

September 28, 2015

Victoria Proehl
City of Grove City
Community Development Manager
4035 Broadway
Grove City, OH 43123



Dear Ms. Proehl:

RE: Hickory Creek Estates – Development Plan
CEC Project 152-743

Civil & Environmental Consultants, Inc. (CEC) has received the review comments prepared by the City of Grove City, dated September 16, 2015, for Hickory Creek Estates – Development Plan, and has prepared the following responses.

Development Department:

1. Williamsburg Court has been modified into a cul-de-sac.
2. Complied.
3. Typo has been corrected.
4. Change has been made regarding dimensional shingles.
5. Item #2 under Open Space has been removed.
6. An 8' pedestrian path was added along Demorest Drive in an adjacent development. Homewood requests to install typical 4' sidewalks.
7. Mailbox details included in resubmittal of application.
8. City Project Number has been added to title block on all sheets.

9. Property dimensions and approximate distance to nearest cross street added to Cover Sheet.
10. Existing zoning of adjacent parcels has been added to relevant plan sheets.
11. All rezoning references removed from Development Plan materials.
12. Design and spacing of driveways provided on Sheet 7: Details

Building Division:

13. Vinyl has been added as an acceptable material for fencing under Development Standards Text.
14. Additional ranch units have been provided in the architectural plans.
15. Noted.
16. Yes. Landscaping plan revised to show contours.
17. Street widths were designed as per city code – through streets are 32' wide and cul-de-sac streets are 28' wide.

Building Division:

18. A note has been added to sheet 6.
19. A note has been added to sheet 6.
20. Details have been revised to show 50%.
21. A note has been added to sheet 6 in the Landscape Buffer detail.
22. A note has been added to sheet 6.
23. JNS callout changed to JUN, the callout for Wichita Juniper.

Service Department:

24. Sanitary is now shown as tying into the existing 18" trunk sewer along Orders Road.
25. Storm sewer has been extended to allow future service for properties south of existing Williamsburg Court.
26. Future utilities are now called out as such.
27. ROW delineation is per the recorded easement to Grove City.
28. Bike path has been extended along the south side of Borders Road.

Engineering, Hockaden and Associates:

29. 16" water main along Orders Road is now called out as Future, By Others.
30. Existing water main north of the project site is now shown with the existing stub. We are also showing the proposed water main connecting to this existing water main.
31. Proposed sanitary sewers have been extended for future offsite connections.
32. Proposed connection to sanitary sewer north of the project site has been removed. Connection is now to CC-17070 existing sanitary sewer.
33. Sanitary sewer from plan CC-17070 is now shown and labeled.
34. Sanitary sewer along Holton Run has been removed.
35. Site grading directs flood routing primarily to ponds.
36. Final grading will demonstrate drainage being kept onsite.
37. 10 feet of depth is now provided in both basins.

38. 1-foot freeboard above the 100-year elevation is now being provided for both basins.
39. 300 foot maximum for curb and gutter inlet spacing complied. Stream setback calculation has been updated.
40. The existing structure has been added to the plans.
41. The exhibit has been included in the drawing folder.
42. Aerator/fountain is now shown in both ponds.
43. Homewood Corporation has not been notified by City Staff that contribution is required. Please have City Staff contact Jim Lipnos to discuss.
44. Existing utility pole symbol added to legend on sheets 3 and 4. Relocation note added.
45. Plat Book and Page Number callouts have been revised.
46. Complied.
47. Complied.
48. Complied.
49. Proposed and existing easements will be shown on the final engineering plans and recorded with the final plat.

Grove City Division of Police:

50. No comment given.

Jackson Township Fire Department:

51. No comment given.

Victoria Proehl
CEC Project 152-743
Page 5
September 28, 2015

Jackson Township Administration:

52. Proposed Williamsburg Court will not be connected with the existing Williamsburg Court. This is based on an e-mail from Mike Lilly with Jackson Township dated September 24, 2015.

53. The project is now called Hickory Creek Estates.

Thank you for your efforts in reviewing Hickory Creek Estates – Development Plan. Should you need any additional information from us, please do not hesitate to contact me at 614-540-6633 or mreeves@cecinc.com.

Sincerely,

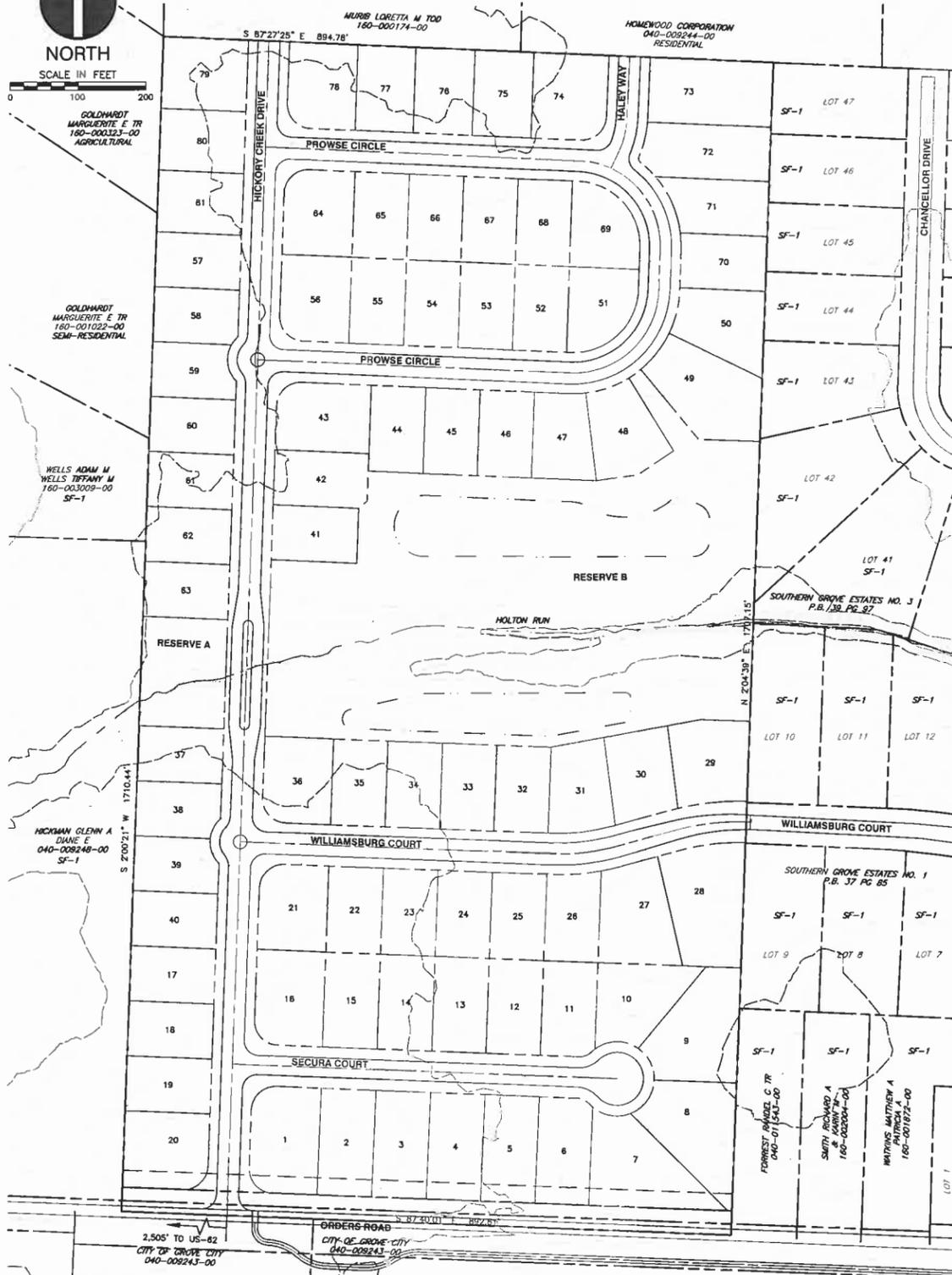
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Michael C. Reeves

Michael C. Reeves, P.E.
Project Manager

Attachment

CITY OF GROVE CITY, OHIO DEVELOPMENT PLAN HICKORY CREEK ESTATES 2015



NARRATIVE

THE HICKORY CREEK ESTATES DEVELOPMENT CONSISTS OF APPROXIMATELY THIRTY-FIVE ACRES WITH EIGHTY-ONE SINGLE FAMILY RESIDENTIAL HOMES LOCATED ON THE NORTH SIDE OF ORDERS ROAD EAST OF HARRISBURG PIKE WITHIN THE CITY OF GROVE CITY, OHIO. THE PROPOSED LOTS ARE A MINIMUM OF TEN THOUSAND SQUARE FEET WITH A MINIMUM LOT WIDTH OF EIGHTY-FEET. THE DEVELOPMENT HAS A CENTRAL OPEN SPACE CONSISTING OF APPROXIMATELY 8.6 ACRES WHICH INCORPORATES TWO RETENTION PONDS AS WELL AS A PEDESTRIAN TRAIL. THE GROSS DENSITY OF THE DEVELOPMENT IS 2.31 LOTS PER ACRE. THE DEVELOPMENT HAS ITS MAIN ACCESS ALONG ORDERS ROAD WITH AN ADDITIONAL ACCESS TO HOLTON RUN TO THE NORTH. IN CREATING THE SECONDARY ACCESS TO THE NORTH A PORTION OF THE HOLTON RUN DEVELOPMENT PLAN IS BEING AMENDED.

SITE STATISTICS

CURRENT ZONING:	PLD-R
TOTAL ACREAGE:	35.25 ACRES ±
NUMBER OF LOTS:	81
MINIMUM LOT SIZE:	10,000 SQ. FT.
FRONTYARD SETBACK:	30'
GROSS DENSITY:	2.31 LOTS/ACRE
OPEN SPACE:	8.69 ACRES
RESERVE "A":	0.48 ACRES
RESERVE "B":	8.23 ACRES
NEAREST CROSS STREET:	
EAST:	US-62 APPROX. 2,505 FT.
WEST:	SOUTHERN GROVE DRIVE APPROX. 331 FT.

NOTES

- HICKORY CREEK ESTATES HOME OWNER'S ASSOCIATION SHALL BE RESPONSIBLE FOR THE MAINTENANCE & OWNERSHIP OF PROPOSED DETENTION BASINS, STREAM CORRIDORS, AND STREET TREES.
- ALL OF HICKORY CREEK ESTATES IS IN THE FLOOD HAZARD ZONE X (OUTSIDE 500-YEAR FLOODPLAIN) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS, MAP NUMBER 36049C0401K, EFFECTIVE DATE JUNE 17, 2008.

OWNER/DEVELOPER
HOMWOOD CORPORATION
 2700 EAST DUBLIN GRANVILLE ROAD, SUITE 300
 COLUMBUS, OHIO 43231
 PHONE: (614) 898-7200
 CONTACT: JIM LIPNOS
 EMAIL: jlipnos@homewoodcorp.com

ENGINEER/SURVEYOR
CIVIL & ENVIRONMENTAL
CONSULTANTS, INC.
 250 OLD WILSON BRIDGE ROAD, SUITE 250
 WORTHINGTON, OHIO 43085
 PHONE: (614) 540-6633
 CONTACT: MIKE REEVES
 EMAIL: mreves@ccecinc.com

CITY ADMINISTRATOR	_____
SERVICE DIRECTOR	_____
REVIEW FOR THE CITY OF GROVE CITY	_____
JACKSON TOWNSHIP FIRE DEPARTMENT	_____

ENGINEER'S CERTIFICATION

THIS IS TO CERTIFY THAT GOOD ENGINEERING PRACTICES HAVE BEEN UTILIZED IN THE DESIGN OF THIS PROJECT AND THAT ALL OF THE MINIMUM STANDARDS AS DELINEATED IN THE GROVE CITY CODIFIED ORDINANCES HAVE BEEN MET, INCLUDING THOSE STANDARDS GREATER THAN MINIMUM WHERE, IN MY OPINION, THEY ARE NEEDED TO PROTECT THE SAFETY OF THE PUBLIC. THESE PREMISES COVERED BY THE PLAN WILL BE SERVED AND MONUMENTS SHOWN ON THE PLAN WILL BE SET IN ACCORDANCE WITH SECTION 1101.051.

REGISTERED ENGINEER NO. 75300 DATE _____



Civil & Environmental Consultants, Inc.
 250 Old Wilson Bridge Road · Suite 250 · Worthington, OH 43085
 Ph: 614.540.6633 · 888.598.6808 · Fax: 614.540.6638
 www.ccecinc.com

HOMWOOD CORPORATION
DEVELOPMENT PLAN
HICKORY CREEK ESTATES
GROVE CITY, OHIO
CITY PROJECT NUMBER: 201509080062

DRAWN BY: KJN CHECKED BY: MCR APPROVED BY: DRAFT
 DATE: OCTOBER 2015 DIV SCALE: 1"=100' PROJECT NO: 152-743

COVER SHEET

C000

SHEET 1 OF 7

DRAWING INDEX		
DRAWING NO.	DESCRIPTION	SHEET TITLE
1	C000	COVER SHEET
2	C100	TREE SURVEY
3	C200	LAYOUT
4	C300	GRADING
5	C700	LANDSCAPE PLAN
6	C701	LANDSCAPE PLAN
7	C800	LANDSCAPE PLAN

REFERENCE

- ALL EXISTING BASE MAP INFORMATION OBTAINED FROM FRANKLIN COUNTY AUDITORS, AUGUST 2015.

INDEX MAP
 SCALE 1"=100'



NORTH

SCALE IN FEET



TREE NUMBER	TREE SPECIES	DBH	CONDITION
1	GREEN ASH MULTI-STEM	57	GOOD
2	GREEN ASH MULTI-STEM	35	FAIR
3	HAWTHORN	7	GOOD
4	HACKBERRY	6	GOOD
5	HACKBERRY	6	GOOD
6	HACKBERRY	6	GOOD
7	HACKBERRY	6	GOOD
8	MULBERRY	6	GOOD
9	WILLOW MULTI-STEM	30	FAIR
10	WILLOW MULTI-STEM	28	FAIR
11	HAWTHORN MULTI-STEM	7	GOOD
12	HONEYLOCUST	6	GOOD
13	HONEYLOCUST MULTI-STEM	7	GOOD
14	HONEYLOCUST MULTI-STEM	27	GOOD
15	HONEYLOCUST MULTI-STEM	13	GOOD
16	HONEYLOCUST MULTI-STEM	11	GOOD
17	HONEYLOCUST MULTI-STEM	37	GOOD
18	HAWTHORN MULTI-STEM	6	GOOD
19	HAWTHORN	7	GOOD
20	WILLOW MULTI-STEM	24	FAIR
21	WILLOW MULTI-STEM	25	FAIR
22	KENTUCKY COFFEETREE	6	GOOD
23	KENTUCKY COFFEETREE	7	GOOD
24	KENTUCKY COFFEETREE	6	GOOD
25	WILLOW	6	FAIR
26	WILLOW	7	FAIR
27	WILLOW MULTI-STEM	16	FAIR
28	WILLOW MULTI-STEM	11	FAIR
29	KENTUCKY COFFEETREE	6	GOOD
30	KENTUCKY COFFEETREE	7	GOOD
31	KENTUCKY COFFEETREE	26	FAIR
32	MULBERRY	9	FAIR
33	MULBERRY	6	FAIR
34	MULBERRY	6	FAIR
35	KENTUCKY COFFEETREE	7	GOOD
36	KENTUCKY COFFEETREE	8	GOOD
37	MULBERRY MULTI-STEM	18	FAIR
38	HAWTHORN MULTI-STEM	9	FAIR
39	SHINGLE OAK	12	GOOD
40	SHINGLE OAK MULTI-STEM	39	FAIR
41	SHINGLE OAK	17	GOOD
42	HONEYLOCUST MULTI-STEM	14	GOOD
43	SHINGLE OAK	17	GOOD
44	SHINGLE OAK MULTI-STEM	21	GOOD
45	PN OAK MULTI-STEM	25	GOOD
46	HONEYLOCUST MULTI-STEM	21	GOOD
47	CHERRY	7	GOOD
48	HONEYLOCUST	9	GOOD
49	HONEYLOCUST	14	GOOD
50	HONEYLOCUST	11	GOOD
51	MULBERRY MULTI-STEM	12	GOOD
52	HONEYLOCUST	17	GOOD
53	MULBERRY MULTI-STEM	16	FAIR
54	MULBERRY MULTI-STEM	18	FAIR
55	SHINGLE OAK	12	GOOD
56	SHAGBARK HICKORY	32	POOR
57	SHINGLE OAK	6	GOOD
58	SHINGLE OAK	12	GOOD
59	HACKBERRY	6	GOOD
60	MULBERRY MULTI-STEM	10	GOOD
61	SHINGLE OAK	16	GOOD
62	SHAGBARK HICKORY	7	FAIR
63	SHAGBARK HICKORY	12	GOOD
64	HONEYLOCUST MULTI-STEM	9	GOOD
65	HONEYLOCUST	15	GOOD
66	HACKBERRY MULTI-STEM	10	GOOD
67	WALNUT	27	GOOD
68	HONEYLOCUST MULTI-STEM	11	GOOD
69	HONEYLOCUST MULTI-STEM	12	GOOD
70	HONEYLOCUST	9	FAIR
71	HAWTHORN MULTI-STEM	12	GOOD
72	SHAGBARK HICKORY	17	GOOD
73	SHAGBARK HICKORY MULTI-STEM	18	GOOD

TREE NUMBER	TREE SPECIES	DBH	CONDITION
74	HONEYLOCUST	9	FAIR
75	HONEYLOCUST	9	GOOD
76	SHAGBARK HICKORY MULTI-STEM	16	GOOD
77	HONEYLOCUST	11	GOOD
78	HONEYLOCUST	13	GOOD
79	WALNUT MULTI-STEM	45	FAIR
80	MULBERRY	7	FAIR
81	HACKBERRY	8	GOOD
82	HONEYLOCUST MULTI-STEM	18	GOOD
83	SHAGBARK HICKORY	14	GOOD
84	SHAGBARK HICKORY	7	GOOD
85	SHAGBARK HICKORY	6	GOOD
86	SHAGBARK HICKORY	9	GOOD
87	SHAGBARK HICKORY MULTI-STEM	19	GOOD
88	HONEYLOCUST	12	GOOD
89	HONEYLOCUST	13	GOOD
90	HONEYLOCUST	11	GOOD
91	HONEYLOCUST	14	GOOD
92	HONEYLOCUST	8	GOOD
93	HONEYLOCUST	6	GOOD
94	HONEYLOCUST	8	GOOD
95	MULBERRY MULTI-STEM	14	GOOD
96	SHAGBARK HICKORY	17	GOOD
97	SHAGBARK HICKORY MULTI-STEM	9	GOOD
98	SHAGBARK HICKORY MULTI-STEM	21	GOOD
99	ELM MULTI-STEM	34	POOR
100	ELM MULTI-STEM	31	POOR
101	SHAGBARK HICKORY	8	GOOD
102	HONEYLOCUST	21	GOOD
103	SHAGBARK HICKORY	8	GOOD
104	SWAMP WHITE OAK	9	GOOD
105	SWAMP WHITE OAK	6	GOOD
106	SWAMP WHITE OAK	7	GOOD
107	SWAMP WHITE OAK	9	GOOD
108	SWAMP WHITE OAK	6	GOOD
109	HAWTHORN	8	FAIR
110	SWAMP WHITE OAK	9	GOOD
111	SHAGBARK HICKORY	10	FAIR
112	GREEN ASH	8	GOOD
113	SHINGLE OAK	12	GOOD
114	SHAGBARK HICKORY	27	GOOD
115	BOXELDER	7	FAIR
116	ELM	6	FAIR
117	SHAGBARK HICKORY	13	GOOD
118	ELM	6	GOOD
119	HACKBERRY	13	GOOD
120	SHAGBARK HICKORY	8	GOOD
121	CHERRY	10	GOOD
122	ELM	7	POOR
123	SHAGBARK HICKORY	12	GOOD
124	SHINGLE OAK	28	GOOD
125	SHINGLE OAK	10	GOOD
126	HACKBERRY	9	POOR
127	SHAGBARK HICKORY	8	FAIR
128	SHAGBARK HICKORY	15	FAIR
129	SHAGBARK HICKORY MULTI-STEM	37	GOOD
130	SHAGBARK HICKORY	10	GOOD
131	HACKBERRY	9	GOOD
132	GREEN ASH	17	POOR
133	SHAGBARK HICKORY	23	GOOD
134	GREEN ASH MULTI-STEM	47	POOR
135	WALNUT	29	POOR
136	HACKBERRY	9	GOOD
137	MULBERRY MULTI-STEM	19	POOR
138	SHAGBARK HICKORY MULTI-STEM	31	FAIR
139	SHINGLE OAK MULTI-STEM	30	GOOD
140	ELM MULTI-STEM	47	GOOD
141	SHAGBARK HICKORY MULTI-STEM	23	GOOD
142	RED OAK MULTI-STEM	36	FAIR
143	SHAGBARK HICKORY MULTI-STEM	21	GOOD
144	SILVER MAPLE	20	GOOD
145	HAWTHORN MULTI-STEM	19	GOOD
146	HAWTHORN MULTI-STEM	17	GOOD

REFERENCE
1 TREE SURVEY PERFORMED BY EMH&T, INC.

P:\2015\152-021-0001\Drawings\152-021-001 Tree Survey.dwg (10/27/2015 - 1:09 PM) - L.R. 1/4/2016 1:09 PM

CEC
Civil & Environmental Consultants, Inc.
250 Old Wilson Bridge Road - Suite 250 - Worthington, OH 43085
Ph: 614.540.5633 - 888.598.6808 - Fax: 614.540.5638
www.cecinc.com

**HOMWOOD CORPORATION
DEVELOPMENT PLAN
HICKORY CREEK ESTATES
GROVE CITY, OHIO
CITY PROJECT NUMBER: 201509080062**

DRAWN BY:	KJN	CHECKED BY:	MCR	APPROVED BY:	DRAFT
DATE:	OCTOBER 2015	DWG SCALE:	1"=100'	PROJECT NO:	152-743

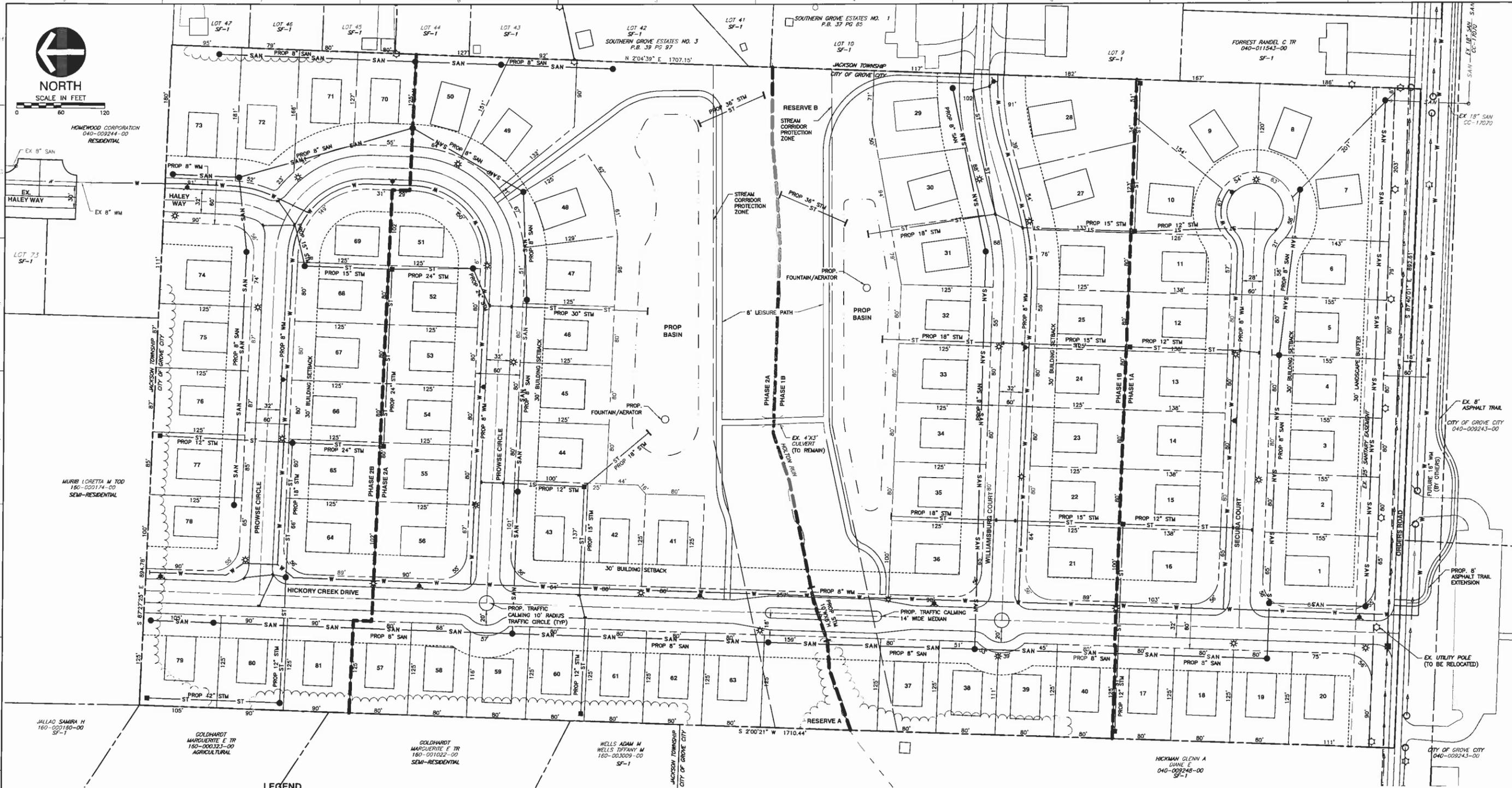
TREE SURVEY

C100
SHEET 2 OF 7



NORTH
SCALE IN FEET

HOMEWOOD CORPORATION
040-009244-00
RESIDENTIAL



LEGEND

	EXISTING PROPERTY LINE		PROPOSED PROPERTY LINE
	EXISTING RIGHT-OF-WAY		PROPOSED RIGHT-OF-WAY
	EXISTING EASEMENT		PROPOSED PROPERTY BOUNDARY
	EXISTING PAVED ROADWAY		PROPOSED BUILDING SETBACK
	EXISTING PAVED DRIVEWAY		PROPOSED SIDEWALK
	EXISTING SANITARY SEWER LINE		PROPOSED STORM SEWER
	EXISTING STORM SEWER LINE		PROPOSED SANITARY SEWER
	EXISTING WATERLINE		PROPOSED WATER MAIN
	EXISTING DITCH		PROPOSED STORM CATCHBASIN
	EXISTING STREAM		PROPOSED STORM MANHOLE
	EXISTING BUILDING		PROPOSED CURB INLET
	EXISTING MANHOLE		PROPOSED HEADWALL
	EXISTING STORM INLET/CATCH BASIN		PROPOSED SANITARY MANHOLE
	EXISTING WATERLINE VALVE		PROPOSED HYDRANT
	EXISTING FIRE HYDRANT		PROPOSED WATER VALVE
	EXISTING UTILITY POLE		PROPOSED LIGHT POLE
	PROPOSED CENTERLINE OF ROAD		FLOOD ROUTING ARROW
	PROPOSED EDGE OF PAVEMENT		

SITE BENCHMARKS

- REFERENCE DATUM: 1929
- BM#1 ELEVATION 835.23
RRS IN WEST SIDE OF UTILITY POLE ON EAST SIDE OF HAUGHIN RD IN FRONT OF RESIDENCE #4880.
 - BM#2 ELEVATION 847.13
RRS IN SE ROOT OF 18" TREE, 350'± SOUTH OF NW PROPERTY CORNER.
 - BM#3 ELEVATION 835.00
TOPO IRON PIN #25 (678601.9204, 1803917.6631).
 - BM#4 ELEVATION 852.77
RP IN CM AT INTERSECTION OF ORDERS RD AND SOUTHERN GROVE DR 26.2 FT NORTH OF CENTERLINE OF ORDERS RD, 24.3 FT WEST OF CENTERLINE OF SOUTHERN GROVE DR, 4.2 FT SOUTHWEST OF CENTER OF UTILITY POLE NO. 195A228, 2.75 FT SOUTHWEST OF A WP.
 - BM#5 ELEVATION 868.63
RP IN CM AT BAO RAILROAD CROSSING ON REINCH RD, 0.12 MI WEST OF US HIGHWAY 62, 27.8 FT EAST OF RAILROAD TRACKS, 15.3 FT SOUTH OF CENTERLINE OF REINCH RD, 5.8 FT WEST OF UTILITY POLE, 2 FT NORTH OF A WP, FLUSH WITH GROUND SURFACE.

NOTES

- RESERVES 'A' & 'B' TO BE OWNED AND MAINTAINED BY THE HICKORY CREEK ESTATES HOME OWNERS ASSOCIATION FOR OPEN SPACE/RETENTION. SAID RESERVES SHALL BE OWNED AND MAINTAINED BY THE DEVELOPER UNTIL SUCH TIME AS SAID ASSOCIATION IS ESTABLISHED.
- NO VEHICULAR ACCESS UNTIL SUCH TIME AS THE STREET RIGHT OF WAY IS EXTENDED OR PLATTED.

REFERENCE

- ALL EXISTING BASE MAP INFORMATION OBTAINED FROM FRANKLIN COUNTY AUDITORS, AUGUST 2015.



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**HOMEWOOD CORPORATION
DEVELOPMENT PLAN
HICKORY CREEK ESTATES
GROVE CITY, OHIO
CITY PROJECT NUMBER: 201509080062**

DRAWN BY: KJN | CHECKED BY: MCR | APPROVED BY: [Signature] | DRAFT
DATE: OCTOBER 2015 (DWG SCALE) | 1"=60' | PROJECT NO: 152-743

LAYOUT

C200
SHEET 3 OF 7



NORTH
SCALE IN FEET
0 50 120

HOMWOOD CORPORATION
040-009244-00

EX. 8" HW
HALEY WAY

LOT 73

MURRI LORETTA M TOD
160-000174-00

JALLAO SAMIRA H
160-000160-00

GOLDHARDT
MARGUERITE E TR
160-000323-00

GOLDHARDT
MARGUERITE E TR
160-001022-00

WELLS ADAM M
WELLS TIFFANY M
160-023009-00

JACKSON TOWNSHIP
CITY OF GROVE CITY

HICKMAN GLENN A
DANE E
040-009248-00

EX. 8" ASPHALT TRAIL
CITY OF GROVE CITY
040-009243-00

PROP. 8" ASPHALT TRAIL EXTENSION

CITY OF GROVE CITY
040-009243-00

LEGEND

	EXISTING PROPERTY LINE		PROPOSED PROPERTY LINE
	EXISTING RIGHT-OF-WAY		PROPOSED RIGHT-OF-WAY
	EXISTING EASEMENT		PROPOSED PROPERTY BOUNDARY
	EXISTING PAVED ROADWAY		PROPOSED BUILDING SETBACK
	EXISTING PAVED DRIVEWAY		PROPOSED SIDEWALK
	EXISTING SANITARY SEWER LINE		PROPOSED STORM SEWER
	EXISTING STORM SEWER LINE		PROPOSED SANITARY SEWER
	EXISTING WATERLINE		PROPOSED WATER MAIN
	EXISTING DITCH		PROPOSED STORM CATCHBASIN
	EXISTING STREAM		PROPOSED STORM MANHOLE
	EXISTING BUILDING		PROPOSED CURB INLET
	EXISTING MANHOLE		PROPOSED HEADWALL
	EXISTING STORM INLET/CATCH BASIN		PROPOSED SANITARY MANHOLE
	EXISTING WATERLINE VALVE		PROPOSED HYDRANT
	EXISTING FIRE HYDRANT		PROPOSED WATER VALVE
	EXISTING UTILITY POLE		PROPOSED LIGHT POLE
	PROPOSED CENTERLINE OF ROAD		FLOOD ROUTING ARROW
	PROPOSED EDGE OF PAVEMENT		

REFERENCE
1. ALL EXISTING BASE MAP INFORMATION OBTAINED FROM FRANKLIN COUNTY AUDITORS, AUGUST 2015.

NOTES

FINAL GRADING FOR THIS SITE WILL BE SHOWN ON FINAL ENGINEERING PLANS. ALL FLOOD ROUTING WILL BE DIRECTED TOWARDS BASINS.
PROPOSED BASINS WILL BE BUILT ACCORDING TO THE CURRENT CITY OF GROVE CITY POND DESIGN STANDARDS.
FILL WILL BE PLACED ACCORDING TO THE GROVE CITY FLOOD DAMAGE PREVENTION CODE AND FEMA.
AT THE TIME OF SUBMITTAL, THE LAND HEREBY BEING NOTED AS THE WOODS IS IN THE FLOOD HAZARD ZONE "X" (OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) UNLESS NOTED ON THE PLAN AS 100-YEAR FLOOD PLAIN WHICH IS IN THE FLOOD HAZARD ZONE "AE" AS DESIGNATED AND DELINEATED ON THE FEMA FLOOD INSURANCE MAP FOR FRANKLIN COUNTY, OHIO, AND UNINCORPORATED AND INCORPORATED AREAS, MAP NUMBER 39049C401K WITH EFFECTIVE DATE OF JUNE 17, 2008.
STREAM SETBACK CALCULATION
SW=147(DA)^{0.38}
DA=1.29 ACRES
SW=182'



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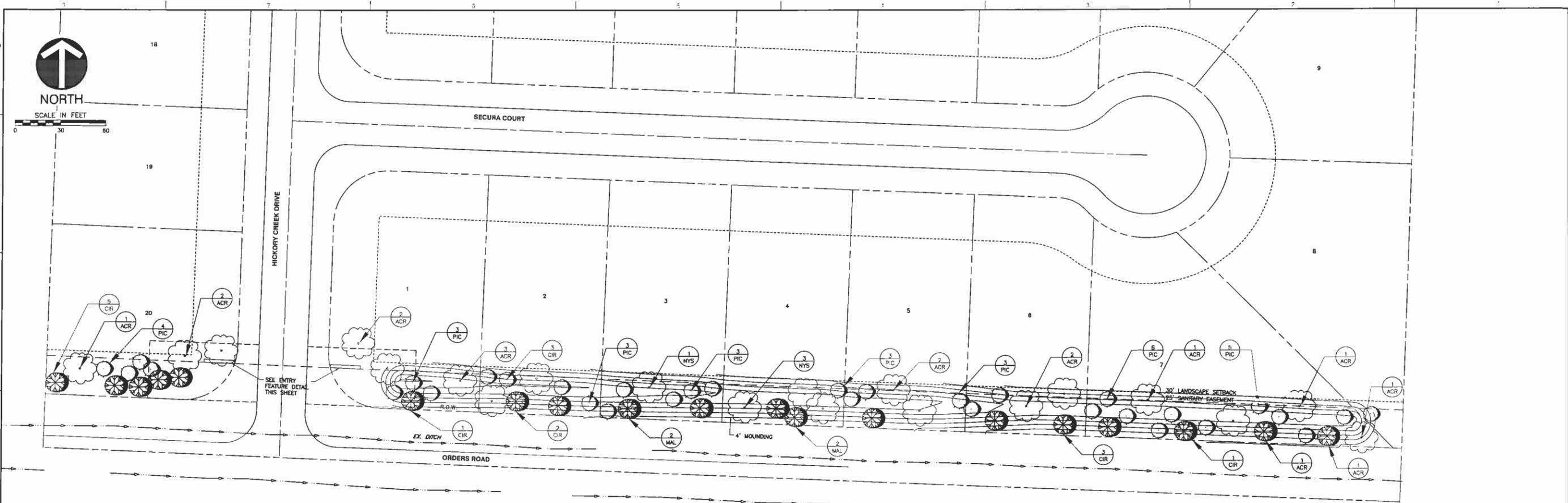
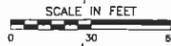
**HOMWOOD CORPORATION
DEVELOPMENT PLAN
HICKORY CREEK ESTATES
GROVE CITY, OHIO
CITY PROJECT NUMBER: 201509080062**

DRAWN BY: KUN CHECKED BY: MCH APPROVED BY: DRAFT
DATE: OCTOBER 2015 (DWG SCALE) 1"=60' PROJECT NO: 152-743

GRADING **C300**
SHEET 4 OF 7



NORTH



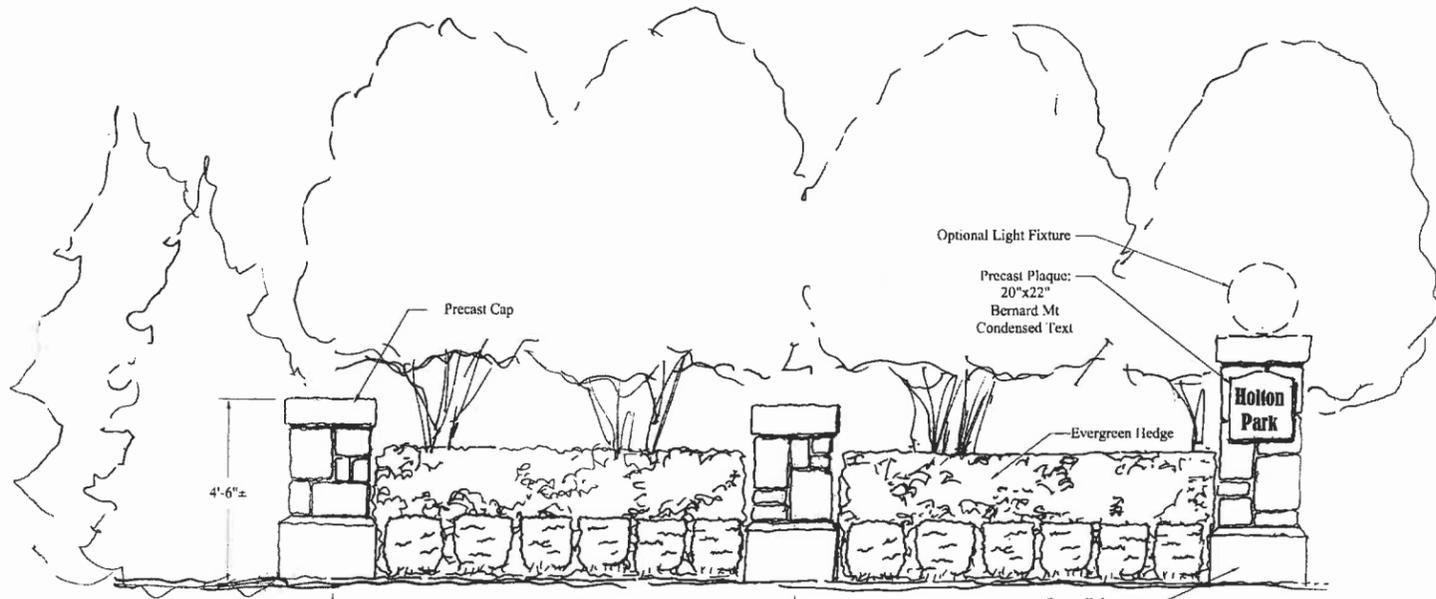
NOTES:

- 1. CITY'S URBAN FORESTER TO INSTALL STREET TREES EXCEPT AS DESIGNATED.
- 2. REFER TO SHEET 7 FOR PLANTING DETAILS.
- 3. REFER TO SHEET 7 FOR PLANT LIST.

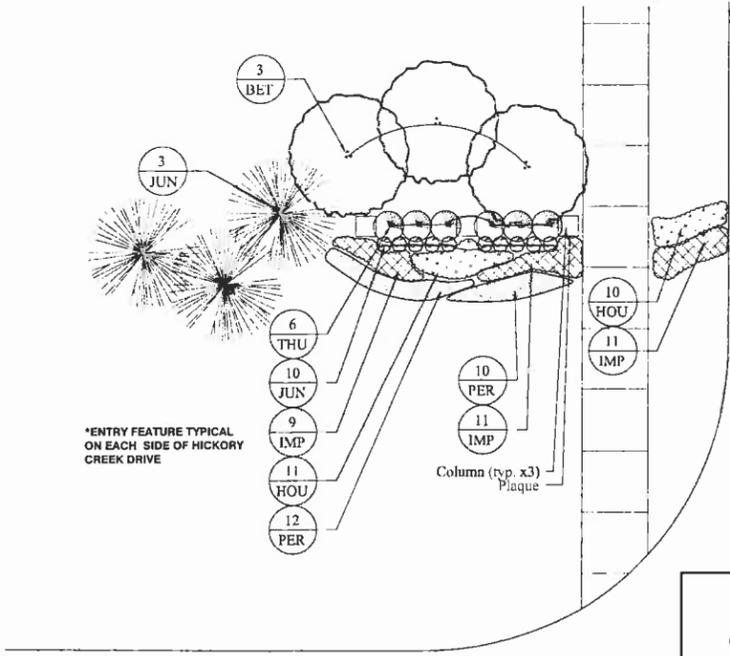
LANDSCAPING NOTES:

- 1. ALL EXISTING ASH TREES AND POOR QUALITY TREES SHALL BE REMOVED DURING THE CONSTRUCTION PROCESS AND NOT PROTECTED.
- 2. ALL SERVICE STRUCTURES SHALL BE SCREENED PER 1136.08.
- 3. PROPERTY FRONTING ORDERS ROAD: TREES MUST BE PLANTED ON FOUR FOOT (4') EARTHEN MOUND.
- 4. SINGLE FAMILY LOTS SHALL BE SODDED TO COVER THE FRONT YARD, SIDE YARDS AND TEN FEET OF REAR YARD. SEED OR SOD MAY BE USED TO FINISH THE BACK YARDS. SOD SHALL BE LAID SOLID.

LANDSCAPE BUFFER



**ENTRY FEATURE:
TYPICAL PER EACH SIDE**
NOT TO SCALE



ENTRY FEATURE DETAIL
NOT TO SCALE

CEC
Civil & Environmental Consultants, Inc.
250 Old Wilson Bridge Road - Suite 250 - Worthington, OH 43085
Ph: 614.540.6633 · 888.598.6808 · Fax: 614.540.6638
www.cecinc.com

**HOMWOOD CORPORATION
DEVELOPMENT PLAN
HICKORY CREEK ESTATES
GROVE CITY, OHIO
CITY PROJECT NUMBER: 201509080062**

DRAWN BY:	KJN	CHECKED BY:	MCR	APPROVED BY:	DRAFT
DATE:	OCTOBER 2015	DWG SCALE:	1"=30'	PROJECT NO.:	152-743

LANDSCAPE PLAN

C701
SHEET 6 OF 7

P:\2015\152-743-C01-C01.dwg (C:\Users\kjohnson\AppData\Local\Temp\152-743-C01.dwg) - 10/14/2015 11:12 AM

PLANT LIST

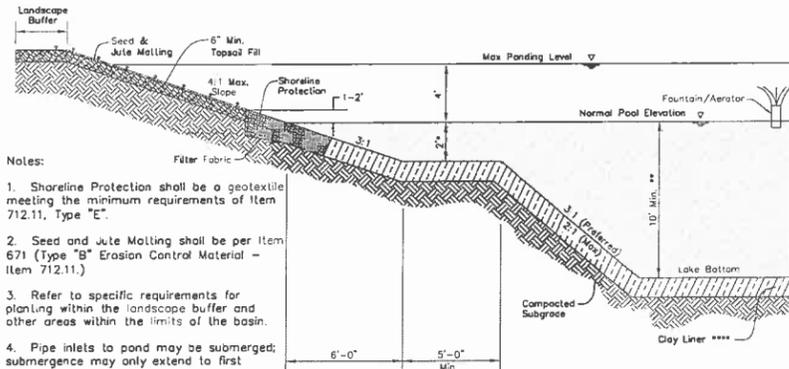
(CONTRACTOR IS RESPONSIBLE FOR ALL PLANT QUANTITIES SHOWN ON PLAN)

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	COND.	REMARKS
DECIDUOUS TREES						
13	ACR	Acer platanoides	Norway Maple	2" cal.	B&B	match form
29	BET	Carpinus betulus	European Hornbeam	2" cal.	B&B	match form
3	COC	Corylus colurna	Turkish Filbert	2" cal.	B&B	match form
3	NYS	Nyssa sylvatica	Blackgum	2" cal.	B&B	match form
4	QIV	Quercus imbricaria	Shingle Oak	2" cal.	B&B	match form
6	LIL	Liriodendron tulipifera	Yellow Pencil Pine	2" cal.	B&B	match form
13	ULM	Ulmus parvifolia	Laebark Elm	2" cal.	B&B	match form
ORNAMENTAL TREES						
21	AME	Amelanchier sp.	Serviceberry	2" cal.	B&B	match form
15	CR	Cercis canadensis	Redbud	2" cal.	B&B	match form
14	MAL	Malus 'Prainfire'	Prainfire Crabapple	2" cal.	B&B	match form
EVERGREEN TREES						
23	PIC	Picea glauca	White Spruce	2" cal.	B&B	match form
11	JUN	Juniperus scopulorum 'Wichita Blue'	Wichita Blue Juniper	2" cal.	B&B	match form
SHRUBS						
52	BER	Berberis thunbergii 'Nana'	Crimson Pygmy Barberry	24"		match form
89	COR	Cornus sericea	Red Twig Dogwood	24"		match form
71	JUN	Juniperus chinensis 'Seagreen'	Seagreen Juniper	24"		match form
14	MYR	Myrica pennsylvanica	Northern Bayberry	24"		match form
15	THU	Thuja occidentalis	Woodward's Globe Arborvitae	24"		match form
17	VIB	Viburnum x carlesii	Korean Spice Viburnum	24"		match form
ORNAMENTAL GRASS						
95	MIS	Miscanthus 'gracillimus'	Maiden Grass	24"		match form
44	PEN	Pennisetum c. 'Hamelin'	Dwarf Fountain Grass	24"		match form
55	IMP	Imperata cylindrica 'Red Baron'	Japanese Blood Grass	24"		match form
GROUND COVER						
120	HOU	Houttuynia cordata 'Chameleon'	Chameleon Houttuynia			
PERENNIALS						
44	PER	Perennials				
		Astilbe 'Red Sentinel'	False Spirea			
		Coreopsis v. 'Rosea'	Pink Tickseed			
		Echinacea purpurea	Purple Coneflower			
		Liatris spicata	Spike Gayleather			

THE OWNER/DEVELOPER RESERVES THE RIGHT TO SUBSTITUTE ANY PLANT MATERIAL DUE TO AVAILABILITY OF SIMILAR SIZE, SHAPE AND CHARACTER.

NOTES:

- CITY'S URBAN FORESTER TO INSTALL STREET TREES EXCEPT AS DESIGNATED.
- SEE PLANTING DETAILS, THIS SHEET.

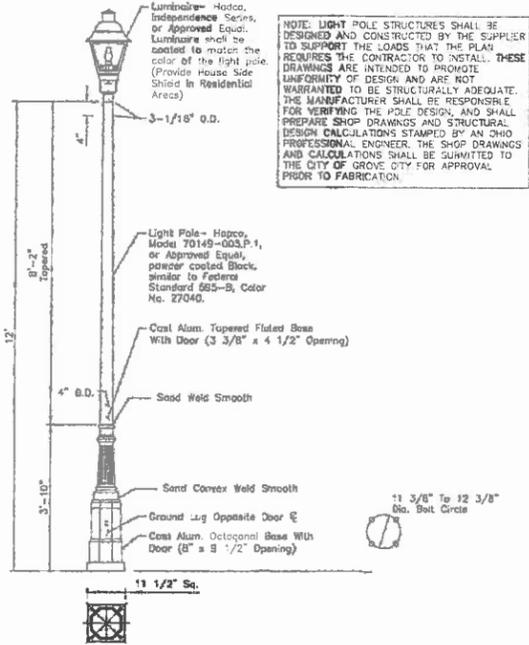


Notes:

- Shoreline Protection shall be a geotextile meeting the minimum requirements of Item 712.11, Type "E".
- Seed and Jute Matting shall be per Item 671 (Type "B" Erosion Control Material - Item 712.11.)
- Refer to specific requirements for planting within the landscape buffer and other areas within the limits of the basin.
- Pipe inlets to pond may be submerged; submergence may only extend to first structure.
- Exposed Headwalls and other stormwater system appurtenances must be stone veneered.

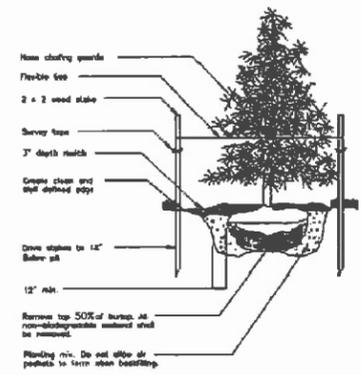
[All item references are with respect to the State of Ohio CMS, Dated 1/1/02]

STANDARD POND GRADING SECTION
NOT TO SCALE

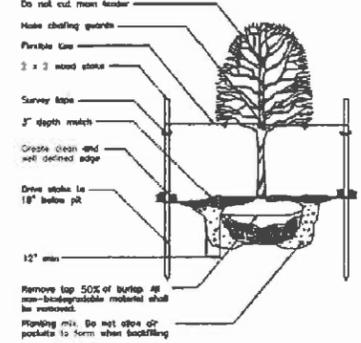


POST TOP LIGHT POLE WITH LANTERN STYLE LUMINAIRE (C-GC-95B)
NOT TO SCALE

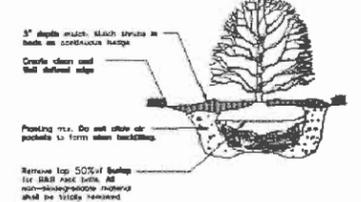
PLANTING DETAILS



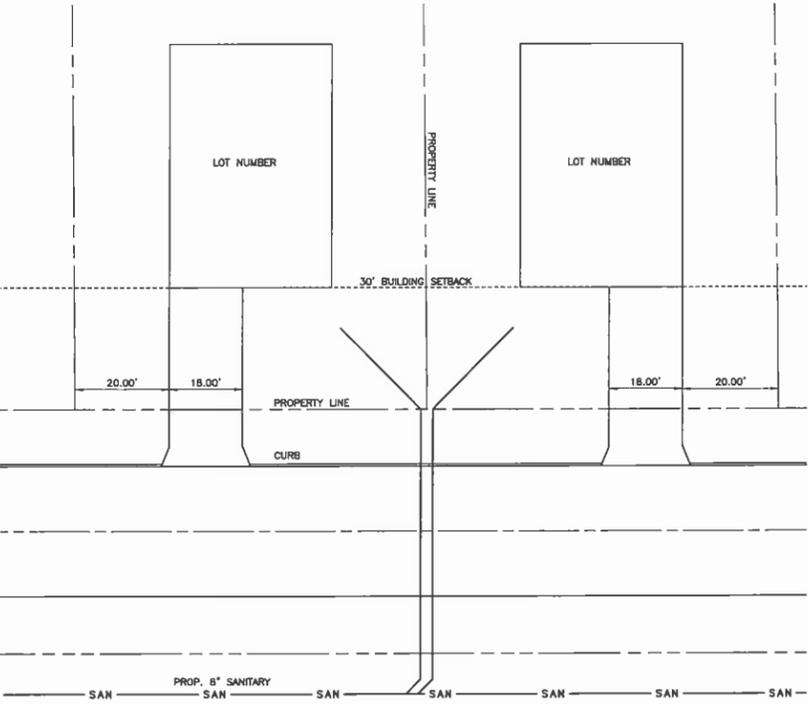
EVERGREEN TREE
NOT TO SCALE



DECIDUOUS TREE
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE



TYPICAL DRIVEWAY LAYOUT DETAIL
NOT TO SCALE

A:\151512-001-0001\Drawings\151512-001-0001.dwg (151512-001-0001.dwg) - 1/1/2018 11:12 AM

REFERENCE

- POND GRADING DETAIL IS FROM CITY OF GROVE CITY "PUBLIC AND PRIVATE POND DESIGN STANDARD".
- POST TOP LIGHT POLE DETAIL (C-GC-95B) IS FROM CITY OF GROVE CITY STANDARD DETAILS.


Civil & Environmental Consultants, Inc.
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HOMWOOD CORPORATION
DEVELOPMENT PLAN
HICKORY CREEK ESTATES
GROVE CITY, OHIO
CITY PROJECT NUMBER: 201509080062

DRAWN BY: KUN	CHECKED BY: MCR	APPROVED BY:	DRAFT
DATE: OCTOBER 2015	DWG SCALE:	AS NOTED	PROJECT NO: 152-743

DETAILS

C800
 SHEET 7 OF 7



CAPITAL LIGHTING

901 POLARIS PARKWAY COLUMBUS, OHIO 43240

PHONE (614) 841-1200 FAX (614) 841-0826

CONSTRUCTION SERVICES
ATTN: JIM STEINBACH
HICKORY CREEK ESTATES MAILBOX ASSEMBLY
BLACK CAST ALUMINUM MAILBOX

September 25, 2015

Qty	Catalog No.	Description	Price Each	Total
1	HN XM62NSA003BLKN	CAST ALUMINUM BOX W/ ADDRESS SIGN & DECORATIVE BASE	425.00	425.00
1	INSTALLATION		40.00	40.00
			Subtotal	465.00
			Tax 7.50%	34.88
			Total	499.88

PLEASE NOTE: THE MAILBOX DOES INCLUDE WHITE NUMERALS PLACED ON BOTH SIDES OF ADDRESS SIGN



RECEIVED

SEP 28 2015

GC PLANNING COMMISSION

APPENDIX B

POST-DEVELOPED FLOWS



PRELIMINARY STORMWATER MANAGEMENT SUMMARY

**CITY OF GROVE CITY
FRANKLIN COUNTY, OHIO**

Prepared for:

HOMEWOOD CORPORATION

Prepared by:

**CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
COLUMBUS, OHIO**

**HOLTON PARK
CEC Project 152-743**

SEPTEMBER 2015



Civil & Environmental Consultants, Inc.

TABLE OF CONTENTS

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1.0 BACKGROUND	1
2.0 PRE-DEVELOPED CONDITIONS	2
3.0 POST-DEVELOPED SUMMARY	3
4.0 CONCLUSION.....	4

APPENDICES

Appendix A – Pre-Developed Flows & Pre-Developed Tributary Area Map

Appendix B – Post-Developed Flows

1.0 BACKGROUND

Holton Park is located on the north side of Orders Road in the City of Grove City, Franklin County, Ohio. The site is bordered on the east by Southern Grove Estates and the north and south by agricultural land. The entire site drains to Holton Run which flows through the site from west to east and separates the project site into north and south drainage areas.

The proposed Holton Park development consists of 81 single-family homes, utilities, streets and associated storm water management facilities on 35.25 acres. Two (2) stormwater management basins will be designed onsite to control runoff from the proposed development. The design of the basins will meet current requirements set forth by the City of Grove City (City) and the Ohio EPA General Permit OHC00004.

2.0 PRE-DEVELOPED CONDITIONS

Holton Park is naturally split into north and south drainage areas by Hoton Run which runs from west to east through the middle of the site. Each subarea drains directly to Holton Run. The existing site is undeveloped with mostly Type C soils and gradual slopes towards the creek. The point of analysis for the pre-developed conditions will be taken where Holton Run crosses at the east property line of the project site.

Pre-Developed North Watershed Characteristics

A= 17.78 Acres

CN= 78

Tc- 36.7 minutes

Pre-Developed South Watershed Characteristics

A= 16.54 Acres

CN= 78

Tc- 24.1 minutes

Refer to Appendix A for the pre-developed flows and tributary area map.

3.0 POST-DEVELOPED SUMMARY

The post-developed detention was based on the requirements of the City. The critical storm method was used to determine the allowable post-developed detained peak rate of runoff for the 1-year thru 100-year storm event: the critical year storm will be detained to the existing 1-year runoff release rate and storms less frequent than the critical year storm will be detained to the existing release rate for the corresponding storm event. The north and south subareas will each have extended detention basins constructed for stormwater quantity and quality treatment. The development consists of ¼ acre lots corresponding to a runoff curve number of 83 for Type C soils. Refer to Appendix B for the critical storm calculations and allowable post-developed peak flow rates.

Post-Developed North Watershed Characteristics

A= 17.78 Acres

CN= 83 (1/4 acre lots, Type C soil)

Tc- 15.2 minutes

Post-Developed South Watershed Characteristics

A= 16.54 Acres

CN= 83 (1/4 acre lots, Type C soil)

Tc- 15.2 minutes

The proposed basins will be designed using HydroCAD software to accomplish the detention and water quality requirements for the development. The 5-year storm was calculated as the critical storm. An SCS Type II 24-hour storm will be modeled using rainfall depths obtained from the City. The allowable and actual releases for the basins will be provided during final engineering. Refer to Appendix B for the post-developed hydrographs.

Table 1: Allowable Site Discharge Summary

Storm Event (year)	Q _{existing} (cfs)	Allowable Q (cfs)	Q _{actual} (cfs)
1	14.83	14.83	2.45
2	22.79	14.83	4.38
5	35.30	14.83	7.71
10	46.29	46.29	13.96
25	62.45	62.45	26.46
50	76.32	76.32	42.71
100	91.36	91.36	60.15

4.0 CONCLUSION

CEC has designed the proposed basins to meet the requirements of the City and the Ohio EPA General Permit OHC00004 for the proposed Holton Park development. For each storm event, CEC is proposing a release rate that is less than or equal to the calculated allowable release rate. The north and south basins will contain approximately 2.68 acre-feet and 1.88 acre-feet of storage for water quantity and quality control. The proposed storm water system should not pose a threat to property and public safety downstream of the proposed development.

APPENDIX A

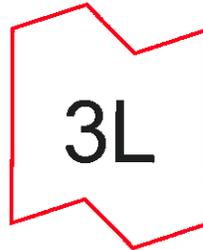
**PRE-DEVELOPED FLOWS & PRE-DEVELOPED
TRIBUTARY AREA MAP**



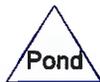
North Existing



South Existing



Holton Run Existing



152-743 Preliminary SWM

Prepared by CEC, Inc.

HydroCAD® 10.00-13 s/n 03447 © 2014 HydroCAD Software Solutions LLC

Type II 24-hr 1-Year Rainfall=2.20"

Printed 9/25/2015

Page 2

Summary for Subcatchment 1S: North Existing

Runoff = 7.12 cfs @ 12.36 hrs, Volume= 0.890 af, Depth= 0.60"

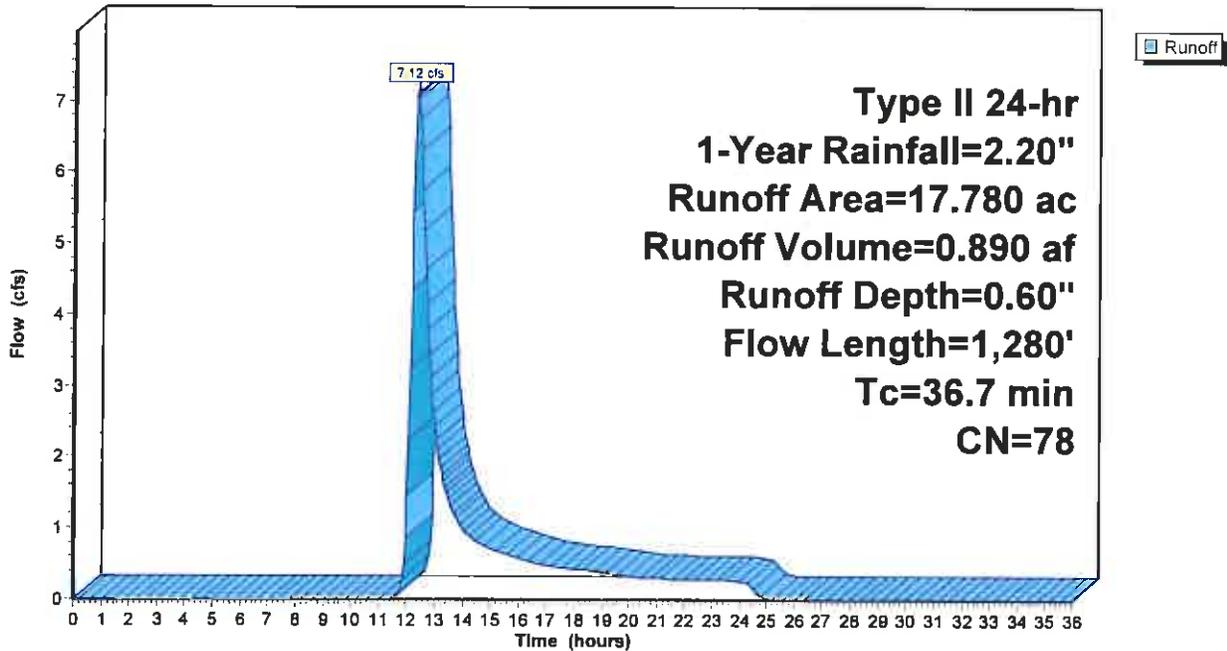
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (ac)	CN	Description
* 17.780	78	Pasture/grassland/range, Fair, HSG C
17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		Sheet Flow, Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing

Hydrograph



152-743 Preliminary SWM

Prepared by CEC, Inc.

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Type II 24-hr 1-Year Rainfall=2.20"

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Page 3

Summary for Subcatchment 2S: South Existing

Runoff = 8.87 cfs @ 12.20 hrs, Volume= 0.828 af, Depth= 0.60"

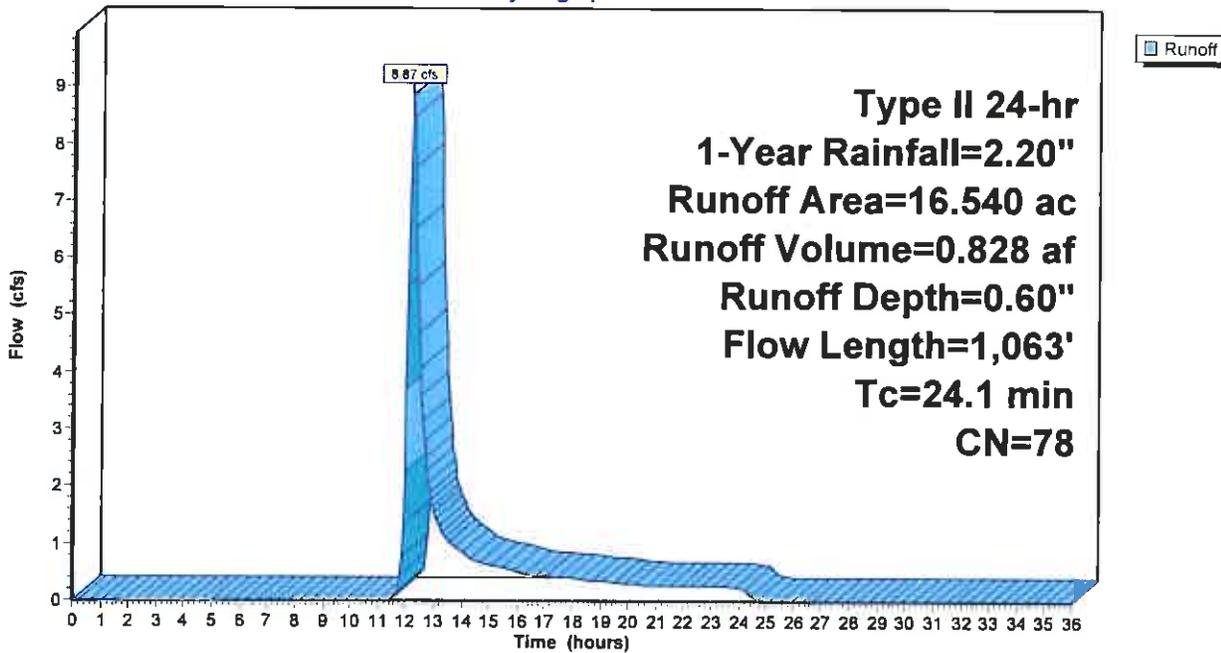
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (ac)	CN	Description
* 16.540	78	Pasture/grassland/range, Fair, HSG C
16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		Sheet Flow, Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.20"

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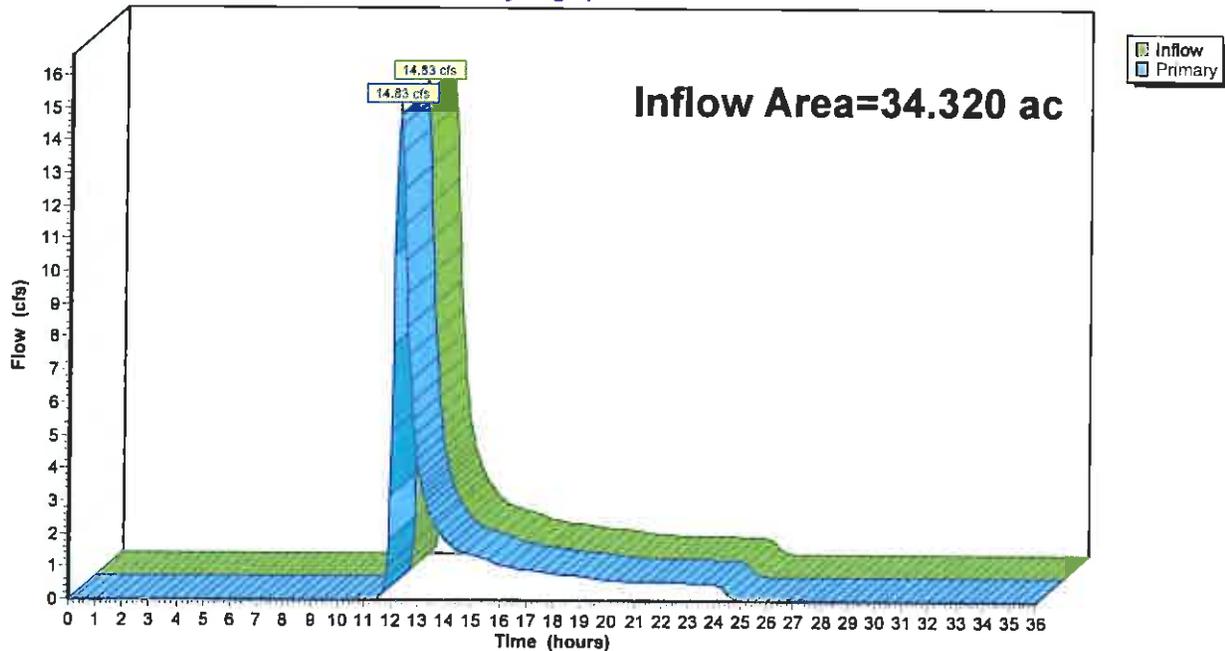
Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 0.60" for 1-Year event
Inflow = 14.83 cfs @ 12.26 hrs, Volume= 1.717 af
Primary = 14.83 cfs @ 12.26 hrs, Volume= 1.717 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing

Hydrograph



152-743 Preliminary SWM

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Type II 24-hr 2-Year Rainfall=2.63"

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Page 5

Summary for Subcatchment 1S: North Existing

Runoff = 10.94 cfs @ 12.35 hrs, Volume= 1.294 af, Depth= 0.87"

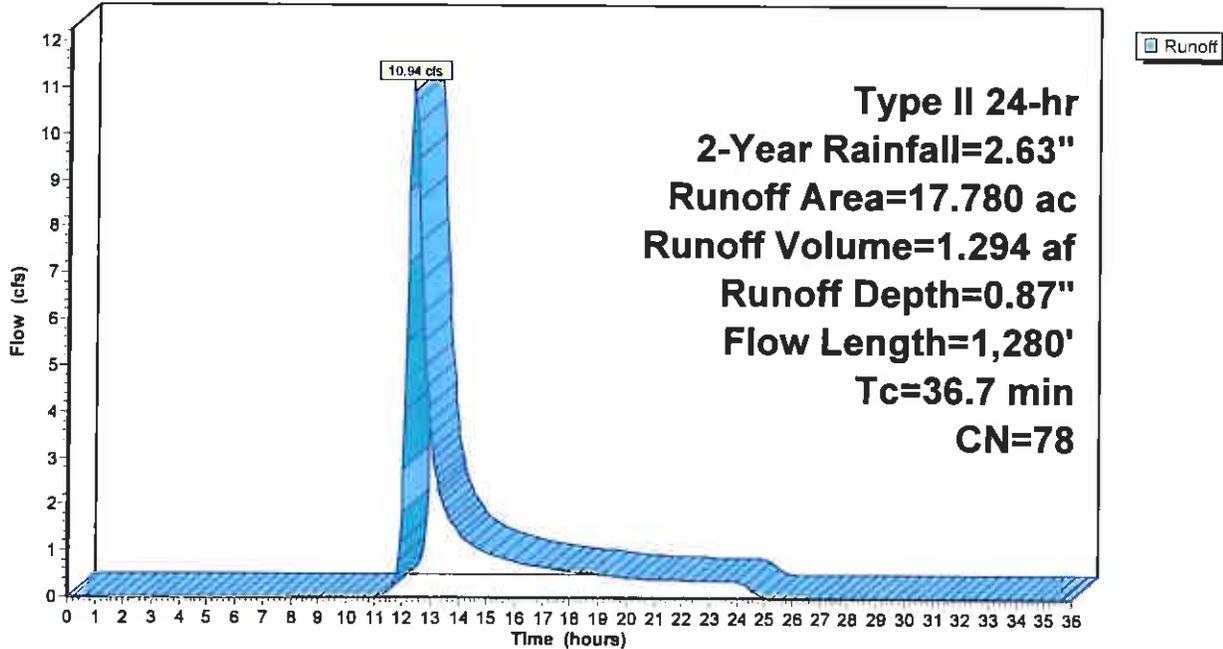
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (ac)	CN	Description
* 17.780	78	Pasture/grassland/range, Fair, HSG C
17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		Sheet Flow, Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.63"

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Summary for Subcatchment 2S: South Existing

Runoff = 13.54 cfs @ 12.19 hrs, Volume= 1.204 af, Depth= 0.87"

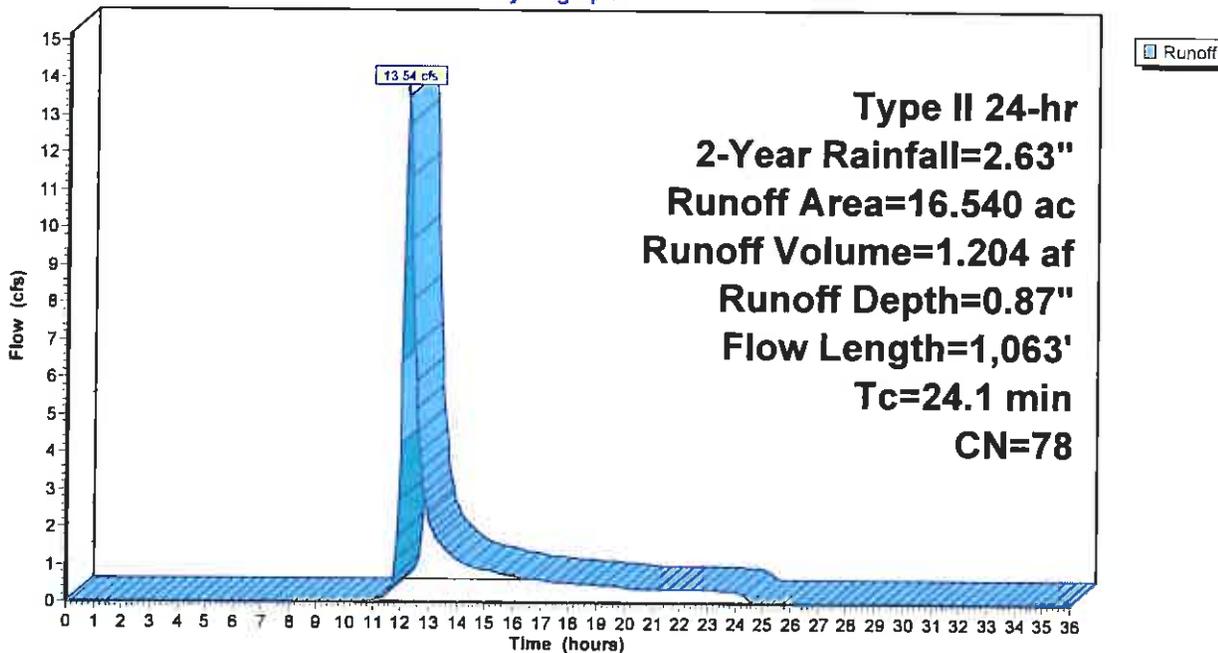
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (ac)	CN	Description
* 16.540	78	Pasture/grassland/range, Fair, HSG C
16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		Sheet Flow, Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.63"

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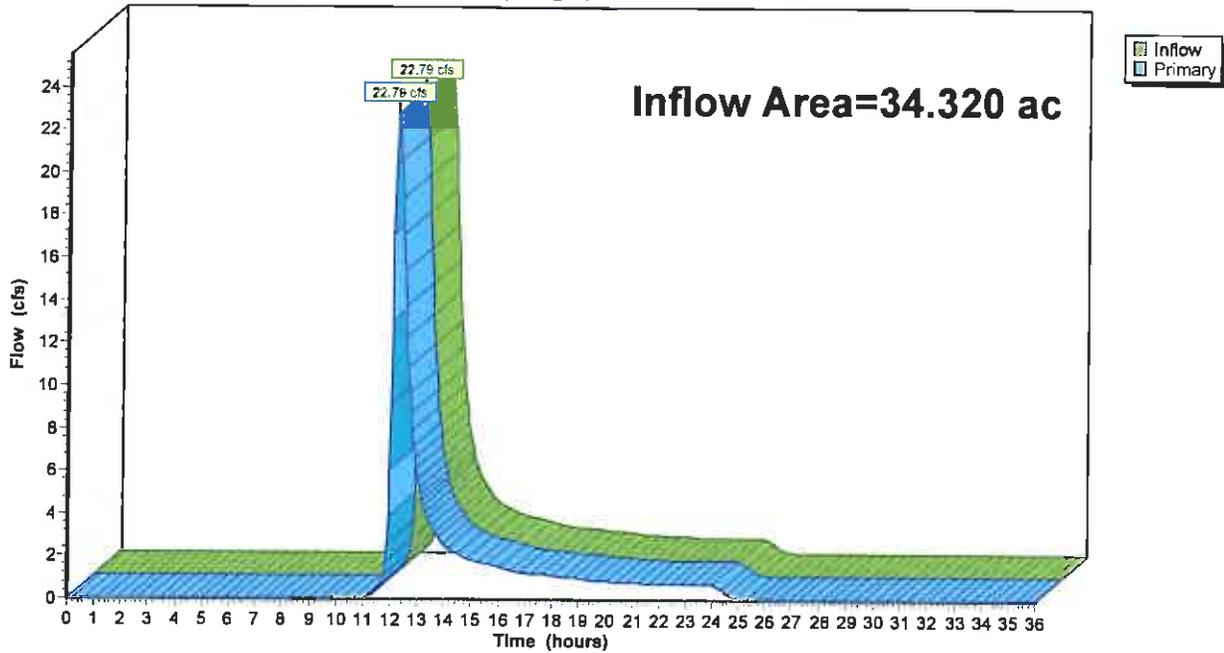
Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 0.87" for 2-Year event
Inflow = 22.79 cfs @ 12.25 hrs, Volume= 2.498 af
Primary = 22.79 cfs @ 12.25 hrs, Volume= 2.498 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing

Hydrograph



152-743 Preliminary SWM

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Type II 24-hr 5-Year Rainfall=3.24"

Printed 9/25/2015

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Summary for Subcatchment 1S: North Existing

Runoff = 16.95 cfs @ 12.34 hrs, Volume= 1.930 af, Depth= 1.30"

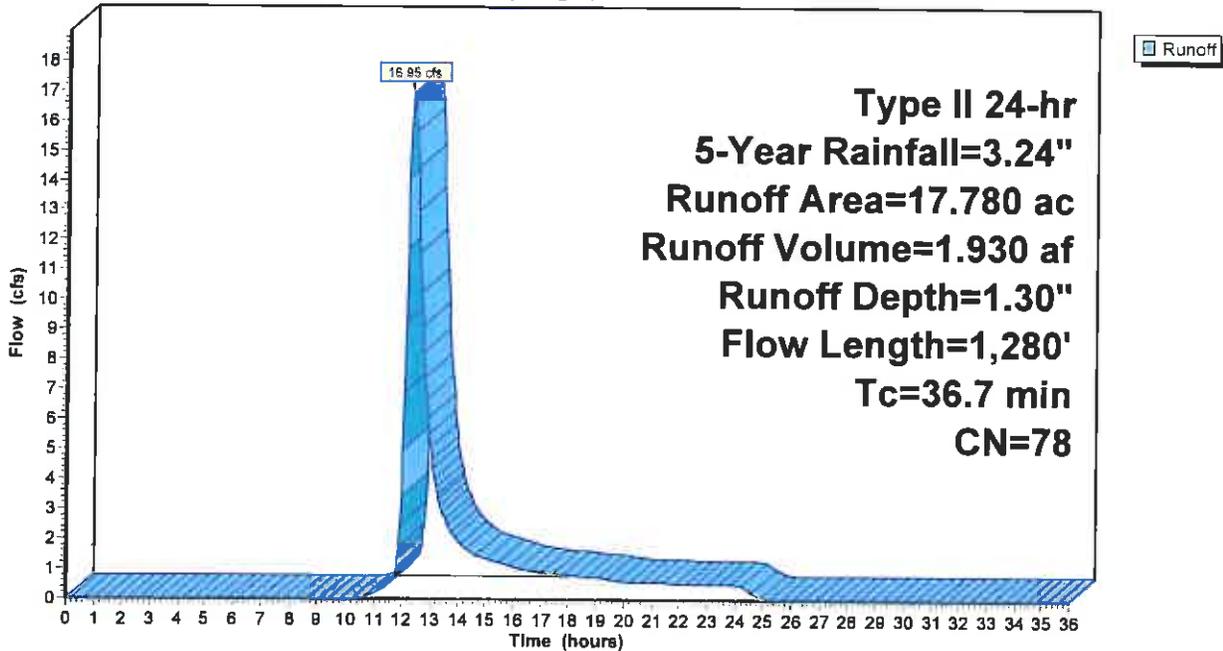
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (ac)	CN	Description
* 17.780	78	Pasture/grassland/range, Fair, HSG C
17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		Sheet Flow, Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing

Hydrograph



152-743 Preliminary SWM

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Type II 24-hr 5-Year Rainfall=3.24"

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Summary for Subcatchment 2S: South Existing

Runoff = 20.85 cfs @ 12.19 hrs, Volume= 1.796 af, Depth= 1.30"

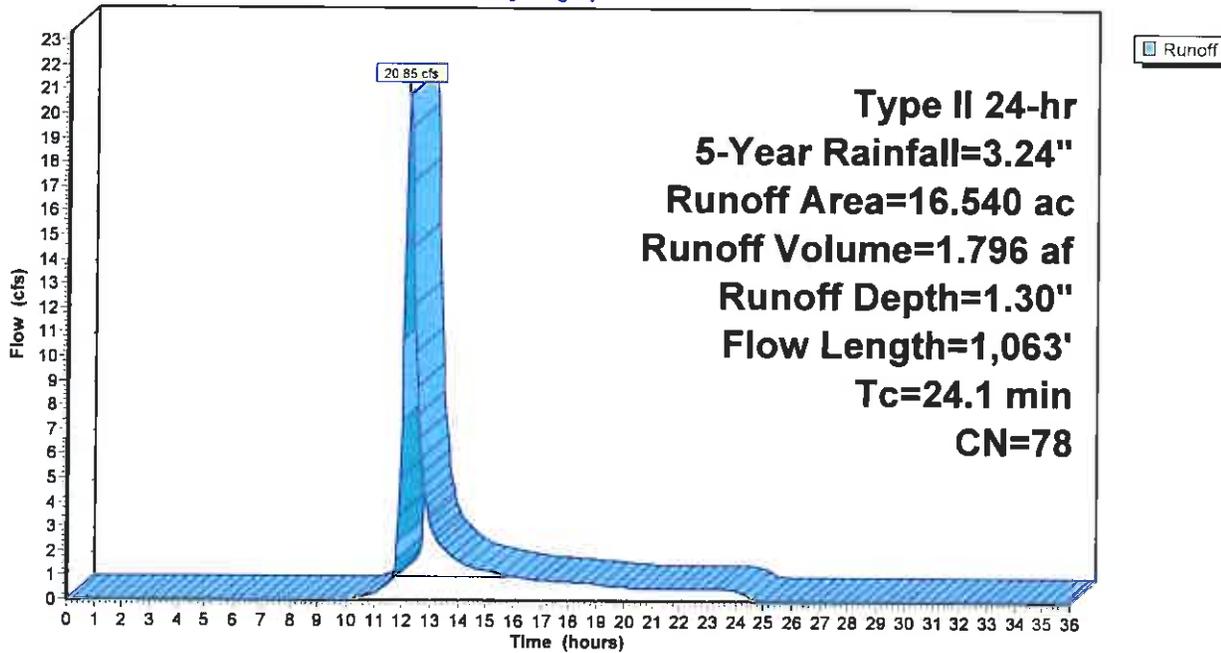
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (ac)	CN	Description
* 16.540	78	Pasture/grassland/range, Fair, HSG C
16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		Sheet Flow, Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

Hydrograph



152-743 Preliminary SWM

Prepared by CEC, Inc.

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Type II 24-hr 5-Year Rainfall=3.24"

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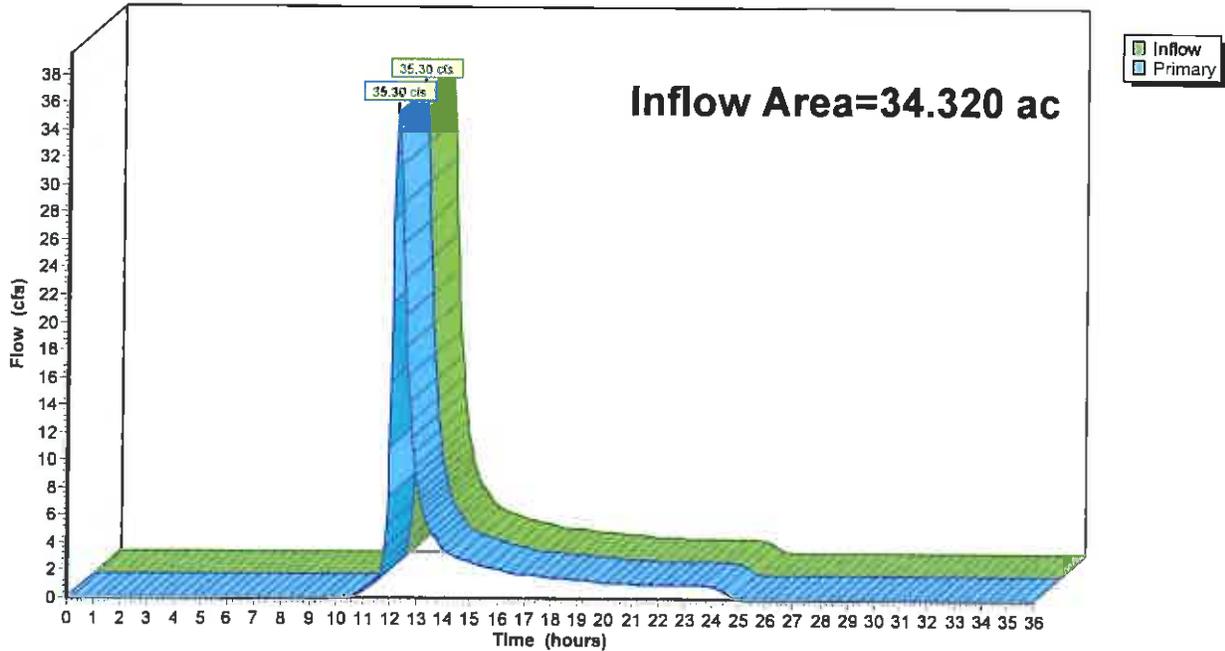
Summary for Link 3L: Holton Run Existing

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Inflow = 35.30 cfs @ 12.24 hrs, Volume= 3.726 af
Primary = 35.30 cfs @ 12.24 hrs, Volume= 3.726 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing

Hydrograph



152-743 Preliminary SWM

Prepared by CEC, Inc.

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Type II 24-hr 10-Year Rainfall=3.74"

Printed 9/25/2015

Page 11

Summary for Subcatchment 1S: North Existing

Runoff = 22.23 cfs @ 12.34 hrs, Volume= 2.492 af, Depth= 1.68"

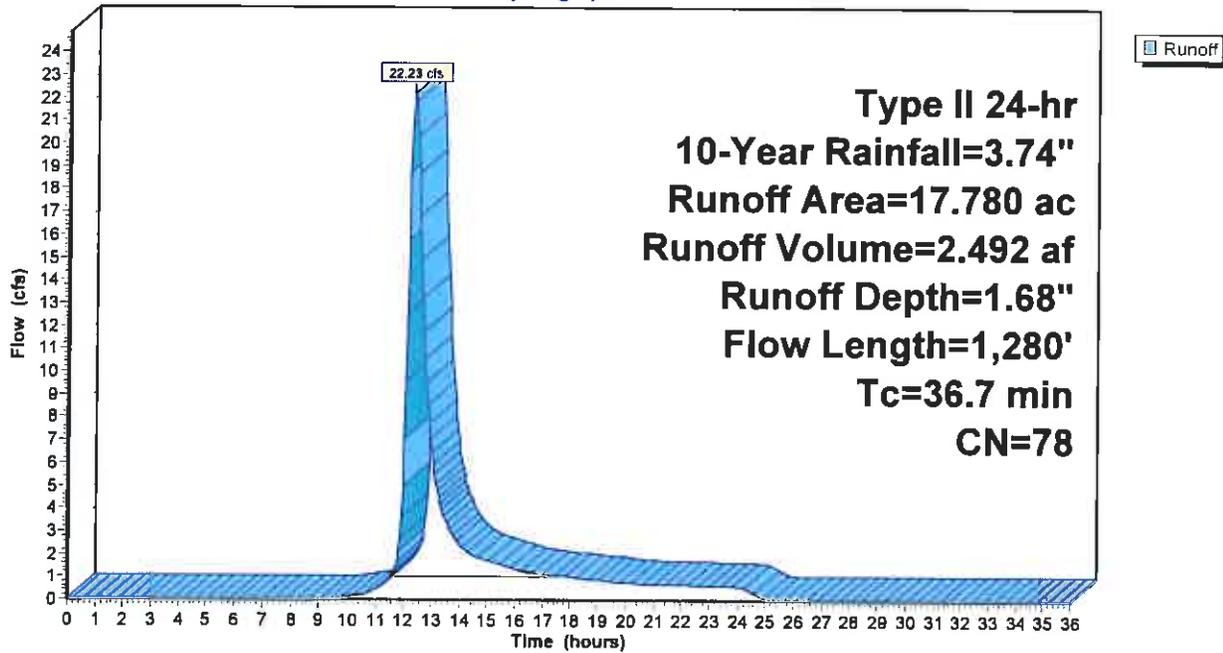
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (ac)	CN	Description
* 17.780	78	Pasture/grassland/range, Fair, HSG C
17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		Sheet Flow, Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.74"

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Summary for Subcatchment 2S: South Existing

Runoff = 27.27 cfs @ 12.18 hrs, Volume= 2.318 af, Depth= 1.68"

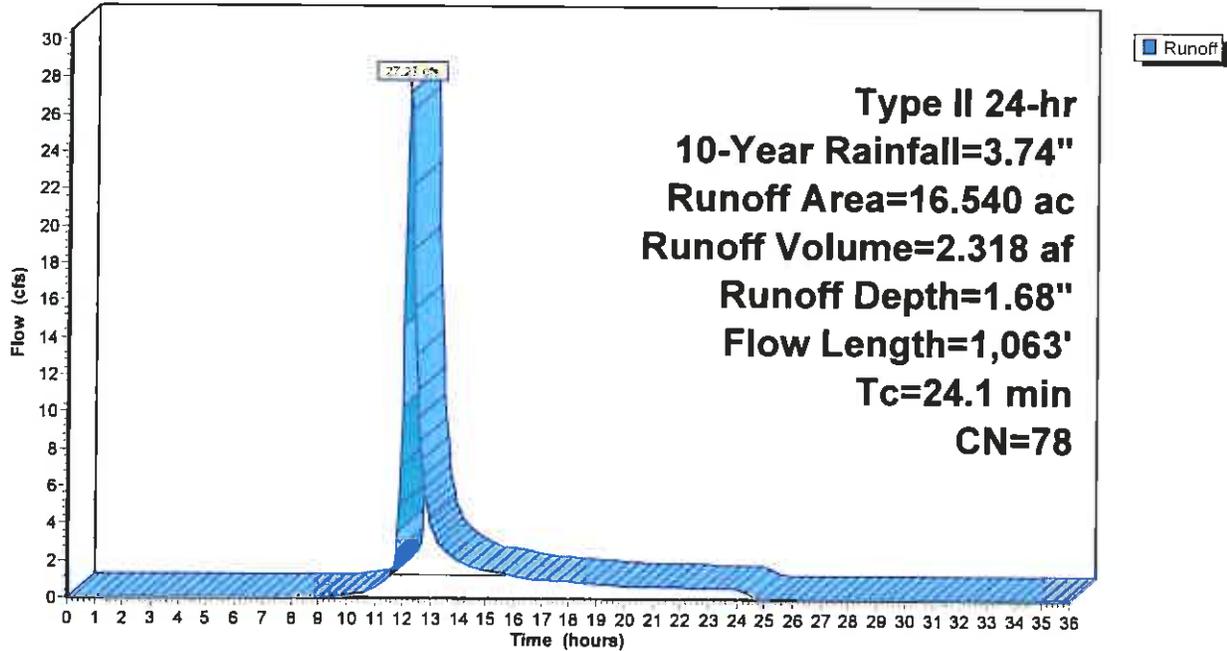
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (ac)	CN	Description
* 16.540	78	Pasture/grassland/range, Fair, HSG C
16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		Sheet Flow, Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

Hydrograph



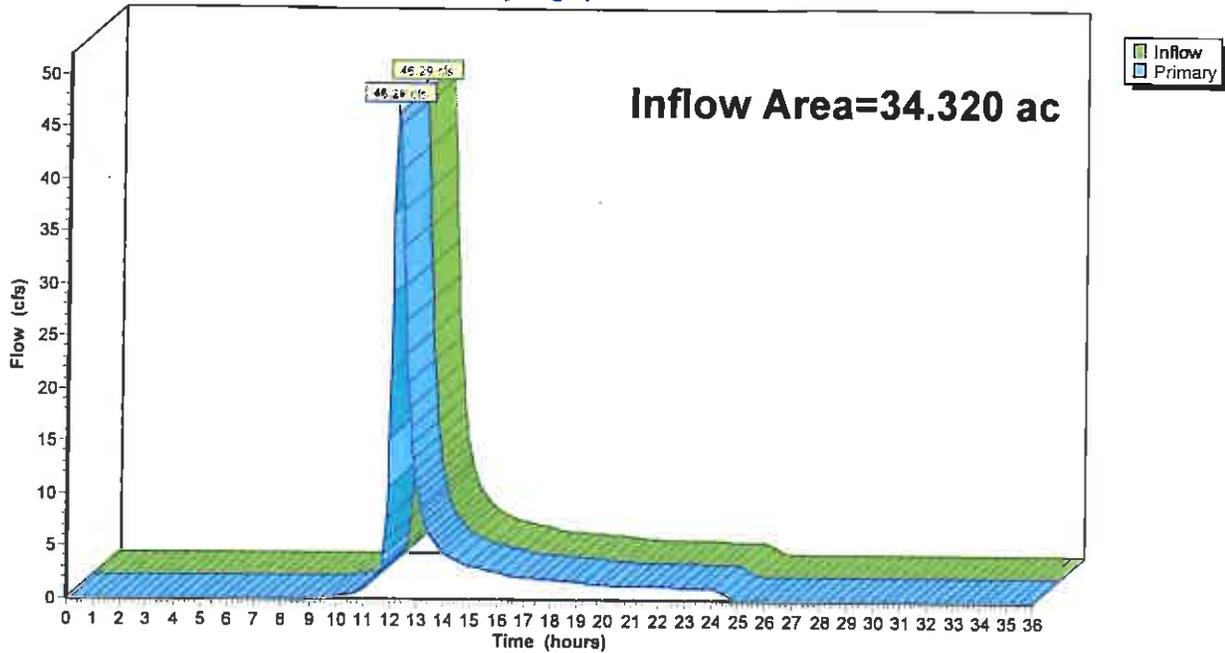
Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 1.68" for 10-Year event
Inflow = 46.29 cfs @ 12.23 hrs, Volume= 4.811 af
Primary = 46.29 cfs @ 12.23 hrs, Volume= 4.811 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.44"

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Summary for Subcatchment 1S: North Existing

Runoff = 30.00 cfs @ 12.33 hrs, Volume= 3.324 af, Depth= 2.24"

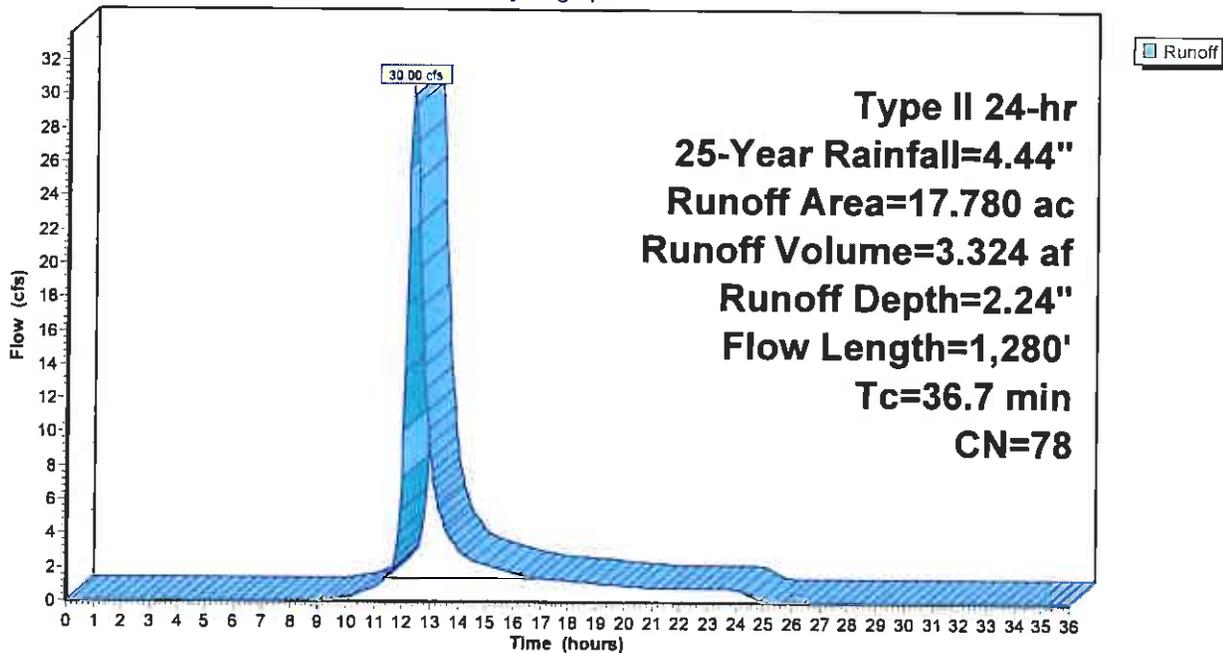
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (ac)	CN	Description
* 17.780	78	Pasture/grassland/range, Fair, HSG C
17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		Sheet Flow, Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.44"

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Summary for Subcatchment 2S: South Existing

Runoff = 36.68 cfs @ 12.18 hrs, Volume= 3.092 af, Depth= 2.24"

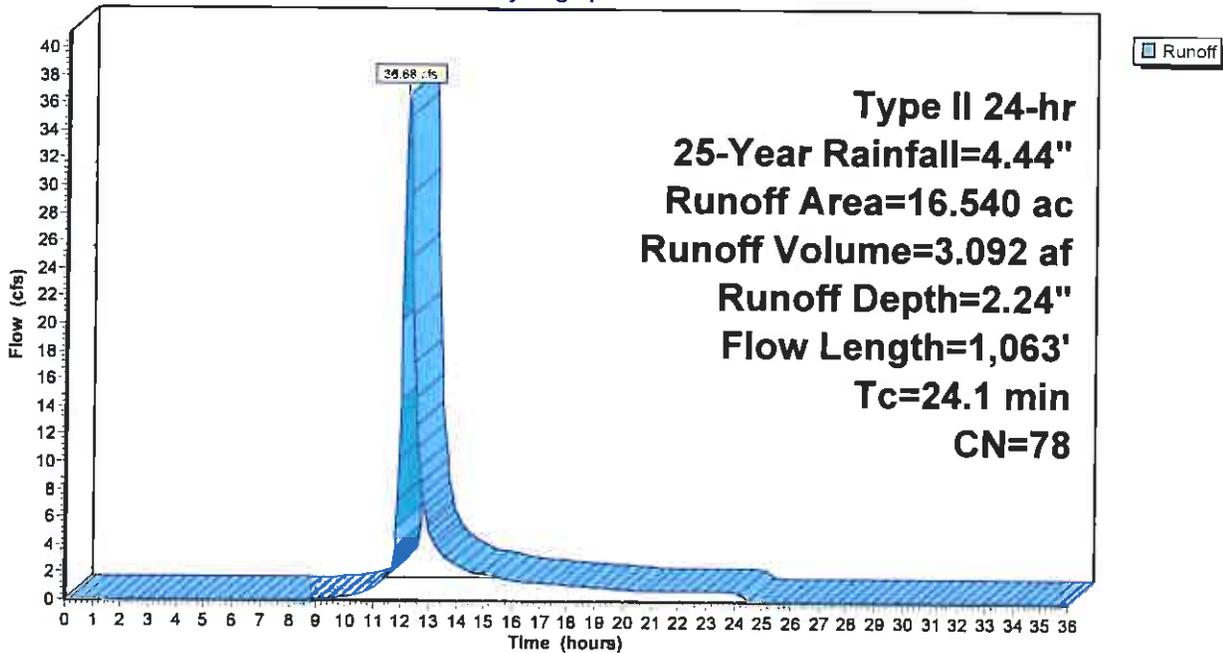
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (ac)	CN	Description
* 16.540	78	Pasture/grassland/range, Fair, HSG C
16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		Sheet Flow, Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.44"

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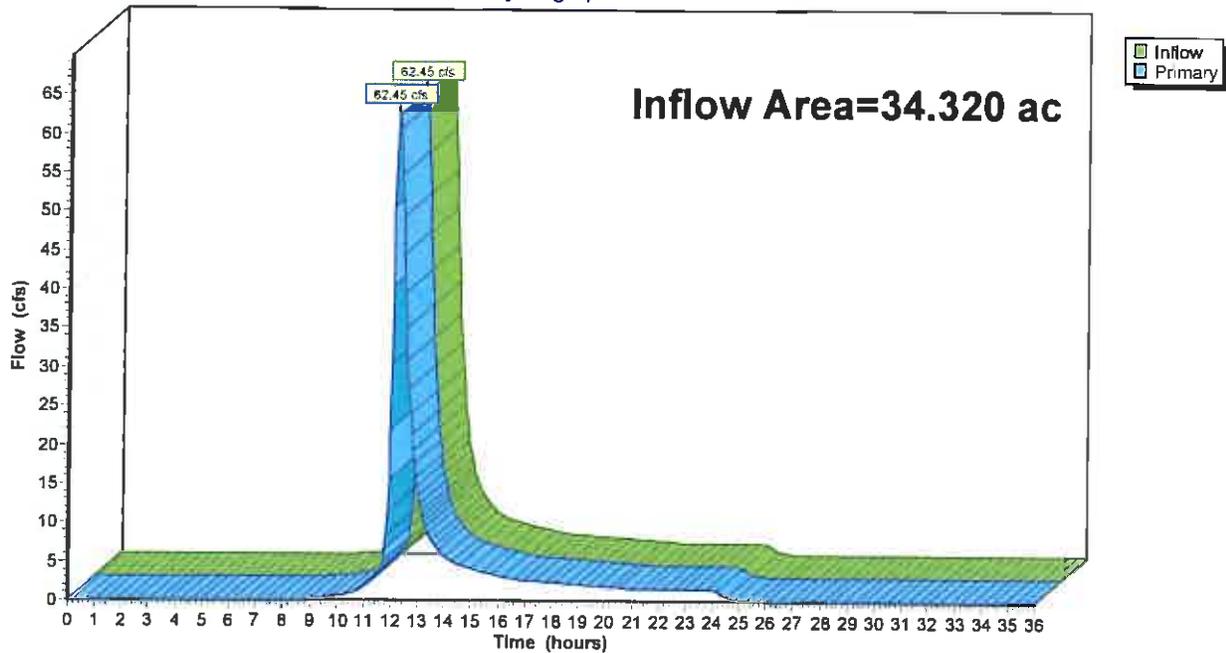
Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 2.24" for 25-Year event
Inflow = 62.45 cfs @ 12.23 hrs, Volume= 6.416 af
Primary = 62.45 cfs @ 12.23 hrs, Volume= 6.416 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing

Hydrograph



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Type II 24-hr 50-Year Rainfall=5.02"

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Summary for Subcatchment 1S: North Existing

Runoff = 36.66 cfs @ 12.33 hrs, Volume= 4.043 af, Depth= 2.73"

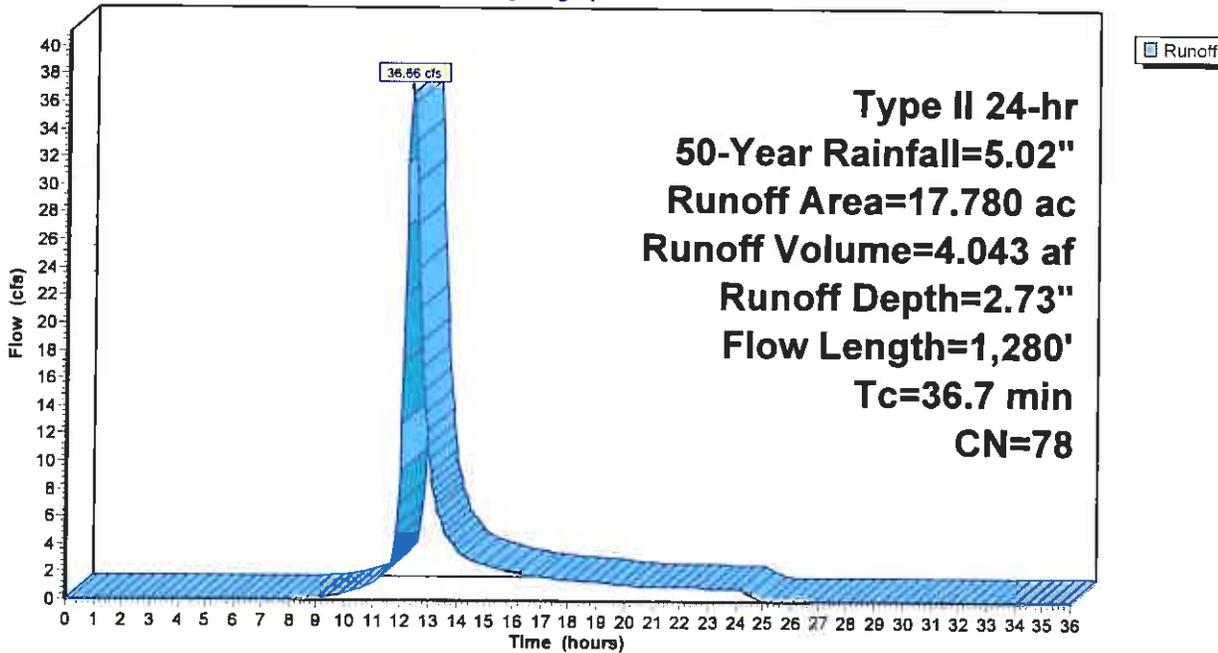
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (ac)	CN	Description
* 17.780	78	Pasture/grassland/range, Fair, HSG C
17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		Sheet Flow, Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing

Hydrograph



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Type II 24-hr 50-Year Rainfall=5.02"

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Summary for Subcatchment 2S: South Existing

Runoff = 44.74 cfs @ 12.18 hrs, Volume= 3.761 af, Depth= 2.73"

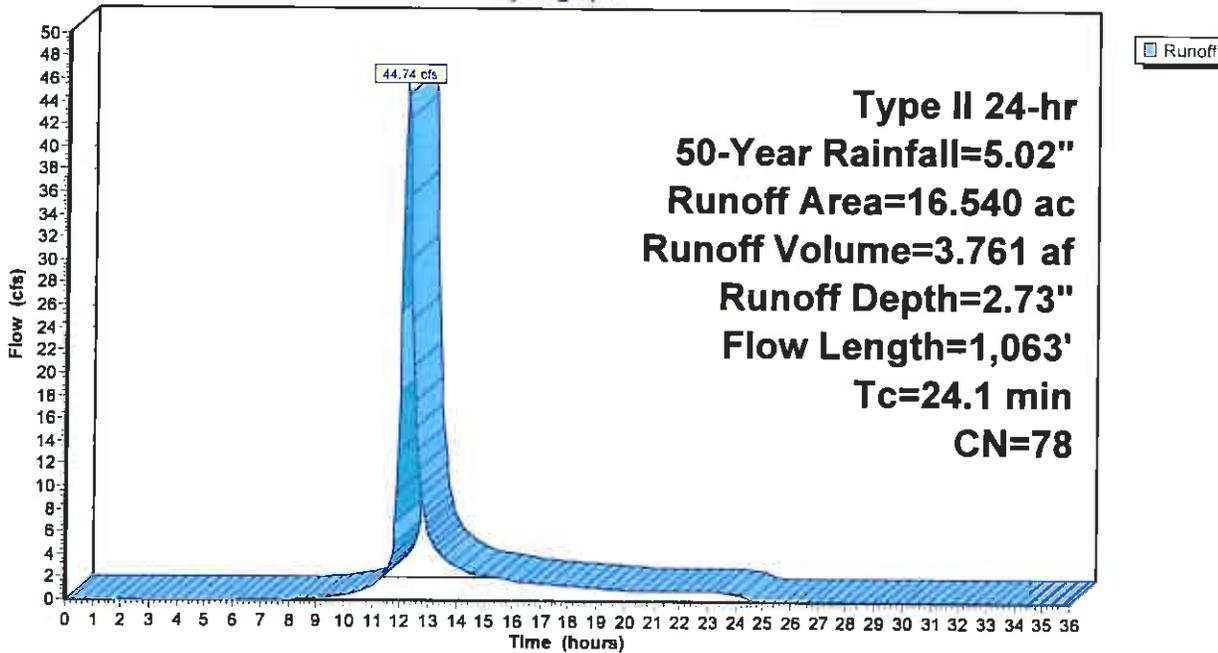
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (ac)	CN	Description
* 16.540	78	Pasture/grassland/range, Fair, HSG C
16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		Sheet Flow, Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

Hydrograph



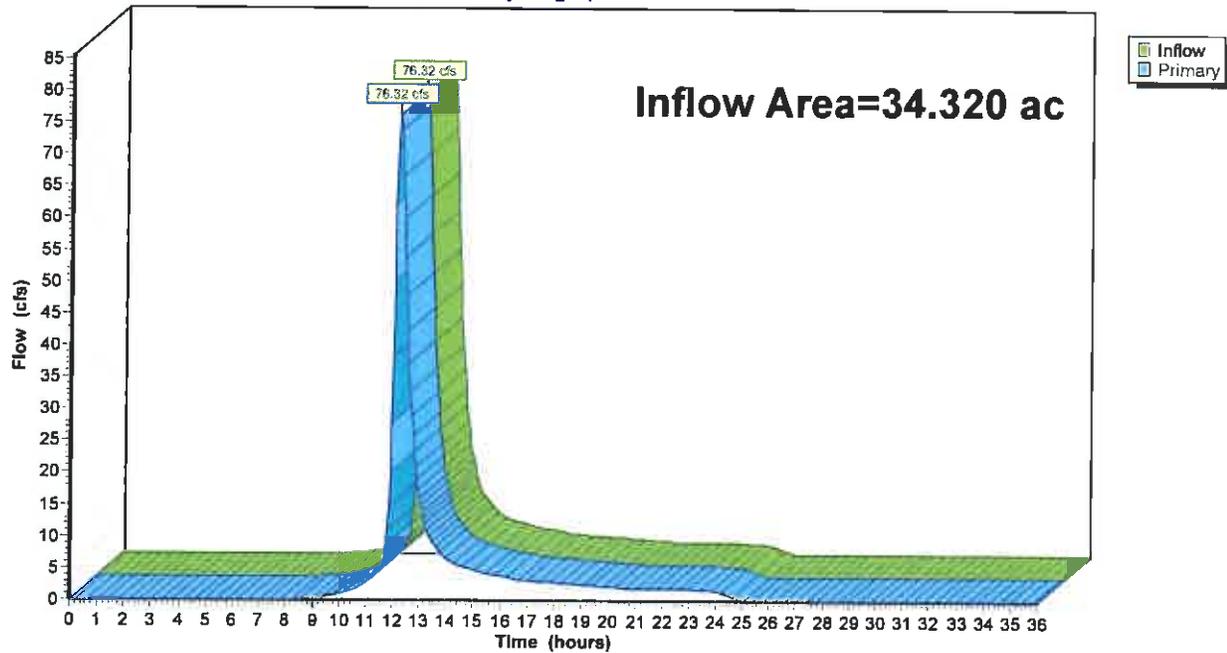
Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 2.73" for 50-Year event
Inflow = 76.32 cfs @ 12.23 hrs, Volume= 7.804 af
Primary = 76.32 cfs @ 12.23 hrs, Volume= 7.804 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.63"

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Summary for Subcatchment 1S: North Existing

Runoff = 43.84 cfs @ 12.32 hrs, Volume= 4.822 af, Depth= 3.25"

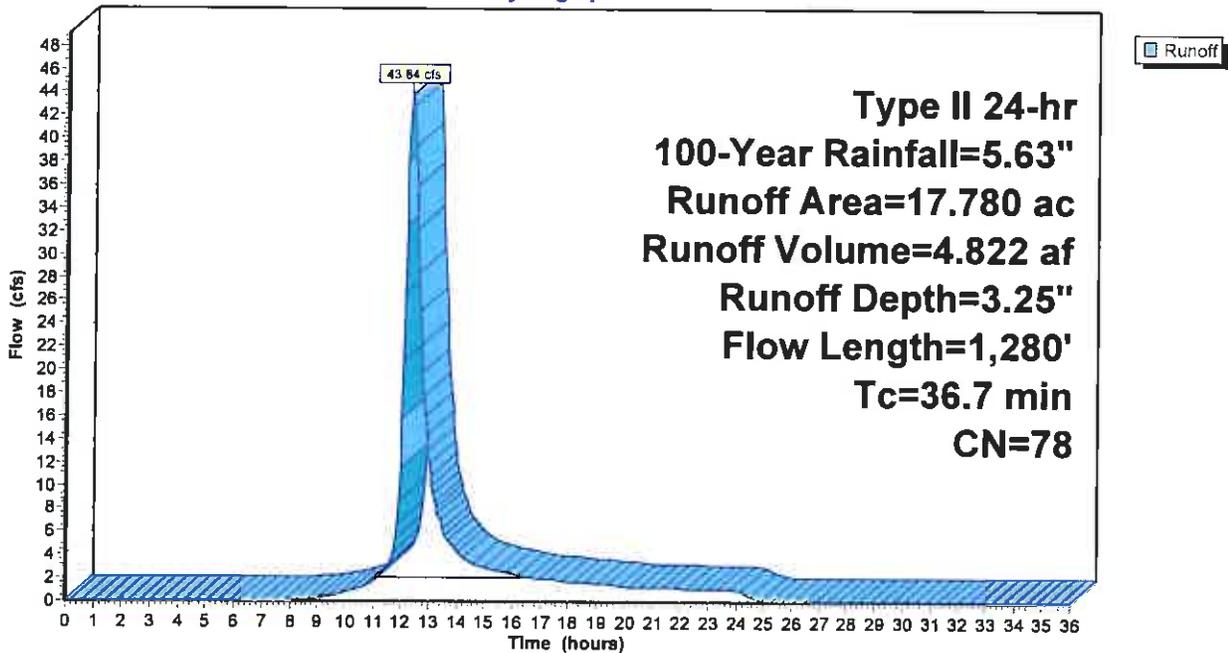
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (ac)	CN	Description
* 17.780	78	Pasture/grassland/range, Fair, HSG C
17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		Sheet Flow, Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.63"

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Summary for Subcatchment 2S: South Existing

Runoff = 53.50 cfs @ 12.17 hrs, Volume= 4.485 af, Depth= 3.25"

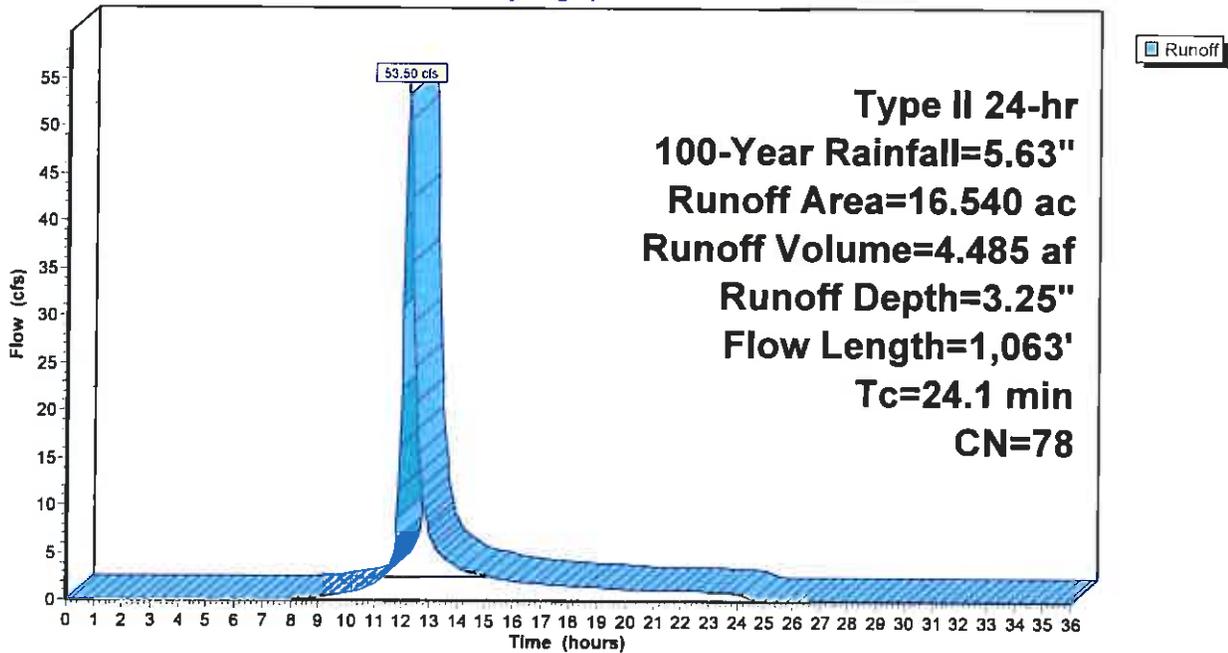
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year Rainfall=5.63"

Area (ac)	CN	Description
* 16.540	78	Pasture/grassland/range, Fair, HSG C
16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		Sheet Flow, Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

Hydrograph



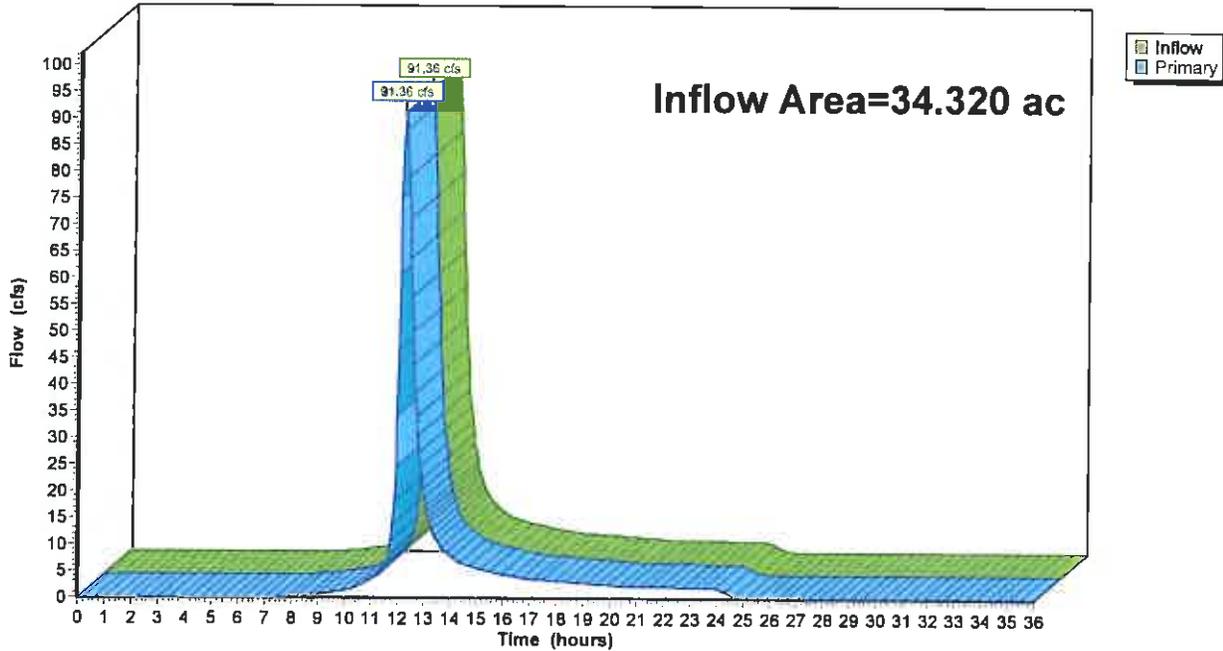
Summary for Link 3L: Holton Run Existing

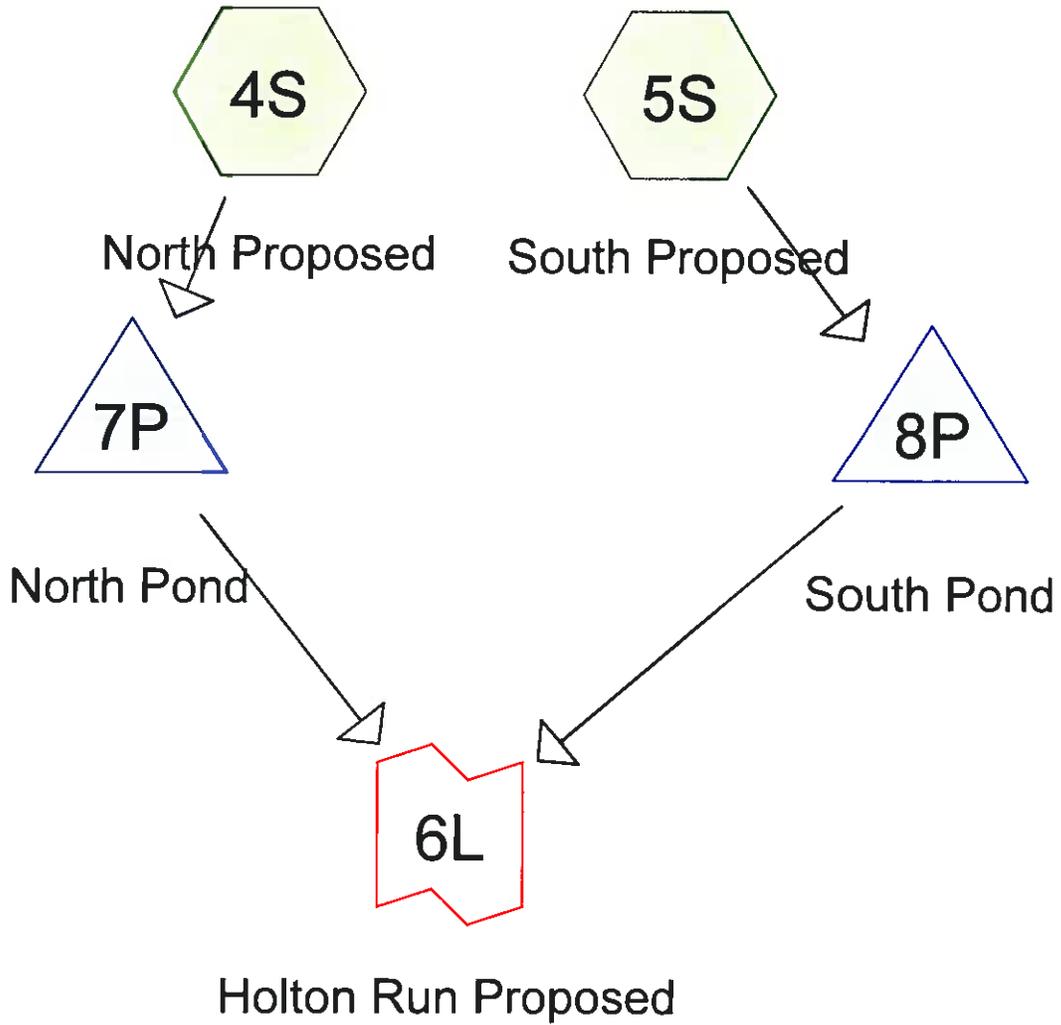
Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 3.25" for 100-Year event
Inflow = 91.36 cfs @ 12.22 hrs, Volume= 9.307 af
Primary = 91.36 cfs @ 12.22 hrs, Volume= 9.307 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing

Hydrograph





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Type II 24-hr 1-Year Rainfall=2.20"

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Summary for Subcatchment 4S: North Proposed

Runoff = 18.58 cfs @ 12.08 hrs, Volume= 1.237 af, Depth= 0.84"

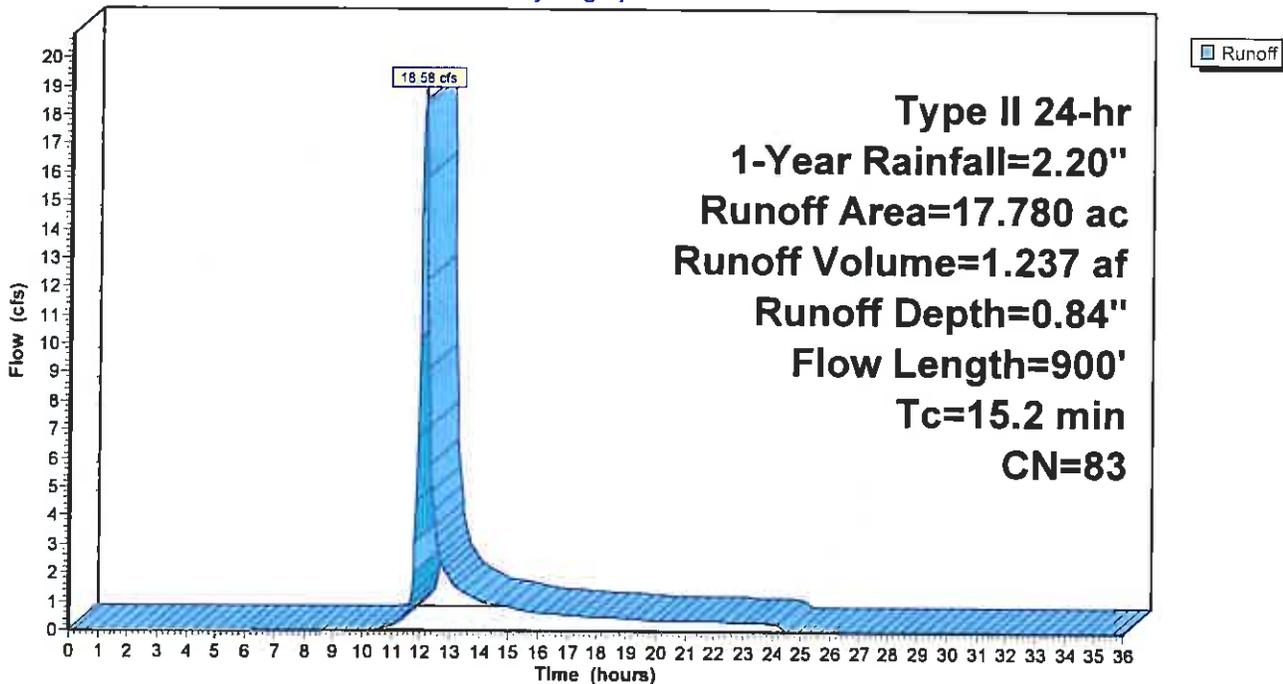
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.20"

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Summary for Subcatchment 5S: South Proposed

Runoff = 17.28 cfs @ 12.08 hrs, Volume= 1.151 af, Depth= 0.84"

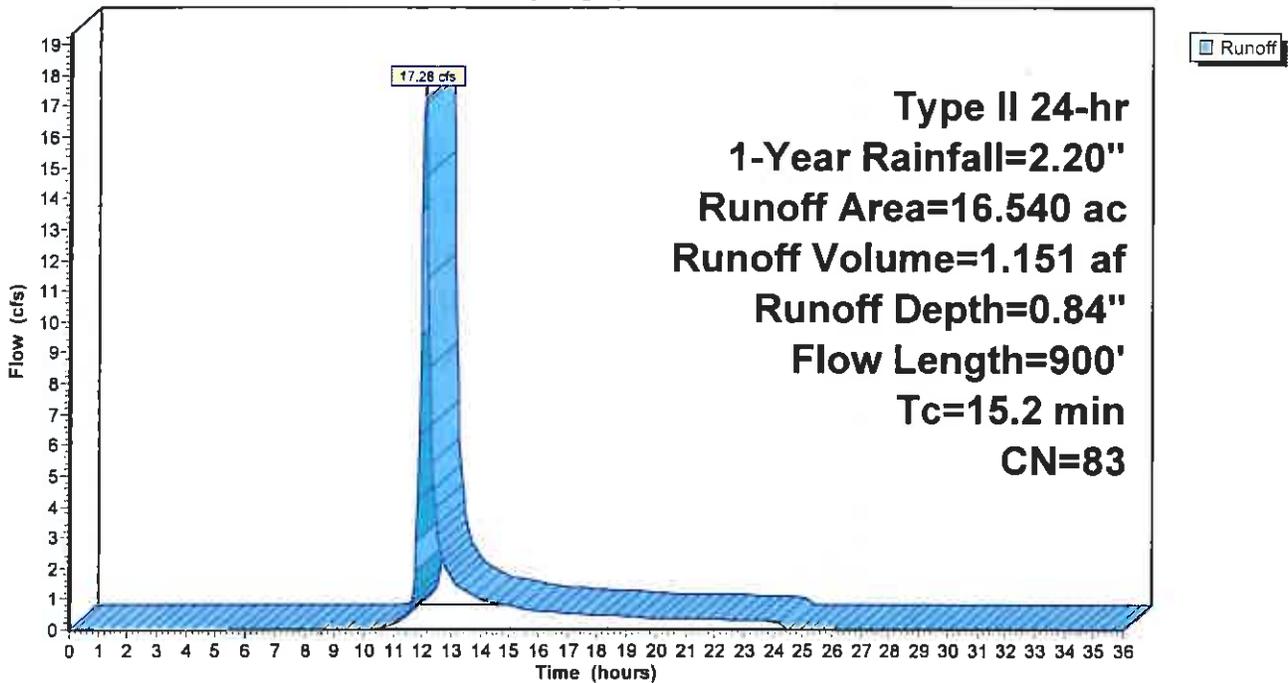
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-Year Rainfall=2.20"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 1-Year Rainfall=2.20"

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Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 0.84" for 1-Year event
 Inflow = 18.58 cfs @ 12.08 hrs, Volume= 1.237 af
 Outflow = 0.72 cfs @ 15.60 hrs, Volume= 0.902 af, Atten= 96%, Lag= 210.9 min
 Primary = 0.72 cfs @ 15.60 hrs, Volume= 0.902 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 852.87' @ 15.60 hrs Surf.Area= 39,235 sf Storage= 32,667 cf

Plug-Flow detention time= 538.7 min calculated for 0.902 af (73% of inflow)
 Center-of-Mass det. time= 434.5 min (1,291.9 - 857.4)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	176,725 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	35,533	0	0
853.00	39,769	37,651	37,651
854.00	44,105	41,937	79,588
855.00	48,541	46,323	125,911
856.00	53,087	50,814	176,725

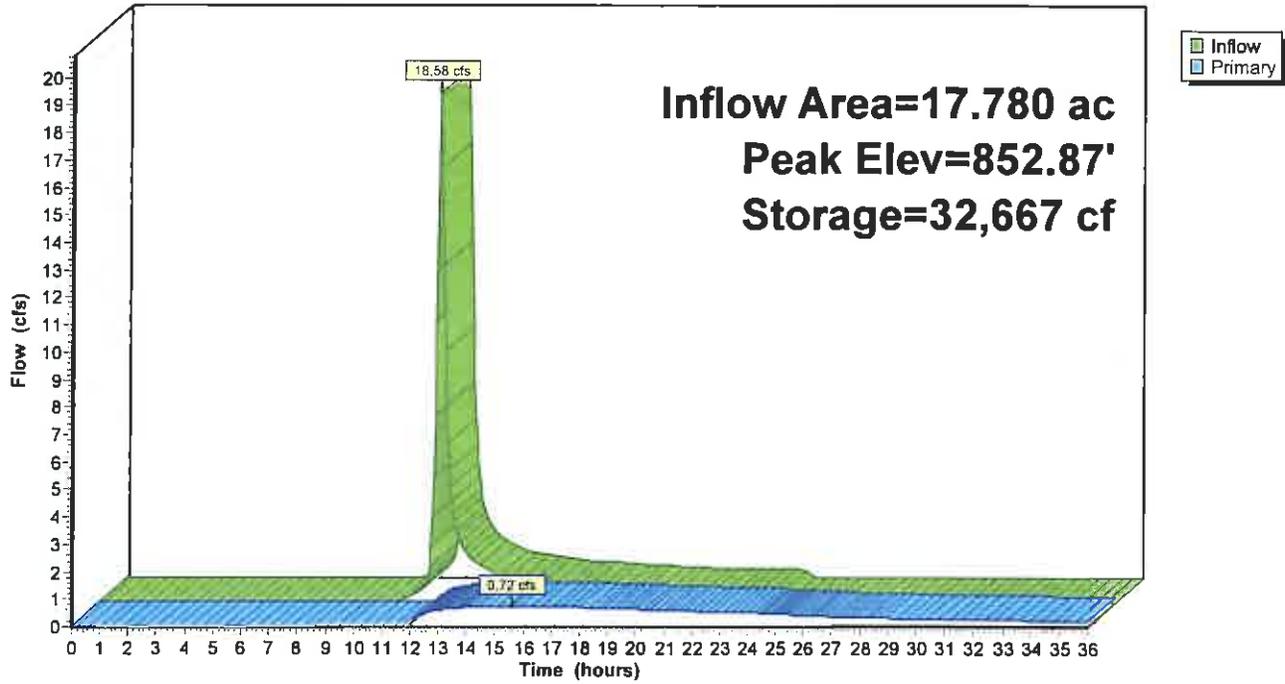
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	6.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	854.00'	48.0" W x 12.0" H Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=0.72 cfs @ 15.60 hrs HW=852.87' (Free Discharge)

- 1=Culvert (Passes 0.72 cfs of 5.98 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.35 cfs @ 4.05 fps)
- 3=Orifice/Grate (Orifice Controls 0.37 cfs @ 1.96 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: North Pond

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.20"

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Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 0.84" for 1-Year event
 Inflow = 17.28 cfs @ 12.08 hrs, Volume= 1.151 af
 Outflow = 1.88 cfs @ 12.84 hrs, Volume= 1.081 af, Atten= 89%, Lag= 45.4 min
 Primary = 1.88 cfs @ 12.84 hrs, Volume= 1.081 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 852.98' @ 12.84 hrs Surf.Area= 25,335 sf Storage= 23,121 cf

Plug-Flow detention time= 271.9 min calculated for 1.081 af (94% of inflow)
 Center-of-Mass det. time= 239.0 min (1,096.4 - 857.4)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	116,919 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	21,747	0	0
853.00	25,400	23,574	23,574
854.00	29,154	27,277	50,851
855.00	33,009	31,082	81,932
856.00	36,964	34,987	116,919

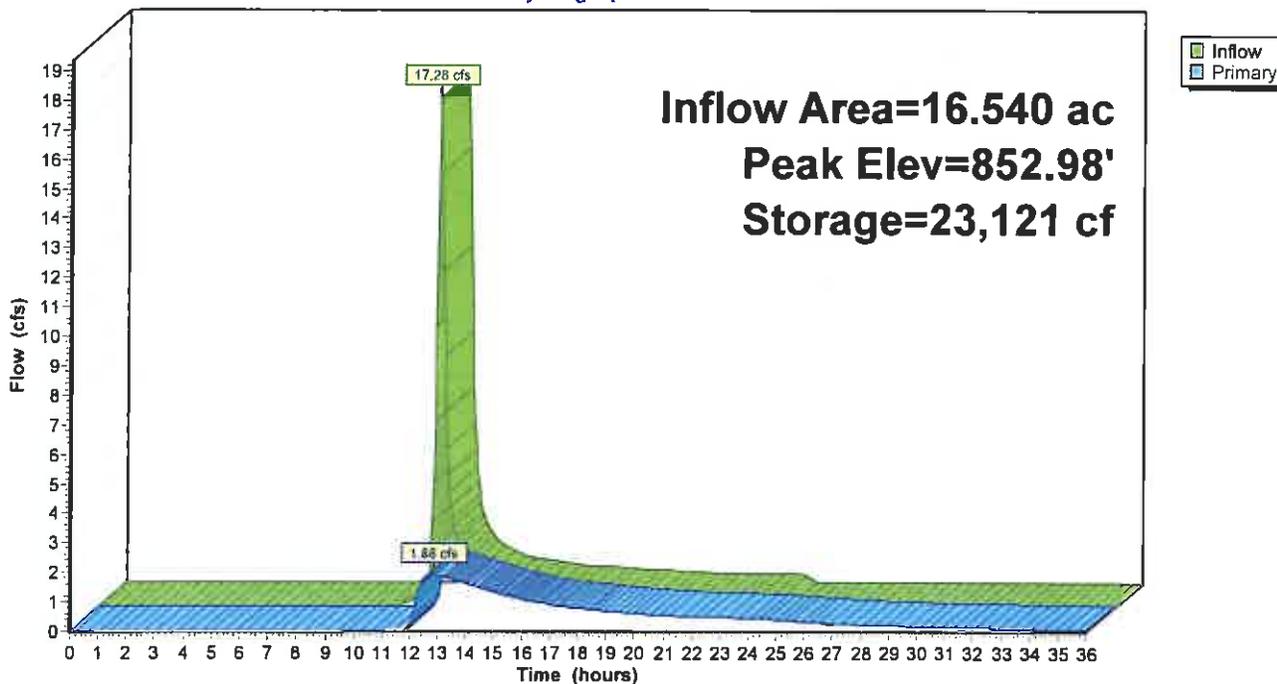
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	12.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	853.75'	30.0" W x 12.0" H Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=1.88 cfs @ 12.84 hrs HW=852.98' (Free Discharge)

- 1=Culvert (Passes 1.88 cfs of 7.46 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.81 cfs @ 4.12 fps)
- 3=Orifice/Grate (Orifice Controls 1.07 cfs @ 2.23 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

Pond 8P: South Pond

Hydrograph



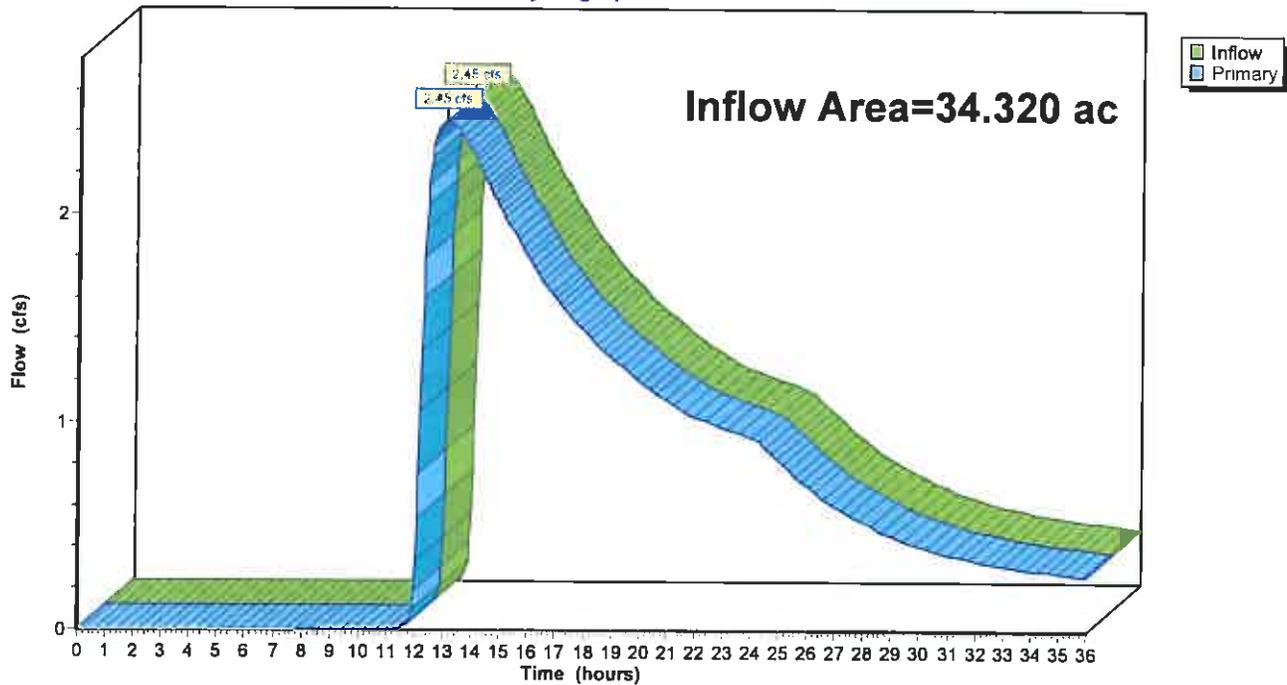
Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 0.69" for 1-Year event
Inflow = 2.45 cfs @ 13.07 hrs, Volume= 1.984 af
Primary = 2.45 cfs @ 13.07 hrs, Volume= 1.984 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.63"

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Summary for Subcatchment 4S: North Proposed

Runoff = 26.01 cfs @ 12.08 hrs, Volume= 1.711 af, Depth= 1.15"

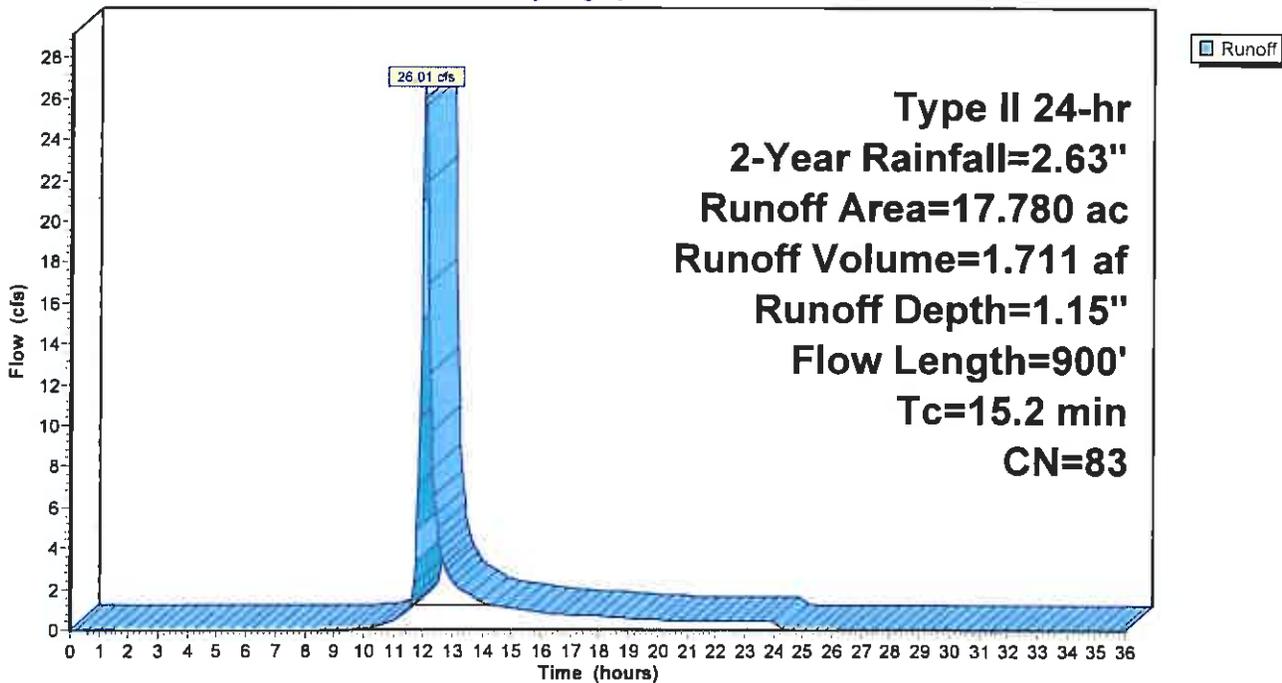
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.63"

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Summary for Subcatchment 5S: South Proposed

Runoff = 24.20 cfs @ 12.08 hrs, Volume= 1.592 af, Depth= 1.15"

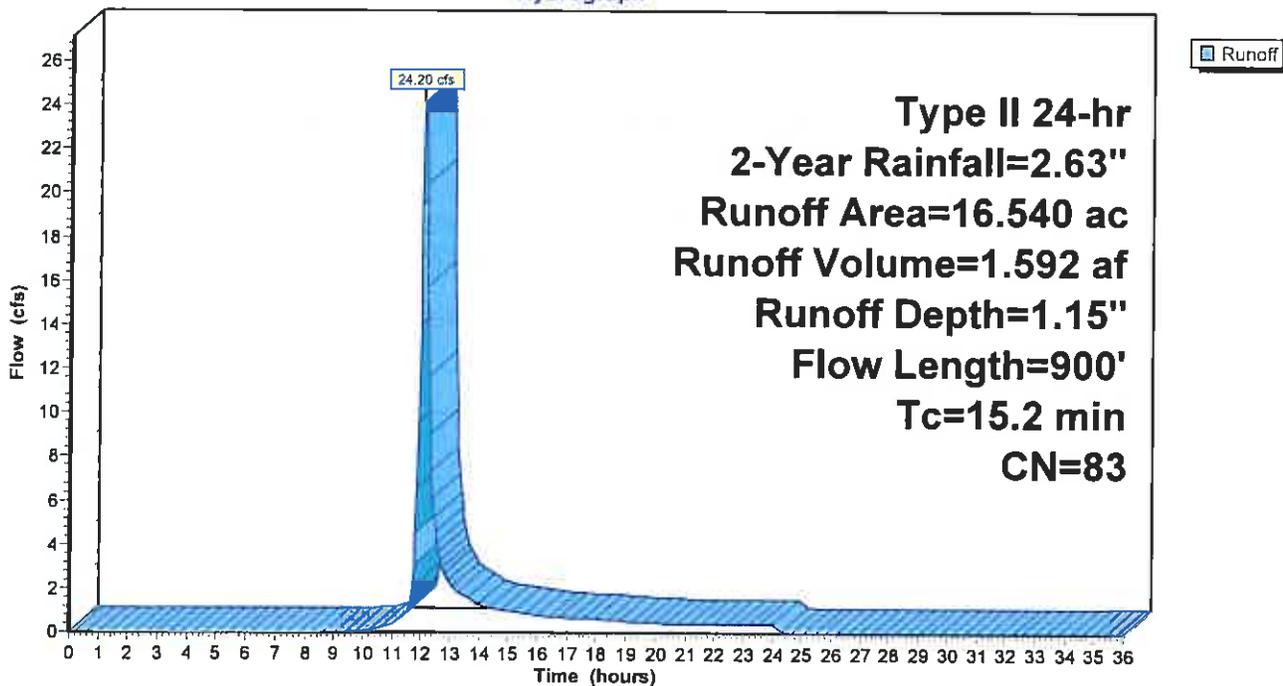
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 2-Year Rainfall=2.63"

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Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 1.15" for 2-Year event
 Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.711 af
 Outflow = 1.25 cfs @ 14.26 hrs, Volume= 1.338 af, Atten= 95%, Lag= 131.0 min
 Primary = 1.25 cfs @ 14.26 hrs, Volume= 1.338 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 853.14' @ 14.26 hrs Surf.Area= 40,394 sf Storage= 43,433 cf

Plug-Flow detention time= 476.2 min calculated for 1.336 af (78% of inflow)
 Center-of-Mass det. time= 387.0 min (1,234.9 - 847.8)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	176,725 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	35,533	0	0
853.00	39,769	37,651	37,651
854.00	44,105	41,937	79,588
855.00	48,541	46,323	125,911
856.00	53,087	50,814	176,725

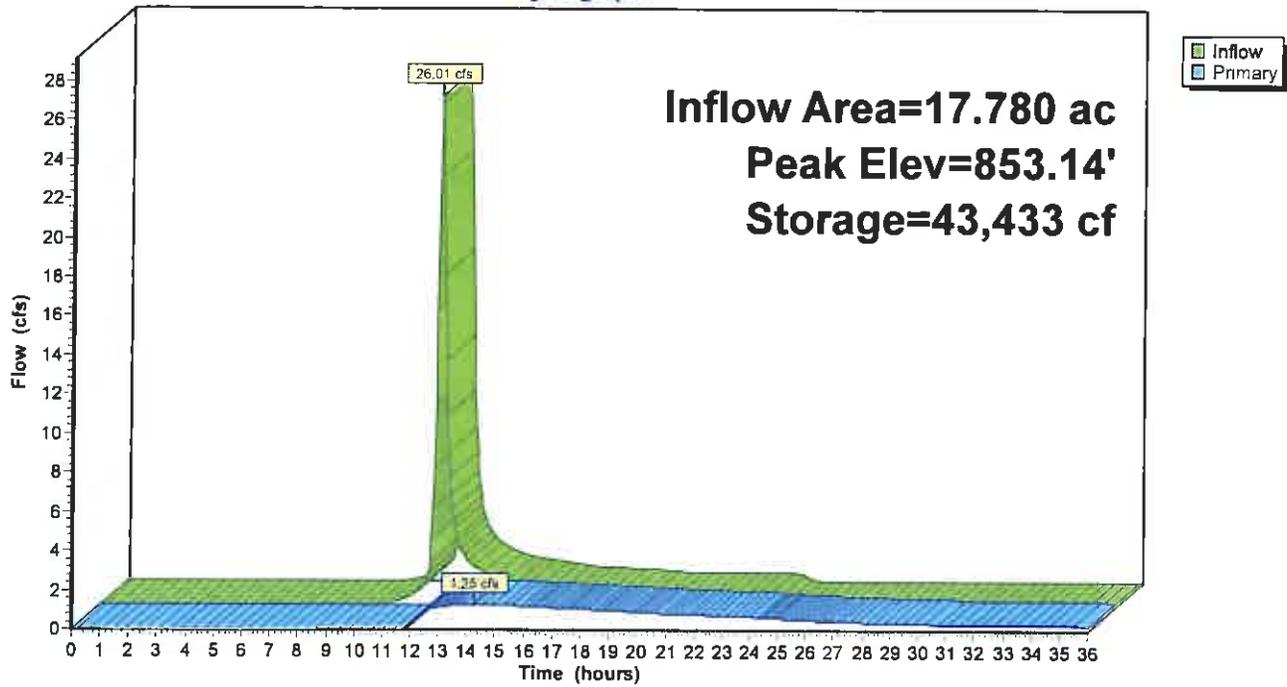
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	6.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	854.00'	48.0" W x 12.0" H Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=1.25 cfs @ 14.26 hrs HW=853.14' (Free Discharge)

- ↑ 1=Culvert (Passes 1.25 cfs of 9.96 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.42 cfs @ 4.76 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 0.83 cfs @ 2.58 fps)
- ↑ 4=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: North Pond

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 2-Year Rainfall=2.63"

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Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 1.15" for 2-Year event
 Inflow = 24.20 cfs @ 12.08 hrs, Volume= 1.592 af
 Outflow = 3.34 cfs @ 12.64 hrs, Volume= 1.518 af, Atten= 86%, Lag= 33.8 min
 Primary = 3.34 cfs @ 12.64 hrs, Volume= 1.518 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 853.32' @ 12.64 hrs Surf.Area= 26,585 sf Storage= 31,778 cf

Plug-Flow detention time= 232.6 min calculated for 1.516 af (95% of inflow)
 Center-of-Mass det. time= 207.4 min (1,055.2 - 847.8)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	116,919 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	21,747	0	0
853.00	25,400	23,574	23,574
854.00	29,154	27,277	50,851
855.00	33,009	31,082	81,932
856.00	36,964	34,987	116,919

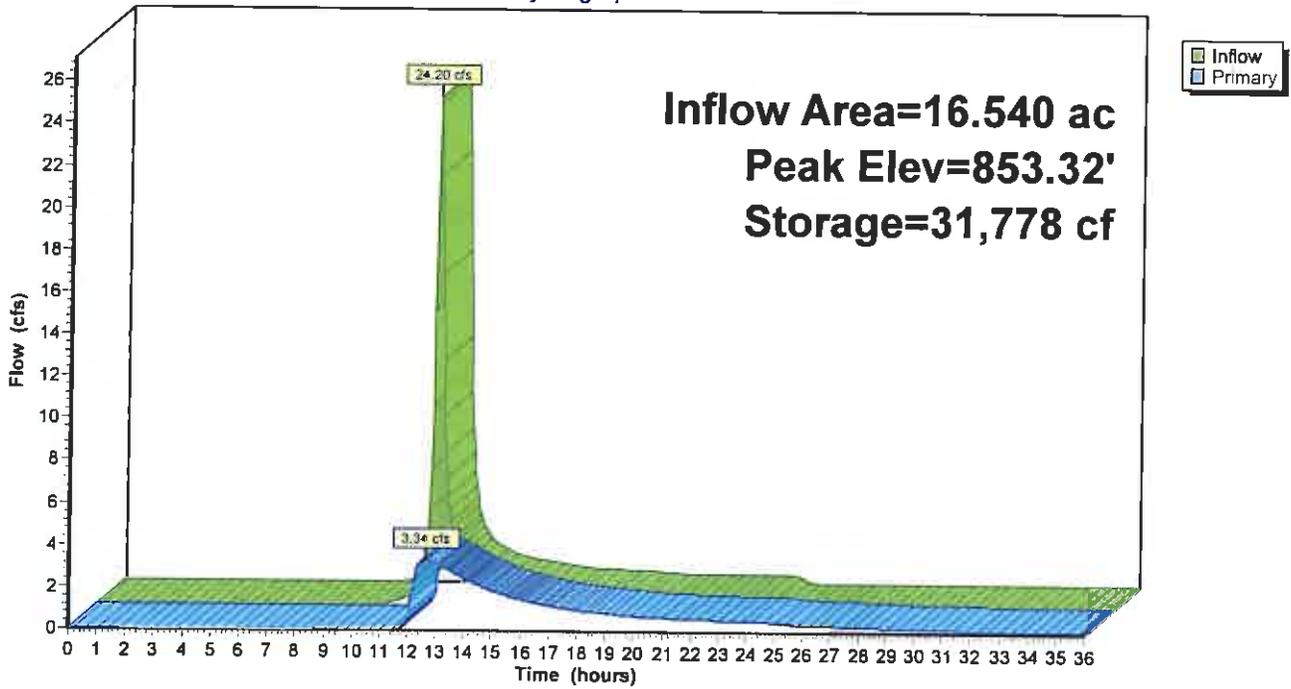
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 ' / Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	12.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	853.75'	30.0" W x 12.0" H Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=3.34 cfs @ 12.64 hrs HW=853.32' (Free Discharge)

- ↑ 1=Culvert (Passes 3.34 cfs of 12.91 cfs potential flow)
- | 2=Orifice/Grate (Orifice Controls 0.98 cfs @ 4.97 fps)
- | 3=Orifice/Grate (Orifice Controls 2.36 cfs @ 2.90 fps)
- | 4=Orifice/Grate (Controls 0.00 cfs)

Pond 8P: South Pond

Hydrograph



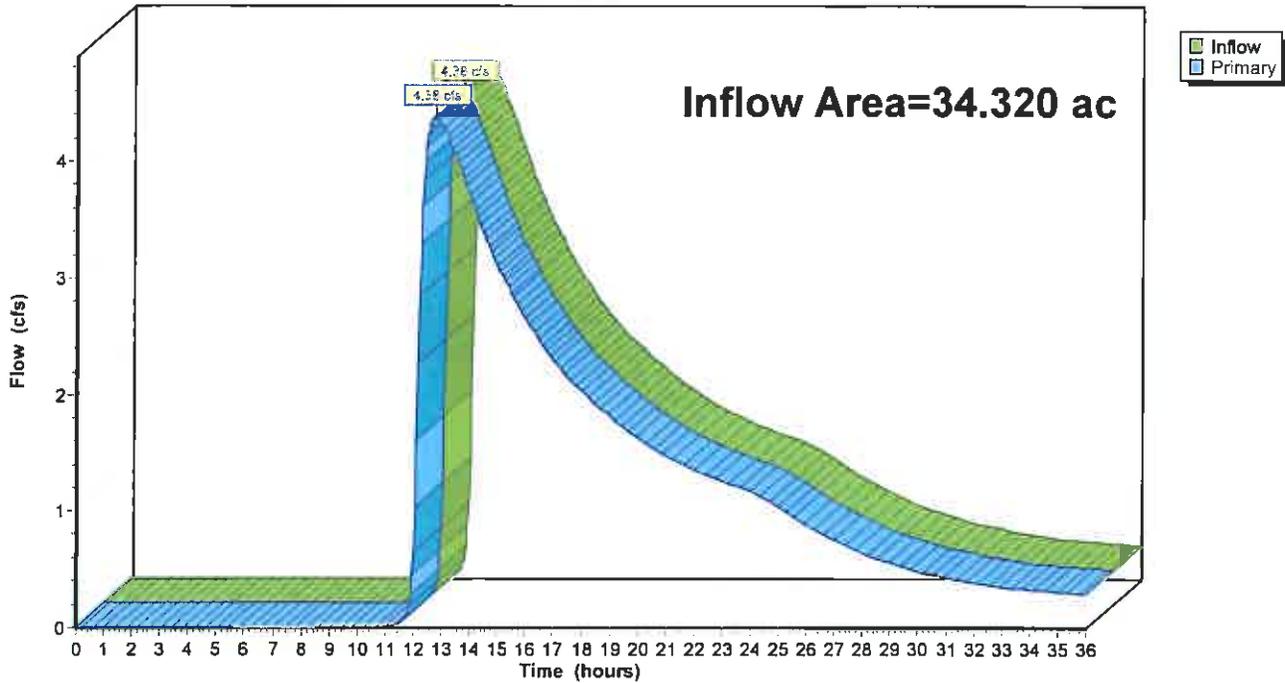
Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 1.00" for 2-Year event
Inflow = 4.38 cfs @ 12.75 hrs, Volume= 2.856 af
Primary = 4.38 cfs @ 12.75 hrs, Volume= 2.856 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.24"

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Summary for Subcatchment 4S: North Proposed

Runoff = 37.19 cfs @ 12.08 hrs, Volume= 2.433 af, Depth= 1.64"

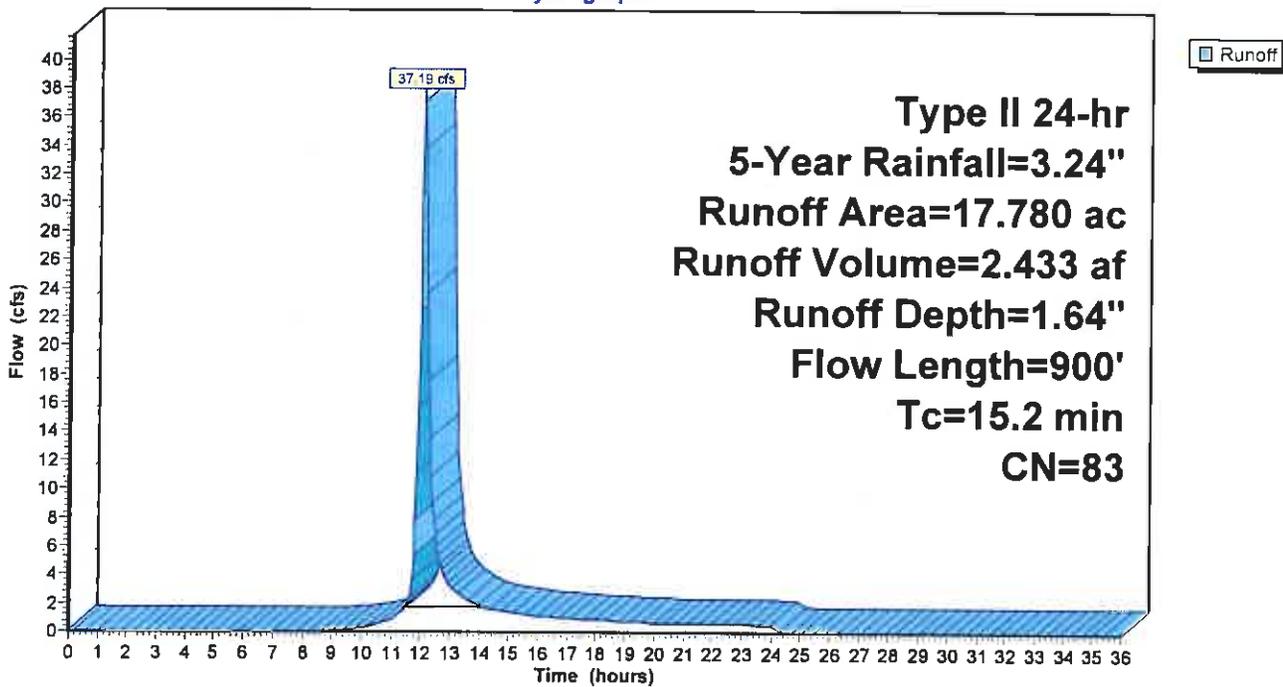
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.24"

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Summary for Subcatchment 5S: South Proposed

Runoff = 34.60 cfs @ 12.08 hrs, Volume= 2.263 af, Depth= 1.64"

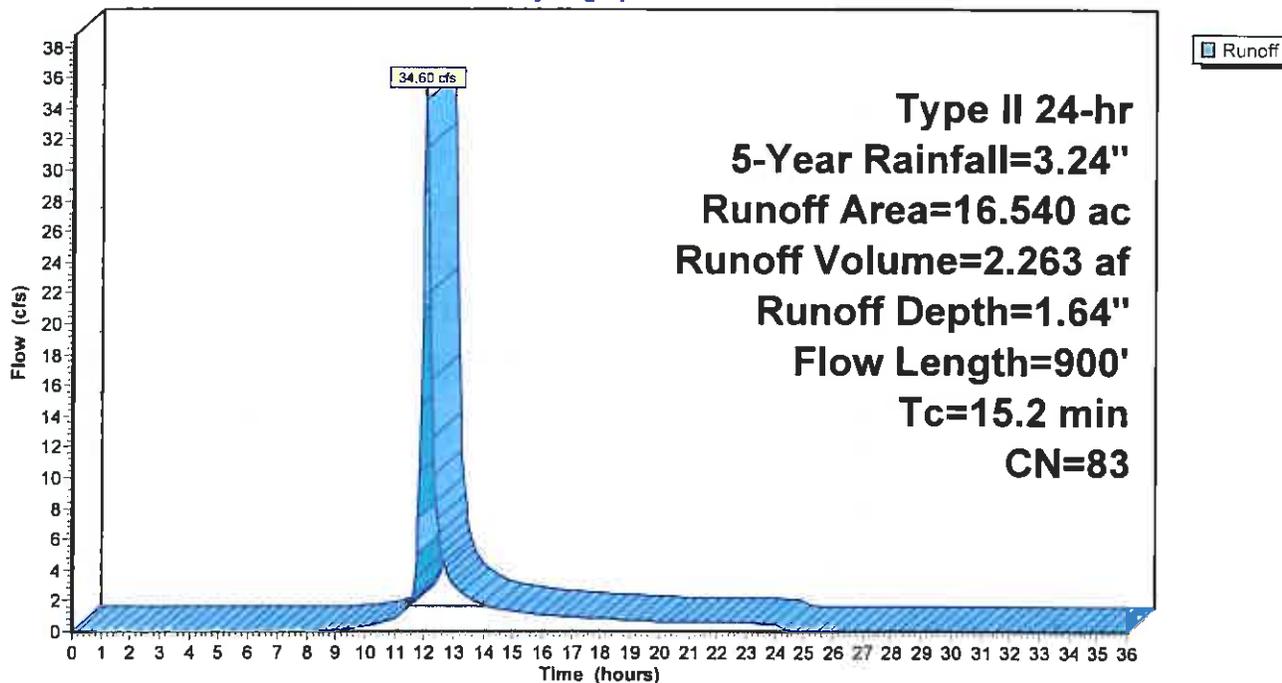
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 5-Year Rainfall=3.24"

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Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 1.64" for 5-Year event
 Inflow = 37.19 cfs @ 12.08 hrs, Volume= 2.433 af
 Outflow = 2.21 cfs @ 13.63 hrs, Volume= 2.023 af, Atten= 94%, Lag= 93.6 min
 Primary = 2.21 cfs @ 13.63 hrs, Volume= 2.023 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 853.55' @ 13.63 hrs Surf.Area= 42,172 sf Storage= 60,355 cf

Plug-Flow detention time= 421.8 min calculated for 2.023 af (83% of inflow)
 Center-of-Mass det. time= 346.5 min (1,184.2 - 837.7)

Volume #1	Invert	Avail.Storage	Storage Description
	852.00'	176,725 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	35,533	0	0
853.00	39,769	37,651	37,651
854.00	44,105	41,937	79,588
855.00	48,541	46,323	125,911
856.00	53,087	50,814	176,725

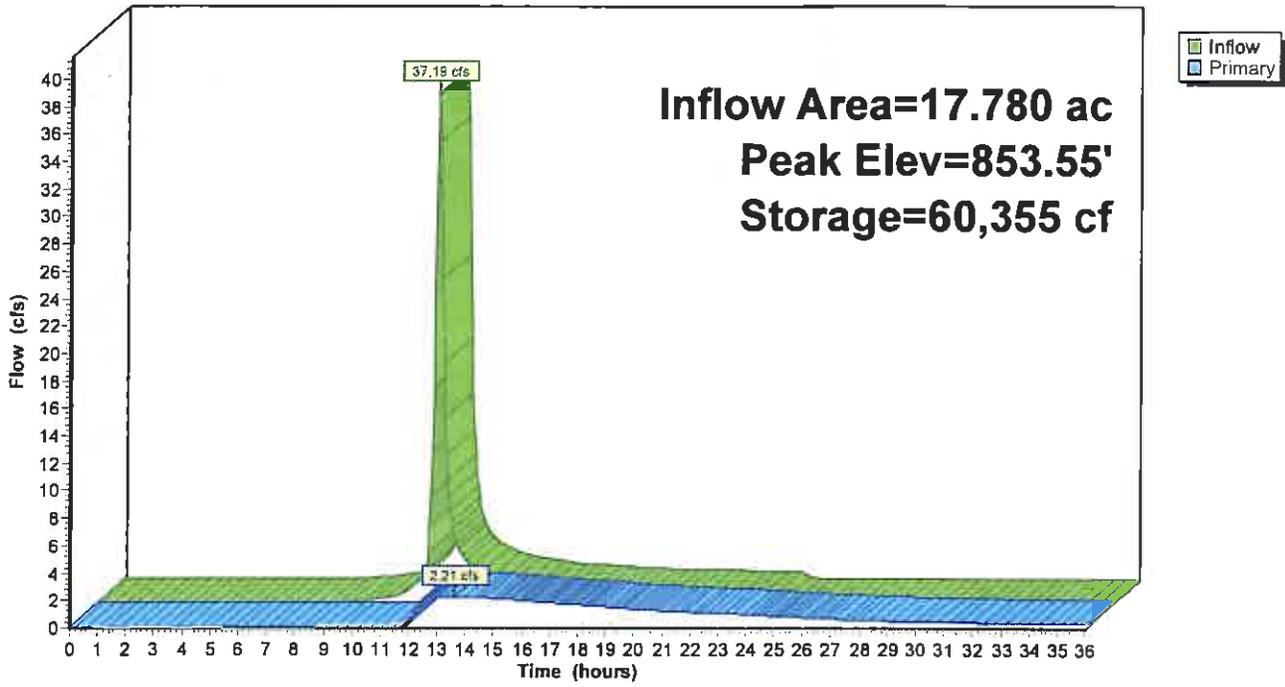
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	6.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	854.00'	48.0" W x 12.0" H Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=2.21 cfs @ 13.63 hrs HW=853.55' (Free Discharge)

- ↑ 1=Culvert (Passes 2.21 cfs of 17.51 cfs potential flow)
- | 2=Orifice/Grate (Orifice Controls 0.49 cfs @ 5.67 fps)
- | 3=Orifice/Grate (Orifice Controls 1.72 cfs @ 3.43 fps)
- | 4=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: North Pond

Hydrograph



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 1.64" for 5-Year event
 Inflow = 34.60 cfs @ 12.08 hrs, Volume= 2.263 af
 Outflow = 5.74 cfs @ 12.54 hrs, Volume= 2.185 af, Atten= 83%, Lag= 27.9 min
 Primary = 5.74 cfs @ 12.54 hrs, Volume= 2.185 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 853.81' @ 12.54 hrs Surf.Area= 28,423 sf Storage= 45,247 cf

Plug-Flow detention time= 199.6 min calculated for 2.185 af (97% of inflow)
 Center-of-Mass det. time= 179.7 min (1,017.4 - 837.7)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	116,919 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	21,747	0	0
853.00	25,400	23,574	23,574
854.00	29,154	27,277	50,851
855.00	33,009	31,082	81,932
856.00	36,964	34,987	116,919

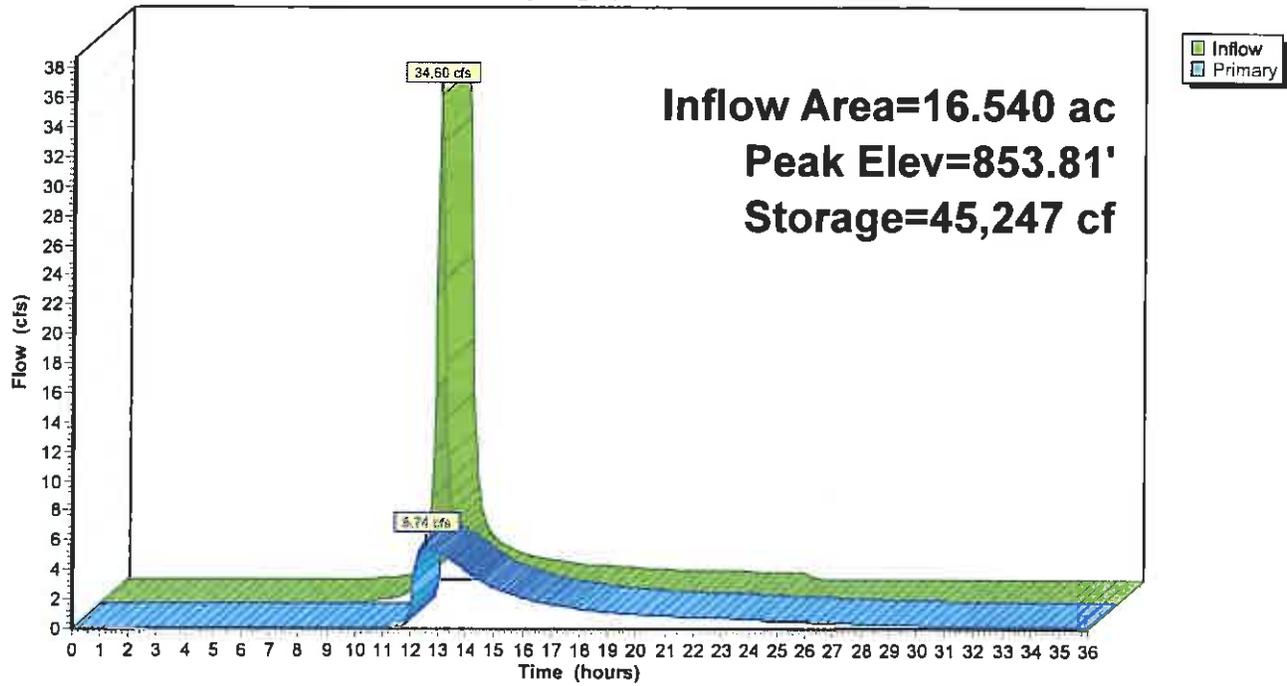
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	12.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	853.75'	30.0" W x 12.0" H Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=5.73 cfs @ 12.54 hrs HW=853.81' (Free Discharge)

- ↑ 1=Culvert (Passes 5.73 cfs of 22.89 cfs potential flow)
- | 2=Orifice/Grate (Orifice Controls 1.18 cfs @ 6.00 fps)
- | 3=Orifice/Grate (Orifice Controls 4.24 cfs @ 4.24 fps)
- | 4=Orifice/Grate (Orifice Controls 0.31 cfs @ 0.75 fps)

Pond 8P: South Pond

Hydrograph



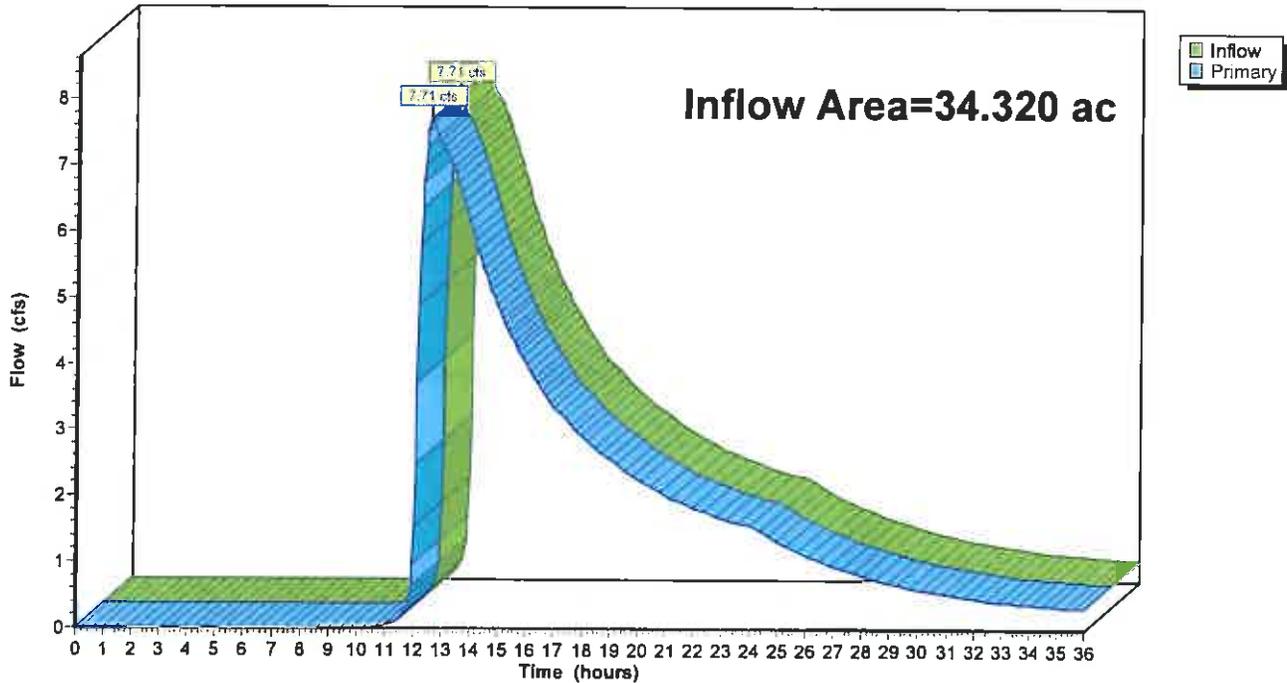
Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 1.47" for 5-Year event
Inflow = 7.71 cfs @ 12.58 hrs, Volume= 4.208 af
Primary = 7.71 cfs @ 12.58 hrs, Volume= 4.208 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 10-Year Rainfall=3.74"

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Summary for Subcatchment 4S: North Proposed

Runoff = 46.77 cfs @ 12.07 hrs, Volume= 3.055 af, Depth= 2.06"

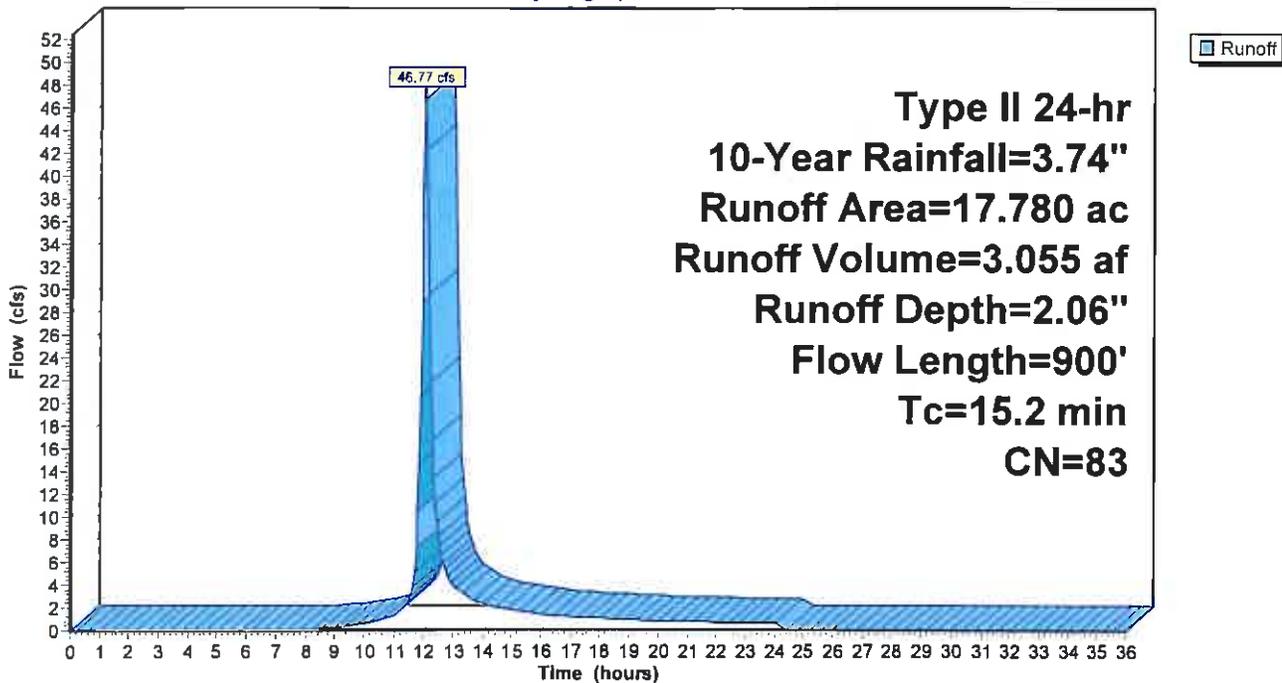
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year Rainfall=3.74"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed

Hydrograph



152-743 Preliminary SWM

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Type II 24-hr 10-Year Rainfall=3.74"

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Summary for Subcatchment 5S: South Proposed

Runoff = 43.51 cfs @ 12.07 hrs, Volume= 2.842 af, Depth= 2.06"

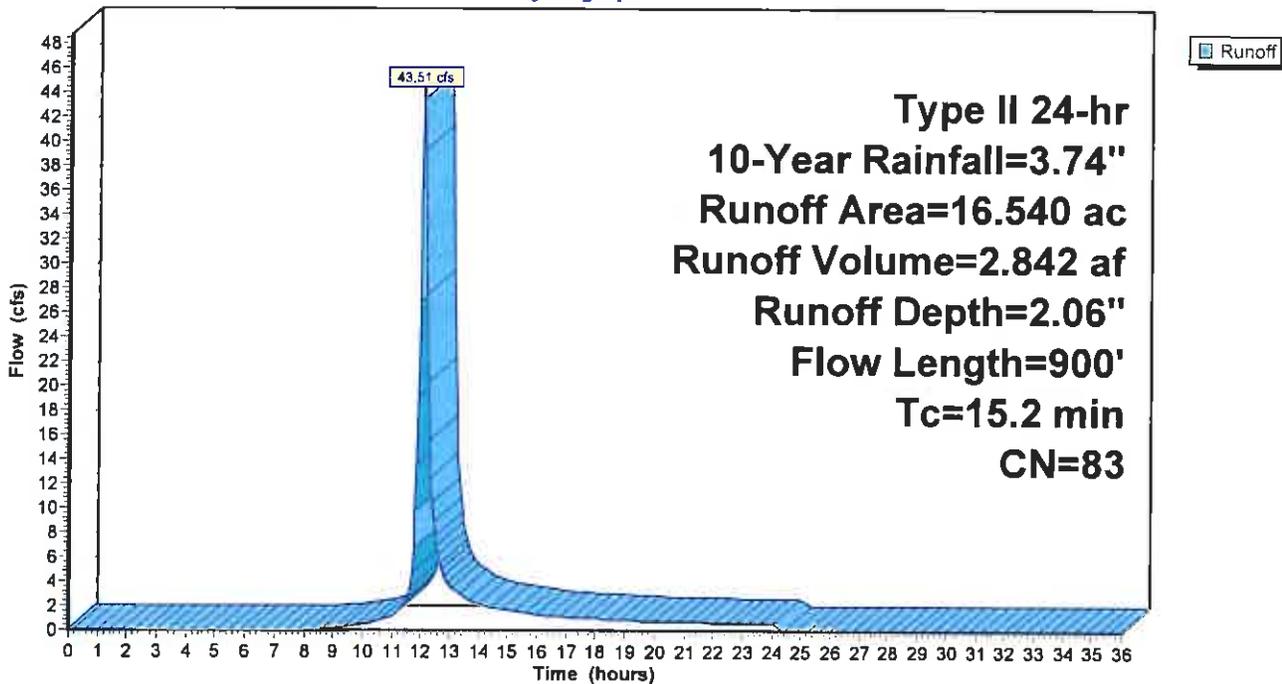
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 10-Year Rainfall=3.74"

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Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 2.06" for 10-Year event
 Inflow = 46.77 cfs @ 12.07 hrs, Volume= 3.055 af
 Outflow = 2.84 cfs @ 13.52 hrs, Volume= 2.620 af, Atten= 94%, Lag= 87.0 min
 Primary = 2.84 cfs @ 13.52 hrs, Volume= 2.620 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 853.93' @ 13.52 hrs Surf.Area= 43,782 sf Storage= 76,316 cf

Plug-Flow detention time= 402.8 min calculated for 2.620 af (86% of inflow)
 Center-of-Mass det. time= 336.2 min (1,167.4 - 831.2)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	176,725 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	35,533	0	0
853.00	39,769	37,651	37,651
854.00	44,105	41,937	79,588
855.00	48,541	46,323	125,911
856.00	53,087	50,814	176,725

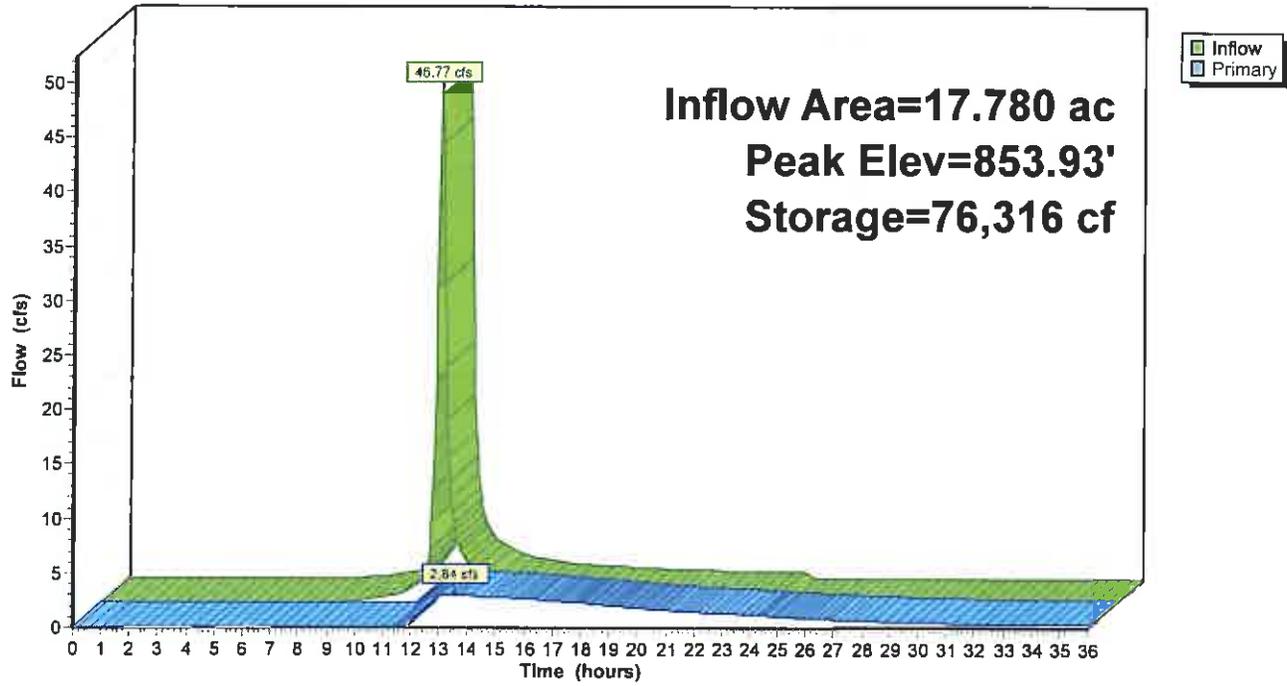
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 ' S= 0.0400 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	6.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	854.00'	48.0" W x 12.0" H Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=2.84 cfs @ 13.52 hrs HW=853.93' (Free Discharge)

- ↑ 1=Culvert (Passes 2.84 cfs of 25.62 cfs potential flow)
- | 2=Orifice/Grate (Orifice Controls 0.56 cfs @ 6.39 fps)
- | 3=Orifice/Grate (Orifice Controls 2.29 cfs @ 4.57 fps)
- | 4=Orifice/Grate (Controls 0.00 cfs)

Pond 7P: North Pond

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 10-Year Rainfall=3.74"

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Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 2.06" for 10-Year event
 Inflow = 43.51 cfs @ 12.07 hrs, Volume= 2.842 af
 Outflow = 11.43 cfs @ 12.38 hrs, Volume= 2.762 af, Atten= 74%, Lag= 18.2 min
 Primary = 11.43 cfs @ 12.38 hrs, Volume= 2.762 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 854.11' @ 12.38 hrs Surf.Area= 29,564 sf Storage= 53,971 cf

Plug-Flow detention time= 175.9 min calculated for 2.762 af (97% of inflow)
 Center-of-Mass det. time= 159.2 min (990.4 - 831.2)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	116,919 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	21,747	0	0
853.00	25,400	23,574	23,574
854.00	29,154	27,277	50,851
855.00	33,009	31,082	81,932
856.00	36,964	34,987	116,919

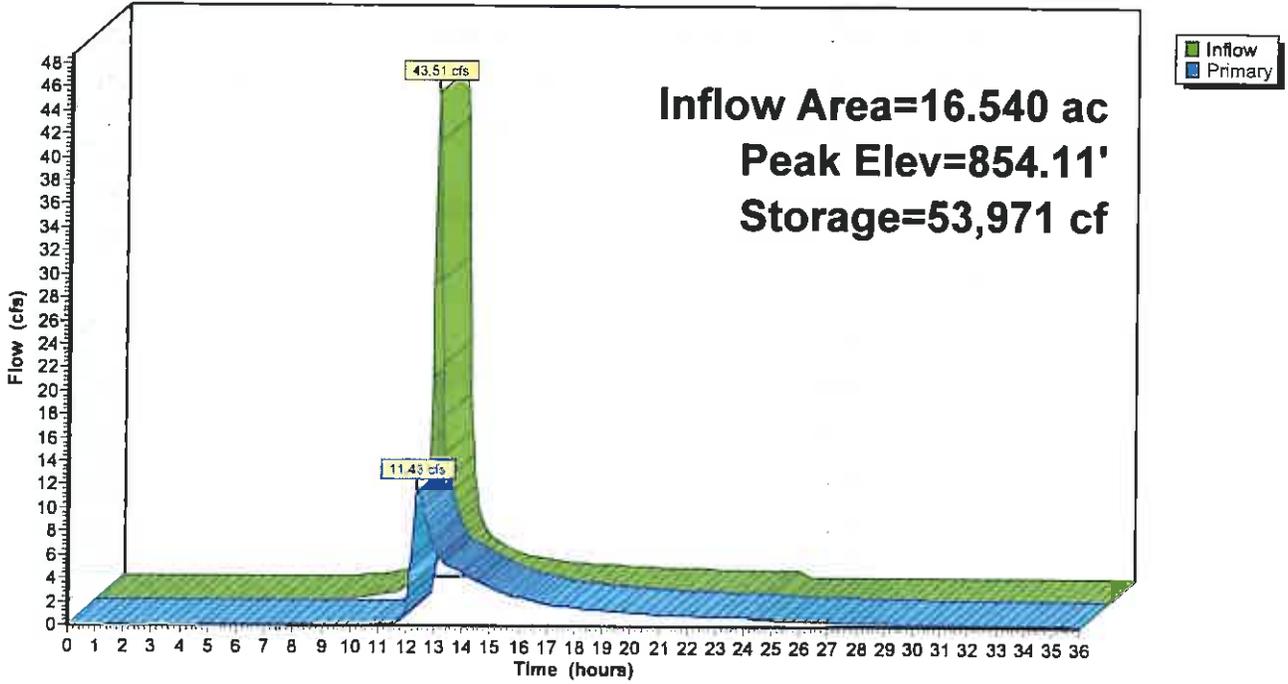
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	12.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	853.75'	30.0" W x 12.0" H Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=11.40 cfs @ 12.38 hrs HW=854.11' (Free Discharge)

- ↑ 1=Culvert (Passes 11.40 cfs of 29.86 cfs potential flow)
- | 2=Orifice/Grate (Orifice Controls 1.29 cfs @ 6.56 fps)
- | 3=Orifice/Grate (Orifice Controls 5.02 cfs @ 5.02 fps)
- | 4=Orifice/Grate (Orifice Controls 5.09 cfs @ 1.91 fps)

Pond 8P: South Pond

Hydrograph

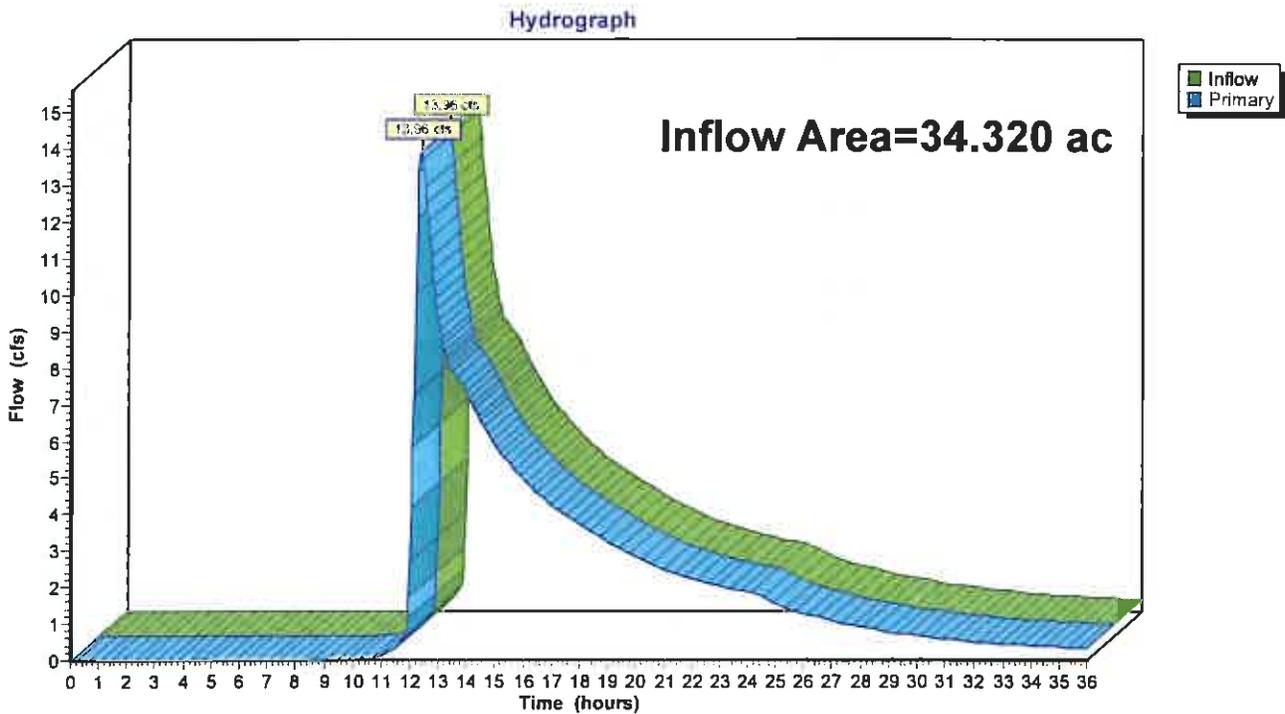


Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 1.88" for 10-Year event
Inflow = 13.96 cfs @ 12.39 hrs, Volume= 5.382 af
Primary = 13.96 cfs @ 12.39 hrs, Volume= 5.382 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed



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Type II 24-hr 25-Year Rainfall=4.44"

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Summary for Subcatchment 4S: North Proposed

Runoff = 60.43 cfs @ 12.07 hrs, Volume= 3.959 af, Depth= 2.67"

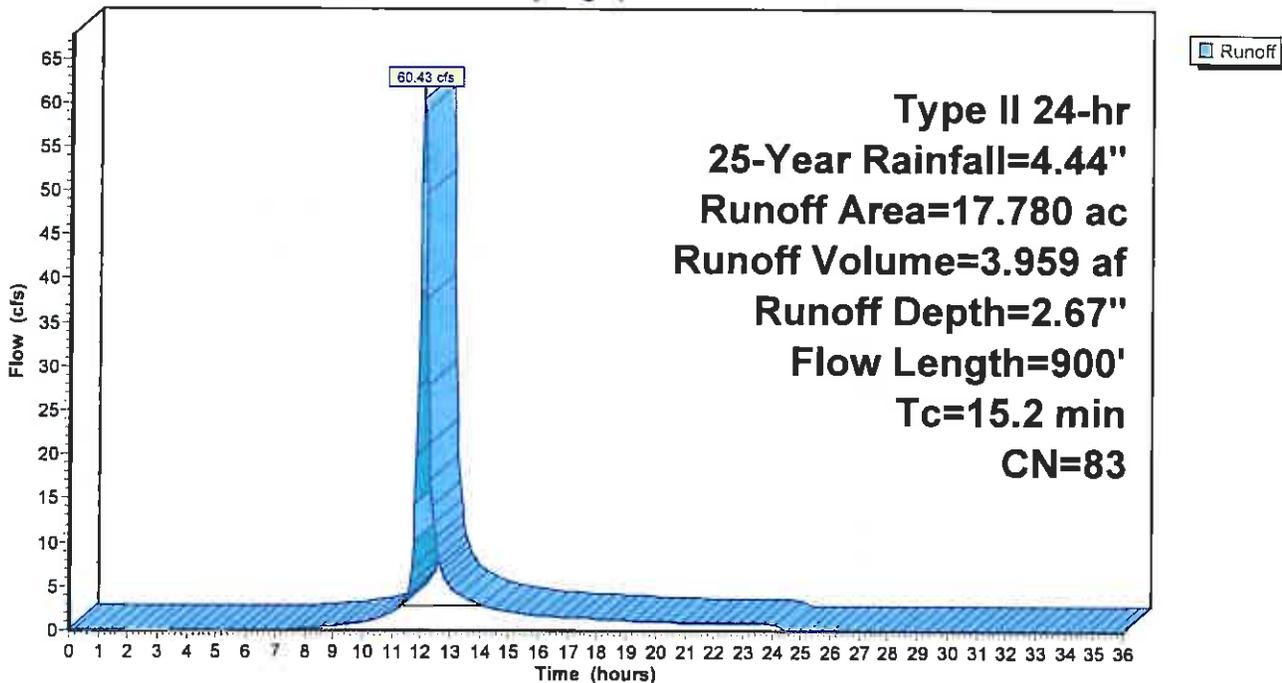
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.44"

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Summary for Subcatchment 5S: South Proposed

Runoff = 56.21 cfs @ 12.07 hrs, Volume= 3.683 af, Depth= 2.67"

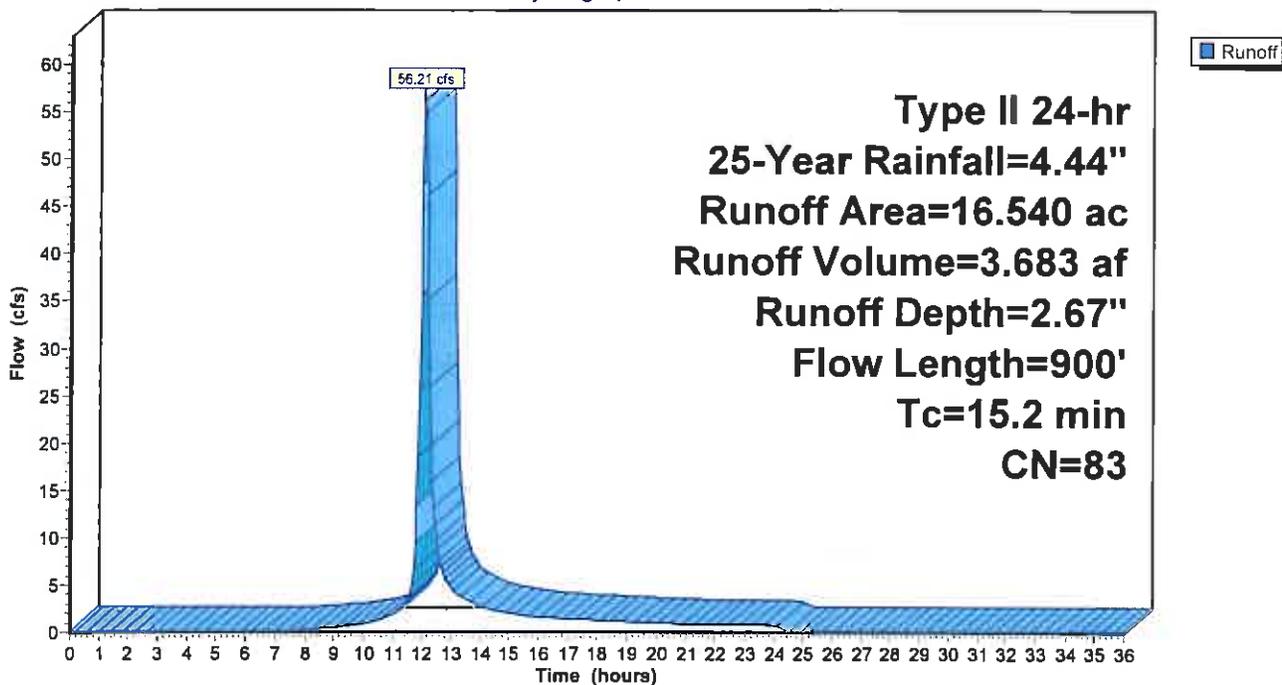
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 25-Year Rainfall=4.44"

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Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 2.67" for 25-Year event
 Inflow = 60.43 cfs @ 12.07 hrs, Volume= 3.959 af
 Outflow = 7.45 cfs @ 12.65 hrs, Volume= 3.503 af, Atten= 88%, Lag= 34.6 min
 Primary = 7.45 cfs @ 12.65 hrs, Volume= 3.503 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 854.29' @ 12.65 hrs Surf.Area= 45,413 sf Storage= 92,783 cf

Plug-Flow detention time= 352.5 min calculated for 3.503 af (88% of inflow)
 Center-of-Mass det. time= 295.6 min (1,119.4 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	176,725 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	35,533	0	0
853.00	39,769	37,651	37,651
854.00	44,105	41,937	79,588
855.00	48,541	46,323	125,911
856.00	53,087	50,814	176,725

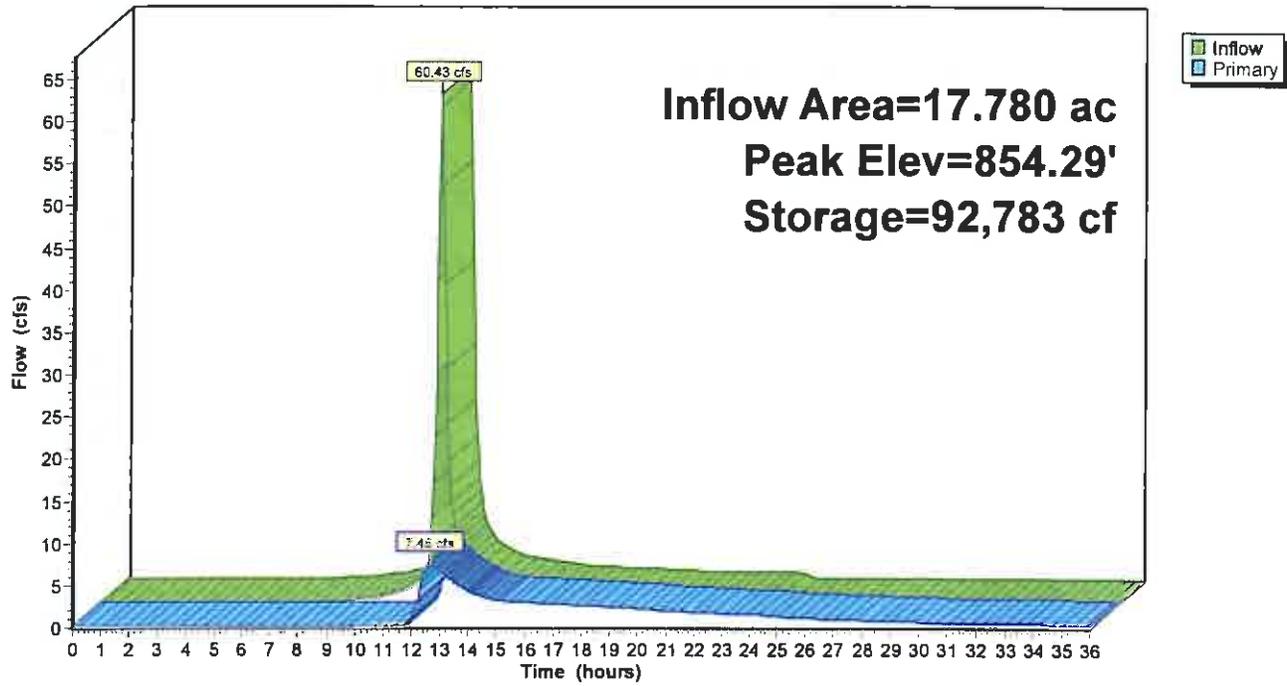
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	6.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	854.00'	48.0" W x 12.0" H Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=7.44 cfs @ 12.65 hrs HW=854.29' (Free Discharge)

- 1=Culvert (Passes 7.44 cfs of 34.48 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.61 cfs @ 7.02 fps)
- 3=Orifice/Grate (Orifice Controls 2.72 cfs @ 5.44 fps)
- 4=Orifice/Grate (Orifice Controls 4.11 cfs @ 1.74 fps)

Pond 7P: North Pond

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 25-Year Rainfall=4.44"

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Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 2.67" for 25-Year event
 Inflow = 56.21 cfs @ 12.07 hrs, Volume= 3.683 af
 Outflow = 21.75 cfs @ 12.29 hrs, Volume= 3.600 af, Atten= 61%, Lag= 13.0 min
 Primary = 21.75 cfs @ 12.29 hrs, Volume= 3.600 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 854.46' @ 12.29 hrs Surf.Area= 30,945 sf Storage= 64,811 cf

Plug-Flow detention time= 150.0 min calculated for 3.595 af (98% of inflow)
 Center-of-Mass det. time= 137.3 min (961.1 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	116,919 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	21,747	0	0
853.00	25,400	23,574	23,574
854.00	29,154	27,277	50,851
855.00	33,009	31,082	81,932
856.00	36,964	34,987	116,919

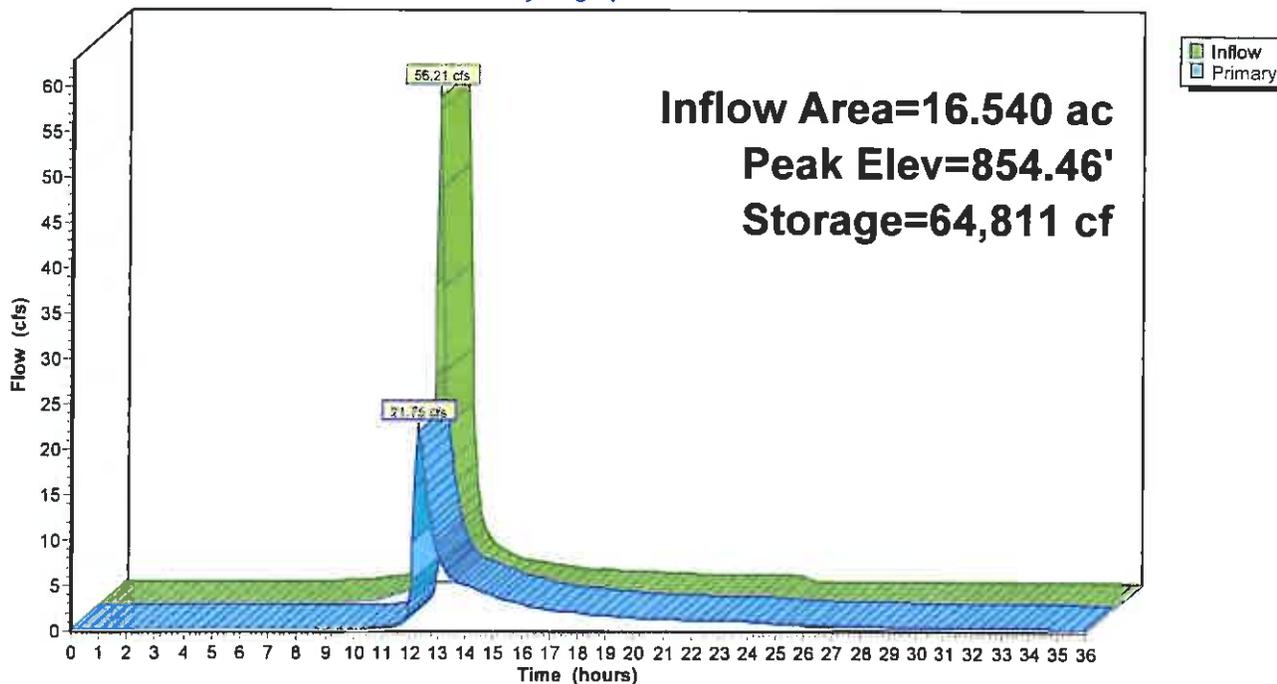
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	12.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	853.75'	30.0" W x 12.0" H Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=21.66 cfs @ 12.29 hrs HW=854.46' (Free Discharge)

- ↑ 1=Culvert (Passes 21.66 cfs of 38.64 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 1.41 cfs @ 7.16 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 5.79 cfs @ 5.79 fps)
- ↑ 4=Orifice/Grate (Orifice Controls 14.47 cfs @ 2.71 fps)

Pond 8P: South Pond

Hydrograph



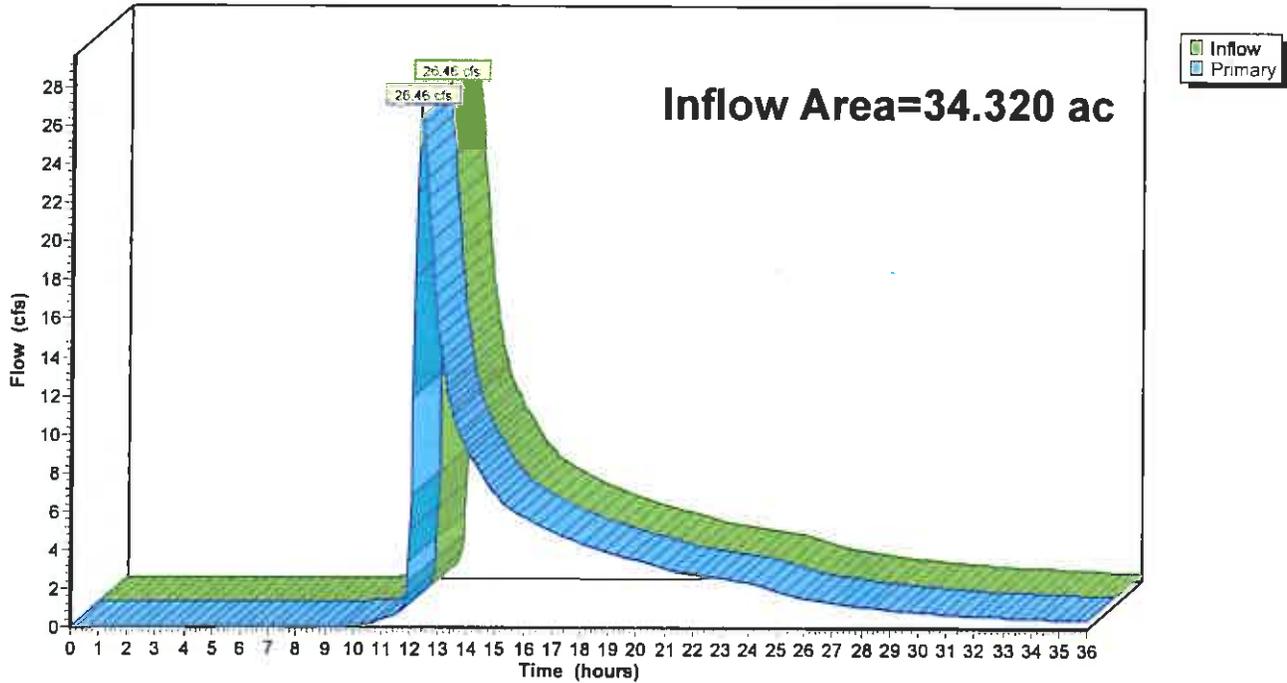
Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 2.48" for 25-Year event
Inflow = 26.46 cfs @ 12.35 hrs, Volume= 7.103 af
Primary = 26.46 cfs @ 12.35 hrs, Volume= 7.103 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed

Hydrograph



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Type II 24-hr 50-Year Rainfall=5.02"

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Summary for Subcatchment 4S: North Proposed

Runoff = 71.90 cfs @ 12.07 hrs, Volume= 4.730 af, Depth= 3.19"

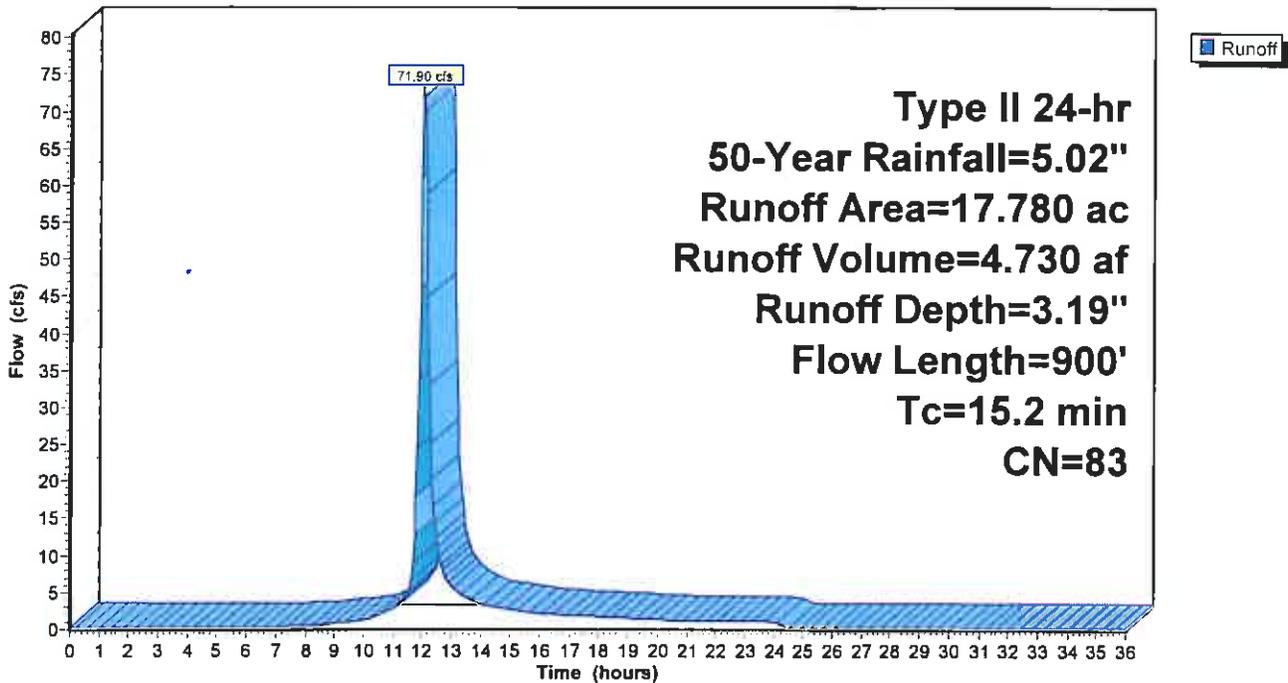
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed

Hydrograph



152-743 Preliminary SWM

Prepared by CEC, Inc.

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Type II 24-hr 50-Year Rainfall=5.02"

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Summary for Subcatchment 5S: South Proposed

Runoff = 66.89 cfs @ 12.07 hrs, Volume= 4.400 af, Depth= 3.19"

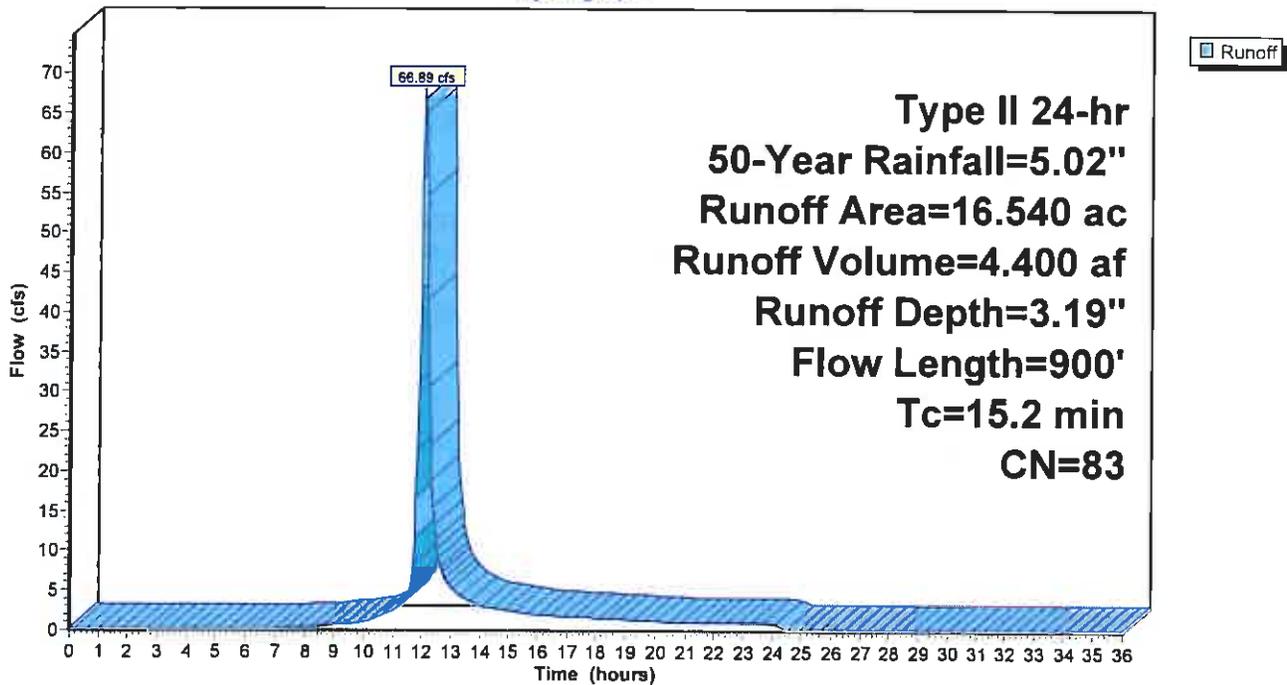
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 50-Year Rainfall=5.02"

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Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 3.19" for 50-Year event
 Inflow = 71.90 cfs @ 12.07 hrs, Volume= 4.730 af
 Outflow = 14.09 cfs @ 12.46 hrs, Volume= 4.261 af, Atten= 80%, Lag= 23.1 min
 Primary = 14.09 cfs @ 12.46 hrs, Volume= 4.261 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 854.55' @ 12.46 hrs Surf.Area= 46,541 sf Storage= 104,479 cf

Plug-Flow detention time= 310.2 min calculated for 4.255 af (90% of inflow)
 Center-of-Mass det. time= 260.6 min (1,079.3 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	176,725 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	35,533	0	0
853.00	39,769	37,651	37,651
854.00	44,105	41,937	79,588
855.00	48,541	46,323	125,911
856.00	53,087	50,814	176,725

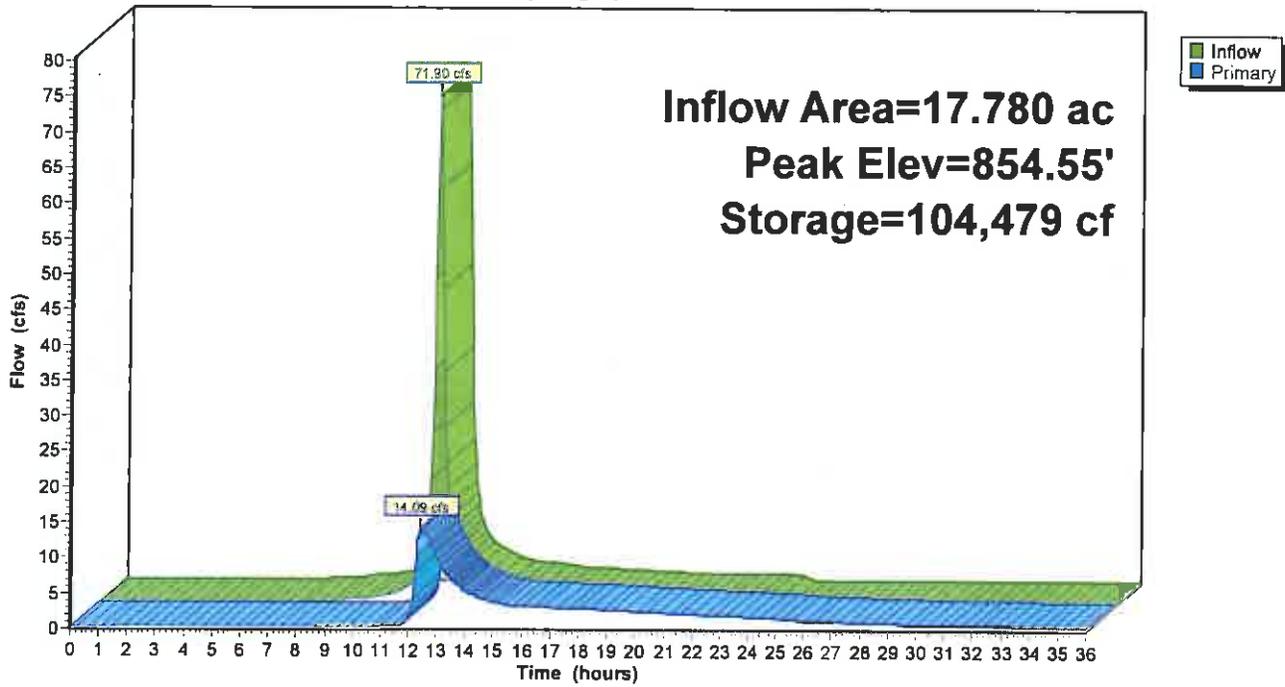
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	6.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	854.00'	48.0" W x 12.0" H Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=14.07 cfs @ 12.46 hrs HW=854.55' (Free Discharge)

- 1=Culvert (Passes 14.07 cfs of 40.80 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.65 cfs @ 7.43 fps)
- 3=Orifice/Grate (Orifice Controls 2.98 cfs @ 5.97 fps)
- 4=Orifice/Grate (Orifice Controls 10.44 cfs @ 2.38 fps)

Pond 7P: North Pond

Hydrograph



152-743 Preliminary SWM

Type II 24-hr 50-Year Rainfall=5.02"

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Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 3.19" for 50-Year event
 Inflow = 66.89 cfs @ 12.07 hrs, Volume= 4.400 af
 Outflow = 31.19 cfs @ 12.25 hrs, Volume= 4.314 af, Atten= 53%, Lag= 11.1 min
 Primary = 31.19 cfs @ 12.25 hrs, Volume= 4.314 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 854.73' @ 12.25 hrs Surf.Area= 31,972 sf Storage= 73,189 cf

Plug-Flow detention time= 136.2 min calculated for 4.314 af (98% of inflow)
 Center-of-Mass det. time= 124.4 min (943.1 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	116,919 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	21,747	0	0
853.00	25,400	23,574	23,574
854.00	29,154	27,277	50,851
855.00	33,009	31,082	81,932
856.00	36,964	34,987	116,919

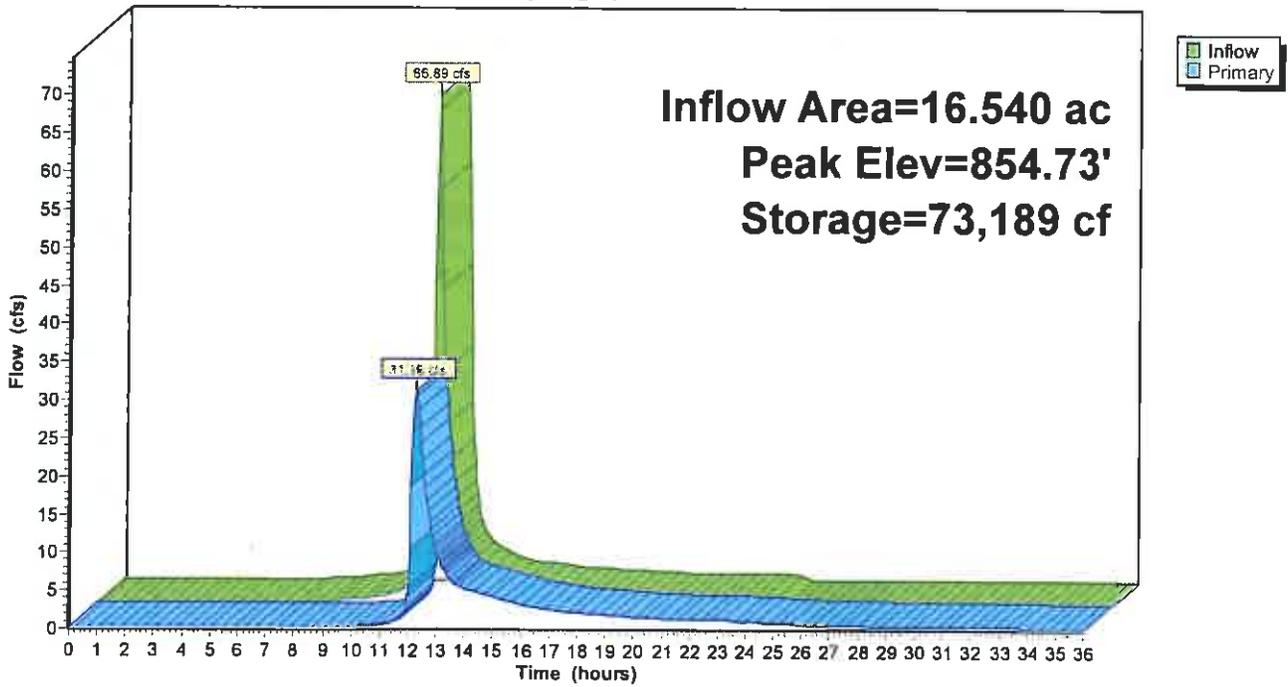
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	12.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	853.75'	30.0" W x 12.0" H Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=31.11 cfs @ 12.25 hrs HW=854.73' (Free Discharge)

- ↑ 1=Culvert (Passes 31.11 cfs of 45.26 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 1.49 cfs @ 7.58 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 6.31 cfs @ 6.31 fps)
- ↑ 4=Orifice/Grate (Orifice Controls 23.31 cfs @ 3.18 fps)

Pond 8P: South Pond

Hydrograph



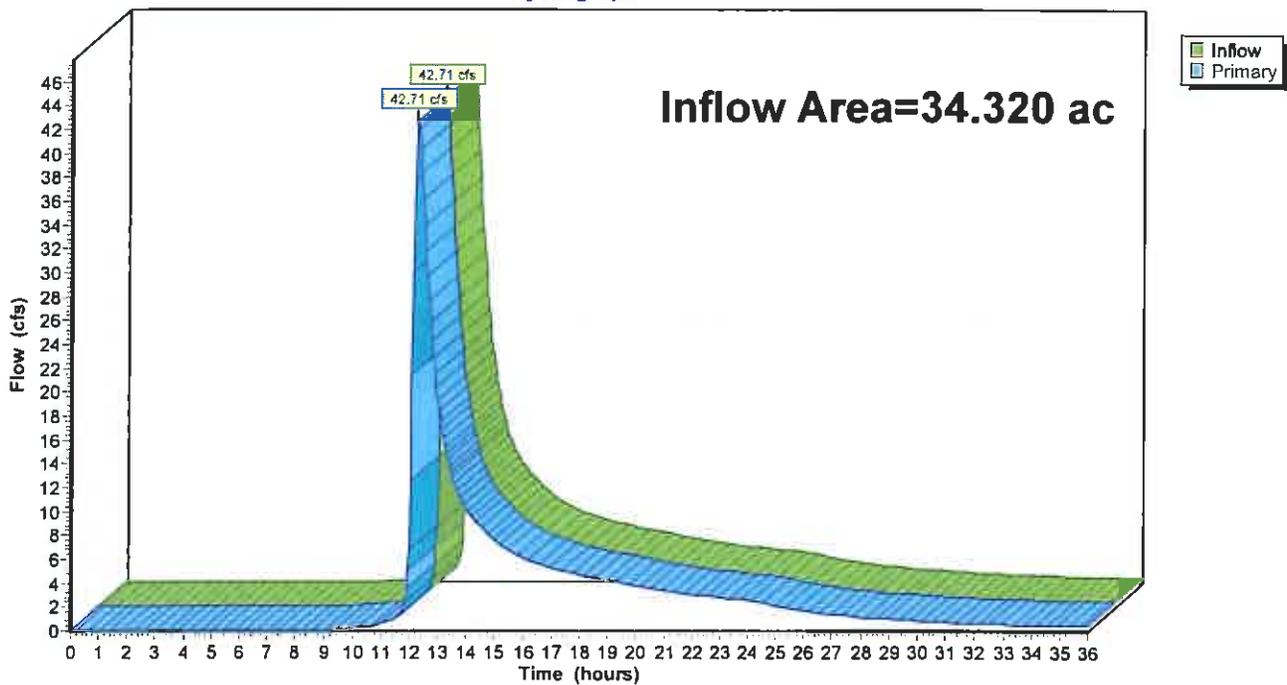
Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 3.00" for 50-Year event
Inflow = 42.71 cfs @ 12.31 hrs, Volume= 8.576 af
Primary = 42.71 cfs @ 12.31 hrs, Volume= 8.576 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed

Hydrograph



152-743 Preliminary SWM

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Type II 24-hr 100-Year Rainfall=5.63"

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Summary for Subcatchment 4S: North Proposed

Runoff = 84.05 cfs @ 12.07 hrs, Volume= 5.555 af, Depth= 3.75"

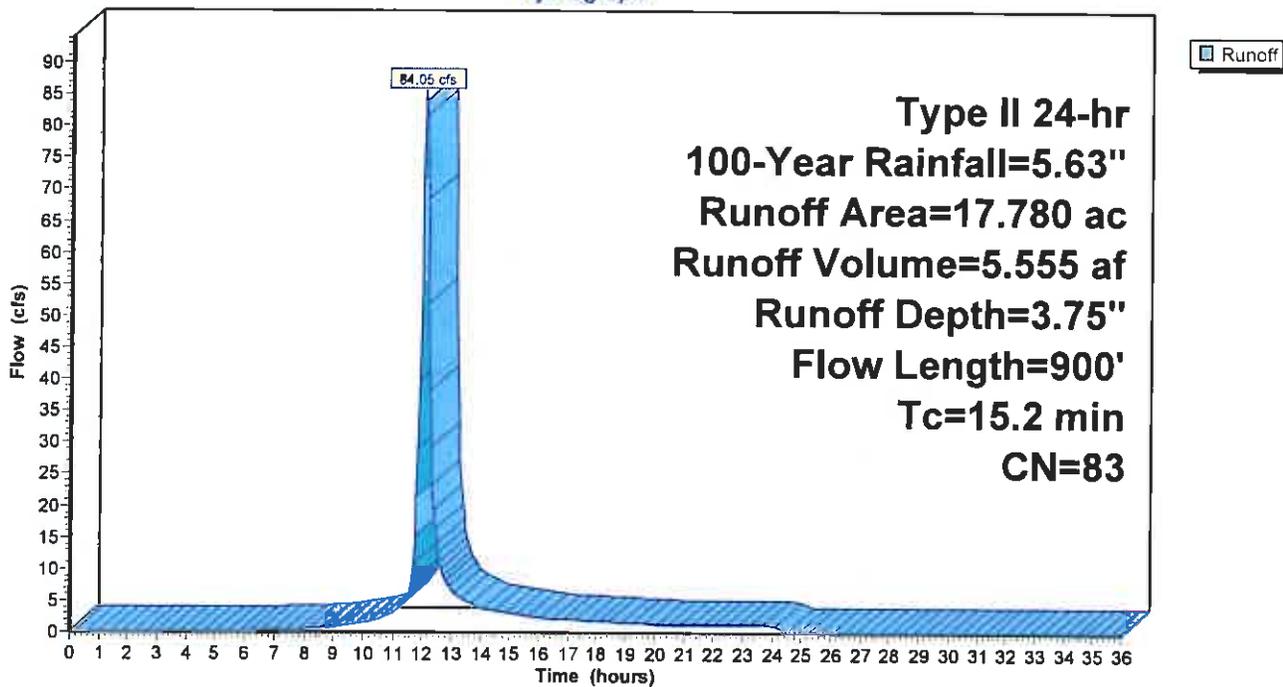
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.63"

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Summary for Subcatchment 5S: South Proposed

Runoff = 78.19 cfs @ 12.07 hrs, Volume= 5.168 af, Depth= 3.75"

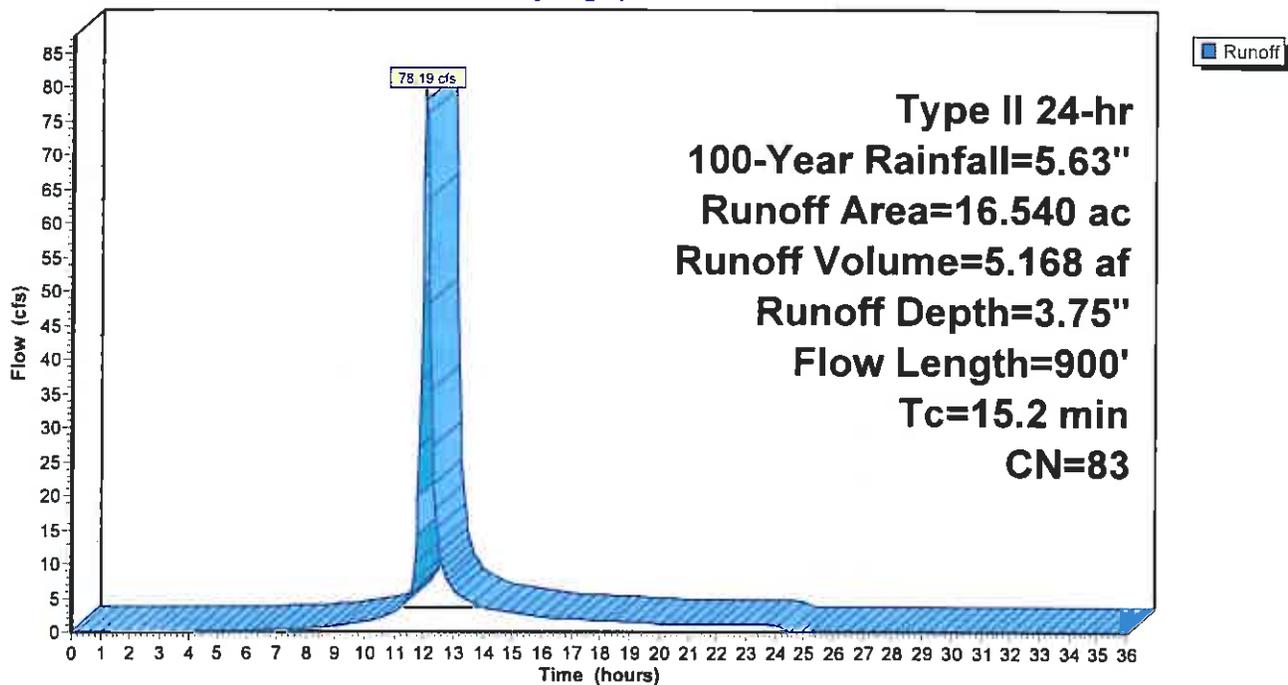
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed

Hydrograph



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 3.75" for 100-Year event
 Inflow = 84.05 cfs @ 12.07 hrs, Volume= 5.555 af
 Outflow = 22.63 cfs @ 12.36 hrs, Volume= 5.076 af, Atten= 73%, Lag= 17.6 min
 Primary = 22.63 cfs @ 12.36 hrs, Volume= 5.076 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 854.81' @ 12.36 hrs Surf.Area= 47,698 sf Storage= 116,764 cf

Plug-Flow detention time= 277.4 min calculated for 5.069 af (91% of inflow)
 Center-of-Mass det. time= 232.9 min (1,047.1 - 814.2)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	176,725 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	35,533	0	0
853.00	39,769	37,651	37,651
854.00	44,105	41,937	79,588
855.00	48,541	46,323	125,911
856.00	53,087	50,814	176,725

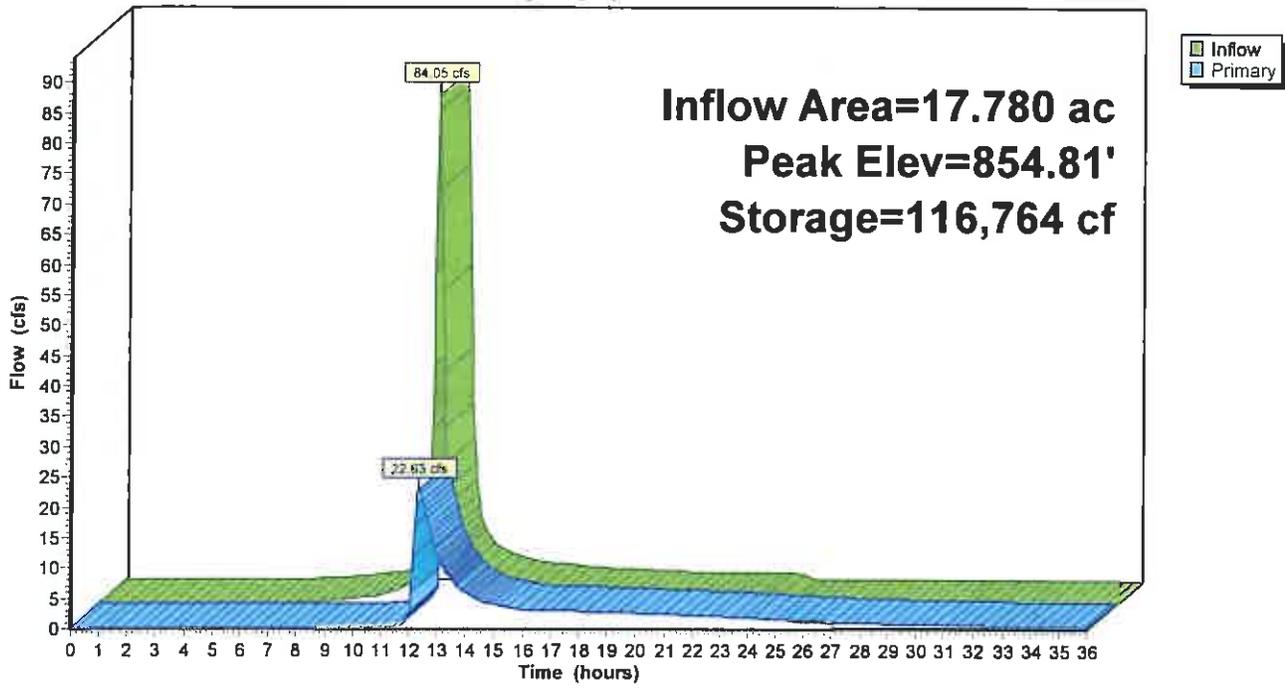
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 ' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	6.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	854.00'	48.0" W x 12.0" H Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=22.57 cfs @ 12.36 hrs HW=854.81' (Free Discharge)

- 1=Culvert (Passes 22.57 cfs of 47.21 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.68 cfs @ 7.83 fps)
- 3=Orifice/Grate (Orifice Controls 3.23 cfs @ 6.45 fps)
- 4=Orifice/Grate (Orifice Controls 18.66 cfs @ 2.89 fps)

Pond 7P: North Pond

Hydrograph



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 3.75" for 100-Year event
 Inflow = 78.19 cfs @ 12.07 hrs, Volume= 5.168 af
 Outflow = 39.03 cfs @ 12.24 hrs, Volume= 5.080 af, Atten= 50%, Lag= 10.3 min
 Primary = 39.03 cfs @ 12.24 hrs, Volume= 5.080 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 855.00' @ 12.24 hrs Surf.Area= 33,014 sf Storage= 81,972 cf

Plug-Flow detention time= 124.7 min calculated for 5.080 af (98% of inflow)
 Center-of-Mass det. time= 114.3 min (928.4 - 814.2)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	116,919 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	21,747	0	0
853.00	25,400	23,574	23,574
854.00	29,154	27,277	50,851
855.00	33,009	31,082	81,932
856.00	36,964	34,987	116,919

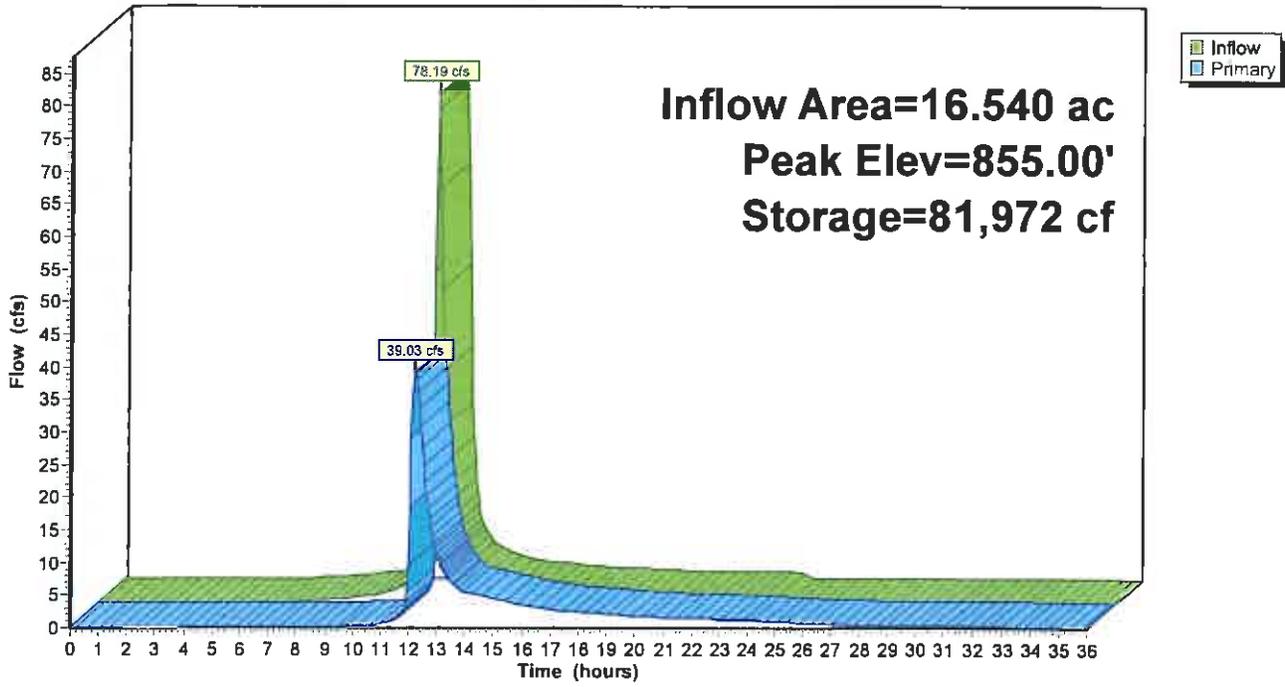
Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	42.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400' /' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	852.50'	12.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	853.75'	30.0" W x 12.0" H Vert. Orifice/Grate X 3.00 C= 0.600

Primary OutFlow Max=38.92 cfs @ 12.24 hrs HW=855.00' (Free Discharge)

- ↑ 1=Culvert (Passes 38.92 cfs of 51.69 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 1.57 cfs @ 7.98 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 6.79 cfs @ 6.79 fps)
- ↑ 4=Orifice/Grate (Orifice Controls 30.56 cfs @ 4.08 fps)

Pond 8P: South Pond

Hydrograph



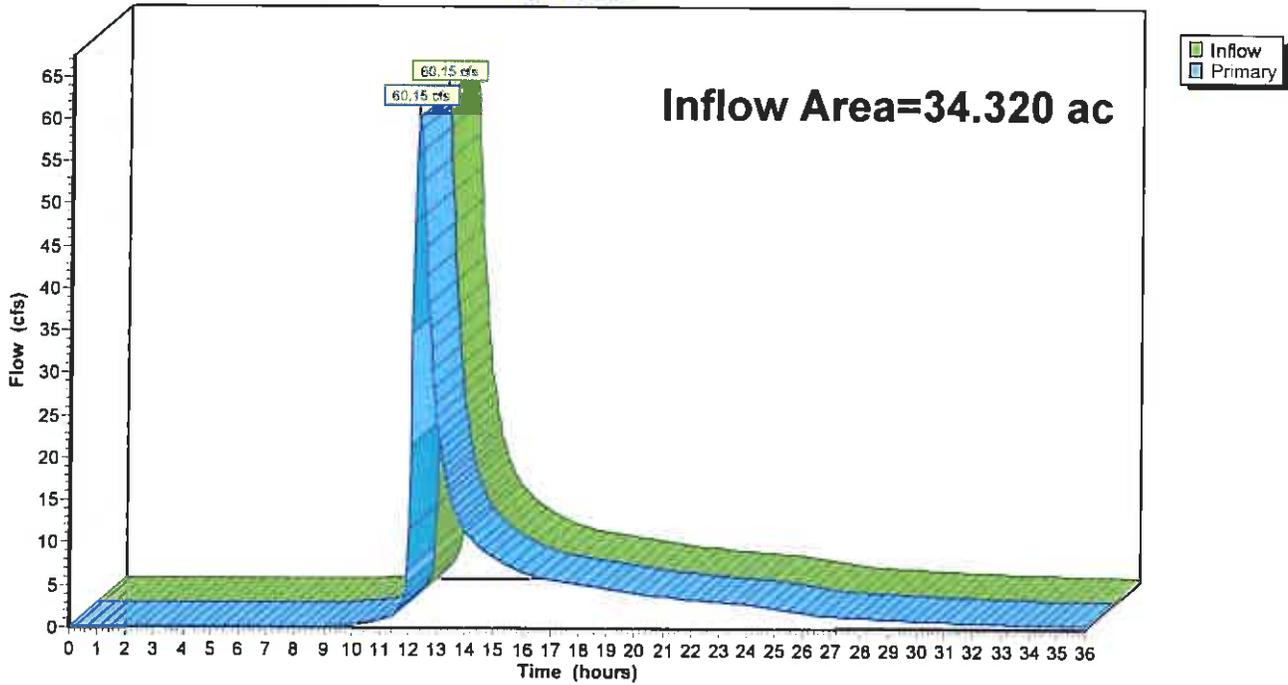
Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 3.55" for 100-Year event
Inflow = 60.15 cfs @ 12.29 hrs, Volume= 10.156 af
Primary = 60.15 cfs @ 12.29 hrs, Volume= 10.156 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed

Hydrograph





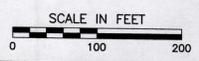
NORTH



REFERENCE
1. ALL EXISTING BASE MAP INFORMATION OBTAINED FROM FRANKLIN COUNTY AUDITORS, AUGUST 2015.

LEGEND

	EXISTING INDEX CONTOUR
	EXISTING INTERMEDIATE CONTOUR
	EXISTING FLOWLINE
	FLOW CHANGE INDICATOR
	EXISTING WATERSHED BOUNDARY



CEC
Civil & Environmental Consultants, Inc.
 250 Old Wilson Bridge Road · Suite 250 · Worthington, OH 43085
 Ph: 614.540.6633 · 888.598.6808 · Fax: 614.540.6638
 www.cecinc.com

**HOMWOOD CORPORATION
 DEVELOPMENT PLAN
 HOLTON PARK
 GROVE CITY, OHIO**

DRAWN BY: KJN	CHECKED BY: MCR	APPROVED BY:	DRAFT
DATE: AUG 2015	DWG SCALE: 1"=100'	PROJECT NO: 152-743	

COVER SHEET

DRAWING NO.: **1**
 SHEET 1 OF 1