



AMERICAN CIVIL ENGINEERING CO.

207 N. MOSS ROAD, SUITE 211 · WINTER SPRINGS, FLORIDA 32708

Telephone: (407) 327 7700 Fax: (407) 327 0227

September 1, 2016

CUBESMART @ HANCOCK ROAD LAKE COUNTY, FLORIDA

STORMWATER MANAGEMENT REPORT

PREPARED FOR:

CLERMONT STORAGE CENTER, LLC
1041 CROWN PARK CR.
WINDER GARDEN, FL 34786

PREPARED BY:

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PRE VS POST ANALYSIS

PRE VS. POST ANALYSIS

<u>EVENT</u>	<u>Q(PRE)</u>	<u>Q(POST)</u>
25 YR/96 HR	10.61 CFS	3.47 CFS
25 YR/24 HR	5.43 CFS	0.40 CFS
10 YR/24 HR	3.02 CFS	0.11 CFS
MEAN ANNUAL	0.18 CFS	0.00 CFS

$$\begin{aligned}\text{PRO-RATA SHARE} &= (9.33 \text{ AC}/9.99 \text{ AC}) \times 11.36 \text{ CFS} = 10.61 \text{ CFS} \\ &= (9.33 \text{ AC}/9.99 \text{ AC}) \times 5.81 \text{ CFS} = 5.43 \text{ CFS} \\ &= (9.33 \text{ AC}/9.99 \text{ AC}) \times 3.23 \text{ CFS} = 3.02 \text{ CFS} \\ &= (9.33 \text{ AC}/9.99 \text{ AC}) \times 0.19 \text{ CFS} = 0.18 \text{ CFS}\end{aligned}$$

PRE-DEVELOPMENT VOLUME

$$9.99 \text{ AC} \times 2.919'' / (12''/\text{FT}) = 2.43 \text{ AC-FT}$$

$$\text{PRO RATA SHARE } (9.33/9.99) \times 2.43 \text{ AC-FT} = \mathbf{2.27 \text{ AC-FT}}$$

POST DEVELOPMENT VOLUME

$$3.79 \text{ AC} \times 7.204'' / (12''/\text{FT}) = 2.28 \text{ AC-FT}$$

$$4.82 \text{ AC} \times 6.916'' / (12''/\text{FT}) = 2.78 \text{ AC-FT}$$

$$0.72 \text{ AC} \times 9.818'' / (12''/\text{FT}) = \mathbf{0.59 \text{ AC-FT}}$$

$$\text{TOTAL VOLUME GENERATED} = \mathbf{5.65 \text{ AC-FT}}$$

25 YR/96 HR DIFFERENTIAL VOLUME REQUIRED

$$5.65 \text{ AC-FT} - 2.27 \text{ AC-FT} = \mathbf{3.38 \text{ AC-FT}}$$

VOLUME PROVIDED

$$\text{NODE 11} = 1.46 \text{ AC-FT}$$

$$\text{NODE 12} = 1.62 \text{ AC-FT}$$

$$\text{NODE 13} = \mathbf{0.30 \text{ AC-FT}}$$

$$\text{TOTAL} = \mathbf{3.38 \text{ AC-FT}}$$

DRAWDOWN TIME FOR WATER QUALITY VOLUME:

<72 HOURS

DRAWDOWN TIME FOR 25 YR/96 HR VOLUME:

<14 DAYS

PROJECT NARRATIVE

PROJECT NARRATIVE

PROJECT DESCRIPTION:

DEVELOP A 5.74 ACRE VACANT COMMERCIAL PARCEL LOCATED ON THE EAST SIDE OF HANCOCK ROAD APPROXIMATE ONE MILE SOUTH WEST COLONIAL DRIVE (SR 50) IN LAKE COUNTY, FLORIDA. THE DEVELOPMENT WILL CONSIST OF SUBDIVIDING THE PARCEL INTO THREE LOTS WITH OFFSITE DRY RETENTION AREAS THAT WILL BE RELOCATED WHEN THE FUTURE DEVELOPMENT TO THE EAST IS CONSTRUCTED. AND MASTER RETENTION SYSTEM. PHASE I WILL INCLUDE CONSTRUCTING THE LOT 1 IMPROVEMENTS AND EXTEND UTILITIES TO SERVE THE LOTS.

EXISTING CONDITIONS:

THE SITE DRAINS TO THE NORTH.

POSITIVE OUTFALL:

THE SITE RETENTION AREAS WILL OVERFLOW TO THE NORTH TO A LANDLOCKED BASIN.

METHODOLOGY:

THE SYSTEM WILL BE DESIGNED TO CONTAIN TWO DRY RETENTION AREAS AND ONE EXFILTRATION SYSTEM.

DRAWDOWN:

THE DRAWDOWN OF THE RETENTION SYSTEM WILL BE THROUGH NATURAL INFILTRATION.

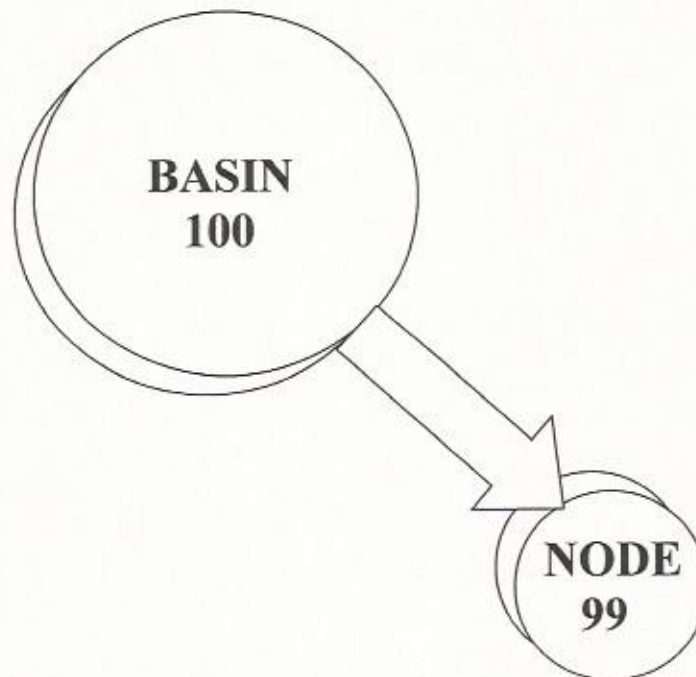
CONCLUSIONS:

THE RETENTION POND IS DESIGNED TO CONFORM TO THE LAKE COUNTY AND SJRWMD PERMIT REQUIREMENTS.

**PRE DEVELOPMENT
BASIN DATA**

PROJECT: **CUBESMART @ HANCOCK ROAD**
LAKE COUNTY, FLORIDA

PRE-DEVELOPED HYD. SCHEMATIC:



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PROJECT: CUBESMART @ HANCOCK ROAD
LAKE COUNTY, FLORIDA

PRE-DEVELOPED ANALYSIS:

HYDROGRAPH DATA:

BASIN NO. 100

TOTAL AREA (AC)	ONSITE = 5.74 AC OFFSITE = 4.25 AC	<u>9.99 ACRES</u>
PERVIOUS AREA (AC)		<u>9.99 ACRES</u>
IMPERVIOUS AREA (AC)		<u>0.00 ACRES</u>
WATER SURFACE AREA (AC)		<u>0.00 ACRE</u>

SCS SOIL TYPE	<u>PASTURE-GOOD</u>
PERVIOUS CN	<u>39</u>
IMPERVIOUS CN	<u>98</u>
WATER SURFACE CN	<u>100</u>
COMPOSITE CN	<u>39</u>

TIME OF CONCENTRATION: 31.8 MINUTES

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PROJECT: CUBESMART @ HANCOCK ROAD
LAKE COUNTY, FLORIDA

PRE-DEVELOPED TIME OF CONCENTRATION COMPUTATIONS:
BASED ON SOIL CONSERVATION SERVICE (SCS) TECHNICAL RELEASE 55 (TR-55)

BASIN NUMBER: 100

1. OVERLAND FLOW: $T_1 = [0.007 (nL)^{0.8}] / (P)^{0.5} (s)^{0.4}$

n = MANNING'S ROUGHNESS 0.40
L = FLOW LENGTH (ft) 300
P = 4.75 INCHES
S = SLOPE OF HYD. GR. (ft/ft) 0.045
T₁ = TRAVEL TIME (hr) 0.51 HOUR

2. CONCENTRATED FLOW: $T_2 = L/V$

L = FLOW LENGTH (ft) 255
V = VELOCITY BASED ON TR55 4.6 FT/S
T₂ = TRAVEL TIME (hr) 0.02 HOUR

3. PIPE FLOW: $T_3 = L/V$

L = FLOW LENGTH (ft)
V = VEL. IN PIPE, ASSUME 4.0 ft/s
T₂ = TRAVEL TIME (hr) 0.0 HOUR

4. TOTAL TIME OF CONCENTRATION:

$$T_c = T_1 + T_2 + T_3$$

$$T_c = 0.51 + 0.02 + 0.0 = \underline{0.53 \text{ HOUR}}$$

31.8 MIN.

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**PRE DEVELOPMENT
HYDROGRAPHS**

CUBESMART @ HANCOCK RD
PRE DEVELOPMENT

BASIN SUMMARY

Basin Name: 100
Group Name: BASE
Node Name: 99
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 7.500
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 31.20
Time Shift (hrs): 0.00
Area (ac): 9.990
Curve Number: 39.000
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 3.233
Runoff Volume (in): 0.955
Runoff Volume (ft3): 34632.444

Basin Name: 100
Group Name: BASE
Node Name: 99
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 8.600
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 31.20
Time Shift (hrs): 0.00
Area (ac): 9.990
Curve Number: 39.000
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 5.808
Runoff Volume (in): 1.418
Runoff Volume (ft3): 51426.305

CUBESMART @ HANCOCK RD
PRE DEVELOPMENT

BASIN SUMMARY

Basin Name: 100
Group Name: BASE
Node Name: 99
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Sjrwnd96
Rainfall Amount (in): 11.500
Storm Duration (hrs): 96.00
Status: Onsite
Time of Conc (min): 31.20
Time Shift (hrs): 0.00
Area (ac): 9.990
Curve Number: 39.000
DCIA (%): 0.000

Time Max (hrs): 60.00
Flow Max (cfs): 11.359
Runoff Volume (in): 2.919
Runoff Volume (ft3): 105843.947

Basin Name: 100
Group Name: BASE
Node Name: 99
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 4.750
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 31.20
Time Shift (hrs): 0.00
Area (ac): 9.990
Curve Number: 39.000
DCIA (%): 0.000

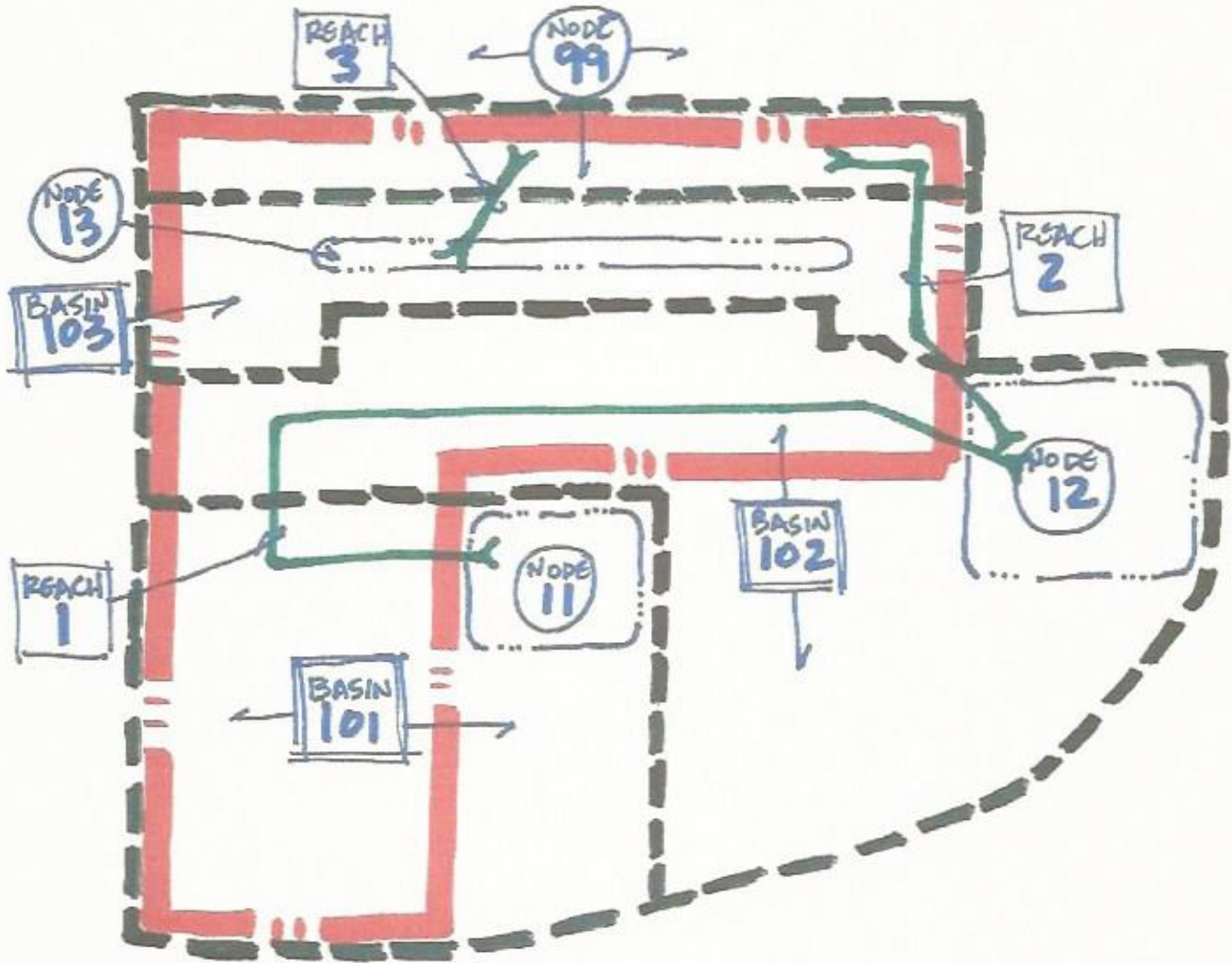
Time Max (hrs): 13.25
Flow Max (cfs): 0.190
Runoff Volume (in): 0.152
Runoff Volume (ft3): 5525.237

**POST DEVELOPMENT
BASIN DATA**

PROJECT: CUBESMART @ HANCOCK ROAD
LAKE COUNTY, FLORIDA

POST DEVELOPMENT ANALYSIS

POST-DEVELOPED HYD. SCHEMATIC:



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PROJECT: CUBESMART @ HANCOCK ROAD
LAKE COUNTY, FLORIDA

POST-DEVELOPMENT ANALYSIS

SPECIFIC DESIGN CRITERIA:

DRY RETENTION AREA

FIRST 1.0" OF RUNOFF OR
1.25" X IMP. AREA + 0.5" (AREA)

WATER QUALITY VOLUME:

$$V_1 = (1.0\text{'}) (3.79 \text{ ACRE}) / (12\text{'}) = \underline{\underline{0.316 \text{ AC-FT}}}$$

$$V_2 = \\ [(1.25\text{'}) (1.82 \text{ ACRE}) + (0.50\text{'}) (3.79 \text{ ACRE})] / (12\text{'}) \\ = \underline{\underline{0.348 \text{ AC-FT}}}$$

REQUIRED WATER QUALITY VOLUME:

$$\underline{\underline{0.348 \text{ AC-FT}}}$$

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PROJECT: **CUBESMART @ HANCOCK ROAD**
LAKE COUNTY, FLORIDA

POST-DEVELOPMENT ANALYSIS

STAGE/STORAGE DATA:

NODE **11**

STAGE (ELEV)	AREA (ACRE)	AVE. AREA (ACRE)	DEPTH (FEET)	INCREM. VOLUME (AC-FT)	ACCUM. VOLUME (AC-FT)
172.00	0.172	-	-	-	-
173.00	0.198	0.185	1.00	0.185	0.185
174.00	0.226	0.212	1.00	0.212	0.397
175.00	0.252	0.239	1.00	0.239	0.636
176.00	0.278	0.265	1.00	0.265	0.901
177.00	0.338	0.308	1.00	0.308	1.209
178.00	0.442	0.390	1.00	0.390	1.599

$$\frac{(174.00 - X)}{(174.00 - 173.00)} = \frac{(0.397 - 0.348)}{(0.397 - 0.185)} \quad X = 173.75 \text{ (MIN)}$$

VOLUME PROVIDED AT OVERFLOW WEIR EL. 177.65 = 1.46 AC-FT

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POST-DEVELOPED ANALYSIS:

HYDROGRAPH DATA:

BASIN NO. 102

TOTAL AREA (AC)	ONSITE = 2.08 AC OFFSITE = 2.72 AC	<u>4.82 ACRES</u>
PERVIOUS AREA (AC)		<u>2.67 ACRES</u>
IMPERVIOUS AREA (AC)		<u>2.15 ACRES</u>
WATER SURFACE AREA (AC)		<u>0.00 ACRE</u>

SCS SOIL TYPE	PASTURE-GOOD	<u>HYD. GRP. A</u>
PERVIOUS CN		<u>39</u>
IMPERVIOUS CN		<u>98</u>
WATER SURFACE CN		<u>100</u>
COMPOSITE CN	$[(2.67)(39) + (2.15)(98)] / [4.82] =$	<u>65.3</u>

TIME OF CONCENTRATION: 15.0 MINUTES

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POST-DEVELOPMENT ANALYSIS

SPECIFIC DESIGN CRITERIA:

DRY RETENTION AREA

FIRST 1.0" OF RUNOFF OR
1.25" X IMP. AREA + 0.5" (AREA)

WATER QUALITY VOLUME:

$$V_1 = (1.0'')(4.82 \text{ ACRE})/(12'' \text{ FT}) = \underline{\underline{0.402 \text{ AC-FT}}}$$

$$V_2 = [(1.25'')(2.15 \text{ ACRE})+(0.50'')(4.82 \text{ ACRE})]/(12'') \\ = \underline{\underline{0.425 \text{ AC-FT}}}$$

REQUIRED WATER QUALITY VOLUME:

$$\underline{\underline{0.425 \text{ AC-FT}}}$$

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LAKE COUNTY, FLORIDA

POST-DEVELOPMENT ANALYSIS

STAGE/STORAGE DATA:

NODE 12

STAGE (ELEV)	AREA (ACRE)	AVE. AREA (ACRE)	DEPTH (FEET)	INCREM. VOLUME (AC-FT)	ACCUM. VOLUME (AC-FT)
169.00	0.336	-	-	-	-
170.00	0.368	0.352	1.00	0.352	0.352
171.00	0.400	0.384	1.00	0.384	0.736
172.00	0.434	0.417	1.00	0.417	1.153
173.00	0.500	0.467	1.00	0.467	1.620
174.00	0.658	0.579	1.00	0.579	2.199
175.00	2.850	1.754	1.00	1.754	3.953

$$\frac{(171.00 - X)}{(171.00 - 170.00)} = \frac{(0.736 - 0.425)}{(0.736 - 0.352)} \quad X = 170.15 \text{ (MIN)}$$

VOLUME PROVIDED AT OVERFLOW WEIR EL. 173.00 = 1.62 AC-FT

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LAKE COUNTY, FLORIDA

POST-DEVELOPED ANALYSIS:

HYDROGRAPH DATA:

BASIN NO. 103

TOTAL AREA (AC)	<u>0.72 ACRES</u>
PERVIOUS AREA (AC)	<u>0.14 ACRES</u>
IMPERVIOUS AREA (AC)	<u>0.58 ACRES</u>
WATER SURFACE AREA (AC)	<u>0.00 ACRE</u>

SCS SOIL TYPE	PASTURE-GOOD	<u>HYD. GRP. A</u>
PERVIOUS CN		<u>39</u>
IMPERVIOUS CN		<u>98</u>
WATER SURFACE CN		<u>100</u>
COMPOSITE CN	$[(0.14)(39) + (0.58)(98)] / [0.72] =$	<u>86.5</u>

TIME OF CONCENTRATION: 10.0 MINUTES

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POST-DEVELOPMENT ANALYSIS

SPECIFIC DESIGN CRITERIA:

DRY RETENTION AREA

FIRST 1.0" OF RUNOFF OR
1.25" X IMP. AREA + 0.5" (AREA)

WATER QUALITY VOLUME:

$$V_1 = (1.0'')(0.72 \text{ ACRE})/(12'' \text{ FT}) = \underline{\underline{0.060 \text{ AC-FT}}}$$

$$V_2 = [(1.25'')(0.58 \text{ ACRE}) + (0.50'')(0.72 \text{ ACRE})]/(12'') \\ = \underline{\underline{0.090 \text{ AC-FT}}}$$

REQUIRED WATER QUALITY VOLUME:

$$\underline{\underline{0.090 \text{ AC-FT}}}$$

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PROJECT: **CUBESMART @ HANCOCK ROAD**
LAKE COUNTY, FLORIDA

POST-DEVELOPMENT ANALYSIS

STAGE/STORAGE DATA:

NODE **13**

STAGE (ELEV)	AREA (ACRE)	AVE. AREA (ACRE)	DEPTH (FEET)	INCREM. VOLUME (AC-FT)	ACCUM. VOLUME (AC-FT)
155.85	0.060	-	-	-	-
156.85	0.060	0.060	1.00	0.060	0.060
157.85	0.060	0.060	1.00	0.060	0.120
158.85	0.060	0.060	1.00	0.060	0.180
159.85	0.060	0.060	1.00	0.060	0.240
160.85	0.060	0.060	1.00	0.060	0.300

$$\frac{(157.85 - X)}{(157.85 - 156.85)} = \frac{(0.120 - 0.090)}{(0.120 - 0.060)} \quad X = 157.35 \text{ (MIN)}$$

VOLUME PROVIDED AT OVERFLOW WEIR EL. 160.85 = 0.30 AC-FT

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CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

INPUT SUMMARY

Basins

Name: 101	Node: 11	Status: Onsite
Group: BASE	Type: Santa Barbara	
Rainfall File: Sjrwm96	Storm Duration(hrs): 96.00	
Rainfall Amount(in): 11.500	Time of Conc(min): 15.00	
Area(ac): 3.790	Time Shift(hrs): 0.00	
Curve Number: 67.30	Time Increment(min): 5.00	
DCIA(%): 0.00	Max Allowable Q(cfs): 99999.000	

Name: 102	Node: 12	Status: Onsite
Group: BASE	Type: Santa Barbara	
Rainfall File: Sjrwm96	Storm Duration(hrs): 96.00	
Rainfall Amount(in): 11.500	Time of Conc(min): 15.00	
Area(ac): 4.820	Time Shift(hrs): 0.00	
Curve Number: 65.30	Time Increment(min): 5.00	
DCIA(%): 0.00	Max Allowable Q(cfs): 999999.000	

Name: 103	Node: 13	Status: Onsite
Group: BASE	Type: Santa Barbara	
Rainfall File: Sjrwm96	Storm Duration(hrs): 96.00	
Rainfall Amount(in): 11.500	Time of Conc(min): 10.00	
Area(ac): 0.720	Time Shift(hrs): 0.00	
Curve Number: 86.50	Time Increment(min): 5.00	
DCIA(%): 0.00	Max Allowable Q(cfs): 999999.000	

Nodes

Name: 11	Base Flow(cfs): 0.000	Init Stage(ft): 172.000
Group: BASE		Warn Stage(ft): 178.000
Type: Stage/Area		

Stage(ft)	Area(ac)
172.000	0.1720
173.000	0.1980
174.000	0.2260

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

INPUT SUMMARY

175.000	0.2520
176.000	0.2780
177.000	0.3380
178.000	0.4420

Name: 12	Base Flow(cfs): 0.000	Init Stage(ft): 168.000
Group: BASE		Warn Stage(ft): 175.000
Type: Stage/Area		

Stage (ft)	Area (ac)
169.000	0.3360
170.000	0.3680
171.000	0.4000
172.000	0.4340
173.000	0.5000
174.000	0.6580
175.000	2.8500

Name: 13	Base Flow(cfs): 0.000	Init Stage(ft): 155.850
Group: BASE		Warn Stage(ft): 163.850
Type: Stage/Area		

Stage (ft)	Area (ac)
155.850	0.0600
156.850	0.0600
157.850	0.0600
158.850	0.0600
159.850	0.0600
160.850	0.0600
161.000	0.0010
163.850	0.0010

Name: 99	Base Flow(cfs): 0.000	Init Stage(ft): 154.930
Group: BASE		Warn Stage(ft): 157.000
Type: Time/Stage		

Time (hrs)	Stage (ft)
0.00	154.930
96.00	157.000

==== Drop Structures =====

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

INPUT SUMMARY

Name:	From Node:	Length(ft):	0.00
Group: BASE	To Node:	Count:	1
UPSTREAM	DOWNSTREAM	Friction Equation:	Average Conve
Geometry: Circular	Circular	Solution Algorithm:	Automatic
Span(in): 0.00	0.00	Flow:	Both
Rise(in): 0.00	0.00	Entrance Loss Coef:	0.000
Invert(ft): 0.000	0.000	Exit Loss Coef:	0.000
Manning's N: 0.000000	0.000000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in): 0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in): 0.000	0.000	Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

----- Weirs -----

Name: 1	From Node: 11
Group: BASE	To Node: 12
Flow: Both	Count: 1
Type: Vertical: Mavis	Geometry: Rectangular
Span(in): 60.00	
Rise(in): 4.00	
Invert(ft): 177.650	
Control Elevation(ft): 177.650	
Bottom Clip(in): 0.000	TABLE
Top Clip(in): 0.000	
Weir Discharge Coef: 3.200	
Orifice Discharge Coef: 0.600	

Name: 2	From Node: 12
Group: BASE	To Node: 99
Flow: Both	Count: 1
Type: Vertical: Mavis	Geometry: Rectangular
Span(in): 12.00	
Rise(in): 9.00	
Invert(ft): 173.000	
Control Elevation(ft): 173.000	
Bottom Clip(in): 0.000	TABLE

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

INPUT SUMMARY

Top Clip(in): 0.000
Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600

Name: 3 From Node: 13
Group: BASE To Node: 99
Flow: Both Count: 1
Type: Vertical: Mavis Geometry: Rectangular

Span(in): 12.00
Rise(in): 42.00
Invert(ft): 160.850
Control Elevation(ft): 160.850

TABLE

Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600

==== Hydrology Simulations =====

Name: POST 10 YR-24 H
Filename: C:\Program Files\Icpr3\examples\2015\15130\POST 10 YR-24 H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 7.50

Time(hrs)	Print Inc(min)
24.000	5.00

Name: POST 25 YR-24 H
Filename: C:\Program Files\Icpr3\examples\2015\15130\POST 25 YR-24 H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 8.60

Time(hrs)	Print Inc(min)
24.000	5.00

Name: POST 25 YR-96 H

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

INPUT SUMMARY

Filename: C:\Program Files\Icpr3\examples\2015\15130\POST 25 YR-96 H.R32

Override Defaults: Yes
Storm Duration(hrs): 96.00
Rainfall File: Sjrwm96
Rainfall Amount(in): 11.50

Time(hrs)	Print Inc(min)
96.000	5.00

Name: POST MEAN ANNUA
Filename: C:\Program Files\Icpr3\examples\2015\15130\POST MEAN ANNUAL.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 4.50

Time(hrs)	Print Inc(min)
24.000	5.00

==== Routing Simulations =====

Name: POST 10 YR-24 H Hydrology Sim: POST 10 YR-24 H
Filename: C:\Program Files\Icpr3\examples\2015\15130\POST 10 YR-24 H.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): 24.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: POST 25 YR-24 H Hydrology Sim: POST 25 YR-24 H
Filename: C:\Program Files\Icpr3\examples\2015\15130\POST 25 YR-24 H.I32

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

INPUT SUMMARY

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): 24.00
Min Calc Time(sec): 0.5000		Max Calc Time(sec): 60.0000
Boundary Stages:		Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000
Group	Run
-----	-----
BASE	Yes

Name: POST 25 YR-96 H Hydrology Sim: POST 25 YR-96 H
Filename: C:\Program Files\Icpr3\examples\2015\15130\POST 25 YR-96 H.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): 96.00
Min Calc Time(sec): 0.5000		Max Calc Time(sec): 60.0000
Boundary Stages:		Boundary Flows:

Time(hrs)	Print Inc(min)
96.000	15.000
Group	Run
-----	-----
BASE	Yes

Name: POST MEAN ANNUA Hydrology Sim: POST MEAN ANNUA
Filename: C:\Program Files\Icpr3\examples\2015\15130\POST MEAN ANNUAL .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): 24.00
Min Calc Time(sec): 0.5000		Max Calc Time(sec): 60.0000

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

INPUT SUMMARY

Boundary Stages:

Boundary Flows:

Time (hrs)	Print Inc (min)
24.000	15.000
Group	Run
BASE	Yes

==== Boundary Conditions =====

**POST DEVELOPMENT
HYDROGRAPHS &
ROUTINGS**

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

ROUTING SUMMARY

Name	Simulation	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Inflow cfs	Max Outflow cfs
11POST	10 YR-24 H	176.908	178.000	0.0041	14482	12.544	0.000
12POST	10 YR-24 H	172.571	175.000	-1.0000	20545	15.008	0.000
13POST	10 YR-24 H	160.957	163.850	0.0050	786	4.381	0.111
99POST	10 YR-24 H	155.447	157.000	0.0004	0	0.111	0.000
11POST	25 YR-24 H	177.684	178.000	0.0042	17822	15.617	0.101
12POST	25 YR-24 H	173.197	175.000	-1.0000	23134	18.848	0.279
13POST	25 YR-24 H	161.100	163.850	0.0050	113	5.131	0.400
99POST	25 YR-24 H	155.448	157.000	0.0004	0	0.400	0.000
11POST	25 YR-96 H	177.790	178.000	0.0046	18301	15.387	0.835
12POST	25 YR-96 H	173.583	175.000	-1.0000	25792	18.897	1.424
13POST	25 YR-96 H	161.905	163.850	0.0155	113	4.013	3.467
99POST	25 YR-96 H	157.000	157.000	0.0004	0	3.467	0.000
11POST	MEAN ANNUA	174.304	178.000	0.0031	10189	4.794	0.000
12POST	MEAN ANNUA	170.500	175.000	-1.0000	16727	5.449	0.000
13POST	MEAN ANNUA	158.896	163.850	0.0050	2614	2.326	0.000
99POST	MEAN ANNUA	155.447	157.000	0.0004	0	0.000	0.000

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

BASIN SUMMARY

Basin Name: 101
Group Name: BASE
Node Name: 11
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 7.500
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 3.790
Curve Number: 67.300
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 12.544
Runoff Volume (in): 3.743
Runoff Volume (ft3): 51490.227

Basin Name: 102
Group Name: BASE
Node Name: 12
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 7.500
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 4.820
Curve Number: 65.300
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 15.008
Runoff Volume (in): 3.526
Runoff Volume (ft3): 61697.707

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

BASIN SUMMARY

Basin Name: 103
Group Name: BASE
Node Name: 13
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 7.500
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 10.00
Time Shift (hrs): 0.00
Area (ac): 0.720
Curve Number: 86.500
DCIA (%): 0.000

Time Max (hrs): 11.92
Flow Max (cfs): 4.383
Runoff Volume (in): 5.906
Runoff Volume (ft3): 15434.838

Basin Name: 101
Group Name: BASE
Node Name: 11
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 8.600
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 3.790
Curve Number: 67.300
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 15.618
Runoff Volume (in): 4.660
Runoff Volume (ft3): 64111.051

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

BASIN SUMMARY

Basin Name: 102
Group Name: BASE
Node Name: 12
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 8.600
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 4.820
Curve Number: 65.300
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 18.848
Runoff Volume (in): 4.421
Runoff Volume (ft3): 77345.177

Basin Name: 103
Group Name: BASE
Node Name: 13
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 8.600
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 10.00
Time Shift (hrs): 0.00
Area (ac): 0.720
Curve Number: 86.500
DCIA (%): 0.000

Time Max (hrs): 11.92
Flow Max (cfs): 5.133
Runoff Volume (in): 6.974
Runoff Volume (ft3): 18228.522

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

BASIN SUMMARY

Basin Name: 101
Group Name: BASE
Node Name: 11
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Sjrwnd96
Rainfall Amount (in): 11.500
Storm Duration (hrs): 96.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 3.790
Curve Number: 67.300
DCIA (%): 0.000

Time Max (hrs): 59.92
Flow Max (cfs): 15.389
Runoff Volume (in): 7.204
Runoff Volume (ft3): 99106.165

Basin Name: 102
Group Name: BASE
Node Name: 12
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Sjrwnd96
Rainfall Amount (in): 11.500
Storm Duration (hrs): 96.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 4.820
Curve Number: 65.300
DCIA (%): 0.000

Time Max (hrs): 59.92
Flow Max (cfs): 18.900
Runoff Volume (in): 6.916
Runoff Volume (ft3): 121007.000

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

BASIN SUMMARY

Basin Name: 103
Group Name: BASE
Node Name: 13
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Sjrwnd96
Rainfall Amount (in): 11.500
Storm Duration (hrs): 96.00
Status: Onsite
Time of Conc (min): 10.00
Time Shift (hrs): 0.00
Area (ac): 0.720
Curve Number: 86.500
DCIA (%): 0.000

Time Max (hrs): 59.92
Flow Max (cfs): 4.013
Runoff Volume (in): 9.818
Runoff Volume (ft3): 25660.920

Basin Name: 101
Group Name: BASE
Node Name: 11
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 4.500
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 3.790
Curve Number: 67.300
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 4.796
Runoff Volume (in): 1.484

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

BASIN SUMMARY

Runoff Volume (ft3): 20419.707

Basin Name: 102
Group Name: BASE
Node Name: 12
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 4.500
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 15.00
Time Shift (hrs): 0.00
Area (ac): 4.820
Curve Number: 65.300
DCIA (%): 0.000

Time Max (hrs): 12.00
Flow Max (cfs): 5.451
Runoff Volume (in): 1.350
Runoff Volume (ft3): 23621.165

Basin Name: 103
Group Name: BASE
Node Name: 13
Basin Type: Santa Barbara

Spec Time Inc (min): 5.00
Comp Time Inc (min): 5.00
Rainfall File: Scsii-24
Rainfall Amount (in): 4.500
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 10.00
Time Shift (hrs): 0.00
Area (ac): 0.720
Curve Number: 86.500
DCIA (%): 0.000

Time Max (hrs): 11.92
Flow Max (cfs): 2.327

CUBESMART @ HANCOCK ROAD
POST DEVELOPMENT

BASIN SUMMARY

Runoff Volume (in): 3.051
Runoff Volume (ft3): 7973.790

DRAWDOWN ANALYSIS

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : CubeSmart @ Hancock - Node 11
MANUAL RUNOFF DATA USED
UNSATURATED ANALYSIS EXCLUDED

**WATER
QUALITY**

Pond Bottom Area	7,492.00 ft ²
Pond Volume between Bottom & DHWL	66,085.00 ft ³
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	165.50 ft
Elevation of Seasonal High Groundwater Table	168.50 ft
Elevation of Starting Water Level	172.00 ft
Elevation of Pond Bottom	172.00 ft
Is there overflow ?	Y
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	15.00 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	30.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

Groundwater Control Features - Y/N

Distance to Edge of Pond
 Elevation of Water Level

	Top	Bottom	Left	Right
N	N	N	N	N
0.00	0.00	0.00	0.00	0.00

Impervious Barrier - Y/N

Elevation of Barrier Bottom

N	N	N	N
0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: CUBESMART @ HANCOCK - NODE 11

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft ³)
Unsat	0.00	0.00
1	1.00	15,159.00
2	3.00	0.00
3	4.00	0.00
4	4.00	0.00
5	4.00	0.00
6	4.00	0.00
7	4.00	0.00
8	24.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00
15	24.00	0.00
16	24.00	0.00
17	24.00	0.00

MODRET

ELEVATION VS OVERFLOW RELATIONSHIP

PROJECT NAME : CubeSmart @ Hancock - Node 11
Structure Type: BROAD CRESTED

Crest Elevation	177.65 ft
Crest Length	1.00 ft
Coefficient of Discharge	3.31
Weir Flow Exponent	1.50
Number of Contractions	1.00
Design High Water Level Elevation	177.79 ft

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart @ Hancock - Node 11

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
00.00 - 0.00	168.500	0.000 *		
			0.00000	
0.00	168.500	0.22328		
			0.22086	
1.00	173.258	0.21844		0.00
			0.21118	
4.00	173.059	0.19852		0.00
			0.18165	
8.00	172.829	0.16592		0.00
			0.15019	
12.00	172.640	0.13718		0.00
			0.12417	
16.00	172.483	0.11426		0.00
			0.10435	
20.00	172.352	0.09703		0.00
			0.08970	
24.00	172.239	0.08479		0.00
			0.05534	
37.66	172.000	0.04715		0.00
			0.03896	
72.00	171.525	0.03435		0.00
			0.02974	
96.00	171.300	0.02683		0.00
			0.02392	
120.00	171.118	0.02194		0.00
			0.01996	
144.00	170.967	0.01846		0.00
			0.01697	
168.00	170.839	0.01592		0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart @ Hancock - Node 11

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
			0.01488	
192.00	170.726	0.01399		0.00
			0.01310	
216.00	170.627	0.01239		0.00
			0.01168	
240.00	170.539	0.01112		0.00
			0.01056	
264.00	170.459			0.00

Maximum Water Elevation: 173.258 feet @ 1.00 hours Recovery @ 37.664 hours
* Time increment when there is no runoff
Maximum Infiltration Rate: 1.672 ft/day

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

**PROJECT NAME : CubeSmart - Node 11 - 25 YR/96 HR
 MANUAL RUNOFF DATA USED
 UNSATURATED ANALYSIS EXCLUDED**

25 YR/96 HR

Pond Bottom Area	7,492.00 ft ²
Pond Volume between Bottom & DHWL	66,085.00 ft ³
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	165.50 ft
Elevation of Seasonal High Groundwater Table	168.50 ft
Elevation of Starting Water Level	172.00 ft
Elevation of Pond Bottom	172.00 ft
Is there overflow ?	Y
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	15.00 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	30.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

Groundwater Control Features - Y/N

Distance to Edge of Pond
 Elevation of Water Level

	Top	Bottom	Left	Right
N	N	N	N	N
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00

Impervious Barrier - Y/N

Elevation of Barrier Bottom

N	N	N	N
0.00	0.00	0.00	0.00

MODRET

ELEVATION VS OVERFLOW RELATIONSHIP

**PROJECT NAME : CubeSmart - Node 11 - 25 YR/96 HR
Structure Type: BROAD CRESTED**

Crest Elevation	177.65 ft
Crest Length	1.00 ft
Coefficient of Discharge	3.31
Weir Flow Exponent	1.50
Number of Contractions	1.00
Design High Water Level Elevation	177.79 ft

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart - Node 11 - 25 YR/96 HR

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
00.00 - 0.00	168.500	0.000 *		
			0.00000	
0.00	168.500	0.43238		
			0.43976	
1.00	177.240	0.44713		0.00
			0.46924	
4.00	176.795	0.44081		0.00
			0.40290	
8.00	176.287	0.36136		0.00
			0.31982	
12.00	175.884	0.28751		0.00
			0.25519	
16.00	175.562	0.23263		0.00
			0.21007	
20.00	175.297	0.19414		0.00
			0.17821	
24.00	175.072	0.16805		0.00
			0.10711	
48.00	174.261	0.09049		0.00
			0.07388	
72.00	173.702	0.06459		0.00
			0.05530	
96.00	173.283	0.04962		0.00
			0.04394	
120.00	172.951	0.04008		0.00
			0.03622	
144.00	172.676	0.03340		0.00
			0.03058	
168.00	172.445	0.02850		0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart - Node 11 - 25 YR/96 HR

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
			0.02642	
192.00	172.245	0.02478		0.00
			0.02314	
216.00	172.070	0.02181		0.00
			0.02048	
226.79	172.000	0.01943		0.00
			0.01838	
264.00	171.776	0.01749		0.00
			0.01660	
288.00	171.650	0.01588		0.00
			0.01515	
312.00	171.535	0.01451		0.00
			0.01387	
336.00	171.430	0.01332		0.00
			0.01277	
360.00	171.333	0.01230		0.00
			0.01182	
384.00	171.244	0.01139		0.00
			0.01097	
408.00	171.161	0.01060		0.00
			0.01024	
432.00	171.083	0.00991		0.00
			0.00958	
456.00	171.011	0.00927		0.00
			0.00896	
480.00	170.943			0.00

Maximum Water Elevation: 177.240 feet @ 1.00 hours

Recovery @ 226.789 hours

* Time increment when there is no runoff

Maximum Infiltration Rate: 3.552 ft/day

Analysis Date: 9/1/2016

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : CubeSmart @ Hancock - Node 12
MANUAL RUNOFF DATA USED
UNSATURATED ANALYSIS EXCLUDED

**WATER
QUALITY**

Pond Bottom Area	14,636.00 ft ²
Pond Volume between Bottom & DHWL	85,196.00 ft ³
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	163.00 ft
Elevation of Seasonal High Groundwater Table	166.00 ft
Elevation of Starting Water Level	169.00 ft
Elevation of Pond Bottom	169.00 ft
Is there overflow ?	Y
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	15.00 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	30.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

Groundwater Control Features - Y/N

Distance to Edge of Pond
 Elevation of Water Level

	Top	Bottom	Left	Right
N	N	N	N	N
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00

Impervious Barrier - Y/N

Elevation of Barrier Bottom

	Top	Bottom	Left	Right
N	N	N	N	N
0.00	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: CUBESMART @ HANCOCK - NODE 12

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft ³)
Unsat	0.00	0.00
1	1.00	18,513.00
2	3.00	0.00
3	4.00	0.00
4	4.00	0.00
5	4.00	0.00
6	4.00	0.00
7	4.00	0.00
8	24.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00
15	24.00	0.00
16	24.00	0.00
17	24.00	0.00

MODRET

ELEVATION VS OVERFLOW RELATIONSHIP

PROJECT NAME : CubeSmart @ Hancock - Node 12
Structure Type: BROAD CRESTED

Crest Elevation	173.00 ft
Crest Length	1.00 ft
Coefficient of Discharge	3.31
Weir Flow Exponent	1.50
Number of Contractions	1.00
Design High Water Level Elevation	173.58 ft

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart @ Hancock - Node 12

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
00.00 - 0.00	166.000	0.000 *		
			0.00000	
0.00	166.000	0.18147		
			0.18026	
1.00	169.960	0.17906		0.00
			0.17543	
4.00	169.858	0.16981		0.00
			0.16232	
8.00	169.733	0.15393		0.00
			0.14555	
12.00	169.620	0.13790		0.00
			0.13025	
16.00	169.519	0.12260		0.00
			0.11496	
20.00	169.430	0.10851		0.00
			0.10206	
24.00	169.351	0.09694		0.00
			0.06616	
48.00	169.044	0.05682		0.00
			0.04748	
52.79	169.000	0.04220		0.00
			0.03692	
96.00	168.652	0.03345		0.00
			0.02998	
120.00	168.513	0.02766		0.00
			0.02535	
144.00	168.395	0.02362		0.00
			0.02190	
168.00	168.293	0.02064		0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart @ Hancock - Node 12

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft³)
			0.01938	
192.00	168.203	0.01826		0.00
			0.01715	
216.00	168.124	0.01636		0.00
			0.01558	
240.00	168.051	0.01489		0.00
			0.01421	
264.00	167.985			0.00

Maximum Water Elevation: 169.960 feet @ 1.00 hours
Recovery @ 52.791 hours
* Time increment when there is no runoff
Maximum Infiltration Rate: 0.837 ft/day

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

**PROJECT NAME : CubeSmart - Node 12 - 25 YR/96 HR
 MANUAL RUNOFF DATA USED
 UNSATURATED ANALYSIS EXCLUDED**

25YR/96HR

Pond Bottom Area	14,636.00 ft ²
Pond Volume between Bottom & DHWL	85,196.00 ft ³
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	163.00 ft
Elevation of Seasonal High Groundwater Table	166.00 ft
Elevation of Starting Water Level	169.00 ft
Elevation of Pond Bottom	169.00 ft
Is there overflow ?	Y
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	15.00 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	30.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

Groundwater Control Features - Y/N

Distance to Edge of Pond
 Elevation of Water Level

	Top	Bottom	Left	Right
	N	N	N	N
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00

Impervious Barrier - Y/N

Elevation of Barrier Bottom

	Top	Bottom	Left	Right
	N	N	N	N
	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: CUBESMART - NODE 12 - 25 YR/96 HR

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft ³)
Unsat	0.00	0.00
1	1.00	70,567.00
2	3.00	0.00
3	4.00	0.00
4	4.00	0.00
5	4.00	0.00
6	4.00	0.00
7	4.00	0.00
8	24.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00
15	24.00	0.00
16	24.00	0.00
17	24.00	0.00
18	24.00	0.00
19	24.00	0.00
20	24.00	0.00
21	24.00	0.00
22	24.00	0.00
23	24.00	0.00
24	24.00	0.00
25	24.00	0.00
26	24.00	0.00
27	24.00	0.00

MODRET

ELEVATION VS OVERFLOW RELATIONSHIP

PROJECT NAME : CubeSmart - Node 12 - 25 YR/96 HR
Structure Type: BROAD CRESTED

Crest Elevation	173.00 ft
Crest Length	1.00 ft
Coefficient of Discharge	3.31
Weir Flow Exponent	1.50
Number of Contractions	1.00
Design High Water Level Elevation	173.58 ft

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart - Node 12 - 25 YR/96 HR

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
00.00 - 0.00	166.000	0.000 *		
			0.00000	
0.00	166.000	0.31489		
			0.31817	
1.00	172.732	0.32145		0.00
			0.33128	
4.00	172.540	0.32585		0.00
			0.31861	
8.00	172.293	0.30308		0.00
			0.28755	
12.00	172.070	0.26964		0.00
			0.25173	
16.00	171.876	0.23533		0.00
			0.21893	
20.00	171.706	0.20519		0.00
			0.19145	
24.00	171.558	0.18126		0.00
			0.12011	
48.00	171.000	0.10245		0.00
			0.08479	
72.00	170.606	0.07483		0.00
			0.06488	
96.00	170.305	0.05861		0.00
			0.05235	
120.00	170.062	0.04807		0.00
			0.04378	
144.00	169.858	0.04071		0.00
			0.03764	
168.00	169.684	0.03523		0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart - Node 12 - 25 YR/96 HR

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
			0.03283	
192.00	169.531	0.03102		0.00
			0.02921	
216.00	169.395	0.02770		0.00
			0.02620	
240.00	169.274	0.02493		0.00
			0.02365	
264.00	169.164	0.02266		0.00
			0.02166	
288.00	169.063	0.02075		0.00
			0.01985	
304.45	169.000	0.01909		0.00
			0.01834	
336.00	168.886	0.01771		0.00
			0.01708	
360.00	168.807	0.01647		0.00
			0.01586	
384.00	168.733	0.01534		0.00
			0.01482	
408.00	168.664	0.01441		0.00
			0.01399	
432.00	168.599	0.01355		0.00
			0.01310	
456.00	168.538	0.01276		0.00
			0.01242	
480.00	168.480	0.01209		0.00
			0.01176	
504.00	168.426			0.00

Maximum Water Elevation: 172.732 feet @ 1.00 hours

Recovery @ 304.452 hours

* Time increment when there is no runoff

Maximum Infiltration Rate: 1.539 ft/day

Analysis Date: 9/1/2016

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : CubeSmart @ Hancock - Node 13
MANUAL RUNOFF DATA USED
UNSATURATED ANALYSIS EXCLUDED

**WATER
QUALITY**

Pond Bottom Area	2,614.00 ft ²
Pond Volume between Bottom & DHWL	13,068.00 ft ³
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	147.00 ft
Elevation of Seasonal High Groundwater Table	150.00 ft
Elevation of Starting Water Level	155.85 ft
Elevation of Pond Bottom	155.85 ft
Is there overflow ?	Y
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	15.00 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	30.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

Groundwater Control Features - Y/N

Distance to Edge of Pond
 Elevation of Water Level

	Top	Bottom	Left	Right
	N	N	N	N
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00

Impervious Barrier - Y/N

Elevation of Barrier Bottom

	Top	Bottom	Left	Right
	N	N	N	N
	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: CUBESMART @ HANCOCK - NODE 13

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft ³)
Unsat	0.00	0.00
1	1.00	3,920.00
2	3.00	0.00
3	4.00	0.00
4	4.00	0.00
5	4.00	0.00
6	4.00	0.00
7	4.00	0.00
8	24.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00
15	24.00	0.00
16	24.00	0.00
17	24.00	0.00

MODRET

ELEVATION VS OVERFLOW RELATIONSHIP

PROJECT NAME : CubeSmart @ Hancock - Node 13
Structure Type: BROAD CRESTED

Crest Elevation	160.85 ft
Crest Length	1.00 ft
Coefficient of Discharge	3.31
Weir Flow Exponent	1.50
Number of Contractions	1.00
Design High Water Level Elevation	161.90 ft

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart @ Hancock - Node 13

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
00.00 - 0.00	150.000	0.000 *		
			0.00000	
0.00	150.000	0.18750		
			0.18750	
1.00	157.352	0.18750		0.00
			0.18750	
4.00	156.415	0.16122		0.00
			0.12617	
6.69	155.850	0.10102		0.00
			0.07587	
12.00	155.068	0.06655		0.00
			0.05722	
16.00	154.686	0.05150		0.00
			0.04579	
20.00	154.381	0.04192		0.00
			0.03804	
24.00	154.128	0.03563		0.00
			0.02114	
48.00	153.282	0.01736		0.00
			0.01358	
72.00	152.739	0.01156		0.00
			0.00955	
96.00	152.357	0.00833		0.00
			0.00712	
120.00	152.072	0.00633		0.00
			0.00555	
144.00	151.850	0.00499		0.00
			0.00444	
168.00	151.673	0.00405		0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart @ Hancock - Node 13

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
			0.00365	
192.00	151.527	0.00334		0.00
			0.00302	
216.00	151.406	0.00280		0.00
			0.00259	
240.00	151.302	0.00241		0.00
			0.00223	
264.00	151.213			0.00

Maximum Water Elevation: 157.352 feet @ 1.00 hours Recovery @ 6.686 hours
 * Time increment when there is no runoff
 Maximum Infiltration Rate: 7.500 ft/day

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

**PROJECT NAME : CubeSmart - Node 13 - 25 YR/96 HR
 MANUAL RUNOFF DATA USED
 UNSATURATED ANALYSIS EXCLUDED**

25YR/96HR

Pond Bottom Area	2,614.00 ft ²
Pond Volume between Bottom & DHWL	13,068.00 ft ³
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	147.00 ft
Elevation of Seasonal High Groundwater Table	150.00 ft
Elevation of Starting Water Level	155.85 ft
Elevation of Pond Bottom	155.85 ft
Is there overflow ?	Y
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	15.00 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	30.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

Groundwater Control Features - Y/N

Distance to Edge of Pond
 Elevation of Water Level

	Top	Bottom	Left	Right
N	N	N	N	N
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00

Impervious Barrier - Y/N

Elevation of Barrier Bottom

	Top	Bottom	Left	Right
N	N	N	N	N
0.00	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: CUBESMART - NODE 13 - 25 YR/96 HR

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft ³)
Unsat	0.00	0.00
1	1.00	13,068.00
2	3.00	0.00
3	4.00	0.00
4	4.00	0.00
5	4.00	0.00
6	4.00	0.00
7	4.00	0.00
8	24.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00
15	24.00	0.00
16	24.00	0.00
17	24.00	0.00
18	24.00	0.00
19	24.00	0.00
20	24.00	0.00
21	24.00	0.00
22	24.00	0.00
23	24.00	0.00
24	24.00	0.00
25	24.00	0.00
26	24.00	0.00

MODRET

ELEVATION VS OVERFLOW RELATIONSHIP

PROJECT NAME : CubeSmart - Node 13 - 25 YR/96 HR
Structure Type: BROAD CRESTED

Crest Elevation	160.85 ft
Crest Length	1.00 ft
Coefficient of Discharge	3.31
Weir Flow Exponent	1.50
Number of Contractions	1.00
Design High Water Level Elevation	161.90 ft

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart - Node 13 - 25 YR/96 HR

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
00.00 - 0.00	150.000	0.000 *		
			0.00000	
0.00	150.000	0.18750		
			0.18750	
1.00	161.423	0.18750		355.35
			0.18750	
4.00	160.485	0.18750		355.35
			0.18750	
8.00	159.235	0.18750		355.35
			0.18750	
12.00	157.985	0.18710		355.35
			0.18670	
16.00	156.741	0.12866		355.35
			0.07062	
20.00	156.270	0.06437		355.35
			0.05813	
24.00	155.883	0.05429		355.35
			0.03129	
24.62	155.850	0.02550		355.35
			0.01970	
72.00	153.843	0.01668		355.35
			0.01365	
96.00	153.297	0.01186		355.35
			0.01007	
120.00	152.894	0.00892		355.35
			0.00777	
144.00	152.583	0.00699		355.35
			0.00620	
168.00	152.335	0.00564		355.35

MODRET

SUMMARY OF RESULTS

PROJECT NAME : CubeSmart - Node 13 - 25 YR/96 HR

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft ³)
			0.00507	
192.00	152.132	0.00465		355.35
			0.00424	
216.00	151.963	0.00392		355.35
			0.00360	
240.00	151.819	0.00333		355.35
			0.00305	
264.00	151.697	0.00286		355.35
			0.00267	
288.00	151.590	0.00251		355.35
			0.00235	
312.00	151.496	0.00222		355.35
			0.00210	
336.00	151.412	0.00198		355.35
			0.00187	
360.00	151.337	0.00177		355.35
			0.00168	
384.00	151.270	0.00160		355.35
			0.00153	
408.00	151.209	0.00145		355.35
			0.00138	
432.00	151.154	0.00132		355.35
			0.00127	
456.00	151.103	0.00121		355.35
			0.00115	
480.00	151.057			355.35

Maximum Water Elevation: 161.423 feet @ 1.00 hours

Recovery @ 24.623 hours

* Time increment when there is no runoff

Maximum Infiltration Rate: 7.500 ft/day

Analysis Date: 9/1/2016

NUTRIENT LOADING ANALYSIS

LAKE APOPKA VOLUME

PRE-DEVELOPMENT VOLUME

$$9.99 \text{ AC} \times 2.919'' / (12''/\text{FT}) = 2.43 \text{ AC-FT}$$

$$\text{PRO RATA SHARE } (9.33/9.99) \times 2.43 \text{ AC-FT} = \mathbf{2.27 \text{ AC-FT}}$$

POST DEVELOPMENT VOLUME

$$3.79 \text{ AC} \times 7.204'' / (12''/\text{FT}) = 2.28 \text{ AC-FT}$$

$$4.82 \text{ AC} \times 6.916'' / (12''/\text{FT}) = 2.78 \text{ AC-FT}$$

$$0.72 \text{ AC} \times 9.818'' / (12''/\text{FT}) = \underline{0.59 \text{ AC-FT}}$$

$$\text{TOTAL VOLUME GENERATED} = \mathbf{5.65 \text{ AC-FT}}$$

25 YR/96 HR DIFFERENTIAL VOLUME REQUIRED

$$5.65 \text{ AC-FT} - 2.27 \text{ AC-FT} = \mathbf{3.38 \text{ AC-FT}}$$

LAKE APOPKA VOLUME PROVIDED

$$\text{NODE 11} = 1.46 \text{ AC-FT}$$

$$\text{NODE 12} = 1.62 \text{ AC-FT}$$

$$\text{NODE 13} = \underline{0.30 \text{ AC-FT}}$$

$$\text{TOTAL} = \mathbf{3.38 \text{ AC-FT}}$$

DRAWDOWN TIME FOR 25 YR/96 HR VOLUME:

<14 DAYS

