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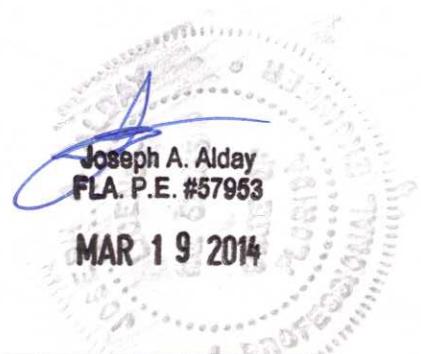
Civil Engineering
Site and Subdivision Design
Environmental Permitting
Land Use Planning

Stormwater Calculations

Crump Road – Convenience Store Leon County, Florida

PREPARED FOR:
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March 19, 2014



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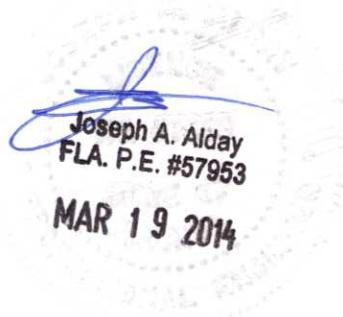
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CRUMP ROAD- CONVENIENCE STORE

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MAR 19 2014



Crump Road – Convenience Store Stormwater Narrative

March 19, 2014

The subject project is proposed on a 2.0 acre portion of the 6.58 acre parent parcel (1204200180000). The proposed site is located just north of the northeast corner of the intersection of Miccosukee Road and Crump Road in Leon County, FL. The proposed project involves the construction of a 2,904 SF convenience store and 7 fueling stations with the associated parking, sidewalks, and a retention stormwater management facility. The developer and owner of the property is William Glen Brown.

Pre-Development Site Conditions:

From review of Leon County GIS, NFWFMD GIS and surveyed data the site is located at the crest of a hill on Crump Road and the runoff within the right-of-way discharges to the north and south. The remainder of the runoff from the site is contained within the confinements of a “closed basin” and only discharges via a saddle condition to the northeast during 50yr24hr and 100yr24hr storm events. The runoff that discharges at the saddle location then cascades through a system of depressions and into a tributary that feeds the St. Marks River. The site is located within the Bird Sink Basin, more particularly within the Apalachee Bay-St. Marks Watershed. According to the NRCS web soil survey, the predominant soil type for the site is Norfolk loamy sand, clayey substratum. There are several scattered permit size trees located on the property as shown on the survey. No significant wildlife or listed species were observed on the site.

Post-Development Site Conditions:

The proposed site development is the construction of a 2,904 sf convenience store with ten (10) regular off-street and one (1) ADA parking spaces. The proposed total impervious area is 22,019 sf. Due to the topography of the site, the proposed method of stormwater management is a shallow retention stormwater management facility (SWMF). The SWMF is located to the east/rear of the building in the existing low area. The site is graded such that the vehicular use area and interior islands in the front of the building drains to three (3) concrete flumes. Two (2) of these flumes drain south into a swale sized to convey the runoff to the proposed SWMF. The concrete flume discharges directly into the SWMF. The contributing runoff for the flumes and swales is calculated per the sub-basin areas provided within the stormwater calculations and drainage area map and were sized using Bentley Flowmaster V8i. The provided FlowMaster calculations are for a flume with a minimum 1.0% slope, normal depth of 0.45 ft and critical depth of 0.53 ft which discharges a maximum allowable flow rate of 3.31 cfs. All of the proposed flumes have 25yr/24hr design flows less than that of the above mentioned conceptual model and are steeper than the minimum 1.0% slope and are therefore considered adequate. Runoff generated by the pump canopy is to be piped directly to the south swale and SWMF using 8” roof drains. The roof drains were modeled in FlowMaster using a minimum 2.0% slope and the maximum 25yr/24hr design storm flow rate of 0.70 cfs. The proposed roof drains from the building, which discharge directly into the SWMF, have considerably

less contributing drainage area than the pump canopy and, therefore, were not redundantly modeled given the previously calculated capacity. The sum of the contributing sub-basin flows was used to size the south swale using triangular shaped open channel simulations in FlowMaster with the 25yr/24hr design flows. The designed minimum 1' deep and south swale resulted in a normal depth of 0.54. The SWMF is designed to maintain post-development runoff generated by storms up to and including the 100yr24hr design storm. The side slopes of the pond are designed at 4H:1V.

Pre-Post Stormwater Analysis:

For the purposes of pre-development and post-development consistent comparison, the total 3.40 acre area of the closed basin was evaluated. The pre-development basin included a small amount of existing impervious area combined with the existing HSG B, Norfolk loamy sand to produce a 61.39 CN. The stage/storage for the pre-development area was calculated using a combination of survey topography and NFWFMD Lidar contours. The post-development basin included the proposed impervious area and HSG B, Norfolk loamy sand to produce a weighted 66.50 CN. The post-development stage/storage area was calculated using a combination of the proposed contours in the disturbed area and NFWFMD Lidar in the undisturbed area.

Per Leon County LDC 10-4.301(2)(iii) and using the total basin area of 3.40 ac., the treatment volume was calculated to be 5,228 cf. By interpolation, a treatment volume depth was calculated to be 4.09 inches within the proposed SWMF. The previous Stormwater Calculations submittal included the recommended design infiltration rate of 0.28 in/hr. This rate was based on the suggested Factor of Safety of 4.0. However, upon receiving comments from your office, the SWMF has been redesigned and now includes a large amount of undisturbed area. After reviewing the design revisions and the reduction of impact to natural soil, the geotechnical engineer now suggests a Factor of Safety of 2.5. Therefore, the provided calculations are now based on the infiltration rate of 0.44 in/hr. With this rate, a treatment volume recovery time of 9.30 hours was determined which is well within the required 72 hour timeframe. A signed and sealed letter of recommendation from the geotechnical engineer will be provided with this submittal.

The volume control, peak stage of the low area, and rate control were analyzed using ICPR V3.10 simulations for all design storms up to and including the 100yr24hr storm. After review of the ICPR output reports and provided Pre-Post Comparison Table, the SWMF discharges in the 50yr24hr and 100yr24hr design storm events. However, the pre-post comparison table demonstrates that the peak stage, volume of discharge off-site (“Node Total Inflow”), and maximum outflow (“Channel Max. Outflow”) are all reduced in the post development condition. Therefore, the proposed SWMF exceeds the requirements of the closed basin standards for volume control per Leon County LDC 10-4.301(3)(b). Also, the comparison table confirms that the peak stage of the on-site “semi” closed basin is reduced due to the added storage volume of the proposed SWMF.

The construction plans require silt fence to be placed by the contractor along the north perimeter of the site prior to construction to prevent erosion and silt from entering the adjacent properties. These controls are required to be maintained by the contractor throughout the life of the project and removed once the site has been stabilized.

In conclusion, the proposed development’s stormwater management system has been designed so that no off-site adverse impacts are anticipated.

Pre-Development Calculations for Crump Road - Convenience Store

AHE Project #13-034

Prepared By: ECW

Date:

3/19/2014

Purpose: To determine pre-development curve number for input into ICPR3

Methodology: SCS Runoff Curve Number

Pre-Development Calculations for the 100-year/24-hour Design Storm Event

Drainage Basin Area = **3.40** Acres

Pre-Development Conditions

Curve Number (CN) = **61.39** (See Below)

S=(1000/CN)-10= **6.29**

P (Rainfall in inches)
100yr/24hr= **12.48** inches (From Leon County Rainfall Depths)

Q (Runnoff in inches)
Q=((P-0.2S)^2)/(P+0.8S)
Qpre= **7.19** inches

Pre Basin CN Calculations					(Rational)
Coverage Description	Soil and Hydrologic Soil Group	CN	Area	"C"	
Open Space, good grass cover	Soil Type B	61	3.36	0.17	
Impervious Area	Exiting Buildings	98	0.03	0.95	
Impervious Area	Vehicular Use Area/Misc. Impervious	98	0.01	0.95	

Total Acreage
Weighted CN
Weighed "C"

3.40
61.39
0.18

Post-Development Calculations for Crump Road - Convenience Store

AHE Project #13-034

Prepared By: ECW

Date: 3/19/2014

Purpose: To determine post-development curve number for input into ICPR3 and to estimate pond storage volume based on pre-post difference in runoff volume.

Methodology: SCS Runoff Curve Number

Pre - Post Calculations for the 100-year/24-hour Design Storm Event

Drainage Basin Area = 3.40 Acres

Pre-Development Conditions

Curve Number (CN) = 61.39

S=(1000/CN)-10= 6.29

P (Rainfall in inches)
100yr/24hr= 10.9 inches (From Leon County Rainfall Depths)

Q (Runoff in inches)
Q=((P-0.2S)^2)/(P+0.8S)
Qpre= 5.84 inches

Post-Development Conditions

Curve Number (CN)= 66.50 weighted (See below)

S= 5.04

Qpost= 6.55 inches

Q_{tr}= 0.56 inches (Per LDC Sec. 10-4.301(2)(iii); P = 3 inches)

Qpost -Qpre= 0.72 inches

Attenuation Volume (V_r)=(Qpost-Qpre)*Area*3630(conversion factor)

V_r= 8,875 CF

V_{tr}= 6,970 CF (Q_{tr}*Area*3630(conversion factor))

Post Basin CN Calculations		(Rational)		
Coverage Description	Soil and Hydrologic Soil Group	CN	Area	"C"
Open Space, good grass cover	Soil Type B	61	2.89	0.17
Impervious Area	Proposed Buildings	98	0.07	0.95
Impervious Area	Vehicular Use Area/Misc. Impervious	98	0.44	0.95

Total Acreage

3.40

Weighted CN

66.50

Weighed "C"

0.29

Purpose: To determine treatment volume

Methodology: Rational

Dry Pond Treatment Volume

Leon County Treatment Volume: 0.75*V_{tr}

5,228 CF

Leon County Treatment Volume: 1.125" x Area (Acres) x 3630 (conv. factor) =

13,885 CF

Pre-Development Stage/Area/Storage Calculations for Crump Road - Convenience Store

AHE Project #13-034

Prepared By: ECW

Date: 3/19/2014

Purpose: To determine pre-development stage areas and perc rates for ICPR input.

Methodology: SCS Runoff Curve Number

Low Area Calculations					
Stage (FT)	Area (SF)	Volume (CF)	Total Vol. (CF)	Area (Acres)	Perc Rate (cfs)
177.50	0	0	0	0.00	0.000
178.00	2,850	713	713	0.07	0.029
179.00	10,950	6,900	7,613	0.25	0.112
180.00	44,342	27,646	35,259	1.02	0.452
181.00	66,386	55,364	90,623	1.52	0.676
182.00	88,344	77,365	167,988	2.03	0.900

Post-Development Stage/Area/Storage Calculations for Crump Road - Convenience Store

AHE Project #13-034

ECW

Date:

3/19/2014

Purpose: To determine post-development stage areas and perc rates for ICPR input and calculate total drawdown time.

SWMF Calculations					
Stage (FT)	Area (SF)	Volume (CF)	Total Vol. (CF)	Perc Rate (cfs)	Area (Acres)
178.00	12,446	0	0	0.127	0.29
179.00	18,219	15,333	15,333	0.186	0.42
180.00	42,178	30,199	45,531	0.430	0.97
181.00	72,660	57,419	102,950	0.740	1.67
182.00	93,719	83,190	186,140	0.955	2.15

100yr24hr Attenuation Volume =	8,875	CF	
Leon County Treatment Volume =	5,228	CF	
Leon County Treatment Volume Elev. =	178.34	ft	
Leon County Treatment Depth =	0.34	ft	= 4.09 inches

Retention Recovery Calculations (Per 13.3.3 of A.H. Volume II)

$Id = Kv_u/FS$	where:	$Id =$ $Kv_u =$	0.44 1.10	in/hr (Design Infiltration Rate) in/hr (Unsaturated Vertical Hydraulic Conductivity from Geotech Report)
		$FS =$	2.5	As suggested by Alpha Geotechnical and Testing Services, Inc. Report
		$hv =$		4.09 inches (Height of treatment volume above pond bottom)
$tsat = f * hb / Id$	where:	$tsat =$ $f =$ $hb =$	65.45 0.20 144	hours (time to saturate soil below the fillable porosity (generally 0.2 to 0.3) inches (Height of basin bottom above)
$V_u = Ab * hb * f$	where	$V_u =$ $Ab =$	29,870 12,446	CF (Volume of water required to saturate the soil below the basin) SF (Area of basin bottom)
$Tv = 5,228$	<	$V_u =$	29,870	The treatment storage will occur under vertical unsaturated flow conditions
				Total drawdown time = 9.30 hrs
				72 hour factor of safety 7.74

Pre-Development TC Calculations for Crump Road - Convenience Store

AHE Project #13-034

Project : **CRUMP ROAD**

Computations For : **Pre-Development Conditions**

Date : **3/19/2014**
By : **ECW**

Sheet Flow
 2 yr., 24 hr. Intensity **4.75**
 Flow Length (ft.) **300**
 Land Slope (ft./ft.) **0.0268**
 n (Mannings Roughness) **F**

T1 **0.42 hr.**

Shallow Concentrated Flow
 Surface Code **U**
 Flow Length (ft.) **22**
 Land Slope (ft./ft.) **0.0268**
 Average Velocity **2.6 ft/s**

T2 **0.00 hr.**

Shallow Concentrated Flow
 Surface Code _____
 Flow Length (ft.) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____

T3

Shallow Concentrated Flow
 Surface Code _____
 Flow Length (ft.) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____

T4

Open Channel Flow
 Cross Sectional Flow Area _____
 Wetted Perimeter _____
 Hydraulic Radius _____
 n (Mannings Roughness) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____
 Flow Length (ft.) _____

T5

Open Channel Flow
 Cross Sectional Flow Area _____
 Wetted Perimeter _____
 Hydraulic Radius _____
 n (Mannings Roughness) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____
 Flow Length (ft.) _____

T6

Open Channel Flow
 Cross Sectional Flow Area _____
 Wetted Perimeter _____
 Hydraulic Radius _____
 n (Mannings Roughness) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____
 Flow Length (ft.) _____

T7

*T1 = Travel Time in existing system
(see stormtabs for basin 1A)

Sheet Flow Surface Codes		Open Channel Flow	
For Mannings Roughness		For Manning's N	
Surface Code	N	Surface Code	N
A Smooth Surface (0.011)	0.011	F Grass-Dense	0.24
B Fallow (No Res.)	0.005	G Grass, Burmuda	0.41
C Cultivated < 20% Res.	0.06	H Woods, Light	0.4
D Cultivated > 20% Res.	0.17	I Woods, Dense	0.8
E Grass-Range, Short	0.15		
			T_n = <u>0.42 hr. 25 Min.</u>
			If T_n < 10 Use 10 Min.
			Shallow Concentrated Surface Codes
			P Paved
			U Unpaved

Post-Development TC Calculations for Crump Road - Convenience Store

AHE Project #13-034

Project : **CRUMP ROAD**

Computations For : **Post-Development Conditions**

Date : **3/19/2014**
By : **ECW**

Sheet Flow
 2 yr., 24 hr. Intensity **4.75**
 Flow Length (ft.) **299.11**
 Land Slope (ft./ft.) **0.0268**
 n (Mannings Roughness) **F**

T1 **0.42 hr.**

Shallow Concentrated Flow
 Surface Code **U**
 Flow Length (ft.) _____
 Land Slope (ft./ft.) **0.0268**
 Average Velocity **2.6 ft/s**

T2

Shallow Concentrated Flow
 Surface Code _____
 Flow Length (ft.) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____

T3

Shallow Concentrated Flow
 Surface Code _____
 Flow Length (ft.) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____

T4

*T1 = Travel Time in existing system
(see stormtabs for basin 1A)

Open Channel Flow
 Cross Sectional Flow Area _____
 Wetted Perimeter _____
 Hydraulic Radius _____
 n (Mannings Roughness) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____
 Flow Length (ft.) _____

T5

Open Channel Flow
 Cross Sectional Flow Area _____
 Wetted Perimeter _____
 Hydraulic Radius _____
 n (Mannings Roughness) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____
 Flow Length (ft.) _____

T6

Open Channel Flow
 Cross Sectional Flow Area _____
 Wetted Perimeter _____
 Hydraulic Radius _____
 n (Mannings Roughness) _____
 Land Slope (ft./ft.) _____
 Average Velocity _____
 Flow Length (ft.) _____

T7

Sheet Flow Surface Codes For Mannings Roughness			
Surface Code	N	Surface Code	N
A Smooth Surface (0.011)	0.011	F Grass-Dense	0.24
B Fallow (No Res.)	0.005	G Grass, Burmuda	0.41
C Cultivated < 20% Res.	0.06	H Woods, Light	0.4
D Cultivated > 20% Res.	0.17	I Woods, Dense	0.8
E Grass-Range, Short	0.15		

T_n = **0.42 hr. 25 Min.
If T_n < 10 Use 10 Min.**

Shallow Concentrated Surface Codes
 P Paved
 U Unpaved

Pre-Post Comparison Table for Crump Road - Convenience Store

AHE Project #13-034

Prepared By: ECW

Date: 3/19/2014

Because the project is within a closed basin, stormwater system post-development runoff is limited to the pre-development critical storm peak discharge rate and volume up to and including the 100yr/24hr design storm (see ICPR Node Min/Max Report)

Design Storm	Channel Max. Outflow (cfs)			Node Max. Stage (ft)		*Node Total Inflow (ft ³)		
	Pre	Post	Low Area	SWMF	Pre Boundary	Post Boundary		
2-yr 1-hr	0	≥ 0	178.24	≥ 178.20	0.00	≥ 0.00		
2-yr 2-hr	0	≥ 0	178.62	≥ 178.41	0.00	≥ 0.00		
2-yr 4-hr	0	≥ 0	178.88	≥ 178.59	0.00	≥ 0.00		
2-yr 8-hr	0	≥ 0	179.12	≥ 178.77	0.00	≥ 0.00		
2-yr 24-hr	0	≥ 0	179.38	≥ 179.11	0.00	≥ 0.00		
5-yr 1-hr	0	≥ 0	178.54	≥ 178.37	0.00	≥ 0.00		
5-yr 2-hr	0	≥ 0	178.94	≥ 178.65	0.00	≥ 0.00		
5-yr 4-hr	0	≥ 0	179.25	≥ 178.97	0.00	≥ 0.00		
5-yr 8-hr	0	≥ 0	179.47	≥ 179.26	0.00	≥ 0.00		
5-yr 24-hr	0	≥ 0	179.73	≥ 179.59	0.00	≥ 0.00		
10-yr 1-hr	0	≥ 0	178.71	≥ 178.49	0.00	≥ 0.00		
10-yr 2-hr	0	≥ 0	179.16	≥ 178.86	0.00	≥ 0.00		
10-yr 4-hr	0	≥ 0	179.42	≥ 179.20	0.00	≥ 0.00		
10-yr 8-hr	0	≥ 0	179.65	≥ 179.49	0.00	≥ 0.00		
10-yr 24-hr	0	≥ 0	179.94	≥ 179.85	0.00	≥ 0.00		
25-yr 1-hr	0	≥ 0	178.98	≥ 178.69	0.00	≥ 0.00		
25-yr 2-hr	0	≥ 0	179.64	≥ 179.47	0.00	≥ 0.00		
25-yr 4-hr	0	≥ 0	179.67	≥ 179.51	0.00	≥ 0.00		
25-yr 8-hr	0	≥ 0	179.86	≥ 179.75	0.00	≥ 0.00		
25-yr 24-hr	0	≥ 0	180.21	≥ 180.17	0.00	≥ 0.00		
50-yr 1-hr	0	≥ 0	179.13	≥ 178.84	0.00	≥ 0.00		
50-yr 2-hr	0	≥ 0	179.49	≥ 179.28	0.00	≥ 0.00		
50-yr 4-hr	0	≥ 0	179.76	≥ 179.62	0.00	≥ 0.00		
50-yr 8-hr	0	≥ 0	180.02	≥ 179.94	0.00	≥ 0.00		
50-yr 24-hr	0.289	≥ 0.178	180.33	≥ 180.32	3223.44	≥ 1698.84		
100-yr 1-hr	0	≥ 0	179.27	≥ 179.01	0.00	≥ 0.00		
100-yr 2-hr	0	≥ 0	179.64	≥ 179.47	0.00	≥ 0.00		
100-yr 4-hr	0	≥ 0	179.93	≥ 179.82	0.00	≥ 0.00		
100-yr 8-hr	0	≥ 0	180.16	≥ 180.11	0.00	≥ 0.00		
100-yr 24-hr	0.811	≥ 0.768	180.37	≥ 180.37	13721.40	≥ 12109.68		

*Volume derived from final depth (ft) of Pre Boundary and Post Boundary nodes times the uniform 1 acre (43,560 sf) stage area increments.

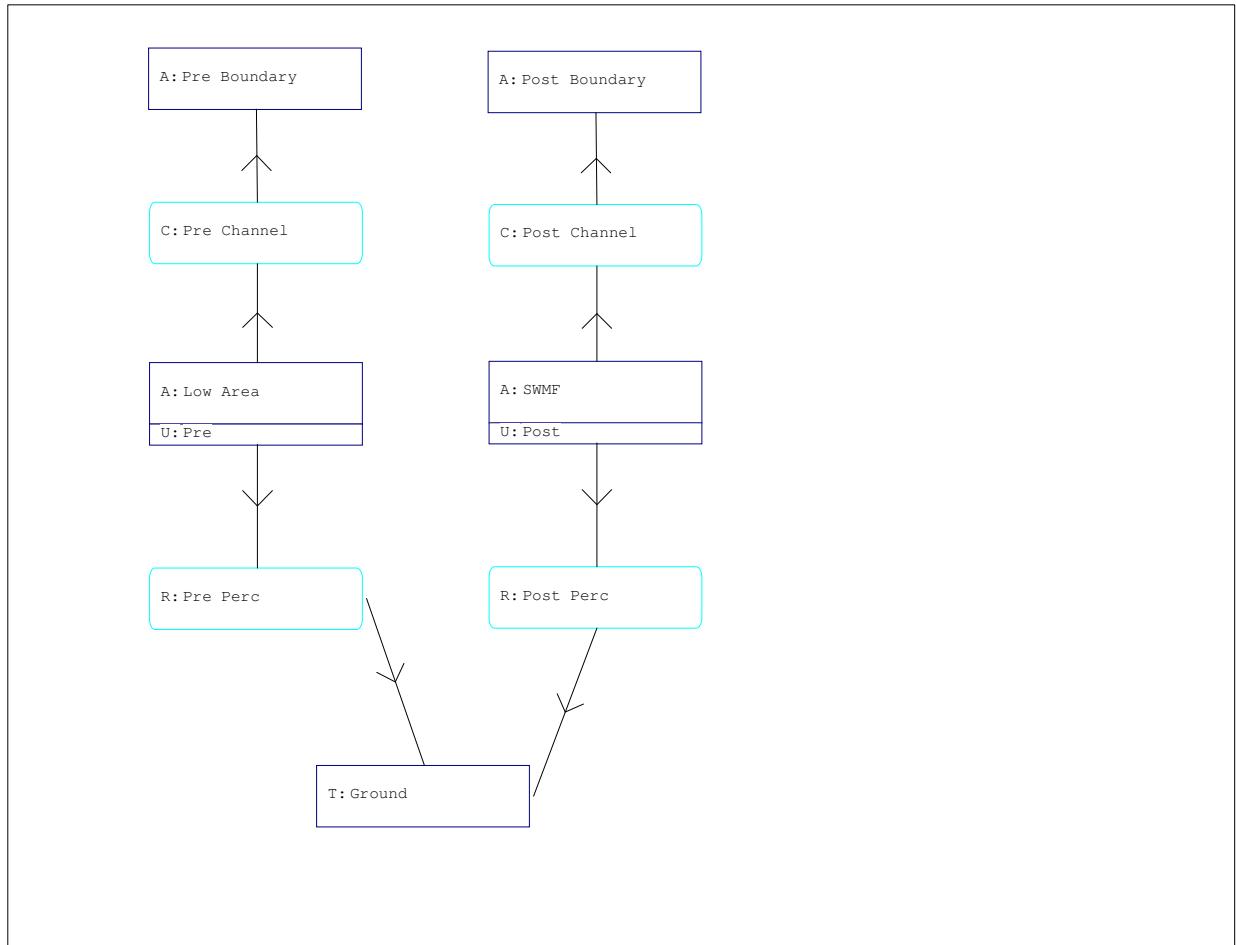
Node/Link Diagram

Nodes

A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



=====
==== Basins =====
=====

Name: Post Group: BASE	Node: SWMF Type: SCS Unit Hydrograph CN	Status: Onsite
Unit Hydrograph: Uh323 Rainfall File: Rainfall Amount(in): 0.000 Area(ac): 3.400 Curve Number: 66.50 DCIA(%): 0.00	Peaking Factor: 323.0 Storm Duration(hrs): 0.00 Time of Conc(min): 25.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000	

Name: Pre Group: BASE	Node: Low Area Type: SCS Unit Hydrograph CN	Status: Onsite
Unit Hydrograph: Uh323 Rainfall File: Rainfall Amount(in): 0.000 Area(ac): 3.400 Curve Number: 61.39 DCIA(%): 0.00	Peaking Factor: 323.0 Storm Duration(hrs): 0.00 Time of Conc(min): 25.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000	

Curve # for Type A Soils, weighted see calculations

=====
==== Nodes =====
=====

Name: Ground Group: BASE Type: Time/Stage	Base Flow(cfs): 0.000	Init Stage(ft): 177.500 Warn Stage(ft): 177.500
---	-----------------------	--

Time(hrs)	Stage(ft)
0.00	177.500
9999.00	177.500

Name: Low Area Group: BASE Type: Stage/Area	Base Flow(cfs): 0.000	Init Stage(ft): 177.500 Warn Stage(ft): 180.000
---	-----------------------	--

Stage(ft)	Area(ac)
177.500	0.0000
178.000	0.0700
179.000	0.2500
180.000	1.0200
181.000	1.5200

Name: Post Boundary Group: BASE Type: Stage/Area	Base Flow(cfs): 0.000	Init Stage(ft): 175.000 Warn Stage(ft): 178.000
--	-----------------------	--

Stage(ft)	Area(ac)
175.000	1.0000
180.000	1.0000

Name: Pre Boundary Group: BASE Type: Stage/Area	Base Flow(cfs): 0.000	Init Stage(ft): 175.000 Warn Stage(ft): 178.000
---	-----------------------	--

Stage(ft)	Area(ac)
175.000	1.0000
180.000	1.0000

Name: SWMF Group: BASE Type: Stage/Area	Base Flow(cfs): 0.000	Init Stage(ft): 178.000 Warn Stage(ft): 180.000
---	-----------------------	--

Stage(ft)	Area(ac)
178.000	0.2900
179.000	0.4200
180.000	0.9700
181.000	1.6700
182.000	2.1500

===== Cross Sections =====

Name: Boundary Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
0.000	182.500	0.035000
16.000	182.000	0.035000
97.000	180.250	0.035000
229.000	182.000	0.035000

===== Operating Tables =====

Name: Post FS=2 Perc Group: BASE
Type: Rating Curve
Function: US Stage vs. Discharge

using perc rate of 0.28 in/hour, for 12,446 sf of bottom
(0.023 ft/hr*12,446)/3600=0.079 cfs

US Stage(ft)	Discharge(cfs)
178.000	0.13
179.000	0.19
180.000	0.43
181.000	0.74

Name: Pre FS=2 Perc Group: BASE
Type: Rating Curve
Function: US Stage vs. Discharge

using perc rate of 0.44 in/hour, for 2,850 sf of bottom
(0.037 ft/hr*2,850)/3600=0.029 cfs

US Stage(ft)	Discharge(cfs)
177.500	0.00
178.000	0.03
179.000	0.11
180.000	0.45
181.000	0.68

===== Channels =====

Name: Post Channel From Node: SWMF Length(ft): 12.50
Group: BASE To Node: Post Boundary Count: 1

UPSTREAM	DOWNTSTREAM	Friction Equation: Automatic
Geometry: Irregular	Irregular	Solution Algorithm: Automatic
Invert(ft): 180.250	180.250	Flow: Both
TClpInitZ(ft): 9999.000	9999.000	Contraction Coef: 0.000
Manning's N:		Expansion Coef: 0.000
Top Clip(ft):		Entrance Loss Coef: 0.000
Bot Clip(ft):		Exit Loss Coef: 0.000
Main XSec: Boundary	Boundary	Outlet Ctrl Spec: Use dc or tw
AuxElev1(ft): 0.000	0.000	Inlet Ctrl Spec: Use dc
Aux XSec1:		Stabilizer Option: None
AuxElev2(ft): 0.000	0.000	
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):		
LtSdSlp(h/v):		
RtSdSlp(h/v):		

Name: Pre Channel	From Node: Low Area	Length(ft): 12.50
Group: BASE	To Node: Pre Boundary	Count: 1
UPSTREAM	DOWNTSTREAM	Friction Equation: Automatic
Geometry: Irregular	Irregular	Solution Algorithm: Automatic
Invert(ft): 180.250	180.250	Flow: Both
TClpInitZ(ft): 9999.000	9999.000	Contraction Coef: 0.000
Manning's N:		Expansion Coef: 0.000
Top Clip(ft):		Entrance Loss Coef: 0.000
Bot Clip(ft):		Exit Loss Coef: 0.000
Main XSec: Boundary	Boundary	Outlet Ctrl Spec: Use dc or tw
AuxElev1(ft): 0.000	0.000	Inlet Ctrl Spec: Use dc
Aux XSec1:		Stabilizer Option: None
AuxElev2(ft): 0.000	0.000	
Aux XSec2:		
Top Width(ft):		
Depth(ft):		
Bot Width(ft):		
LtSdSlp(h/v):		
RtSdSlp(h/v):		

===== Weirs =====

Name:	From Node:
Group: BASE	To Node:
Flow: Both	Count: 1
Type: Horizontal	Geometry: Circular
Span(in): 0.00	
Rise(in): 0.00	
Invert(ft): 0.000	
Control Elevation(ft): 0.000	
TABLE	
Bottom Clip(in): 0.000	
Top Clip(in): 0.000	
Weir Discharge Coef: 3.200	
Orifice Discharge Coef: 0.600	

===== Rating Curves =====

Name: Post Perc	From Node: SWMF	Count: 1
Group: BASE	To Node: Ground	Flow: Both
TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1: Post FS=2 Perc	178.001	178.000
#2:	0.000	0.000
#3:	0.000	0.000
#4:	0.000	0.000

Name: Pre Perc	From Node: Low Area	Count: 1
Group: BASE	To Node: ground	Flow: Both
TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1: Pre FS=2 Perc	177.501	177.500
#2:	0.000	0.000
#3:	0.000	0.000
#4:	0.000	0.000

===== Percolation Links =====

Name:	From Node:	Flow: Both
Group: BASE	To Node:	Count: 1
Surface Area Option: Use 1st Point in Stage/Area Table		
Vertical Flow Termination: Horizontal Flow Algorithm		
Aquifer Base Elev(ft): 0.000	Perimeter 1(ft): 0.000	
Water Table Elev(ft): 0.000	Perimeter 2(ft): 0.000	
*****0.000	Perimeter 3(ft): 0.000	
Horiz Conductivity(ft/day): 0.000	Distance 1 to 2(ft): 0.000	
Vert Conductivity(ft/day): 0.000	Distance 2 to 3(ft): 0.000	
Effective Porosity(dec): 0.000	Num Cells 1 to 2: 0	
Suction Head(in): 0.000	Num Cells 2 to 3: 0	
Layer Thickness(ft): 0.000		

=====
==== Hydrology Simulations =====
=====

Name: 002yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr01hr.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: Fdot-1
Rainfall Amount(in): 2.35

Time(hrs)	Print Inc(min)
4.000	5.00

Name: 002yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr02hr.R32

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: Fdot-2
Rainfall Amount(in): 3.00

Time(hrs)	Print Inc(min)
6.000	5.00

Name: 002yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr04hr.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: Fdot-4
Rainfall Amount(in): 3.50

Time(hrs)	Print Inc(min)
8.000	5.00

Name: 002yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr08hr.R32

Override Defaults: Yes
Storm Duration(hrs): 8.00
Rainfall File: Fdot-2
Rainfall Amount(in): 4.20

Time(hrs)	Print Inc(min)
12.000	5.00

Name: 002yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr24hr.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Fdot-24
Rainfall Amount(in): 5.64

Time(hrs)	Print Inc(min)
28.000	5.00

Name: 005yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr01hr.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: Fdot-1
Rainfall Amount(in): 2.85

Time(hrs)	Print Inc(min)
4.000	5.00

Name: 005yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr02hr.R32

Complete Input Report

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: Fdot-2
Rainfall Amount(in): 3.60

Time(hrs)	Print Inc(min)
6.000	5.00

Name: 005yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr04hr.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: Fdot-4
Rainfall Amount(in): 4.40

Time(hrs)	Print Inc(min)
8.000	5.00

Name: 005yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr08hr.R32

Override Defaults: Yes
Storm Duration(hrs): 8.00
Rainfall File: Fdot-8
Rainfall Amount(in): 5.40

Time(hrs)	Print Inc(min)
12.000	5.00

Name: 005yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr24hr.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Fdot-24
Rainfall Amount(in): 7.44

Time(hrs)	Print Inc(min)
30.000	5.00

Name: 010yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr01hr.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: Fdot-1
Rainfall Amount(in): 3.15

Time(hrs)	Print Inc(min)
4.000	5.00

Name: 010yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr02hr.R32

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: Fdot-2
Rainfall Amount(in): 4.10

Time(hrs)	Print Inc(min)
6.000	5.00

Name: 010yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr04hr.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: Fdot-4
Rainfall Amount(in): 5.00

Time(hrs)	Print Inc(min)
8.000	5.00

Name: 010yr08hr

Complete Input Report

Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr08hr.R32

Override Defaults: Yes
Storm Duration(hrs): 8.00
Rainfall File: Fdot-8
Rainfall Amount(in): 6.20

Time(hrs) Print Inc(min)

12.000 5.00

Name: 010yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr24hr.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Fdot-24
Rainfall Amount(in): 8.64

Time(hrs) Print Inc(min)

28.000 5.00

Name: 025yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr01hr.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: Fdot-1
Rainfall Amount(in): 3.65

Time(hrs) Print Inc(min)

4.000 5.00

Name: 025yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr02hr.R32

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: Fdot-2
Rainfall Amount(in): 4.70

Time(hrs) Print Inc(min)

6.000 5.00

Name: 025yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr04hr.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: Fdot-4
Rainfall Amount(in): 6.00

Time(hrs) Print Inc(min)

8.000 5.00

Name: 025yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr08hr.R32

Override Defaults: Yes
Storm Duration(hrs): 8.00
Rainfall File: Fdot-8
Rainfall Amount(in): 7.20

Time(hrs) Print Inc(min)

12.000 5.00

Name: 025yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr24hr.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Fdot-24
Rainfall Amount(in): 10.32

Time(hrs) Print Inc(min)

28.000 5.00

Complete Input Report

Name: 050yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr01hr.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: Fdot-1
Rainfall Amount(in): 4.00

Time(hrs)	Print Inc(min)
4.000	5.00

Name: 050yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr02hr.R32

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: Fdot-2
Rainfall Amount(in): 5.20

Time(hrs)	Print Inc(min)
6.000	5.00

Name: 050yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr04hr.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: Fdot-4
Rainfall Amount(in): 6.40

Time(hrs)	Print Inc(min)
8.000	5.00

Name: 050yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr08hr.R32

Override Defaults: Yes
Storm Duration(hrs): 8.00
Rainfall File: Fdot-8
Rainfall Amount(in): 8.00

Time(hrs)	Print Inc(min)
12.000	5.00

Name: 050yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr24hr.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Fdot-24
Rainfall Amount(in): 11.28

Time(hrs)	Print Inc(min)
168.000	5.00

Name: 100yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr01hr.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: Fdot-1
Rainfall Amount(in): 4.40

Time(hrs)	Print Inc(min)
4.000	5.00

Name: 100yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr02hr.R32

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: Fdot-2
Rainfall Amount(in): 5.80

Time(hrs)	Print Inc(min)

Complete Input Report

6.000 5.00

Name: 100yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr04hr.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: Fdot-4
Rainfall Amount(in): 7.20

Time(hrs) Print Inc(min)

8.000 5.00

Name: 100yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr08hr.R32

Override Defaults: Yes
Storm Duration(hrs): 8.00
Rainfall File: Fdot-8
Rainfall Amount(in): 8.80

Time(hrs) Print Inc(min)

12.000 5.00

Name: 100yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr24hr.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Fdot-24
Rainfall Amount(in): 12.48

Time(hrs) Print Inc(min)

168.000 5.00

===== Routing Simulations =====

Name: 002yr01hr Hydrology Sim: 002yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr01hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 4.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

4.000 15.000

Group Run

BASE Yes

Name: 002yr02hr Hydrology Sim: 002yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr02hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 6.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

6.000 15.000

Group Run

Complete Input Report

BASE Yes

Name: 002yr04hr Hydrology Sim: 002yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr04hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 8.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

8.000	15.000
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Group Run

BASE Yes

Name: 002yr08hr Hydrology Sim: 002yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr08hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 12.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

12.000	15.000
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Group Run

BASE Yes

Name: 002yr24hr Hydrology Sim: 002yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\002yr24hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 40.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

40.000	15.000
--------	--------

Group Run

BASE Yes

Name: 005yr01hr Hydrology Sim: 005yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr01hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 4.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Complete Input Report

Time(hrs)	Print Inc(min)
4.000	15.000

Group Run

BASE Yes

Name: 005yr02hr Hydrology Sim: 005yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr02hr.I32
Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 6.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
6.000	15.000

Group Run

BASE Yes

Name: 005yr04hr Hydrology Sim: 005yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr04hr.I32
Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 8.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
8.000	15.000

Group Run

BASE Yes

Name: 005yr08hr Hydrology Sim: 005yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr08hr.I32
Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 12.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
12.000	15.000

Group Run

BASE Yes

Name: 005yr24hr Hydrology Sim: 005yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\005yr24hr.I32
Execute: Yes Restart: No Patch: No
Alternative: No

Complete Input Report

Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500
Time Step Optimizer: 10.000	
Start Time(hrs): 0.000	End Time(hrs): 40.00
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000
Boundary Stages:	Boundary Flows:

Time(hrs)	Print Inc(min)
-----	-----
40.000	15.000

Group	Run
-----	-----
BASE	Yes

Name: 010yr01hr Hydrology Sim: 010yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr01hr.I32

Execute: Yes	Restart: No	Patch: No
Alternative: No		
Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500	
Time Step Optimizer: 10.000		
Start Time(hrs): 0.000	End Time(hrs): 4.00	
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000	
Boundary Stages:	Boundary Flows:	

Time(hrs)	Print Inc(min)
-----	-----
4.000	15.000

Group	Run
-----	-----
BASE	Yes

Name: 010yr02hr Hydrology Sim: 010yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr02hr.I32

Execute: Yes	Restart: No	Patch: No
Alternative: No		
Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500	
Time Step Optimizer: 10.000		
Start Time(hrs): 0.000	End Time(hrs): 6.00	
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000	
Boundary Stages:	Boundary Flows:	

Time(hrs)	Print Inc(min)
-----	-----
6.000	15.000

Group	Run
-----	-----
BASE	Yes

Name: 010yr04hr Hydrology Sim: 010yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr04hr.I32

Execute: Yes	Restart: No	Patch: No
Alternative: No		
Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500	
Time Step Optimizer: 10.000		
Start Time(hrs): 0.000	End Time(hrs): 8.00	
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000	
Boundary Stages:	Boundary Flows:	

Time(hrs)	Print Inc(min)
-----	-----
8.000	15.000

Group	Run
-----	-----
BASE	Yes

Complete Input Report

Name: 010yr08hr Hydrology Sim: 010yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr08hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000 End Time(hrs): 12.00
Start Time(hrs): 0.000 Max Calc Time(sec): 60.0000
Min Calc Time(sec): 0.5000 Boundary Stages:
Boundary Flows:

Time(hrs) Print Inc(min)

12.000 15.000

Group Run

BASE Yes

Name: 010yr24hr Hydrology Sim: 010yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\010yr24hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000 End Time(hrs): 40.00
Start Time(hrs): 0.000 Max Calc Time(sec): 60.0000
Min Calc Time(sec): 0.5000 Boundary Stages:
Boundary Flows:

Time(hrs) Print Inc(min)

40.000 15.000

Group Run

BASE Yes

Name: 025yr01hr Hydrology Sim: 025yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr01hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000 End Time(hrs): 4.00
Start Time(hrs): 0.000 Max Calc Time(sec): 60.0000
Min Calc Time(sec): 0.5000 Boundary Stages:
Boundary Flows:

Time(hrs) Print Inc(min)

4.000 15.000

Group Run

BASE Yes

Name: 025yr02hr Hydrology Sim: 025yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr02hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000 End Time(hrs): 6.00
Start Time(hrs): 0.000 Max Calc Time(sec): 60.0000
Min Calc Time(sec): 0.5000 Boundary Stages:
Boundary Flows:

Time(hrs) Print Inc(min)

Complete Input Report

6.000 15.000

Group Run

BASE Yes

Name: 025yr04hr Hydrology Sim: 025yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr04hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 8.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

8.000 15.000

Group Run

BASE Yes

Name: 025yr08hr Hydrology Sim: 025yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr08hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 12.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

12.000 15.000

Group Run

BASE Yes

Name: 025yr24hr Hydrology Sim: 025yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\025yr24hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 40.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

40.000 15.000

Group Run

BASE Yes

Name: 050yr01hr Hydrology Sim: 050yr01hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr01hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 4.00

Complete Input Report

Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

4.000 15.000

Group Run

BASE Yes

Name: 050yr02hr Hydrology Sim: 050yr02hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr02hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 6.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

6.000 15.000

Group Run

BASE Yes

Name: 050yr04hr Hydrology Sim: 050yr04hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr04hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 8.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

8.000 15.000

Group Run

BASE Yes

Name: 050yr08hr Hydrology Sim: 050yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr08hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 12.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

12.000 15.000

Group Run

BASE Yes

Name: 050yr24hr Hydrology Sim: 050yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\050yr24hr.I32

Complete Input Report

Execute: Yes	Restart: No	Patch: No
Alternative: No		
Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500	
Time Step Optimizer: 10.000		
Start Time(hrs): 0.000	End Time(hrs): 40.00	
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000	
Boundary Stages:	Boundary Flows:	

Time(hrs)	Print Inc(min)
-----	-----
40.000	15.000
Group	Run
-----	-----
BASE	Yes

Name: 100yr01hr	Hydrology Sim: 100yr01hr	
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr01hr.I32		
Execute: Yes	Restart: No	Patch: No
Alternative: No		
Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500	
Time Step Optimizer: 10.000		
Start Time(hrs): 0.000	End Time(hrs): 4.00	
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000	
Boundary Stages:	Boundary Flows:	

Time(hrs)	Print Inc(min)
-----	-----
4.000	15.000
Group	Run
-----	-----
BASE	Yes

Name: 100yr02hr	Hydrology Sim: 100yr02hr	
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr02hr.I32		
Execute: Yes	Restart: No	Patch: No
Alternative: No		
Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500	
Time Step Optimizer: 10.000		
Start Time(hrs): 0.000	End Time(hrs): 6.00	
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000	
Boundary Stages:	Boundary Flows:	

Time(hrs)	Print Inc(min)
-----	-----
6.000	15.000
Group	Run
-----	-----
BASE	Yes

Name: 100yr04hr	Hydrology Sim: 100yr04hr	
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr04hr.I32		
Execute: Yes	Restart: No	Patch: No
Alternative: No		
Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500	
Time Step Optimizer: 10.000		
Start Time(hrs): 0.000	End Time(hrs): 8.00	
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000	
Boundary Stages:	Boundary Flows:	

Time(hrs)	Print Inc(min)
-----	-----
8.000	15.000
Group	Run

Complete Input Report

BASE Yes

Name: 100yr08hr Hydrology Sim: 100yr08hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr08hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No
Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 12.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

12.000 15.000

Group Run

BASE Yes

Name: 100yr24hr Hydrology Sim: 100yr24hr
Filename: S:\Projects\13-034 (Crump Rd Store)\data\icpr\ICPR PRE\100yr24hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No
Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 168.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs) Print Inc(min)

168.000 5.000

Group Run

BASE Yes

Node Min/Max Report

Name	Group	Simulation	Max Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Inflow hrs	Max Inflow cfs	Max Outflow hrs
Ground	BASE	002yr01hr	0.00	177.500	177.500	0.0000	0	2.14	0.188	0.00
Ground	BASE	002yr02hr	0.00	177.500	177.500	0.0000	0	2.88	0.231	0.00
Ground	BASE	002yr04hr	0.00	177.500	177.500	0.0000	0	4.58	0.263	0.00
Ground	BASE	002yr08hr	0.00	177.500	177.500	0.0000	0	8.25	0.323	0.00
Ground	BASE	002yr24hr	0.00	177.500	177.500	0.0000	0	22.28	0.452	0.00
Ground	BASE	005yr01hr	0.00	177.500	177.500	0.0000	0	2.24	0.222	0.00
Ground	BASE	005yr02hr	0.00	177.500	177.500	0.0000	0	2.94	0.272	0.00
Ground	BASE	005yr04hr	0.00	177.500	177.500	0.0000	0	4.55	0.381	0.00
Ground	BASE	005yr08hr	0.00	177.500	177.500	0.0000	0	8.29	0.520	0.00
Ground	BASE	005yr24hr	0.00	177.500	177.500	0.0000	0	22.26	0.688	0.00
Ground	BASE	010yr01hr	0.00	177.500	177.500	0.0000	0	2.29	0.243	0.00
Ground	BASE	010yr02hr	0.00	177.500	177.500	0.0000	0	2.91	0.343	0.00
Ground	BASE	010yr04hr	0.00	177.500	177.500	0.0000	0	4.57	0.489	0.00
Ground	BASE	010yr08hr	0.00	177.500	177.500	0.0000	0	8.30	0.639	0.00
Ground	BASE	010yr24hr	0.00	177.500	177.500	0.0000	0	22.28	0.823	0.00
Ground	BASE	025yr01hr	0.00	177.500	177.500	0.0000	0	2.33	0.277	0.00
Ground	BASE	025yr02hr	0.00	177.500	177.500	0.0000	0	2.90	0.626	0.00
Ground	BASE	025yr04hr	0.00	177.500	177.500	0.0000	0	4.56	0.648	0.00
Ground	BASE	025yr08hr	0.00	177.500	177.500	0.0000	0	8.30	0.773	0.00
Ground	BASE	025yr24hr	0.00	177.500	177.500	0.0000	0	22.34	0.983	0.00
Ground	BASE	050yr01hr	0.00	177.500	177.500	0.0000	0	2.32	0.333	0.00
Ground	BASE	050yr02hr	0.00	177.500	177.500	0.0000	0	2.90	0.531	0.00
Ground	BASE	050yr04hr	0.00	177.500	177.500	0.0000	0	4.57	0.706	0.00
Ground	BASE	050yr08hr	0.00	177.500	177.500	0.0000	0	8.32	0.869	0.00
Ground	BASE	050yr24hr	0.00	177.500	177.500	0.0000	0	21.74	1.054	0.00
Ground	BASE	100yr01hr	0.00	177.500	177.500	0.0000	0	2.34	0.390	0.00
Ground	BASE	100yr02hr	0.00	177.500	177.500	0.0000	0	2.90	0.626	0.00
Ground	BASE	100yr04hr	0.00	177.500	177.500	0.0000	0	4.57	0.812	0.00
Ground	BASE	100yr08hr	0.00	177.500	177.500	0.0000	0	8.32	0.952	0.00
Ground	BASE	100yr24hr	0.00	177.500	177.500	0.0000	0	19.37	1.081	0.00
Low Area	BASE	002yr01hr	2.20	178.244	180.000	0.0050	4960	0.92	0.810	2.20
Low Area	BASE	002yr02hr	2.93	178.617	180.000	0.0050	7885	1.17	0.943	2.93
Low Area	BASE	002yr04hr	4.61	178.879	180.000	0.0050	9940	3.08	1.259	4.61
Low Area	BASE	002yr08hr	8.25	179.116	180.000	0.0050	14764	3.33	1.201	8.25
Low Area	BASE	002yr24hr	22.18	179.378	180.000	0.0050	23556	12.08	0.669	22.18
Low Area	BASE	005yr01hr	2.29	178.542	180.000	0.0050	7303	0.92	1.584	2.29
Low Area	BASE	005yr02hr	2.97	178.941	180.000	0.0050	10430	1.17	1.665	2.97
Low Area	BASE	005yr04hr	4.54	179.251	180.000	0.0050	19320	2.67	2.124	4.54
Low Area	BASE	005yr08hr	8.26	179.468	180.000	0.0050	26577	4.16	2.616	8.26
Low Area	BASE	005yr24hr	22.20	179.729	180.000	0.0050	35353	12.08	1.193	22.20
Low Area	BASE	010yr01hr	2.33	178.712	180.000	0.0050	8629	0.92	2.132	2.33
Low Area	BASE	010yr02hr	2.91	179.160	180.000	0.0050	16254	1.08	2.368	2.91
Low Area	BASE	010yr04hr	4.52	179.424	180.000	0.0050	25126	2.67	2.810	4.52
Low Area	BASE	010yr08hr	8.27	179.652	180.000	0.0050	32775	4.17	3.488	8.27
Low Area	BASE	010yr24hr	22.22	179.937	180.000	0.0050	42327	12.08	1.570	22.22
Low Area	BASE	025yr01hr	2.35	178.980	180.000	0.0050	10735	0.92	3.160	2.35
Low Area	BASE	025yr02hr	2.87	179.635	180.000	0.0050	32173	1.08	5.363	2.87
Low Area	BASE	025yr04hr	4.53	179.670	180.000	0.0050	33370	2.67	4.042	4.53
Low Area	BASE	025yr08hr	8.27	179.861	180.000	0.0050	39766	4.08	4.662	8.27
Low Area	BASE	025yr24hr	22.31	180.214	180.000	0.0050	49096	12.08	2.121	22.31
Low Area	BASE	050yr01hr	2.32	179.133	180.000	0.0050	15360	0.92	3.951	2.32
Low Area	BASE	050yr02hr	2.87	179.487	180.000	0.0050	27216	1.08	4.230	2.87
Low Area	BASE	050yr04hr	4.54	179.759	180.000	0.0050	36357	2.67	4.557	4.54
Low Area	BASE	050yr08hr	8.28	180.015	180.000	0.0050	44748	4.08	5.650	8.28
Low Area	BASE	050yr24hr	21.40	180.332	180.000	0.0050	51731	12.08	2.445	21.40
Low Area	BASE	100yr01hr	2.29	179.270	180.000	0.0050	19945	0.92	4.915	2.29
Low Area	BASE	100yr02hr	2.87	179.635	180.000	0.0050	32173	1.08	5.363	2.87
Low Area	BASE	100yr04hr	4.55	179.926	180.000	0.0050	41951	2.67	5.621	4.55
Low Area	BASE	100yr08hr	8.31	180.164	180.000	0.0050	48008	4.08	6.668	8.31
Low Area	BASE	100yr24hr	19.27	180.374	180.000	0.0050	52678	12.08	2.855	19.27
Post Boundary	BASE	002yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	002yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	002yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	002yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	002yr24hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	005yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	005yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	005yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	005yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	005yr24hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	010yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	010yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	010yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	010yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	010yr24hr	25.39	175.039	178.000	0.0002	43560	22.09	0.178	0.00
Post Boundary	BASE	100yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00

Node Min/Max Report

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs
Post Boundary	BASE	100yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	100yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	100yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Post Boundary	BASE	100yr24hr	25.83	175.278	178.000	0.0011	43560	19.45	0.768	0.00
Pre Boundary	BASE	002yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	002yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	002yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	002yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	002yr24hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	005yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	005yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	005yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	005yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	005yr24hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	010yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	010yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	010yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	010yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	010yr24hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	025yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	025yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	025yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	025yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	025yr24hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	050yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	050yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	050yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	050yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	050yr24hr	25.45	175.074	178.000	0.0004	43560	21.40	0.289	0.00
Pre Boundary	BASE	100yr01hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	100yr02hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	100yr04hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	100yr08hr	0.00	175.000	178.000	0.0000	43560	0.00	0.000	0.00
Pre Boundary	BASE	100yr24hr	25.77	175.315	178.000	0.0011	43560	19.27	0.811	0.00
SWMF	BASE	002yr01hr	1.99	178.200	180.000	0.0012	13763	0.92	1.388	1.99
SWMF	BASE	002yr02hr	2.80	178.414	180.000	0.0017	14975	1.16	1.489	2.80
SWMF	BASE	002yr04hr	4.53	178.593	180.000	0.0019	15989	2.67	1.674	4.53
SWMF	BASE	002yr08hr	8.27	178.773	180.000	0.0021	17010	3.33	1.621	8.27
SWMF	BASE	002yr24hr	22.42	179.108	180.000	0.0024	20889	12.08	0.858	22.42
SWMF	BASE	005yr01hr	2.17	178.373	180.000	0.0016	14746	0.92	2.371	2.17
SWMF	BASE	005yr02hr	2.89	178.653	180.000	0.0021	16328	1.08	2.402	2.89
SWMF	BASE	005yr04hr	4.62	178.966	180.000	0.0028	18105	2.67	2.727	4.62
SWMF	BASE	005yr08hr	8.33	179.260	180.000	0.0030	24520	4.08	3.293	8.33
SWMF	BASE	005yr24hr	22.36	179.586	180.000	0.0038	32327	12.08	1.426	22.36
SWMF	BASE	010yr01hr	2.24	178.488	180.000	0.0018	15398	0.92	3.039	2.24
SWMF	BASE	010yr02hr	2.94	178.861	180.000	0.0025	17507	1.08	3.269	2.94
SWMF	BASE	010yr04hr	4.60	179.195	180.000	0.0029	22965	2.67	3.487	4.60
SWMF	BASE	010yr08hr	8.33	179.493	180.000	0.0032	30098	4.09	4.265	8.33
SWMF	BASE	010yr24hr	22.38	179.847	180.000	0.0038	38598	12.08	1.825	22.38
SWMF	BASE	025yr01hr	2.31	178.691	180.000	0.0021	16545	0.92	4.253	2.31
SWMF	BASE	025yr02hr	2.95	179.465	180.000	0.0030	29431	1.00	6.720	2.95
SWMF	BASE	025yr04hr	4.60	179.505	180.000	0.0031	30401	2.67	4.820	4.60
SWMF	BASE	025yr08hr	8.33	179.750	180.000	0.0031	36257	4.08	5.535	8.33
SWMF	BASE	025yr24hr	22.39	180.171	180.000	0.0050	47481	12.08	2.399	22.39
SWMF	BASE	050yr01hr	2.35	178.837	180.000	0.0023	17372	0.83	5.185	2.35
SWMF	BASE	050yr02hr	2.95	179.280	180.000	0.0030	25001	1.08	5.405	2.95
SWMF	BASE	050yr04hr	4.61	179.616	180.000	0.0030	33046	2.66	5.371	4.61
SWMF	BASE	050yr08hr	8.35	179.937	180.000	0.0036	40740	4.08	6.581	8.35
SWMF	BASE	050yr24hr	22.09	180.318	180.000	0.0050	51994	12.08	2.732	22.09
SWMF	BASE	100yr01hr	2.37	179.006	180.000	0.0027	18436	0.83	6.337	2.37
SWMF	BASE	100yr02hr	2.95	179.465	180.000	0.0030	29431	1.00	6.720	2.95
SWMF	BASE	100yr04hr	4.62	179.821	180.000	0.0034	37954	2.66	6.496	4.62
SWMF	BASE	100yr08hr	8.36	180.110	180.000	0.0039	45603	4.08	7.648	8.36
SWMF	BASE	100yr24hr	19.45	180.372	180.000	0.0040	53678	12.08	3.150	19.45

Link Min/Max Report

Name	Group	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max Time US Stage hrs	Max US Stage ft	Max Time DS Stage hrs	Max DS Stage ft
Post Channel	BASE	002yr01hr	0.00	0.000	0.000	1.99	178.200	0.00	175.000
Post Channel	BASE	002yr02hr	0.00	0.000	0.000	2.80	178.414	0.00	175.000
Post Channel	BASE	002yr04hr	0.00	0.000	0.000	4.53	178.593	0.00	175.000
Post Channel	BASE	002yr08hr	0.00	0.000	0.000	8.27	178.773	0.00	175.000
Post Channel	BASE	002yr24hr	0.00	0.000	0.000	22.42	179.108	0.00	175.000
Post Channel	BASE	005yr01hr	0.00	0.000	0.000	2.17	178.373	0.00	175.000
Post Channel	BASE	005yr02hr	0.00	0.000	0.000	2.89	178.653	0.00	175.000
Post Channel	BASE	005yr04hr	0.00	0.000	0.000	4.62	178.966	0.00	175.000
Post Channel	BASE	005yr08hr	0.00	0.000	0.000	8.33	179.260	0.00	175.000
Post Channel	BASE	005yr24hr	0.00	0.000	0.000	22.36	179.586	0.00	175.000
Post Channel	BASE	010yr01hr	0.00	0.000	0.000	2.24	178.488	0.00	175.000
Post Channel	BASE	010yr02hr	0.00	0.000	0.000	2.94	178.861	0.00	175.000
Post Channel	BASE	010yr04hr	0.00	0.000	0.000	4.60	179.195	0.00	175.000
Post Channel	BASE	010yr08hr	0.00	0.000	0.000	8.33	179.493	0.00	175.000
Post Channel	BASE	010yr24hr	0.00	0.000	0.000	22.38	179.847	0.00	175.000
Post Channel	BASE	025yr01hr	0.00	0.000	0.000	2.31	178.691	0.00	175.000
Post Channel	BASE	025yr02hr	0.00	0.000	0.000	2.95	179.465	0.00	175.000
Post Channel	BASE	025yr04hr	0.00	0.000	0.000	4.60	179.505	0.00	175.000
Post Channel	BASE	025yr08hr	0.00	0.000	0.000	8.33	179.750	0.00	175.000
Post Channel	BASE	025yr24hr	0.00	0.000	0.000	22.39	180.171	0.00	175.000
Post Channel	BASE	050yr01hr	0.00	0.000	0.000	2.35	178.837	0.00	175.000
Post Channel	BASE	050yr02hr	0.00	0.000	0.000	2.95	179.280	0.00	175.000
Post Channel	BASE	050yr04hr	0.00	0.000	0.000	4.61	179.616	0.00	175.000
Post Channel	BASE	050yr08hr	0.00	0.000	0.000	8.35	179.937	0.00	175.000
Post Channel	BASE	050yr24hr	22.09	0.178	0.002	22.09	180.318	22.09	180.306
Post Channel	BASE	100yr01hr	0.00	0.000	0.000	2.37	179.006	0.00	175.000
Post Channel	BASE	100yr02hr	0.00	0.000	0.000	2.95	179.465	0.00	175.000
Post Channel	BASE	100yr04hr	0.00	0.000	0.000	4.62	179.821	0.00	175.000
Post Channel	BASE	100yr08hr	0.00	0.000	0.000	8.36	180.110	0.00	175.000
Post Channel	BASE	100yr24hr	19.45	0.768	0.007	19.45	180.372	19.45	180.350
Post Perc	BASE	002yr01hr	1.99	0.138	0.127	1.99	178.200	0.00	177.500
Post Perc	BASE	002yr02hr	2.80	0.151	0.127	2.80	178.414	0.00	177.500
Post Perc	BASE	002yr04hr	4.53	0.162	0.127	4.53	178.593	0.00	177.500
Post Perc	BASE	002yr08hr	8.27	0.172	0.127	8.27	178.773	0.00	177.500
Post Perc	BASE	002yr24hr	22.42	0.212	0.127	22.42	179.108	0.00	177.500
Post Perc	BASE	005yr01hr	2.17	0.149	0.127	2.17	178.373	0.00	177.500
Post Perc	BASE	005yr02hr	2.89	0.165	0.127	2.89	178.653	0.00	177.500
Post Perc	BASE	005yr04hr	4.62	0.184	0.127	4.62	178.966	0.00	177.500
Post Perc	BASE	005yr08hr	8.33	0.249	0.127	8.33	179.260	0.00	177.500
Post Perc	BASE	005yr24hr	22.36	0.328	0.127	22.36	179.586	0.00	177.500
Post Perc	BASE	010yr01hr	2.24	0.155	0.127	2.24	178.488	0.00	177.500
Post Perc	BASE	010yr02hr	2.94	0.177	0.127	2.94	178.861	0.00	177.500
Post Perc	BASE	010yr04hr	4.60	0.233	0.127	4.60	179.195	0.00	177.500
Post Perc	BASE	010yr08hr	8.33	0.306	0.127	8.33	179.493	0.00	177.500
Post Perc	BASE	010yr24hr	22.38	0.392	0.127	22.38	179.847	0.00	177.500
Post Perc	BASE	025yr01hr	2.31	0.167	0.127	2.31	178.691	0.00	177.500
Post Perc	BASE	025yr02hr	2.95	0.299	0.127	2.95	179.465	0.00	177.500
Post Perc	BASE	025yr04hr	4.60	0.309	0.127	4.60	179.505	0.00	177.500
Post Perc	BASE	025yr08hr	8.33	0.369	0.127	8.33	179.750	0.00	177.500
Post Perc	BASE	025yr24hr	22.39	0.483	0.127	22.39	180.171	0.00	177.500
Post Perc	BASE	050yr01hr	2.35	0.176	0.127	2.35	178.837	0.00	177.500
Post Perc	BASE	050yr02hr	2.95	0.254	0.127	2.95	179.280	0.00	177.500
Post Perc	BASE	050yr04hr	4.61	0.336	0.127	4.61	179.616	0.00	177.500
Post Perc	BASE	050yr08hr	8.35	0.414	0.127	8.35	179.937	0.00	177.500
Post Perc	BASE	050yr24hr	22.09	0.528	0.127	22.09	180.318	0.00	177.500
Post Perc	BASE	100yr01hr	2.37	0.187	0.127	2.37	179.006	0.00	177.500
Post Perc	BASE	100yr02hr	2.95	0.299	0.127	2.95	179.465	0.00	177.500
Post Perc	BASE	100yr04hr	4.62	0.386	0.127	4.62	179.821	0.00	177.500
Post Perc	BASE	100yr08hr	8.36	0.464	0.127	8.36	180.110	0.00	177.500
Post Perc	BASE	100yr24hr	19.45	0.545	0.127	19.45	180.372	0.00	177.500
Pre Channel	BASE	002yr01hr	0.00	0.000	0.000	2.20	178.244	0.00	175.000
Pre Channel	BASE	002yr02hr	0.00	0.000	0.000	2.93	178.617	0.00	175.000
Pre Channel	BASE	002yr04hr	0.00	0.000	0.000	4.61	178.879	0.00	175.000
Pre Channel	BASE	002yr08hr	0.00	0.000	0.000	8.25	179.116	0.00	175.000
Pre Channel	BASE	002yr24hr	0.00	0.000	0.000	22.18	179.378	0.00	175.000
Pre Channel	BASE	005yr01hr	0.00	0.000	0.000	2.29	178.542	0.00	175.000
Pre Channel	BASE	005yr02hr	0.00	0.000	0.000	2.97	178.941	0.00	175.000
Pre Channel	BASE	005yr04hr	0.00	0.000	0.000	4.54	179.251	0.00	175.000
Pre Channel	BASE	005yr08hr	0.00	0.000	0.000	8.26	179.468	0.00	175.000
Pre Channel	BASE	005yr24hr	0.00	0.000	0.000	22.20	179.729	0.00	175.000
Pre Channel	BASE	010yr01hr	0.00	0.000	0.000	2.33	178.712	0.00	175.000
Pre Channel	BASE	010yr02hr	0.00	0.000	0.000	2.91	179.160	0.00	175.000
Pre Channel	BASE	010yr04hr	0.00	0.000	0.000	4.52	179.424	0.00	175.000
Pre Channel	BASE	010yr08hr	0.00	0.000	0.000	8.27	179.652	0.00	175.000
Pre Channel	BASE	010yr24hr	0.00	0.000	0.000	22.22	179.937	0.00	175.000
Pre Channel	BASE	025yr01hr	0.00	0.000	0.000	2.35	178.980	0.00	175.000
Pre Channel	BASE	025yr02hr	0.00	0.000	0.000	2.87	179.635	0.00	175.000
Pre Channel	BASE	025yr04hr	0.00	0.000	0.000	4.53	179.670	0.00	175.000
Pre Channel	BASE	025yr08hr	0.00	0.000	0.000	8.27	179.861	0.00	175.000
Pre Channel	BASE	025yr24hr	0.00	0.000	0.000	22.31	180.214	0.00	175.000
Pre Channel	BASE	050yr01hr	0.00	0.000	0.000	2.32	179.133	0.00	175.000
Pre Channel	BASE	050yr02hr	0.00	0.000	0.000	2.87	179.487	0.00	175.000
Pre Channel	BASE	050yr04hr	0.00	0.000	0.000	4.54	179.759	0.00	175.000
Pre Channel	BASE	050yr08hr	0.00	0.000	0.000	8.28	180.015	0.00	175.000
Pre Channel	BASE	050yr24hr	21.40	0.289	-0.002	21.40	180.332	21.40	180.318
Pre Channel	BASE	100yr01hr	0.00	0.000	0.000	2.29	179.270	0.00	175.000

Link Min/Max Report

Name	Group	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max US Stage hrs	Max US Stage ft	Max DS Stage hrs	Max DS Stage ft
Pre Channel	BASE	100yr02hr	0.00	0.000	0.000	2.87	179.635	0.00	175.000
Pre Channel	BASE	100yr04hr	0.00	0.000	0.000	4.55	179.926	0.00	175.000
Pre Channel	BASE	100yr08hr	0.00	0.000	0.000	8.31	180.164	0.00	175.000
Pre Channel	BASE	100yr24hr	19.27	0.811	0.006	19.27	180.374	19.27	180.352
Pre Perc	BASE	002yr01hr	2.20	0.049	0.000	2.20	178.244	0.00	177.500
Pre Perc	BASE	002yr02hr	2.93	0.080	0.000	2.93	178.617	0.00	177.500
Pre Perc	BASE	002yr04hr	4.61	0.102	0.000	4.61	178.879	0.00	177.500
Pre Perc	BASE	002yr08hr	8.25	0.151	0.001	8.25	179.116	0.00	177.500
Pre Perc	BASE	002yr24hr	22.18	0.240	0.001	22.18	179.378	0.00	177.500
Pre Perc	BASE	005yr01hr	2.29	0.074	0.000	2.29	178.542	0.00	177.500
Pre Perc	BASE	005yr02hr	2.97	0.107	0.000	2.97	178.941	0.00	177.500
Pre Perc	BASE	005yr04hr	4.54	0.197	0.001	4.54	179.251	0.00	177.500
Pre Perc	BASE	005yr08hr	8.26	0.271	0.001	8.26	179.468	0.00	177.500
Pre Perc	BASE	005yr24hr	22.20	0.360	0.002	22.20	179.729	0.00	177.500
Pre Perc	BASE	010yr01hr	2.33	0.088	0.000	2.33	178.712	0.00	177.500
Pre Perc	BASE	010yr02hr	2.91	0.166	0.001	2.91	179.160	0.00	177.500
Pre Perc	BASE	010yr04hr	4.52	0.256	0.001	4.52	179.424	0.00	177.500
Pre Perc	BASE	010yr08hr	8.27	0.333	0.001	8.27	179.652	0.00	177.500
Pre Perc	BASE	010yr24hr	22.22	0.430	0.001	22.22	179.937	0.00	177.500
Pre Perc	BASE	025yr01hr	2.35	0.110	0.000	2.35	178.980	0.00	177.500
Pre Perc	BASE	025yr02hr	2.87	0.327	0.001	2.87	179.635	0.00	177.500
Pre Perc	BASE	025yr04hr	4.53	0.339	0.001	4.53	179.670	0.00	177.500
Pre Perc	BASE	025yr08hr	8.27	0.404	0.001	8.27	179.861	0.00	177.500
Pre Perc	BASE	025yr24hr	22.31	0.500	0.002	22.31	180.214	0.00	177.500
Pre Perc	BASE	050yr01hr	2.32	0.157	0.001	2.32	179.133	0.00	177.500
Pre Perc	BASE	050yr02hr	2.87	0.277	0.001	2.87	179.487	0.00	177.500
Pre Perc	BASE	050yr04hr	4.54	0.370	0.001	4.54	179.759	0.00	177.500
Pre Perc	BASE	050yr08hr	8.28	0.455	0.001	8.28	180.015	0.00	177.500
Pre Perc	BASE	050yr24hr	21.40	0.526	0.002	21.40	180.332	0.00	177.500
Pre Perc	BASE	100yr01hr	2.29	0.203	0.001	2.29	179.270	0.00	177.500
Pre Perc	BASE	100yr02hr	2.87	0.327	0.001	2.87	179.635	0.00	177.500
Pre Perc	BASE	100yr04hr	4.55	0.426	0.001	4.55	179.926	0.00	177.500
Pre Perc	BASE	100yr08hr	8.31	0.489	0.002	8.31	180.164	0.00	177.500
Pre Perc	BASE	100yr24hr	19.27	0.536	0.001	19.27	180.374	0.00	177.500

Sub-Basin Runoff Calculations for Crump Road - Convenience Store

AHE Project #13-034

Prepared By: ECW

Date: 3/19/2014

Purpose: To determine post-development flow rates for input into FlowMaster for sizing flumes, swales and roof drains

Methodology: SCS Runoff Curve Number

<u>SB-1 CN Calculations</u>		(Rational)		
Coverage Description	Soil and Hydrologic Soil Group	CN	Area	"C"
Open Space, good grass cover	Soil Type B	61	0.03	0.17
Impervious Area	Proposed Buildings	98	0.00	0.95
Impervious Area	Vehicular Use Area/Misc. Impervious	98	0.07	0.95
		Total	0.09	
Total Acreage		0.09		
Weighted CN		87.41		
Weighed "C"		0.73		
Flow Q (cfs)		0.70		

<u>SB-2 CN Calculations</u>		(Rational)		
Coverage Description	Soil and Hydrologic Soil Group	CN	Area	"C"
Open Space, good grass cover	Soil Type B	61	0.00	0.17
Impervious Area	Proposed Buildings	98	0.00	0.95
Impervious Area	Vehicular Use Area/Misc. Impervious	98	0.10	0.95
		Total	0.10	
Total Acreage		0.10		
Weighted CN		98.00		
Weighed "C"		0.95		
Flow Q (cfs)		0.98		

<u>SB-3 CN Calculations</u>		(Rational)		
Coverage Description	Soil and Hydrologic Soil Group	CN	Area	"C"
Open Space, good grass cover	Soil Type B	61	0.04	0.17
Impervious Area	Proposed Buildings	98	0.00	0.95
Impervious Area	Vehicular Use Area/Misc. Impervious	98	0.20	0.95
		Total	0.24	
Total Acreage		0.24		
Weighted CN		92.27		
Weighed "C"		0.83		
Flow Q (cfs)		2.04		

<u>SB-4 CN Calculations</u>		(Rational)		
Coverage Description	Soil and Hydrologic Soil Group	CN	Area	"C"
Open Space, good grass cover	Soil Type B	61	0.00	0.17
Impervious Area	Proposed Buildings	98	0.00	0.95
Impervious Area	Vehicular Use Area/Misc. Impervious	98	0.07	0.95
		Total	0.07	
Total Acreage		0.07		
Weighted CN		98.00		
Weighed "C"		0.95		
Flow Q (cfs)		0.70		

Worksheet for Concrete Flume

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013
Channel Slope	0.01000 ft/ft
Normal Depth	0.45 ft
Bottom Width	1.50 ft

Results

Discharge	3.31	ft³/s
Flow Area	0.68	ft²
Wetted Perimeter	2.40	ft
Hydraulic Radius	0.28	ft
Top Width	1.50	ft
Critical Depth	0.53	ft
Critical Slope	0.00621	ft/ft
Velocity	4.91	ft/s
Velocity Head	0.37	ft
Specific Energy	0.82	ft
Froude Number	1.29	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.50	ft
Length	20.00	ft
Number Of Steps	1	

GVF Output Data

Upstream Depth		0.53	ft
Profile Description	S2		
Profile Headloss		0.23	ft
Downstream Velocity		4.42	ft/s
Upstream Velocity		4.14	ft/s
Normal Depth		0.45	ft
Critical Depth		0.53	ft
Channel Slope		0.01000	ft/ft
Critical Slope		0.00621	ft/ft

Worksheet for PVC Roof Drain

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.010
Channel Slope	0.02000 ft/ft
Diameter	0.67 ft
Discharge	0.70 ft ³ /s

Results

Normal Depth	0.26 ft
Flow Area	0.12 ft ²
Wetted Perimeter	0.89 ft
Hydraulic Radius	0.14 ft
Top Width	0.65 ft
Critical Depth	0.39 ft
Percent Full	38.3 %
Critical Slope	0.00455 ft/ft
Velocity	5.64 ft/s
Velocity Head	0.49 ft
Specific Energy	0.75 ft
Froude Number	2.28
Maximum Discharge	2.42 ft ³ /s
Discharge Full	2.25 ft ³ /s
Slope Full	0.00193 ft/ft
Flow Type	SuperCritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.00 %
Normal Depth Over Rise	38.27 %
Downstream Velocity	Infinity ft/s

Worksheet for PVC Roof Drain

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.26	ft
Critical Depth	0.39	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.00455	ft/ft

Worksheet for South Swale

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	0.01800 ft/ft
Left Side Slope	3.00 ft/ft (H:V)
Right Side Slope	3.00 ft/ft (H:V)
Discharge	2.38 ft ³ /s

Results

Normal Depth	0.54 ft
Flow Area	0.88 ft ²
Wetted Perimeter	3.43 ft
Hydraulic Radius	0.26 ft
Top Width	3.26 ft
Critical Depth	0.52 ft
Critical Slope	0.02200 ft/ft
Velocity	2.69 ft/s
Velocity Head	0.11 ft
Specific Energy	0.66 ft
Froude Number	0.91
Flow Type	Subcritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.54 ft
Critical Depth	0.52 ft
Channel Slope	0.01800 ft/ft
Critical Slope	0.02200 ft/ft

REVISIONS		
DESCRIPTION	INITIALS	DATE

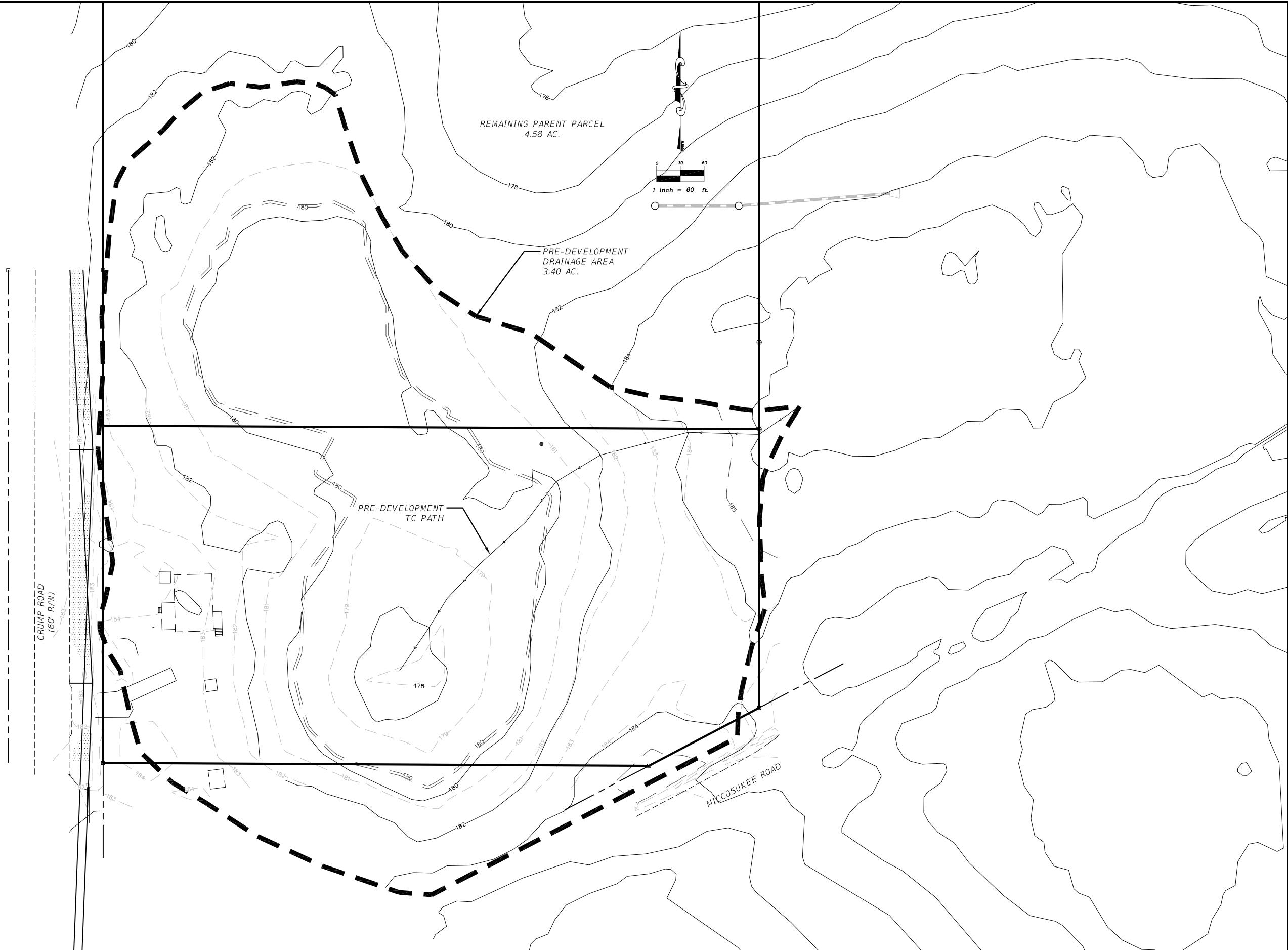
CLIENT:
WILLIAM GLEN BROWN

PROJECT:
**CRUMP ROAD
CONVENIENCE STORE**

SHEET TITLE:
**PRE-DEVELOPMENT
BASIN MAP**

1"	IF THIS LINE DOES NOT MEASURE ONE INCH IN LENGTH, THE SCALES ON THIS DRAWING ARE NOT VALID.
	NOT VALID UNLESS EMBOSSED

JOB NO. 13-034
DRAWN BY ECW
CHECKED BY JAA
DATE 3/19/14



REVISIONS		
DESCRIPTION	INITIALS	DATE

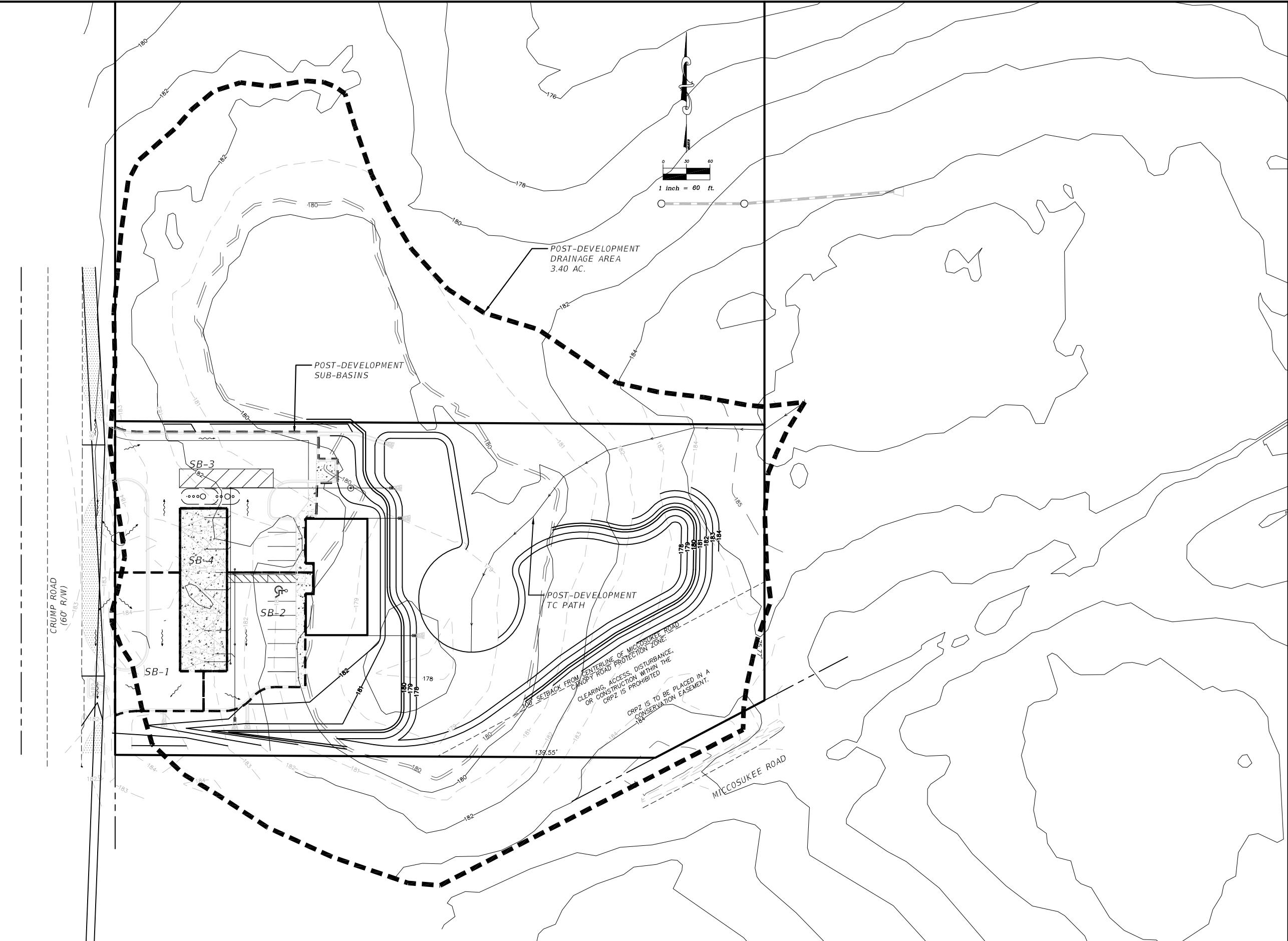
CLIENT:
WILLIAM GLEN BROWN

PROJECT:
**CRUMP ROAD
CONVENIENCE STORE**

SHEET TITLE:
**POST-DEVELOPMENT
BASIN MAP**

1"	IF THIS LINE DOES NOT MEASURE ONE INCH IN LENGTH, THE SCALES ON THIS DRAWING ARE NOT VALID.
	NOT VALID UNLESS EMBOSSED

JOB NO. **13-034**
DRAWN BY **ECW**
CHECKED BY **JAA**
DATE **3/19/14**





**MAINTENANCE AND OPERATION INSTRUCTIONS
FOR THE
Crump Road Convenience Store
3/19/14**

The following is an instructional outline for the maintenance and operation of the above referenced stormwater management facility.

The maintenance entity for the stormwater management facility located in Leon County, FL on parcel numbers 12-04-20-018-000-0:

**William “Glen” Brown
2802 Topaz Way
Tallahassee, FL 32309
(850) 528-6293**

The stormwater management facility has been designed in accordance with current engineering principles applicable to conveyance, storage, attenuation, treatment, and disposal of stormwater runoff assuming normal maintenance procedures are performed as outlined below.

Normal maintenance requirements are as follows:

- * Structures shall be cleared of any debris at all times. Structures shall be inspected for any structural cracking and settlement. Bushes, weeds, grass, etc. shall be removed from the proximity of any discharge spillway. Any cracked concrete or exposed reinforcing steel (rebar) shall be sealed and grouted or formed over with concrete. In the event that any concrete structure is severely damaged, the engineer of record or a qualified professional licensed to practice engineering shall be contacted to assess the damage and make recommendations for repairs.
- * Prior to disposal of any sediment from the pond, the facilities operator shall insure that the excavated material is disposed of in accordance with local, state, and/or federal regulations.
- * For *Stormceptor* inspection and maintenance instructions, refer to “Maintenance” at www.stormceptor.com.

Erosion Control Procedures

In the event there is any major erosion damage or if erosion continually occurs after rainfall events, a thorough inspection shall be performed to identify the cause. The Engineer of record or a qualified professional licensed to practice engineering shall be contacted in order to assess and implement corrective action to both stabilize the area and to eliminate the cause of the erosion problem.

The following recommendations are offered as a guide for re-vegetating any disturbed or eroded areas:

- * If clay soil is exposed - pulverize by spading or roto-tilling. Fill the low or washed out areas with topsoil. The topsoil shall be free of weeds, litter, and rocks and have a high organic matter content. A one-inch layer of topsoil will require approximately 3.1 cubic yards of material per 1,000 square feet of area.
- * Fertilize with 8-8-8 or similar slow-release type fertilizer at the rate of 20 pounds per 1,000 square feet and lime with dolomite at the rate of 46 pounds per 1,000 square feet or as recommended by a soils test or turf specialist. Incorporate into the upper six (6) inches of soil.
- * After final grading, distribute Bahia grass seed uniformly over the area with a drop-type fertilizer spreader or cyclone type broadcast spreader. Cover an area in one direction and then at right angles in the opposite direction, crossing the entire area. Cover the seed lightly one-fourth (1/4) inch deep. Firm the seed into the soil with a roller. Plant 2-3 pounds of Bahia grass per 1,000 square feet. After seeding, apply a mulch of one (1) inch or more of close fitting material, or up to four (4) inches of loose fitting material, so that about 25 percent of the ground is visible. Disk or spade in lightly at or near vertical angle. Starting four to six weeks after the seed has germinated, apply ammonium nitrate at the rate of approximately three (3) pounds per 1,000 square feet every month until grass is well established and embankment slope stabilized.
- * Sod can be used in lieu of seed in order to re-vegetate the areas quicker than seeding. Sod is required in areas where slopes are steeper than 4(H):1(V). The site preparation, liming, and fertilization are the same as for seeding. Lay pieces of sod over the entire area with snug, even joints. Stagger the joints from strip to strip. Roll or tamp sod immediately following placement. Do not overlap the sod. On steep slopes secure sod to surface with wooden pegs or wire staples as necessary to prevent displacement. After major maintenance has been performed, the system shall be routinely maintained as noted above.

Facilities Operation

- * The Facilities Operator shall be responsible for the day-to-day operation, maintenance and management of the Stormwater Management systems, including, but not limited to, the detention areas, drainage conveyance, and filtration system. i.e., all stormwater management systems.
- * The Facilities Operator shall supervise all maintenance activities pertaining to the Stormwater Management System and shall report any instances of flooding, erosion undermining, structural defects, etc. to the Managing Supervisor.
- * The Facilities Operator shall maintain an official log of all maintenance activities, observed drawdown times and all inspection results. The official log shall be available to the Northwest Florida Water Management District Inspector upon request.
- * The Engineer of record or a qualified professional licensed to practice engineering shall be contacted if any unusual, uncharacteristic or potentially damaging drainage problem is observed, or if recommendations and/or improvements to the stormwater management facilities are needed.
- * The Facilities Operator shall provide for the inspection of the stormwater management system at least once every third year after conversion of a permit to the operation phase. A report describing the results of the inspection and certifying that the system is operating as designed and permitted must be filed with the Northwest Florida Water Management District (NFWFMD) within 30 days after the third-year inspection. A report shall also be submitted within 30 days of a system failure or deviation from the permit.