#### Appendix C:

**Stormwater Management Report** 

Generic Draft Environmental Impact Statement

Hampton Ridge Center Rezoning

## STORMWATER MANAGEMENT REPORT

# Hampton Ridge Center & the Shops at Hampton Ridge

West Ridge Road Town of Greece, Monroe County, NY

August 14, 2007

**Prepared For** 



Prepared by:



#### **Table of Contents**

Section	on		Page
Title	Dago		
Iabi		Juleurs	il
Sect	ion I:	General Information	1
B.	SOIL	CLASSIFICATION	1
Sect	ion II:	Hydrology	2
A.	METH		
В.			
C.	PROP	OSED CONDITIONS	3
Secti	ion III:	Stormwater Management & SPDFS Phase II Requirements	4
B.			
C.			
D.			
Section	n IV:	Summary of Findings	5
A	opendi	x A-Existing Drainage Conditions Map and Hydrograph Repor	ts
A	opendi	ix B-Proposed Drainage Conditions Map and Hydrograph Repo	orts
A	Fitle Page  Fable of Contents  F		
Ap	pendi	x D - Soils	
Αŗ	pendi	x E – Hydraulic Analysis of Smith Creek	
Ap	pendi	x F – FEMA Letters for LOMR	
Αŗ	pendi	x G – Existing Watershed for the Images West Subdivision	



#### A. PROJECT DESCRIPTION

This Stormwater Management Report is for the proposed retail center, Hampton Ridge Center and the Shops at Hampton Ridge. The project site is located on 4320 West Ridge Road, in the Town of Greece, NY 14556.

This proposed design will mitigate the increase in peak flow created by the proposed development. This is done by reducing the undetained drainage area and through peak flow attenuation. This approach will alleviate impacts to existing downstream structures and properties from the proposed site improvements. The proposed stormwater management facility meets the SPDES Phase II requirements.

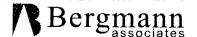
#### B. SOIL CLASSIFICATION

According to the Monroe Soil Survey, Natural Resources Conservation Service website (NRCS), there are two (4) mapped soil units identified on the project property (see Appendix D). Lairdsville silt loam is the dominant soil type and is located on approximately 48 percent of the project area. This soil type slopes at approximately 2 to 6 percent. These soils have a moderate infiltration rate when thoroughly wet. They consist of moderately deep, moderately well drained or well drained soils that have a generally coarse fragments with hard gravel present. These soils have a low rate of water transmission.

The complete list of soils found on the project site is identified in the table below (see Appendix D for soils map).

**Table I- Monroe County Soils Summary** 

Unit	Name	Hydrologic Group		
AnB	Alton gravelly sandy loam, 3 to 8 percent slopes	Α		
EIA	Elnora loamy fine sand, 0 to 2 percent slopes	В		
LaB	Lairdsville silt loam, 2 to 6 percent slopes	D		
Lp	Lockport silty clay loam	D		



#### Section II Hydrology

#### A. METHODOLOGY

Stormwater runoff rates discharged from the site under the existing conditions provide the basis on which to compare the impacts of the proposed site improvements. Analysis points are established where runoff exits the site to provide a fixed location at which existing and proposed stormwater quantities can be compared. The areas draining to each analysis point are delineated using topographic survey maps, grading plans and utility plans. HydroCAD 8.0 by HydroCAD Software Solutions LLC was used to model the existing and proposed condition. This program simulates the USDA Soil Conservations Service's TR-20 hydrologic model to analyze discharges from drainage areas and retention basins.

The parameters required to calculate stormwater runoff are area, curve number, and time of concentration. Each drainage area is evaluated using the guidelines described in USDA Soil Conservation Service's TR-55 to determine the curve number and time of concentration.

The runoff curve number (CN) is based on a weighted average of ground cover and soil type. The underlying soil types are described in county soil maps. Site and grading plans and survey maps outline existing and proposed ground cover. CN values for specific locations are determined from the tables presented in TR-55.

Time of concentration (Tc) represents the amount of time it takes for runoff to travel from the hydraulically most distant point of the watershed to the point of analysis. Surface roughness, slope, channel shape and flow patterns are the factors that affect the time of concentration. Stormwater runoff flows through the drainage area as sheet flow, shallow concentrated flow, open channel flow, or concentrated flow (such as in storm sewers). For this report sheet flow will become shallow concentrated flow after a maximum of 150 feet for the existing condition and 100 feet for the proposed condition. The sum of the travel times over the various surfaces within the assumed flow path for a specific drainage area determines that area's time of concentration. The figures and formulas in TR-55 are employed to compute travel times for sheet flow and shallow concentrated flow. Manning's equation is used to determine flow velocities through pipes.

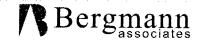
The stage-storage-discharge relationship for the proposed detention area is determined from topographical data and outlet structure characteristics. Discharge rates and storage volumes at various elevations (stage) are represented by this relationship. The pond storage capacity is calculated by determining the surface area at various elevations.

#### B. EXISTING CONDITIONS

The existing drainage area comprises a total of  $\pm 76$  acres. This includes a portion of off site drainage along the east of the site. The parcel to be developed consists of woods, underbrush and grass areas.

The majority of runoff from our site area has been included in the drainage analysis of the Images West Subdivision directly to the north of our site. As shown on their Existing Watershed Map, which is included in Appendix G of this report, approximately 60.4 acres to the south of the Images West Subdivision site (4320 West Ridge Rd.) all drains to the north through their site to Smith Creek. In the Proposed Conditions Map the water from this area is shown as bypassing the Images West Site by means of a weir and 30" culvert pipe to Smith Creek. This suggests that runoff currently leaving our site heads north and discharges to Smith Creek immediately west of the Images West Subdivision site. Therefore runoff is ultimately controlled by the bypass controls of the Images West Subdivision.

A hydraulic analysis of Smith Creek, which lies to the west of the site, is included in Appendix E of this report. The hydraulics of Smith Creek was based on the flow assumptions found in the Buck Pond Watershed Detailed Drainage Study by Erdman, Anthony Associates, July 1978. Using that flow, 169 cfs,



and the downstream characteristics of Smith Creek, the analysis was found to have no negative impact upon the proposed site improvements.

According to readily available FEMA Flood Insurance Rate Maps, the site is located in a portion of the Larkin Creek Flood Plain. However, in response to a Letter of Map Revision (LOMR) request on October 24<sup>th</sup>, 1996, the flood plain was studied and revised. Effective August 13<sup>th</sup>, 1997 FEMA made a final determination as to the modified Base Flood Elevation's for the town of Greece, NY. Included in Appendix F is the correspondence with the FEMA regarding this LOMR. The re-mapped FIRM shows this property entirely outside the Larkin Creek base flood elevations.

The overall drainage areas was divided into two sub areas for analysis purposes, labeled Area A, and Area B as shown on Figure 1 and DR-1, the Existing Conditions Plan in Appendix A.

Drainage Area A, consisting of 17.90 acres, includes the western portion of the property, uncultivated grass lands and woods, draining to Smith Creek to the northwest of the site. The southern part of the site contains abandoned run-down homes.

Drainage Area B, consisting of 58.38 acres, includes the eastern three-quarters of the property, with uncultivated grass lands and woods, draining to the Northern property line. The southern part of the site contains abandoned run-down homes. Runoff drains to the north of the site then settles in wetlands prior to draining towards Smith Creek.

Table II summarizes the hydrologic characteristics of the drainage areas described above. See Appendix A for computations for the existing drainage conditions.

Drainage Description Size Composite Cn Tc (min) Area (ac) Area A Western portion of the property, uncultivated grass lands 17.90 78 25.72 and woods, draining to Smith Creek past the north property line. The eastern portion of the property, containing grass lands Area B 58.38 77 33.30 and woods, draining to wetlands across the north property.

Table II Existing Conditions Summary

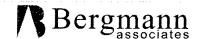
#### C. PROPOSED CONDITIONS

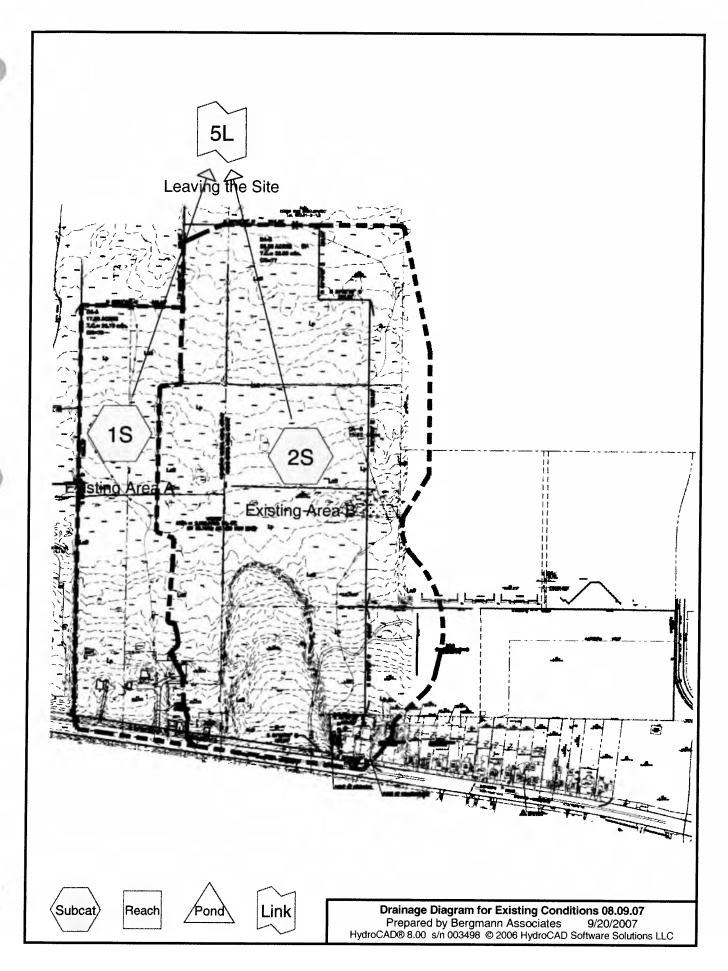
The overall drainage area for the proposed condition consists of  $\pm 69.51$  ac and was broken into two drainage areas labeled Area 1, and Area 2 as shown on Figure 2 and DR-2 and on the Proposed Drainage Conditions Plan in Appendix B.

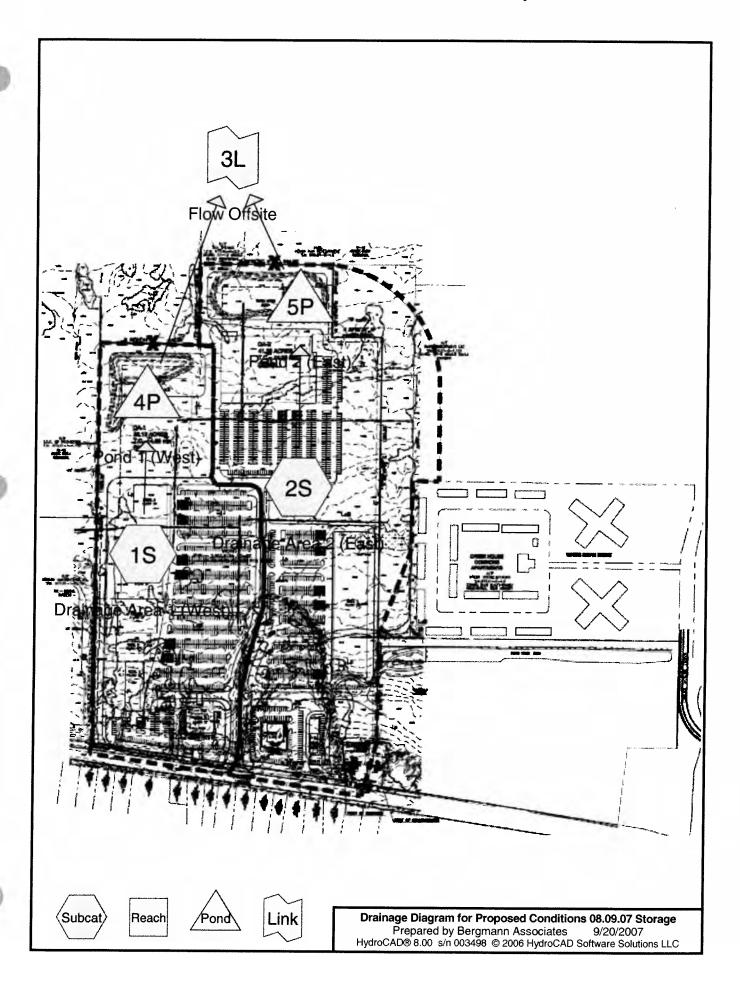
Drainage Area 1, consisting of 28.13 acres, is comprised of the western half of the site. Buildings, parking lots, and some lawn area makes up this portion of the site. Stormwater from this area will drain via the closed storm sewer system to Detention Pond A prior to being outlet to the Northern property line. For analysis purposes, this area was compared to Existing Drainage Area A.

Drainage Area 2, consisting of 41.38 acres, is comprised of the eastern half of the site in front of and including the proposed building. This area flows through the closed storm sewer system to Detention Pond B prior to its' being outlet to the North property line. From there the water will enter the existing wetlands leading to Smith Creek. For analysis purposes, this area was compared to Existing Drainage Area B.

Under proposed conditions it is possible that the runoff from the developed site will be mitigated by releasing less than the existing 2 year design storm runoff including the 70% reduction per the Town of Greece requirements. Another possibility, which is also worth considering, is that of releasing up to the capacity of the stormwater bypass provided by the Images West Subdivision site as discussed in the







Existing conditions section of this report. Discharge from the two ponds will also mirror existing conditions as best as possible.

Table III Summarized the hydrologic characteristics of the drainage areas described above.

Table III
Proposed Conditions Summary

Drainage Area	Description	Size (ac)	Composite Cn	Tc (min)
Area 1	Western portion of the property, Parking areas, Building rooftops, and grass cover, draining to the north property line and eventually Smith Creek.	28.13	88	14.4
Area 2	Eastern portion of the property, Parking areas, Building rooftops, and grass cover, draining to the north	41.38	88	14.9

#### Section III Stormwater Management & SPDES Phase II Requirements

The amount of stormwater runoff generated under proposed conditions is increased due to the newly added impervious surfaces. To manage the increased runoff, two detention/retention ponds are proposed.

As required by the SPDES Phase II Requirements, and the NYS DEC, the on-site SMP (Stormwater Management Practice) must be designed to meet pollutant removal goals, reduce channel erosion, prevent overbank flooding, and help control extreme floods. To do this, the design of both of the P-2 Wet Pond as described in the NYS Stormwater Design Manual was followed closely. This design incorporates the ability to keep the ponds aesthetically pleasing and functionally sound.

#### A. WATER QUALITY VOLUME

The Water Quality Volume requirement is designed to improve the quality of stormwater leaving the site. To meet the Water Quality volume, you must capture and treat 90% of the average annual stormwater runoff volume. The Water Quality Volume (WQv) portion of the design standards (see Appendix C) permit the Water Quality Volume to be provided by retention. For this reason two large P-2 Wet Ponds have been designed to detain stormwater runoff. Pond A the pond at the northwest corner of the site, provides 83,588 ft<sup>3</sup> at an elevation of 397 where 49711 ft<sup>3</sup> is required. Pond B at the far north of the site provides 165,810 ft<sup>3</sup> at an elevation of 393 where 73028 ft<sup>3</sup> is required.

#### B. CHANNEL PROTECTION VOLUME

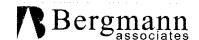
The Channel Protection Volume stated in the NYS Stormwater Design Manual is used to reduce flow out of a storage facility so as to protect the outlet channel or stream from erosion. The Channel Protection Volume is met by providing the 24 hour extended detention of the post developed 1 year, 24 hour storm event. As shown in Appendix C, for Pond A, a 6.82 inch orifice would be required to provide a detention time of 24 hrs. In pond B an 8.40 inch orifice would be required to provide the 24 hour detention time required by NYS Stormwater Design Manual. Therefore the 6 inch orifice being used in pond A & B is providing more than the required Channel Protection Volume for both ponds.

#### C. OVERBANK FLOOD

Overbank Flood protection is provided by controlling the peak discharge from the 10-year storm to 10-year predevelopment rates. This requirement is being satisfied as the proposed development is reducing the peak discharge from the 10 yr storm below pre-development rates. Refer to Table IV for details.

#### D. EXTREME STORM

Extreme Storm protection is provided by controlling the peak discharge from the 100-year storm to 100-year predevelopment rates. This requirement is being satisfied as the proposed development is reducing the peak discharge from the 100 yr storm below pre-development rates. Refer to Table V for details



#### A. Summary of Results

Table IV and Table V depict the peak discharges from the site for each of the design storms for the existing and proposed conditions. In Table VI these discharges are compared to the Town requirements for reducing the amount of runoff in existing conditions by 70%. During all analyzed storm events these conditions can be satisfied and can accommodate extra detention treatment from the neighboring Kohl's site. Further, in the event of two successive 100 year storm events the two ponds are capable of providing the capacity needed to further mitigate the discharge from the proposed site to below existing runoff values via emergency spillways and over detaining.

Table IV-Existing and Proposed Peak Discharge for the 10-Year Storm (cfs)

Drainage Area	10 yr Design Storm Discharge			
	Existing	Proposed		
Existing-Area A Proposed-Area 1	26.53	11.05		
Existing-Area B Proposed-Area 2	69.22	10.53		

Table V-Existing and Proposed Peak Discharge for the 100-Year Storm (cfs)

Drainage Area	100 yr Design Storm Discharge			
	Existing	Proposed		
Existing-Area A Proposed-Area 1	44.99	14.36		
Existing-Area B Proposed-Area 2	119.41	14.16		

Table VI-Existing and Proposed Peak Discharge for Design Storm Events

Designed Storm Event		Discharge (cfs)					
	Exist	ing Site 70% Reduction	Proposed Total Runoff				
1 Year	31.15	21.81*	2.16				
2- Year	43.13	30.19	2.44				
10- Year	93.61	59.88*	21.52				
50- Year	145.09	101.56	27.02				
100-Year	161.12	88.17*	28.46				

<sup>\*</sup> Additional Reduction taken to accommodate the neighboring Kohl's Site to the east based on storm runoff data from the site.

As depicted in the above tables, the peak discharge from the site for each of the design storms will be decreased after this project is constructed and the stormwater management plan is implemented.

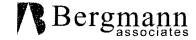
#### **B.** Conclusion

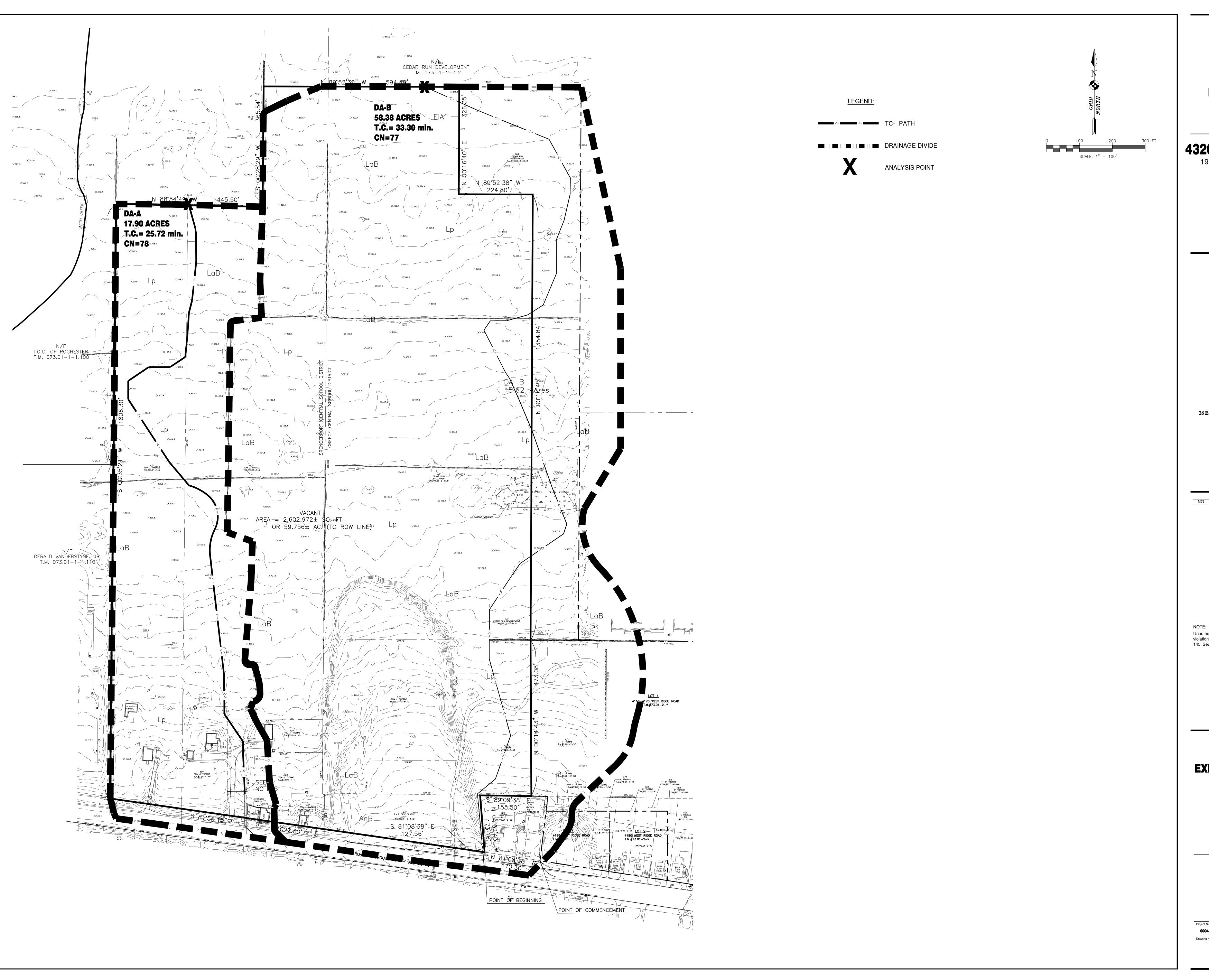
Although existing conditions show multiple points of discharge along the property line, all drainage pools in the wetlands to the north of our site before draining further north and west towards Smith Creek. This allows us to analyze the larger drainage areas the site has been broken up into. Based on the calculations attached in the appendices of this report, the proposed Stormwater Management Facility will decrease peak discharge rates from the site and into Smith Creek, for all of the design storms under proposed conditions. The proposed facility also includes an excess of retention volume for water quality treatment. Therefore, this project has provided sufficient mitigation to minimize any negative effect to downstream systems and properties.



## Appendix A

## Existing Drainage Conditions Map And Hydrograph Reports





# GREECE RETAIL CENTER

NYS ROUTE 104 GREECE, NY

# **4320 WEST RIDGE LLC**

1950 BRIGHTON- HENRIETTA TOWN LINE ROAD ROCHESTER, NY 14623



Engineers / Architects / Surveyors

200 First Federal Plaza 28 East Main Street, Rochester. New York 14614 585.232.5135 / 585.232.4652 fax

REVISIONS

NO. DATE DESCRIPTION REV. CK'D

NOTE:

Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

EXISTING CONDITIONS DRAINAGE MAP

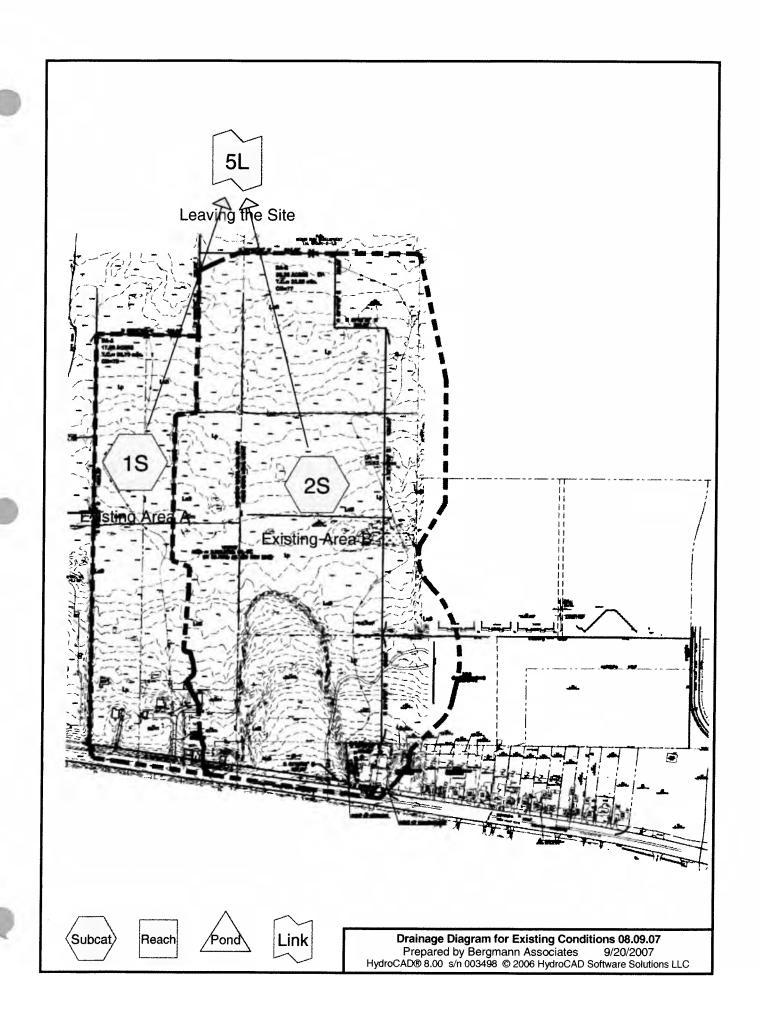
Project Manager:

Designed by:

Drawn by:

Date Issued:
DECEMBER 10, 2003

DR-1



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8/14/2007

#### Subcatchment 1S: Existing Area A

Runoff

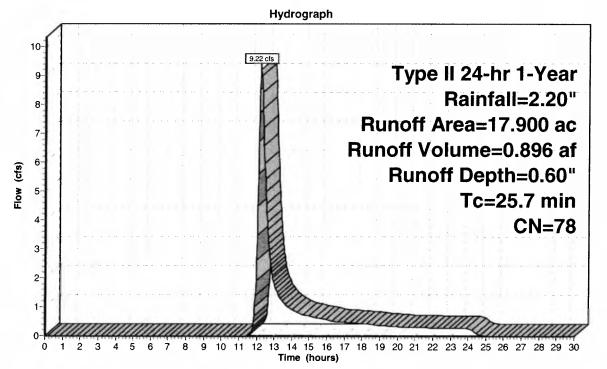
9.22 cfs @ 12.22 hrs, Volume=

0.896 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 1-Year Rainfall=2.20"

_	Area	(ac)	CN	Des	cription		
	17	.900	78				
	17.	.900		Perv	rious Area		
	Тс	Leng	jth	Slope	Velocity	Capacity	Description
	(min)	(fe	et)	(ft/ft)	(ft/sec)	(cfs)	
	25.7						Direct Entry Longest Path

#### Subcatchment 1S: Existing Area A



Runoff

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#### Subcatchment 2S: Existing Area B

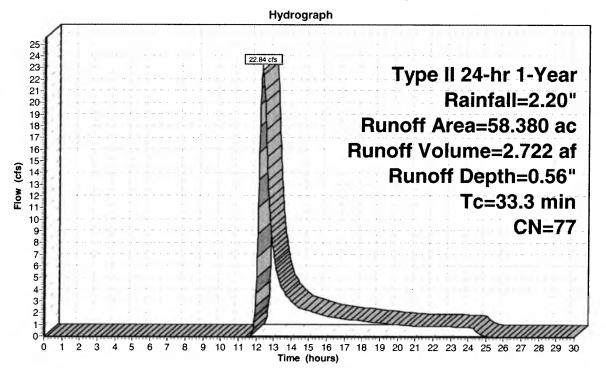
Runoff = 22.84 cfs @ 12.32 hrs, Volume=

2.722 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 1-Year Rainfall=2.20"

_	<u> Area</u>	(ac)	CN	Desc	cription		
	58.	.380	77				
_	58.	.380		Perv	rious Area		
	Tc			Slope			Description
-	(min)	(feet	.)	(ft/ft)	(ft/sec)	(cfs)	
	33.3						Direct Entry, Longest Path

#### Subcatchment 2S: Existing Area B





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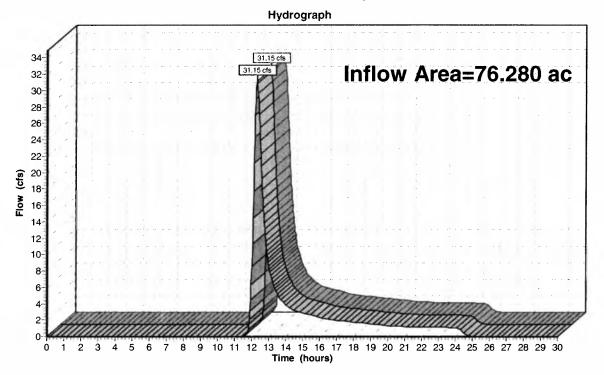
#### Link 5L: Leaving the Site

Inflow Area = 76.280 ac, Inflow Depth = 0.57" for 1-Year event Inflow = 31.15 cfs @ 12.29 hrs, Volume= 3.618 af

Primary = 31.15 cfs @ 12.29 hrs, Volume= 3.618 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

#### Link 5L: Leaving the Site





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#### Subcatchment 1S: Existing Area A

Runoff

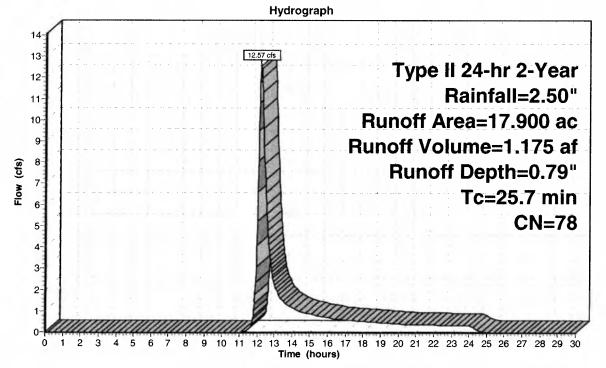
12.57 cfs @ 12.21 hrs, Volume=

1.175 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 2-Year Rainfall=2.50"

_	Area	(ac)	CN	Des	cription			
	17	.900	78					
_	17.	.900		Perv	ious Area			
	Тс	Leng	th S	•	•	Capacity	Description	
	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)		
	25.7						Direct Entry Longest Path	

#### Subcatchment 1S: Existing Area A





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#### Subcatchment 2S: Existing Area B

Runoff

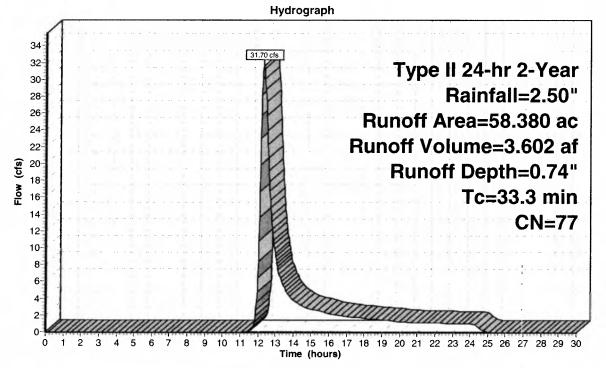
31.70 cfs @ 12.31 hrs, Volume=

3.602 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 2-Year Rainfall=2.50"

_	Area	(ac)	CN	Desc	cription		
	58	.380	77				
-	58.	.380		Perv	ious Area		
	Тс	Leng		Slope	•		Description
_	(min)	(fee	∋t)	(ft/ft)	(ft/sec)	(cfs)	
	33.3						Direct Entry Longest Path

#### **Subcatchment 2S: Existing Area B**





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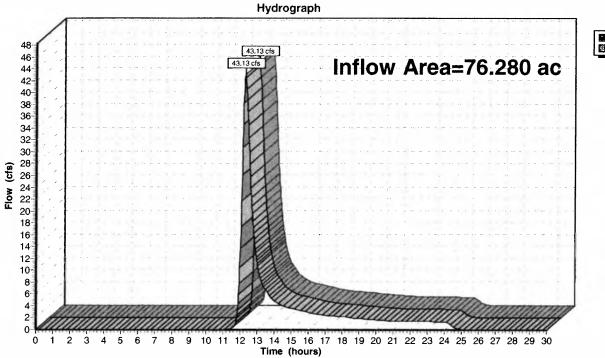
#### Link 5L: Leaving the Site

Inflow Area = 76.280 ac, Inflow Depth = 0.75" for 2-Year event Inflow = 43.13 cfs @ 12.28 hrs, Volume= 4.777 af

Primary = 43.13 cfs @ 12.28 hrs, Volume= 4.777 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

#### Link 5L: Leaving the Site





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Page 8 8/14/2007

#### Subcatchment 1S: Existing Area A

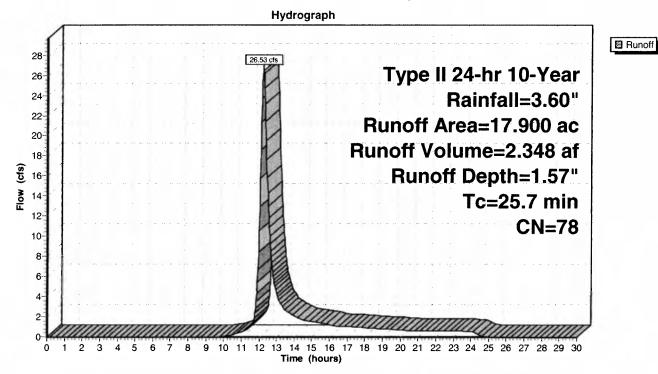
Runoff = 26.53 cfs @ 12.20 hrs, Volume= 2.3

2.348 af, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 10-Year Rainfall=3.60"

_	(min) 25.7	(fee	et)	(ft/ft)	(ft/sec)	(cfs)	Direct Entry, Longest Path
	Tc	~		Slope	•		Description
	17.	.900		Perv	ious Area		
	17.	.900	78				
_	Area	(ac)	CN	Desc	cription		

#### Subcatchment 1S: Existing Area A



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#### **Subcatchment 2S: Existing Area B**

Runoff

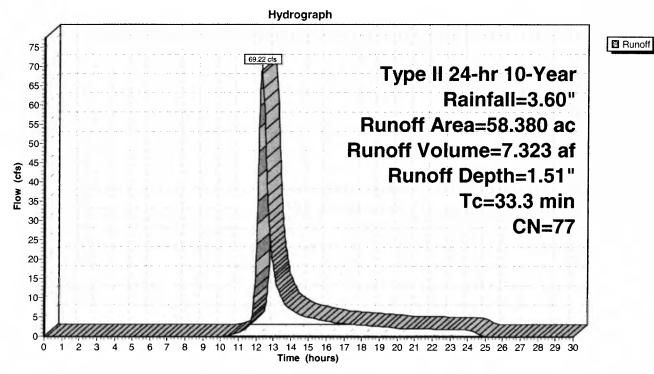
69.22 cfs @ 12.30 hrs, Volume=

7.323 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 10-Year Rainfall=3.60"

_	Area	(ac)	CN	Desc	cription		
	58	.380	77				
_	58.	.380		Perv	ious Area		
	Tc (min)	Lengt (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-	33.3	(100	,,,	(IUIL)	(1000)	(010)	Direct Entry, Longest Path

#### Subcatchment 2S: Existing Area B



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Page 10 8/14/2007

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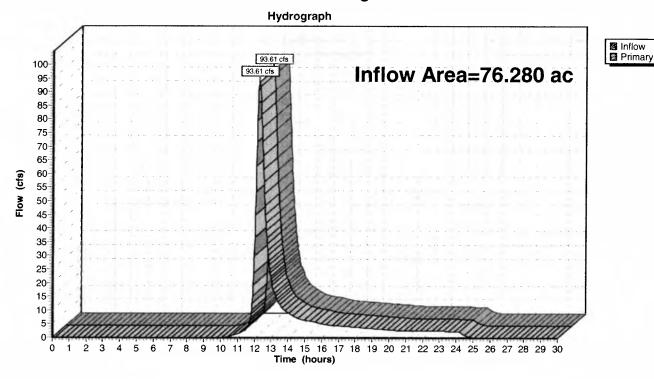
#### Link 5L: Leaving the Site

Inflow Area = 76.280 ac, Inflow Depth = 1.52" for 10-Year event Inflow = 93.61 cfs @ 12.26 hrs, Volume= 9.670 af

Primary = 93.61 cfs @ 12.26 hrs, Volume= 9.670 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

#### Link 5L: Leaving the Site



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Page 11 8/14/2007

#### Subcatchment 1S: Existing Area A

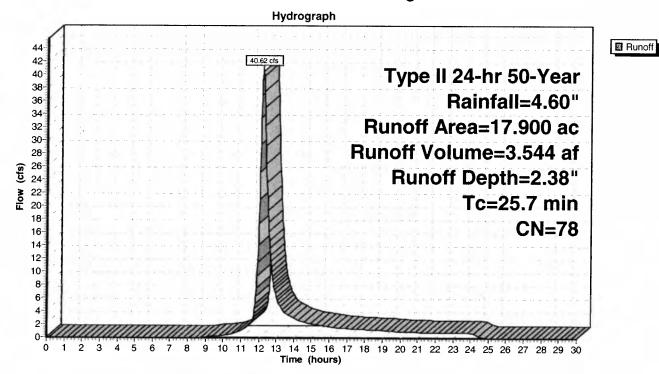
Runoff = 40.62 cfs @ 12.19 hrs, Volume=

3.544 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 50-Year Rainfall=4.60"

_	Area	(ac)	CN [	Descri	iption		
	17.	.900	78				
	17.	900	F	Pervio	us Area		
_	Tc (min)	Lengt (feet			Velocity (ft/sec)	Capacity (cfs)	Description
	25.7						Direct Entry, Longest Path

#### **Subcatchment 1S: Existing Area A**



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#### Subcatchment 2S: Existing Area B

Runoff

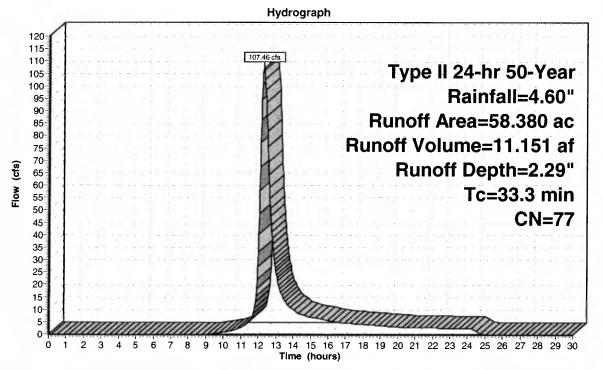
107.46 cfs @ 12.29 hrs, Volume=

11.151 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 50-Year Rainfall=4.60"

_	Area	(ac)	CN	Desc	cription			
	58	.380	77					
	58	.380		Perv	rious Area			
	Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
-	33.3	,,,,,		(1214)	<u>, - 5 5 5 7 </u>		Direct Entry Longest Path	

#### Subcatchment 2S: Existing Area B



Runoff

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Page 13 8/14/2007

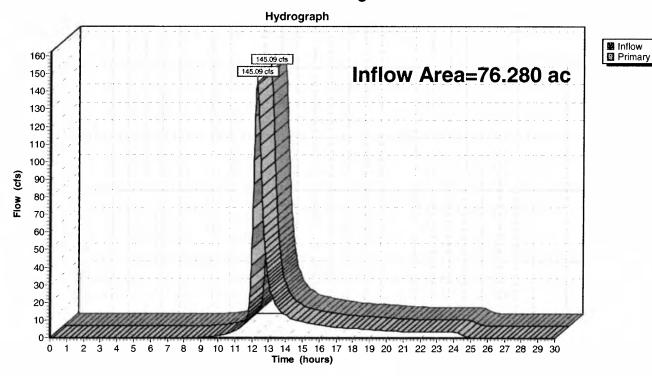
#### Link 5L: Leaving the Site

Inflow Area = 76.280 ac, Inflow Depth = 2.31" for 50-Year event Inflow = 145.09 cfs @ 12.25 hrs, Volume= 14.695 af

Primary = 145.09 cfs @ 12.25 hrs, Volume= 14.695 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

#### Link 5L: Leaving the Site



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Runoff

#### **Subcatchment 1S: Existing Area A**

Runoff

=

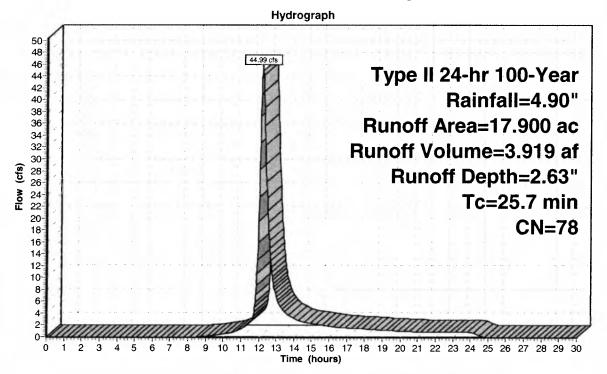
44.99 cfs @ 12.19 hrs, Volume=

3.919 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 100-Year Rainfall=4.90"

	Area	(ac)	CN	Desc	cription		
	17.	.900	78				
-	17.	900		Perv	rious Area		
	Tc	- 3		•	•		Description
-	(min)	(fee	<u>(t)</u>	(ft/ft)	(ft/sec)	(cfs)	
	25.7						Direct Entry Longest Path

#### Subcatchment 1S: Existing Area A



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Page 15 8/14/2007

#### Subcatchment 2S: Existing Area B

Runoff

= 1

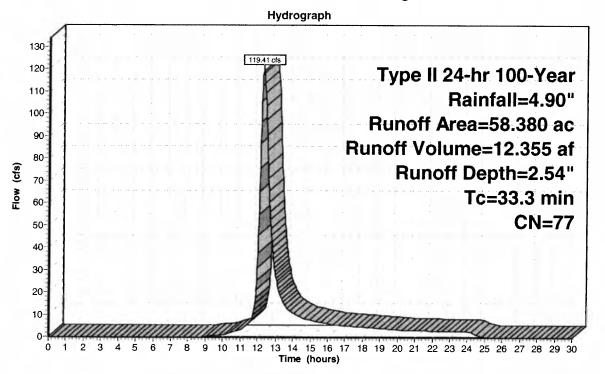
119.41 cfs @ 12.29 hrs, Volume=

12.355 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Type II 24-hr 100-Year Rainfall=4.90"

33		(.001)	(1010)	(10000)	(0.0)	Direct Entry, Longest Path
(mi		(feet)	(ft/ft)	(ft/sec)	(cfs)	
	Tc I	Length	Slope	Velocity	Capacity	Description
	58.3	80	Perv	rious Area		
	58.3	80	77			
<u>Aı</u>	rea (a	ac) C	N Des	cription	····	

#### Subcatchment 2S: Existing Area B



Runoff

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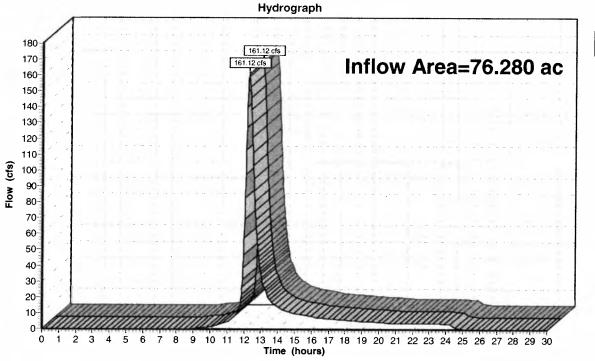
#### Link 5L: Leaving the Site

Inflow Area = 76.280 ac, Inflow Depth = 2.56" for 100-Year event Inflow = 161.12 cfs @ 12.25 hrs, Volume= 16.274 af

Primary = 161.12 cfs @ 12.25 hrs, Volume= 16.274 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

#### Link 5L: Leaving the Site







Project: Hapmton Ridge Center and the Shops of

Hapmton Ridge

Project # 6237.01 By: A. Adekoya

Date: August 13th, 2007

#### **Existing Conditions CN and Time of Concentration Calculations**

#### Drainage Area A 17.90 Acres:

Western portion of the property, uncultivated grass lands and woods, draining to Smith Creek.

#### **Weighted Curve Number:**

	Hydrologic			Product of
Soil Type	Soils Group	CN	Area	Area x CN
			(Acres)	
LaB	D	79	10.62	839.0
AnB	Α	32	0.64	20.5
Lp	D	79	6.31	498.6
Pavement	N/A	95	0.33	31.1
		Total	17.90	1389.2
 Weighter	1 CN-	78		

<sup>\*</sup>Soils are assumed to be in Good condition

#### Time of Concentration:

Tt (sheet)=	.007(nL)^0.8 (P2)^0.5 x (S)^0	.4				
P2=	2.5					
n(Pavement)=	0.011					
Tt (S. C.)=	LV					
	Flow Type:	$\Delta$ Elevation	Length	Slope	Velocity	Travel Time, Tt
		(Ft.)	(Ft.)	(%)	(fps)	(sec.)
	Sheet (Paved)	1.5	52	0.029		42
	Grass	9	98	0.092		356
	Shallow				"	āĒ
	Concentrated					
	(50% Cover)	25.2	2062	0.012	1.8	1146
					Total =	1543
					Min.=	25.72
					Tt, Hours	0.43



Project: Hapmton Ridge Center and the Shops of

Hapmton Ridge

Project # 6237.01 By: A. Adekoya Date: August 13th, 2007

#### **Existing Conditions CN and Time of Concentration Calculations**

#### Drainage Area B 58.38 Acres:

Eastern two-thirds portion of the property, with uncultivated grass lands and woods, draining to Wetlands north of the site.

#### **Weighted Curve Number:**

	Hydrologic			Product of
Soil Type	Soils Group	CN	Area	Area x CN
LaB	D	79	24.98	1973.18
EIA	В	58	0.37	21.46
AnB	Α	32	2.91	93.12
Lp	D	79	29.64	2341.56
Pavement -	N/A	95	0.48	45.60
		Total	58.38	4474.923
Weighted	I CN=	77	1	

<sup>\*</sup>Soils are assumed to be in Good condition

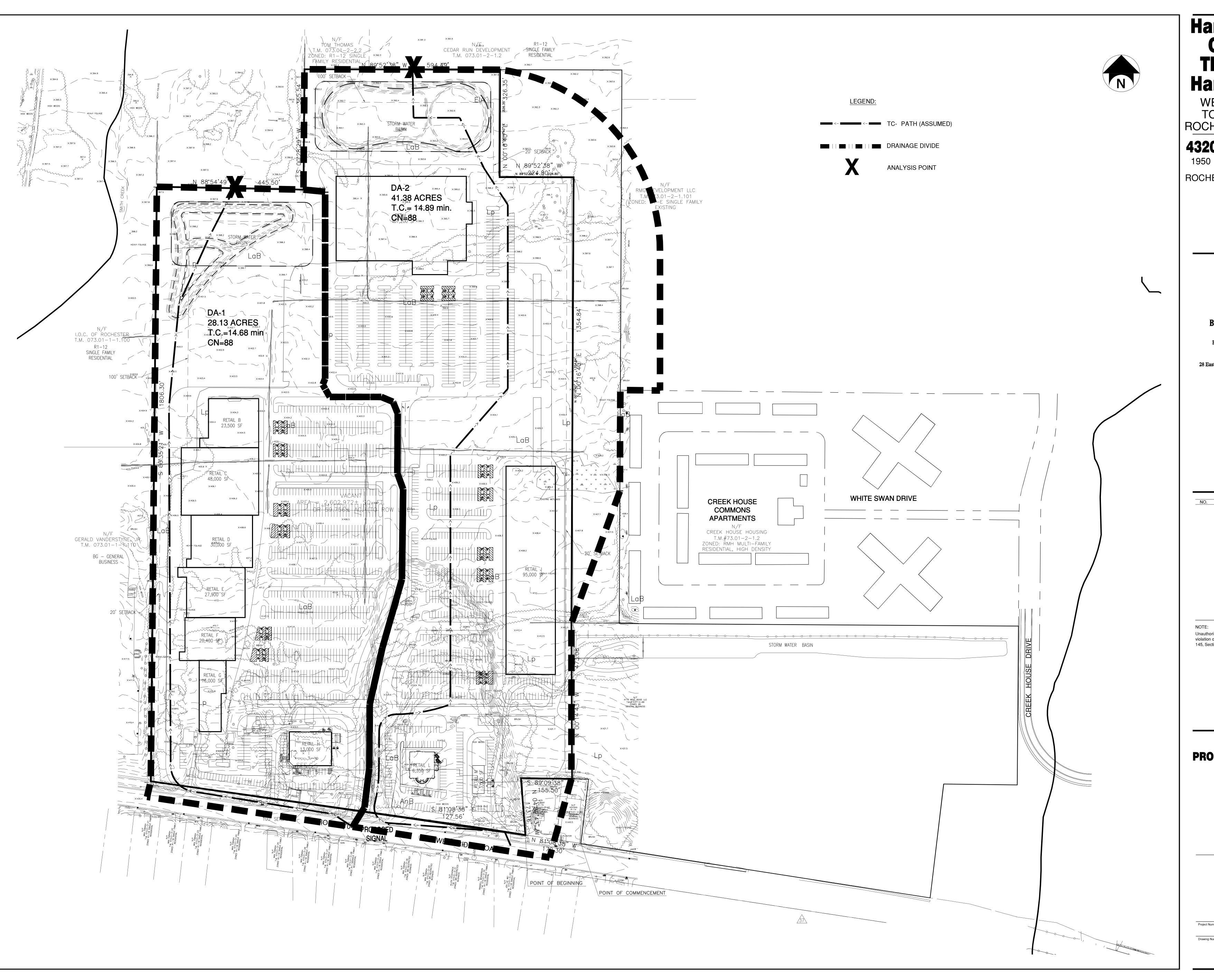
#### Time of Concentration:

Tt (sheet)=	.007(nL)^0.8 (P2)^0.5 x (S)^0	).4				
P2=	2.5					
n(Pavement)=	0.011					
Tt (S. C.)=	V					
	Flow Type:	$\Delta$ Elevation	Length	Slope	Velocity	Travel Time, Tt
		(Ft.)	(Ft.)	(%)	(fps)	(sec.)
	Sheet (Paved)	0.3	27	0.011		37
	Underbrush	10.1	133	0.076		490
	Shallow					
	Concentrated					
	(50% Cover)	38.9	2869	0.014	1.95	1471
					Total =	1998
					Min.=	33.30
					Tt, Hours	0.55

## Appendix B

### Proposed Drainage Conditions Map And Hydrograph Reports





# Hampton Ridge Center and The Shops at Hampton Ridge

WEST RIDGE ROAD TOWN OF GREECE ROCHESTER, NEW YORK

# 4320 West Ridge, LLC 1950 BRIGHTON- HENRIETTA TOWN LINE ROAD ROCHESTER, NEW YORK 14623



Engineers / Architects / Surveyors

200 First Federal Plaza 28 East Main Street, Rochester. New York 14614 585.232.5135 / 585.232.4652 fax

REVISIONS

NO. DATE DESCRIPTION REV. CK'D

NOTE:
Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

# PROPOSED CONDITIONS DRAINAGE MAP

Project Manager:

M. Petroski, PE

Designed by:

D. Christopher

Drawn by:

A. Adekoya

Checked by:

M. Petroski, PE

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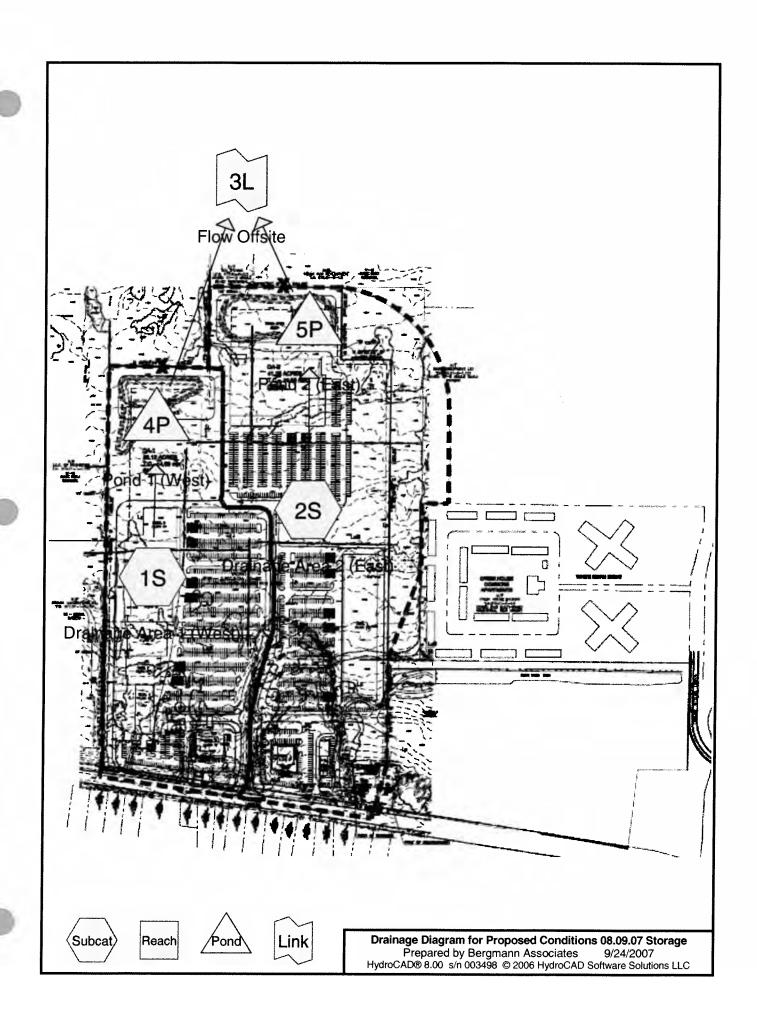
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Date

**DR-2** 



#### **Proposed Conditions 08.09.07 Storage**

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Page 2 8/14/2007

#### **Subcatchment 1S: Drainage Area 1 (West)**

Runoff

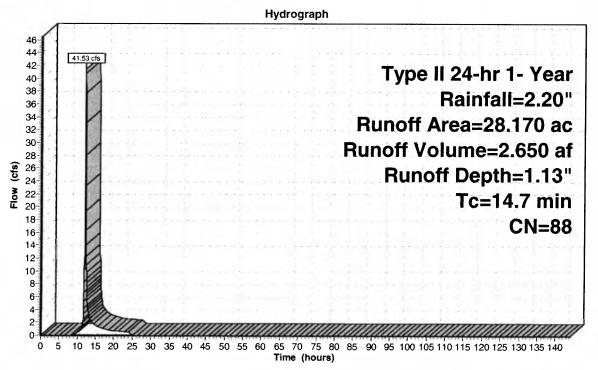
41.53 cfs @ 12.07 hrs, Volume=

2.650 af, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 1- Year Rainfall=2.20"

_	Area	(ac)	CN	Desc	cription			
_	28	.170	88					
-	28	.170		Perv	rious Area			
	Tc	Leng		Slope			Description	
_	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)		
	14.7						Direct Entry	

#### Subcatchment 1S: Drainage Area 1 (West)



■ Runoff

#### **Proposed Conditions 08.09.07 Storage**

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#### **Subcatchment 2S: Drainage Area 2 (East)**

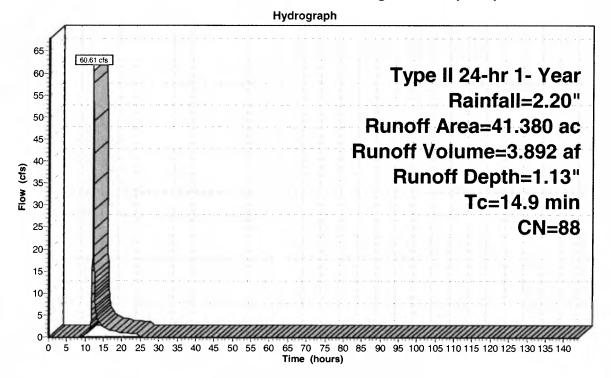
Runoff = 60.61 cfs @ 12.07 hrs, Volume=

3.892 af, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 1- Year Rainfall=2.20"

_	Area	(ac)	CN	Desc	cription			
	41.	.380	88					
	41.	.380		Perv	rious Area			
	Tc (min)	Lengt (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	•	
_	14.9						Direct Entry,	

#### Subcatchment 2S: Drainage Area 2 (East)



Runoff

#### **Proposed Conditions 08.09.07 Storage**

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Page 4

#### Pond 4P: Pond 1 (West)

Inflow Area = 28.170 ac, Inflow Depth = 1.13" for 1- Year event Inflow = 41.53 cfs @ 12.07 hrs, Volume= 2.650 af

Outflow = 1.07 cfs @ 16.84 hrs, Volume= 2.617 af, Atten= 97%, Lag= 286.6 min

Primary = 1.07 cfs @ 16.84 hrs, Volume= 2.617 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs

Starting Elev= 397.00' Surf.Area= 91,732 sf Storage= 83,588 cf

Peak Elev= 398.54' @ 16.84 hrs Surf.Area= 100,651 sf Storage= 161,374 cf (77,786 cf above start)

Plug-Flow detention time= 2,526.9 min calculated for 0.698 af (26% of inflow)

Center-of-Mass det. time= 1,059.9 min (1,896.3 - 836.3)

Volume	Invert	Avail.Storage	Storage Description
#1	394.00'	83,588 cf	WQv (Prismatic) Listed below (Recalc)
#2	397.00'	228,800 cf	Wet Pool (Prismatic) Listed below (Recalc)

312,388 cf Total Available Storage

Elevation	on Surf.Area	Inc.Store	Cum.Store
(fee	t) (sq-ft)	(cubic-feet)	(cubic-feet)
394.0	0 0	0	0
395.0	0 28,467	14,234	14,234
396.0	0 32,188	30,328	44,561
397.0	0 45,866	39,027	83,588
Elevatio	n Surf.Area	Inc.Store	Cum.Store
(fee	t) (sq-ft)	(cubic-feet)	(cubic-feet)
397.0	0 45,866	0	0
398.0	0 51,991	48,929	48,929
399.0	0 57,161	54,576	103,505
400.0	0 62,839	60,000	163,505
401.0	0 67,751	65,295	228,800

Device	Routing	Invert	Outlet Devices
#1	Primary	397.00'	18.0" x 60.0' long Culvert CMP, square edge headwall, Ke= 0.500
			Outlet Invert= 396.50' S= 0.0083 '/' Cc= 0.900 n= 0.012
#2	Device 1	397.00	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	399.00	3.00' x 3.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Primary OutFlow** Max=1.07 cfs @ 16.84 hrs HW=398.54' (Free Discharge)

1=Culvert (Passes 1.07 cfs of 7.40 cfs potential flow)

2=Orifice/Grate (Orifice Controls 1.07 cfs @ 5.47 fps)

-3=Orifice/Grate (Controls 0.00 cfs)

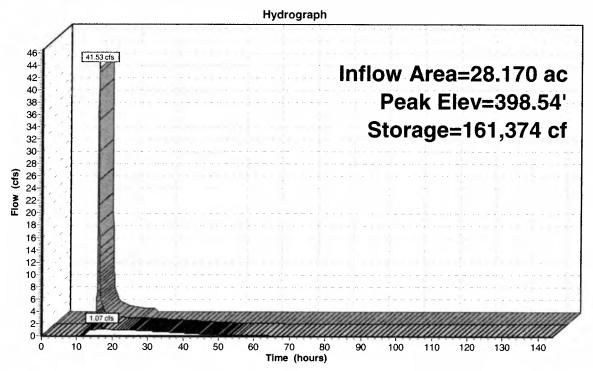


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#### Pond 4P: Pond 1 (West)





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Page 6

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#### Pond 5P: Pond 2 (East)

Inflow Area = 41.380 ac, Inflow Depth = 1.13" for 1- Year event

Inflow 60.61 cfs @ 12.07 hrs, Volume= 3.892 af

Outflow 1.09 cfs @ 19.57 hrs, Volume= 3.780 af, Atten= 98%, Lag= 450.1 min

1.09 cfs @ 19.57 hrs, Volume= Primary 3.780 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 393.00' Surf.Area= 145,064 sf Storage= 165,810 cf

Peak Elev= 394.59' @ 19.57 hrs Surf.Area= 156,439 sf Storage= 291,257 cf (125,447 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)

Center-of-Mass det. time= 1,529.7 min (2,366.3 - 836.5)

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'	165,810 cf	WQv (Prismatic) Listed below (Recalc)
#2	393.00'	342,281 cf	Wet Pool (Prismatic) Listed below (Recalc)

508,091 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
390.00	0	0	0
391.00	62,262	31,131	31,131
392.00	67,282	64,772	95,903
393.00	72,532	69,907	165,810
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	72,532	0	0
394.00	80,972	76,752	76,752
395.00	85,941	83,457	160,209
396.00	91,011	88,476	248,685
397.00	96,181	93,596	342,281

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	18.0" x 80.0' long Culvert CMP, square edge headwall, Ke= 0.500
			Outlet Invert= 392.50' S= 0.0063 '/' Cc= 0.900 n= 0.012
#2	Device 1	393.00	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	395.00'	3.00' x 5.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Primary OutFlow** Max=1.09 cfs @ 19.57 hrs HW=394.59' (Free Discharge)

-1=Culvert (Passes 1.09 cfs of 7.31 cfs potential flow)

**-2=Orifice/Grate** (Orifice Controls 1.09 cfs @ 5.58 fps)

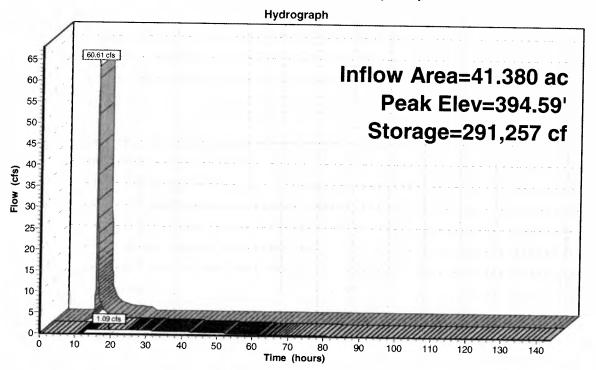
-3=Orifice/Grate (Controls 0.00 cfs)



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### Pond 5P: Pond 2 (East)





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Page 8 8/14/2007

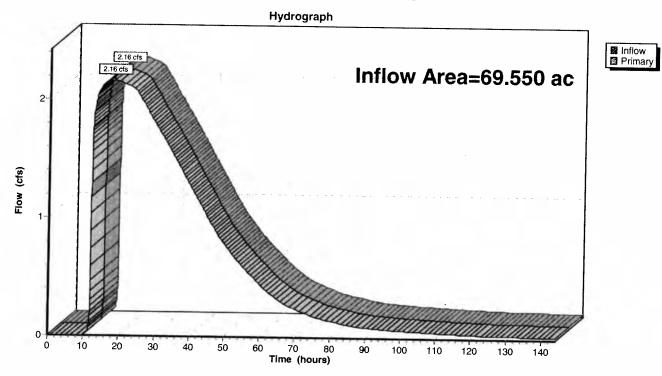
### Link 3L: Flow Offsite

Inflow Area = 69.550 ac, Inflow Depth > 1.10" for 1- Year event 2.16 cfs @ 18.20 hrs, Volume= 6.397 af

Primary = 2.16 cfs @ 18.20 hrs, Volume= 6.397 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs

#### Link 3L: Flow Offsite



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Page 9 8/14/2007

### Subcatchment 1S: Drainage Area 1 (West)

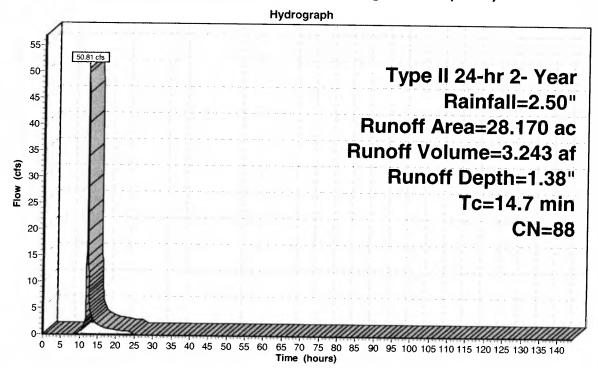
Runoff = 50.81 cfs @ 12.07 hrs, Volume=

3.243 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 2- Year Rainfall=2.50"

_	Area	(ac)	CN	Desc	cription		
_	28.	170	88				
	28.	170		Perv	ious Area		
_	Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	14.7						Direct Entry

## Subcatchment 1S: Drainage Area 1 (West)



■ Runoff

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Page 10 8/14/2007

### Subcatchment 2S: Drainage Area 2 (East)

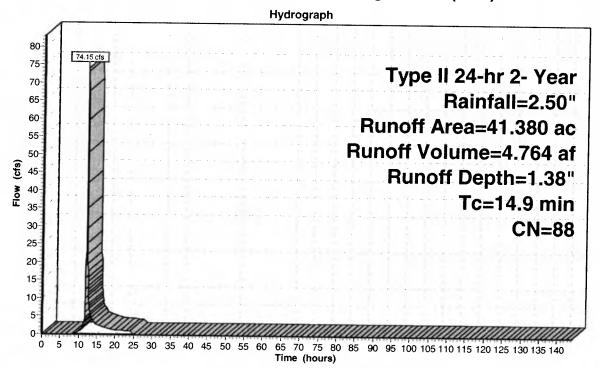
Runoff 74.15 cfs @ 12.07 hrs, Volume=

4.764 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 2- Year Rainfall=2.50"

_	Area	(ac)	CN	Des	cription			
	41.	.380	88					
	41.	.380		Perv	ious Area			
_	Tc (min)	Lengt (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
	14.9						Direct Entry.	

#### Subcatchment 2S: Drainage Area 2 (East)





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Page 11 8/14/2007

#### Pond 4P: Pond 1 (West)

Inflow Area = 28.170 ac, Inflow Depth = 1.38" for 2- Year event

Inflow = 50.81 cfs @ 12.07 hrs, Volume= 3.243 af

Outflow = 1.21 cfs @ 17.23 hrs, Volume= 3.208 af, Atten= 98%, Lag= 309.9 min

Primary = 1.21 cfs @ 17.23 hrs, Volume= 3.208 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 397.00' Surf.Area= 91,732 sf Storage= 83,588 cf

Peak Elev= 398.90' @ 17.23 hrs Surf.Area= 102,492 sf Storage= 181,205 cf (97,617 cf above start)

Plug-Flow detention time= 2,210.9 min calculated for 1.289 af (40% of inflow)

Center-of-Mass det. time= 1,127.2 min (1,957.8 - 830.6)

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1	394.00'		WQv (Prismatic) Listed below (Recalc)
#2	397.00'		Wet Pool (Prismatic) Listed below (Recalc)

Cum Store

312,388 cf Total Available Storage

Inc.Store

			Ourn.Otoro
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
394.00	0	O	Ō
395.00	28,467	14,234	14,234
396.00	32,188	30,328	44,561
397.00	45,866	39,027	83,588
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
397.00	45,866	0	0
398.00	51,991	48,929	48,929
399.00	57,161	54,576	103,505
400.00	62,839	60,000	163,505
401.00	67,751	65,295	228.800

Device	Routing	Invert	Outlet Devices
#1	Primary	397.00'	18.0" x 60.0' long Culvert CMP, square edge headwall, Ke= 0.500
#2 #3	Device 1 Device 1	397.00'	Outlet Invert= 396.50' S= 0.0083 '/' Cc= 0.900 n= 0.012 6.0" Vert. Orifice/Grate C= 0.600 3.00' x 3.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=1.21 cfs @ 17.23 hrs HW=398.90' (Free Discharge)

1=Culvert (Passes 1.21 cfs of 9.09 cfs potential flow)

2=Orifice/Grate (Orifice Controls 1.21 cfs @ 6.18 fps)

-3=Orifice/Grate (Controls 0.00 cfs)



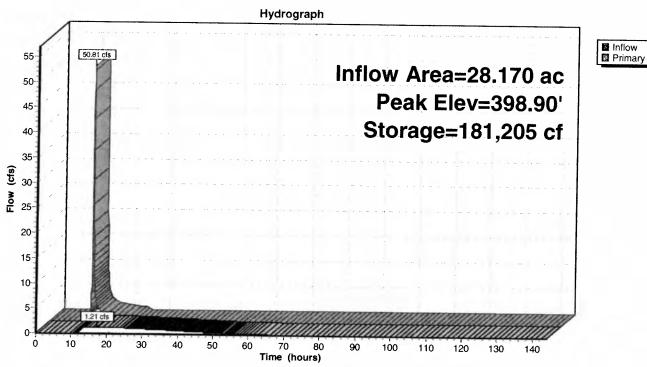
Elevation



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Page 12 8/14/2007

Pond 4P: Pond 1 (West)





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Page 13 8/14/2007

#### Pond 5P: Pond 2 (East)

Inflow Area = 41.380 ac, Inflow Depth = 1.38" for 2- Year event 74.15 cfs @ 12.07 hrs, Volume= Inflow 4.764 af

Outflow 1.24 cfs @ 19.82 hrs, Volume= 4.641 af, Atten= 98%, Lag= 464.8 min

Primary 1.24 cfs @ 19.82 hrs, Volume= 4.641 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 393.00' Surf.Area= 145,064 sf Storage= 165,810 cf

Peak Elev= 394.96' @ 19.82 hrs Surf.Area= 158,273 sf Storage= 322,564 cf (156,754 cf above start)

Plug-Flow detention time= 4,082.5 min calculated for 0.835 af (18% of inflow)

Center-of-Mass det. time= 1,638.5 min (2,469.2 - 830.7)

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'	165,810 cf	WQv (Prismatic) Listed below (Recalc)
#2	393.00'		Wet Pool (Prismatic) Listed below (Recalc)
		=	

508,091 cf Total Available Storage

Elevation (feet)	Surf.Area	Inc.Store	Cum.Store
	(sq-ft)	(cubic-feet)	<u>(cubic-feet)</u>
390.00	0	0	0
391.00	62,262	31,131	31,131
392.00	67,282	64,772	95,903
393.00	72,532	69,907	165,810
Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
393.00	72,532	0	Ó
394.00	80,972	76,752	76,752
395.00	85,941	83,457	160,209
396.00	91,011	88,476	248,685
397.00	96,181	93,596	342,281

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	<b>18.0" x 80.0' long Culvert</b> CMP, square edge headwall, Ke= 0.500 Outlet Invert= 392.50' S= 0.0063 '/' Cc= 0.900 n= 0.012
#2	Device 1	393.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	395.00'	3.00' x 5.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=1.24 cfs @ 19.82 hrs HW=394.96' (Free Discharge)

1=Culvert (Passes 1.24 cfs of 8.70 cfs potential flow)

-2=Orifice/Grate (Orifice Controls 1.24 cfs @ 6.30 fps)

-3=Orifice/Grate (Controls 0.00 cfs)





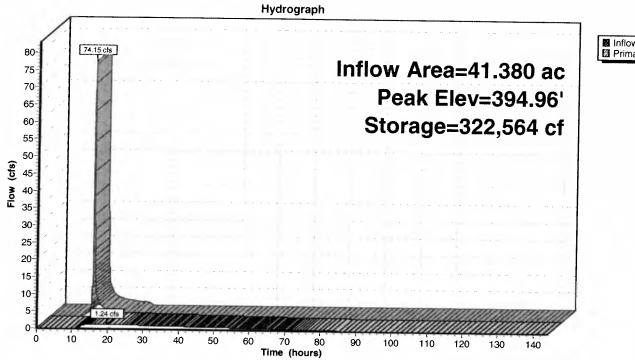
Elevation



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Page 14 8/14/2007

## Pond 5P: Pond 2 (East)





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\*\* Page 15

8/14/2007

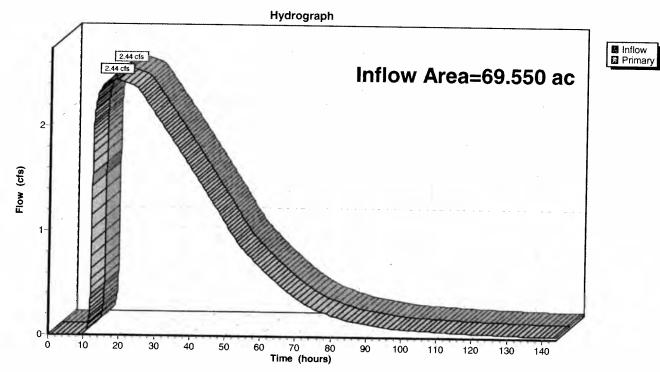
#### Link 3L: Flow Offsite

Inflow Area = 69.550 ac, Inflow Depth > 1.35" for 2- Year event 2.44 cfs @ 18.52 hrs, Volume= 7.849 af

Primary = 2.44 cfs @ 18.52 hrs, Volume= 7.849 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs

#### Link 3L: Flow Offsite



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Page 16 8/14/2007

### Subcatchment 1S: Drainage Area 1 (West)

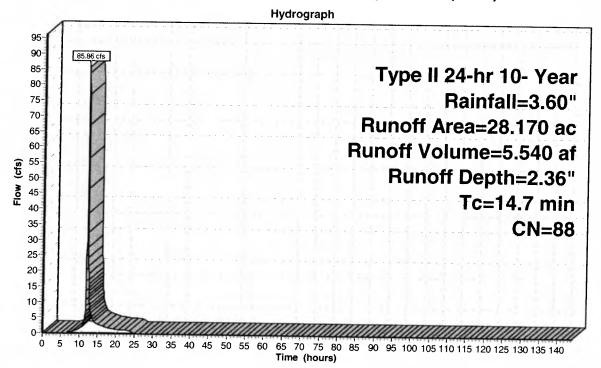
Runoff 85.86 cfs @ 12.06 hrs, Volume=

5.540 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 10- Year Rainfall=3.60"

	Area	(ac)	CN	Desc	cription		
	28.	170	88				
	28.	170		Perv	ious Area	***	
_	Tc (min)	Lengtl (feet		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	14.7						Direct Entry

## Subcatchment 1S: Drainage Area 1 (West)



■ Runoff

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Page 17 8/14/2007

### Subcatchment 2S: Drainage Area 2 (East)

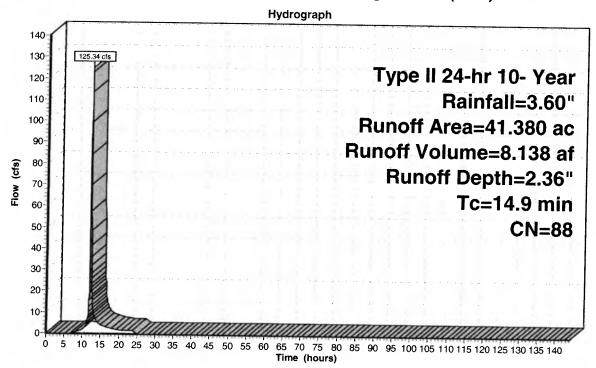
Runoff 125.34 cfs @ 12.07 hrs, Volume=

8.138 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 10- Year Rainfall=3.60"

	Area	(ac)	CN	Desc	cription		
_	41.	.380	88				
	41.	.380		Perv	ious Area		
_	Tc (min)	Lengt (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	14.9						Direct Entry

# Subcatchment 2S: Drainage Area 2 (East)



Runoff

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Elevation

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Page 18 8/14/2007

#### Pond 4P: Pond 1 (West)

Inflow Area = 28.170 ac, Inflow Depth = 2.36" for 10- Year event 85.86 cfs @ 12.06 hrs, Volume= 5.540 af

Outflow = 11.05 cfs @ 12.59 hrs, Volume= 5.504 af, Atten= 87%, Lag= 31.6 min

Primary = 11.05 cfs @ 12.59 hrs, Volume= 5.504 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 397.00' Surf.Area= 91,732 sf Storage= 83,588 cf

Peak Elev= 399.48' @ 12.59 hrs Surf.Area= 105,745 sf Storage= 215,104 cf (131,516 cf above start)

Plug-Flow detention time= 1,319.1 min calculated for 3.585 af (65% of inflow)

Center-of-Mass det. time= 786.7 min (1,602.0 - 815.3)

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1	394.00'		WQv (Prismatic) Listed below (Recalc)
#2	397.00'	228,800 cf	Wet Pool (Prismatic) Listed below (Recalc)
		010 000	

Cum.Store

312,388 cf Total Available Storage

Inc.Store

(teet)	(sq-ft)	(cubic-feet)	(cubic-feet)
394.00	0	0	Ó
395.00	28,467	14,234	14,234
396.00	32,188	30,328	44,561
397.00	45,866	39,027	83,588
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
397.00	45,866	Ó	0
398.00	51,991	48,929	48,929
399.00	57,161	54,576	103,505
400.00	62,839	60,000	163,505
401.00	67,751	65,295	228.800

Device	Routing	Invert	Outlet Devices
#1	Primary	397.00'	18.0" x 60.0' long Culvert CMP, square edge headwall, Ke= 0.500
#2 #3	Device 1 Device 1	397.00'	Outlet Invert= 396.50' S= 0.0083 '/' Cc= 0.900 n= 0.012  6.0" Vert. Orifice/Grate C= 0.600  3.00' x 3.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=11.05 cfs @ 12.59 hrs HW=399.48' (Free Discharge)

-1=Culvert (Barrel Controls 11.05 cfs @ 6.25 fps)

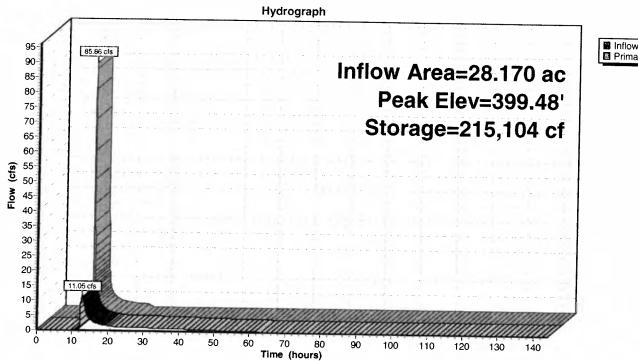
2=Orifice/Grate (Passes < 1.41 cfs potential flow)

-3=Orifice/Grate (Passes < 12.99 cfs potential flow)

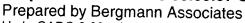


Page 19 8/14/2007

## Pond 4P: Pond 1 (West)







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Page 20 8/14/2007

#### Pond 5P: Pond 2 (East)

Inflow Area = 41.380 ac, Inflow Depth = 2.36" for 10- Year event Inflow 125.34 cfs @ 12.07 hrs, Volume= 8.138 af

Outflow 10.53 cfs @ 12.88 hrs, Volume= = 8.013 af, Atten= 92%, Lag= 49.0 min

Primary 10.53 cfs @ 12.88 hrs, Volume= 8.013 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 393.00' Surf.Area= 145,064 sf Storage= 165,810 cf

Peak Elev= 395.51' @ 12.88 hrs Surf.Area= 161,077 sf Storage= 370,828 cf (205,018 cf above start)

Plug-Flow detention time= 2,050.4 min calculated for 4.205 af (52% of inflow)

Center-of-Mass det. time= 1,056.1 min (1,871.6 - 815.5)

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'		WQv (Prismatic) Listed below (Recalc)
#2	393.00'	342,281 cf	Wet Pool (Prismatic) Listed below (Recalc)

Cum.Store

508,091 cf Total Available Storage

Inc.Store

Cum.Store	1110.01016	our in a ou	
(cubic-feet)	(cubic-feet)	(sq-ft)	(feet)
0	0	0	390.00
31,131	31,131	62,262	391.00
95,903	64,772	67,282	392.00
165,810	69,907	72,532	393.00
Cum.Store (cubic-feet)	Inc.Store (cubic-feet)	Surf.Area (sq-ft)	Elevation (feet)
0	0	72,532	393.00
76,752	76,752	80,972	394.00
160,209	83,457	85,941	395.00
248,685	88,476	91,011	396.00
342 281	93,596	96.181	397.00

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00	<b>18.0"</b> x <b>80.0'</b> long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 392.50' S= 0.0063 '/' Cc= 0.900 n= 0.012
#2 #3	Device 1 Device 1	393.00'	6.0" Vert. Orifice/Grate C= 0.600  3.00' x 5.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=10.53 cfs @ 12.88 hrs HW=395.51' (Free Discharge)

1=Culvert (Barrel Controls 10.53 cfs @ 5.96 fps)

-2=Orifice/Grate (Passes < 1.42 cfs potential flow)

-3=Orifice/Grate (Passes < 19.26 cfs potential flow)



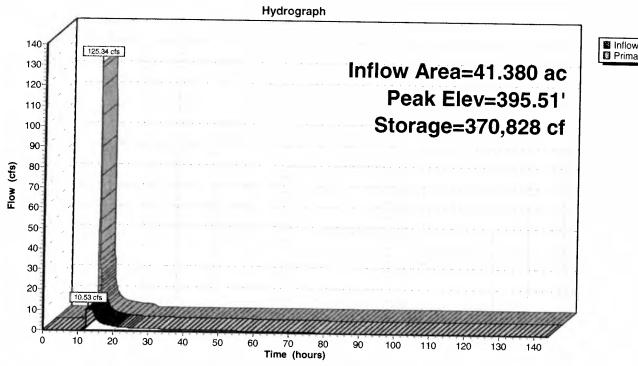
Elevation

Proposed Conditions 08.09.07 Storage
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Page 21

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## Pond 5P: Pond 2 (East)





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Page 22 8/14/2007

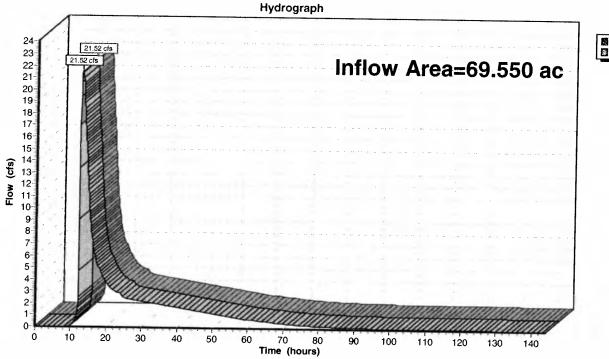
#### Link 3L: Flow Offsite

69.550 ac, Inflow Depth > 2.33" for 10- Year event Inflow Area = Inflow 21.52 cfs @ 12.68 hrs, Volume= 13.516 af

Primary 21.52 cfs @ 12.68 hrs, Volume= 13.516 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs

#### Link 3L: Flow Offsite





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Page 23 8/14/2007

### Subcatchment 1S: Drainage Area 1 (West)

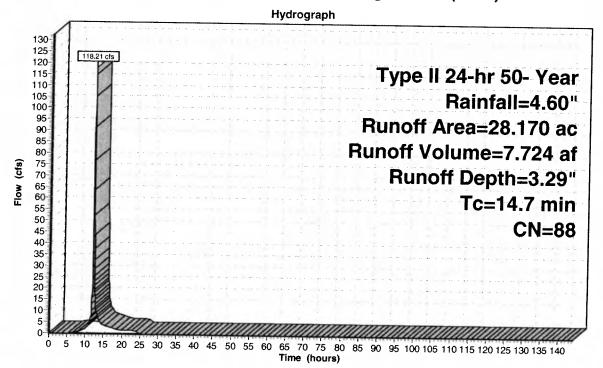
Runoff 118.21 cfs @ 12.06 hrs, Volume=

7.724 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 50- Year Rainfall=4.60"

Area	a (ac)	CN.	Desc	cription		
2	8.170	88				
2	8.170		Perv	ious Area		
To (min)			lope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	•					Direct Entry.

## Subcatchment 1S: Drainage Area 1 (West)



■ Runoff

Page 24 8/14/2007

### Subcatchment 2S: Drainage Area 2 (East)

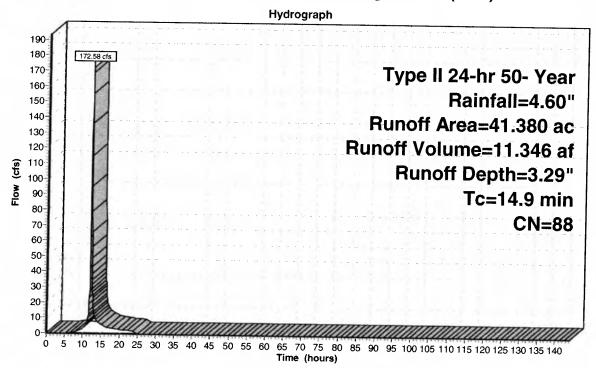
Runoff = 172.58 cfs @ 12.06 hrs, Volume=

11.346 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 50- Year Rainfall=4.60"

_	Area	(ac)	CN	Desc	cription		
_	41.	.380	88				
	41.	.380		Perv	ious Area		
***	Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	14.9						Direct Entry,

### Subcatchment 2S: Drainage Area 2 (East)



■ Runoff

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Page 25 8/14/2007

#### Pond 4P: Pond 1 (West)

Inflow Area = 28.170 ac, Inflow Depth = 3.29" for 50- Year event

Inflow = 118.21 cfs @ 12.06 hrs, Volume= 7.724 af

Outflow = 13.67 cfs @ 12.63 hrs, Volume= 7.687 af, Atten= 88%, Lag= 33.8 min

Primary = 13.67 cfs @ 12.63 hrs, Volume= 7.687 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 397.00' Surf.Area= 91,732 sf Storage= 83,588 cf

Peak Elev= 400.33' @ 12.63 hrs Surf.Area= 110,340 sf Storage= 268,278 cf (184,690 cf above start)

Plug-Flow detention time= 913.2 min calculated for 5.768 af (75% of inflow)

Center-of-Mass det. time= 607.3 min ( 1,413.2 - 805.9 )

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1 #2	394.00' 397.00'	83,588 cf	WQv (Prismatic) Listed below (Recalc)
	007.00	220,000 01	Wet Pool (Prismatic) Listed below (Recalc)

Cum.Store

312,388 cf Total Available Storage

Inc.Store

(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
394.00	0	0	0
395.00	28,467	14,234	14,234
396.00	32,188	30,328	44,561
397.00	45,866	39,027	83,588
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
397.00	45,866	Ó	0
398.00	51,991	48,929	48,929
399.00	57,161	54,576	103,505
400.00	62,839	60,000	163,505
401.00	67,751	65,295	228,800

Device	Routing	Invert	Outlet Devices
#1	Primary	397.00'	18.0" x 60.0' long Culvert CMP, square edge headwall, Ke= 0.500
#2 #3	Device 1 Device 1	397.00'	Outlet Invert= 396.50' S= 0.0083 '/' Cc= 0.900 n= 0.012  6.0" Vert. Orifice/Grate C= 0.600  3.00' x 3.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=13.67 cfs @ 12.63 hrs HW=400.33' (Free Discharge)

-1=Culvert (Inlet Controls 13.67 cfs @ 7.74 fps)

2=Orifice/Grate (Passes < 1.66 cfs potential flow)

-3=Orifice/Grate (Passes < 50.03 cfs potential flow)



Elevation

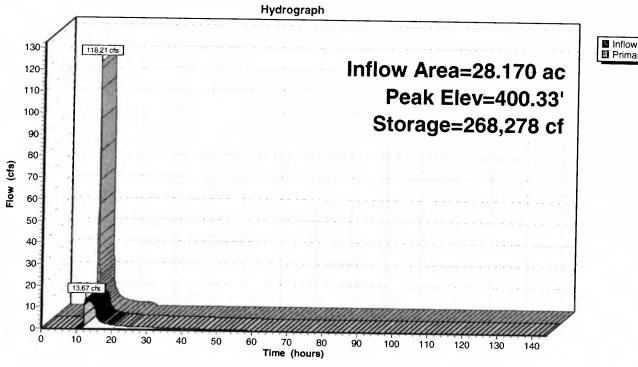


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Page 26

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### Pond 4P: Pond 1 (West)





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Page 27 8/14/2007

#### Pond 5P: Pond 2 (East)

Inflow Area = 41.380 ac, Inflow Depth = 3.29" for 50- Year event Inflow

172.58 cfs @ 12.06 hrs, Volume= 11.346 af

Outflow 13.40 cfs @ 12.94 hrs, Volume= 11.220 af, Atten= 92%, Lag= 52.8 min

Primary 13.40 cfs @ 12.94 hrs, Volume= 11.220 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 393.00' Surf Area= 145,064 sf Storage= 165,810 cf

Peak Elev= 396.45' @ 12.94 hrs Surf.Area= 165,875 sf Storage= 456,080 cf (290,270 cf above start)

Plug-Flow detention time= 1,328.1 min calculated for 7.414 af (65% of inflow)

Center-of-Mass det. time= 816.0 min ( 1,622.1 - 806.1 )

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'		WQv (Prismatic) Listed below (Recalc)
#2	393.00'	342,281 cf	Wet Pool (Prismatic) Listed below (Recalc)
		E00.004.4	

508,091 cf Total Available Storage

Elevation (feet)	Surf.Area	Inc.Store	Cum.Store
	(sq-ft)	(cubic-feet)	(cubic-feet)
390.00	0	0	0
391.00	62,262	31,131	31,131
392.00	67,282	64,772	95,903
393.00	72,532	69,907	165,810
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	72,532	0	0
394.00	80,972	76,752	76,752
395.00	85,941	83,457	160,209
396.00	91,011	88,476	248,685
397.00	96,181	93,596	342,281

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	<b>18.0" x 80.0' long Culvert</b> CMP, square edge headwall, Ke= 0.500 Outlet Invert= 392.50' S= 0.0063 '/' Cc= 0.900 n= 0.012
#2 #3	Device 1 Device 1	393.00'	6.0" Vert. Orifice/Grate C= 0.600  3.00' x 5.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=13.40 cfs @ 12.94 hrs HW=396.45' (Free Discharge)

-1=Culvert (Barrel Controls 13.40 cfs @ 7.58 fps)

-2=Orifice/Grate (Passes < 1.69 cfs potential flow)

-3=Orifice/Grate (Passes < 87.00 cfs potential flow)



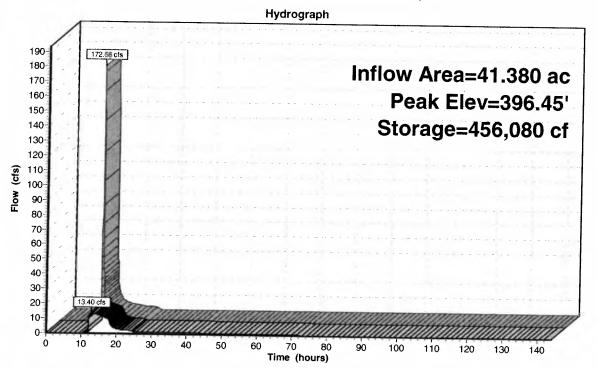
Elevation



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Page 28 8/14/2007

## Pond 5P: Pond 2 (East)





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Page 29 8/14/2007

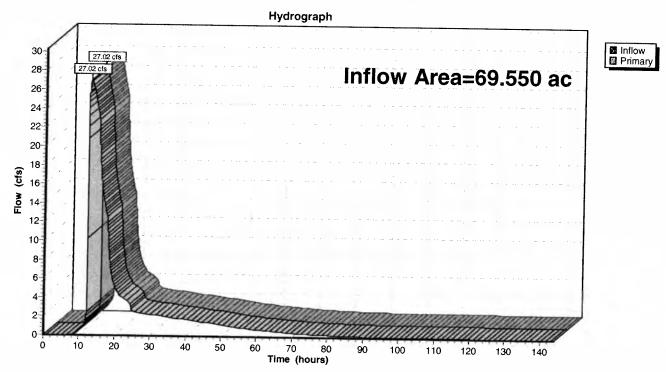
#### Link 3L: Flow Offsite

Inflow Area = 69.550 ac, Inflow Depth > 3.26" for 50- Year event 27.02 cfs @ 12.73 hrs, Volume= Inflow 18.908 af

Primary 27.02 cfs @ 12.73 hrs, Volume= 18.908 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs

#### Link 3L: Flow Offsite



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Page 30

8/14/2007

### Subcatchment 1S: Drainage Area 1 (West)

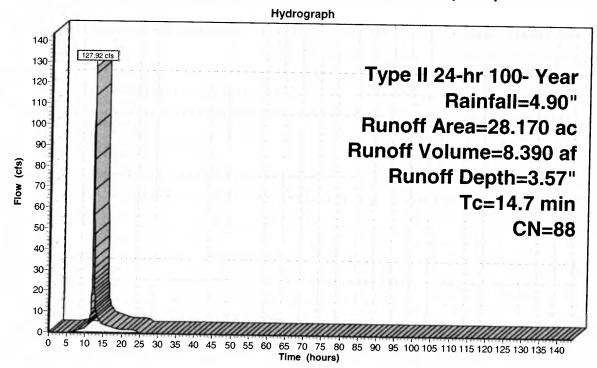
Runoff = 127.92 cfs @ 12.06 hrs, Volume=

8.390 af, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 100- Year Rainfall=4.90"

_	Area	(ac) (	ON Des	cription		
_	28	.170	88			
	28.	.170	Pen	ious Area		
_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	14.7					Direct Entry

## Subcatchment 1S: Drainage Area 1 (West)



Runoff

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Page 31 8/14/2007

### Subcatchment 2S: Drainage Area 2 (East)

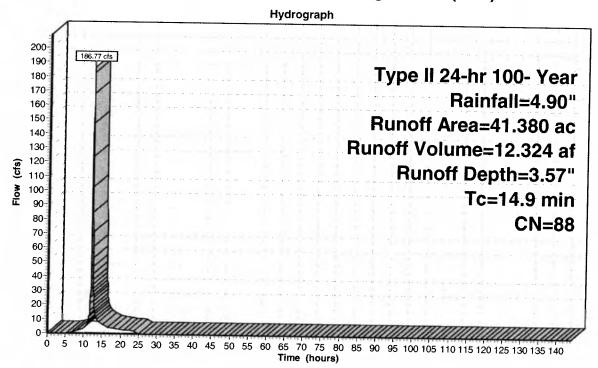
Runoff 186.77 cfs @ 12.06 hrs, Volume=

12.324 af, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Type II 24-hr 100- Year Rainfall=4.90"

_	Area	(ac)	CN	Des	cription		
_	41.	.380	88			***	
	41.	.380		Perv	ious Area	· · · · · · · · · · · · · · · · · · ·	
_	Tc (min)	Leng (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	14.9						Direct Entry,

## Subcatchment 2S: Drainage Area 2 (East)



■ Runoff

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Page 32 8/14/2007

#### Pond 4P: Pond 1 (West)

Inflow Area = 28.170 ac, Inflow Depth = 3.57" for 100- Year event

Inflow = 127.92 cfs @ 12.06 hrs, Volume= 8.390 af

Outflow = 14.36 cfs @ 12.64 hrs, Volume= 8.353 af, Atten= 89%, Lag= 34.5 min

Primary = 14.36 cfs @ 12.64 hrs, Volume= 8.353 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs

Starting Elev= 397.00' Surf.Area= 91,732 sf Storage= 83,588 cf

Peak Elev= 400.60' @ 12.64 hrs Surf.Area= 111,634 sf Storage= 285,441 cf (201,853 cf above start)

Plug-Flow detention time= 844.4 min calculated for 6.434 af (77% of inflow)

Center-of-Mass det. time= 573.5 min ( 1,377.1 - 803.5 )

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1	394.00'	83,588 cf	WQv (Prismatic) Listed below (Recalc)
#2	397.00'	228,800 cf	Wet Pool (Prismatic) Listed below (Recalc)

Cum.Store

312,388 cf Total Available Storage

Inc.Store

			Quin.Oldie
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
394.00	0	Ó	0
395.00	28,467	14,234	14,234
396.00	32,188	30,328	44,561
397.00	45,866	39,027	83,588
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
397.00	45,866	0	0
398.00	51,991	48,929	48,929
399.00	57,161	54,576	103,505
400.00	62,839	60,000	163,505
401.00	67,751	65.295	228 800

Device	Routing	Invert	Outlet Devices
#1	Primary	397.00'	18.0" x 60.0' long Culvert CMP, square edge headwall, Ke= 0.500
#2 #3	Device 1 Device 1	397.00'	Outlet Invert= 396.50' S= 0.0083 '/' Cc= 0.900 n= 0.012  6.0" Vert. Orifice/Grate C= 0.600  3.00' x 3.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=14.35 cfs @ 12.64 hrs HW=400.60' (Free Discharge)

-1=Culvert (Inlet Controls 14.35 cfs @ 8.12 fps)

2=Orifice/Grate (Passes < 1.73 cfs potential flow)

-3=Orifice/Grate (Passes < 54.75 cfs potential flow)

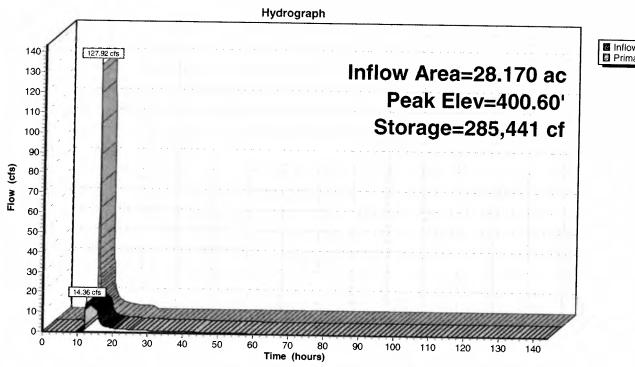


Elevation

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Page 33 <u>8/14/2007</u>

## Pond 4P: Pond 1 (West)





Prepared by Bergmann Associates

Elevation

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Page 34 8/14/2007

#### Pond 5P: Pond 2 (East)

Inflow Area = 41.380 ac, Inflow Depth = 3.57" for 100- Year event

Inflow = 186.77 cfs @ 12.06 hrs, Volume= 12.324 af

Outflow = 14.16 cfs @ 12.97 hrs, Volume= 12.198 af, Atten= 92%, Lag= 54.1 min

Primary = 14.16 cfs @ 12.97 hrs, Volume= 12.198 af

Routing by Stor-Ind method, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs Starting Elev= 393.00' Surf.Area= 145,064 sf Storage= 165,810 cf

Peak Elev= 396.74' @ 12.97 hrs Surf.Area= 167,361 sf Storage= 483,122 cf (317,312 cf above start)

Plug-Flow detention time= 1,216.2 min calculated for 8.390 af (68% of inflow)

Center-of-Mass det. time= 773.1 min (1,576.8 - 803.7)

Surf.Area

Volume	Invert	Avail.Storage	Storage Description
#1 #2	390.00'	165,810 cf	WQv (Prismatic) Listed below (Recalc)
#2	393.00'	342,281 cf	Wet Pool (Prismatic) Listed below (Recalc)

Cum Store

508,091 cf Total Available Storage

Inc.Store

			Quill.Olore
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
390.00	0	Ó	0
391.00	62,262	31,131	31,131
392.00	67,282	64,772	95,903
393.00	72,532	69,907	165,810
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	72,532	0	0
394.00	80,972	76,752	76,752
395.00	85,941	83,457	160,209
396.00	91,011	88,476	248,685
397.00	96,181	93,596	342,281

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00	<b>18.0" x 80.0' long Culvert</b> CMP, square edge headwall, Ke= 0.500 Outlet Invert= 392.50' S= 0.0063 '/' Cc= 0.900 n= 0.012
#2 #3	Device 1 Device 1	393.00'	6.0" Vert. Orifice/Grate C= 0.600  3.00' x 5.00' Horiz. Orifice/Grate Limited to weir flow C= 0.600

Primary OutFlow Max=14.16 cfs @ 12.97 hrs HW=396.74' (Free Discharge)

-1=Culvert (Barrel Controls 14.16 cfs @ 8.01 fps)

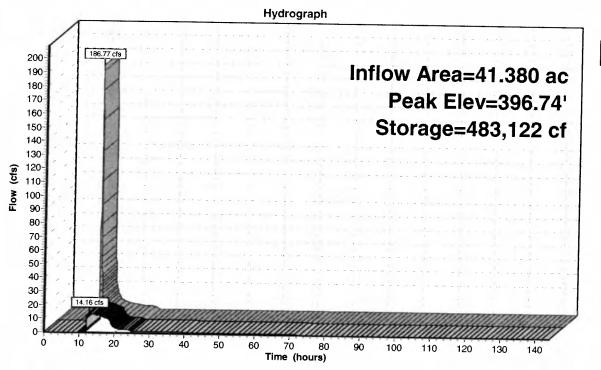
2=Orifice/Grate (Passes < 1.77 cfs potential flow)

**-3=Orifice/Grate** (Passes < 95.23 cfs potential flow)

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Page 35 8/14/2007

### Pond 5P: Pond 2 (East)





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Page 36 8/14/2007

#### Link 3L: Flow Offsite

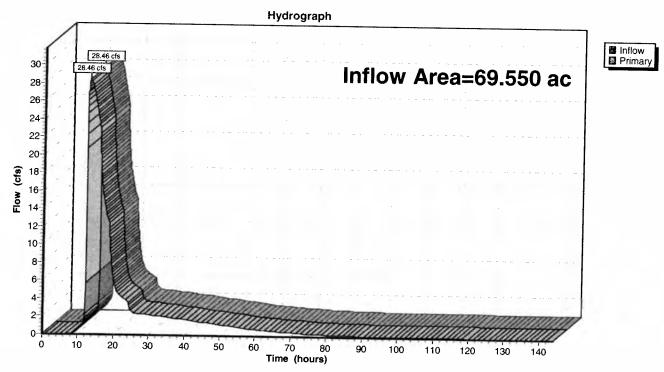
Inflow Area = 69.550 ac, Inflow Depth > 3.55" for 100- Year event

Inflow = 28.46 cfs @ 12.74 hrs, Volume= 20.551 af

Primary = 28.46 cfs @ 12.74 hrs, Volume= 20.551 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-144.00 hrs, dt= 0.03 hrs

#### Link 3L: Flow Offsite





Project:

Hapmton Ridge Center and the Shops of

Hapmton Ridge

Project #

6237.01

By: Date: A. Adekoya August 13th, 2007

# **Proposed Conditions CN and Time of Concentration Calculations**

#### Drainage Area 1 28.13 Acres:

Western portion of the property, Parking areas, Building rooftops, and grass cover, draining to the north Property line and eventually Smith Creek.

#### **Weighted Curve Number:**

Soil Type	Hydrologic Soils Group	CN	Area	Product of Area x CN
Impervious Topsoil	N/A B	90 85 Total	17.20 10.93 28.13	1548 929.05 2477
Weighte	Weighted CN=			

<sup>\*</sup>Soils are assumed to Imported Topsoil, minimum HSG B

#### Time of Concentration:

Assumed Tc with a minimum of (5) minutes for drainage to enter the storm sewer system. Add the time for water to travel through 2893.40 $^{\circ}$  of storm sewer @ 0.70 $^{\circ}$  slope =

Tc, Min.	14.68
Tt, Hours	0.24



Project:

Hapmton Ridge Center and the Shops of

Hapmton Ridge

Project #

6237.01

By:

A. Adekoya

Date:

May 17th, 2007

# **Proposed Conditions CN and Time of Concentration Calculations**

Drainage Area 2 = 41.38 Acres:

Eastern portion of the property, Parking areas, Building rooftops, and grass cover, draining to the north

#### **Weighted Curve Number:**

Weighted	Weighted CN=			
Topsoil	В	85 Total	20.67 41.38	1863.9 1756.95 3621
Impervious	N/A	90	Area 20.71	Area x CN
Soil Type	Hydrologic Soils Group	CN	<b>A</b>	Product of

<sup>\*</sup>Soils are assumed to Imported Topsoil, minimum HSG B

#### Time of Concentration:

Assumed Tc with a minimum of (5) minutes for drainage to enter the storm sewer system. Add the time for water to travel through  $3047.60^{\circ}$  of storm sewer @ 0.70% slope =

	Tc, Min.	14.89
Tt, Hours 0.25	Tt, Hours	0.25

NYSDEC GP-02-01 Stormwater Pollution Prevention Plan November 25, 2003

Stormwater Discharges from Construction Activities Kohl's, Town of Greece, New York #6086.00

 $R_v = 0.05 + 0.009(I)$ , where I is percent impervious cover (I = 64.0%)

A = site area in acres

 $WQ_v = (0.90 * (0.05+0.009(64.0)) * 22.79 ac)/12$ 

= (0.90 \* .626 \* 22.79)/12

= 1.07 acre-feet or 46,609 cuft (required)

C. Hydrologic Input Parameters and Developed Site Hydrology was developed and can be reviewed in Appendix E, TR-55 calculations. For a recap of TR-55 sheet results and input parameters see table 1 below.

Table 1.	TR-55 Hydrol	ogic Input Pa	rameters and S	ite Hydrology	for Existing Co	onditions
	Acreage (ac)	CN	Тс	1 year event (cfs)	10 year event (cfs)	100 year event (cfs)
Area #1	2.466	73	0.63	0.58	3.06	8.75
Area #2	7.879	77	0.63	2.87	11.71	30.73
Area #3	7.614	78	0.74	2.56	9.95	25.69
Area #4	6.574	72	0.59	1.36	7.78	22.78
Combined	24.533			7.24	32.41	87.78

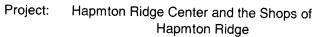
Table 2. TR-:	55 Hydrologic	Input Paramet	ers and Site Hy	drology for D	eveloped Cond	litions
	Acreage (ac)	CN	Тс	1 year event	10 year event	100 year event
Area #1	7.412	79	0.06	(cfs)	(cfs)	(cfs)
Area #2	6.268	92	0.06	21.93	43.09	81.01
Area #3	3.473	98	0.09	14.72	33.26	66.05
Area #4	4.212	79	0.06	10.27	20.19	37.96
Area #5	3.336	85	0.09	4.58 3.86	15.39	37.64
Combined Inflow	24.701		0.24	46.92	96.53	24.49 185.02

Table3. Pond Disch	narge Rates:				
Year	Existing Peak Discharge	Propose	Proposed Peak Discharge		
	cfs	cfs	Peak Water Elevation		
1	7.24	1.73	410.26		
10	32.41	28.35	411.60		
100	87.78	86.06	113 27		

Table 3 Note: See Appendix D for complete Hydrology results from Hydroflow 2002 runs and Appendix E for complete TR-55 input parameters and results for Area 1 existing and proposed.

No diversion structure is needed since all of the stormwater drainage will be direction into a stilling basin for pre-treatment prior to entering into the infiltration portion of the basin. All of the required stormwater storage volumes will be provided for above the infiltration portion of the basin. A primary outlet structure has been designed to drain each portion of the pond at the same discharge point to Larkin Creek under Creek House Drive.





pject # 6237.01

Project # 6237.01 By: A. Adekoya

Date: August 13th, 2007

Year Storm	1	<u>10</u>	100
From Existing Site	31.15	93.61	161.12
70% per Town			
Requirement	21.805	65.527	112.784
Additional Storage from Neighboring Kohls Site	_	5.65	24.61
Total Allowable Discharge (cfs)	21.8	59.9	88.2

Allowable Discharge leaving this site will closely match Existing Discha Discharge conditions

2yr Qout= 43.13cfs

Target Release Rate 30.191 cfs



## Appendix C

Water Quality Volume/Channel Protection Volume





Project: Hapmton Ridge Center and the Shops of Hapmton Ridge Project No. 6237

Date: 6/20/2007

By: AAA

Checked: 1 of 1

T	-	 ٠.
		 •

#### WATER QUALITY STORAGE VOLUME

#### Water Quality Volume

#### DESCRIPTION:

Total Water Quality Volume Required

Formula for calculating the Water Quality storage volume (WQv) = (P) (Rv) (A)
12

P = 90% Rainfall Event = 0.90

I = percent Impervious Cover = 55

Rv = 0.05 + 0.009(I) = 0.54

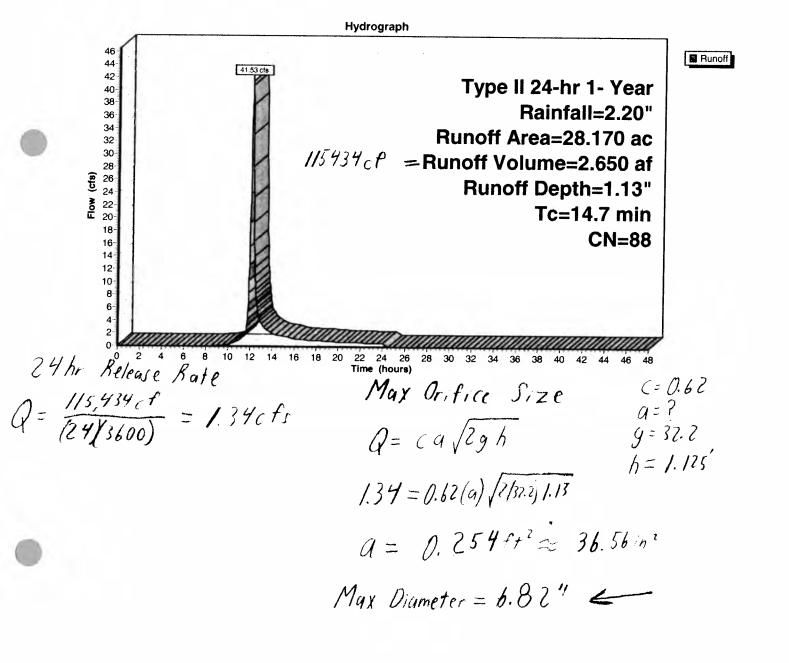
A = Acres = 69.51

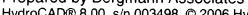
Water Quality Storage Volume (acre-feet) = 2.82

122,742 Cubic-Feet

7/19/2007

### Subcatchment 1S: Drainage Area 1 (West)





NWSE

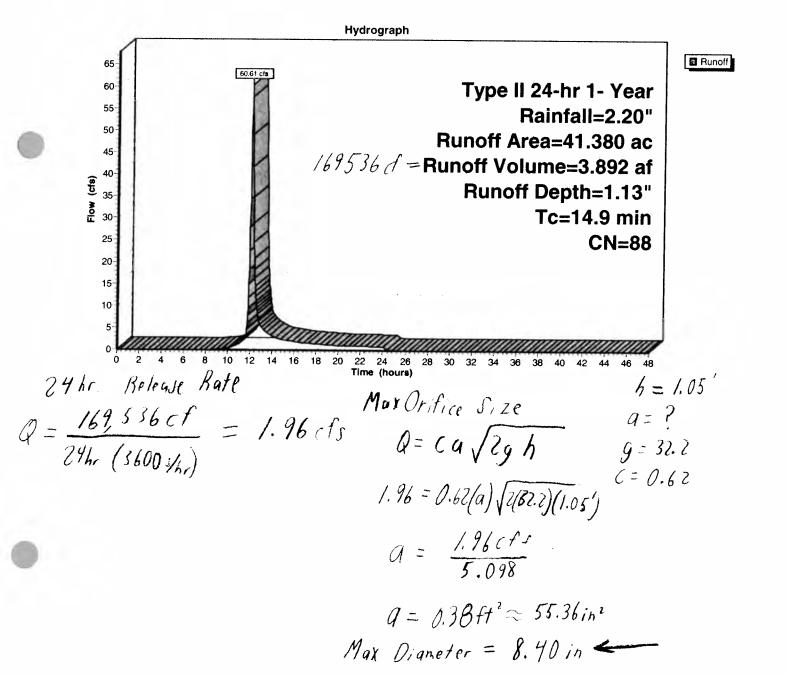
7/20/2007

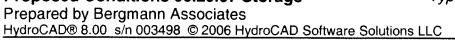
## Stage-Area-Storage for Pond 4P: Pond 1 (West)

		Otage-Area-t	Storage for Fond	3 4F. Folid I (West)
Elevation	Storage	Elevation	Storage	
(feet)	(cubic-feet)	(feet)	(cubic-feet)	
394.00	0	399.20	198,638	- Elevation 399.25
394.10	142	399.30	204,496	21(14) 10/1 3/1/10
394.20	569	399.40	210,411	397.00
394.30	1,281	399.50	216,383	Max Head, $H = 2.25$ Avg. Head, $h = 1.125$
394.40	2,277	399.60	222,411	Max Head $H = 2.25$
394.50	3,558	399.70	228,496	A
394.60	5,124	399.80	234,638	Hvg, Head h = 1.125
394.70	6,974	399.90	240,837	<i>y</i> . <i>y</i>
394.80	9,109	400.00	247,093	
394.90	11,529	400.10	253,401	
395.00	14,234	400.20	259,759	
395.10	17,099	400.30	266,165	
395.20	20,001	400.40	272,621	
395.30	22,941	400.50	279,126	
395.40 395.50	25,918	400.60	285,680	
395.60	28,932 31,983	400.70 400.80	292,283	
395.70	35,072	400.80	298,936 305,637	
395.80	38,198	401.00	<b>312,388</b>	
395.90	41,361	401.00	312,300	
396.00	44,561			
396.10	47,848			
396.20	51,272			
396.30	54,833			
396.40	58,530			
396.50	62,365			
396.60	66,336			
396.70	70,444			
396.80	74,688		_	
396.90	79,070	+115,434	cf =	
397.00	83,588	160, 100	•	
397.10 397.20	88,205 92,884			
397.30	97,623			
397.40	102,424			
397.50	107,287			
397.60	112,210			
397.70	117,195			
397.80	122,241			
397.90	127,348			
398.00	132,517			
398.10	137,741			
398.20	143,018			
398.30	148,346			
398.40	153,726			
398.50	159,158			
398.60	164,642			
398.70	170,177			
398.80	175,764			
398.90	181,402			
399.00 399.10	187,093			
J33. IU	192,837			

7/19/2007

### Subcatchment 2S: Drainage Area 2 (East)





7/20/2007



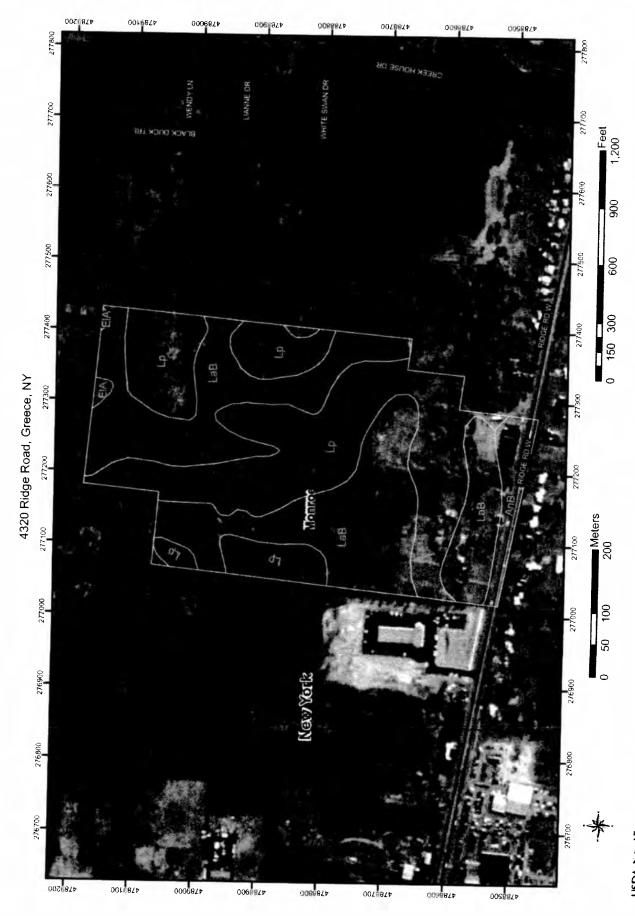
	Elevation	Storage	Elevation	Storage	
	(feet)	(cubic-feet)	(feet)	(cubic-feet)	
	390.00	0	395.20	343,308	
	390.10	311	395.30	352,029	
	390.20	1,245	395.40	360,800	
	390.30	2,802	395.50	369,623	
	390.40	4,981	395.60	378,496	
	390.50	7,783	395.70	387,419	
	390.60	11,207	395.80	396,394	
	390.70	15,254	395.90	405,419	
	390.80	19,924	396.00	414,495	
	390.90 391.00	25,216 31,131	396.10	423,621	
	391.10	37,382	396.20 396.30	432,800 442,030	
	391.20	43,684	396.40	451,312	
	391.30	50,036	396.50	460,646	
	391.40	56,437	396.60	470,032	
	391.50	62,890	396.70	479,469	
	391.60	69,392	396.80	488,958	
	391.70	75,944	396.90	498,498	
	391.80	82,547	397.00	508,091	
	391.90	89,200			
<i>6</i>	392.00	95,903			
	392.10	102,657			
	392.20	109,464			
	392.30	116,324			
	392.40	123,236			
	392.50 392.60	130,200			
	392.70	137,217 144,287			
	392.80	151,409			
	392.90	158,583		22 7	/// (
NWSF	- 393.00	165,810	+ 169 5360	t = 335 <sub>1</sub> 3	76 ct
,,02	393.10	173,105	, , , ,		
	393.20	180,485			
	393.30	187,949			
	393.40	195,498			
	393.50	203,131			
	393.60	210,848			
	393.70	218,650			
	393.80	226,536			
	393.90 394.00	234,507 242,562			
	394.10	250,684			
	394.20	258,856			
	394.30	267,077			
	394.40	275,348			
	394.50	283,669			
	394.60	292,040			
	394.70	300,460			
ATT	394.80	308,930			
	394.90	317,449			
	395.00	326,019	Ilouat	10h 395.	10
	395.10	334,638	- Elevai	100	5 <b>/</b> )
		1		393.0	
			Max Hea	d, H = 2.7	0
			* * * *	$x_{j}$ $y$	~

AVA Und 1 - INC

## Appendix D

Soils Map





Web Soil Survey 1.1 National Cooperative Soil Survey

4/4/2007 Page 1 of 3

### Map comprised of aerial images photographed on these dates: Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Source of Map: Natural Resources Conservation Service Soil Survey Area: Monroe County, New York MAP INFORMATION Soil Map Compilation Scale: 1:15840 Coordinate System: UTM Zone 18 Spatial Version of Data: 3 4/22/1994 ///// Escarpment, non-bedrock VAVAVA Escarpment, bedrock Miscellaneous Water Interstate Highways Depression, closed Detailed Counties Marsh or Swamp Detailed States Soil Map Units Gravelly Spot Rock Outcrop Hydrography Eroded Spot Saline Spot Sandy Spot Slide or Slip Gravel Pit Lava Flow Borrow Pit MAP LEGEND Clay Spot Blowout Oceans Gulley Roads Landfill Cities Water Gulley mmmmm Levee Slope Rails 3 Э

Perennial Water

Wet Spot

<del>Магу Экопу Эро</del>

Stony Spot

Sodic Spot Spoil Area

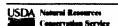
Sinkhole

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

### Map Unit Legend Summary

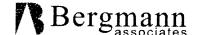
#### Monroe County, New York

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
AnB	Alton gravelly sandy loam, 3 to 8 percent slopes	2.6	<b>4.2</b>	Α
EIA	Elnora loamy fine sand, 0 to 2 percent slopes	0.3	0.5	B
LaB	Lairdsville silt loam, 2 to 6 percent slopes	29.5	† <b>48.3</b>	D
Lp	Lockport silty clay loam	28.8	47.1	D



## Appendix E

## Hydraulic Analysis of Smith Creek



# Appendix E Smith Creek Hydraulic Analysis

#### A. Introduction

To determine the drainage conditions and investigate a flood event within the western project boundary, an investigation of the Smith Creek was recommended by the Town of Greece. A hydrologic and hydraulic analysis of Smith Creek was conducted to determine the channel geometry and floodway characteristics of Smith Creek between Ridge Road and a point approximately 2,400 feet downstream.

The scope of work includes the study of existing hydrologic data and the development of hydraulic models to estimate the 100-year floodwater surface elevations adjacent to the project site. One hundred-year floodway boundaries were established to indicate the approximate areas of the floodway where water would encroach onto the project site.

#### B. Scope of Work

In order to conduct the analysis of Smith Creek the following tasks were performed:

- A topographical survey of the project site along with a field survey of Smith Creek from Ridge Road to approximate 2,400 downstream was conducted.
- Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map was investigated to determine a mapped flood boundary.
- The New York State Codes, Rules and Regulations (NYCRR) was investigated to determine the stream classification.
- The contributing 100-year discharge rates were determined from the Detailed Drainage Study for the Buck Pond Watershed, Erdman, Anthony, Associates, July 1978.
- FlowMaster computer program by Haestad Methods was used to analyze the open channel hydraulics.
- A floodway analysis was conducted for the 100-year event to indicate the approximate areas
  of the floodway would impact the site and plotted on a plan.

#### C. Findings

1. The Town of Greece is enrolled in the National Flood Insurance Program. The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) # 360417 0006 E does not map Smith Creek. A flood insurance study of the Smith Creek has not been conducted and base flood elevations do not exist.

- 2. Smith Creek is classified as a Class C Stream according to the NYCRR Division of Water Resources.
- 3. The 100 year discharge for Smith Creek at Ridge Road was assumed to be 169 cfs based on the value that is published in the *Detailed Drainage Study for the Buck Pond Watershed, Erdman, Anthony, Associates, and July 1978.* A Flood Hazard Report for Greece, NY by USCOE in July 1975 reported a 100 year discharge for Smith Creek to be 490 cfs. However, the higher flow considers the entire watershed south of Mill Road whereas the Detailed Drainage Study divided the watershed into smaller areas.
- 4. Two 30" culverts (CMP and RCP) convey flow in Smith Creek north, under Ridge Road. The 100 year discharge would be contained within the ravine that abruptly ends approximately 90 feet downstream of Ridge Road. Overflow areas are nearly horizontal, perpendicular to the Smith Creek downstream of this point. The overflow area east of Smith Creek is bounded by a 5H:1V slope that rises approximately 5 feet to the Vanderstyne Toyota developed property. The horizontal extent of overflow area perpendicular to Smith Creek does not appear to be bounded by significant features at any other location.
- 5. Smith Creek is a very small meandering perennial stream that begins as a stony channel and transforms to a weed less, soil channel d/s of Ridge Road. The channel has an estimated capacity of 30 to 40 cfs.
- 6. The channel of Smith Creek was difficult to define in dry conditions The field investigation did not definitively determine where the channel disappears or reforms; but led us to believe that the channel alignment was slightly different than published reports.
- 7. The hydrologic and hydraulic analysis defines 100-year floodway to encroach on the site by about 100-feet at the widest point.

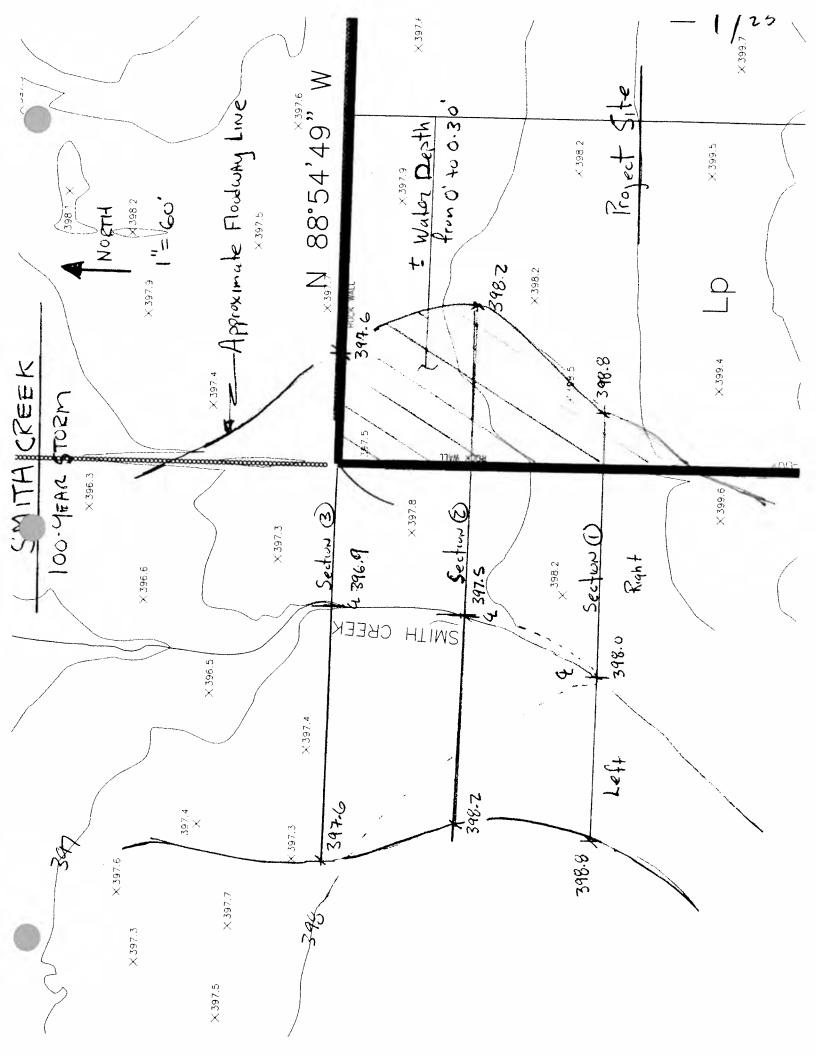
#### D. Conclusion

Based on the hydraulic analysis calculations attached, the Smith Creek floodway during the 100-year storm event will impact the northwest corner of the property by about 100 feet and the widest section. This is based on the assumption that the channel has shallow depth at that point along the floodway. Currently no improvements are proposed along the northwest corner of the site other than the detention pond, which can be adjusted to avoid impacts to the floodway of Smith Creek. The on-site system as analyzed, provides more than an 80% reduction in flows to Smith Creek, thus benefiting downstream properties.

It is recommended that upon development of the property containing Smith Creek, a definitive channel is constructed to contain the 100-year flow rate. There are no controls in this stretch of Smith Creek causing backwater or flood storage so a channel that simply conveys the discharge is all that is necessary. The channel design should consider the reduction in discharge delivered to Smith Creek by the proposed development.

## E. Calculations and Analysis-

• See the following pages 1 through 23.

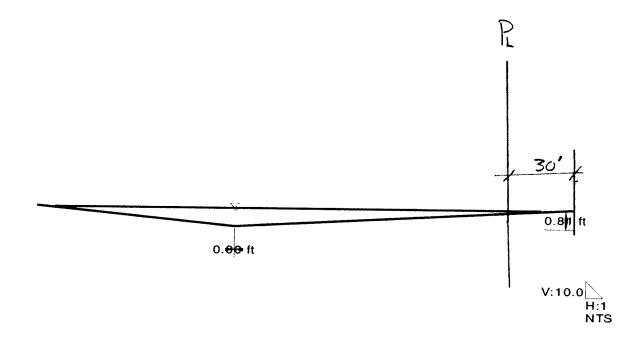


### **Cross Section #1 Cross Section for Trapezoidal Channel**



Project Description	n
Worksheet	Alternative Channel to contain 100 yr c
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coeffic	0.035	
Channel Slope	006700	ft/ft
Depth	0.81	ft
Left Side Slope	100.00	H : V
Right Side Slope	170.00	H : V
Bottom Width	0.00	ft
Discharge	169.00	cfs

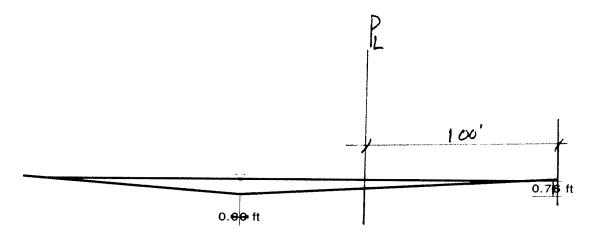


## Cross Section # 2 Cross Section for Trapezoidal Channel



Alternative Channel to contain 100 yr d
Trapezoidal Channel
Manning's Formula
Channel Depth

Section Data		
Mannings Coeffic	0.035	
Channel Slope	006700	ft/ft
Depth	0.76	ft
Left Side Slope	130.00	H:V
Right Side Slope	190.00	H : V
Bottom Width	0.00	Ħ
Discharge	169.00	cfs



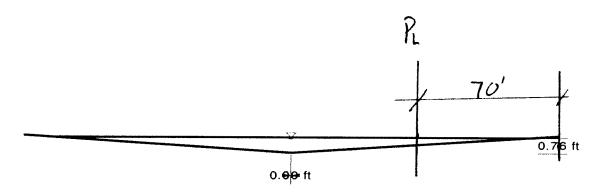
V:10.0 H:1

## Cross Section # 3 Cross Section for Trapezoidal Channel



Project Description	n
Worksheet	Alternative Channel to contain 100 yr c
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coeffic	0.035	
Channel Slope	006700	ft/ft
Depth	0.76	ft
Left Side Slope	160.00	H:V
Right Side Slope	160.00	H:V
Bottom Width	0.00	ft
Discharge	169.00	cfs



V:10.0 H:1 NTS

### **Alternative Channel Capacity Rating Table for Trapezoidal Channel**

- assumed worst case



**Project Description** 

Worksheet

Alternative Channel to contain 100 yr c

Flow Element

Trapezoidal Channel

Method

Manning's Formula

Solve For

Channel Depth

Input Data

Mannings Coeffic 0.035

Channel Slope 006700 ft/ft

**Bottom Width** 

0.00 ft 4

169.00 cfs

Discharge

Attribute	Minimum	Maximum	Increment
Left Side Slope (H : V	100.00	160.00	10.00
Right Side Slope (H:	150.00	200.00	10.00

Right Depth Velocity Flow Wetted

	Side Slope (H:V)	Side Slope (H:V)	(ft)	Velocity (ft/s)	Area (ft²)	Wetted Perimeter (ft)	Width (ft)	
	100.00	1	1	1.94	87.1	208.66	l .	
	110.00		i	1.92	87.9		1	
	120.00	1	1	1.90	88.8	i	1	
	130.00			1.89	89.6		1	
<b>.</b>	140.00	1	1	1.87	90.4	228.94		
	150.00	ı	l i	1.85	91.1	233.84	233.83	
	160.00	1	1	1.84	91.9		1	
	100.00	L	1	1.92	87.9	213.84	l .	
	110.00 120.00	1	1	1.90	88.8	218.94	218.93	
	130.00		1 1	1.89	89.6	223.97	i	
	140.00	1		1.87 1.85	90.4 91.1	228.94 233.84	228.93 233.83	Section (3)
	150.00	160.00	1	1.84	91.9	238.68	233.63	<u> 3861108 (3)</u>
	160.00			1.82	92.6	243.46	238.67	
	100.00	1		1.90	88.8	218.94	218.93	Section (1)
	110.00	170.00		1.89	89.6	223.97	223.97	Occinois (1)
	120.00	170.00	1 1	1.87	90.4	228.94	228.93	
	130.00	170.00		1.85	91.1	233.84	233.83	
	140.00	1	1 1	1.84	91.9	238.68	238.67	
	150.00	170.00	0.76	1.82	92.6	243.46	243.46	
	160.00	170.00	0.75	1.81	93.3	248.19	248.19	
	100.00	180.00	0.80	1.89	89.6	223.97	223.97	
	110.00	180.00	0.79	1.87	90.4	228.94	228.93	
	120.00	180.00	0.78	1.85	91.1	233.84	233.83	
	130.00	180.00	0.77	1.84	91.9	238.68	238.67	
	140.00	180.00	0.76	1.82	92.6	243.46	243.46	
	150.00	180.00	0.75	1.81	93.3	248.19	248.19	
	160.00	180.00	0.74	1.80	94.0	252.87	252.86	
	100.00	190.00	0.79	1.87	90.4	228.94	228.93	
	110.00	190.00	0.78	1.85	91.1	233.84	233.83	
	120.00	190.00	0.77	1.84	91.9	238.68	238.67	( ) (6)
$\bot$	130.00	190.00	0.76	1.82	92.6	243.46	243.46	Section (2)
	140.00	190.00	0.75	1.81	93.3	248.19	248.19	
	150.00	190.00	0.74	1.80	94.0	252.87	252.86	
	160.00	190.00	0.74	1.78	94.7	257.49	257.49	

Page 1 of 2

## Alternative Channel Capacity Rating Table for Trapezoidal Channel



	Left Side Slope (H : V)	Right Side Slope (H : V)	Depth (ft)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
ſ	100.00	200.00	0.78	1.85	91.1	233.84	233.83
١	110.00	200.00	0.77	1.84	91.9	238.68	238.67
ı	120.00	200.00	0.76	1.82	92.6	243.46	243.46
ı	130.00	200.00	0.75	1.81	93.3	248.19	248.19
١	140.00	200.00	0.74	1.80	94.0	252.87	252.86
I	150.00	200.00	0.74	1.78	94.7	257.49	257.49
l	160.00	200.00	0.73	1.77	95.4	262.07	262.06

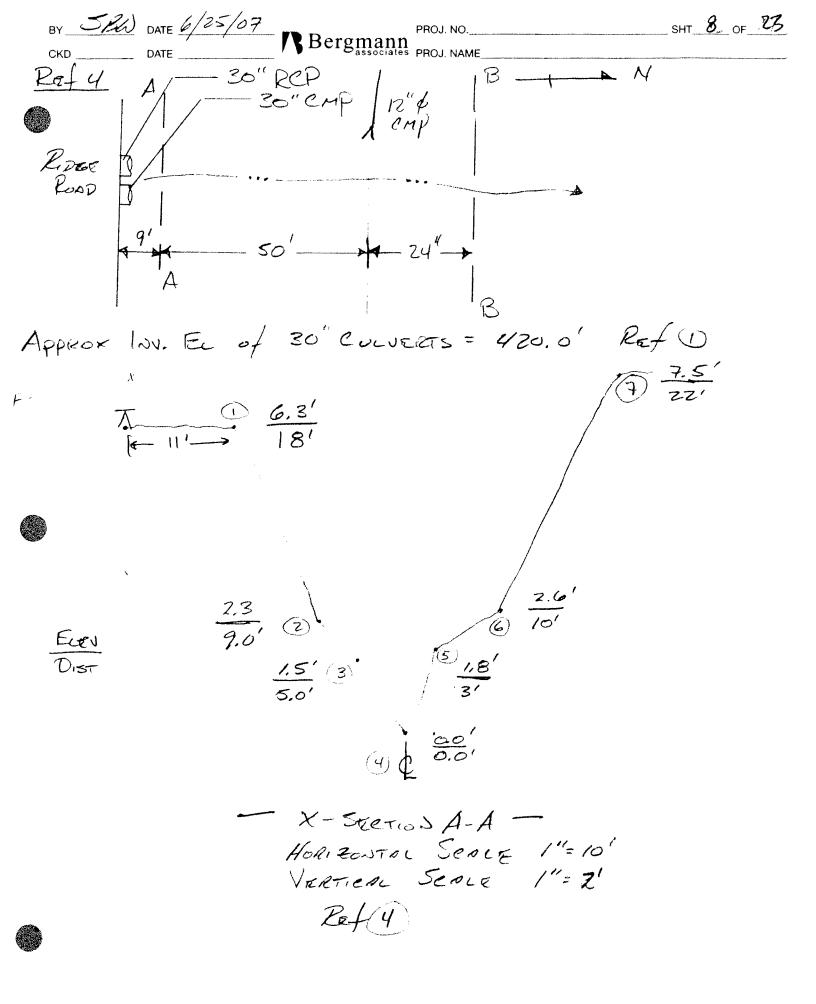
OBj: TO DETERMINE CHONNEL GEONETRY AND FLOODWAY CHORACTERISTICS of SMITH CK RETWEEN RIDGE RD AND A pt ApproxINSTELY 2400 FT D/S

Paf. O FLOOD PLAIS INFORMATION, FLOOD HAZDED RESPORT FOR GATHER, N.Y., USCOE, July 1975

3 RUCK POSO (SATERISHED, DETRICED DRAINAGE STUDY, ERDMAN, ANTHONY ASSOCIATES, JULY 1978

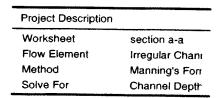
- (3) TOWN of GREKER ARRIAL DEED MAP. DATE WKNOWN, BUT AFTER OPENING of KOHES ON RODGE RD.
- 9 SURVEY NOTES FROM 6/25/07
- (5) FENDA MAP
- 6) NYCRR Stream Classification

Assurptions: 1. Quo = 169 cfs, FRom Rrf (2)



BY DATE	Bergmann PROJ. NOPROJ. NAME	SHT_/O OF 23
- SMITH (1.	OF RIDER ROPD AS FOLLO	WS WEL APPROX
· · · · · · · · · · · · · · · · · · ·	- 4.7 × 10.8'	
- STONEY - SILT/MA - SILT/MA - OVER BANKS AWAY FROM • VONDERSTO MAY FOR  MAY FOR  MAY FOR  VANDERST  @ SKETT	SMITH CREIK & EXER of BOTTOM FRON PIDER ROAD TO DER ZOTTOM DE FROM ZOO  ARE FLAT W/NO DISCE SMITH CREEK  INT PROPARTY IS COCOTED  EX & BOUNTRY FOR FLOODWAR  YOU PROPERTY IS APPROX 150  ON B-B  ON PROPERTY IS APPROX 300  GOO' DE of RIDER ROAD.	WEEDS.  200 D/S  CHNAISLE SCOPE  ENST A SMITH CE  SHIIV Scope) AND  OTER.  E of SMITH CR

## 169 cfs - 100 - yr storm at section A-A Worksheet for Irregular Channel



Input Data

Channel Sk 010000 ft/ft Discharge 169.00 cfs

**Options** 

Current Roughness Methoved Lotter's Method
Open Channel Weighting oved Lotter's Method
Closed Channel Weighting Horton's Method

Results		
Mannings Coefficie	0.054	
Water Surface Elev	3.66	ft
Elevation Range	.00 to 7.50	
Flow Area	43.6	ft²
Wetted Perimeter	26.00	ft
Top Width	24.66	ft
Actual Depth	3.66	ft
Critical Elevation	2.92	ft
Critical Slope	0.042109	ft/ft
Velocity	3.88	ft/s
Velocity Head	0.23	ft
Specific Energy	3.90	ft
Froude Number	0.51	
Flow Type	Subcritical	

Rou	Roughness Segments		
Start Station	End Station	Mannings Coefficient	
0+00	0+24	0.060	
0+24	0+32	0.050	
0+32	0+51	0.060	

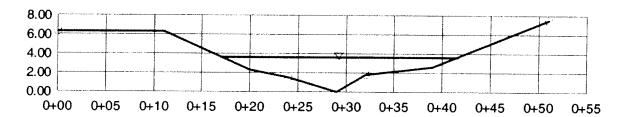
Natural Channel Points		
Station (ft)	Elevation (ft)	
0+00	6.30	
0+11	6.30	
0+20	2.30	
0+24	1.50	
0+29	0.00	
0+32	1.80	
0+39	2.60	
0+51	7.50	

\* CHANNEL SLOPE FROM REF (1)

### Cross Section A-A**Cross Section for Irregular Channel**

Project Description		
Worksheet	section a-a	
Flow Element	Irregular Chani	
Method	Manning's Forr	
Solve For	Channel Depth	

Section Data		
Mannings Coefficier	0.054	
Channel Slope	0.010000	ft/ft
Water Surface Elev	3.66	ft
Elevation Range	.00 to 7.50	
Discharge	169.00	cfs



V:1 H:1 NTS

## 169 cfs - 100 - yr storm at section B-B Worksheet for Irregular Channel



Project Description	
Worksheet	Section B-B
Flow Element	Irregular Chani
Method	Manning's Forr
Solve For	Channel Depth

Input Data

Channel Sk 010000 ft/ft

Discharge 169.00 cfs

Options

Current Roughness Methoved Lotter's Method Open Channel Weighting oved Lotter's Method Closed Channel Weighting Horton's Method

Results		
Mannings Coefficie	0.058	
Water Surface Elev	3.96	ft
Elevation Range	.00 to 7.40	
Flow Area	40.5	ft²
Wetted Perimeter	19.50	ft
Top Width	17.56	ft
Actual Depth	3.96	ft
Critical Elevation	2.82	ft
Critical Slope	0.046672	ft/ft
Velocity	4.17	ft/s
Velocity Head	0.27	ft
Specific Energy	4.23	ft
Froude Number	0.48	
Flow Type	Subcritical	

Rou	Roughness Segments		
Start End Station Station		Mannings Coefficient	
0+00	0+22	0.060	
0+22	0+26	0.050	
0+26	0+35	0.060	

Natural Channel Points		
Station (ft)	Elevation (ft)	
0+00	7.40	
0+10	7.40	
0+22	0.30	
0+25	0.00	
0+26	0.20	
0+35	4.80	

\* CHANNEL SLOPE FROM Rr.f (1)

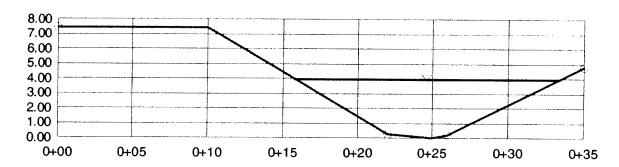


## Cross Section R-B **Cross Section for Irregular Channel**



Project Description		
Worksheet	Section B-B	
Flow Element	Irregular Chani	
Method	Manning's Forr	
Solve For	Channel Depth	

Section Data		
Mannings Coefficier	0.058	
Channel Slope	0.010000	ft/ft
Water Surface Elev	3.96	ft
Elevation Range	.00 to 7.40	
Discharge	169.00	cfs



**Project Description** Worksheet Stony Bottom portion of Sn Flow Element Trapezoidal Channel Method Manning's Formula Solve For Channel Depth

Input Data

Mannings Coeffic 0.050 Channel Slope 018000 ft/ft Left Side Slope 1.00 H:V Right Side Slope 1.00 H:V **Bottom Width** 4.00 ft

Attribute	Minimum	Maximum	Increment
Discharge (cfs)	10.00	200.00	10.00

Discharge (cfs)	Depth (ft)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
10.00	0.75	2.79	3.6	6.13	5.51
20.00	1.13	3.45	5.8	7.20	6.26
30.00	1.42	3.88	7.7	8.03	6.85
40.00	1.67	4.21	9.5	8.73	7.35
50.00	1.89	4.48	11.2	9.35	7.79
60.00	2.09	4.71	12.7	9.91	8.18
70.00	2.27	4.91	14.3	10.43	8.54
80.00	2.44	5.09	15.7	10.90	8.88
90.00	2.60	5.25	17.1	11.35	9.20
100.00	2.75	5.40	18.5	11.77	9.49
110.00	2.89	5.53	19.9	12.17	9.77
120.00	3.02	5.66	21.2	12.54	10.04
130.00	3.15	5.78	22.5	12.90	10.30
140.00	3.27	5.89	23.8	13.25	10.54
150.00	3.39	5.99	25.0	13.58	10.78
160.00	3.50	6.09	26.3	13.90	11.00
170.00	3.61	6.19	27.5	14.21	11.22
180.00	3.72	6.28	28.7	14.51	11.43
190.00	3.82	6.37	29.9	14.80	11.64
200.00	3.92	6.45	31.0	15.08	11.83

\* CHANNEL SLOPE FROM REF (1)

### Natural d/s section of Smith Ck **Rating Table for Trapezoidal Channel**



Project Description	n
Worksheet	Soil bottom portion of Smith
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data

Mannings Coeffic 0.030 → Channel Slope 006700 ft/ft Left Side Slope 1.00 H:V Right Side Slope 1.00 H:V **Bottom Width** 5.00 ft

Attribute	Minimum	Maximum	Increment
Discharge (cfs)	10.00	200.00	10.00

Discharge (cfs)	Depth (ft)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
10.00	0.66	2.69	3.7	6.86	6.31
20.00	0.99	3.38	5.9	7.80	6.98
30.00	1.25	3.83	7.8	8.54	7.51
40.00	1.48	4.17	9.6	9.19	7.9 <del>6</del>
50.00	1.68	4.45	11.2	9.75	8.36
60.00	1.86	4.69	12.8	10.27	8.73
70.00	2.03	4.90	14.3	10.75	9.06
80.00	2.19	5.09	15.7	11.19	9.38
90.00	2.33	5.26	17.1	11.60	9.67
100.00	2.47	5.41	18.5	12.00	9.95
110.00	2.61	5.55	19.8	12.37	10.21
120.00	2.73	5.68	21.1	12.73	10.46
130.00	2.85	5.81	22.4	13.07	10.70
140.00	2.97	5.92	23.6	13.39	10.93
150.00	3.08	6.03	24.9	13.71	11.16
160.00	3.19	6.13	26.1	14.01	11.37
170.00	3.29	6.23	27.3	14.31	11.58
180.00	3.39	6.33	28.4	14.59	11.78
190.00	3.49	6.42	29.6	14.87	11.98
200.00	3.58	6.50	30.8	15.13	12.17

\* CHANNEL SLOPE FROM Ref (1)



Project Engineer: Employee Of FlowMaster v7.0 [7.0005] Page 1 of 1

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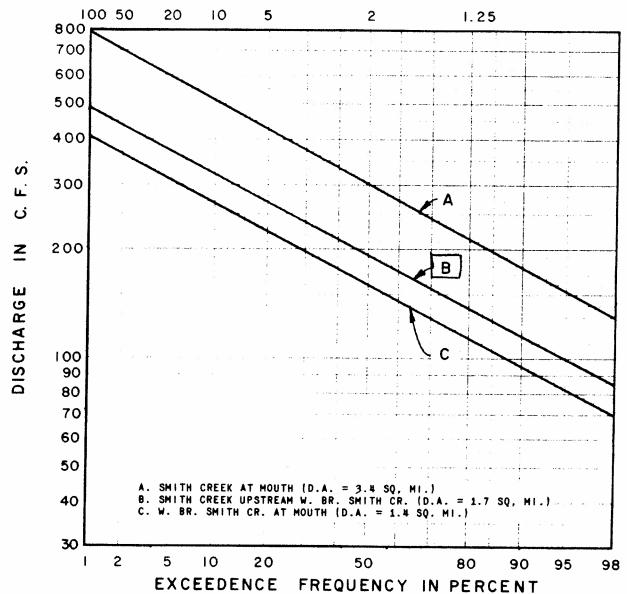
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was NW constraint

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Ref (1)





FLOOD HAZARD REPORT GREECE, N.Y.

DISCHARGE-FREQUENCY CURVES

U. S. ARMY ENGINEER DISTRICT, BUFFALO
JULY 1975

	ſ	T														K.	(Z)	19,	/2
	0010	122	169		286	294	369	412	488	970	1001	1008	1016		78	8			
F.S.	050	106	146		250	257	323	360	425	846	872	878	885		69	72			1
IN C.	925	86	118		208	212	266	296	348	695	716	720	722		57	09			1. 12-100-10
FLOW	010	49	93		165	168	211	234	273	550	995	268	570		46	48			
	Nom. Cap.	188	96		109			402			648	722			124				$\mathcal{I}_{i}$
EXIST	INVERTS	436.7	421.4	421.3	370.5			339.4			304.9	295.2		(AREA 3					( <u>)</u>
STRUCTURE	DESCRIPTION	2 - 50" x 31" CMPA	36" CMP	& 3' x 2'1" Conc. Box	5'2" x 2'8" Conc. Box	NONE	NONE	8' x 4'9" Conc. Box		NONE	18' x 4'3" Conc. Box	14' x 5'9" Conc. Box	NONE	TRIBUTARY 0-122-2-3-1	6'3" x 3' Conc. Box	NONE	·		
DRAINAGE	AREA IN ACRES	253	353		545	260	695	802	1007	1925	2014	2073	2125	TRIBU	1.28	134			
	LOCATION	Manitou Road	Ridge Road		Mill Road	Confluence, Tributary 0-122-2-3-1'	Combined	North Greece Road	Confluence, Smith Creek, West Branch	Combined	Latta Road	Flynn Road	Confluence, Larkin Creek		Mill Road	Confluence, Smith Creek			
C.P.	ON	49	20		52	53	53	54	26	56	57	28	20		99	53			

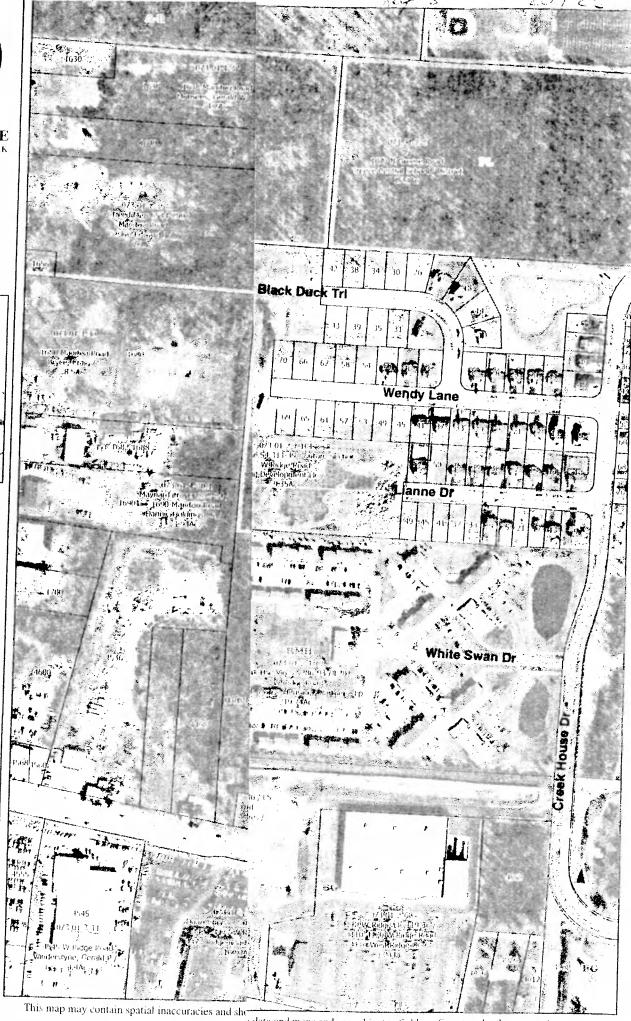


TOWN OF GREECE MONROE COUNTY, NEW YORK

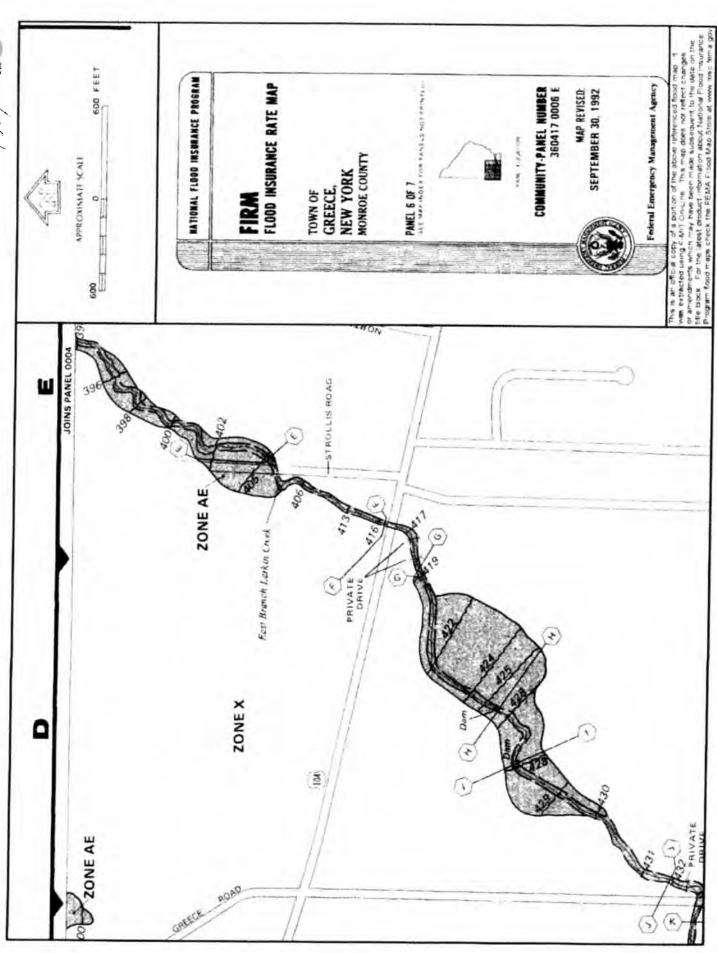


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inch equals 300 feet



data and maps and are subject to field confirmation by the appropriate agency.









	em Waters Index o. Number	Name	Description	Map Ref. No	Class	Standards	
64	02 Ont. 122-P 153-2-2a, 3 and tribs., 4 and tribs 5 including P 153a, P 153c, P 153d	Tribs. of Larkin Creek	Enter 0.3 mile southwest of New York Central Railroad bridge an 0.3 mile west of Long Pond Roato a point 0.7 mile north of Big Ridge Road and 0.6 mile west of N.Y. Route 386. At this point, stream is unnamed. Trib. 4 is named Larkin Creek. P 153a is located just north of U.S. Route 104, 0.7 mile west of North Greece Road. P 153e is located 0.8 mile east of east line of Village of Spencerport and 0.2 mile north of Nichols Street. P 153d is located 0.3 mile east of Long Pond Road and 0.8 mile north of Janes Road.	d H-9nw d H-8ne	С	c <del>V</del>	i
603	3 Ont. 122-P 153-3	Trib of Buck Pond	Enters west side of Buck Pond 1.2 miles north of Janes Road and 1.3 miles northwest of junction of Island Cottage Road and Edgemere Drive.		В	В	
604	Ont. 123	Outlet of Long Pond	Enters Lake Ontario 0.1 mile east of junction of Long Pond Road and Edgemere Drive.	G-9sw	В	В	
605	Ont. 123-P 154, including trib. 1a and P 154a	Long Pond	Long Pond extends 1.6 miles southwesterly from Edgemere Drive between Lowden Point Road and Long Pond Road. Trib. Ia enters Long Pond 0.4 mile north of Kuhn Road and 0.3 mile east of Flynn Road. P 154a lies at head of trib. Ia, 0.1 mile upstream from mouth.	G-9sw	В	В	ř.
€ 206	Ont. 123-P 154-1 portion as described	Northrup Creek	Enters west side of Long Pond 0.5 mile north of Kuhn Road and 0.3 mile east of Flynn Road. Mouth to trib. 1 just west of North Greece Road 0.3 mile north of Post Avenue.	G-9sw	В	В	
607	Ont. 123-P 154-1 portion as described and tribs. including P 154b	Northrup Creek	Route 104 and 0.5 mile east of	G-9sw H-9nw H-8ne G-8se	С	С	
608	Ont. 123-P 154-2, P 155 and trib.	Trib. of Long Pond and Cranberry Pond	Trib. 2 enters Long Pond at its northeast corner 0.1 mile southeast of junction of Edgemere Drive and Lowden Point Road. P 155 (Cranberry Pond) lies for 0.8 mile northwest along Edgemere Drive beginning at junction of Edgemere Drive and Lowden Point Road.	G-9sw	В	В	
609	P 155a	Braddock Bay	This is an open bay of Lake Ontario lying south of a line drawn from most northerly point of Braddock Heights northwest to terminus of extension of Manitou Beach Road at Manitou Beach.	G-9sw	В	В	
14,454	Conservation				1	0/31/97	

## Appendix F

Federal Emergency Management Agency Correspondence for Letter of Map Revision





## LaDieu Associates p.c.

surveying-engineering-land planning

40 Cedarfield Commons Rochester New York 14612-2337

(716) 225-8530 Fax (716) 225-4819

October 24, 1996

Federal Emergency Management Agency Federal Insurance Administration Office of Risk Assessment Hazard Identification Branch 500 C. Street, S. W. Washington, D.C. 20472 Mail 26

ROBERT A. LADIEU, L.S. RANDALL E. LADIEU, P.E. BRUCE J. KIRCHHOFF, L.S.

Must provide statement

Re: channel maintume

their letter,

the accompany

their letter,

the most contice in

must publish notice in

the Post for FEMA.

11/13/94

RE: Larkin Creek diversion LOMR Request following a CLOMR

Ladies & Gentlemen:

On behalf of the Town of Greece we are submitting a request for a Letter of Map Revision (LOMR) following a CLOMR for a portion of Larkin Creek within the Town. The CLOMR case number is 96-02-033R and it was issued on September 5, 1996.

The original CLOMR submittal covered a very large section of Larkin Creek that had already been constructed and awaited the final creek diversion. This LOMR request only includes data for the work that was proposed. That area was limited to between the Larkin Creek Apartment pond and Ridge Road West. All other data are as provided for the CLOMR.

As requested by Dewberry & Davis during the CLOMR review, the new lower 100 year flow rate was continued upstream from Ridge Road West to Manitou Road. However, in using the lower flow rate in the effective model upstream of Ridge Road, an error in the program occurred at stations 8790, 8810 and 9000. Changes were made to the effective flow areas of stations 8790 and 8810, and are noted in the model.

Changes were not made to the floodplain on the proposed FIRM upstream of Ridge Road West for several reasons:

- 1. The area is outside of the project work limits;
- 2. There was no topographic and cross section location information on which to base the new location.

Federal Emergency Management Agency October 24, 1996 Page 2

Enclosed please find the public notice that will be published in the "Greece Post" newspaper on November 13, 1996. This will comply with NFIP subparagraph 65.7(6)(1) regarding floodway notification. Also enclosed is a description from the 4 Town of Greece regarding channel maintenance.

+4

The following other data are submitted to support this request:

- 1. FIRM map with site accurately shown;
- 2. MT-2 form 1:
- 3. MT-2 Form 2:
- 4. MT-2 Form 4:
- 5. MT-2 form 5;
- 6. MT-2 Form 6:
- 7. MT-2 form 7 Creek House Drive
- 8. 1" = 100' Scale Floodplain Revision Map;
- 9. 1" = 600' Scale Floodplain Revision Map;
- ·10. Flood Profile:
- 11. HEC-2 Model of File LARKCHGR in hard copy on computer disk
- 12. HEC-2 plots of all cross-sections;
- 13. HEC-2 plots of reduced profiles;
- 14. Creek House Commons record creek diversion grading plan.

We are requesting that the LOMR be effective the date the letter is issued with a six month grace period for anyone wishing to respond to the new mapping. Time is of the essence with this application, and we are hopeful that it can be processed withing three to four weeks.

Please direct all correspondence and questions regarding this request to our office. Thank you for your consideration.

Sincerely,

Richard C. Giraulo

RCG/cal ENCLOSURES

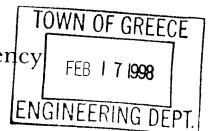
cc: James Peet, Town of Greece

Ron Mariano, Creek House Housing Partners, L.P.



## Federal Emergency Management Agency

Washington, D.C. 20472 FEB ב ו אשלט



CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Roger W. Boily Supervisor for the Town of Greece 2505 West Ridge Road Rochester, New York 14626 (116-I-A)

Case Number: 97-02-001P

(follow-up to CLOMR: 96-02-033R)

Community: Town of Greece,

Monroe County,

New York

Community No.: 360417

Dear Mr. Boily:

On May 5, 1997, you were notified of proposed modified flood elevation determinations affecting the Flood Insurance Rate Map (FIRM) for the Town of Greece, Monroe County, New York. The 90-day appeal period that was initiated on May 15, 1997, when the Federal Emergency Management Agency (FEMA) published a notice of proposed base (1% annual chance) flood elevations (BFEs) for the Town of Greece, in The Greece Post, has elapsed.

FEMA received no valid requests for changes to the modified BFEs. Therefore, the determination as to the modified BFEs for your community is considered final. The modified BFEs and LOMR, as referenced above, will be effective on August 13, 1997, and will revise the current effective FIRM dated September 30, 1992. These changes will not appear on the community's FIRM until the next physical map revision.

The modifications are pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and are in accordance with the National Flood. Insurance Act of 1968, as amended, (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448) 42 U.S. C. 4001-4128, and 44 CFR Part 65. The community number is unaffected by this revision. The suffix codes for individual FIRM panels may be determined by referring to the most recent FIRM Index for your community. The community number and appropriate suffix code will be used by the National Flood Insurance Program (NFIP) for all flood insurance policies and renewals issued for your community.

FEMA has developed criteria for floodplain management as required under the above-mentioned Acts of 1968 and 1973. To continue participation in the NFIP, your community must use the modified BFEs to carry out the floodplain management regulations for the NFIP. The modified BFEs will also be used to calculate the appropriate flood insurance premium rates for all new buildings and their contents and for the second layer of insurance on existing buildings and their contents.

If you have any questions regarding the BFE determinations, please contact your Consultation Coordination Officer, Mr. Joseph F. Picciano, Mitigation Division of the Federal Emergency Management Agency in New York, New York at (212) 225-7200.

Sincerely,

Frederick H. Sharrocks Jr., Chief Hazard Identification Branch

Mitigation Directorate

cc: Mr. James S. Peet, F.E., Town of Greece Engineer FEMA Region II

NFIP State Coordinator

## Appendix G

Existing Watershed for the Images West Subdivision



