.347	-----	-----	-----	-----	-----	-----	-----	0.347
18.57	0.131	311.52	0.349	0.347	-----	-----	-----	-----	-----	-----	-----	0.347

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Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
18.60	0.130	311.51	0.349	0.346	-----	-----	-----	-----	-----	-----	-----	0.346
18.63	0.130	311.51	0.348	0.346	-----	-----	-----	-----	-----	-----	-----	0.346
18.67	0.130	311.50	0.348	0.345	-----	-----	-----	-----	-----	-----	-----	0.345
18.70	0.129	311.50	0.347	0.345	-----	-----	-----	-----	-----	-----	-----	0.345
18.73	0.129	311.49	0.347	0.345	-----	-----	-----	-----	-----	-----	-----	0.345
18.77	0.128	311.49	0.346	0.344	-----	-----	-----	-----	-----	-----	-----	0.344
18.80	0.128	311.48	0.346	0.344	-----	-----	-----	-----	-----	-----	-----	0.344
18.83	0.127	311.48	0.345	0.343	-----	-----	-----	-----	-----	-----	-----	0.343
18.87	0.127	311.47	0.345	0.343	-----	-----	-----	-----	-----	-----	-----	0.343
18.90	0.127	311.47	0.344	0.343	-----	-----	-----	-----	-----	-----	-----	0.343
18.93	0.126	311.46	0.344	0.342	-----	-----	-----	-----	-----	-----	-----	0.342
18.97	0.126	311.46	0.343	0.342	-----	-----	-----	-----	-----	-----	-----	0.342
19.00	0.125	311.45	0.343	0.342	-----	-----	-----	-----	-----	-----	-----	0.342
19.03	0.125	311.45	0.342	0.341	-----	-----	-----	-----	-----	-----	-----	0.341
19.07	0.125	311.44	0.342	0.341	-----	-----	-----	-----	-----	-----	-----	0.341
19.10	0.124	311.44	0.341	0.340	-----	-----	-----	-----	-----	-----	-----	0.340
19.13	0.124	311.43	0.341	0.340	-----	-----	-----	-----	-----	-----	-----	0.340
19.17	0.123	311.43	0.340	0.340	-----	-----	-----	-----	-----	-----	-----	0.340
19.20	0.123	311.42	0.340	0.339	-----	-----	-----	-----	-----	-----	-----	0.339
19.23	0.122	311.42	0.339	0.339	-----	-----	-----	-----	-----	-----	-----	0.339
19.27	0.122	311.42	0.339	0.338	-----	-----	-----	-----	-----	-----	-----	0.338
19.30	0.122	311.41	0.338	0.338	-----	-----	-----	-----	-----	-----	-----	0.338
19.33	0.121	311.41	0.338	0.338	-----	-----	-----	-----	-----	-----	-----	0.338
19.37	0.121	311.40	0.337	0.337	-----	-----	-----	-----	-----	-----	-----	0.337
19.40	0.120	311.40	0.337	0.337	-----	-----	-----	-----	-----	-----	-----	0.337
19.43	0.120	311.39	0.337	0.336	-----	-----	-----	-----	-----	-----	-----	0.336
19.47	0.120	311.39	0.337	0.336	-----	-----	-----	-----	-----	-----	-----	0.336
19.50	0.119	311.38	0.337	0.335	-----	-----	-----	-----	-----	-----	-----	0.335
19.53	0.119	311.38	0.337	0.335	-----	-----	-----	-----	-----	-----	-----	0.335
19.57	0.118	311.37	0.337	0.335	-----	-----	-----	-----	-----	-----	-----	0.335
19.60	0.118	311.37	0.337	0.334	-----	-----	-----	-----	-----	-----	-----	0.334
19.63	0.117	311.36	0.337	0.334	-----	-----	-----	-----	-----	-----	-----	0.334
19.67	0.117	311.36	0.336	0.333	-----	-----	-----	-----	-----	-----	-----	0.333
19.70	0.117	311.35	0.336	0.333	-----	-----	-----	-----	-----	-----	-----	0.333
19.73	0.116	311.35	0.336	0.333	-----	-----	-----	-----	-----	-----	-----	0.333
19.77	0.116	311.34	0.336	0.332	-----	-----	-----	-----	-----	-----	-----	0.332
19.80	0.115	311.34	0.336	0.332	-----	-----	-----	-----	-----	-----	-----	0.332
19.83	0.115	311.33	0.336	0.331	-----	-----	-----	-----	-----	-----	-----	0.331
19.87	0.115	311.33	0.336	0.331	-----	-----	-----	-----	-----	-----	-----	0.331
19.90	0.114	311.32	0.336	0.331	-----	-----	-----	-----	-----	-----	-----	0.331
19.93	0.114	311.32	0.336	0.330	-----	-----	-----	-----	-----	-----	-----	0.330
19.97	0.113	311.31	0.336	0.330	-----	-----	-----	-----	-----	-----	-----	0.330
20.00	0.113	311.31	0.336	0.329	-----	-----	-----	-----	-----	-----	-----	0.329
20.03	0.112	311.30	0.336	0.329	-----	-----	-----	-----	-----	-----	-----	0.329
20.07	0.112	311.30	0.336	0.328	-----	-----	-----	-----	-----	-----	-----	0.328
20.10	0.112	311.29	0.335	0.328	-----	-----	-----	-----	-----	-----	-----	0.328
20.13	0.111	311.29	0.335	0.328	-----	-----	-----	-----	-----	-----	-----	0.328
20.17	0.111	311.28	0.335	0.327	-----	-----	-----	-----	-----	-----	-----	0.327
20.20	0.110	311.28	0.335	0.327	-----	-----	-----	-----	-----	-----	-----	0.327
20.23	0.110	311.27	0.335	0.326	-----	-----	-----	-----	-----	-----	-----	0.326
20.27	0.110	311.27	0.335	0.326	-----	-----	-----	-----	-----	-----	-----	0.326
20.30	0.109	311.26	0.335	0.326	-----	-----	-----	-----	-----	-----	-----	0.326
20.33	0.109	311.26	0.335	0.325	-----	-----	-----	-----	-----	-----	-----	0.325
20.37	0.108	311.25	0.335	0.325	-----	-----	-----	-----	-----	-----	-----	0.325
20.40	0.108	311.25	0.335	0.324	-----	-----	-----	-----	-----	-----	-----	0.324
20.43	0.107	311.24	0.335	0.324	-----	-----	-----	-----	-----	-----	-----	0.324

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Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20.47	0.107	311.24	0.335	0.323	-----	-----	-----	-----	-----	-----	-----	0.323
20.50	0.107	311.23	0.335	0.323	-----	-----	-----	-----	-----	-----	-----	0.323
20.53	0.106	311.23	0.334	0.323	-----	-----	-----	-----	-----	-----	-----	0.323
20.57	0.106	311.22	0.334	0.322	-----	-----	-----	-----	-----	-----	-----	0.322
20.60	0.105	311.22	0.334	0.322	-----	-----	-----	-----	-----	-----	-----	0.322
20.63	0.105	311.21	0.334	0.321	-----	-----	-----	-----	-----	-----	-----	0.321
20.67	0.104	311.21	0.334	0.321	-----	-----	-----	-----	-----	-----	-----	0.321
20.70	0.104	311.20	0.334	0.321	-----	-----	-----	-----	-----	-----	-----	0.321
20.73	0.104	311.20	0.334	0.320	-----	-----	-----	-----	-----	-----	-----	0.320
20.77	0.103	311.19	0.333	0.320	-----	-----	-----	-----	-----	-----	-----	0.320
20.80	0.103	311.19	0.333	0.319	-----	-----	-----	-----	-----	-----	-----	0.319
20.83	0.102	311.19	0.332	0.319	-----	-----	-----	-----	-----	-----	-----	0.319
20.87	0.102	311.18	0.332	0.318	-----	-----	-----	-----	-----	-----	-----	0.318
20.90	0.102	311.18	0.331	0.318	-----	-----	-----	-----	-----	-----	-----	0.318
20.93	0.101	311.17	0.331	0.317	-----	-----	-----	-----	-----	-----	-----	0.317
20.97	0.101	311.17	0.330	0.317	-----	-----	-----	-----	-----	-----	-----	0.317
21.00	0.100	311.16	0.330	0.317	-----	-----	-----	-----	-----	-----	-----	0.317
21.03	0.100	311.16	0.329	0.316	-----	-----	-----	-----	-----	-----	-----	0.316
21.07	0.099	311.15	0.329	0.316	-----	-----	-----	-----	-----	-----	-----	0.316
21.10	0.099	311.15	0.328	0.315	-----	-----	-----	-----	-----	-----	-----	0.315
21.13	0.099	311.14	0.327	0.315	-----	-----	-----	-----	-----	-----	-----	0.315
21.17	0.098	311.14	0.327	0.314	-----	-----	-----	-----	-----	-----	-----	0.314
21.20	0.098	311.13	0.326	0.314	-----	-----	-----	-----	-----	-----	-----	0.314
21.23	0.097	311.13	0.326	0.314	-----	-----	-----	-----	-----	-----	-----	0.314
21.27	0.097	311.12	0.325	0.313	-----	-----	-----	-----	-----	-----	-----	0.313
21.30	0.096	311.12	0.325	0.313	-----	-----	-----	-----	-----	-----	-----	0.313
21.33	0.096	311.11	0.324	0.312	-----	-----	-----	-----	-----	-----	-----	0.312
21.37	0.096	311.11	0.324	0.312	-----	-----	-----	-----	-----	-----	-----	0.312
21.40	0.095	311.10	0.323	0.311	-----	-----	-----	-----	-----	-----	-----	0.311
21.43	0.095	311.10	0.323	0.311	-----	-----	-----	-----	-----	-----	-----	0.311
21.47	0.094	311.09	0.322	0.310	-----	-----	-----	-----	-----	-----	-----	0.310
21.50	0.094	311.09	0.322	0.310	-----	-----	-----	-----	-----	-----	-----	0.310
21.53	0.093	311.08	0.321	0.310	-----	-----	-----	-----	-----	-----	-----	0.310
21.57	0.093	311.08	0.320	0.309	-----	-----	-----	-----	-----	-----	-----	0.309
21.60	0.093	311.07	0.320	0.309	-----	-----	-----	-----	-----	-----	-----	0.309
21.63	0.092	311.07	0.319	0.308	-----	-----	-----	-----	-----	-----	-----	0.308
21.67	0.092	311.06	0.319	0.308	-----	-----	-----	-----	-----	-----	-----	0.308
21.70	0.091	311.06	0.318	0.307	-----	-----	-----	-----	-----	-----	-----	0.307
21.73	0.091	311.05	0.318	0.307	-----	-----	-----	-----	-----	-----	-----	0.307
21.77	0.091	311.05	0.317	0.307	-----	-----	-----	-----	-----	-----	-----	0.307
21.80	0.090	311.04	0.317	0.306	-----	-----	-----	-----	-----	-----	-----	0.306
21.83	0.090	311.04	0.316	0.306	-----	-----	-----	-----	-----	-----	-----	0.306
21.87	0.089	311.03	0.316	0.305	-----	-----	-----	-----	-----	-----	-----	0.305
21.90	0.089	311.03	0.315	0.305	-----	-----	-----	-----	-----	-----	-----	0.305
21.93	0.088	311.02	0.314	0.304	-----	-----	-----	-----	-----	-----	-----	0.304
21.97	0.088	311.02	0.314	0.304	-----	-----	-----	-----	-----	-----	-----	0.304
22.00	0.088	311.01	0.313	0.303	-----	-----	-----	-----	-----	-----	-----	0.303
22.03	0.104	311.01	0.313	0.303	-----	-----	-----	-----	-----	-----	-----	0.303
22.07	0.121	311.00	0.312	0.303	-----	-----	-----	-----	-----	-----	-----	0.303
22.10	0.138	311.00	0.312	0.302	-----	-----	-----	-----	-----	-----	-----	0.302
22.13	0.129	311.00	0.312	0.302	-----	-----	-----	-----	-----	-----	-----	0.302
22.17	0.120	310.99	0.311	0.302	-----	-----	-----	-----	-----	-----	-----	0.302
22.20	0.111	310.99	0.311	0.301	-----	-----	-----	-----	-----	-----	-----	0.301
22.23	0.101	310.98	0.310	0.301	-----	-----	-----	-----	-----	-----	-----	0.301
22.27	0.091	310.98	0.310	0.300	-----	-----	-----	-----	-----	-----	-----	0.300
22.30	0.091	310.98	0.309	0.300	-----	-----	-----	-----	-----	-----	-----	0.300

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Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
22.33	0.091	310.97	0.309	0.299	-----	-----	-----	-----	-----	-----	-----	0.299
22.37	0.090	310.97	0.308	0.299	-----	-----	-----	-----	-----	-----	-----	0.299
22.40	0.090	310.96	0.308	0.298	-----	-----	-----	-----	-----	-----	-----	0.298
22.43	0.090	310.96	0.307	0.298	-----	-----	-----	-----	-----	-----	-----	0.298
22.47	0.089	310.95	0.307	0.298	-----	-----	-----	-----	-----	-----	-----	0.298
22.50	0.089	310.95	0.306	0.297	-----	-----	-----	-----	-----	-----	-----	0.297
22.53	0.089	310.94	0.306	0.297	-----	-----	-----	-----	-----	-----	-----	0.297
22.57	0.088	310.94	0.305	0.296	-----	-----	-----	-----	-----	-----	-----	0.296
22.60	0.088	310.93	0.305	0.296	-----	-----	-----	-----	-----	-----	-----	0.296
22.63	0.088	310.93	0.304	0.295	-----	-----	-----	-----	-----	-----	-----	0.295
22.67	0.087	310.92	0.304	0.295	-----	-----	-----	-----	-----	-----	-----	0.295
22.70	0.087	310.92	0.303	0.294	-----	-----	-----	-----	-----	-----	-----	0.294
22.73	0.087	310.91	0.303	0.294	-----	-----	-----	-----	-----	-----	-----	0.294
22.77	0.086	310.91	0.302	0.294	-----	-----	-----	-----	-----	-----	-----	0.294
22.80	0.086	310.90	0.302	0.293	-----	-----	-----	-----	-----	-----	-----	0.293
22.83	0.086	310.90	0.301	0.293	-----	-----	-----	-----	-----	-----	-----	0.293
22.87	0.085	310.90	0.301	0.292	-----	-----	-----	-----	-----	-----	-----	0.292
22.90	0.085	310.89	0.300	0.292	-----	-----	-----	-----	-----	-----	-----	0.292
22.93	0.085	310.89	0.300	0.291	-----	-----	-----	-----	-----	-----	-----	0.291
22.97	0.084	310.88	0.299	0.291	-----	-----	-----	-----	-----	-----	-----	0.291
23.00	0.084	310.88	0.299	0.290	-----	-----	-----	-----	-----	-----	-----	0.290
23.03	0.084	310.87	0.298	0.290	-----	-----	-----	-----	-----	-----	-----	0.290
23.07	0.084	310.87	0.298	0.290	-----	-----	-----	-----	-----	-----	-----	0.290
23.10	0.083	310.86	0.297	0.289	-----	-----	-----	-----	-----	-----	-----	0.289
23.13	0.083	310.86	0.297	0.289	-----	-----	-----	-----	-----	-----	-----	0.289
23.17	0.083	310.85	0.296	0.288	-----	-----	-----	-----	-----	-----	-----	0.288
23.20	0.082	310.85	0.296	0.288	-----	-----	-----	-----	-----	-----	-----	0.288
23.23	0.082	310.84	0.295	0.287	-----	-----	-----	-----	-----	-----	-----	0.287
23.27	0.082	310.84	0.295	0.287	-----	-----	-----	-----	-----	-----	-----	0.287
23.30	0.081	310.83	0.294	0.286	-----	-----	-----	-----	-----	-----	-----	0.286
23.33	0.081	310.83	0.294	0.286	-----	-----	-----	-----	-----	-----	-----	0.286
23.37	0.081	310.83	0.293	0.286	-----	-----	-----	-----	-----	-----	-----	0.286
23.40	0.080	310.82	0.293	0.285	-----	-----	-----	-----	-----	-----	-----	0.285
23.43	0.080	310.82	0.292	0.285	-----	-----	-----	-----	-----	-----	-----	0.285
23.47	0.080	310.81	0.292	0.284	-----	-----	-----	-----	-----	-----	-----	0.284
23.50	0.079	310.81	0.291	0.284	-----	-----	-----	-----	-----	-----	-----	0.284
23.53	0.079	310.80	0.291	0.283	-----	-----	-----	-----	-----	-----	-----	0.283
23.57	0.079	310.80	0.290	0.283	-----	-----	-----	-----	-----	-----	-----	0.283
23.60	0.078	310.79	0.290	0.282	-----	-----	-----	-----	-----	-----	-----	0.282
23.63	0.078	310.79	0.290	0.282	-----	-----	-----	-----	-----	-----	-----	0.282
23.67	0.078	310.78	0.289	0.281	-----	-----	-----	-----	-----	-----	-----	0.281
23.70	0.077	310.78	0.289	0.281	-----	-----	-----	-----	-----	-----	-----	0.281
23.73	0.077	310.77	0.288	0.281	-----	-----	-----	-----	-----	-----	-----	0.281
23.77	0.077	310.77	0.288	0.280	-----	-----	-----	-----	-----	-----	-----	0.280
23.80	0.076	310.77	0.287	0.280	-----	-----	-----	-----	-----	-----	-----	0.280
23.83	0.076	310.76	0.287	0.279	-----	-----	-----	-----	-----	-----	-----	0.279
23.87	0.076	310.76	0.286	0.279	-----	-----	-----	-----	-----	-----	-----	0.279
23.90	0.076	310.75	0.286	0.278	-----	-----	-----	-----	-----	-----	-----	0.278
23.93	0.075	310.75	0.285	0.278	-----	-----	-----	-----	-----	-----	-----	0.278
23.97	0.075	310.74	0.285	0.277	-----	-----	-----	-----	-----	-----	-----	0.277
24.00	0.075	310.74	0.284	0.277	-----	-----	-----	-----	-----	-----	-----	0.277
24.03	0.068	310.73	0.284	0.276	-----	-----	-----	-----	-----	-----	-----	0.276
24.07	0.056	310.73	0.283	0.276	-----	-----	-----	-----	-----	-----	-----	0.276
24.10	0.037	310.72	0.283	0.275	-----	-----	-----	-----	-----	-----	-----	0.275
24.13	0.022	310.72	0.282	0.275	-----	-----	-----	-----	-----	-----	-----	0.275
24.17	0.011	310.71	0.282	0.274	-----	-----	-----	-----	-----	-----	-----	0.274

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Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
24.20	0.004	310.71	0.281	0.273	-----	-----	-----	-----	-----	-----	-----	0.273
24.23	0.000	310.70	0.281	0.273	-----	-----	-----	-----	-----	-----	-----	0.273
24.27	0.000	310.69	0.280	0.272	-----	-----	-----	-----	-----	-----	-----	0.272
24.30	0.000	310.69	0.279	0.272	-----	-----	-----	-----	-----	-----	-----	0.272
24.33	0.000	310.68	0.279	0.271	-----	-----	-----	-----	-----	-----	-----	0.271
24.37	0.000	310.68	0.278	0.270	-----	-----	-----	-----	-----	-----	-----	0.270
24.40	0.000	310.67	0.277	0.270	-----	-----	-----	-----	-----	-----	-----	0.270
24.43	0.000	310.66	0.277	0.269	-----	-----	-----	-----	-----	-----	-----	0.269
24.47	0.000	310.66	0.276	0.268	-----	-----	-----	-----	-----	-----	-----	0.268
24.50	0.000	310.65	0.276	0.268	-----	-----	-----	-----	-----	-----	-----	0.268
24.53	0.000	310.64	0.275	0.267	-----	-----	-----	-----	-----	-----	-----	0.267
24.57	0.000	310.64	0.274	0.267	-----	-----	-----	-----	-----	-----	-----	0.267
24.60	0.000	310.63	0.274	0.266	-----	-----	-----	-----	-----	-----	-----	0.266
24.63	0.000	310.63	0.273	0.265	-----	-----	-----	-----	-----	-----	-----	0.265
24.67	0.000	310.62	0.273	0.265	-----	-----	-----	-----	-----	-----	-----	0.265
24.70	0.000	310.61	0.272	0.264	-----	-----	-----	-----	-----	-----	-----	0.264
24.73	0.000	310.61	0.271	0.264	-----	-----	-----	-----	-----	-----	-----	0.264
24.77	0.000	310.60	0.271	0.263	-----	-----	-----	-----	-----	-----	-----	0.263
24.80	0.000	310.60	0.270	0.262	-----	-----	-----	-----	-----	-----	-----	0.262
24.83	0.000	310.59	0.270	0.262	-----	-----	-----	-----	-----	-----	-----	0.262
24.87	0.000	310.59	0.269	0.261	-----	-----	-----	-----	-----	-----	-----	0.261
24.90	0.000	310.58	0.269	0.260	-----	-----	-----	-----	-----	-----	-----	0.260
24.93	0.000	310.57	0.268	0.260	-----	-----	-----	-----	-----	-----	-----	0.260
24.97	0.000	310.57	0.267	0.259	-----	-----	-----	-----	-----	-----	-----	0.259
25.00	0.000	310.56	0.267	0.258	-----	-----	-----	-----	-----	-----	-----	0.258
25.03	0.000	310.56	0.266	0.258	-----	-----	-----	-----	-----	-----	-----	0.258
25.07	0.000	310.55	0.266	0.257	-----	-----	-----	-----	-----	-----	-----	0.257
25.10	0.000	310.54	0.265	0.256	-----	-----	-----	-----	-----	-----	-----	0.256
25.13	0.000	310.54	0.265	0.256	-----	-----	-----	-----	-----	-----	-----	0.256
25.17	0.000	310.53	0.264	0.255	-----	-----	-----	-----	-----	-----	-----	0.255
25.20	0.000	310.53	0.264	0.254	-----	-----	-----	-----	-----	-----	-----	0.254
25.23	0.000	310.52	0.263	0.254	-----	-----	-----	-----	-----	-----	-----	0.254
25.27	0.000	310.52	0.262	0.253	-----	-----	-----	-----	-----	-----	-----	0.253
25.30	0.000	310.51	0.262	0.253	-----	-----	-----	-----	-----	-----	-----	0.253
25.33	0.000	310.50	0.261	0.252	-----	-----	-----	-----	-----	-----	-----	0.252
25.37	0.000	310.50	0.261	0.251	-----	-----	-----	-----	-----	-----	-----	0.251
25.40	0.000	310.49	0.260	0.251	-----	-----	-----	-----	-----	-----	-----	0.251
25.43	0.000	310.49	0.260	0.250	-----	-----	-----	-----	-----	-----	-----	0.250
25.47	0.000	310.48	0.259	0.249	-----	-----	-----	-----	-----	-----	-----	0.249
25.50	0.000	310.48	0.259	0.249	-----	-----	-----	-----	-----	-----	-----	0.249
25.53	0.000	310.47	0.258	0.248	-----	-----	-----	-----	-----	-----	-----	0.248
25.57	0.000	310.46	0.258	0.248	-----	-----	-----	-----	-----	-----	-----	0.248
25.60	0.000	310.46	0.257	0.247	-----	-----	-----	-----	-----	-----	-----	0.247
25.63	0.000	310.45	0.256	0.246	-----	-----	-----	-----	-----	-----	-----	0.246
25.67	0.000	310.45	0.256	0.246	-----	-----	-----	-----	-----	-----	-----	0.246
25.70	0.000	310.44	0.255	0.245	-----	-----	-----	-----	-----	-----	-----	0.245
25.73	0.000	310.44	0.255	0.244	-----	-----	-----	-----	-----	-----	-----	0.244
25.77	0.000	310.43	0.254	0.244	-----	-----	-----	-----	-----	-----	-----	0.244
25.80	0.000	310.43	0.254	0.243	-----	-----	-----	-----	-----	-----	-----	0.243
25.83	0.000	310.42	0.253	0.243	-----	-----	-----	-----	-----	-----	-----	0.243
25.87	0.000	310.41	0.253	0.242	-----	-----	-----	-----	-----	-----	-----	0.242
25.90	0.000	310.41	0.252	0.241	-----	-----	-----	-----	-----	-----	-----	0.241
25.93	0.000	310.40	0.252	0.241	-----	-----	-----	-----	-----	-----	-----	0.241
25.97	0.000	310.40	0.251	0.240	-----	-----	-----	-----	-----	-----	-----	0.240
26.00	0.000	310.39	0.250	0.240	-----	-----	-----	-----	-----	-----	-----	0.240
26.03	0.000	310.39	0.249	0.239	-----	-----	-----	-----	-----	-----	-----	0.239

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Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
26.07	0.000	310.38	0.248	0.238	-----	-----	-----	-----	-----	-----	-----	0.238
26.10	0.000	310.38	0.247	0.238	-----	-----	-----	-----	-----	-----	-----	0.238
26.13	0.000	310.37	0.246	0.237	-----	-----	-----	-----	-----	-----	-----	0.237
26.17	0.000	310.37	0.245	0.236	-----	-----	-----	-----	-----	-----	-----	0.236
26.20	0.000	310.36	0.244	0.236	-----	-----	-----	-----	-----	-----	-----	0.236
26.23	0.000	310.36	0.243	0.235	-----	-----	-----	-----	-----	-----	-----	0.235
26.27	0.000	310.35	0.242	0.234	-----	-----	-----	-----	-----	-----	-----	0.234
26.30	0.000	310.34	0.242	0.234	-----	-----	-----	-----	-----	-----	-----	0.234
26.33	0.000	310.34	0.241	0.233	-----	-----	-----	-----	-----	-----	-----	0.233
26.37	0.000	310.33	0.240	0.232	-----	-----	-----	-----	-----	-----	-----	0.232
26.40	0.000	310.33	0.239	0.232	-----	-----	-----	-----	-----	-----	-----	0.232
26.43	0.000	310.32	0.238	0.231	-----	-----	-----	-----	-----	-----	-----	0.231
26.47	0.000	310.32	0.237	0.230	-----	-----	-----	-----	-----	-----	-----	0.230
26.50	0.000	310.31	0.236	0.230	-----	-----	-----	-----	-----	-----	-----	0.230
26.53	0.000	310.31	0.235	0.229	-----	-----	-----	-----	-----	-----	-----	0.229
26.57	0.000	310.30	0.234	0.229	-----	-----	-----	-----	-----	-----	-----	0.229
26.60	0.000	310.30	0.233	0.228	-----	-----	-----	-----	-----	-----	-----	0.228
26.63	0.000	310.29	0.232	0.227	-----	-----	-----	-----	-----	-----	-----	0.227
26.67	0.000	310.29	0.231	0.227	-----	-----	-----	-----	-----	-----	-----	0.227
26.70	0.000	310.28	0.231	0.226	-----	-----	-----	-----	-----	-----	-----	0.226
26.73	0.000	310.28	0.230	0.225	-----	-----	-----	-----	-----	-----	-----	0.225
26.77	0.000	310.27	0.229	0.225	-----	-----	-----	-----	-----	-----	-----	0.225
26.80	0.000	310.27	0.228	0.224	-----	-----	-----	-----	-----	-----	-----	0.224
26.83	0.000	310.26	0.227	0.224	-----	-----	-----	-----	-----	-----	-----	0.224
26.87	0.000	310.26	0.226	0.223	-----	-----	-----	-----	-----	-----	-----	0.223
26.90	0.000	310.25	0.225	0.222	-----	-----	-----	-----	-----	-----	-----	0.222
26.93	0.000	310.25	0.224	0.222	-----	-----	-----	-----	-----	-----	-----	0.222
26.97	0.000	310.24	0.223	0.221	-----	-----	-----	-----	-----	-----	-----	0.221
27.00	0.000	310.24	0.223	0.220	-----	-----	-----	-----	-----	-----	-----	0.220
27.03	0.000	310.23	0.222	0.220	-----	-----	-----	-----	-----	-----	-----	0.220
27.07	0.000	310.23	0.221	0.219	-----	-----	-----	-----	-----	-----	-----	0.219
27.10	0.000	310.22	0.220	0.219	-----	-----	-----	-----	-----	-----	-----	0.219
27.13	0.000	310.22	0.219	0.218	-----	-----	-----	-----	-----	-----	-----	0.218
27.17	0.000	310.21	0.218	0.217	-----	-----	-----	-----	-----	-----	-----	0.217
27.20	0.000	310.21	0.217	0.217	-----	-----	-----	-----	-----	-----	-----	0.217
27.23	0.000	310.20	0.216	0.216	-----	-----	-----	-----	-----	-----	-----	0.216
27.27	0.000	310.20	0.216	0.216	-----	-----	-----	-----	-----	-----	-----	0.216
27.30	0.000	310.19	0.215	0.215	-----	-----	-----	-----	-----	-----	-----	0.215
27.33	0.000	310.19	0.215	0.214	-----	-----	-----	-----	-----	-----	-----	0.214
27.37	0.000	310.18	0.215	0.214	-----	-----	-----	-----	-----	-----	-----	0.214
27.40	0.000	310.18	0.214	0.213	-----	-----	-----	-----	-----	-----	-----	0.213
27.43	0.000	310.17	0.214	0.212	-----	-----	-----	-----	-----	-----	-----	0.212
27.47	0.000	310.17	0.213	0.212	-----	-----	-----	-----	-----	-----	-----	0.212
27.50	0.000	310.16	0.213	0.211	-----	-----	-----	-----	-----	-----	-----	0.211
27.53	0.000	310.16	0.213	0.210	-----	-----	-----	-----	-----	-----	-----	0.210
27.57	0.000	310.15	0.212	0.210	-----	-----	-----	-----	-----	-----	-----	0.210
27.60	0.000	310.15	0.212	0.209	-----	-----	-----	-----	-----	-----	-----	0.209
27.63	0.000	310.14	0.211	0.208	-----	-----	-----	-----	-----	-----	-----	0.208
27.67	0.000	310.14	0.211	0.208	-----	-----	-----	-----	-----	-----	-----	0.208
27.70	0.000	310.14	0.211	0.207	-----	-----	-----	-----	-----	-----	-----	0.207
27.73	0.000	310.13	0.210	0.206	-----	-----	-----	-----	-----	-----	-----	0.206
27.77	0.000	310.13	0.210	0.206	-----	-----	-----	-----	-----	-----	-----	0.206
27.80	0.000	310.12	0.209	0.205	-----	-----	-----	-----	-----	-----	-----	0.205
27.83	0.000	310.12	0.209	0.204	-----	-----	-----	-----	-----	-----	-----	0.204
27.87	0.000	310.11	0.209	0.204	-----	-----	-----	-----	-----	-----	-----	0.204
27.90	0.000	310.11	0.208	0.203	-----	-----	-----	-----	-----	-----	-----	0.203

Continues on next page...

Pond

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
27.93	0.000	310.10	0.208	0.203	-----	-----	-----	-----	-----	-----	-----	0.203
27.97	0.000	310.10	0.208	0.202	-----	-----	-----	-----	-----	-----	-----	0.202
28.00	0.000	310.09	0.207	0.201	-----	-----	-----	-----	-----	-----	-----	0.201
28.03	0.000	310.09	0.207	0.201	-----	-----	-----	-----	-----	-----	-----	0.201
28.07	0.000	310.08	0.206	0.200	-----	-----	-----	-----	-----	-----	-----	0.200
28.10	0.000	310.08	0.206	0.199	-----	-----	-----	-----	-----	-----	-----	0.199
28.13	0.000	310.08	0.206	0.199	-----	-----	-----	-----	-----	-----	-----	0.199
28.17	0.000	310.07	0.205	0.198	-----	-----	-----	-----	-----	-----	-----	0.198
28.20	0.000	310.07	0.205	0.198	-----	-----	-----	-----	-----	-----	-----	0.198
28.23	0.000	310.06	0.205	0.197	-----	-----	-----	-----	-----	-----	-----	0.197
28.27	0.000	310.06	0.204	0.196	-----	-----	-----	-----	-----	-----	-----	0.196
28.30	0.000	310.05	0.204	0.196	-----	-----	-----	-----	-----	-----	-----	0.196
28.33	0.000	310.05	0.203	0.195	-----	-----	-----	-----	-----	-----	-----	0.195
28.37	0.000	310.04	0.203	0.194	-----	-----	-----	-----	-----	-----	-----	0.194
28.40	0.000	310.04	0.203	0.194	-----	-----	-----	-----	-----	-----	-----	0.194
28.43	0.000	310.04	0.202	0.193	-----	-----	-----	-----	-----	-----	-----	0.193
28.47	0.000	310.03	0.202	0.193	-----	-----	-----	-----	-----	-----	-----	0.193
28.50	0.000	310.03	0.202	0.192	-----	-----	-----	-----	-----	-----	-----	0.192
28.53	0.000	310.02	0.201	0.191	-----	-----	-----	-----	-----	-----	-----	0.191
28.57	0.000	310.02	0.201	0.191	-----	-----	-----	-----	-----	-----	-----	0.191
28.60	0.000	310.01	0.201	0.190	-----	-----	-----	-----	-----	-----	-----	0.190
28.63	0.000	310.01	0.200	0.190	-----	-----	-----	-----	-----	-----	-----	0.190
28.67	0.000	310.01	0.200	0.189	-----	-----	-----	-----	-----	-----	-----	0.189

...End

Pond No. 1 - Pond

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 308.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	308.00	565	0	0
2.00	310.00	3,330	3,511	3,511
4.00	312.00	7,569	10,612	14,123
6.00	314.00	12,359	19,731	33,854
8.00	316.00	16,728	28,974	62,828

Culvert / Orifice Structures

		[A]	[B]	[C]	[PrfRsr]
Rise (in)	=	18.00	3.00	18.00	0.00
Span (in)	=	18.00	3.00	18.00	0.00
No. Barrels	=	1	1	1	0
Invert El. (ft)	=	308.00	309.24	312.00	0.00
Length (ft)	=	282.00	0.00	0.00	0.00
Slope (%)	=	1.00	0.00	0.00	n/a
N-Value	=	.013	.013	.013	n/a
Orifice Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	Yes	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	12.00	10.00	0.00	0.00
Crest El. (ft)	=	315.00	314.50	0.00	0.00
Weir Coeff.	=	3.33	2.60	3.33	3.33
Weir Type	=	Riser	Broad	---	---
Multi-Stage	=	Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	308.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
2.00	3,511	310.00	0.20 ic	0.19 ic	0.00	---	0.00	0.00	---	---	---	---	0.188
4.00	14,123	312.00	0.38 ic	0.38 ic	0.00	---	0.00	0.00	---	---	---	---	0.384
6.00	33,854	314.00	9.98 ic	0.47 ic	9.51 ic	---	0.00	0.00	---	---	---	---	9.977
8.00	62,828	316.00	16.81 oc	0.05 ic	1.93 ic	---	14.82 s	47.77	---	---	---	---	64.57

Hydrograph Report

Hyd. No. 5

Proposed Discharge

Hydrograph type	= Combine	Peak discharge	= 2.784 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 31,512 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 3.580 ac

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
12.03	1.447	0.254	1.701
12.07	1.846	0.266	2.113
12.10	2.201	0.280	2.480
12.13	2.421	0.292	2.713
12.17	2.480 <<	0.304	2.784 <<
12.20	2.419	0.313	2.732
12.23	2.291	0.321	2.612
12.27	2.127	0.328	2.455
12.30	1.939	0.333	2.273
12.33	1.749	0.338	2.087
12.37	1.582	0.342	1.924
12.40	1.449	0.346	1.795
12.43	1.338	0.350	1.688
12.47	1.231	0.353	1.583
12.50	1.117	0.355	1.472

...End

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	13.51	2	732	55,696	----	------	------	EX-1
2	SCS Runoff	13.96	2	726	49,018	----	------	------	PR-1 Routed
3	SCS Runoff	8.513	2	728	32,824	----	------	------	PR-2 Bypass
4	Reservoir	4.361	2	746	49,010	2	312.95	23,441	Pond
5	Combine	11.00	2	732	81,834	3, 4	------	------	Proposed Discharge

Hydrograph Report

Hyd. No. 1

EX-1

Hydrograph type	= SCS Runoff	Peak discharge	= 13.51 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 16,113 cuft
Drainage area	= 7.160 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.1 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.03	8.025
12.07	9.742
12.10	11.42
12.13	12.75
12.17	13.46
12.20	13.51 <<
12.23	13.06
12.27	12.35
12.30	11.50
12.33	10.52
12.37	9.471
12.40	8.447
12.43	7.556
12.47	6.829

...End

Hydrograph Report

Hyd. No. 2

PR-1 Routed

Hydrograph type	= SCS Runoff	Peak discharge	= 13.96 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 21,195 cuft
Drainage area	= 3.580 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.9 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
11.97	7.238
12.00	9.021
12.03	11.28
12.07	13.20
12.10	13.96 <<
12.13	13.35
12.17	11.86
12.20	10.09
12.23	8.481
12.27	7.256

...End

Hydrograph Report

Hyd. No. 3

PR-2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 8.513 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 10,324 cuft
Drainage area	= 3.580 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.9 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.00	4.607
12.03	5.752
12.07	6.985
12.10	7.998
12.13	8.513 <<
12.17	8.484
12.20	8.075
12.23	7.472
12.27	6.779
12.30	6.042
12.33	5.335
12.37	4.745
12.40	4.293

...End

Hydrograph Report

Hyd. No. 4

Pond

Hydrograph type	= Reservoir	Peak discharge	= 4.361 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.43 hrs
Time interval	= 2 min	Hyd. volume	= 21,187 cuft
Inflow hyd. No.	= 2 - PR-1 Routed	Reservoir name	= Pond
Max. Elevation	= 312.95 ft	Max. Storage	= 23,441 cuft

Storage Indication method used. Wet pond routing start elevation = 309.20 ft.

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
12.17	11.86	312.62	2.351	0.426	1.897	-----	-----	-----	-----	-----	-----	2.323
12.20	10.09	312.72	2.950	0.433	2.497	-----	-----	-----	-----	-----	-----	2.930
12.23	8.481	312.80	3.390	0.438	2.938	-----	-----	-----	-----	-----	-----	3.375
12.27	7.256	312.85	3.735	0.441	3.282	-----	-----	-----	-----	-----	-----	3.723
12.30	6.450	312.89	3.976	0.443	3.524	-----	-----	-----	-----	-----	-----	3.967
12.33	5.898	312.91	4.146	0.445	3.694	-----	-----	-----	-----	-----	-----	4.139
12.37	5.430	312.93	4.264	0.446	3.812	-----	-----	-----	-----	-----	-----	4.258
12.40	4.957	312.94	4.336	0.447	3.884	-----	-----	-----	-----	-----	-----	4.331
12.43	4.482	312.94 <<	4.366	0.447	3.914	-----	-----	-----	-----	-----	-----	4.361 <<
12.47	4.003	312.94	4.356	0.447	3.905	-----	-----	-----	-----	-----	-----	4.352
12.50	3.521	312.94	4.311	0.447	3.860	-----	-----	-----	-----	-----	-----	4.306
12.53	3.056	312.92	4.233	0.446	3.781	-----	-----	-----	-----	-----	-----	4.227
12.57	2.643	312.91	4.126	0.445	3.675	-----	-----	-----	-----	-----	-----	4.119
12.60	2.321	312.89	4.000	0.444	3.548	-----	-----	-----	-----	-----	-----	3.992
12.63	2.097	312.87	3.862	0.442	3.410	-----	-----	-----	-----	-----	-----	3.853
12.67	1.948	312.85	3.721	0.441	3.269	-----	-----	-----	-----	-----	-----	3.710
12.70	1.855	312.83	3.582	0.440	3.130	-----	-----	-----	-----	-----	-----	3.569
12.73	1.794	312.81	3.447	0.438	2.995	-----	-----	-----	-----	-----	-----	3.433
12.77	1.744	312.79	3.329	0.437	2.876	-----	-----	-----	-----	-----	-----	3.313
12.80	1.693	312.77	3.218	0.436	2.765	-----	-----	-----	-----	-----	-----	3.201
12.83	1.643	312.75	3.112	0.435	2.659	-----	-----	-----	-----	-----	-----	3.094
12.87	1.592	312.73	3.010	0.434	2.556	-----	-----	-----	-----	-----	-----	2.990
12.90	1.542	312.72	2.911	0.433	2.458	-----	-----	-----	-----	-----	-----	2.890
12.93	1.491	312.70	2.816	0.431	2.363	-----	-----	-----	-----	-----	-----	2.794
12.97	1.440	312.68	2.724	0.430	2.270	-----	-----	-----	-----	-----	-----	2.701
13.00	1.389	312.67	2.635	0.429	2.181	-----	-----	-----	-----	-----	-----	2.611
13.03	1.340	312.65	2.549	0.429	2.095	-----	-----	-----	-----	-----	-----	2.523
13.07	1.295	312.64	2.466	0.428	2.011	-----	-----	-----	-----	-----	-----	2.439
13.10	1.259	312.63	2.385	0.427	1.931	-----	-----	-----	-----	-----	-----	2.357
13.13	1.230	312.61	2.308	0.426	1.853	-----	-----	-----	-----	-----	-----	2.279
13.17	1.209	312.60	2.235	0.425	1.780	-----	-----	-----	-----	-----	-----	2.205

...End

Hydrograph Report

Hyd. No. 5

Proposed Discharge

Hydrograph type	= Combine	Peak discharge	= 11.00 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 31,512 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 3.580 ac

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
12.03	5.752	0.435	6.187
12.07	6.985	0.601	7.586
12.10	7.998	1.069	9.067
12.13	8.513 <<	1.687	10.20
12.17	8.484	2.323	10.81
12.20	8.075	2.930	11.00 <<
12.23	7.472	3.375	10.85
12.27	6.779	3.723	10.50
12.30	6.042	3.967	10.01
12.33	5.335	4.139	9.475
12.37	4.745	4.258	9.003
12.40	4.293	4.331	8.625
12.43	3.926	4.361 <<	8.287
12.47	3.582	4.352	7.934
12.50	3.229	4.306	7.535
12.53	2.876	4.227	7.103
12.57	2.540	4.119	6.660
12.60	2.239	3.992	6.231
12.63	1.989	3.853	5.842
12.67	1.794	3.710	5.504

...End

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	26.51	2	730	107,917	----	------	------	EX-1
2	SCS Runoff	22.33	2	726	80,530	----	------	------	PR-1 Routed
3	SCS Runoff	16.04	2	728	61,552	----	------	------	PR-2 Bypass
4	Reservoir	9.524	2	740	80,522	2	313.89	32,727	Pond
5	Combine	24.42	2	730	142,074	3, 4	------	------	Proposed Discharge

Hydrograph Report

Hyd. No. 1

EX-1

Hydrograph type	= SCS Runoff	Peak discharge	= 26.51 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 16,113 cuft
Drainage area	= 7.160 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.1 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.00	13.86
12.03	16.72
12.07	19.95
12.10	23.03
12.13	25.38
12.17	26.51 <<
12.20	26.34
12.23	25.24
12.27	23.67
12.30	21.84
12.33	19.81
12.37	17.68
12.40	15.64
12.43	13.90

...End

Hydrograph Report

Hyd. No. 2

PR-1 Routed

Hydrograph type	= SCS Runoff	Peak discharge	= 22.33 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 21,195 cuft
Drainage area	= 3.580 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.9 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
11.97	11.82
12.00	14.65
12.03	18.21
12.07	21.21
12.10	22.33 <<
12.13	21.28
12.17	18.85
12.20	15.98
12.23	13.39
12.27	11.43

...End

Hydrograph Report

Hyd. No. 3

PR-2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 16.04 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 10,324 cuft
Drainage area	= 3.580 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.9 min
Total precip.	= 7.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.00	9.157
12.03	11.25
12.07	13.46
12.10	15.23
12.13	16.04 <<
12.17	15.85
12.20	14.96
12.23	13.73
12.27	12.36
12.30	10.93
12.33	9.578
12.37	8.466

...End

Hydrograph Report

Hyd. No. 4

Pond

Hydrograph type	= Reservoir	Peak discharge	= 9.524 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 21,187 cuft
Inflow hyd. No.	= 2 - PR-1 Routed	Reservoir name	= Pond
Max. Elevation	= 313.89 ft	Max. Storage	= 32,727 cuft

Storage Indication method used. Wet pond routing start elevation = 309.20 ft.

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
12.07	21.21	313.15	5.798	0.460	5.338	-----	-----	-----	-----	-----	-----	5.798
12.10	22.33 <<	313.34	7.011	0.465	6.545	-----	-----	-----	-----	-----	-----	7.011
12.13	21.28	313.52	7.919	0.466	7.452	-----	-----	-----	-----	-----	-----	7.919
12.17	18.85	313.66	8.569	0.466	8.102	-----	-----	-----	-----	-----	-----	8.568
12.20	15.98	313.76	9.027	0.466	8.560	-----	-----	-----	-----	-----	-----	9.026
12.23	13.39	313.83	9.307	0.466	8.841	-----	-----	-----	-----	-----	-----	9.307
12.27	11.43	313.87	9.453	0.466	8.987	-----	-----	-----	-----	-----	-----	9.453
12.30	10.14	313.88	9.516	0.466	9.050	-----	-----	-----	-----	-----	-----	9.516
12.33	9.257	313.89 <<	9.525	0.466	9.059	-----	-----	-----	-----	-----	-----	9.524 <<
12.37	8.511	313.88	9.494	0.466	9.029	-----	-----	-----	-----	-----	-----	9.494
12.40	7.763	313.86	9.430	0.466	8.965	-----	-----	-----	-----	-----	-----	9.430
12.43	7.011	313.84	9.334	0.466	8.868	-----	-----	-----	-----	-----	-----	9.334
12.47	6.257	313.81	9.207	0.466	8.741	-----	-----	-----	-----	-----	-----	9.207
12.50	5.500	313.77	9.037	0.466	8.571	-----	-----	-----	-----	-----	-----	9.037
12.53	4.770	313.72	8.835	0.466	8.369	-----	-----	-----	-----	-----	-----	8.835
12.57	4.124	313.67	8.608	0.466	8.142	-----	-----	-----	-----	-----	-----	8.608
12.60	3.619	313.61	8.363	0.466	7.896	-----	-----	-----	-----	-----	-----	8.363
12.63	3.268	313.55	8.097	0.466	7.630	-----	-----	-----	-----	-----	-----	8.097
12.67	3.036	313.50	7.827	0.466	7.360	-----	-----	-----	-----	-----	-----	7.826
12.70	2.889	313.44	7.561	0.466	7.094	-----	-----	-----	-----	-----	-----	7.560
12.73	2.794	313.38	7.273	0.466	6.806	-----	-----	-----	-----	-----	-----	7.272
12.77	2.715	313.33	6.937	0.465	6.471	-----	-----	-----	-----	-----	-----	6.937
12.80	2.636	313.28	6.620	0.464	6.156	-----	-----	-----	-----	-----	-----	6.620
12.83	2.557	313.23	6.321	0.463	5.857	-----	-----	-----	-----	-----	-----	6.321
12.87	2.477	313.19	6.031	0.462	5.569	-----	-----	-----	-----	-----	-----	6.031
12.90	2.398	313.15	5.741	0.459	5.281	-----	-----	-----	-----	-----	-----	5.740
12.93	2.319	313.11	5.467	0.457	5.010	-----	-----	-----	-----	-----	-----	5.467
12.97	2.239	313.07	5.209	0.455	4.754	-----	-----	-----	-----	-----	-----	5.209
13.00	2.160	313.03	4.966	0.453	4.513	-----	-----	-----	-----	-----	-----	4.966

...End

Hydrograph Report

Hyd. No. 5

Proposed Discharge

Hydrograph type	= Combine	Peak discharge	= 24.42 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 31,512 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 3.580 ac

Hydrograph Discharge Table

(Printed values >= 50.00% of Qp.)

Time (hrs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
12.00	9.157	3.578	12.73
12.03	11.25	4.580	15.83
12.07	13.46	5.798	19.26
12.10	15.23	7.011	22.24
12.13	16.04 <<	7.919	23.96
12.17	15.85	8.568	24.42 <<
12.20	14.96	9.026	23.99
12.23	13.73	9.307	23.04
12.27	12.36	9.453	21.82
12.30	10.93	9.516	20.44
12.33	9.578	9.524 <<	19.10
12.37	8.466	9.494	17.96
12.40	7.625	9.430	17.05
12.43	6.947	9.334	16.28
12.47	6.319	9.207	15.53
12.50	5.681	9.037	14.72
12.53	5.049	8.835	13.88
12.57	4.451	8.608	13.06
12.60	3.916	8.363	12.28

...End

APPENDIX D – NOTICE OF INTENT (TO BE PROVIDED)

APPENDIX E – INSPECTION FORMS

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for “honeycomb” prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken: