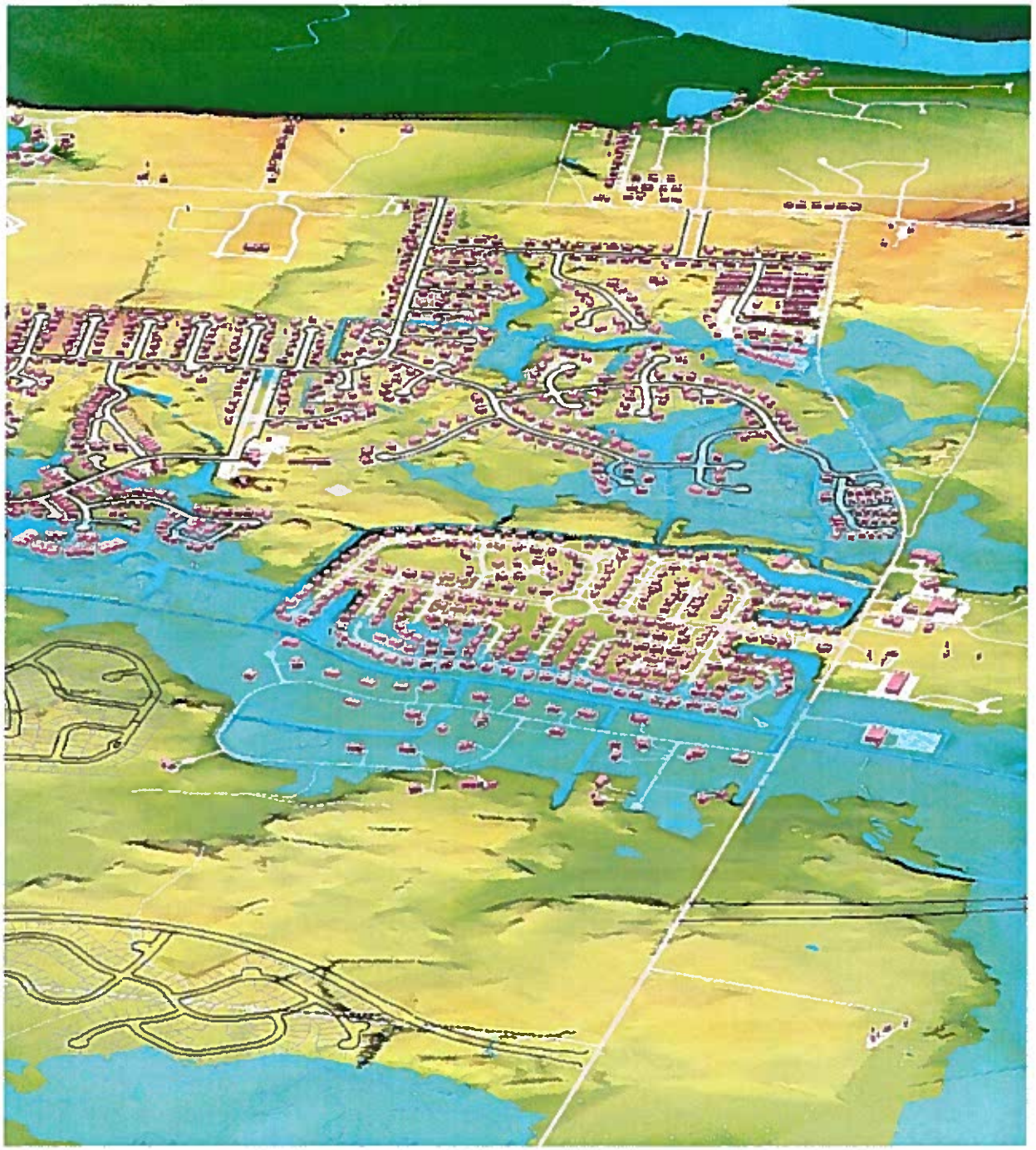

City of Charleston

Church Creek Watershed

Storm Water Master Plan Technical Report (Vol. 2)

December 2001

Church Creek Stormwater Master Plan

Technical Report
(Volume 2)

December 2001

Woolpert LLP
Charlotte, North Carolina
Job No. 58375

SOUTH CAROLINA
WOOLPERT LLP
No. C00198
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 12574
01/02/02
KENDALL FLINT HOLBROOK

CHURCH CREEK STORMWATER MASTER PLAN

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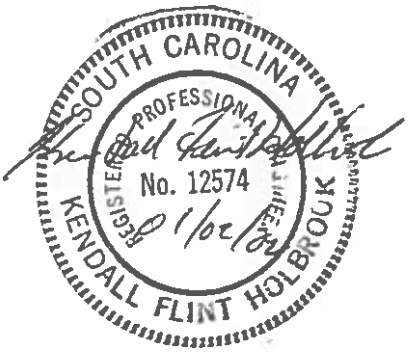

Appendix A	Bibliography
Appendix B	ICPR Input File
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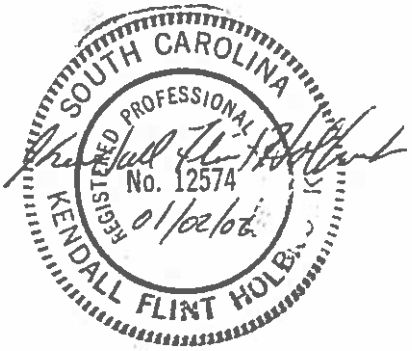


SECTION 1 INTRODUCTION

1.1 PROJECT AUTHORIZATION

Woolpert LLP was authorized to prepare a Storm Water Master Plan (SWMP) for the Church Creek Watershed under agreement with the City of Charleston. These terms are specified in the Agreement for Engineering Services dated September 2000 between the City of Charleston and Woolpert LLP.

1.2 PURPOSE

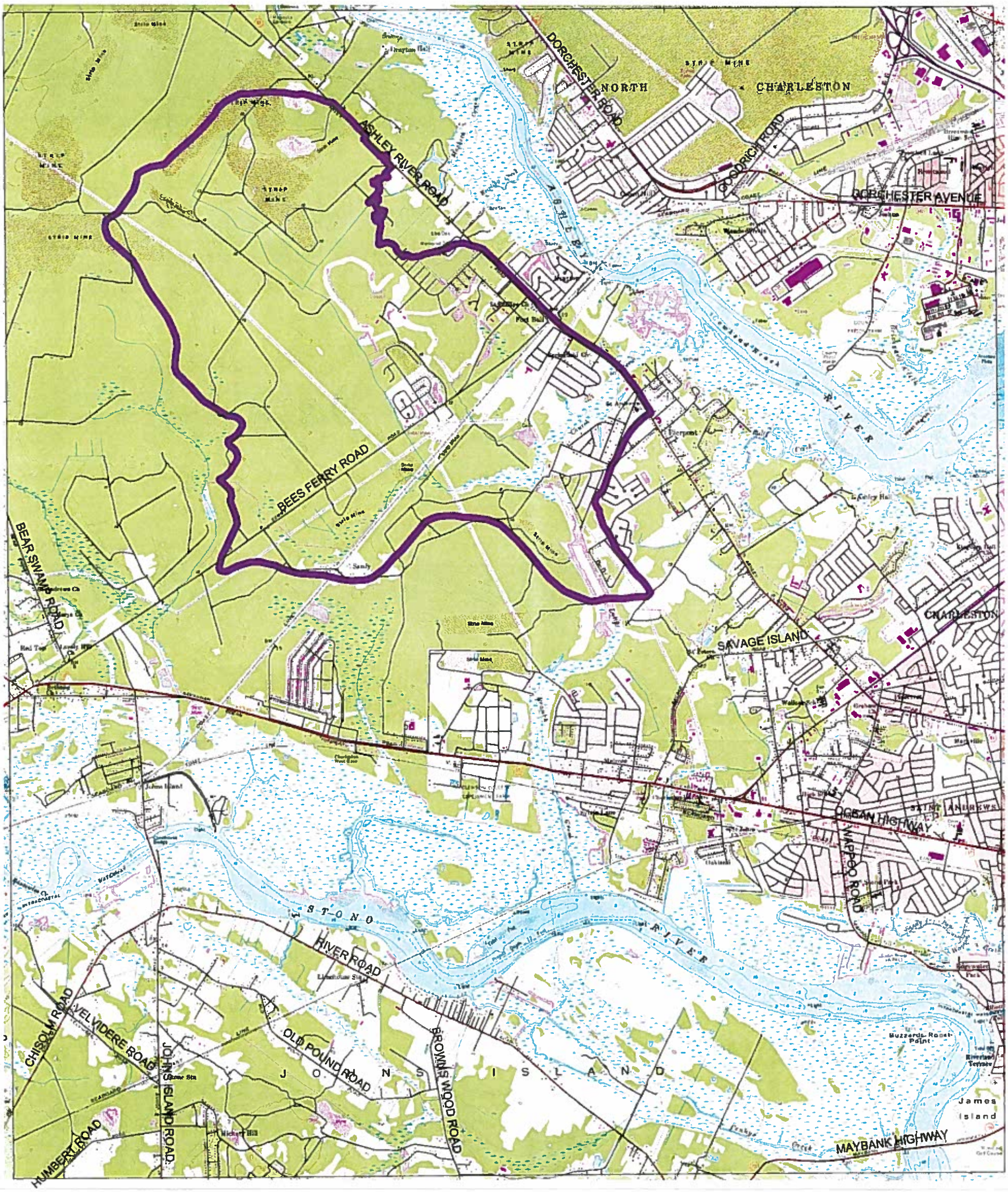
The Church Creek Watershed has experienced reoccurring residential flooding within the past 10 years. This watershed is approximately 8.5 square miles in size and drains to the Ashley River. The land use is currently comprised primarily of residential neighborhoods with undeveloped land and some industrial and commercial development. Over the past 10 years, the upper half of the watershed has undergone rapid residential development; there remains more than two square miles of undeveloped land planned for future development. During this same time period, there have been numerous yards that have flooded and several houses inundated with storm water on more than one occasion. As a result, the City of Charleston hired Woolpert to analyze the flooding problems and to create a Storm Water Master Plan for the Church Creek Watershed.

The purpose of this Storm Water Master Plan is to 1) identify existing storm water flooding problems, 2) analyze and recommend potential solutions to those identified problems, 3) analyze flooding impacts due to future development, 4) analyze the current storm water detention requirements, and 5) determine if land use restrictions or modifications to the detention requirements should be made. This process is in accordance with policies adopted by the City of Charleston to implement a comprehensive stormwater management program. The Church Creek Watershed SWMP will be used with other completed watershed SWMP's to establish citywide priorities for capital improvement projects based on the potential benefit versus overall cost (B/C ratio) of each recommended improvement. This SWMP may also be used as the community's source for hydraulic and hydrologic data for the Church Creek Watershed.

A substantial effort was made during the project planning process to make the ICPR model as user friendly as possible. The model created as a result of this study can and should be modified and updated based on improvements and changes made to individual components of the drainage system, as well as the drainage basin as a whole. This report provides the essential background information, methodologies, and assumptions necessary for the future use of the models as a tool in stormwater master planning the City of Charleston.

Upon acceptance of the final Church Creek Watershed SWMP document by the City of Charleston, the hydrologic and floodplain information from this report will be included in a Federal Emergency Management Agency (FEMA) restudy for Charleston County. Revised mapping of the floodplain may allow some property owners to qualify for flood insurance and be able to participate in FEMA programs for floodproofing, structure relocation or structure elevation. In addition, the SWMP will help the City of Charleston manage floodplains not regulated by FEMA.

Ver 2.21



0 0.5 1 2 3 4 Miles

1 inch equals 4,000 feet

Legend

Church Creek Watershed

Church Creek Watershed

Woolpert LLP
8731 Red Oak Blvd., Suite 101

SECTION 2 DESCRIPTION OF WATERSHED

2.1 WATERSHED LOCATION

The Church Creek Watershed is situated in the western part of Charleston in West Ashley with a total drainage area of 8.5 square miles (mi^2) that drains southeast to the Ashley River. Elevations in the watershed range from 35 feet National Geodetic Vertical Datum (NGVD 1929), near the top of the watershed along Ashley River Road (SC-61), to -4 feet NGVD at the confluence with the Ashley River. The upper portion of the watershed is mostly undeveloped land while the middle and lower portions are primarily residential with some commercial development along the major roadways.

2.2 HYDROLOGIC SUBDIVISION OF WATERSHED

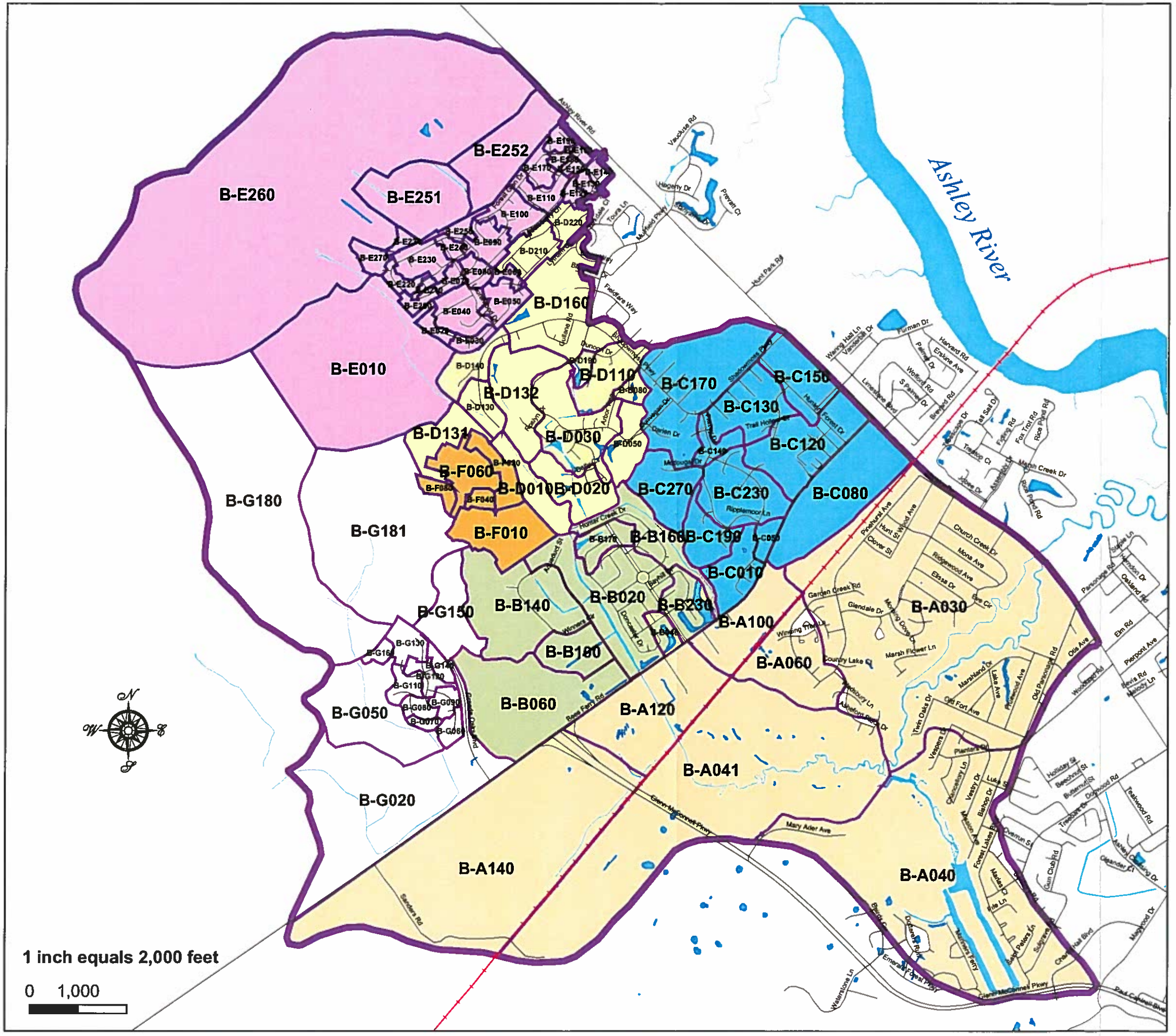
For the purposes of this study, the watershed was divided into seven major groups, with a total of 89 sub-basins based on homogeneity of the drainage system, soils, and land use. The sub-basins range in size from two acres to 744 acres with an average size of 61 acres. The smaller sub-basins are located primarily in the residential neighborhoods while the larger sub-basins are located primarily in the undeveloped areas or downstream of the railroad. Each sub-basin was assigned a unique identifier. The naming scheme for the sub-basins consists of a "B-" followed by the node name where the sub-basin enters the model. If there is more than one sub-basin entering at the same node location, then the additional sub-basin's digit is increased by one (e.g., sub-basins B-D130, B-D131, and B-D132 all enter at node N-D130). Table 2-1 lists the groups and their descriptions while Figure 2-1 shows the locations of the groups and sub-basins in the Church Creek Watershed.

Table 2-1. Group ID's and Descriptions

Name ID	ICPR Group ID	Description
A	RR	Railroad Area and Below
B	HH	Hickory Hills Area
C	SM1	Shadowmoss #1 – Southeast Portion of Shadowmoss
D	SM2	Shadowmoss #2 – Northwest Portion of Shadowmoss
E	VG	Village Green Area
F	MC	Moss Creek Area
G	BL	Bees Landing Area

Church Creek Watershed

Map Showing Sub-basins and ICPR Groups



Legend

ICPR Group

- Group A-RR
- Group B-HH
- Group C-SM1
- Group D-SM2
- Group E-VG
- Group F-MC
- Group G-BL

Hydro

- Lake
- Pond
- River
- Tidal Area
- Marsh
- Marsh Upland
- Rail

Figure 2-1.

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Charlotte, NC 28278
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2.3 STREAM CHANNELS

The Church Creek Watershed has a shape factor of 2.2:1 (length to width). There are three typical types of channels in the watershed: 1) channels that meander and branch through the marshy areas and have varying sizes and shapes, 2) wide man-made channels ranging from 30 ft to 50 ft in topwidth, with 4 ft to 10 ft bank heights that always have standing water, and 3) channels ranging from 15 ft to 25 ft in topwidth that travel through the neighborhoods and the upper portions of the watershed. The terrain within the watershed is flat with upstream inverts ranging from 3 ft to 6 ft in elevation. The modeled portion of the watershed consists of the main channel and several branching tributaries that have a combined length of approximately 20.2 miles.

2.4 SOILS

Soils in the Church Creek Watershed are predominantly in the C and D Hydrologic Soil Groups (HSG) and consist primarily of the Yonges (Yo)(HSG=D), Edisto (Ed)(HSG=C) and Hockley (HoA)(HSG=C) soil types. There are also large areas classified as Mine Pits (Mp), because this area was an old phosphate strip mine years ago, that are considered to have a HSG classification of D for this study. Other soils types include Stono (St), Kiawah (Ka), Wadmalaw (Wa), Santee (Se), and Capers (Cg) which are classified as Hydrologic Soil Group D, and Charleston (Ch), Seebrook (Sk), and Quitman (Qu) which are classified as Hydrologic Soil Group C. There are also areas of Wagram (WgB) and Wando (WnB) that fall in the Hydrologic Soil Group A.

The soils located in the Church Creek Watershed area are 5.1 percent HSG A, 0.2 percent HSG B, 25.0 percent HSG C, and 69.8 percent HSG D. Table 2-2 shows the percentage occupied by each Hydrologic Soil Group (HSG) within each sub-basin in the Church Creek Watershed. Figure 2-2 shows the Hydrologic Soil Group locations in the Church Creek Watershed.

Table 2-2. Summary of Hydrologic Soil Groups in Church Creek Watershed

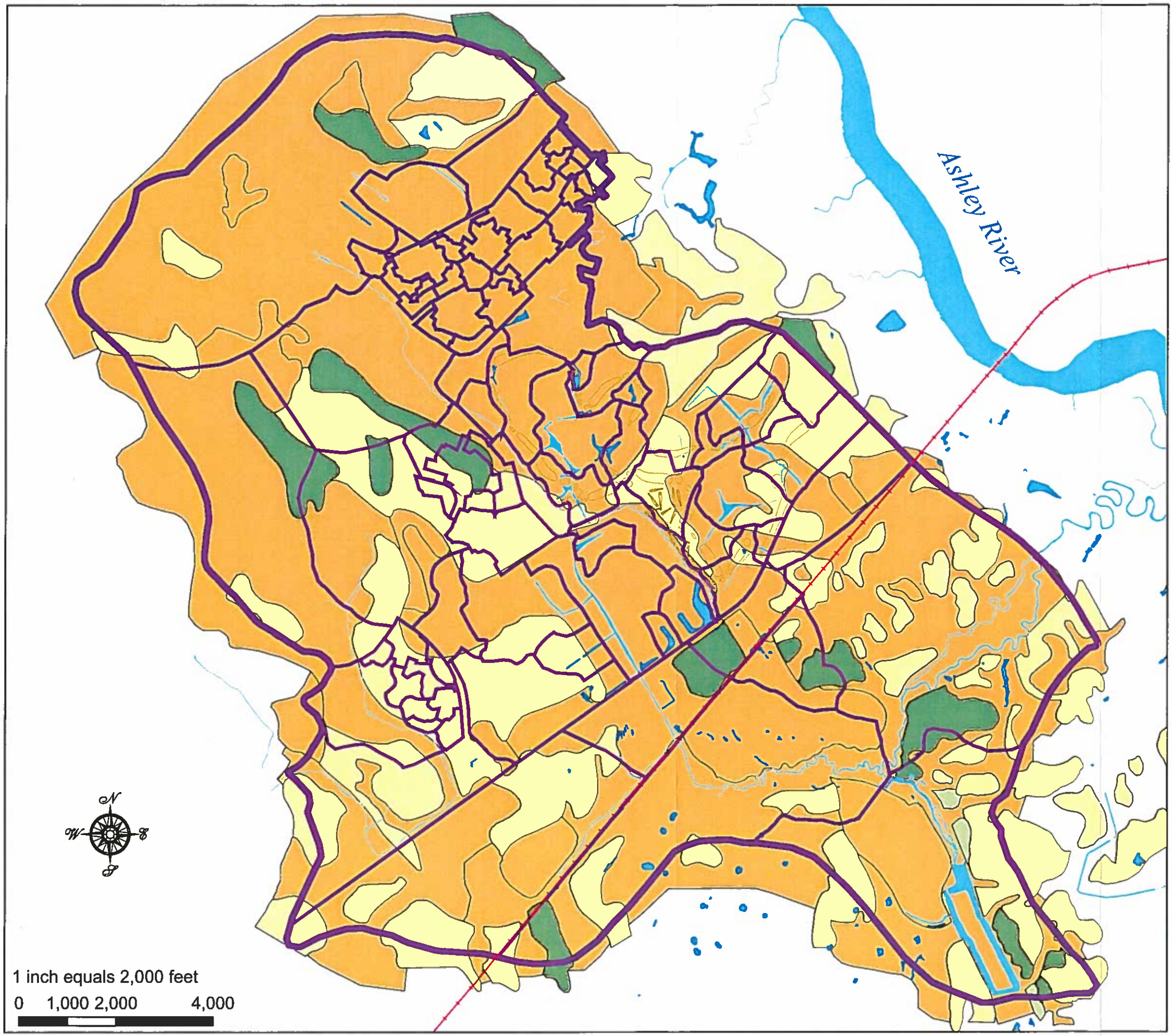
SUB-BASIN NUMBER	HSG A (in percent)	HSG B (in percent)	HSG C (in percent)	HSG D (in percent)
B-A030	8.4	0	25	66.6
B-A040	6	2.3	28.5	63.1
B-A041	3.6	0	11	85.4
B-A060	23.2	0	7.2	69.7
B-A100	29.4	0	10.6	60.1
B-A120	14.7	0	4.5	80.7
B-A140	0.3	0	36.9	62.9
B-B020	0	0	0	100
B-B040	0	0	0	100
B-B060	0	0	61.3	38.7
B-B100	0	0	66.9	33.1
B-B140	0	0	36.2	63.8
B-B160	0	0	14.2	85.8
B-B170	0	0	0	100
B-B230	0	0	0	100
B-C010	0	0	19.3	80.7
B-C050	0	0	52.1	47.9
B-C080	0	0	37.7	62.3
B-C120	0	0	69.4	30.6
B-C130	0	0	34.2	65.8
B-C140	0	0	0	100
B-C150	4.3	0	82.3	13.4
B-C170	0	0	59.8	40.2
B-C190	0	0	26.9	73.1
B-C230	0	0	33.4	66.6
B-C270	0	0	65.8	34.2
B-D010	0	0	63.1	36.9
B-D020	0	0	20.6	79.4
B-D030	0	0	0	100
B-D050	0	0	15.8	84.2
B-D080	0	0	0	100
B-D110	0	0	12.7	87.3
B-D130	0	0	0	100
B-D131	33.1	0	34.7	32.2
B-D132	0	0	0	100

SUB-BASIN NUMBER	HSG A (in percent)	HSG B (in percent)	HSG C (in percent)	HSG D (in percent)
B-D140	0	0	0	100
B-D160	0	0	2.4	97.6
B-D190	0	0	0	100
B-D210	0	0	0	100
B-D220	0	0	0	100
B-E010	14	0	21.6	64.4
B-E020	0	0	0	100
B-E030	0	0	0	100
B-E040	0	0	0	100
B-E050	0	0	0	100
B-E060	0	0	0	100
B-E070	0	0	0	100
B-E080	0	0	0	100
B-E090	0	0	0	100
B-E100	0	0	0	100
B-E110	0	0	0	100
B-E120	0	0	0	100
B-E130	0	0	20.6	79.4
B-E140	0	0	94.6	5.4
B-E150	0	0	0	100
B-E160	0	0	0	100
B-E170	0	0	0	100
B-E180	0	0	0	100
B-E190	0	0	0	100
B-E200	0	0	0	100
B-E210	0	0	0	100
B-E220	0	0	0	100
B-E230	0	0	0	100
B-E231	0	0	0	100
B-E240	0	0	0	100
B-E250	0	0	0	100
B-E251	0	0	0	100
B-E252	0	0	0.5	99.5
B-E260	3.9	0	14.2	81.9
B-E270	0	0	0	100
B-F010	0	0	97	3

SUB-BASIN NUMBER	HSG A (in percent)	HSG B (in percent)	HSG C (in percent)	HSG D (in percent)
B-F030	17.4	0	53	29.6
B-F040	5.4	0	94.6	0
B-F060	50.8	0	48.9	0.3
B-F080	0	0	100	0
B-G020	0	0	55.4	44.6
B-G050	0	0	33.2	66.8
B-G060	0	0	100	0
B-G070	0	0	95.8	4.2
B-G080	0	0	100	0
B-G090	0	0	100	0
B-G110	0	0	100	0
B-G120	0	0	100	0
B-G130	0	0	60.9	39.1
B-G140	0	0	76.6	23.4
B-G150	0	0	7.7	92.3
B-G160	0	0	100	0
B-G180	11.2	0	10.5	78.3
B-G181	11.6	0	35.9	52.5

Church Creek Watershed

Map Showing
Hydrologic Soil Groups



Legend

- Basins
- Rail

Hydro

- Lake
- Pond
- River
- Tidal Area
- Marsh
- Marsh Upland

HSG

- A
- B
- C
- D

Figure 2-2.

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2.5 LAND USE

Land use in the Church Creek Watershed is characterized by marsh, woods, residential and commercial areas in the lower portion of the watershed, mostly residential in the middle portion of the watershed with some commercial and industrial areas along Bees Ferry Road, and mostly undeveloped land in the upper portion of the watershed with limited residential. The existing land use used for this study consisted of December 2000 conditions. For hydrologic modeling purposes, land use in the Church Creek Watershed is defined by the 15 land use categories and they are listed in Table 2-3.

The existing land use was determined using current City zoning, GIS data of the watershed, and field observations. Table 2-3 shows existing land use distribution within the Church Creek Watershed. Table 2-4 shows runoff curve numbers by Land Use Category and Hydrologic Soil Group. The runoff curve numbers presented in Table 2-4 are based on average antecedent runoff conditions (ARC-II).

Table 2-3. Existing TR55 Land Use Distribution in Church Creek Watershed

LAND USE CATEGORY CODE	PERCENT OF WATERSHED	LAND USE DESCRIPTION
ROW	1.0	Impervious Roads, Including Right-of-Way
COM	1.1	Urban Commercial Centers – Malls, Strip Shopping Centers
IND	1.0	Urban Industrial and Manufacturing
OFF	1.8	Office parks and schools
MF	1.4	Multi Family Dwellings – Apartments/Townhomes
R25	1.1	Single Family Residential – 0.25 acre lots
R33	19.5	Single Family Residential – 0.33 acre lots
R50	6.0	Single Family Residential – 0.50 acre lots
R200	2.2	Single Family Residential – 2.00 acre lots
RR	1.0	Rail Road
GOLF	2.9	Golf Courses
OPEN	1.5	Lawns, Parks – Fair condition
WOODS	54.9	Woods/Brush (Good Condition)
MARSH	3.0	Marsh/Swamps
H2O	1.6	Water Bodies

Table 2-4. TR55 Runoff Curve Numbers by Land Use Category and Hydrologic Soil Group

LAND USE CATEGORY CODE	LAND USE DESCRIPTION	Hydrologic Soil Group			
		A	B	C	D
ROW	Impervious Roads Including Right-of-Way	83	89	92	93
COM	Urban Commercial Centers – Malls, Strip Shopping Centers	89	92	94	95
IND	Urban Industrial and Manufacturing	81	88	91	93
OFF	Schools/Colleges/Hospitals & office parks and centers	72	81	87	90
MF	Multi Family Dwellings – Apartments/Townhomes	77	85	90	92
R25	Single Family Residential – 0.25 acre lots	61	72	81	85
R33	Single Family Residential – 0.33 acre lots	57	70	80	84
R50	Single Family Residential – 0.50 acre lots	54	68	79	83
R200	Single Family Residential – 2.0 acre lots	46	64	76	81
RR	Rail Road	76	85	89	91
GOLF	Golf Courses	39	61	74	80
OPEN	Lawns, Parks – Fair condition	49	69	79	84
WOODS	Woods/Brush (Good Condition)	36	60	73	79
MARSH	Marsh/Swamps	99	99	99	99
H2O	Water Bodies	99	99	99	99

Table 2-5. Existing Land Use Distribution Within Each Sub-basin in the Church Creek Watershed

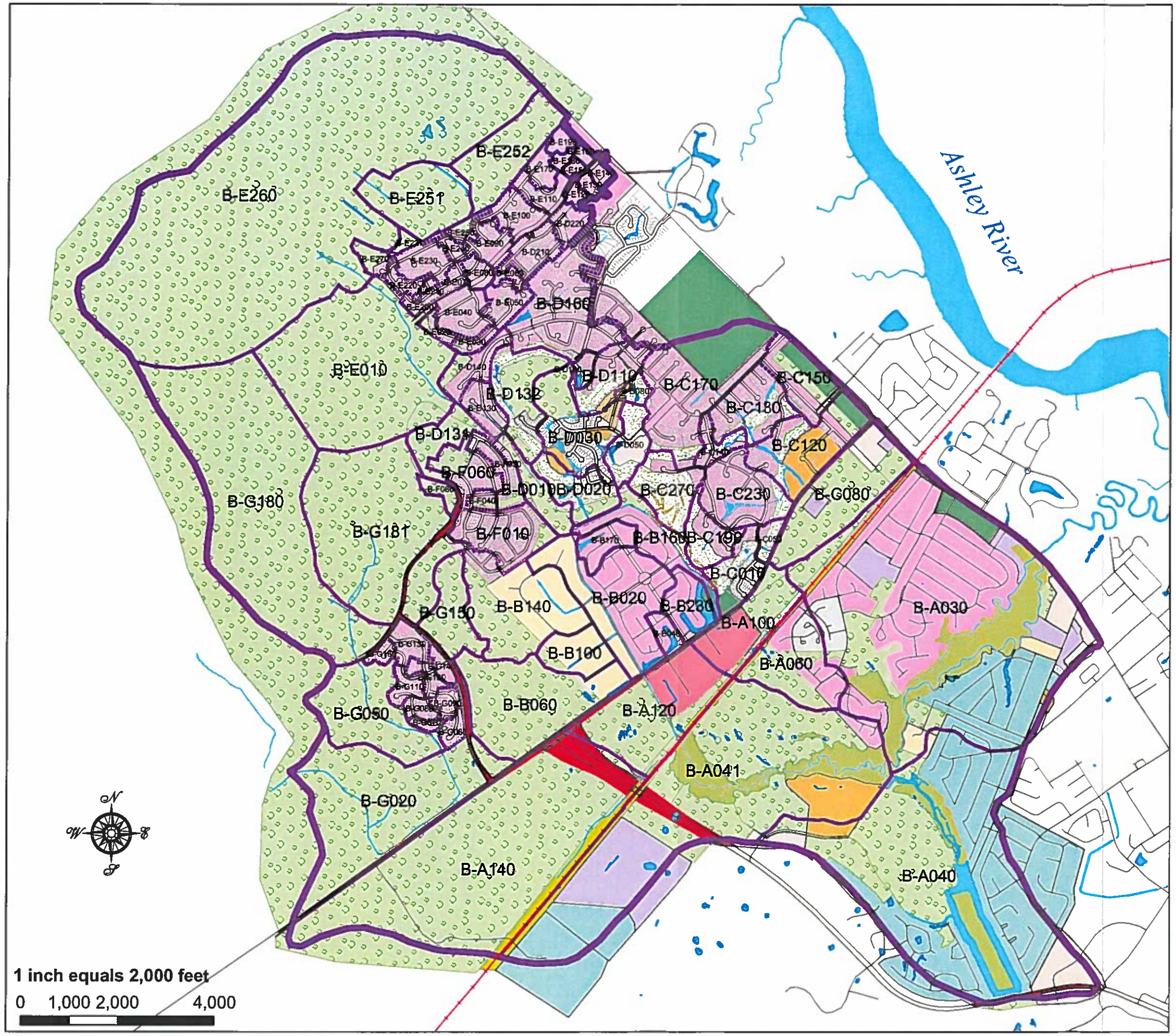
Sub-Basin	ROW	COM	IND	OFF	MF	R25	R33	R50	R200	RR	GOLF	OPEN	WOODS	MARSH	H2O
B-A030	0.0	2.7	0.0	6.2	0.2	3.1	38.6	15.8	2.0	1.6	0.0	2.9	11.3	13.8	1.7
B-A040	0.8	6.6	0.0	0.0	1.8	0.0	0.0	47.3	0.5	0.0	0.0	0.0	28.5	7.7	6.8
B-A041	3.2	0.3	0.0	14.4	7.7	0.0	2.0	10.9	0.0	4.0	0.0	0.0	41.6	14.2	1.6
B-A060	0.0	0.0	0.0	0.0	0.0	15.0	34.7	0.0	0.0	5.7	0.0	0.0	44.2	0.0	0.4
B-A100	4.6	0.0	44.5	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	45.4	0.0	0.9
B-A120	7.2	0.0	30.6	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.1	54.9	0.0	2.3
B-A140	8.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	86.4	0.0	0.4
B-B020	1.0	0.0	0.0	0.0	0.0	0.0	62.4	0.0	31.7	0.0	0.0	0.2	0.0	0.0	4.7
B-B040	6.5	0.0	0.0	0.0	0.0	0.0	75.7	0.0	0.0	0.0	0.0	2.7	0.0	0.0	15.0
B-B060	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0	86.7	0.0	0.7
B-B100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.2	0.0	0.0	0.0	16.5	0.0	2.3
B-B140	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0	50.8	0.0	0.0	0.0	39.5	0.0	1.0
B-B160	0.2	0.0	0.0	0.0	0.0	0.0	59.4	0.0	0.0	0.0	17.3	5.3	12.9	0.0	4.9
B-B170	0.0	0.0	0.0	0.0	0.0	0.0	93.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6
B-B230	3.7	0.0	0.0	0.0	0.0	0.0	71.3	0.0	0.0	0.0	0.0	5.7	0.0	0.0	19.3
B-C010	4.7	0.0	0.0	0.0	0.0	0.0	43.4	0.0	0.0	0.0	37.8	12.9	0.0	0.0	1.2
B-C050	9.9	0.0	0.0	0.0	0.0	0.0	22.7	0.0	0.0	0.0	65.2	0.0	0.0	0.0	2.2
B-C080	5.3	12.3	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.7	0.0	0.0
B-C120	1.5	0.0	0.0	0.0	35.8	0.0	32.0	0.0	0.0	0.0	10.0	11.0	6.6	0.0	3.1
B-C130	0.0	0.0	0.0	0.0	0.0	0.0	73.9	0.0	0.1	0.0	19.5	0.0	0.0	0.0	6.4
B-C140	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	29.2	0.0	0.0	0.0	4.1
B-C150	0.0	0.0	0.0	0.0	0.1	0.0	43.1	0.0	0.0	0.0	3.4	32.5	20.9	0.0	0.0
B-C170	0.0	0.1	0.0	0.0	0.0	0.0	59.9	0.0	0.0	0.0	4.9	34.5	0.0	0.0	0.6
B-C190	0.0	0.0	0.0	0.0	0.0	0.0	51.4	0.0	0.0	0.0	47.6	0.0	0.0	0.0	1.0
B-C230	0.6	0.0	0.0	0.0	0.0	0.0	85.3	0.0	0.0	0.0	9.6	0.0	0.0	0.0	4.5
B-C270	0.0	2.1	0.0	0.0	0.0	0.0	16.2	0.0	0.0	0.0	76.4	0.0	5.4	0.0	0.0
B-D010	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.0	0.6	0.0	4.9	0.0	84.9	0.0	1.6
B-D020	0.0	0.0	0.0	0.0	7.4	12.4	0.0	0.0	0.0	0.0	45.3	0.0	30.0	0.0	4.9
B-D030	0.0	0.4	0.0	0.0	16.2	40.2	0.0	0.0	0.0	0.0	6.4	0.0	31.1	0.0	5.8
B-D050	0.0	35.9	0.0	0.0	0.3	0.4	3.4	0.0	0.0	0.0	56.2	0.0	0.0	0.0	3.8
B-D080	0.0	0.0	0.0	0.0	21.3	0.0	7.1	0.0	0.0	0.0	65.0	0.0	0.0	0.0	6.6
B-D110	0.0	0.0	0.0	0.0	8.5	0.6	52.8	0.6	0.0	0.0	32.7	0.0	2.5	0.0	2.2
B-D130	0.0	0.0	0.0	0.0	0.0	0.0	83.4	0.0	0.0	0.0	10.3	0.0	5.1	0.0	1.2
B-D131	0.9	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	97.2	0.0	0.1
B-D132	0.0	0.0	0.0	0.0	0.0	10.0	2.2	0.0	0.0	0.0	33.3	0.0	53.7	0.0	0.8
B-D140	0.0	0.0	0.0	0.0	0.0	0.0	72.6	0.0	0.0	0.0	1.0	0.0	25.1	0.0	1.3
B-D160	0.0	0.0	0.0	0.0	0.0	0.0	95.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	1.2
B-D190	0.0	0.0	0.0	0.0	0.0	0.0	65.8	0.0	0.0	0.0	21.0	0.0	0.0	0.0	13.2
B-D210	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-D220	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E010	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	98.8	0.0	0.3

Sub-Basin	ROW	COM	IND	OFF	MF	R25	R33	R50	R200	RR	GOLF	OPEN	WOODS	MARSH	H2O
B-E020	0.0	0.0	0.0	0.0	0.0	0.0	74.5	0.0	0.0	0.0	0.0	0.0	25.5	0.0	0.0
B-E030	0.0	0.0	0.0	0.0	0.0	0.0	91.3	0.0	0.0	0.0	0.0	0.0	8.7	0.0	0.0
B-E040	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E050	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E060	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E070	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E080	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E090	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E100	0.0	0.0	0.0	0.0	0.0	0.0	99.1	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
B-E110	0.0	0.0	0.0	0.0	0.0	0.0	99.9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
B-E120	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E130	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E140	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E150	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E160	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E170	0.0	0.0	0.0	0.0	0.0	0.0	97.3	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0
B-E180	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E190	0.0	0.0	0.0	0.0	0.0	0.0	98.7	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
B-E200	0.0	0.0	0.0	0.0	0.0	0.0	86.9	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0
B-E210	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E220	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E230	0.0	0.0	0.0	0.0	0.0	0.0	98.9	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0
B-E231	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0
B-E240	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-E250	0.0	0.0	0.0	0.0	0.0	0.0	63.9	0.0	0.0	0.0	0.0	0.0	36.1	0.0	0.0
B-E251	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.7	0.0	1.3
B-E252	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	99.7	0.0	0.0
B-E260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.7	0.0	0.3
B-E270	0.0	0.0	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0	0.0	0.0	76.8	0.0	0.0
B-F010	0.0	0.0	0.0	0.0	0.0	0.0	89.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0	0.0
B-F030	0.0	0.0	0.0	0.0	0.0	0.0	64.3	0.0	0.0	0.0	0.0	0.0	35.7	0.0	0.0
B-F040	0.0	0.0	0.0	0.0	0.0	0.0	78.5	0.0	0.0	0.0	0.0	0.0	21.5	0.0	0.0
B-F060	5.4	0.0	0.0	0.0	0.0	0.0	56.9	0.0	0.0	0.0	0.0	0.0	37.7	0.0	0.0
B-F080	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.0	0.0	0.0
B-G020	7.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	91.7	0.0	1.2
B-G050	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	98.3	0.0	1.0
B-G060	0.0	0.0	0.0	0.0	0.0	0.0	92.4	0.0	0.0	0.0	0.0	0.0	7.6	0.0	0.0
B-G070	0.0	0.0	0.0	0.0	0.0	0.0	99.9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
B-G080	0.0	0.0	0.0	0.0	0.0	0.0	98.5	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
B-G090	0.2	0.0	0.0	0.0	0.0	0.0	99.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-G110	0.0	0.0	0.0	0.0	0.0	0.0	95.4	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0
B-G120	0.0	0.0	0.0	0.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-G130	0.6	0.0	0.0	0.0	0.0	0.0	99.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-G140	1.6	0.0	0.0	0.0	0.0	0.0	98.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Sub-Basin	ROW	COM	IND	OFF	MF	R25	R33	R50	R200	RR	GOLF	OPEN	WOODS	MARSH	H2O
B-G150	4.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	94.8	0.0	0.0
B-G160	0.9	0.0	0.0	0.0	0.0	0.0	78.6	0.0	0.0	0.0	0.0	0.0	20.5	0.0	0.0
B-G180	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.5	0.0	0.1
B-G181	2.8	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	95.8	0.0	0.2

Church Creek Watershed

Map Showing Existing Landuse



Legend

- Parcels
- Golf Fairways
- Rail
- Basins

Hydro

- Lake
- Pond
- River
- Tidal Area
- Marsh
- Marsh Upland

Land Use

- COM
- GOLF
- H2O
- IND
- MARSH
- MF
- OFF
- OPEN
- R200
- R25
- R33
- R50
- ROW
- RR
- WOODS

Figure 2-3.

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SECTION 3 DESCRIPTION OF DATA USED IN ANALYSES

3.1 FIELD RECONNAISSANCE DATA

3.1.1 Stream Evaluations

A field reconnaissance of the Church Creek Watershed was performed by walking the length of the Church Creek mainstem and its tributaries. During this field reconnaissance, channel and overbank Manning's roughness coefficients were recorded with typical channel dimensions, pipe structure sizes and materials, depths of fill cover over the structures, hydraulic characteristics of detention/retention structures, watershed and sub-basin boundaries, and areas of flooding problems. Verification photographs were taken of all the structures and channels that were to be modeled. These photographs are provided on the CD in Appendix D of this report.

3.1.2 Survey Data

Invert elevations and roadway overtopping elevations for key culverts, bridges and detention structures were surveyed with several channel inverts taken in key locations. Finish floor elevations for 44 houses and six townhouse buildings were also surveyed for model calibration and for the alternative analysis.

3.2 RAINFALL DATA

3.2.1 Design Storm Data and Rainfall Frequency Depths

Rainfall depth/duration/frequency data for the 2-, 10-, 25-, 50-, and 100-year frequency storm events was obtained from the South Carolina Stormwater Management and Sediment Control Handbook (1995). This data was used to develop the 500-year, 24-hour rainfall amount using Probability-Log paper. These 24-hour rainfall amounts were used with the SCS TYPE III rainfall distribution in the ICPR model to calculate rainfall runoff amounts. The rainfall depth values are listed in Table 3-1 and the SCS TYPE III distribution is listed in Table 3-2.

Table 3-1. Rainfall Depth/Duration/Frequency Data

Storm Event	Rainfall Depth (inches)
2-year 24-hour	4.6
10-year 24-hour	6.8
25-year 24-hour	7.8
50-year 24-hour	8.8
100-year 24-hour	10.0
500-year 24-hour	11.5

Table 3-2. SCS TYPE III 24-Hour Storm Hydrograph Rainfall Distribution (15-minute intervals, P_{time} / P_{24})

0.000	0.002	0.005	0.007	0.010	0.012	0.015	0.017
0.020	0.023	0.026	0.028	0.031	0.034	0.037	0.040
0.043	0.047	0.050	0.053	0.057	0.060	0.064	0.068
0.072	0.076	0.080	0.085	0.089	0.094	0.100	0.107
0.115	0.122	0.130	0.139	0.148	0.157	0.167	0.178
0.189	0.202	0.216	0.232	0.250	0.271	0.298	0.339
0.500	0.662	0.702	0.729	0.751	0.769	0.785	0.799
0.811	0.823	0.834	0.844	0.853	0.862	0.870	0.878
0.886	0.893	0.900	0.907	0.911	0.916	0.920	0.925
0.929	0.933	0.936	0.940	0.944	0.947	0.951	0.954
0.957	0.960	0.963	0.966	0.969	0.972	0.975	0.978
0.981	0.983	0.986	0.988	0.991	0.993	0.996	0.998
1.000							

3.2.2 Historical Rainfall Data

Rainfall gage data for the Charleston Airport was obtained for the periods from January 1990 through December 2000, and for July 2001. This information was reported in hourly increments and was used to model historical storm events that had reported flooding problems. The storm periods modeled are listed in Table 3-3 along with the total rainfall amounts. All of the gage data obtained is reported in Appendix C.

Table 3-3. Rainfall Depth/Duration/Frequency Data

Year	Month	Day	24-Hour Depth (inches)	48-Hour Depth (inches)
2001	July	27	4.66	4.66
1999	September	29	5.35	5.71
1998	September	21	10.52	10.52
1998	February	17	5.92	5.92
1994	October	3	4.02	4.22

3.3 CITY OF CHARLESTON DATA

3.3.1 Digital Topography and Planimetric Coverages

Topographic and planimetric data were furnished by the City of Charleston in the form of ARCInfo GIS format coverages. This data was used in the watershed boundary delineation, stream connectivity determination, digital cross section generation, delineation of the time-of-concentration flow paths for lag time computations, street name definition, and spatial location of structures located in the floodplains. Digital topographic data was converted to National Geodetic Vertical Datum (NGVD) 1929. A hard copy of the City of Charleston map M-14 (1980, NGVD 1929) was used as supplementary data for locations without topographic data.

3.3.2 Storm Drainage Studies

Storm drainage studies done for sites within the watershed were provided by the City of Charleston. Information from these studies was used to verify invert elevations, detention storage and drainage results. The studies for Village Green, Moss Creek and Bees Landing completed by Seamon, Whiteside & Associates also contained ICPR models. Data from these three models were incorporated into the ICPR model for the entire watershed.

3.3.3 Historical Flooding Information

Areas of known flooding problems within the watershed were provided by the City of Charleston. Additional information was collected from residents that live within the watershed at a public meeting held on November 30, 2000. This information was used to validate and calibrate the ICPR model results.

3.4 FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)-FIS STUDY

The Flood Insurance Rate Map for the effective FIS was obtained for the Church Creek Watershed. Map (455412 0005D) was used to compare the floodplain elevations in the effective FIS for Church Creek with those developed as a result of this analysis. The effective FIRM shows this area as ZONE A2, A5, or A13, with a WSEL of 13 ft for the area downstream of Ashley River Road (SC-61), a WSEL of 11 ft for the area between the railroad and Ashley River Road, and a WSEL of 8 ft upstream of the railroad.

3.5 UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) SOILS COVERAGES

Soils information was obtained from the Charleston County Soil Survey (US Department of Agriculture, March 1971). This information was used to create a digital Hydrologic Soil Group (HSG) coverage. The soils coverage was used to compute the runoff curve number for each sub-basin.

3.6 NOAA/NOS DATA

Tide gage data for the Cooper River Entrance (8665530) in Charleston, SC was obtained for the period from January 1990 through December 2000. This information contained the monthly Mean High Water (MHW), Mean Low Water (MLW), Mean Higher High Water (MHHW) and Mean Lower Low Water (MLLW) elevations. The maximum MHHW and MLW elevations for this 10-year period were projected up the Ashley River and used as boundary conditions for the ICPR model at the confluence with the Ashley River. The projected MHHW and MLW elevations were 4.8 ft and –1.1 ft respectively. This information is reported in Appendix C.

3.7 UNITED STATES GEOLOGICAL SURVEY (USGS) DATA

Elevation data from the USGS quadrangle for Johns Island, SC (1979) was used for locations where there was no City of Charleston elevation data. (NGVD of 1929)

There are no active U.S. Geological Survey (USGS) streamflow gaging stations or rainfall gaging stations located within the Church Creek Watershed.

3.8 TIME OF CONCENTRATION

A Microsoft Excel spreadsheet, programmed with the Soil Conservation Service (SCS) methodology and equations, was used to calculate the time of concentration for each sub-basin in the Church Creek Watershed. The program contains equations for calculating the travel time associated with the sheet flow, shallow concentrated flow, and channel flow segments of the overall time of concentration flow path within each sub-basin. In areas where there was a previous ICPR model completed, the previous study's time of concentration values were used.

SECTION 4 DESCRIPTION OF HYDROLOGIC AND HYDRAULIC MODELING

4.1 MODEL USED

The ICPR computer model (version 2.2) was used to model the Church Creek Watershed. This model is a link/node computer model that creates rainfall runoff hydrographs and then routes these hydrographs through the watershed. A general explanation of how the computer model works, excerpted from the ICPR User's Manual on page 2-12, is as follows.

"Each node in an ICPR model represents a control volume. Water enters and leaves each node by the links connected to it or from it. Water also enters nodes by way of surface runoff hydrographs and/or base flow. Storage at each node is provided by any link connected to or from it (e.g., channel storage) and/or any user specified supplemental storage (e.g., pond storage or overbank flooding). ICPR calculates the change in storage for each node based on the differences between inflows and outflows at each time step during the simulation period. The changes in storage are used to determine elevations at each node. Flows through each link are calculated from the known elevations at each end of the link and the hydraulic properties of the link (e.g., slope, roughness, geometric configuration, etc)."

4.2 HYDROLOGIC MODELING

4.2.1 Model Assumptions

The Hydrology routine in ICPR is used to compute runoff losses and then generate a runoff hydrograph for each of the sub-basins within the Church Creek Watershed. The following are some of the underlying theoretical assumptions that govern the model's applicability to this watershed:

- The hydrologic process can be represented by the model parameters that reflect average conditions within a catchment area.
- Rainfall and losses are uniformly distributed across the watershed.
- All runoff from a catchment area goes to the same outfall point...eventually.
- The modeling procedure used in this modeling project followed the "SCS Methodology". This terminology is an "umbrella" term used to cover a wide range of procedures relating to rainfall and losses, runoff and hydrograph routing, and use of the SCS Unit Dimensionless Hydrograph to develop runoff hydrographs.
- The 24-hour storm was used for all flood frequency simulations in this project.
- The SCS Type III rainfall distribution was used.

- Adjustments for directly connected impervious areas were not considered because the SCS methodology used in this modeling project assumes "very short" flow paths between the imperviousness and the drainage system for urban condition runoff curve numbers. In the majority of the urban settings in the Church Creek Watershed, the flow path distance from the impervious surface to the storm water collector system is indeed relatively short. Therefore, runoff (particularly during the less frequent storm events) cannot pond long enough for significant infiltration losses to occur.

4.2.2 Model Parameter Development

There are 89 sub-basins within the Church Creek Watershed that were modeled. The parameter data for each of these sub-basins can be found in Section 8 of this report. The following is the list of parameter data used and/or developed for the hydrologic modeling.

Rainfall Data: Rainfall depths from the South Carolina Stormwater Management and Sediment Control Handbook were used along with the SCS Type III rainfall distribution. For this analysis, the 2-, 10-, 25-, 50-, 100-, and 500-year storms were used.

Drainage Area: Drainage basin boundaries for the Church Creek Watershed, and sub-basins were delineated in ARC-Info using a Digital Terrain Model (DTM) of the watershed. The GIS was used to compute the area of each sub-basin and the entire Church Creek Watershed. The average sub-basin area was 61 acres.

Runoff Curve Numbers: A weighted runoff curve number was calculated for each sub-basin by using GIS with soils, land use, and sub-basin boundary coverages. The GIS references a "Look-up Table" of runoff curve numbers for the various soil and land use category combinations and assigns a runoff curve number to each polygon within a sub-basin. For a given sub-basin, the individual runoff curve numbers are multiplied by the drainage area of the polygon they represent and the results are summed and divided by the total drainage area of the sub-basin. The resultant runoff curve number is the weighted runoff curve number for the sub-basin.

Time of Concentration/Lag Time: Time of concentration is the time required for a drop of water (during a 2-year runoff event) to travel from the hydraulically most remote part of a catchment to its outfall. The time of concentration has three associated flow path components:

1) sheet flow,
2) shallow concentrated flow, and
3) channel flow.

In general, the length of the sheet flow segment for a sub-basin was limited to 100 feet for urban areas and 300 feet for undeveloped or rural areas. The shallow concentrated flow segment extended from the downstream end of the sheet flow segment to the first topographically defined swale or pipe on the topographic maps. The channel flow segment extended from the downstream end of the shallow concentrated flow segment to the outfall of the sub-basin. Where appropriate, the channel flow segment was subdivided into circular, triangular, rectangular, and trapezoidal channel sub-reaches.

4.3 HYDRAULIC MODELING

4.3.1 Assumptions

As with the Hydrology routine, it is important to understand the underlying theoretical assumptions with the Hydraulic routine. These assumptions are as follows:

- The stream channel has rigid boundary conditions (the cross sectional area does not change with time).
- Manning's roughness coefficients were selected to represent full summer growth conditions (worst case). In addition, weighted roughness coefficients were used that were representative of the full range of flood discharges being modeled.
- All structures and channels in the Church Creek Watershed were modeled as if they were open and free of debris. The reason for this assumption was to produce water-surface profiles reflecting system design capacity. It should be noted, however, that some of the structures were in reality partially blocked with debris or sediment deposits.

4.3.2 Model Input Parameters

Channel Invert Profiles: The channel invert profiles were developed by combining the inverts derived from topographic maps, surveyed inverts at road crossings that were collected by Woolpert surveyors, information provided in previous drainage studies within the watershed, and information collected during the field reconnaissance.

Cross Sections: Cross sections were created in GIS using topographic and planimetric coverages. Channel dimensions collected during the field reconnaissance were then merged with the DTM cross sections to make a composite cross section that best represents the actual channel section.

Manning's n Values: Manning's roughness coefficients were derived for the channels and floodplains from the field reconnaissance. A Manning's roughness value of 0.013 was used for concrete culverts (pipe and box) and a Manning's roughness value of 0.025 was used for corrugated metal pipe culverts. Manning's roughness values in the channels ranged from 0.045 to 0.075 while the overbanks had values that ranged from 0.020 to 0.180.

Boundary Conditions: The maximum MHHW and MLW elevations for the last 10 years at the Cooper River Entrance were projected up the Ashley River and used as boundary conditions for the ICPR model at the confluence with the Ashley River. The projected MHHW and MLW elevations were 4.8 ft and –1.1 ft respectively, and were used for all the modeled storm events using a linear 12-hour cycle. The start of the cycle was set so that the effects of high tide in the vicinity of the railroad occurred around hour 22, which is approximately the same time as the peak hydrograph from the 24-hour SCS Type III storm event. This was done to produce the largest backwater effects at the railroad crossing.

4.4 MODEL CONNECTIVITY

For the purposes of this study, the watershed was divided into seven major groups to be used in the ICPR model. The ICPR model for the Church Creek Watershed contains 89 sub-basins, 138 nodes, 57 channel links, 84 pipe links, 57 weir links, nine drop-structure links, and two bridges. Table 4-1 lists the group names, the number of structures and number of storage nodes within each group, while Figure 4-1 shows the ICPR link/node network. A large scale map of the ICPR link/node network is also provided in Appendix E. The following is the scheme used to name the nodes, links and templates within the ICPR model:

Nodes: Consist of a "N-" followed by the node name, which is the group name ID and a 3-digit number. (Example: N-A050, N-B110, or N-G150) Nodes were numbered from downstream to upstream in increments of 10 within each group. This allows the possibility of inserting additional nodes at a later time if needed yet still be able to conform to the naming scheme. (e.g., N-A055 can be inserted between nodes N-A050 and N-A060.)

Sub-Basins: Consist of a "B-" followed by the node name where the sub-basin enters the model. If there is more than one sub-basin entering at the same node location, then the additional sub-basins have the digit increased by one (e.g., sub-basins B-D130, B-D131, and B-D132 all enter at node N-D130).

Links: Consist of an "L-" followed by the group name ID, the upstream node number, and the link type and number. The link types are either a "P" for pipe, a "W" for weir, a "C" for channel, a "D" for drop inlet, or a "B" for bridge. For example, if two different size pipes and one weir leave node "N-C060", then the three links would be named L-C060P1, L-C060P2, and L-C060W1.

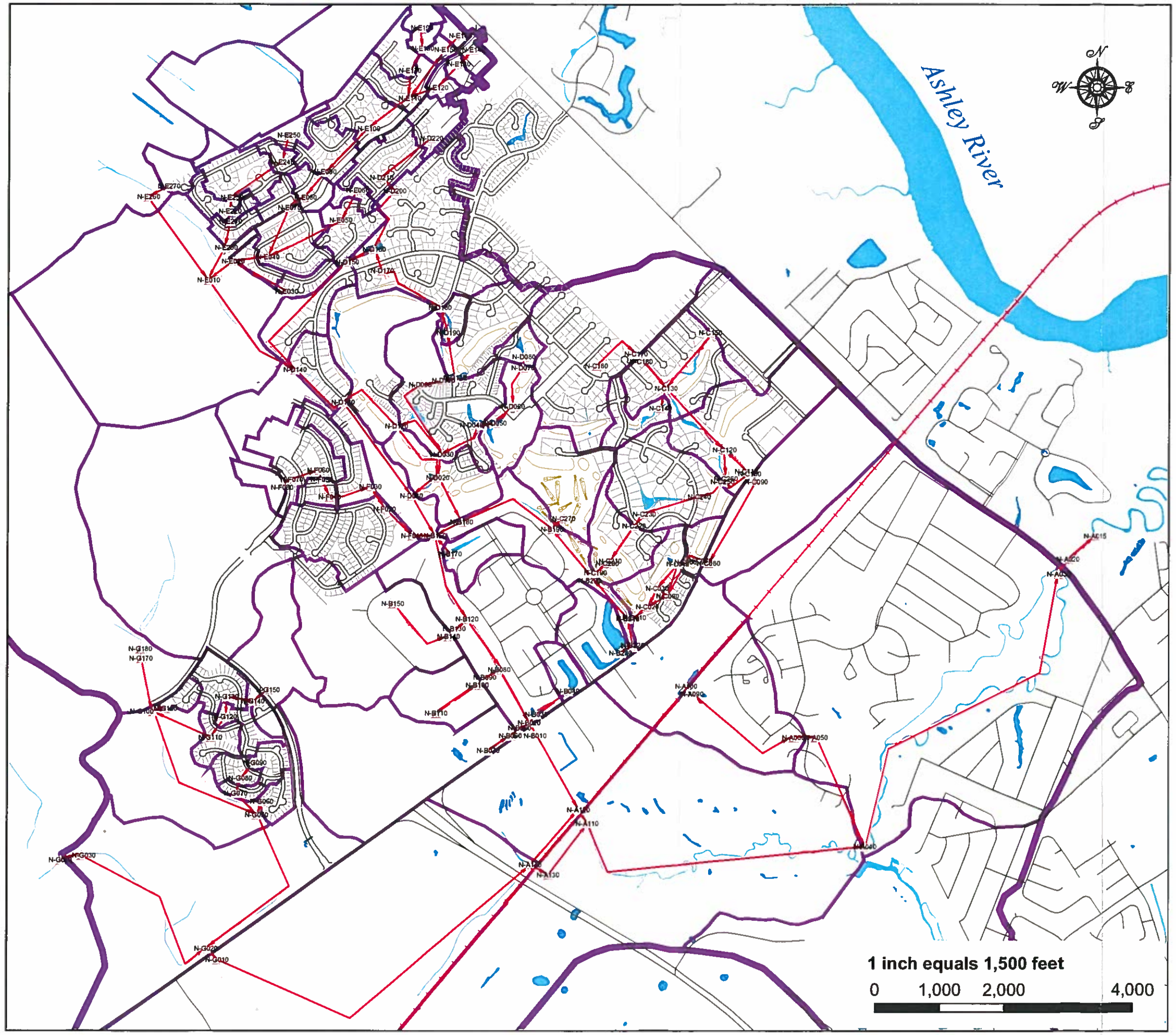
Cross Section Templates: Consist of an "X-" followed by the group name ID, the upstream node number, another dash (-), and the number. For example, if there are two different cross sections below node N-D130 that are going to be used in link L-D130-C1, then the cross section templates would be named X-D130-1 and X-D130-2.

Table 4-1. Church Creek Watershed ICPR Model Information

Name ID	ICPR Group ID	NUMBER OF LINKS					NUMBER STORAGE NODES
		CHANNEL	PIPE	BRIDGE	DROP STRUCTURE	WEIR	
A	RR	8	12	1	0	4	1
B	HH	15	2	1	4	7	4
C	SM1	16	17	0	0	15	5
D	SM2	11	12	0	0	14	10
E	VG	2	20	0	3	7	26
F	MC	0	7	0	1	0	8
G	BL	5	14	0	1	10	11
	TOTAL	57	84	2	9	57	65

Church Creek Watershed

Map Showing ICPR Links and Nodes



Legend

- ICPR Nodes
- ICPR Links
- Golf Fairways
- Parcels
- Rail
- Basins

Hydro

- Lake
- Pond
- River
- Tidal Area
- Marsh
- Marsh Upland

Figure 4-1.

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SECTION 5 MODEL CALIBRATION/VERIFICATION

5.1 CALIBRATION/VERIFICATION

The ICPR model was calibrated and verified using four different sources of information:

5.1.1 Previous FIS Study

The Flood Insurance Rate Map (FIRM) for the effective FIS was obtained for the Church Creek Watershed. The effective FIRM map (455412 0005D) shows portions of the Church Creek Watershed as either ZONE A2, A5, or A13. These zones have a WSEL of 13 ft for the area downstream of Ashley River Road (SC-61), a WSEL of 11 ft for the area between the railroad and Ashley River Road, and a WSEL of 8 ft upstream of the railroad. These FIS elevations are for storm surge and could not be used to calibrate of this riverine model.

5.1.2 Previous Drainage Models

Storm drainage studies for Village Green, Moss Creek and Bees Landing completed by Seamon, Whiteside & Associates contained ICPR models. Data from these three models were incorporated into the ICPR model for the entire watershed. Model results in these areas from the watershed ICPR model were compared to the results of the individual ICPR models to verify that the models were behaving similarly. The boundary conditions of the individual models varied somewhat from the tailwater conditions that were produced in the watershed model. After accounting for these boundary condition differences, the watershed model produced similar results as the individual models.

5.1.3 USGS Regression Equation

Peak flows were computed based on the USGS regression equations (USGS Report 92-4040 and USGS Report 91-4157) using the lower coastal plain as the hydrologic area. Impervious areas for each sub-basin were estimated based on the land use and by applying the percent impervious values for each land use as reported in TR-55. Table 5-1 compares the ICPR model results with the calculated USGS regression equations for both the rural and urban equations. The locations of these comparison points are shown on Figure 5-1. The urban regression equation is not valid for percent impervious of less than 10 percent. Most of these drainage areas have seven to 18 percent impervious areas, therefore the true regression discharge will fall somewhere between the calculated urban and rural discharges. The ICPR model results showed discharges that were very similar to the rural regression discharges.

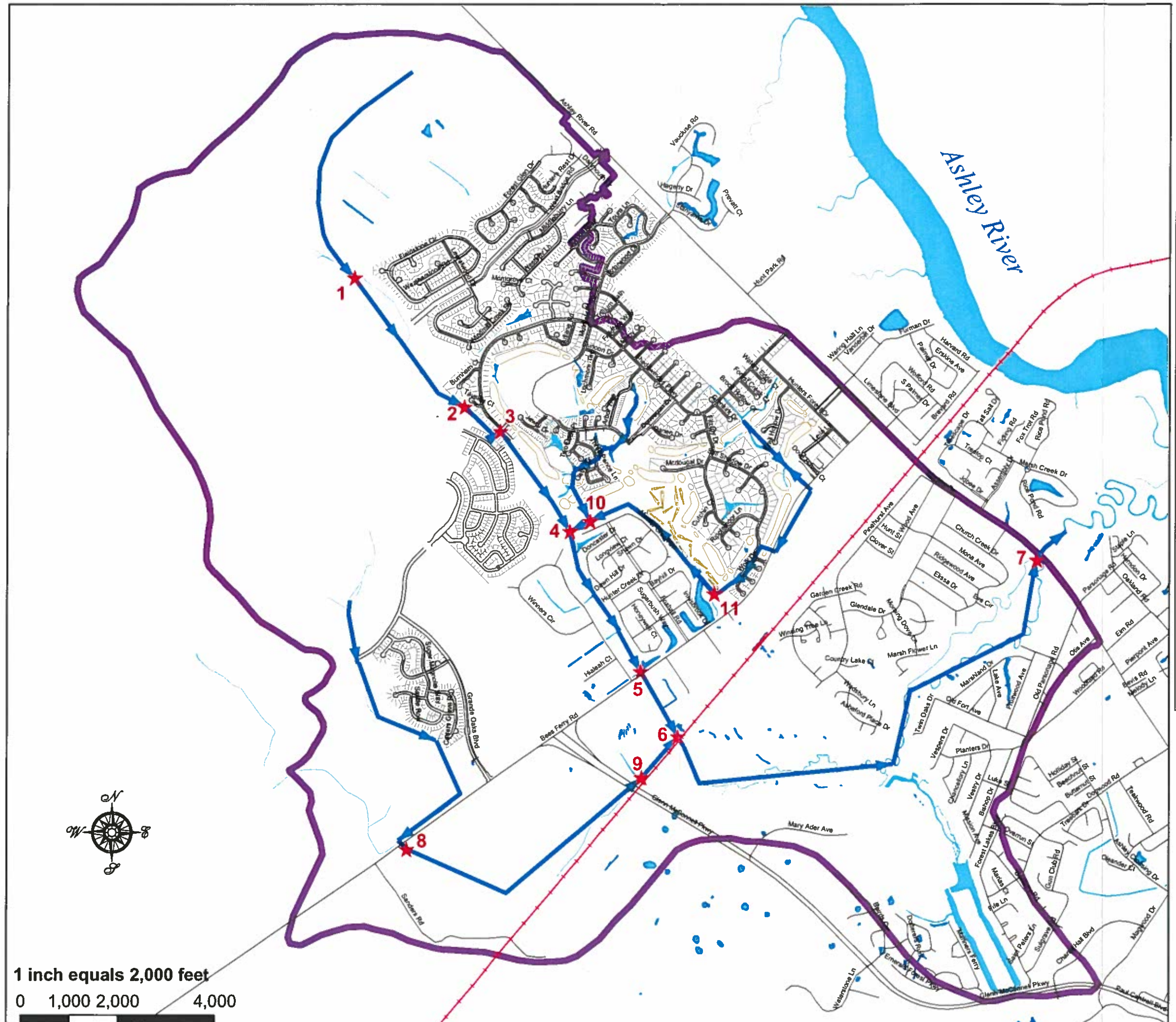
Table 5-1. Comparison of Flows (ICPR, and USGS Regression)

#	LOCATION DESCRIPTION	SUB-BASINS ABOVE	AREA (sq mi)	TOTAL IMP. AREA (%)	ICPR 2-yr (cfs)	USGS Rural 2-yr (cfs)	USGS Urban 2-yr (cfs)	ICPR 10-yr (cfs)	USGS Rural 10-yr (cfs)	USGS Urban 10-yr (cfs)
1	Above Village Green	N-E260	1.17	0.0	118	62	---	233	173	---
2	Below Village Green	N-E010	2.01	4.6	160	86	---	338	236	---
3	Dunwoody	N-D130	2.35	7.0	126	95	106	287	259	262
4	Hickory Farms	N-B160	3.63	13.0	302	126	318	507	336	711
5	Bees Ferry – Mainstem	N-B010	4.14	13.2	327	137	358	544	363	794
6	Railroad	B-A110	6.22	12.0	438	177	436	693	461	957
7	SC-61	N-A030	8.47	18.4	550	215	934	874	553	1914
8	Bees Ferry – Location 2	N-G010	1.37	5.1	89	68	---	134	189	---
9	Railroad – Location 2	N-A140	2.07	9.8	123	88	146	181	241	348
10	Hickory Hills	N-B180	1.39	23.2	192	68	316	273	190	690
11	Chippers Pitch and Putt	N-C010	0.58	23.4	84	39	165	100	113	375
12	Shadowmoss Pond #6	N-D020	0.26	24.2	69	24	95	92	71	223

#	LOCATION DESCRIPTION	SUB-BASINS ABOVE	AREA (sq mi)	TOTAL IMP. AREA (%)	ICPR 25-yr (cfs)	USGS Rural 25-yr (cfs)	USGS Urban 25-yr (cfs)	ICPR 100-yr (cfs)	USGS Rural 100-yr (cfs)	USGS Urban 100-yr (cfs)
1	Above Village Green	N-E260	1.17	0.0	297	243	---	442	368	---
2	Below Village Green	N-E010	2.01	4.6	444	333	---	695	502	---
3	Dunwoody	N-D130	2.35	7.0	376	365	369	613	550	573
4	Hickory Farms	N-B160	3.63	13.0	612	473	950	907	708	1365
5	Bees Ferry – Mainstem	N-B010	4.14	13.2	643	511	1057	951	764	1513
6	Railroad	B-A110	6.22	12.0	819	649	1274	1090	966	1824
7	SC-61	N-A030	8.47	18.4	1055	779	2457	1389	1156	3333
8	Bees Ferry – Location 2	N-G010	1.37	5.1	155	266	---	196	402	300
9	Railroad – Location 2	N-A140	2.07	9.8	209	339	480	276	511	721
10	Hickory Hills	N-B180	1.39	23.2	315	268	896	392	405	1236
11	Chippers Pitch and Putt	N-C010	0.58	23.4	102	160	494	109	243	695
12	Shadowmoss Pond #6	N-D020	0.26	24.2	104	100	297	166	154	424

Church Creek Watershed

Map Showing Calibration and Verification Points



Legend

- Calibration/Verification Poi
- Stream Centerline
- Golf Fairways

Hydro

- Lake
- Pond
- River
- Tidal Area
- Marsh
- Marsh Upland
- Rail

Figure 5-1.

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5.1.4 Historical Structure Flooding

There are several houses and townhouses within the Church Creek Watershed that have flooded on more than one occasion in the past 10 years. Flooding information for these buildings were collected at a Public Meeting held for the residents. Additional information was gathered by interviews that were conducted with some of the residents during the field reconnaissance. The finish floor elevations of these buildings, which are located in three primary locations, were surveyed and used to verify the model results. Figure 5-2 shows the location of these structures.

- Townhouses in Shadowmoss located near node N-D030 have been inundated with one to three inches of water on at least two occasions. The finish floor elevations range from 8.87 ft to 9.19 ft.
- Several houses in the Shadowood neighborhood located near node N-C060 have been inundated with three to 12 inches of water on at least four occasions. One house is reported to have had 18 inches of water during one of those occasions. The four lowest finish floor elevations among these houses are 9.64 ft, 10.02 ft, 10.05 ft and 10.07 ft.
- A house located on Winners Circle near node N-B060 has had water come up to within an inch below the finish floor elevation of 8.55 ft but has not been inundated.

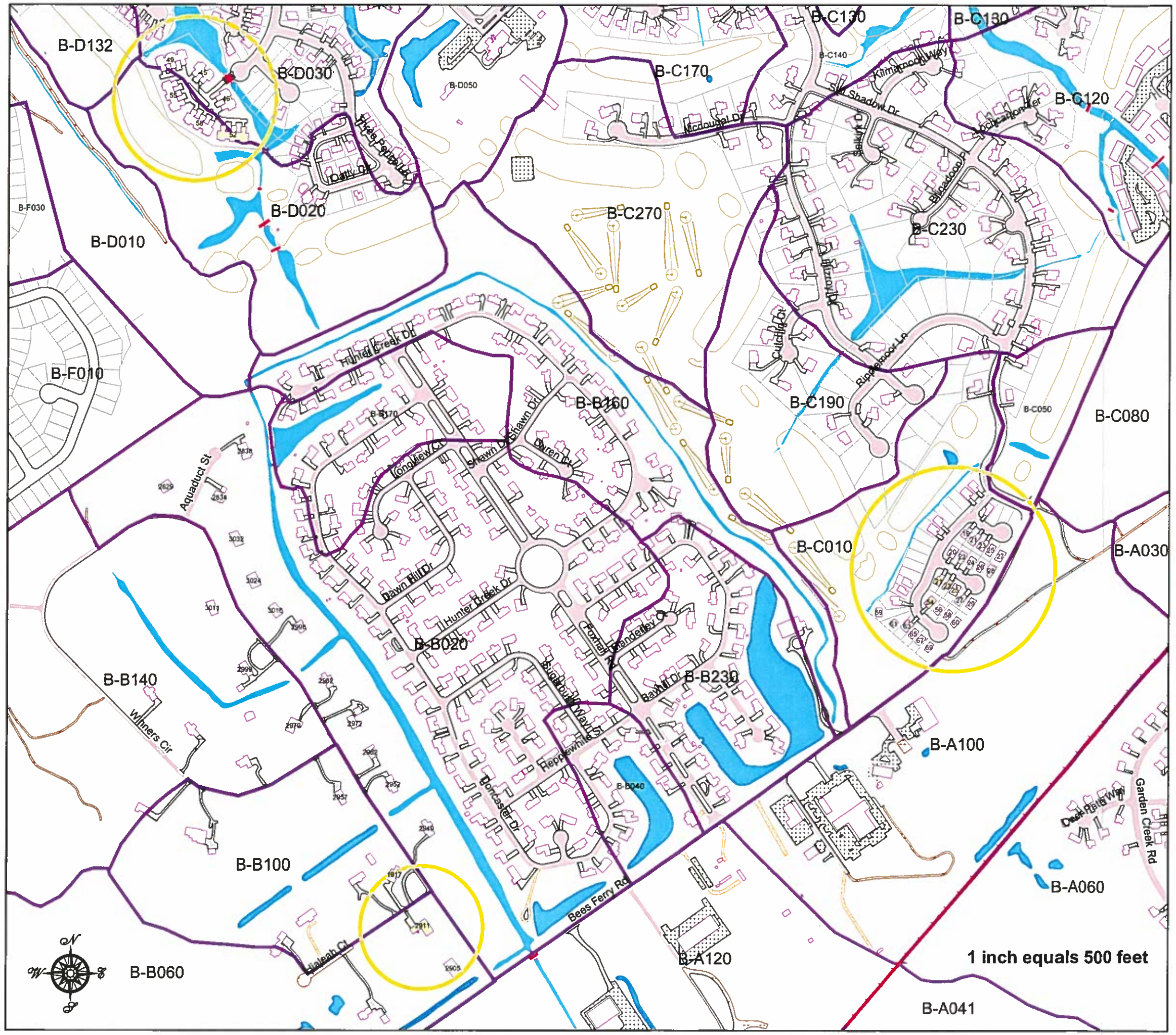
Historical rainfall data for the four largest storm events from the past 10 years were used to calibrate the model results at these three locations. One of the historical rainfall events had a total rainfall depth greater than the 100-year event and showed unreasonable flooding results. The three other storm events had more reasonable results with rainfall depths between the 2- and 10-year events. These results showed slightly higher elevations at the house on Winners Circle (downstream most point), similar elevations near the townhouses (upstream point), and lower elevations near Shadowood where the majority of the flooding occurs.

In order for the model to give the same results as the historical flooding, the elevational difference between the townhouses and the downstream location should be around six inches, while the difference between the Shadowood houses and the downstream location should be around two feet. Several runs were made with some of the model parameters adjusted (i.e., curve numbers, time of concentrations, Manning's n values, antecedent runoff condition, etc.) to try and achieve closer model results in these three locations. Any parameter changes that increased the water surface elevation near Shadowood would also increase the elevation at the downstream location. In order to produce similar flooding in the Shadowood location, parameters had to be adjusted to unreasonable values and in return would produce unreasonable water surface elevations downstream. Therefore, it is assumed that other factors not included in the ICPR model contributed to the flooding in the Shadowood area.

Near the end of this project, a large storm event occurred on July 27, 2001 and flooded several of the houses in the Shadowood area. Rainfall for this storm event was also run in the model and the results did not produce the magnitude of flooding as reported by the residents.

Church Creek Watershed

Map Showing Surveyed Structure used for Calibration



Legend

- Surveyed Structures used in calibratic
- Buildings
- Parcels
- Basins

Paved

- Other
- Paved Road
- Paved Drive
- Paved Parking
- Bridge
- Unpaved Road
- Unpaved Drive
- Unpaved Parking
- Golf Fairways

Hydro

- Lake
- Pond
- River
- Tidal Area
- Marsh
- Marsh Upland
- Rail

Figure 5-2.

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SECTION 6 STORMWATER MANAGEMENT ALTERNATIVES

6.1 SUMMARY OF EXISTING FLOODING

The existing condition ICPR model was used to analyze the performance of the drainage system elements in their current configuration. The model predicts the occurrence of flooding at numerous locations throughout the watershed in response to significant rainfall events. Structures that may potentially be at risk of flood damage in the 100-year flood event were identified using the elevations from the ICPR model. This was done by locating all building footprints that were in or bordering the 100-year floodplain and structures that were identified by the City as having flooding complaints. A drive by survey was performed at each of these structures to determine if the structure was truly at risk. This was done by estimating the depth from the finish floor to the ground around the house and comparing it to the depth of flooding as determined by the ICPR model. Surveyors were then dispatched to obtain accurate finished floor and foundation elevations for 44 houses and six townhouse buildings, containing a total of 32 units, that were determined to be at risk of flooding. This information enabled detailed analysis of flooding impacts on these structures. From this detailed analysis, the depths of flooding under existing conditions were determined for the 2-, 10-, 25-, 50-, 100-, and 500-year flood events. Table 6-1 below provides an overall summary of the results of our analysis of 76 flood prone structures in the watershed. These results are based on existing land use conditions. The model results showed that two houses have finish floor flooding in the 10-year storm event while 23 houses and 32 townhouses have finish floor flooding in the 100-year storm event. The structures surveyed are located in three areas of the watershed; 25 structures are in the Shadowood neighborhood, 19 structures are in the Hickory Farms neighborhood, and the six townhouse buildings are located in Shadowmoss. A detailed list of the flooding at each surveyed structure is provided in APPENDIX C. Maps showing the existing flooding conditions are in Appendix F.

Table 6-1. Summary of Building Flooding

Storm Event	Houses	Townhouse Units
2	0	0
10	2	0
25	8	22
50	15	32
100	23	32
500	24	32
Not flooded	20	0
Total	44	32

6.2 BENEFIT/COST ANALYSIS

Mitigation measures for the three problem areas were identified that would likely be technically feasible, cost effective, and accepted by the local community. These alternatives were focused only on modifications to the City's drainage infrastructure and included such options as culvert improvements, channel improvements, pump stations and temporary flood storage. Buyout of several of the more frequently flooded structures was also considered.

Acceptable alternatives were conceptually designed and inserted into the ICPR model and re-run to determine the impacts on the flooding conditions. If necessary, alternatives were modified or refined to optimize their performance, as predicted by the models. Once a final version of the alternative was modeled and flood improvements were determined, then the flood elevation information resulting from that alternative was analyzed for its reduction in the flood damage to affected structures. For those mitigation alternatives that produced a sufficient benefit, the next step was to develop a cost estimate for construction of the alternative(s). This was done by 1) identifying the items required for construction, 2) determining unit prices, 3) determining quantities of materials, and 4) calculating construction costs.

The next step in the analysis process was to determine the economic impact of flooding. These analyses were conducted by calculating the approximate expected annual damages to these structures by using elevation-frequency and depth-damage relations developed by the Federal Emergency Management Agency (FEMA) and a modification of FEMA's QuattroPro Spreadsheet program Benefit-Cost Analysis of Hazard Mitigation Projects (1996). The Benefit/Cost (B/C) Analysis Methodology consists of using the known flood elevations and depth of flooding in each flood analyzed at each impacted structure and calculating an annual damage cost figure. Annual impacts to individual structures were totaled and converted to a present worth value, based on a useful life of 40 years and an interest rate of 7%. Structure tax values were obtained from the County of Charleston Property Information System.

In general this B/C method requires that each mitigation alternative to solve a storm water problem be analyzed individually. First, a cost of implementing the alternative is developed, then the present worth of annual damages without the mitigation alternative is determined, followed by the present worth of annual damages with the mitigation alternative in place. The difference between these two present worth values is the benefit derived by implementing of the mitigation alternative and this is divided by the cost developed above to determine the B/C ratio. Note that the benefits must be calculated individually for each structure that is helped by the mitigation alternative and then the benefits are summed to determine the total benefit.

This B/C analysis is intended to determine to a rough degree of accuracy, the ratio of dollar value of benefits to the dollar value of costs for a proposed project. The purpose of this analysis is to enable a manager to make an informed decision regarding the relative priority of a particular project as compared to other similar projects. Projects with higher B/C ratios likely justify a higher priority ranking than those with lower ratios. A project with a B/C ratio less than one is not economically feasible based on its merits alone. However, the B/C analysis is only one factor (albeit a major factor) in deciding how to prioritize projects. Other factors enter into this decision that do not lend themselves to economic analysis. These factors may include:

- Direct public endangerment,
- Restriction of emergency access,
- Impact on street system(s), or
- Public inconvenience.

6.3 FLOOD MITIGATION ALTERNATIVES

Once the existing flooding conditions were identified, a total of nine alternatives were investigated to address flooding in the three problem locations. The first level of investigation was to alter the ICPR model in a coarse fashion to see if removing or adding a culvert, enlarging a channel, or provide significant runoff storage would beneficially reduce flooding. If the coarse changes in the models produced a beneficial change in the flooding impacts, then the alternative was pursued to the next level of detail.

If the coarse analysis indicated beneficial results, the alternative was then held for more detailed analysis to determine if it produced a significant reduction in flooding damages as calculated in the benefit portion of the B/C analysis. If significant benefits were achieved, a cost was determined for the alternative and the B/C analysis was performed. Table 6.2 lists those alternatives that were analyzed and their B/C ratio. Table 6.3 lists the number of houses and townhouse units that are inundated during each storm event. Following these tables is a more detailed description of the alternatives. Figures 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8, 6-9 show the location of each of the alternatives. Information used in the B/C calculations (i.e., structures, tax values, costs, benefits, etc.) are provided in Appendix C.

Table 6-2. Summary of Analyzed Alternatives

Alternative Number	Alternative Description	Benefit/Cost Ratio
1	New pipes at primary crossing under Railroad	0.002
2A	New pipes and ditch from Shadowood to Railroad	0.563
2B	New pipes and ditch from Shadowood to Railroad and new culverts under the Railroad	1.182
2C	New ditch along Bees Ferry Road to Railroad and new culverts under the Railroad	1.638
3	Part of Shadowmoss diverted to drain directly to the Ashley River	1.126
4	Drainage from Village Green and above diverted to drain directly to the Ashley River	0.287
5	Channel improvements from Dunwoody to Hickory Farms	0.908
6	Drainage above Village Green diverted to drain directly to the Ashley River	0.288
7	Buyout of frequently flooded structures in Shadowood	0.177

Table 6-3. Number of Structures Inundated (December 2000 Landuse Conditions)

Alternative Number	Houses					Townhouse Units				
	2-Yr	10-Yr	25-Yr	50-Yr	100-Yr	2-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Existing	0	2	8	15	23	0	0	22	32	32
1	0	2	8	15	23	0	0	22	32	32
2A	0	2	6	14	23	0	0	10	32	32
2B	0	0	3	8	18	0	0	10	32	32
2C	0	0	1	2	5	0	0	0	32	32
3	0	0	1	1	2	0	0	0	32	32
4	0	1	7	14	23	0	0	0	0	10
5	0	1	8	15	23	0	0	10	32	32
6	0	1	8	15	23	0	0	0	22	32
7	0	1	1	3	6	0	0	22	32	32

Alternative #1

Location: Main railroad crossing

Description: Add two additional 72-inch diameter steel pipes

Results: This improvement provides more flow area under the culvert but has little to no effect on the water surface elevations upstream of the railroad. The railroad culverts are controlled by the water surface elevation on the downstream side of the railroad.

Present Value Benefit: $722
Cost Estimate: $302,850
Benefit/Cost Ratio: 0.002

Alternative #2A

Location: Shadowood neighborhood

Description: Create a new ditch that drains from the existing 36 inch culvert under Bees Ferry Road to a culvert under the railroad approximately 800 feet away. This would also require adding additional pipes down Wolk Drive to tie into the culvert under Bees Ferry Road, and cleaning out the existing culvert that is almost completely full of sediment. Some improvements to the channel downstream of the railroad may also be required.

Results: This improvement provides very little benefit to the structures in the Shadowood neighborhood. The water surface elevations are reduced by about 0.1ft in the 10-year storm event to about 0.2 ft in the 100-year event.

Present Value Benefit: $120,580
Cost Estimate: $214,021
Benefit/Cost Ratio: 0.563

Alternative #2B

Location: Shadowood neighborhood

Description: Create a new ditch that drains from Bees Ferry Road to the railroad approximately 800 feet away. Install two new 60-inch steel pipes under the railroad at a lower invert than the existing culvert. Replace the existing culvert under Bees Ferry Road with two 36-inch pipes at a lower invert than the existing pipe. This would also require adding pipes down Wolk Drive to tie into the culverts under Bees Ferry Road. Some improvements to the channel downstream of the railroad may also be required.

Results: This improvement provides some benefit to the structures in the Shadowood neighborhood. The water surface elevations are reduced by about 0.75 ft in the 2-year storm event to about 0.4 ft in the 100-year event.

Present Value Benefit: $501,199
Cost Estimate: $424,065
Benefit/Cost Ratio: 1.182

Alternative #2C

Location: Along Bees Ferry Road near the Shadowood neighborhood

Description: Plug the two existing 48-inch pipes that cross under Bees Ferry Road. Create a new ditch that runs along Bees Ferry Road for approximately 1,300 ft and then turns toward the railroad approximately 800 feet away. Install two new 60-inch steel pipes under the railroad at a lower invert than the existing culvert. Some improvements to the channel downstream of the railroad may also be required.

Results: This improvement provides the most benefit to the structures in the Shadowood neighborhood. The water upstream of Shadowood is diverted away from the neighborhood. The water surface elevations are reduced by about 0.8 ft in the 2-year storm event to about 1.0 ft in the 100-year event.

Present Value Benefit: $917,924
Cost Estimate: $560,490
Benefit/Cost Ratio: 1.638

Alternative #3

Location: Shadowmoss near Ashley River Road and Bees Ferry Road

Description: Block the existing weir that is just upstream of the two existing 48-inch pipes that cross under Bees Ferry Road and block the outfall at the 5th fairway. Divert the outfall for the golf course pond near the 6th and 8th holes to outfall directly to the Ashley River. This new outfall will run from Hunters Forest Drive towards Ashley River Road and then towards the Ashley River. This will consist of two new 48-inch pipes beginning at the pond and running approximately 850 feet under Hunters Forest Drive and under Ashley River Road. A new ditch will be created that continues approximately 1,300 ft until it reaches the Ashley River.

Results: This improvement provides benefit to the structures in the Shadowood neighborhood and to several houses within Shadowmoss. The water surface elevations in Shadowood are reduced by about 1.1 ft in the 2-year storm event to about 1.3 ft in the 100-year event.

Present Value Benefit: $1,130,700
Cost Estimate: $1,004,010
Benefit/Cost Ratio: 1.126

Alternative #4

Location: Shadowmoss and Village Green

Description: Divert all the storm water coming to a point just downstream of Village Green directly to the Ashley River. This would consist of several new ditches, pipes and a pump station running between the houses located in Shadowmoss and Village Green.

Results: This improvement provides benefits to many downstream structures including the Shadowood neighborhood. However, this alternative is costly and would require numerous drainage easements.

Present Value Benefit: $1,150,796
Cost Estimate: $4,013,430
Benefit/Cost Ratio: 0.287

Alternative #5

Location: Channel between Shadowmoss and Moss Creek

Description: Increase the size of the channel to provide more flood storage. This would consist of channel improvements for approximately 2,500 feet. The top width of the channel would be increased from the existing average top width of 20 feet to a new top width of approximately 50 feet.

Results: This improvement provides a small benefit to the structures located on Two Loch Place. The water surface elevations are reduced by about 0.2 ft for each of the storm events.

Present Value Benefit: $275,990
Cost Estimate: $303,825
Benefit/Cost Ratio: 0.908

Alternative #6

Location: Village Green

Description: Divert all the storm water coming to a point just upstream of Village Green directly to the Ashley River. This would consist of several new ditches and pipes running just north of Village Green.

Results: This improvement provides some benefit to downstream structures located on Two Loch Place. The water surface elevations are reduced by about 0.2 ft for each of the storm events.

Present Value Benefit: $506,917
Cost Estimate: $1,763,130
Benefit/Cost Ratio: 0.288

Alternative #7

Location: Shadowood neighborhood

Description: The City would buy a section of houses along Wolk Drive and Mowler Drive that borders Bees Ferry Road. This would include the houses that have experienced reoccurring flooding over the last 10 years and some other houses along these streets. This land could then be filled and used by the City (i.e., fire or police station).

Results: This improvement removes a majority of the structures completely from the floodplain that have had repeated flooding over the past 10 years. This alternative does not provide a large financial benefit; however there may be several intangible items that a price cannot be assigned to (i.e., public endangerment, or emergency vehicle access).

Present Value Benefit: $436,478
Cost Estimate: $2,464,200
Benefit/Cost Ratio: 0.177

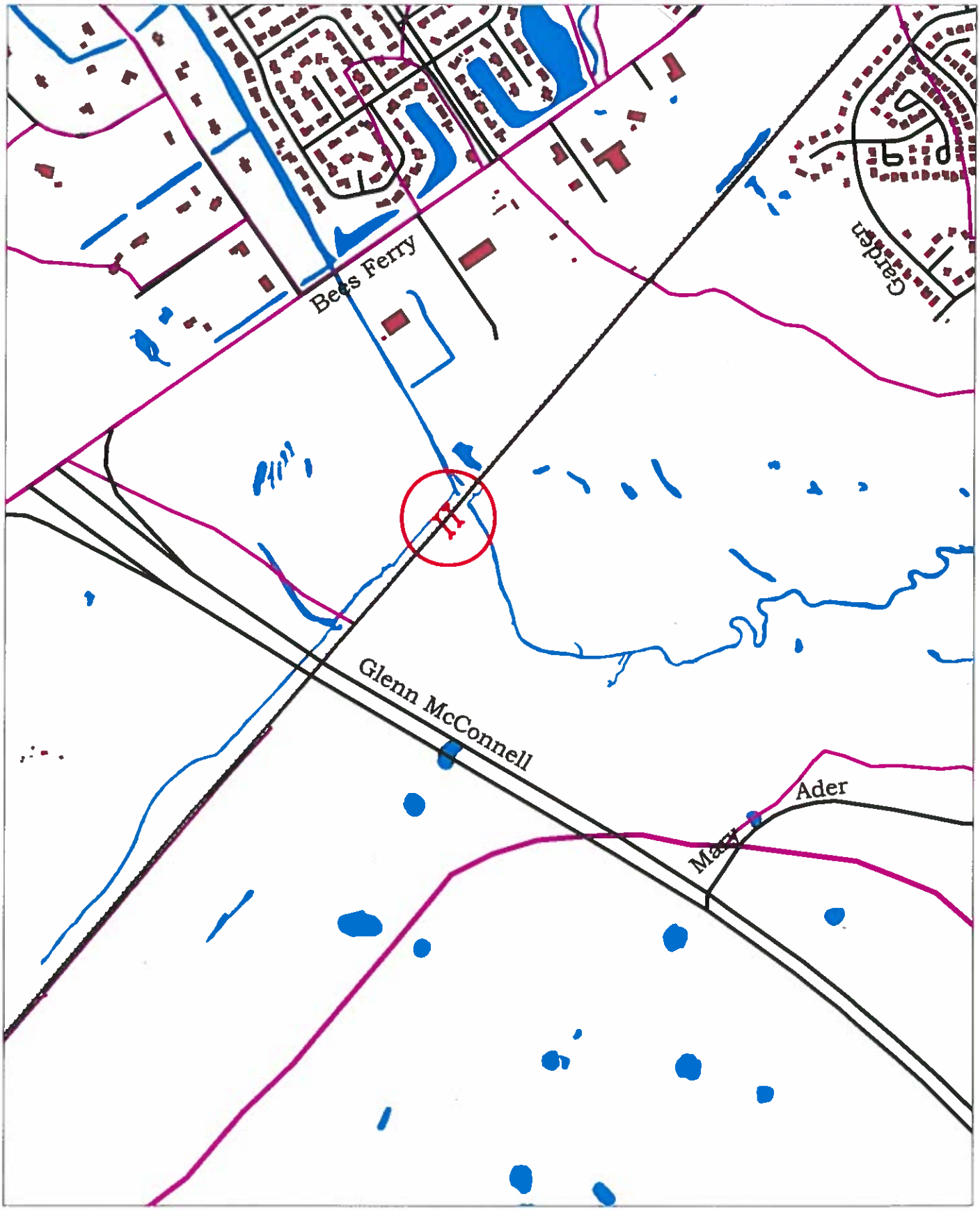


FIGURE 6-1 ALTERNATIVE #1

New 2-72" Steel Pipes Under Railroad

500 0 500 1000 Feet

N

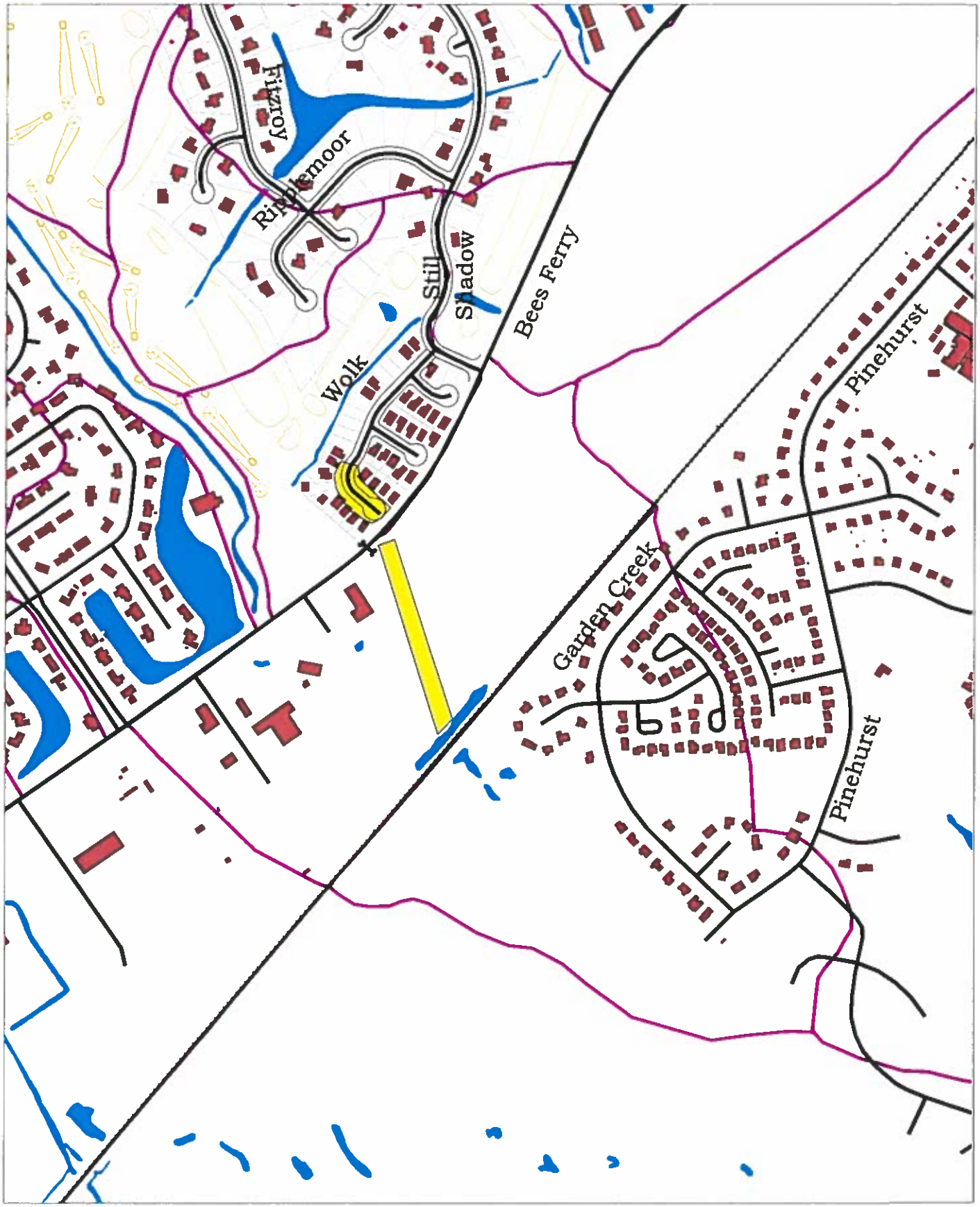


FIGURE 6-2 ALTERNATIVE #2a

New Ditch, New Shadowood Pipes

500 0 500 Feet

N

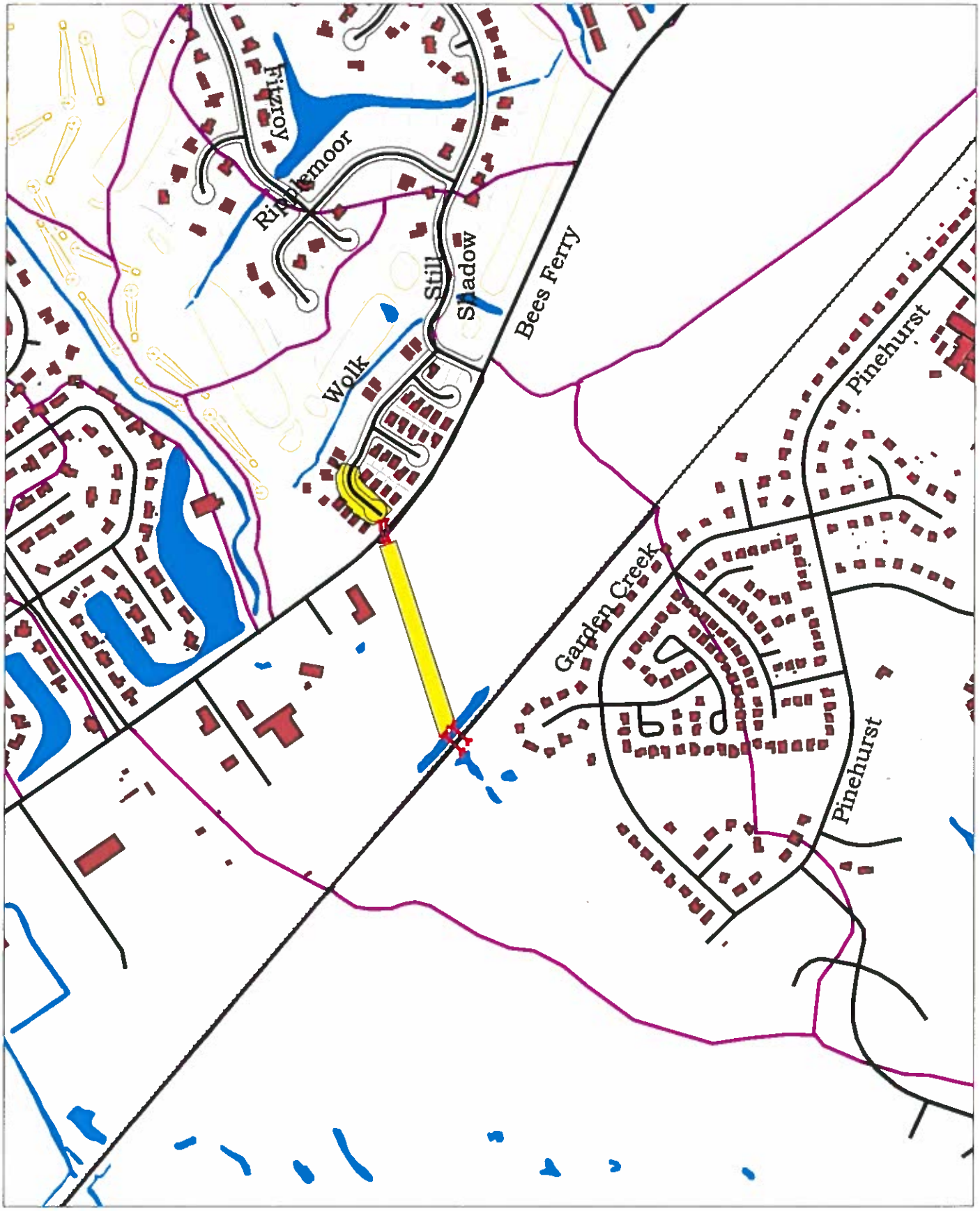


FIGURE 6-3 ALTERNATIVE #2b

New Ditch, New Shadowood Pipe System and New Culvert Under Bees Ferry

500 0 500 Feet

N

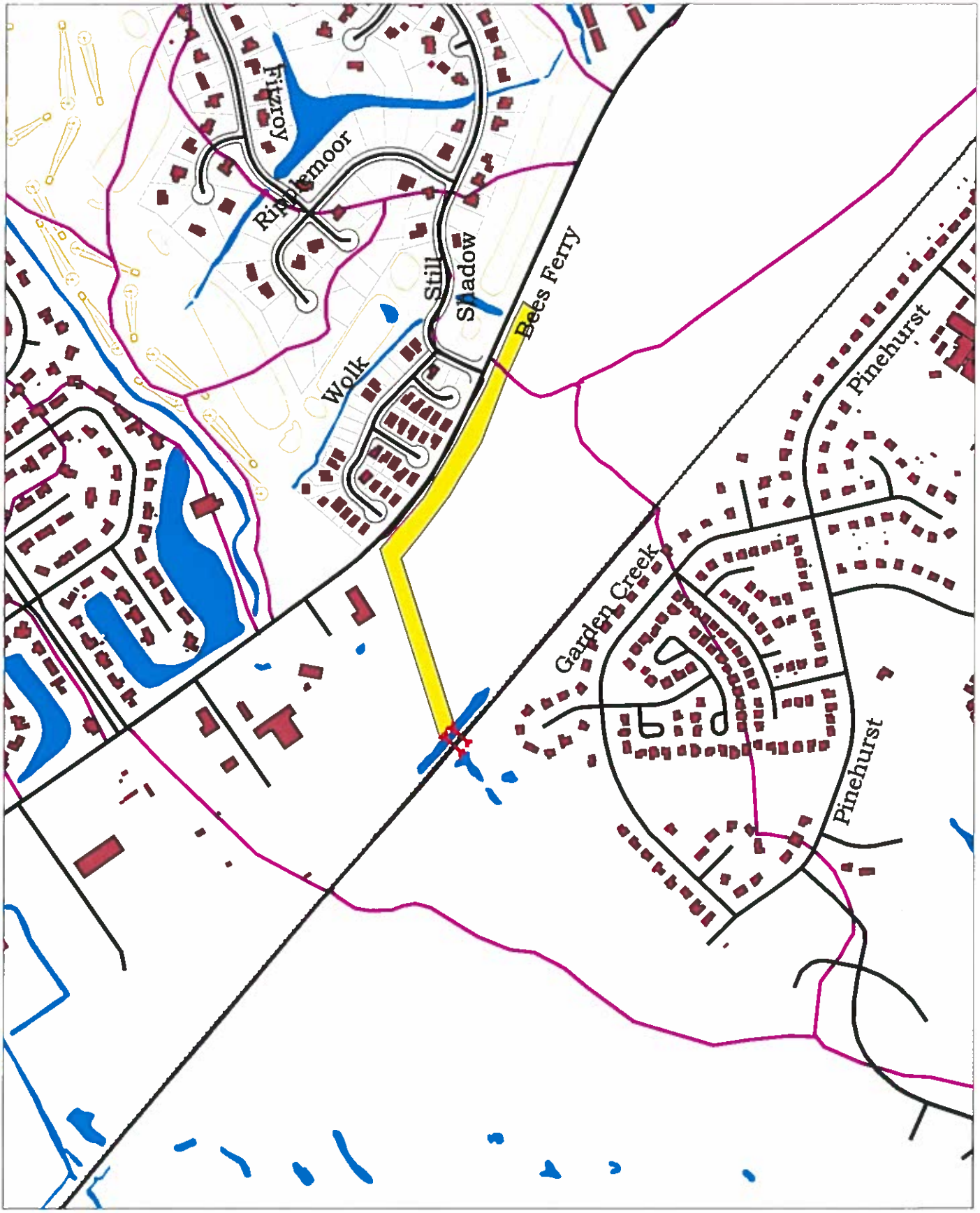


FIGURE 6-4 ALTERNATIVE #2c

New Ditch Along Bees Ferry and New 2-60" Under Railroad

500 0 500 Feet

N

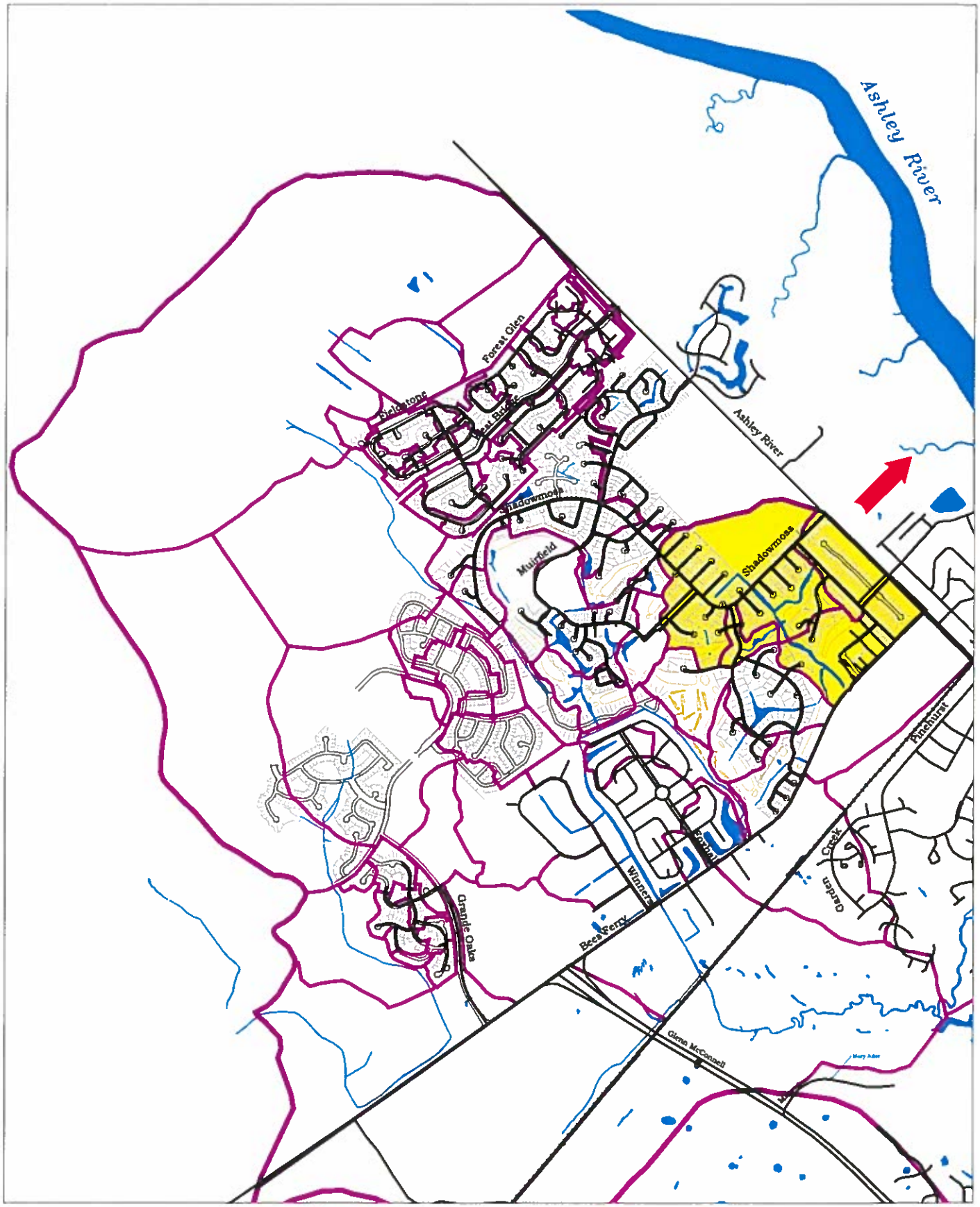


FIGURE 6-5 ALTERNATIVE #3

Portion of Shadowmoss to Ashley River

N

1000 0 1000 2000 3000 Feet

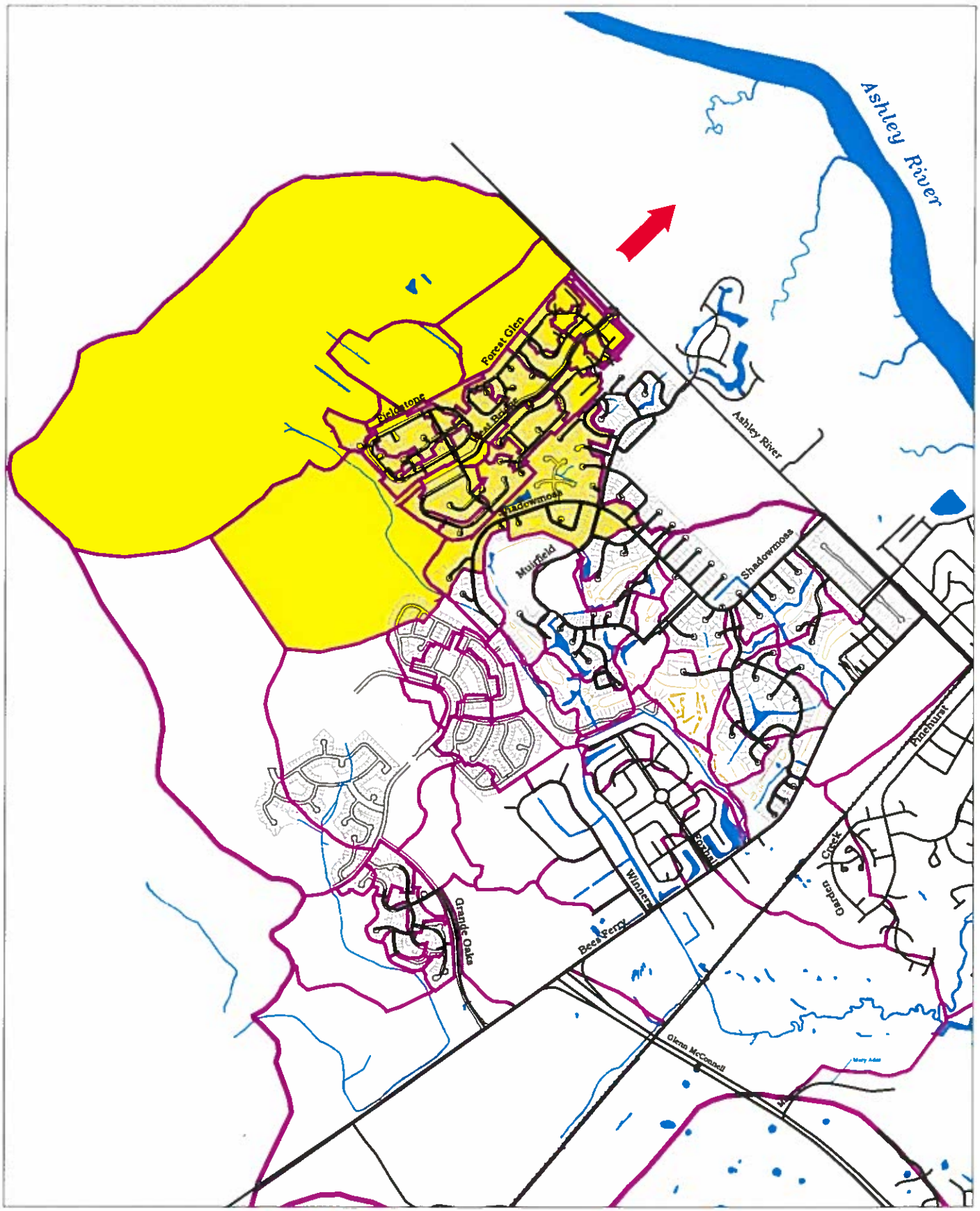


FIGURE 6-6 ALTERNATIVE #4

Village Green Diverted to Ashley River

1000 0 1000 2000 3000 Feet

N

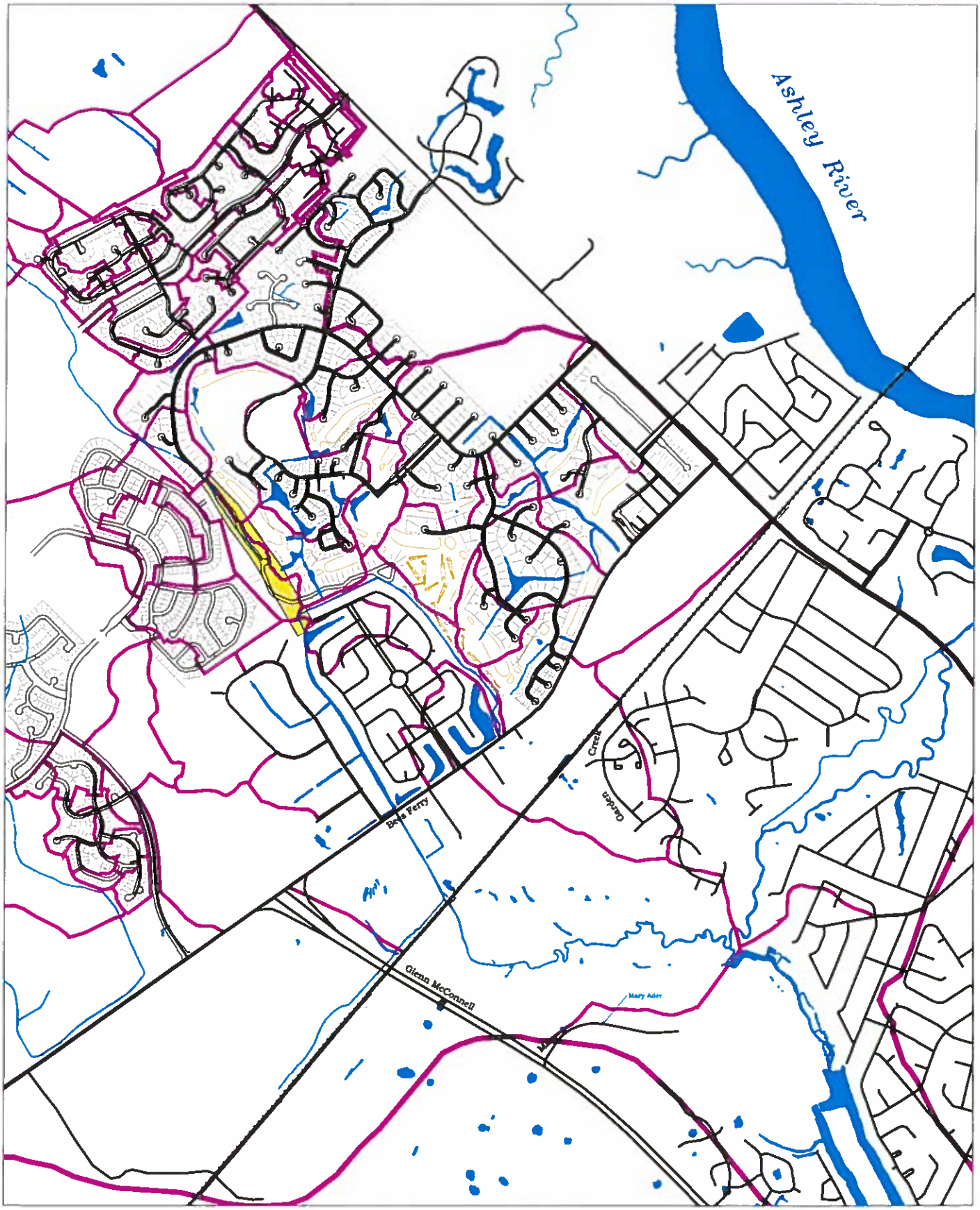


FIGURE 6-7 ALTERNATIVE #5

Channel Improvements

1000 0 1000 2000 Feet

N

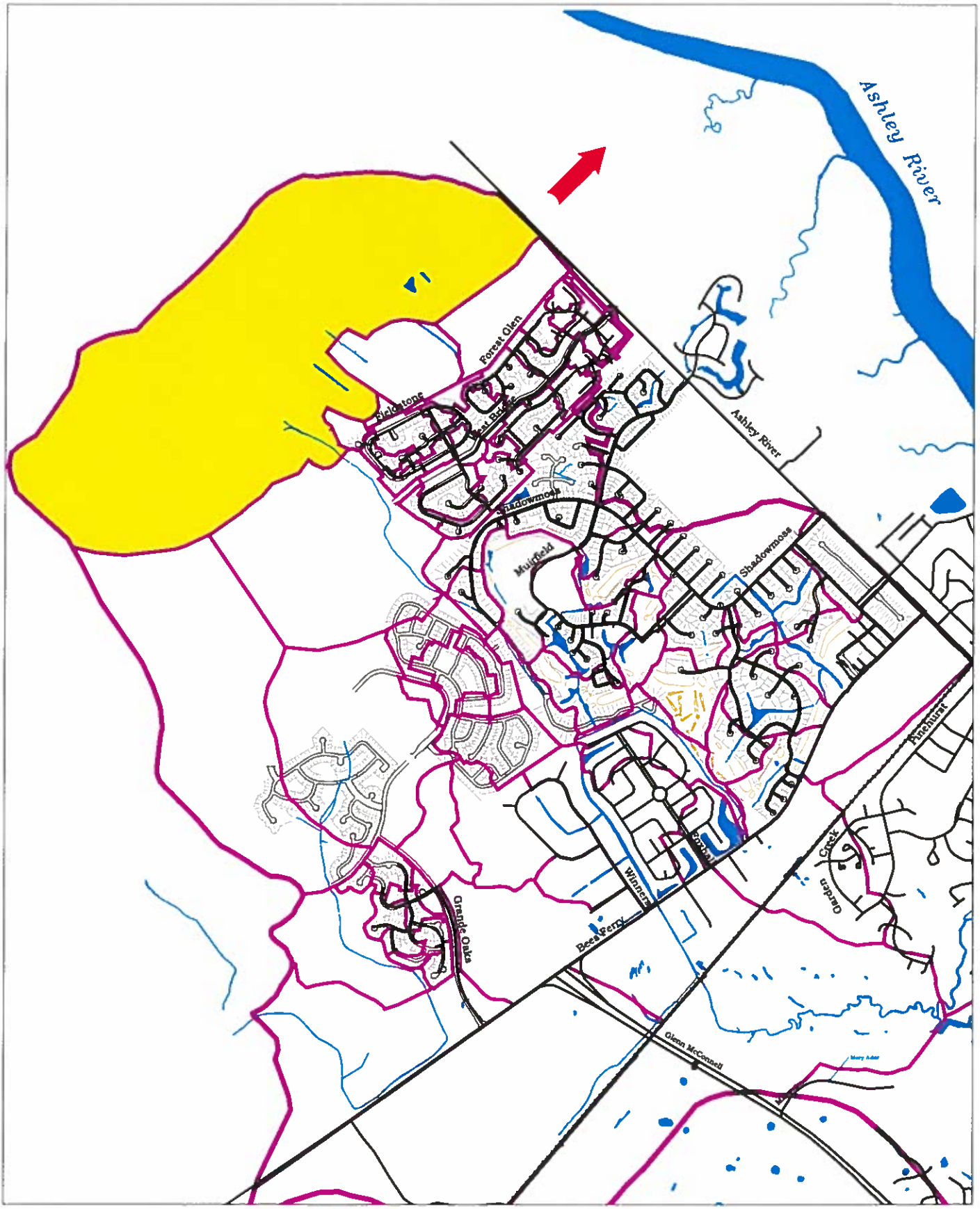


FIGURE 6-8 ALTERNATIVE #6

Drainage Above Village Green Diverted to Ashley River

1000 0 1000 2000 3000 Feet

N

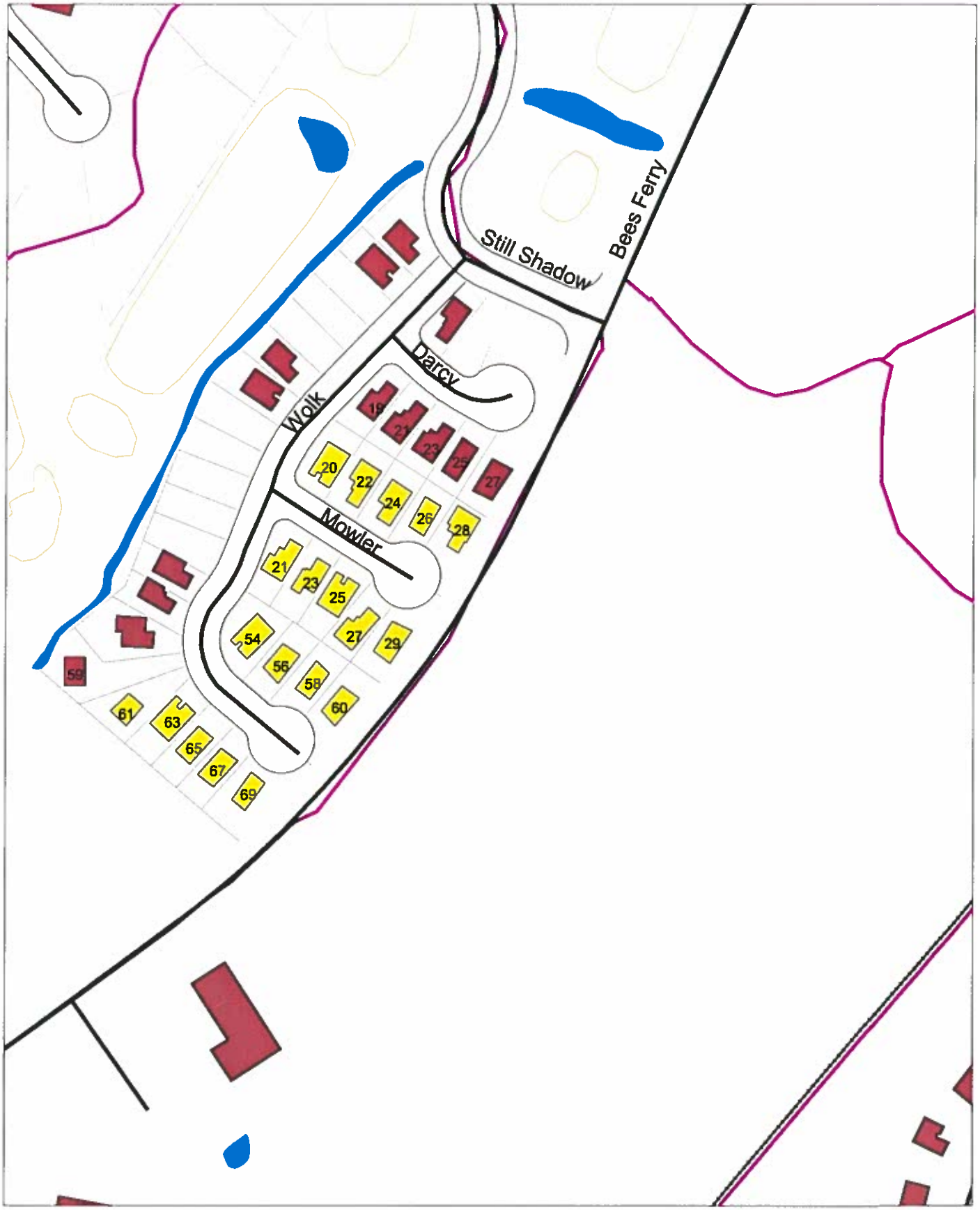


FIGURE 6-9 ALTERNATIVE #7
Buyout of Houses in Shadowood

100 0 100 200 Feet

N

6.4 PROPOSED ALTERNATIVES

The results of the B/C analysis for reducing building flooding had three positive alternatives. However, all three of those alternatives (#2B, #2C, and #3) provide relief to the Shadowood neighborhood. Alternative 2C provides the largest B/C ratio and is the recommended alternative to reduce flooding in the Shadowood neighborhood. Alternative #5 is the only other alternative that has close to a positive B/C ratio. This alternative is to increase the available channel storage between Dunwoody and Hickory Farms. Table 6-4 lists the prioritized alternatives by B/C ratio and recommends alternatives for the City to consider. The recommended alternatives #2C and #5 have estimated costs of $560,490 and $303,825 respectively. The combined cost for both Alternative #2C and #5 is $864,315. The itemized cost estimates are provided in Appendix C.

Table 6-4. Summary of Recommended Alternatives

Alternative Number	Alternative Description	Benefit/Cost Ratio	Recommended
2C	New ditch along Bees Ferry Road to Railroad and new culverts under the Railroad	1.638	Yes
2B	New pipes and ditch from Shadowood to Railroad and new culverts under the Railroad	1.182	No
3	Part of Shadowmoss diverted to drain directly to the Ashley River	1.126	No
5	Channel improvements from Dunwoody to Hickory Farms	0.908	Yes
2A	New pipes and ditch from Shadowood to Railroad	0.563	No
6	Drainage above Village Green diverted to drain directly to the Ashley River	0.288	No
4	Drainage from Village Green and above diverted to drain directly to the Ashley River	0.287	No
7	Buyout of frequently flooded structures in Shadowood	0.177	No
1	Primary crossing under Railroad	0.002	No

SECTION 7 STORMWATER DETENTION REQUIREMENTS

7.1 CURRENT REGULATIONS

The current detention regulations used by the City of Charleston are those required by the State of South Carolina. These regulations are listed in Section 72-307 and Appendix B of the South Carolina Stormwater Management and Sediment Control Handbook for Land Disturbance Activities (September 1995). The major requirement as pertaining to storm water detention quantity control is that the post-development peak discharge rates shall not exceed pre-development discharge rates for the 2- and 10-year frequency 24-hour duration storm event. This requirement only controls the peak rate at which storm water can leave a site and does not consider the volume of water, or the timing of hydrographs at downstream locations. There is also no control requirement for the larger storm events.

The ICPR model was used to determine what effects controlling only the peak rates might have on hydrograph timing and water surface elevations within the watershed. The sub-basins upstream of Bees Ferry Road were modified to reflect future development land use conditions. These sub-basins were also set so that the peak runoff rates were limited to the existing conditions peak flow rates. This is an option within of ICPR that can be used to modify runoff hydrographs to simulate peak rate controls. ICPR does this by creating a hydrograph that limits the peak rate to a set discharge limit. Any discharge from the runoff hydrograph that is larger than the set discharge limit is set aside until the runoff discharge rate drops below the set limit. At this time, the saved discharge is added back to the hydrograph at a rate that still maintains the set discharge limit. Therefore, any discharge rate greater than a set limit is saved and added to the back end of the runoff hydrograph once the rates drop below the set discharge limit.

The 2- through 100-year storm events were modeled with the peak rate controls in place. The model results showed that there is one additional house that might have finish floor flooding in the 10-, 25- and 100-year storm events while there are three additional houses that may have finish floor flooding in the 50-year storm event. Therefore, the current detention requirement of only controlling peak discharge rates does not protect downstream locations from increased flooding due to new development. Table 7-1 summarizes the flooding impacts with only peak rate controls.

Table 7-1. Flooding Impacts with Only Peak Rate Controls

Policy Modification Alternative	Number of Finish Floors Inundated Per Condition				
	2-year	10-year	25-year	50-year	100-year
Houses					
Existing Conditions	0	2	8	15	23
Future Conditions with Detention That Controls the Peak Rate	0	3	9	18	24
Townhouse Units					
Existing Conditions	0	0	22	32	32
Future Conditions with Detention That Controls the Peak Rate	0	10	32	32	32

7.2 DETENTION REQUIREMENT OPTIONS

Due to the extent of the existing flooding and the potential for future flooding in the watershed, a change in policy and requirements may be a solution to the problem. There were six possible policy modification alternatives investigated. Descriptions of these alternatives are listed below while Table 7-2 shows a comparison of the pros and cons for each alternative.

1) No detention required,
2) Control peak flow rates only,
3) Detain the excess 24-hour, X-year storm rainfall runoff at the peak detention elevation,
4) Detain the excess 24-hour, X-year storm rainfall runoff until Z-time,
5) Detain the excess 24-hour, X-year storm rainfall runoff at the peak detention elevation and control peak discharge rates, and
6) Detain the excess 24-hour, X-year storm rainfall runoff until Z-time and control peak discharge rates.

X-year = given storm frequency (i.e., 2-year, 10-year, 100-year)
Z-time = given time (i.e., 24-hours)

Policy modification alternative #1, No detention required;

- This alternative would not require future development to provide detention, allowing direct release of all runoff.

Policy modification alternative #2, Control peak flow rates only (Current Policy):

- This alternative would implement the current policy of requiring detention facilities to detain runoff and release the post-development peak flow rates for the 2- and 10-year 24-hour storm events to the pre-development peak flow rates. However, the design storm event could be changed to a less frequent storm event (i.e., 25-year, 50-year, or 100-year) to address future storm water quantity problems. See Figure 7-1.

Policy modification alternative #3, Detain the excess 24-hour, X-year storm rainfall runoff at the peak detention elevation,

- This alternative would require detaining the excess runoff volume difference between the pre-development and post-development conditions for a given storm frequency X (i.e., 100-year storm event). This excess volume would occupy the peak storage volume in the detention facility. See Figure 7-2.

Policy modification alternative #4, Detain the excess 24-hour, X-year storm rainfall runoff until Z-time:

- This alternative would require detaining the excess runoff volume difference between the pre-development and post-development conditions for a given storm frequency X (i.e., 100-year storm event) for a certain time period Z (i.e., 24-hours). The storage volume within the detention facility would be required to occupy the excess runoff volume and the volume required to detain this excess volume for the desired time period. See Figure 7-3.

Policy modification alternative #5, Detain the excess 24-hour, X-year storm rainfall runoff at the peak detention elevation and control peak discharge rates:

- This alternative would require detaining the excess runoff volume difference between the pre-development and post-development conditions for a given storm frequency X (i.e., 100-year storm event) and release the post-development peak flow rates for the X-year storm event to the pre-development peak flow rates. The storage volume within the detention facility would be required to occupy the excess runoff volume and the volume required to release the post-development peak flow to the pre-development peak flow rates. See Figure 7-4.

Policy modification alternative #6, Detain the excess 24-hour, X-year storm rainfall runoff until Z-time and control peak discharge rates:

- This alternative would require detaining the excess runoff volume difference between the pre-development and post-development conditions for a given storm frequency X (i.e., 100-year storm event) for a certain time period Z (i.e., 24-hours). The storage volume within the detention facility would be required to occupy the excess runoff volume, the volume required to detain this excess volume for the desired time period and the volume required to release the post-development peak flow to the pre-development peak flow rates. See Figure 7-5.

Table 7-2. Alternative Pros and Cons

Policy Option	Pros	Cons
1	Easiest approach	Results in increased downstream volume, increased flow elevations and increased peak discharges.
2	Current practice, easy understanding for design community	Results in increased downstream volume, and increased flow elevations.
3	Excess runoff volume created from development is captured	Post-peak flow rates could be larger than the pre-rates (excess volume could be captured before peak flow is reached, excess volume may be less than required volume to control peak). Larger post-runoff volume could travel downstream sooner than pre-runoff volume.
4	More than excess runoff volume is captured at peak detention elevation (excess volume + drawdown volume)	Post-peak flow rate could be larger than the pre-rates (excess volume could be captured before peak flow is reached, excess volume may be less than required volume to control peak).
5	Excess volume is captured Peak discharge is controlled	Larger post- runoff volume could travel downstream sooner than pre- runoff volume (post- shape of hydrograph may have centroid sooner). If drawdown time is large, detention facilities could stay full for long periods of time.
6	Same Z-hour volume is released for pre- and post- conditions, and the post- peak flow rates will be equal to or lower than the pre- peak flow rates	Requires the most detention volume of the six options. Detention facilities will stay full for longer periods of time due to smaller outlet control devices.

Figure 7-1 Alternative #2 - Control Peak Flow Rates

Pros: Current Practice
Cons: Increased volume downstream,
Increased elevation downstream,
Increased discharge downstream

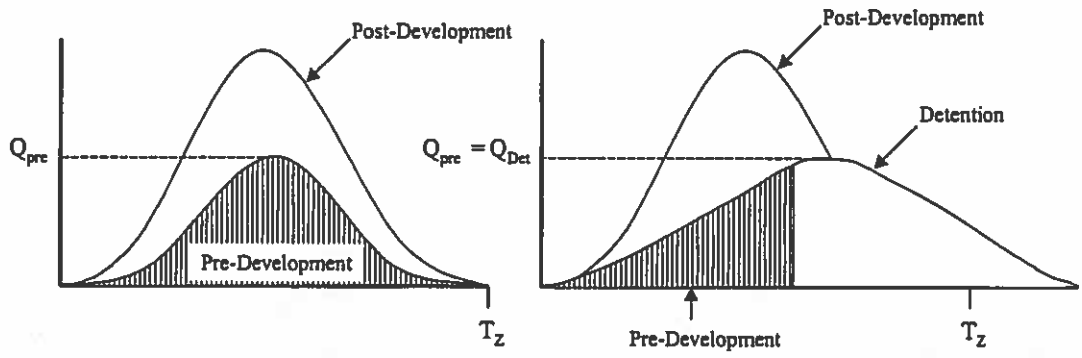
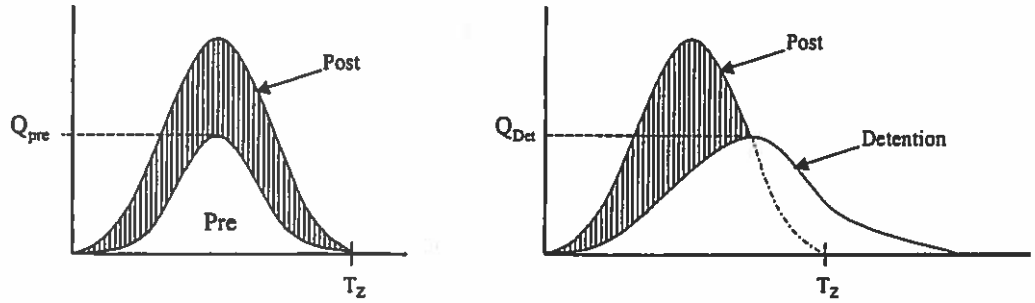


Figure 7-2 Alternative #3 - Detain the excess 24-hour, X-year storm rainfall runoff at the peak detention elevation

Pros: Excess volume is captured
Cons: Peak rates could be larger than existing
*(excess volume is captured before peak)
Larger volume could travel downstream sooner than existing
*(shape of hydrograph may have centroid sooner than existing conditions)

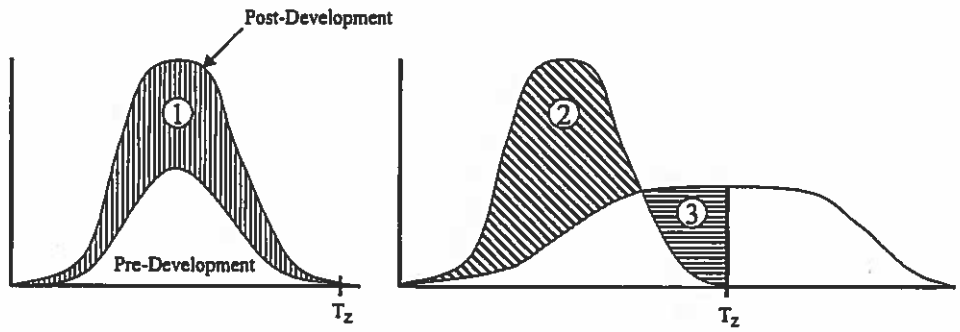


$$A_{Excess} = A_{Storage}$$

Figure 7-3 Alternative #4 - Detain excess 24-hour X-year rainfall until Z-time

Pros: At peak detention elevation there is more than excess runoff volume
(excess volume + drawdown)

Cons: Peak rates could be larger than existing
*(excess volume is captured before peak)
Excess volume may be less than volume required to control peak



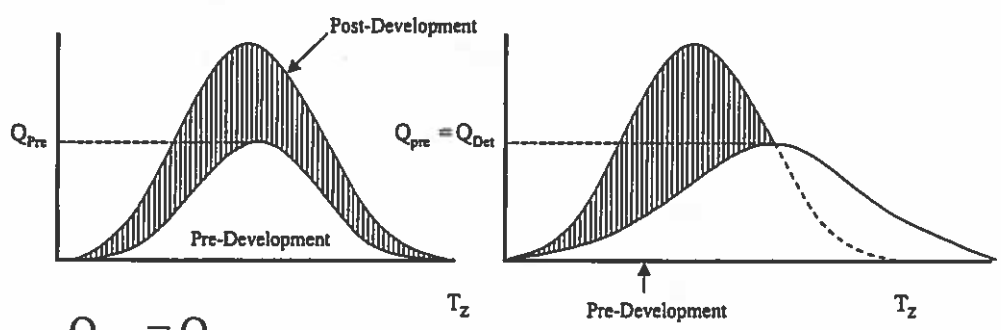
$$A_1 = A_2 - A_3$$

$$A_{Excess} + A_{Drawdown} = A_{Storage}$$

Figure 7-4 Alternative #5 - Detain excess 24-hour X-year at peak detention elevation and control peak discharge

Pros: Excess runoff volume is captured
Peak discharge is controlled

Cons: Larger volume could travel downstream sooner than existing
* (Shape of hydrograph may have centroid sooner)
If drawdown time is large, pond stays full

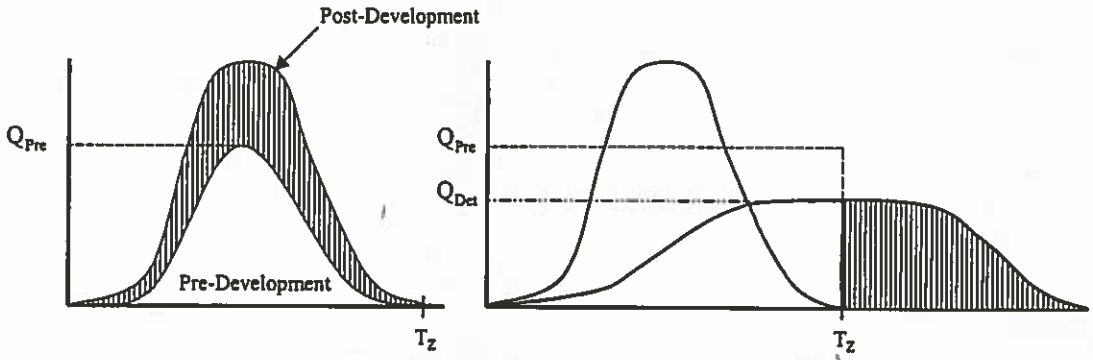


$$Q_{Det} = Q_{Pre}$$

$$A_{Storage} \geq A_{Excess}$$

Figure 7-5 Alternative #6 Detain excess 24-hour X-year until Z-time and control peak discharge

Pros: About the same X-hour volume is released for pre- and post- conditions
Peak discharge will be lower than or equal to existing peak flows
Cons: Requires more detention volume
Ponds may stay full longer due to small outlet devices



Railroad

Using the ICPR computer model, different detention policy options were applied to future land use conditions for sub-basins located upstream of Bees Ferry Road to determine the resulting impacts on future flood elevations. Changes that were made to the ICPR model to simulate these control options are as follows:

- **Peak Rate Controls**: The future runoff hydrographs were limited to the existing conditions peak rates for each of the storm events.
- **Volume Controls**: The increased volume of runoff from each sub-basin was determined for each storm event. Storage was added to the sub-basin node to account for this volume increase for each storm event. This was done by providing additional storage volume equal to the given year storm event volume increase below the existing water surface elevation for that given year storm event. (i.e., the increase in volume for the 2-year event was created below the existing 2-year water surface elevation for that node).
- **Volume Time Controls**: The volume of runoff at 24-hours was determined for each storm event under existing conditions. The future runoff hydrographs were limited to a discharge rate that would produce the same volume at a time period of 24-hours. A holding period of 24-hours was used due to the fact that the time to peak in the vicinity of the railroad was approximately 25 hours.

Results from the modeled detention options are shown in Table 7-3.

Table 7-3. Policy Modification Alternatives and Future Flooding Impacts

Policy Modification Alternative	Number of Finish Floors Inundated Per Condition				
	2-year	10-year	25-year	50-year	00-year
Houses					
Existing Conditions	0	2	8	15	23
Alt #1 –No Controls	0	4	9	19	24
Alt #2 –Peak Controls	0	3	9	18	24
Alt #3 –Volume Controls	0	2	9	17	24
Alt #6 –Peak and Volume Time Control	0	2 or less	8	15	23
Townhouse Units					
Existing Conditions	0	0	22	32	32
Alt #1 –No Controls	0	22	32	32	32
Alt #2 –Peak Controls	0	10	32	32	32
Alt #3 –Volume Controls	0	4	32	32	32
Alt #6 –Peak and Volume Time Control	0	0	22 or less	32	32

7.3 PROPOSED DETENTION REQUIREMENTS

Based on the results of the computer model simulations it is recommended that detention policy alternative number six be implemented for future development. This alternative was selected because it provides the most protection against flooding for the future land use conditions as shown in Table 7-3. This alternative gives developers the freedom to develop at any impervious density while maintaining no flooding impacts to downstream properties.

Figures 7-6, 7-7, 7-8, and 7-9 show existing stage hydrographs at several locations upstream of the railroad. The peak stages at these locations occur between hours 21 to 25 depending on the location and remain near peak stage for approximately three to six hours. Therefore, it is recommended that the time period for pre-volume release control be set to 24-hours. This should prevent any excess runoff volume due to new development from traveling downstream until after the peak stage at the railroad has begun to reside. It is also recommended that all storm events up to the 100-year storm event should be controlled for both excess volume and peak rates.

Therefore, the recommended detention standard shall require permanent storm water management systems, associated with new development, to be designed and constructed to maintain the post-development peak flow rates at or below the pre-development peak flow rates; and to detain the excess runoff volume difference between the pre-development and post-development conditions for the design storms having a duration of 24-hours and frequencies of 2-, 10-, 25-, 50- and 100- years for a time period of 24-hours. Tolerances for the 25-, and 50- year storm event peak flow rates will be plus or minus 10 percent. All other post-development peak flow rates must be at or below the pre-development peak flow rates. Detention facilities meeting these standards must be designed and constructed to contain the excess volume for the 24-hour period and the volume required to release the post development peak flow at or below the pre-development peak flow rates.

Figure 7-6 - Node A120 (Upstream of Railroad)

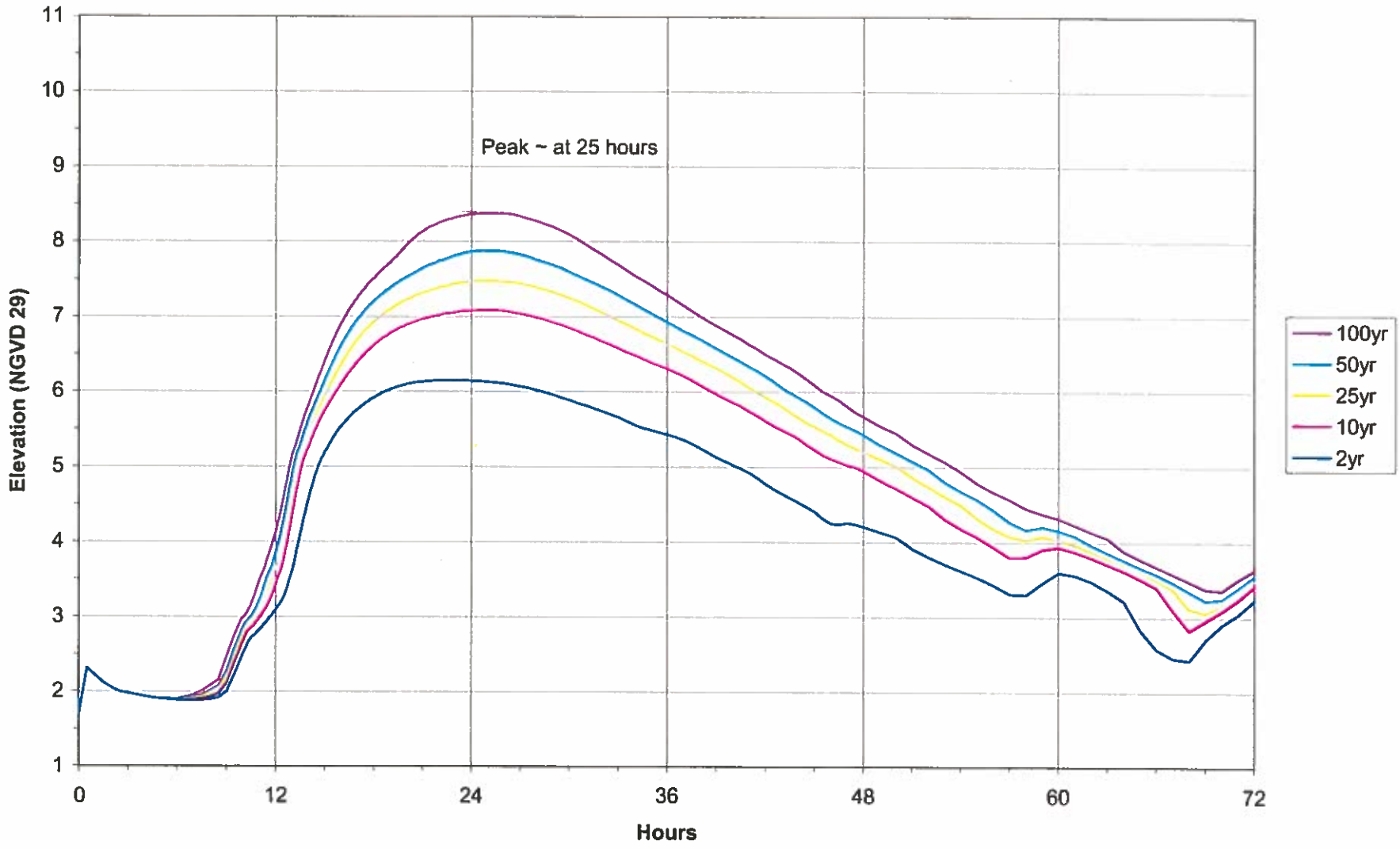


Figure 7-7 - Node B020 (Upstream of BeesFerry - NE)

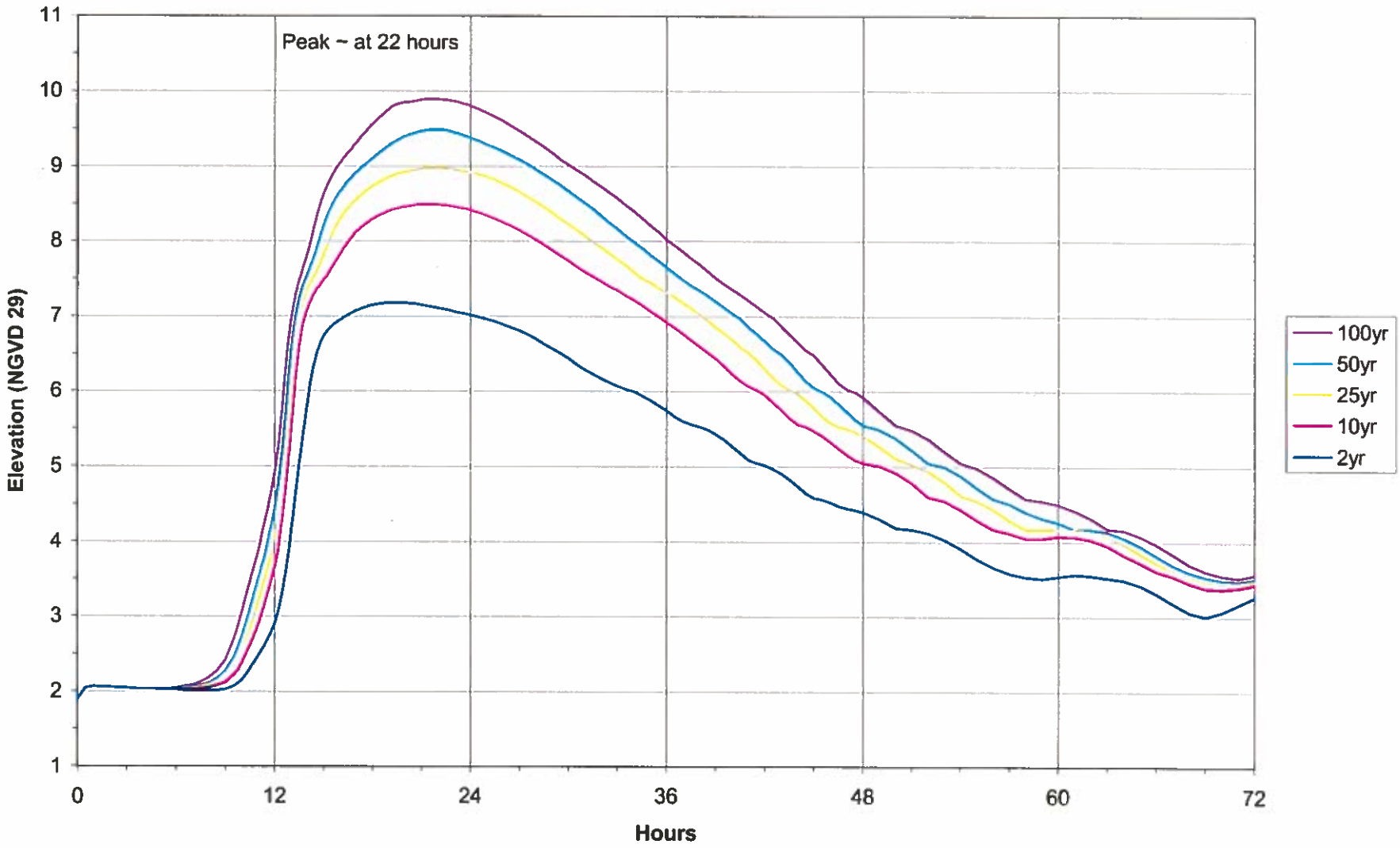


Figure 7-8 - Node B160 (Above Hickory Farms)

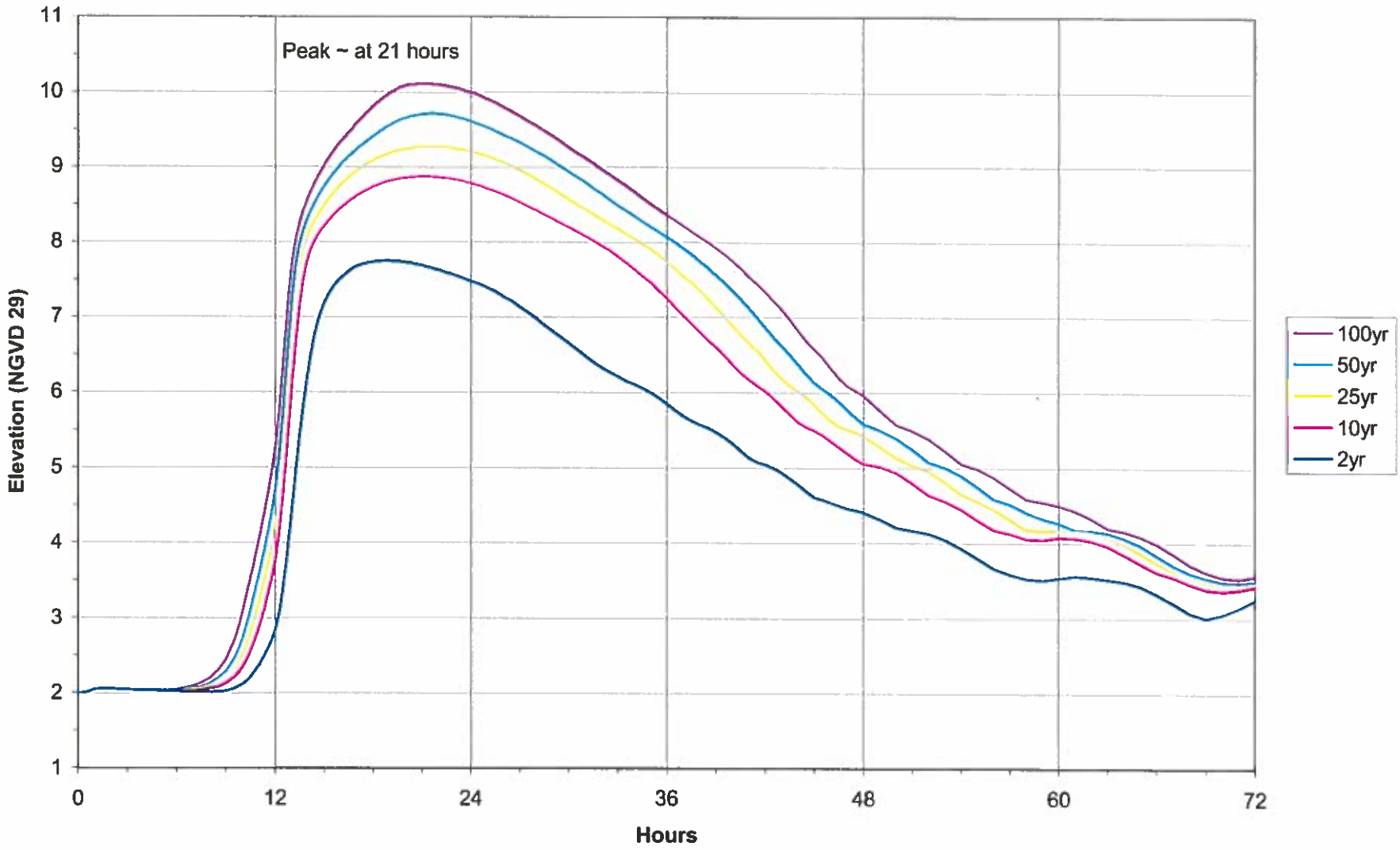
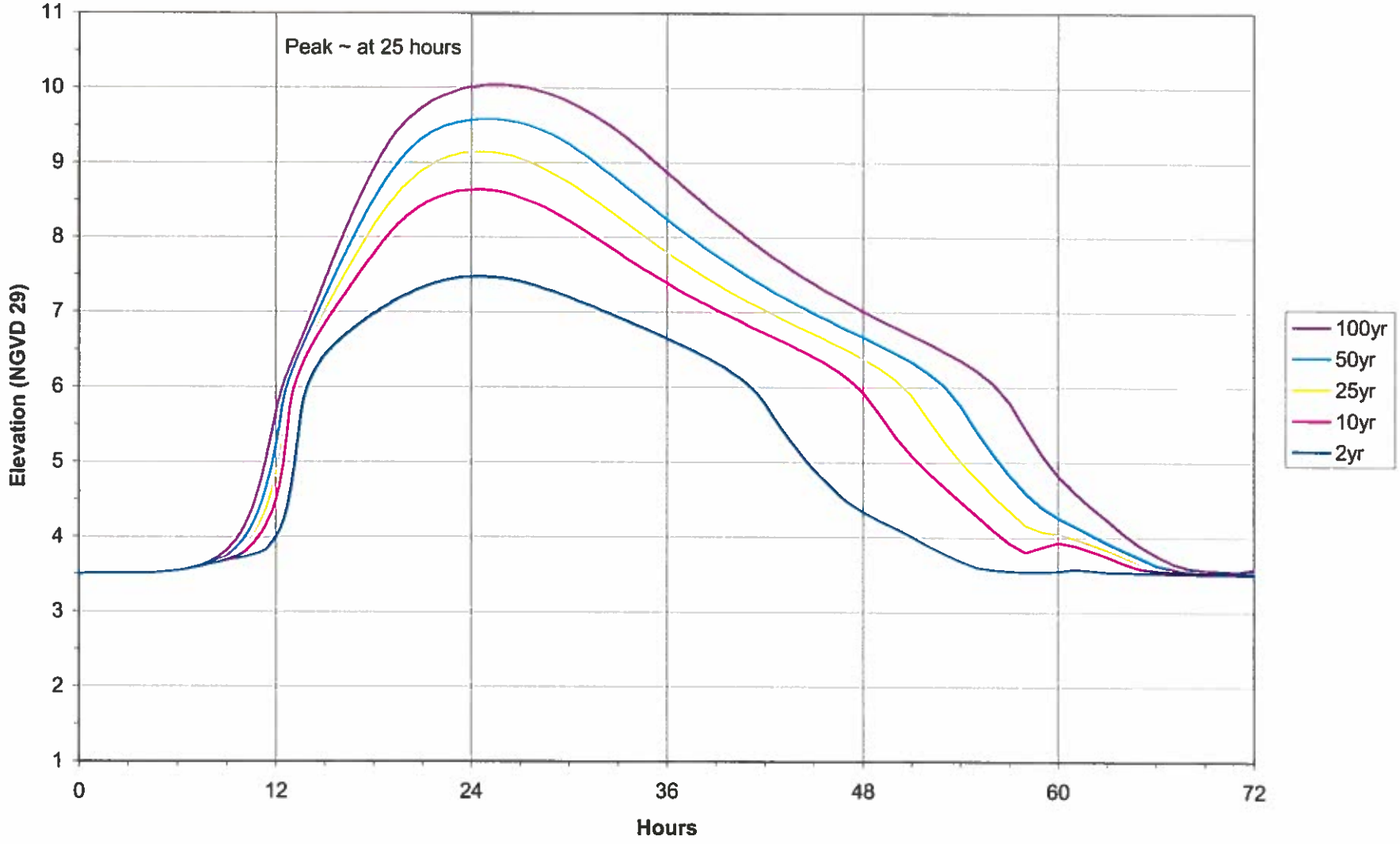


Figure 7-9 - Node G020 (Upstream of BeesFerry - SW)



SECTION 8 CHURCH CREEK ICPR MODEL RESULTS

8.1 HYDROLOGIC RESULTS

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Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20)      [1]
Copyright 1995, Streamline Technologies, Inc.

Church Creek Watershed
Existing Conditions
09/26/01

********** Basin Summary - 2YR ************************************************

-------------------------------------------------------------------------------
***
Basin Name:                B-A030     B-A040     B-A041     B-A060     B-A100
Group Name:                    RR         RR         RR         RR         RR
Node Name:                 N-A030     N-A040     N-A040     N-A060     N-A100
Hydrograph Type:               UH         UH         UH         UH         UH

Unit Hydrograph:            UH323      UH323      UH323      UH323      UH323
Peaking Factor:            323.00     323.00     323.00     323.00     323.00
Spec Time Inc (min):        39.99      36.66      35.99      17.73      17.20
Comp Time Inc (min):        15.00      15.00      15.00      15.00      15.00
Rainfall File:             SCSIII     SCSIII     SCSIII     SCSIII     SCSIII
Rainfall Amount (in):        4.60       4.60       4.60       4.60       4.60
Storm Duration (hr):        24.00      24.00      24.00      24.00      24.00
Status:                    ONSITE     ONSITE     ONSITE     ONSITE     ONSITE
Time of Conc. (min):       300.00     275.00     270.00     133.00     129.00
Lag Time (hr):               0.00       0.00       0.00       0.00       0.00
Area (acres):              536.70     402.60     388.40      62.80      52.00
Vol of Unit Hyd (in):        1.00       1.00       1.00       1.00       1.00
Curve Number:               84.00      83.00      85.00      76.00      82.00
DCIA (%):                    0.00       0.00       0.00       0.00       0.00

Time Max (hrs):             15.75      15.50      15.25      13.50      13.50
Flow Max (cfs):            163.42     126.32     132.37      25.80      27.70
Runoff Volume (in):          2.91       2.81       3.00       2.21       2.72
Runoff Volume (cf):       5662045    4112398    4228557     503205     513524


***
Basin Name:                B-A120     B-A140     B-B020     B-B040     B-B060
Group Name:                    RR         RR         HH         HH         HH
Node Name:                 N-A120     N-A140     N-B020     N-B040     N-B060
Hydrograph Type:               UH         UH         UH         UH         UH

Unit Hydrograph:            UH323      UH323      UH323      UH323      UH323
Peaking Factor:            323.00     323.00     323.00     323.00     323.00
Spec Time Inc (min):        18.00      34.66      18.40       3.60      25.99
Comp Time Inc (min):        15.00      15.00      15.00       3.60      15.00
Rainfall File:             SCSIII     SCSIII     SCSIII     SCSIII     SCSIII
Rainfall Amount (in):        4.60       4.60       4.60       4.60       4.60
Storm Duration (hr):        24.00      24.00      24.00      24.00      24.00
Status:                    ONSITE     ONSITE     ONSITE     ONSITE     ONSITE
Time of Conc. (min):       135.00     260.00     138.00      27.00     195.00
Lag Time (hr):               0.00       0.00       0.00       0.00       0.00
Area (acres):               99.30     348.50      93.40       9.10     107.60
Vol of Unit Hyd (in):        1.00       1.00       1.00       1.00       1.00
Curve Number:               83.00      79.00      85.00      88.00      76.00
DCIA (%):                    0.00       0.00       0.00       0.00       0.00

Time Max (hrs):             13.50      15.25      13.50      12.36      14.50
Flow Max (cfs):             52.92      98.71      52.34      16.04      33.47
Runoff Volume (in):          2.81       2.46       3.00       3.29       2.21
Runoff Volume (cf):       1013662    3112077    1016933     108737     863312
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***

Basin Name:	B-B100	B-B140	B-B160	B-B170	B-B230
Group Name:	HH	HH	HH	HH	HH
Node Name:	N-B100	N-B140	N-B160	N-B170	N-B230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	11.60	27.19	10.13	4.13	4.27
Comp Time Inc (min):	11.60	15.00	10.13	4.13	4.27
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	87.00	204.00	76.00	31.00	32.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	26.30	90.20	37.90	16.60	25.20
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	78.00	79.00	83.00	87.00	89.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.95	14.50	12.84	12.40	12.44
Flow Max (cfs):	15.92	30.66	30.41	26.45	41.61
Runoff Volume (in):	2.38	2.46	2.82	3.19	3.39
Runoff Volume (cf):	226817	805604	387307	192378	310134

***

Basin Name:	B-C010	B-C050	B-C080	B-C120	B-C130
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C010	N-C050	N-C080	N-C120	N-C130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.93	6.80	15.46	13.33	5.33
Comp Time Inc (min):	6.93	6.80	15.00	13.33	5.33
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	52.00	51.00	116.00	100.00	40.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	27.60	7.60	84.50	60.70	40.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	80.00	81.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.60	12.58	13.25	13.11	12.53
Flow Max (cfs):	28.79	7.23	46.72	41.66	49.54
Runoff Volume (in):	2.81	2.55	2.63	2.91	2.82
Runoff Volume (cf):	281837	70217	807969	640748	414988

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Basin Name:	B-C140	B-C150	B-C170	B-C190	B-C230
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C140	N-C150	N-C170	N-C190	N-C230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Comp Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	37.00	88.00	61.00	48.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	12.20	36.10	101.20	23.50	48.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	78.00	82.00	82.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	13.10	12.74	12.59	12.38
Flow Max (cfs):	16.66	21.74	91.28	24.89	74.04
Runoff Volume (in):	3.00	2.37	2.72	2.73	2.91
Runoff Volume (cf):	132817	310851	1001004	232466	506419

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Basin Name:	B-C270	B-D010	B-D020	B-D030	B-D050
Group Name:	SM1	SM2	SM2	SM2	SM2
Node Name:	N-C270	N-D010	N-D020	N-D030	N-D050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	10.80	13.73	9.86	11.20	4.40
Comp Time Inc (min):	10.80	13.73	9.87	11.20	4.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	81.00	103.00	74.00	84.00	33.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	35.70	23.10	30.50	56.50	22.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	76.00	81.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.96	13.28	12.83	12.88	12.47
Flow Max (cfs):	21.95	11.45	23.24	46.62	33.79
Runoff Volume (in):	2.29	2.20	2.63	3.09	3.10
Runoff Volume (cf):	296916	184879	291256	634367	253999

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Basin Name:	B-D080	B-D110	B-D130	B-D131	B-D132
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D080	N-D110	N-D130	N-D130	N-D130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	5.07	5.73	9.46	12.80	12.40
Comp Time Inc (min):	5.07	5.73	9.47	12.80	12.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	38.00	43.00	71.00	96.00	93.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	6.80	29.80	15.60	24.90	46.30
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	85.00	63.00	80.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.52	12.78	13.23	13.02
Flow Max (cfs):	8.89	36.21	14.02	6.58	28.92
Runoff Volume (in):	2.91	2.91	3.00	1.26	2.55
Runoff Volume (cf):	71765	314510	169942	113882	428101

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Basin Name:	B-D140	B-D160	B-D190	B-D210	B-D220
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D140	N-D160	N-D190	N-D210	N-D220
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	8.26	5.60	3.07	7.20	6.00
Comp Time Inc (min):	8.27	5.60	3.07	7.20	6.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	62.00	42.00	23.00	54.00	45.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	19.80	76.40	5.70	18.53	11.75
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	86.00	86.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.68	12.51	12.37	12.60	12.60
Flow Max (cfs):	18.92	100.06	10.21	18.88	13.26
Runoff Volume (in):	2.91	3.10	3.10	2.82	2.82
Runoff Volume (cf):	208942	858716	64055	189403	120101

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Basin Name:	B-E010	B-E020	B-E030	B-E040	B-E050
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E010	N-E020	N-E030	N-E040	N-E050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	29.99	2.40	3.20	3.87	2.67
Comp Time Inc (min):	15.00	2.40	3.20	3.87	2.67
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	225.00	18.00	24.00	29.00	20.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	223.40	5.75	6.47	20.89	14.49
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	72.00	85.00	85.00	85.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	15.00	12.32	12.37	12.37	12.31
Flow Max (cfs):	52.50	11.20	11.06	32.56	26.91
Runoff Volume (in):	1.89	3.00	3.00	3.00	3.00
Runoff Volume (cf):	1536297	62652	70497	227546	157882

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Basin Name:	B-E060	B-E070	B-E080	B-E090	B-E100
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E060	N-E070	N-E080	N-E090	N-E100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.73	2.27	2.13	6.53	7.06
Comp Time Inc (min):	1.73	2.27	2.13	6.53	7.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	17.00	16.00	49.00	53.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.25	5.64	7.61	14.98	18.64
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	84.00	84.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.28	12.32	12.30	12.63	12.60
Flow Max (cfs):	9.28	10.93	15.07	16.62	19.20
Runoff Volume (in):	3.00	2.91	2.91	2.91	2.81
Runoff Volume (cf):	46296	59528	80331	158045	190316

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Basin Name:	B-E110	B-E120	B-E130	B-E140	B-E150
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E110	N-E120	N-E130	N-E140	N-E150
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Comp Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	45.00	25.00	20.00	25.00	23.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	13.04	4.37	3.57	5.37	2.97
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	82.00	83.00	81.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.60	12.39	12.31	12.39	12.37
Flow Max (cfs):	14.72	6.68	6.25	7.95	4.88
Runoff Volume (in):	2.82	2.73	2.82	2.64	2.81
Runoff Volume (cf):	133287	43229	36490	51381	30347

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Basin Name:	B-E160	B-E170	B-E180	B-E190	B-E200
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E160	N-E170	N-E180	N-E190	N-E200
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Comp Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	29.00	38.00	26.00	30.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	3.97	9.21	3.20	5.10	6.45
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	83.00	83.00	83.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.37	12.50	12.36	12.40	12.30
Flow Max (cfs):	5.81	11.67	4.97	7.34	13.07
Runoff Volume (in):	2.81	2.82	2.82	2.82	2.91
Runoff Volume (cf):	40566	94119	32700	52129	68086

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Basin Name:	B-E210	B-E220	B-E230	B-E231	B-E240
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E210	N-E220	N-E230	N-E230	N-E240
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Comp Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	10.00	15.00	30.00	47.00	12.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.15	6.73	20.10	4.00	4.48
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	84.00	79.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.27	12.30	12.40	12.53	12.27
Flow Max (cfs):	4.91	13.63	29.86	3.83	9.77
Runoff Volume (in):	2.91	2.91	2.91	2.46	2.91
Runoff Volume (cf):	22695	71042	212175	35705	47291

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Basin Name:	B-E250	B-E251	B-E252	B-E260	B-E270
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E250	N-E250	N-E250	N-E260	N-E270
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.67	18.93	19.33	43.99	6.53
Comp Time Inc (min):	2.67	15.00	15.00	15.00	6.53
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	20.00	142.00	145.00	330.00	49.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	5.35	59.00	58.00	743.90	7.94
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	79.00	79.00	77.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.31	13.75	13.75	16.25	12.63
Flow Max (cfs):	9.65	26.22	25.39	162.89	7.98
Runoff Volume (in):	2.91	2.46	2.46	2.29	2.63
Runoff Volume (cf):	56474	527216	517892	6188418	75929

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Basin Name:	B-F010	B-F030	B-F040	B-F060	B-F080
Group Name:	MC	MC	MC	MC	MC
Node Name:	N-F010	N-F030	N-F040	N-F060	N-F080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Comp Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	49.00	30.00	13.00	20.00	38.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	43.19	16.46	4.84	24.34	7.55
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	86.00	86.00	72.00	73.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.63	12.40	12.28	12.36	12.50
Flow Max (cfs):	50.92	25.95	10.85	28.47	6.54
Runoff Volume (in):	3.10	3.10	3.10	1.90	1.97
Runoff Volume (cf):	485271	185035	54395	167465	54038

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Basin Name:	B-G020	B-G050	B-G060	B-G070	B-G080
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G020	N-G050	N-G060	N-G070	N-G080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	27.99	23.99	3.07	2.13	1.87
Comp Time Inc (min):	15.00	15.00	3.07	2.13	1.87
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	210.00	180.00	23.00	16.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	182.80	76.10	6.22	2.37	5.29
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	77.00	86.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.75	14.25	12.37	12.30	12.29
Flow Max (cfs):	55.96	26.18	11.14	4.96	11.58
Runoff Volume (in):	2.29	2.29	3.10	3.10	3.10
Runoff Volume (cf):	1519893	632674	69899	26642	59458

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Basin Name:	B-G090	B-G180	B-G110	B-G120	B-G130
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G090	N-G180	N-G110	N-G120	N-G130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.53	33.33	1.73	3.20	3.73
Comp Time Inc (min):	2.53	15.00	1.73	3.20	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	19.00	250.00	13.00	24.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	7.38	317.90	7.36	7.88	11.79
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	74.00	85.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.33	15.25	12.28	12.37	12.38
Flow Max (cfs):	14.43	75.59	16.08	12.69	17.63
Runoff Volume (in):	3.10	2.05	3.00	2.82	2.81
Runoff Volume (cf):	82945	2365312	80174	80545	120445

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Basin Name:	B-G140	B-G150	B-G160	B-G181
Group Name:	BL	BL	BL	BL
Node Name:	N-G140	N-G150	N-G160	N-G180
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.60	16.40	2.40	29.33
Comp Time Inc (min):	3.60	15.00	2.40	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	4.60	4.60	4.60	4.60
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	27.00	123.00	18.00	220.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	4.86	37.00	3.69	202.50
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	81.00	79.00	86.00	72.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.36	13.50	12.32	14.75
Flow Max (cfs):	6.93	18.26	7.39	48.31
Runoff Volume (in):	2.64	2.46	3.10	1.89
Runoff Volume (cf):	46501	330206	41481	1392023

********** Basin Summary - 10YR **********

Basin Name:	B-A030	B-A040	B-A041	B-A060	B-A100
Group Name:	RR	RR	RR	RR	RR
Node Name:	N-A030	N-A040	N-A040	N-A060	N-A100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	39.99	36.66	35.99	17.73	17.20
Comp Time Inc (min):	15.00	15.00	15.00	15.00	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	300.00	275.00	270.00	133.00	129.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	536.70	402.60	388.40	62.80	52.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	83.00	85.00	76.00	82.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	15.75	15.25	15.25	13.50	13.50
Flow Max (cfs):	279.56	218.90	224.26	49.01	48.48
Runoff Volume (in):	4.95	4.84	5.06	4.08	4.72
Runoff Volume (cf):	9642397	7070642	7133530	928993	891524

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Basin Name:	B-A120	B-A140	B-B020	B-B040	B-B060
Group Name:	RR	RR	HH	HH	HH
Node Name:	N-A120	N-A140	N-B020	N-B040	N-B060
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	18.00	34.66	18.40	3.60	25.99
Comp Time Inc (min):	15.00	15.00	15.00	3.60	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	135.00	260.00	138.00	27.00	195.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	99.30	348.50	93.40	9.10	107.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	79.00	85.00	88.00	76.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	13.50	15.25	13.50	12.36	14.25
Flow Max (cfs):	91.69	179.22	88.63	25.82	63.19
Runoff Volume (in):	4.84	4.40	5.06	5.40	4.08
Runoff Volume (cf):	1742838	5567103	1715554	178430	1593805

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Basin Name:	B-B100	B-B140	B-B160	B-B170	B-B230
Group Name:	HH	HH	HH	HH	HH
Node Name:	N-B100	N-B140	N-B160	N-B170	N-B230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	11.60	27.19	10.13	4.13	4.27
Comp Time Inc (min):	11.60	15.00	10.13	4.13	4.27
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	87.00	204.00	76.00	31.00	32.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	26.30	90.20	37.90	16.60	25.20
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	78.00	79.00	83.00	87.00	89.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.95	14.50	12.84	12.40	12.44
Flow Max (cfs):	29.35	55.73	52.42	43.07	66.25
Runoff Volume (in):	4.29	4.40	4.84	5.29	5.51
Runoff Volume (cf):	409969	1441121	665930	318581	504342

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Basin Name:	B-C010	B-C050	B-C080	B-C120	B-C130
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C010	N-C050	N-C080	N-C120	N-C130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.93	6.80	15.46	13.33	5.33
Comp Time Inc (min):	6.93	6.80	15.00	13.33	5.33
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	52.00	51.00	116.00	100.00	40.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	27.60	7.60	84.50	60.70	40.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	80.00	81.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.60	12.58	13.25	13.11	12.53
Flow Max (cfs):	49.38	12.88	83.00	71.09	84.42
Runoff Volume (in):	4.84	4.51	4.62	4.95	4.84
Runoff Volume (cf):	484619	124357	1416562	1091188	713510

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Basin Name:	B-C140	B-C150	B-C170	B-C190	B-C230
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C140	N-C150	N-C170	N-C190	N-C230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Comp Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	37.00	88.00	61.00	48.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	12.20	36.10	101.20	23.50	48.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	78.00	82.00	82.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	13.10	12.74	12.59	12.38
Flow Max (cfs):	27.73	39.79	158.40	43.11	124.49
Runoff Volume (in):	5.06	4.29	4.73	4.73	4.95
Runoff Volume (cf):	224077	561958	1737846	403582	862468

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Basin Name:	B-C270	B-D010	B-D020	B-D030	B-D050
Group Name:	SM1	SM2	SM2	SM2	SM2
Node Name:	N-C270	N-D010	N-D020	N-D030	N-D050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	10.80	13.73	9.86	11.20	4.40
Comp Time Inc (min):	10.80	13.73	9.87	11.20	4.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	81.00	103.00	74.00	84.00	33.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	35.70	23.10	30.50	56.50	22.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	76.00	81.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.96	13.28	12.83	12.88	12.39
Flow Max (cfs):	40.84	21.57	41.05	77.71	55.60
Runoff Volume (in):	4.19	4.07	4.61	5.17	5.17
Runoff Volume (cf):	542368	341425	510742	1060340	424523

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Basin Name:	B-D080	B-D110	B-D130	B-D131	B-D132
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D080	N-D110	N-D130	N-D130	N-D130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	5.07	5.73	9.46	12.80	12.40
Comp Time Inc (min):	5.07	5.73	9.47	12.80	12.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	38.00	43.00	71.00	96.00	93.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	6.80	29.80	15.60	24.90	46.30
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	85.00	63.00	80.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.52	12.78	13.23	13.02
Flow Max (cfs):	14.98	61.21	23.57	15.73	51.92
Runoff Volume (in):	4.95	4.95	5.06	2.75	4.51
Runoff Volume (cf):	122218	535616	286695	248458	758118

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Basin Name:	B-D140	B-D160	B-D190	B-D210	B-D220
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D140	N-D160	N-D190	N-D210	N-D220
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	8.26	5.60	3.07	7.20	6.00
Comp Time Inc (min):	8.27	5.60	3.07	7.20	6.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	62.00	42.00	23.00	54.00	45.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	19.80	76.40	5.70	18.53	11.75
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	86.00	86.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.68	12.51	12.32	12.60	12.50
Flow Max (cfs):	32.16	165.24	16.74	32.43	22.74
Runoff Volume (in):	4.95	5.18	5.17	4.84	4.84
Runoff Volume (cf):	355836	1435211	107060	325649	206496

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Basin Name:	B-E010	B-E020	B-E030	B-E040	B-E050
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E010	N-E020	N-E030	N-E040	N-E050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	29.99	2.40	3.20	3.87	2.67
Comp Time Inc (min):	15.00	2.40	3.20	3.87	2.67
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	225.00	18.00	24.00	29.00	20.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	223.40	5.75	6.47	20.89	14.49
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	72.00	85.00	85.00	85.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.75	12.32	12.37	12.37	12.31
Flow Max (cfs):	105.08	18.48	18.31	54.21	44.55
Runoff Volume (in):	3.66	5.06	5.06	5.06	5.06
Runoff Volume (cf):	2967231	105693	118928	383878	266346

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Basin Name:	B-E060	B-E070	B-E080	B-E090	B-E100
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E060	N-E070	N-E080	N-E090	N-E100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.73	2.27	2.13	6.53	7.06
Comp Time Inc (min):	1.73	2.27	2.13	6.53	7.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	17.00	16.00	49.00	53.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.25	5.64	7.61	14.98	18.64
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	84.00	84.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.28	12.32	12.30	12.63	12.60
Flow Max (cfs):	15.25	18.20	25.09	28.06	32.96
Runoff Volume (in):	5.06	4.95	4.95	4.95	4.84
Runoff Volume (cf):	78102	101377	136803	269161	327254

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Basin Name:	B-E110	B-E120	B-E130	B-E140	B-E150
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E110	N-E120	N-E130	N-E140	N-E150
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Comp Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	45.00	25.00	20.00	25.00	23.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	13.04	4.37	3.57	5.37	2.97
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	82.00	83.00	81.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.39	12.31	12.39	12.37
Flow Max (cfs):	25.23	11.44	10.58	13.78	8.25
Runoff Volume (in):	4.84	4.73	4.84	4.62	4.84
Runoff Volume (cf):	229167	75049	62740	90083	52179

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Basin Name:	B-E160	B-E170	B-E180	B-E190	B-E200
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E160	N-E170	N-E180	N-E190	N-E200
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Comp Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	29.00	38.00	26.00	30.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	3.97	9.21	3.20	5.10	6.45
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	83.00	83.00	83.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.37	12.50	12.36	12.40	12.30
Flow Max (cfs):	9.91	19.90	8.45	12.50	21.72
Runoff Volume (in):	4.84	4.84	4.84	4.84	4.95
Runoff Volume (cf):	69749	161826	56223	89628	115950

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Basin Name:	B-E210	B-E220	B-E230	B-E231	B-E240
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E210	N-E220	N-E230	N-E230	N-E240
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Comp Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	10.00	15.00	30.00	47.00	12.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.15	6.73	20.10	4.00	4.48
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	84.00	79.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.27	12.30	12.40	12.53	12.27
Flow Max (cfs):	8.11	22.67	50.25	6.92	16.21
Runoff Volume (in):	4.95	4.95	4.95	4.40	4.95
Runoff Volume (cf):	38650	120984	361333	63878	80536

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Basin Name:	B-E250	B-E251	B-E252	B-E260	B-E270
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E250	N-E250	N-E250	N-E260	N-E270
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.67	18.93	19.33	43.99	6.53
Comp Time Inc (min):	2.67	15.00	15.00	15.00	6.53
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	20.00	142.00	145.00	330.00	49.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	5.35	59.00	58.00	743.90	7.94
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	79.00	79.00	77.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.31	13.75	13.75	16.00	12.63
Flow Max (cfs):	16.16	47.56	46.11	302.55	13.96
Runoff Volume (in):	4.95	4.40	4.40	4.19	4.62
Runoff Volume (cf):	96175	943122	926442	11303137	133129

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Basin Name:	B-F010	B-F030	B-F040	B-F060	B-F080
Group Name:	MC	MC	MC	MC	MC
Node Name:	N-F010	N-F030	N-F040	N-F060	N-F080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Comp Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	49.00	30.00	13.00	20.00	38.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	43.19	16.46	4.84	24.34	7.55
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	86.00	86.00	72.00	73.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.52	12.40	12.28	12.31	12.50
Flow Max (cfs):	84.06	42.69	17.65	55.50	12.78
Runoff Volume (in):	5.17	5.18	5.17	3.66	3.76
Runoff Volume (cf):	811080	309253	90913	323446	103162

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Basin Name:	B-G020	B-G050	B-G060	B-G070	B-G080
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G020	N-G050	N-G060	N-G070	N-G080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	27.99	23.99	3.07	2.13	1.87
Comp Time Inc (min):	15.00	15.00	3.07	2.13	1.87
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	210.00	180.00	23.00	16.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	182.80	76.10	6.22	2.37	5.29
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	77.00	86.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.50	14.25	12.32	12.30	12.29
Flow Max (cfs):	104.61	48.79	18.26	8.08	18.84
Runoff Volume (in):	4.18	4.18	5.17	5.18	5.18
Runoff Volume (cf):	2776082	1155578	116827	44528	99376

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Basin Name:	B-G090	B-G180	B-G110	B-G120	B-G130
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G090	N-G180	N-G110	N-G120	N-G130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.53	33.33	1.73	3.20	3.73
Comp Time Inc (min):	2.53	15.00	1.73	3.20	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	19.00	250.00	13.00	24.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	7.38	317.90	7.36	7.88	11.79
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	74.00	85.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.33	15.00	12.28	12.37	12.38
Flow Max (cfs):	23.56	146.46	26.41	21.49	29.99
Runoff Volume (in):	5.17	3.87	5.06	4.84	4.84
Runoff Volume (cf):	138631	4464185	135255	138484	207098

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Basin Name:	B-G140	B-G150	B-G160	B-G181
Group Name:	BL	BL	BL	BL
Node Name:	N-G140	N-G150	N-G160	N-G180
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.60	16.40	2.40	29.33
Comp Time Inc (min):	3.60	15.00	2.40	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	6.80	6.80	6.80	6.80
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	27.00	123.00	18.00	220.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	4.86	37.00	3.69	202.50
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	81.00	79.00	86.00	72.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.36	13.50	12.32	14.75
Flow Max (cfs):	12.10	33.11	12.06	96.70
Runoff Volume (in):	4.62	4.40	5.18	3.66
Runoff Volume (cf):	81528	590696	69328	2688577

********** Basin Summary - 25YR **********

Basin Name:	B-A030	B-A040	B-A041	B-A060	B-A100
Group Name:	RR	RR	RR	RR	RR
Node Name:	N-A030	N-A040	N-A040	N-A060	N-A100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	39.99	36.66	35.99	17.73	17.20
Comp Time Inc (min):	15.00	15.00	15.00	15.00	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	300.00	275.00	270.00	133.00	129.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	536.70	402.60	388.40	62.80	52.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	83.00	85.00	76.00	82.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	15.50	15.25	15.25	13.50	13.50
Flow Max (cfs):	333.27	261.96	266.59	60.07	58.10
Runoff Volume (in):	5.90	5.79	6.02	4.97	5.66
Runoff Volume (cf):	11499237	8454775	8484847	1133121	1068936

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Basin Name:	B-A120	B-A140	B-B020	B-B040	B-B060
Group Name:	RR	RR	HH	HH	HH
Node Name:	N-A120	N-A140	N-B020	N-B040	N-B060
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	18.00	34.66	18.40	3.60	25.99
Comp Time Inc (min):	15.00	15.00	15.00	3.60	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	135.00	260.00	138.00	27.00	195.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	99.30	348.50	93.40	9.10	107.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	79.00	85.00	88.00	76.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	13.50	15.25	13.50	12.36	14.25
Flow Max (cfs):	109.60	217.14	105.27	30.24	77.49
Runoff Volume (in):	5.78	5.32	6.02	6.38	4.98
Runoff Volume (cf):	2084011	6731006	2040536	210602	1944011

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Basin Name:	B-B100	B-B140	B-B160	B-B170	B-B230
Group Name:	HH	HH	HH	HH	HH
Node Name:	N-B100	N-B140	N-B160	N-B170	N-B230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	11.60	27.19	10.13	4.13	4.27
Comp Time Inc (min):	11.60	15.00	10.13	4.13	4.27
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	87.00	204.00	76.00	31.00	32.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	26.30	90.20	37.90	16.60	25.20
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	78.00	79.00	83.00	87.00	89.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.95	14.50	12.84	12.40	12.44
Flow Max (cfs):	35.66	67.52	62.54	50.60	77.36
Runoff Volume (in):	5.21	5.32	5.79	6.26	6.49
Runoff Volume (cf):	497113	1742413	796295	376980	593787

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Basin Name:	B-C010	B-C050	B-C080	B-C120	B-C130
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C010	N-C050	N-C080	N-C120	N-C130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.93	6.80	15.46	13.33	5.33
Comp Time Inc (min):	6.93	6.80	15.00	13.33	5.33
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	52.00	51.00	116.00	100.00	40.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	27.60	7.60	84.50	60.70	40.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	80.00	81.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.60	12.58	13.25	13.11	12.53
Flow Max (cfs):	58.83	15.51	99.87	84.60	100.39
Runoff Volume (in):	5.78	5.43	5.55	5.91	5.79
Runoff Volume (cf):	579502	149935	1703125	1301318	853186

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Basin Name:	B-C140	B-C150	B-C170	B-C190	B-C230
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C140	N-C150	N-C170	N-C190	N-C230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Comp Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	37.00	88.00	61.00	48.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	12.20	36.10	101.20	23.50	48.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	78.00	82.00	82.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.91	12.74	12.59	12.38
Flow Max (cfs):	32.76	48.30	189.30	51.49	147.48
Runoff Volume (in):	6.02	5.20	5.67	5.67	5.90
Runoff Volume (cf):	266530	681443	2083679	483893	1028567

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Basin Name:	B-C270	B-D010	B-D020	B-D030	B-D050
Group Name:	SM1	SM2	SM2	SM2	SM2
Node Name:	N-C270	N-D010	N-D020	N-D030	N-D050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	10.80	13.73	9.86	11.20	4.40
Comp Time Inc (min):	10.80	13.73	9.87	11.20	4.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	81.00	103.00	74.00	84.00	33.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	35.70	23.10	30.50	56.50	22.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	76.00	81.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.96	13.28	12.83	12.88	12.39
Flow Max (cfs):	49.74	26.37	49.30	91.89	65.55
Runoff Volume (in):	5.09	4.97	5.55	6.13	6.14
Runoff Volume (cf):	659593	416484	614096	1257963	503633

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Basin Name:	B-D080	B-D110	B-D130	B-D131	B-D132
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D080	N-D110	N-D130	N-D130	N-D130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	5.07	5.73	9.46	12.80	12.40
Comp Time Inc (min):	5.07	5.73	9.47	12.80	12.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	38.00	43.00	71.00	96.00	93.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	6.80	29.80	15.60	24.90	46.30
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	85.00	63.00	80.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.52	12.78	13.23	13.02
Flow Max (cfs):	17.76	72.62	27.94	20.42	62.64
Runoff Volume (in):	5.90	5.90	6.02	3.51	5.44
Runoff Volume (cf):	145754	638763	341007	317096	914034

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Basin Name:	B-D140	B-D160	B-D190	B-D210	B-D220
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D140	N-D160	N-D190	N-D210	N-D220
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	8.26	5.60	3.07	7.20	6.00
Comp Time Inc (min):	8.27	5.60	3.07	7.20	6.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	62.00	42.00	23.00	54.00	45.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	19.80	76.40	5.70	18.53	11.75
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	86.00	86.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.68	12.51	12.32	12.60	12.50
Flow Max (cfs):	38.22	194.85	19.71	38.65	27.09
Runoff Volume (in):	5.90	6.14	6.14	5.79	5.79
Runoff Volume (cf):	424363	1702662	127011	389397	246919

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Basin Name:	B-E010	B-E020	B-E030	B-E040	B-E050
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E010	N-E020	N-E030	N-E040	N-E050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	29.99	2.40	3.20	3.87	2.67
Comp Time Inc (min):	15.00	2.40	3.20	3.87	2.67
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	225.00	18.00	24.00	29.00	20.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	223.40	5.75	6.47	20.89	14.49
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	72.00	85.00	85.00	85.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.75	12.32	12.37	12.37	12.31
Flow Max (cfs):	130.75	21.78	21.60	64.06	52.56
Runoff Volume (in):	4.52	6.02	6.02	6.02	6.02
Runoff Volume (cf):	3664717	125715	141457	456601	316801

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Basin Name:	B-E060	B-E070	B-E080	B-E090	B-E100
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E060	N-E070	N-E080	N-E090	N-E100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.73	2.27	2.13	6.53	7.06
Comp Time Inc (min):	1.73	2.27	2.13	6.53	7.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	17.00	16.00	49.00	53.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.25	5.64	7.61	14.98	18.64
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	84.00	84.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.28	12.32	12.30	12.52	12.60
Flow Max (cfs):	17.96	21.50	29.64	33.29	39.27
Runoff Volume (in):	6.02	5.91	5.91	5.90	5.78
Runoff Volume (cf):	92898	120899	163147	320998	391327

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Basin Name:	B-E110	B-E120	B-E130	B-E140	B-E150
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E110	N-E120	N-E130	N-E140	N-E150
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Comp Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	45.00	25.00	20.00	25.00	23.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	13.04	4.37	3.57	5.37	2.97
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	82.00	83.00	81.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.33	12.31	12.33	12.32
Flow Max (cfs):	30.06	13.65	12.56	16.47	9.80
Runoff Volume (in):	5.79	5.67	5.79	5.56	5.79
Runoff Volume (cf):	274028	89984	75021	108307	62394

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Basin Name:	B-E160	B-E170	B-E180	B-E190	B-E200
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E160	N-E170	N-E180	N-E190	N-E200
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Comp Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	29.00	38.00	26.00	30.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	3.97	9.21	3.20	5.10	6.45
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	83.00	83.00	83.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.37	12.50	12.36	12.40	12.30
Flow Max (cfs):	11.78	23.66	10.04	14.86	25.66
Runoff Volume (in):	5.79	5.79	5.79	5.79	5.91
Runoff Volume (cf):	83403	193506	67230	107174	138279

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Basin Name:	B-E210	B-E220	B-E230	B-E231	B-E240
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E210	N-E220	N-E230	N-E230	N-E240
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Comp Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	10.00	15.00	30.00	47.00	12.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.15	6.73	20.10	4.00	4.48
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	84.00	79.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.24	12.30	12.40	12.53	12.27
Flow Max (cfs):	9.57	26.77	59.54	8.36	19.13
Runoff Volume (in):	5.91	5.91	5.91	5.32	5.91
Runoff Volume (cf):	46093	144281	430914	77236	96045

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Basin Name:	B-E250	B-E251	B-E252	B-E260	B-E270
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E250	N-E250	N-E250	N-E260	N-E270
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.67	18.93	19.33	43.99	6.53
Comp Time Inc (min):	2.67	15.00	15.00	15.00	6.53
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	20.00	142.00	145.00	330.00	49.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	5.35	59.00	58.00	743.90	7.94
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	79.00	79.00	77.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.31	13.75	13.75	16.00	12.63
Flow Max (cfs):	19.12	57.57	55.83	369.40	16.73
Runoff Volume (in):	5.91	5.32	5.32	5.09	5.55
Runoff Volume (cf):	114696	1140298	1120131	13745780	160062

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Basin Name:	B-F010	B-F030	B-F040	B-F060	B-F080
Group Name:	MC	MC	MC	MC	MC
Node Name:	N-F010	N-F030	N-F040	N-F060	N-F080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Comp Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	49.00	30.00	13.00	20.00	38.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	43.19	16.46	4.84	24.34	7.55
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	86.00	86.00	72.00	73.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.52	12.40	12.28	12.31	12.50
Flow Max (cfs):	99.25	50.28	20.72	68.52	15.75
Runoff Volume (in):	6.14	6.14	6.14	4.52	4.63
Runoff Volume (cf):	962231	366880	107855	399477	127004

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Basin Name:	B-G020	B-G050	B-G060	B-G070	B-G080
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G020	N-G050	N-G060	N-G070	N-G080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	27.99	23.99	3.07	2.13	1.87
Comp Time Inc (min):	15.00	15.00	3.07	2.13	1.87
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	210.00	180.00	23.00	16.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	182.80	76.10	6.22	2.37	5.29
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	77.00	86.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.50	14.25	12.32	12.30	12.29
Flow Max (cfs):	127.74	59.50	21.50	9.49	22.12
Runoff Volume (in):	5.09	5.09	6.14	6.14	6.14
Runoff Volume (cf):	3376006	1405303	138598	52825	117894

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Basin Name:	B-G090	B-G180	B-G110	B-G120	B-G130
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G090	N-G180	N-G110	N-G120	N-G130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.53	33.33	1.73	3.20	3.73
Comp Time Inc (min):	2.53	15.00	1.73	3.20	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	19.00	250.00	13.00	24.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	7.38	317.90	7.36	7.88	11.79
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	74.00	85.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.33	15.00	12.28	12.37	12.38
Flow Max (cfs):	27.70	180.88	31.09	25.51	35.64
Runoff Volume (in):	6.14	4.75	6.02	5.79	5.79
Runoff Volume (cf):	164464	5478541	160878	165594	247642

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Basin Name:	B-G140	B-G150	B-G160	B-G181
Group Name:	BL	BL	BL	BL
Node Name:	N-G140	N-G150	N-G160	N-G180
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.60	16.40	2.40	29.33
Comp Time Inc (min):	3.60	15.00	2.40	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	7.80	7.80	7.80	7.80
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	27.00	123.00	18.00	220.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	4.86	37.00	3.69	202.50
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	81.00	79.00	86.00	72.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.36	13.50	12.32	14.75
Flow Max (cfs):	14.47	40.06	14.17	120.26
Runoff Volume (in):	5.56	5.32	6.14	4.52
Runoff Volume (cf):	98021	714191	82247	3320562

********** Basin Summary - 50YR **********

Basin Name:	B-A030	B-A040	B-A041	B-A060	B-A100
Group Name:	RR	RR	RR	RR	RR
Node Name:	N-A030	N-A040	N-A040	N-A060	N-A100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	39.99	36.66	35.99	17.73	17.20
Comp Time Inc (min):	15.00	15.00	15.00	15.00	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	300.00	275.00	270.00	133.00	129.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	536.70	402.60	388.40	62.80	52.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	83.00	85.00	76.00	82.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	15.50	15.25	15.25	13.50	13.50
Flow Max (cfs):	387.52	305.27	309.06	71.29	67.76
Runoff Volume (in):	6.86	6.74	6.98	5.88	6.61
Runoff Volume (cf):	13373714	9853648	9847535	1341413	1248452

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Basin Name:	B-A120	B-A140	B-B020	B-B040	B-B060
Group Name:	RR	RR	HH	HH	HH
Node Name:	N-A120	N-A140	N-B020	N-B040	N-B060
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	18.00	34.66	18.40	3.60	25.99
Comp Time Inc (min):	15.00	15.00	15.00	3.60	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	135.00	260.00	138.00	27.00	195.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	99.30	348.50	93.40	9.10	107.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	79.00	85.00	88.00	76.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	13.50	15.25	13.50	12.36	14.25
Flow Max (cfs):	127.57	255.48	121.94	34.64	92.02
Runoff Volume (in):	6.74	6.26	6.99	7.35	5.89
Runoff Volume (cf):	2428819	7913365	2368252	242950	2301361

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Basin Name:	B-B100	B-B140	B-B160	B-B170	B-B230
Group Name:	HH	HH	HH	HH	HH
Node Name:	N-B100	N-B140	N-B160	N-B170	N-B230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	11.60	27.19	10.13	4.13	4.27
Comp Time Inc (min):	11.60	15.00	10.13	4.13	4.27
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	87.00	204.00	76.00	31.00	32.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	26.30	90.20	37.90	16.60	25.20
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	78.00	79.00	83.00	87.00	89.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.95	14.50	12.84	12.40	12.44
Flow Max (cfs):	42.03	79.44	72.67	58.10	88.43
Runoff Volume (in):	6.14	6.26	6.75	7.23	7.47
Runoff Volume (cf):	585768	2048483	928049	435753	683649

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Basin Name:	B-C010	B-C050	B-C080	B-C120	B-C130
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C010	N-C050	N-C080	N-C120	N-C130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.93	6.80	15.46	13.33	5.33
Comp Time Inc (min):	6.93	6.80	15.00	13.33	5.33
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	52.00	51.00	116.00	100.00	40.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	27.60	7.60	84.50	60.70	40.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	80.00	81.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.60	12.58	13.25	13.11	12.53
Flow Max (cfs):	68.29	18.14	116.84	98.12	116.34
Runoff Volume (in):	6.74	6.38	6.50	6.87	6.75
Runoff Volume (cf):	675396	175885	1993453	1513444	994349

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Basin Name:	B-C140	B-C150	B-C170	B-C190	B-C230
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C140	N-C150	N-C170	N-C190	N-C230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Comp Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	37.00	88.00	61.00	48.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	12.20	36.10	101.20	23.50	48.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	78.00	82.00	82.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.91	12.74	12.59	12.38
Flow Max (cfs):	37.78	56.97	220.25	59.88	170.43
Runoff Volume (in):	6.99	6.13	6.62	6.63	6.87
Runoff Volume (cf):	309341	803000	2433617	565158	1196245

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Basin Name:	B-C270	B-D010	B-D020	B-D030	B-D050
Group Name:	SM1	SM2	SM2	SM2	SM2
Node Name:	N-C270	N-D010	N-D020	N-D030	N-D050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	10.80	13.73	9.86	11.20	4.40
Comp Time Inc (min):	10.80	13.73	9.87	11.20	4.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	81.00	103.00	74.00	84.00	33.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	35.70	23.10	30.50	56.50	22.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	76.00	81.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.96	13.28	12.83	12.88	12.39
Flow Max (cfs):	58.74	31.23	57.59	106.05	75.47
Runoff Volume (in):	6.01	5.88	6.49	7.10	7.11
Runoff Volume (cf):	779026	493077	718811	1457045	583327

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Basin Name:	B-D080	B-D110	B-D130	B-D131	B-D132
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D080	N-D110	N-D130	N-D130	N-D130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	5.07	5.73	9.46	12.80	12.40
Comp Time Inc (min):	5.07	5.73	9.47	12.80	12.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	38.00	43.00	71.00	96.00	93.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	6.80	29.80	15.60	24.90	46.30
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	85.00	63.00	80.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.52	12.78	13.23	13.02
Flow Max (cfs):	20.53	84.03	32.29	25.32	73.42
Runoff Volume (in):	6.87	6.87	6.99	4.30	6.38
Runoff Volume (cf):	169515	742889	395775	388949	1072208

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Basin Name:	B-D140	B-D160	B-D190	B-D210	B-D220
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D140	N-D160	N-D190	N-D210	N-D220
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	8.26	5.60	3.07	7.20	6.00
Comp Time Inc (min):	8.27	5.60	3.07	7.20	6.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	62.00	42.00	23.00	54.00	45.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	19.80	76.40	5.70	18.53	11.75
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	86.00	86.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.68	12.51	12.32	12.60	12.50
Flow Max (cfs):	44.28	224.37	22.66	44.87	31.44
Runoff Volume (in):	6.87	7.11	7.11	6.75	6.75
Runoff Volume (cf):	493541	1972085	147109	453825	287773

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Basin Name:	B-E010	B-E020	B-E030	B-E040	B-E050
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E010	N-E020	N-E030	N-E040	N-E050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	29.99	2.40	3.20	3.87	2.67
Comp Time Inc (min):	15.00	2.40	3.20	3.87	2.67
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	225.00	18.00	24.00	29.00	20.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	223.40	5.75	6.47	20.89	14.49
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	72.00	85.00	85.00	85.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.75	12.32	12.37	12.37	12.31
Flow Max (cfs):	157.06	25.07	24.88	73.88	60.55
Runoff Volume (in):	5.40	6.99	6.99	6.99	6.99
Runoff Volume (cf):	4381243	145905	164175	529935	367680

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Basin Name:	B-E060	B-E070	B-E080	B-E090	B-E100
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E060	N-E070	N-E080	N-E090	N-E100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.73	2.27	2.13	6.53	7.06
Comp Time Inc (min):	1.73	2.27	2.13	6.53	7.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	17.00	16.00	49.00	53.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.25	5.64	7.61	14.98	18.64
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	84.00	84.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.28	12.32	12.30	12.52	12.60
Flow Max (cfs):	20.65	24.80	34.18	38.56	45.59
Runoff Volume (in):	6.99	6.87	6.87	6.87	6.74
Runoff Volume (cf):	107818	140607	189742	373328	456084

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Basin Name:	B-E110	B-E120	B-E130	B-E140	B-E150
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E110	N-E120	N-E130	N-E140	N-E150
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Comp Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	45.00	25.00	20.00	25.00	23.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	13.04	4.37	3.57	5.37	2.97
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	82.00	83.00	81.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.33	12.31	12.33	12.32
Flow Max (cfs):	34.90	15.85	14.53	19.18	11.35
Runoff Volume (in):	6.75	6.63	6.75	6.50	6.74
Runoff Volume (cf):	319367	105095	87434	126770	72717

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Basin Name:	B-E160	B-E170	B-E180	B-E190	B-E200
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E160	N-E170	N-E180	N-E190	N-E200
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Comp Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	29.00	38.00	26.00	30.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	3.97	9.21	3.20	5.10	6.45
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	83.00	83.00	83.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.37	12.50	12.36	12.40	12.27
Flow Max (cfs):	13.66	27.42	11.62	17.22	29.58
Runoff Volume (in):	6.75	6.75	6.75	6.75	6.87
Runoff Volume (cf):	97204	225523	78354	124906	160819

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Basin Name:	B-E210	B-E220	B-E230	B-E231	B-E240
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E210	N-E220	N-E230	N-E230	N-E240
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Comp Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	10.00	15.00	30.00	47.00	12.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.15	6.73	20.10	4.00	4.48
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	84.00	79.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.24	12.27	12.40	12.53	12.27
Flow Max (cfs):	11.02	30.87	68.82	9.80	22.05
Runoff Volume (in):	6.87	6.87	6.87	6.25	6.87
Runoff Volume (cf):	53606	167800	501157	90805	111701

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Basin Name:	B-E250	B-E251	B-E252	B-E260	B-E270
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E250	N-E250	N-E250	N-E260	N-E270
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.67	18.93	19.33	43.99	6.53
Comp Time Inc (min):	2.67	15.00	15.00	15.00	6.53
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	20.00	142.00	145.00	330.00	49.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	5.35	59.00	58.00	743.90	7.94
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	79.00	79.00	77.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.31	13.75	13.75	16.00	12.63
Flow Max (cfs):	22.07	67.66	65.65	437.31	19.49
Runoff Volume (in):	6.87	6.26	6.25	6.01	6.50
Runoff Volume (cf):	133392	1340601	1316892	16234420	187350

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Basin Name:	B-F010	B-F030	B-F040	B-F060	B-F080
Group Name:	MC	MC	MC	MC	MC
Node Name:	N-F010	N-F030	N-F040	N-F060	N-F080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Comp Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	49.00	30.00	13.00	20.00	38.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	43.19	16.46	4.84	24.34	7.55
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	86.00	86.00	72.00	73.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.52	12.40	12.28	12.31	12.50
Flow Max (cfs):	114.40	57.85	23.78	81.74	18.78
Runoff Volume (in):	7.11	7.11	7.11	5.41	5.53
Runoff Volume (cf):	1114499	424933	124922	477583	151453

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Basin Name:	B-G020	B-G050	B-G060	B-G070	B-G080
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G020	N-G050	N-G060	N-G070	N-G080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	27.99	23.99	3.07	2.13	1.87
Comp Time Inc (min):	15.00	15.00	3.07	2.13	1.87
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	210.00	180.00	23.00	16.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	182.80	76.10	6.22	2.37	5.29
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	77.00	86.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.50	14.00	12.32	12.30	12.29
Flow Max (cfs):	151.20	70.38	24.73	10.90	25.39
Runoff Volume (in):	6.01	6.01	7.11	7.11	7.11
Runoff Volume (cf):	3987219	1659729	160529	61184	136549

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Basin Name:	B-G090	B-G180	B-G110	B-G120	B-G130
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G090	N-G180	N-G110	N-G120	N-G130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.53	33.33	1.73	3.20	3.73
Comp Time Inc (min):	2.53	15.00	1.73	3.20	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	19.00	250.00	13.00	24.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	7.38	317.90	7.36	7.88	11.79
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	74.00	85.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.33	15.00	12.28	12.37	12.38
Flow Max (cfs):	31.82	216.01	35.76	29.52	41.28
Runoff Volume (in):	7.11	5.65	6.99	6.75	6.74
Runoff Volume (cf):	190489	6516956	186716	192992	288619

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Basin Name:	B-G140	B-G150	B-G160	B-G181
Group Name:	BL	BL	BL	BL
Node Name:	N-G140	N-G150	N-G160	N-G180
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.60	16.40	2.40	29.33
Comp Time Inc (min):	3.60	15.00	2.40	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	8.80	8.80	8.80	8.80
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	27.00	123.00	18.00	220.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	4.86	37.00	3.69	202.50
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	81.00	79.00	86.00	72.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.36	13.50	12.32	14.75
Flow Max (cfs):	16.85	47.07	16.27	144.39
Runoff Volume (in):	6.50	6.25	7.11	5.40
Runoff Volume (cf):	114730	839645	95261	3969800

********** Basin Summary - 100YR **********

Basin Name:	B-A030	B-A040	B-A041	B-A060	B-A100
Group Name:	RR	RR	RR	RR	RR
Node Name:	N-A030	N-A040	N-A040	N-A060	N-A100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	39.99	36.66	35.99	17.73	17.20
Comp Time Inc (min):	15.00	15.00	15.00	15.00	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	300.00	275.00	270.00	133.00	129.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	536.70	402.60	388.40	62.80	52.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	83.00	85.00	76.00	82.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	15.50	15.25	15.25	13.50	13.50
Flow Max (cfs):	452.80	357.42	360.09	84.89	79.38
Runoff Volume (in):	8.03	7.90	8.15	7.00	7.77
Runoff Volume (cf):	15639906	11546412	11493561	1595454	1465894

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Basin Name:	B-A120	B-A140	B-B020	B-B040	B-B060
Group Name:	RR	RR	HH	HH	HH
Node Name:	N-A120	N-A140	N-B020	N-B040	N-B060
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	18.00	34.66	18.40	3.60	25.99
Comp Time Inc (min):	15.00	15.00	15.00	3.60	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	135.00	260.00	138.00	27.00	195.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	99.30	348.50	93.40	9.10	107.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	79.00	85.00	88.00	76.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	13.50	15.00	13.50	12.36	14.25
Flow Max (cfs):	149.15	301.87	141.93	39.90	109.66
Runoff Volume (in):	7.90	7.39	8.15	8.53	7.01
Runoff Volume (cf):	2846067	9350137	2764106	281934	2737200

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Basin Name:	B-B100	B-B140	B-B160	B-B170	B-B230
Group Name:	HH	HH	HH	HH	HH
Node Name:	N-B100	N-B140	N-B160	N-B170	N-B230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	11.60	27.19	10.13	4.13	4.27
Comp Time Inc (min):	11.60	15.00	10.13	4.13	4.27
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	87.00	204.00	76.00	31.00	32.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	26.30	90.20	37.90	16.60	25.20
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	78.00	79.00	83.00	87.00	89.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.95	14.50	12.84	12.40	12.44
Flow Max (cfs):	49.72	93.83	84.82	67.06	101.66
Runoff Volume (in):	7.27	7.39	7.90	8.41	8.66
Runoff Volume (cf):	693625	2420411	1087484	506633	791875

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Basin Name:	B-C010	B-C050	B-C080	B-C120	B-C130
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C010	N-C050	N-C080	N-C120	N-C130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.93	6.80	15.46	13.33	5.33
Comp Time Inc (min):	6.93	6.80	15.00	13.33	5.33
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	52.00	51.00	116.00	100.00	40.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	27.60	7.60	84.50	60.70	40.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	80.00	81.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.60	12.58	13.25	13.11	12.53
Flow Max (cfs):	79.61	21.31	137.26	114.33	135.44
Runoff Volume (in):	7.90	7.52	7.65	8.03	7.91
Runoff Volume (cf):	791438	207383	2345476	1769901	1165167

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Basin Name:	B-C140	B-C150	B-C170	B-C190	B-C230
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C140	N-C150	N-C170	N-C190	N-C230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Comp Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	37.00	88.00	61.00	48.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	12.20	36.10	101.20	23.50	48.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	78.00	82.00	82.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.91	12.74	12.59	12.38
Flow Max (cfs):	43.79	67.44	257.38	69.94	197.88
Runoff Volume (in):	8.15	7.26	7.78	7.78	8.03
Runoff Volume (cf):	361053	950891	2857481	663592	1398964

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Basin Name:	B-C270	B-D010	B-D020	B-D030	B-D050
Group Name:	SM1	SM2	SM2	SM2	SM2
Node Name:	N-C270	N-D010	N-D020	N-D030	N-D050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	10.80	13.73	9.86	11.20	4.40
Comp Time Inc (min):	10.80	13.73	9.87	11.20	4.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	81.00	103.00	74.00	84.00	33.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	35.70	23.10	30.50	56.50	22.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	76.00	81.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.96	13.28	12.83	12.88	12.39
Flow Max (cfs):	69.59	37.12	67.54	122.99	87.33
Runoff Volume (in):	7.13	6.99	7.64	8.28	8.28
Runoff Volume (cf):	924509	586498	845781	1697328	679512

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Basin Name:	B-D080	B-D110	B-D130	B-D131	B-D132
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D080	N-D110	N-D130	N-D130	N-D130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	5.07	5.73	9.46	12.80	12.40
Comp Time Inc (min):	5.07	5.73	9.47	12.80	12.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	38.00	43.00	71.00	96.00	93.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	6.80	29.80	15.60	24.90	46.30
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	85.00	63.00	80.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.52	12.78	13.23	13.02
Flow Max (cfs):	23.85	97.67	37.51	31.40	86.41
Runoff Volume (in):	8.03	8.03	8.16	5.29	7.52
Runoff Volume (cf):	198240	868776	461930	478493	1264200

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Basin Name:	B-D140	B-D160	B-D190	B-D210	B-D220
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D140	N-D160	N-D190	N-D210	N-D220
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	8.26	5.60	3.07	7.20	6.00
Comp Time Inc (min):	8.27	5.60	3.07	7.20	6.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	62.00	42.00	23.00	54.00	45.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	19.80	76.40	5.70	18.53	11.75
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	86.00	86.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.68	12.51	12.32	12.60	12.50
Flow Max (cfs):	51.54	259.67	26.20	52.33	36.66
Runoff Volume (in):	8.03	8.28	8.28	7.91	7.91
Runoff Volume (cf):	577176	2297259	171366	531787	337210

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Basin Name:	B-E010	B-E020	B-E030	B-E040	B-E050
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E010	N-E020	N-E030	N-E040	N-E050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	29.99	2.40	3.20	3.87	2.67
Comp Time Inc (min):	15.00	2.40	3.20	3.87	2.67
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	225.00	18.00	24.00	29.00	20.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	223.40	5.75	6.47	20.89	14.49
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	72.00	85.00	85.00	85.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.75	12.32	12.32	12.37	12.31
Flow Max (cfs):	189.22	29.00	28.82	85.63	70.09
Runoff Volume (in):	6.49	8.16	8.16	8.16	8.16
Runoff Volume (cf):	5260075	170293	191617	618518	429138

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Basin Name:	B-E060	B-E070	B-E080	B-E090	B-E100
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E060	N-E070	N-E080	N-E090	N-E100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.73	2.27	2.13	6.53	7.06
Comp Time Inc (min):	1.73	2.27	2.13	6.53	7.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	17.00	16.00	49.00	53.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.25	5.64	7.61	14.98	18.64
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	84.00	84.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.28	12.32	12.30	12.52	12.60
Flow Max (cfs):	23.87	28.74	39.61	44.87	53.15
Runoff Volume (in):	8.16	8.03	8.03	8.03	7.90
Runoff Volume (cf):	125841	164434	221894	436593	534447

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Basin Name:	B-E110	B-E120	B-E130	B-E140	B-E150
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E110	N-E120	N-E130	N-E140	N-E150
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Comp Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	45.00	25.00	20.00	25.00	23.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	13.04	4.37	3.57	5.37	2.97
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	82.00	83.00	81.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.33	12.31	12.33	12.32
Flow Max (cfs):	40.69	18.49	16.89	22.42	13.21
Runoff Volume (in):	7.91	7.78	7.91	7.65	7.90
Runoff Volume (cf):	374231	123400	102454	149156	85210

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Basin Name:	B-E160	B-E170	B-E180	B-E190	B-E200
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E160	N-E170	N-E180	N-E190	N-E200
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Comp Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	29.00	38.00	26.00	30.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	3.97	9.21	3.20	5.10	6.45
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	83.00	83.00	83.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.37	12.50	12.36	12.40	12.27
Flow Max (cfs):	15.90	31.92	13.52	20.04	34.30
Runoff Volume (in):	7.90	7.90	7.90	7.91	8.03
Runoff Volume (cf):	113903	264267	91815	146364	188070

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Basin Name:	B-E210	B-E220	B-E230	B-E231	B-E240
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E210	N-E220	N-E230	N-E230	N-E240
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Comp Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	10.00	15.00	30.00	47.00	12.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.15	6.73	20.10	4.00	4.48
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	84.00	79.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.24	12.27	12.40	12.53	12.27
Flow Max (cfs):	12.76	35.79	79.92	11.54	25.53
Runoff Volume (in):	8.03	8.03	8.03	7.39	8.03
Runoff Volume (cf):	62690	196234	586079	107295	130629

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Basin Name:	B-E250	B-E251	B-E252	B-E260	B-E270
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E250	N-E250	N-E250	N-E260	N-E270
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.67	18.93	19.33	43.99	6.53
Comp Time Inc (min):	2.67	15.00	15.00	15.00	6.53
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	20.00	142.00	145.00	330.00	49.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	5.35	59.00	58.00	743.90	7.94
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	79.00	79.00	77.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.31	13.50	13.75	16.00	12.52
Flow Max (cfs):	25.61	79.89	77.49	519.73	22.83
Runoff Volume (in):	8.03	7.40	7.39	7.13	7.65
Runoff Volume (cf):	155996	1584005	1555991	19265788	220437

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Basin Name:	B-F010	B-F030	B-F040	B-F060	B-F080
Group Name:	MC	MC	MC	MC	MC
Node Name:	N-F010	N-F030	N-F040	N-F060	N-F080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Comp Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	49.00	30.00	13.00	20.00	38.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	43.19	16.46	4.84	24.34	7.55
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	86.00	86.00	72.00	73.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.52	12.40	12.28	12.31	12.50
Flow Max (cfs):	132.53	66.89	27.44	97.77	22.44
Runoff Volume (in):	8.28	8.28	8.28	6.49	6.62
Runoff Volume (cf):	1298276	494998	145520	573381	181396

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Basin Name:	B-G020	B-G050	B-G060	B-G070	B-G080
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G020	N-G050	N-G060	N-G070	N-G080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	27.99	23.99	3.07	2.13	1.87
Comp Time Inc (min):	15.00	15.00	3.07	2.13	1.87
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	210.00	180.00	23.00	16.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	182.80	76.10	6.22	2.37	5.29
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	77.00	86.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.50	14.00	12.32	12.30	12.29
Flow Max (cfs):	179.64	83.67	28.59	12.58	29.30
Runoff Volume (in):	7.13	7.13	8.28	8.28	8.28
Runoff Volume (cf):	4731733	1969641	187000	71273	159065

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Basin Name:	B-G090	B-G180	B-G110	B-G120	B-G130
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G090	N-G180	N-G110	N-G120	N-G130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.53	33.33	1.73	3.20	3.73
Comp Time Inc (min):	2.53	15.00	1.73	3.20	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	19.00	250.00	13.00	24.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	7.38	317.90	7.36	7.88	11.79
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	74.00	85.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.33	15.00	12.28	12.37	12.38
Flow Max (cfs):	36.74	258.84	41.34	34.31	48.04
Runoff Volume (in):	8.28	6.75	8.16	7.91	7.90
Runoff Volume (cf):	221898	7786894	217927	226146	338205

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Basin Name:	B-G140	B-G150	B-G160	B-G181
Group Name:	BL	BL	BL	BL
Node Name:	N-G140	N-G150	N-G160	N-G180
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.60	16.40	2.40	29.33
Comp Time Inc (min):	3.60	15.00	2.40	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	10.00	10.00	10.00	10.00
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	27.00	123.00	18.00	220.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	4.86	37.00	3.69	202.50
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	81.00	79.00	86.00	72.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.36	13.50	12.32	14.75
Flow Max (cfs):	19.70	55.53	18.79	173.89
Runoff Volume (in):	7.65	7.39	8.28	6.48
Runoff Volume (cf):	134990	992093	110969	4766099

********** Basin Summary - 500YR **********

Basin Name:	B-A030	B-A040	B-A041	B-A060	B-A100
Group Name:	RR	RR	RR	RR	RR
Node Name:	N-A030	N-A040	N-A040	N-A060	N-A100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	39.99	36.66	35.99	17.73	17.20
Comp Time Inc (min):	15.00	15.00	15.00	15.00	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	300.00	275.00	270.00	133.00	129.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	536.70	402.60	388.40	62.80	52.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	83.00	85.00	76.00	82.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	15.50	15.25	15.25	13.50	13.50
Flow Max (cfs):	534.52	422.73	423.89	102.02	93.90
Runoff Volume (in):	9.49	9.36	9.62	8.41	9.22
Runoff Volume (cf):	18491120	13677918	13562898	1917626	1739933

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Basin Name:	B-A120	B-A140	B-B020	B-B040	B-B060
Group Name:	RR	RR	HH	HH	HH
Node Name:	N-A120	N-A140	N-B020	N-B040	N-B060
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	18.00	34.66	18.40	3.60	25.99
Comp Time Inc (min):	15.00	15.00	15.00	3.60	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	135.00	260.00	138.00	27.00	195.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	99.30	348.50	93.40	9.10	107.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	79.00	85.00	88.00	76.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	13.50	15.00	13.50	12.36	14.25
Flow Max (cfs):	176.12	360.55	166.87	46.44	131.91
Runoff Volume (in):	9.35	8.83	9.62	10.02	8.42
Runoff Volume (cf):	3371461	11166145	3261765	330845	3289928

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Basin Name:	B-B100	B-B140	B-B160	B-B170	B-B230
Group Name:	HH	HH	HH	HH	HH
Node Name:	N-B100	N-B140	N-B160	N-B170	N-B230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	11.60	27.19	10.13	4.13	4.27
Comp Time Inc (min):	11.60	15.00	10.13	4.13	4.27
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	87.00	204.00	76.00	31.00	32.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	26.30	90.20	37.90	16.60	25.20
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	78.00	79.00	83.00	87.00	89.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.95	14.50	12.84	12.40	12.44
Flow Max (cfs):	59.36	111.91	99.98	78.21	118.12
Runoff Volume (in):	8.69	8.83	9.36	9.88	10.14
Runoff Volume (cf):	830097	2890511	1288243	595618	927578

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Basin Name:	B-C010	B-C050	B-C080	B-C120	B-C130
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C010	N-C050	N-C080	N-C120	N-C130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.93	6.80	15.46	13.33	5.33
Comp Time Inc (min):	6.93	6.80	15.00	13.33	5.33
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	52.00	51.00	116.00	100.00	40.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	27.60	7.60	84.50	60.70	40.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	80.00	81.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.60	12.58	13.25	13.11	12.44
Flow Max (cfs):	93.73	25.26	162.80	134.55	159.32
Runoff Volume (in):	9.36	8.96	9.09	9.50	9.37
Runoff Volume (cf):	937557	247154	2789535	2092560	1380262

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Basin Name:	B-C140	B-C150	B-C170	B-C190	B-C230
Group Name:	SM1	SM1	SM1	SM1	SM1
Node Name:	N-C140	N-C150	N-C170	N-C190	N-C230
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Comp Time Inc (min):	4.93	11.73	8.13	6.40	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	37.00	88.00	61.00	48.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	12.20	36.10	101.20	23.50	48.00
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	78.00	82.00	82.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.91	12.74	12.59	12.38
Flow Max (cfs):	51.26	80.58	303.69	82.48	232.04
Runoff Volume (in):	9.62	8.68	9.23	9.23	9.49
Runoff Volume (cf):	426064	1138021	3391675	787646	1654017

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Basin Name:	B-C270	B-D010	B-D020	B-D030	B-D050
Group Name:	SM1	SM2	SM2	SM2	SM2
Node Name:	N-C270	N-D010	N-D020	N-D030	N-D050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	10.80	13.73	9.86	11.20	4.40
Comp Time Inc (min):	10.80	13.73	9.87	11.20	4.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	81.00	103.00	74.00	84.00	33.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	35.70	23.10	30.50	56.50	22.60
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	76.00	81.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.96	13.05	12.83	12.88	12.39
Flow Max (cfs):	83.22	44.56	79.97	144.10	102.09
Runoff Volume (in):	8.56	8.41	9.09	9.75	9.76
Runoff Volume (cf):	1108794	704976	1005950	1999187	800346

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Basin Name:	B-D080	B-D110	B-D130	B-D131	B-D132
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D080	N-D110	N-D130	N-D130	N-D130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	5.07	5.73	9.46	12.80	12.40
Comp Time Inc (min):	5.07	5.73	9.47	12.80	12.40
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	38.00	43.00	71.00	96.00	93.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	6.80	29.80	15.60	24.90	46.30
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	85.00	63.00	80.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.52	12.78	13.23	13.02
Flow Max (cfs):	27.98	114.67	44.01	39.23	102.65
Runoff Volume (in):	9.50	9.50	9.63	6.58	8.96
Runoff Volume (cf):	234380	1027160	545100	594354	1506623

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Basin Name:	B-D140	B-D160	B-D190	B-D210	B-D220
Group Name:	SM2	SM2	SM2	SM2	SM2
Node Name:	N-D140	N-D160	N-D190	N-D210	N-D220
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	8.26	5.60	3.07	7.20	6.00
Comp Time Inc (min):	8.27	5.60	3.07	7.20	6.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	62.00	42.00	23.00	54.00	45.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	19.80	76.40	5.70	18.53	11.75
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	86.00	86.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.68	12.51	12.32	12.60	12.50
Flow Max (cfs):	60.59	303.59	30.60	61.63	43.16
Runoff Volume (in):	9.49	9.76	9.75	9.37	9.37
Runoff Volume (cf):	682401	2705764	201839	629957	399460

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Basin Name:	B-E010	B-E020	B-E030	B-E040	B-E050
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E010	N-E020	N-E030	N-E040	N-E050
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	29.99	2.40	3.20	3.87	2.67
Comp Time Inc (min):	15.00	2.40	3.20	3.87	2.67
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	225.00	18.00	24.00	29.00	20.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	223.40	5.75	6.47	20.89	14.49
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	72.00	85.00	85.00	85.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.75	12.32	12.32	12.37	12.31
Flow Max (cfs):	230.04	33.89	33.73	100.24	81.97
Runoff Volume (in):	7.87	9.63	9.63	9.63	9.63
Runoff Volume (cf):	6380380	200953	226116	729881	506402

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Basin Name:	B-E060	B-E070	B-E080	B-E090	B-E100
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E060	N-E070	N-E080	N-E090	N-E100
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.73	2.27	2.13	6.53	7.06
Comp Time Inc (min):	1.73	2.27	2.13	6.53	7.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	17.00	16.00	49.00	53.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.25	5.64	7.61	14.98	18.64
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	85.00	84.00	84.00	84.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.28	12.28	12.30	12.52	12.60
Flow Max (cfs):	27.87	33.64	46.37	52.73	62.58
Runoff Volume (in):	9.63	9.50	9.50	9.49	9.36
Runoff Volume (cf):	148498	194411	262346	516191	633120

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Basin Name:	B-E110	B-E120	B-E130	B-E140	B-E150
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E110	N-E120	N-E130	N-E140	N-E150
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Comp Time Inc (min):	6.00	3.33	2.67	3.33	3.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	45.00	25.00	20.00	25.00	23.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	13.04	4.37	3.57	5.37	2.97
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	82.00	83.00	81.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.50	12.33	12.31	12.33	12.32
Flow Max (cfs):	47.90	21.77	19.84	26.47	15.52
Runoff Volume (in):	9.37	9.23	9.37	9.10	9.36
Runoff Volume (cf):	443316	146468	121368	177395	100941

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Basin Name:	B-E160	B-E170	B-E180	B-E190	B-E200
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E160	N-E170	N-E180	N-E190	N-E200
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Comp Time Inc (min):	3.87	5.07	3.47	4.00	2.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	29.00	38.00	26.00	30.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	3.97	9.21	3.20	5.10	6.45
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	83.00	83.00	83.00	83.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.37	12.50	12.36	12.40	12.27
Flow Max (cfs):	18.69	37.53	15.89	23.55	40.16
Runoff Volume (in):	9.36	9.36	9.36	9.37	9.50
Runoff Volume (cf):	134931	313053	108765	173383	222356

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Basin Name:	B-E210	B-E220	B-E230	B-E231	B-E240
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E210	N-E220	N-E230	N-E230	N-E240
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Comp Time Inc (min):	1.33	2.00	4.00	6.27	1.60
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	10.00	15.00	30.00	47.00	12.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.15	6.73	20.10	4.00	4.48
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	84.00	84.00	79.00	84.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.24	12.27	12.40	12.53	12.27
Flow Max (cfs):	14.92	41.90	93.73	13.72	29.87
Runoff Volume (in):	9.50	9.50	9.50	8.82	9.50
Runoff Volume (cf):	74119	232009	692924	128137	154443

***

Basin Name:	B-E250	B-E251	B-E252	B-E260	B-E270
Group Name:	VG	VG	VG	VG	VG
Node Name:	N-E250	N-E250	N-E250	N-E260	N-E270
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.67	18.93	19.33	43.99	6.53
Comp Time Inc (min):	2.67	15.00	15.00	15.00	6.53
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	20.00	142.00	145.00	330.00	49.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	5.35	59.00	58.00	743.90	7.94
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	84.00	79.00	79.00	77.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.31	13.50	13.75	16.00	12.52
Flow Max (cfs):	30.00	95.34	92.34	623.70	27.02
Runoff Volume (in):	9.50	8.83	8.83	8.56	9.10
Runoff Volume (cf):	184435	1891655	1858200	23105692	262174

***

Basin Name:	B-F010	B-F030	B-F040	B-F060	B-F080
Group Name:	MC	MC	MC	MC	MC
Node Name:	N-F010	N-F030	N-F040	N-F060	N-F080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Comp Time Inc (min):	6.53	4.00	1.73	2.67	5.07
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	49.00	30.00	13.00	20.00	38.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	43.19	16.46	4.84	24.34	7.55
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	86.00	86.00	72.00	73.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.52	12.40	12.28	12.31	12.50
Flow Max (cfs):	155.09	78.15	31.98	117.94	27.05
Runoff Volume (in):	9.75	9.76	9.76	7.87	8.01
Runoff Volume (cf):	1529149	583019	171398	695502	219514

***

Basin Name:	B-G020	B-G050	B-G060	B-G070	B-G080
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G020	N-G050	N-G060	N-G070	N-G080
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	27.99	23.99	3.07	2.13	1.87
Comp Time Inc (min):	15.00	15.00	3.07	2.13	1.87
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	210.00	180.00	23.00	16.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	182.80	76.10	6.22	2.37	5.29
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	77.00	77.00	86.00	86.00	86.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	14.50	14.00	12.32	12.30	12.29
Flow Max (cfs):	215.45	100.40	33.39	14.67	34.16
Runoff Volume (in):	8.55	8.55	9.75	9.76	9.76
Runoff Volume (cf):	5674819	2362214	220253	83946	187350

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Basin Name:	B-G090	B-G180	B-G110	B-G120	B-G130
Group Name:	BL	BL	BL	BL	BL
Node Name:	N-G090	N-G180	N-G110	N-G120	N-G130
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00	323.00
Spec Time Inc (min):	2.53	33.33	1.73	3.20	3.73
Comp Time Inc (min):	2.53	15.00	1.73	3.20	3.73
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	19.00	250.00	13.00	24.00	28.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	7.38	317.90	7.36	7.88	11.79
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	86.00	74.00	85.00	83.00	83.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.29	15.00	12.28	12.32	12.38
Flow Max (cfs):	42.87	313.04	48.27	40.31	56.45
Runoff Volume (in):	9.76	8.15	9.63	9.37	9.36
Runoff Volume (cf):	261357	9401416	257164	267893	400642

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Basin Name:	B-G140	B-G150	B-G160	B-G181
Group Name:	BL	BL	BL	BL
Node Name:	N-G140	N-G150	N-G160	N-G180
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00	323.00
Spec Time Inc (min):	3.60	16.40	2.40	29.33
Comp Time Inc (min):	3.60	15.00	2.40	15.00
Rainfall File:	SCSIII	SCSIII	SCSIII	SCSIII
Rainfall Amount (in):	11.50	11.50	11.50	11.50
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	27.00	123.00	18.00	220.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	4.86	37.00	3.69	202.50
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	81.00	79.00	86.00	72.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.36	13.50	12.32	14.75
Flow Max (cfs):	23.26	66.13	21.92	211.31
Runoff Volume (in):	9.10	8.82	9.76	7.86
Runoff Volume (cf):	160547	1184781	130701	5781197

8.2 HYDRAULIC RESULTS

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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Church Creek Watershed
Existing Conditions
09/26/01

********** Node Maximum Comparisons **********

(Time units - hours)

Sim Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
*** Node Name: N-A010		Group: RR							
2YR	10.00	4.80	0.00	0.0003	1361754.38	25.18	584.88	0.00	0.00
10YR	10.00	4.80	0.00	0.0003	1362952.33	25.73	880.25	0.00	0.00
25YR	10.00	4.80	0.00	0.0003	1363797.09	25.26	1063.71	0.00	0.00
50YR	10.00	4.80	0.00	0.0003	1364920.38	25.73	1216.09	0.00	0.00
100YR	10.00	4.80	0.00	0.0003	1368091.53	25.44	1428.36	0.00	0.00
500YR	10.00	4.80	0.00	0.0003	1371721.03	25.14	1707.61	0.00	0.00
*** Node Name: N-A015		Group: RR							
2YR	22.38	4.76	0.00	0.0006	1742277.92	26.35	545.89	25.18	584.88
10YR	23.94	5.20	0.00	0.0006	1879041.56	26.03	872.00	25.73	880.25
25YR	24.41	5.50	0.00	0.0006	1892572.83	25.31	1051.42	25.26	1063.71
50YR	25.73	5.78	0.00	0.0006	2115191.03	25.22	1210.61	25.73	1216.09
100YR	25.44	6.01	0.00	0.0006	2145270.13	26.08	1388.03	25.44	1428.36
500YR	25.14	6.28	0.00	0.0008	1928097.44	25.70	1601.09	25.14	1707.61
*** Node Name: N-A020		Group: RR							
2YR	22.54	4.82	0.00	0.0007	354093.66	26.40	541.36	26.35	545.89
10YR	24.36	5.33	0.00	0.0008	444702.70	26.05	870.90	26.03	872.00
25YR	24.54	5.63	0.00	0.0008	447958.94	25.30	1049.07	25.31	1051.42
50YR	25.74	5.90	0.00	0.0008	450919.98	25.24	1211.48	25.22	1210.61
100YR	25.45	6.11	0.00	0.0008	453308.92	26.11	1386.50	26.08	1388.03
500YR	25.14	6.38	0.00	0.0010	456607.41	25.84	1595.95	25.70	1601.09
*** Node Name: N-A030		Group: RR							
2YR	23.04	5.01	0.00	0.0008	2069940.22	25.76	525.17	26.40	541.36
10YR	25.10	5.79	0.00	0.0008	2681581.65	25.82	861.43	26.05	870.90
25YR	24.73	6.02	0.00	0.0008	2728647.73	25.08	1045.68	25.30	1049.07
50YR	25.78	6.18	0.00	0.0008	2926739.14	23.71	1219.86	25.24	1211.48
100YR	25.59	6.52	0.00	0.0008	3512471.84	23.04	1422.09	26.11	1386.50
500YR	25.25	6.94	0.00	0.0008	3798121.02	22.92	1616.27	25.84	1595.95
*** Node Name: N-A040		Group: RR							
2YR	25.69	5.39	0.00	0.0003	4515070.17	14.75	804.73	26.86	481.90
10YR	26.02	6.27	0.00	0.0006	5201051.46	19.68	877.66	26.46	786.40
25YR	25.61	6.57	0.00	0.0004	5363641.75	19.33	1020.73	25.83	948.46
50YR	25.77	6.81	0.00	0.0003	5572212.08	18.66	1153.84	25.71	1101.00
100YR	26.16	7.15	0.00	0.0006	6261849.83	21.76	1341.94	23.71	1253.94
500YR	25.92	7.51	0.00	0.0005	6629058.72	19.80	1527.27	26.58	1426.60
*** Node Name: N-A050		Group: RR							
2YR	25.69	5.39	8.00	-0.0012	386761.21	14.41	33.37	14.75	387.24
10YR	26.02	6.27	8.00	-0.0014	446735.78	14.20	59.19	13.49	433.89
25YR	25.61	6.57	8.00	-0.0014	459770.23	14.42	71.96	13.07	432.74
50YR	25.77	6.81	8.00	-0.0014	473483.80	14.34	84.48	12.65	430.53
100YR	26.16	7.15	8.00	-0.0014	493258.69	14.28	98.87	12.08	427.78
500YR	25.92	7.51	8.00	-0.0006	518396.41	14.25	115.96	67.54	164.83
*** Node Name: N-A060		Group: RR							
2YR	25.69	5.39	8.00	-0.0005	186305.21	13.75	34.91	14.41	33.37
10YR	26.02	6.27	8.00	0.0002	232389.37	13.75	64.84	14.20	59.19
25YR	25.58	6.57	8.00	-0.0005	266879.02	13.75	79.09	14.42	71.96
50YR	25.72	6.82	8.00	-0.0004	313279.56	13.75	92.80	14.34	84.48
100YR	26.15	7.15	8.00	-0.0003	328687.93	13.50	108.81	14.28	98.87
500YR	25.92	7.51	8.00	-0.0003	346254.65	13.50	127.44	14.25	115.96
*** Node Name: N-A090		Group: RR							
2YR	17.59	6.28	9.00	0.0002	43957.08	15.53	16.44	20.04	16.22
10YR	25.98	6.27	9.00	0.0001	86933.59	16.04	24.61	17.57	28.56
25YR	25.41	6.57	9.00	0.0001	135841.72	16.23	27.96	16.97	30.89
50YR	25.61	6.82	9.00	0.0001	241360.61	16.38	31.16	16.48	32.51
100YR	26.11	7.15	9.00	0.0001	261729.03	16.50	34.96	16.02	34.15
500YR	25.91	7.52	9.00	0.0001	284357.41	16.66	39.54	15.56	36.36
*** Node Name: N-A100		Group: RR							
2YR	15.53	8.77	14.80	0.0004	213284.62	13.50	27.70	15.53	16.44
10YR	16.04	9.24	14.80	0.0003	380523.76	13.50	48.48	16.04	24.61
25YR	16.23	9.41	14.80	0.0002	451775.71	13.50	58.10	16.23	27.96
50YR	16.38	9.56	14.80	0.0002	504063.08	13.50	67.76	16.38	31.16
100YR	16.50	9.74	14.80	0.0002	543755.26	13.50	79.38	16.50	34.96
500YR	16.66	9.95	14.80	0.0002	591372.83	13.50	93.90	16.66	39.54

********** Node Maximum Comparisons **********

(Time units - hours)

Sim Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
*** Node Name: N-A110		Group: RR							
2YR	23.46	5.95	8.00	0.0003	1938681.53	20.69	435.30	21.78	424.13
10YR	25.58	6.79	8.00	0.0003	2323431.44	22.04	708.43	24.41	680.14
25YR	25.64	7.12	8.00	0.0003	2533972.07	22.22	822.95	25.66	807.63
50YR	25.63	7.41	8.00	0.0003	2644366.50	24.16	955.30	25.52	942.22
100YR	25.97	7.75	8.00	0.0004	3171589.69	22.68	1109.93	24.37	1082.16
500YR	25.82	8.06	8.00	0.0004	3431102.20	23.67	1232.58	24.57	1209.83
*** Node Name: N-A120		Group: RR							
2YR	22.48	6.12	8.00	0.0018	523894.30	19.36	410.72	20.58	404.41
10YR	24.86	7.07	8.00	0.0018	856741.19	21.31	666.98	21.99	655.21
25YR	25.10	7.46	8.00	0.0018	1073820.99	21.21	779.03	22.17	760.84
50YR	25.07	7.85	8.00	0.0018	1118483.99	23.34	894.86	24.10	882.52
100YR	25.29	8.35	8.00	0.0018	1320199.57	20.85	1063.40	22.68	1026.49
500YR	25.04	9.15	8.00	0.0018	1526868.80	19.87	1213.15	19.68	1116.93
*** Node Name: N-A130		Group: RR							
2YR	22.83	6.28	8.00	-0.0017	12131.72	22.01	31.38	22.10	31.35
10YR	25.16	7.17	8.00	-0.0017	17659.42	23.32	53.69	23.56	53.57
25YR	25.46	7.51	8.00	-0.0017	19013.15	24.78	62.76	25.02	62.71
50YR	25.47	7.81	8.00	-0.0017	20244.72	24.99	73.30	25.02	73.24
100YR	25.63	8.15	8.00	-0.0017	21679.24	25.06	85.20	25.17	85.15
500YR	25.36	8.66	8.00	-0.0017	23560.11	24.86	120.46	24.94	120.40
*** Node Name: N-A140		Group: RR							
2YR	22.79	6.31	8.00	-0.0009	1076068.99	15.50	150.81	23.26	113.59
10YR	25.10	7.22	8.00	-0.0009	1454703.25	15.25	241.65	26.23	174.97
25YR	25.42	7.58	8.00	-0.0009	1749671.25	15.25	282.76	26.83	203.22
50YR	25.42	7.93	8.00	-0.0009	1874269.94	15.25	323.55	27.83	234.36
100YR	25.51	8.39	8.00	-0.0009	2032282.74	15.00	369.33	30.98	274.51
500YR	25.16	9.16	8.00	-0.0009	2301992.05	15.00	421.34	31.67	317.68
*** Node Name: N-B010		Group: HH							
2YR	21.35	6.39	8.10	0.0007	443083.86	18.25	329.30	19.49	321.92
10YR	23.99	7.32	8.10	0.0008	663562.93	21.03	546.02	21.61	538.01
25YR	24.48	7.69	8.10	0.0007	702823.40	21.00	649.00	21.56	638.78
50YR	24.55	8.07	8.10	0.0007	724612.64	22.99	759.92	23.23	750.70
100YR	24.63	8.55	8.10	-0.0006	824051.05	20.30	992.95	20.49	951.47
500YR	24.43	9.29	8.10	-0.0007	1105082.25	20.82	1238.27	20.89	1182.20
*** Node Name: N-B020		Group: HH							
2YR	19.42	7.17	8.55	0.0008	82273.80	18.41	384.87	18.25	329.30
10YR	21.38	8.48	8.55	0.0008	207366.36	19.71	445.92	21.03	546.02
25YR	21.71	8.97	8.55	0.0008	264064.70	16.87	578.01	21.00	649.00
50YR	21.87	9.48	8.55	0.0008	308107.07	21.55	655.65	22.99	759.92
100YR	21.64	9.88	8.55	0.0008	318128.30	20.34	1220.57	20.30	992.95
500YR	21.73	10.35	8.55	0.0008	338026.22	20.91	1499.27	20.82	1238.27
*** Node Name: N-B030		Group: HH							
2YR	19.43	7.17	8.55	0.0006	57897.78	12.97	7.81	30.34	2.45
10YR	21.42	8.48	8.55	0.0007	114403.93	13.09	10.73	14.62	5.67
25YR	21.75	8.97	8.55	0.0008	114998.40	13.15	11.70	29.08	7.51
50YR	21.91	9.48	8.55	0.0008	114998.40	13.20	12.61	32.18	8.70
100YR	21.64	9.88	8.55	0.0007	114998.40	13.26	13.61	29.33	9.15
500YR	21.78	10.35	8.55	0.0006	114998.40	13.32	14.76	34.38	12.25
*** Node Name: N-B040		Group: HH							
2YR	12.97	8.51	11.00	0.0002	71618.34	12.42	15.89	12.97	7.81
10YR	13.09	8.83	11.00	0.0002	75686.98	12.42	25.49	13.09	10.73
25YR	13.15	8.98	11.00	0.0003	77736.58	12.33	29.85	13.15	11.70
50YR	22.13	9.48	11.00	0.0003	86416.96	12.33	34.20	13.20	12.61
100YR	22.03	9.89	11.00	0.0004	90442.68	12.33	39.41	13.26	13.61
500YR	21.84	10.35	11.00	0.0004	94554.71	12.33	45.88	13.32	14.76
*** Node Name: N-B050		Group: HH							
2YR	19.42	7.17	8.55	-0.0034	8826.75	18.18	16.86	19.30	71.79
10YR	21.38	8.48	8.55	-0.0034	11923.68	17.10	38.30	0.00	13.00
25YR	21.71	8.97	8.55	-0.0034	13553.74	16.24	55.08	16.24	53.99
50YR	21.87	9.48	8.55	-0.0034	13568.29	15.74	72.50	15.76	71.13
100YR	21.64	9.89	8.55	-0.0050	13580.04	15.33	93.59	20.22	273.33
500YR	21.60	10.36	8.55	-0.0050	13593.42	15.01	119.71	22.65	341.78
*** Node Name: N-B060		Group: HH							
2YR	18.75	8.02	8.55	0.0007	108140.73	14.50	27.96	18.18	16.86
10YR	17.34	9.25	8.55	0.0011	156978.38	16.90	50.25	17.10	38.30
25YR	16.38	9.38	8.55	0.0011	157017.53	16.03	68.49	16.24	55.08
50YR	21.87	9.50	8.55	0.0011	157053.72	15.55	87.35	15.74	72.50
100YR	21.57	9.90	8.55	0.0011	157175.20	15.17	109.92	15.33	93.59
500YR	21.69	10.36	8.55	0.0009	157655.69	14.85	137.71	15.01	119.71
*** Node Name: N-B070		Group: HH							
2YR	18.75	8.02	8.55	0.0007	44415.07	0.00	0.00	27.47	13.04
10YR	17.34	9.25	8.55	0.0011	165804.19	0.00	0.00	16.91	9.18
25YR	16.38	9.38	8.55	0.0011	165901.45	0.00	0.00	16.06	9.64
50YR	21.87	9.50	8.55	0.0011	165991.35	0.00	0.00	15.56	10.68
100YR	21.57	9.90	8.55	0.0011	166293.18	0.00	0.00	23.15	29.43
500YR	21.69	10.36	8.55	0.0009	167661.42	0.00	0.00	25.34	46.52

********** Node Maximum Comparisons **********

(Time units - hours)

Sim Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
*** Node Name: N-B080		Group: HH							
2YR	19.40	7.30	8.55	0.0006	174448.95	18.75	275.82	19.22	296.95
10YR	21.39	8.62	8.55	0.0007	402512.82	21.12	575.18	21.49	509.14
25YR	21.69	9.07	8.55	0.0008	536477.12	21.11	712.59	21.40	608.13
50YR	21.85	9.55	8.55	0.0008	597737.87	21.22	872.99	21.49	717.96
100YR	21.47	9.95	8.55	0.0007	618312.02	20.40	1131.98	20.38	922.87
500YR	21.47	10.42	8.55	0.0006	660001.72	20.74	946.24	20.90	1136.34
*** Node Name: N-B090		Group: HH							
2YR	19.40	7.30	10.00	0.0006	14464.16	14.44	8.52	2.61	0.02
10YR	21.40	8.62	10.00	0.0007	22138.56	13.32	22.28	22.67	68.75
25YR	21.69	9.07	10.00	0.0008	22167.10	13.14	25.95	22.84	104.89
50YR	21.86	9.55	10.00	0.0008	22197.19	13.01	28.27	22.66	154.13
100YR	21.47	9.96	10.00	0.0009	22222.51	13.43	35.11	22.10	212.74
500YR	21.47	10.41	10.00	0.0024	22251.34	13.03	39.07	12.46	66.22
*** Node Name: N-B100		Group: HH							
2YR	19.39	7.31	10.00	0.0005	25523.01	14.32	9.12	14.44	8.52
10YR	21.53	8.62	10.00	0.0008	259222.53	13.29	25.02	13.32	22.28
25YR	21.83	9.07	10.00	0.0009	259776.35	13.10	30.95	13.14	25.95
50YR	22.00	9.55	10.00	0.0009	260857.96	13.00	35.95	13.01	28.27
100YR	21.66	9.96	10.00	0.0008	261895.43	13.17	41.98	13.43	35.11
500YR	21.65	10.42	10.00	0.0006	263084.22	13.03	52.91	13.03	39.07
*** Node Name: N-B110		Group: HH							
2YR	19.39	7.31	10.00	0.0005	19570.37	0.00	0.00	31.67	1.05
10YR	21.51	8.62	10.00	0.0008	97782.81	0.00	0.00	29.61	3.36
25YR	21.80	9.07	10.00	0.0009	99327.27	0.00	0.00	24.90	5.24
50YR	21.99	9.55	10.00	0.0009	102448.76	0.00	0.00	24.49	8.63
100YR	21.65	9.96	10.00	0.0008	105457.28	0.00	0.00	21.65	10.72
500YR	21.65	10.42	10.00	0.0006	108904.96	0.00	0.00	25.12	16.39
*** Node Name: N-B120		Group: HH							
2YR	19.35	7.42	10.00	0.0006	297508.53	17.91	344.71	18.78	295.29
10YR	21.32	8.72	10.00	0.0007	534171.98	15.02	399.28	20.68	509.43
25YR	21.61	9.15	10.00	0.0008	703407.49	19.47	466.34	20.66	612.26
50YR	21.79	9.61	10.00	0.0008	764793.80	20.26	596.78	20.45	728.78
100YR	21.41	10.01	10.00	0.0007	810443.78	20.40	1191.26	20.40	924.06
500YR	21.26	10.47	10.00	0.0006	860380.47	20.09	1450.03	20.58	1128.85
*** Node Name: N-B130		Group: HH							
2YR	19.35	7.42	10.00	0.0006	17576.33	22.37	17.65	19.86	57.85
10YR	21.33	8.72	10.00	0.0007	17645.44	25.98	31.62	35.71	26.50
25YR	21.61	9.15	10.00	0.0008	17668.39	27.79	39.86	37.97	26.45
50YR	21.80	9.61	10.00	0.0016	17692.76	24.18	46.78	37.80	29.22
100YR	21.42	10.02	10.00	-0.0050	17714.32	23.84	54.13	21.84	293.75
500YR	21.25	10.48	10.00	0.0050	17738.73	25.47	62.83	21.85	367.80
*** Node Name: N-B140		Group: HH							
2YR	19.62	7.45	10.00	0.0013	409843.60	14.78	23.01	22.37	17.65
10YR	21.35	8.73	10.00	0.0014	475121.61	14.17	30.82	25.98	31.62
25YR	21.64	9.16	10.00	0.0014	475897.09	15.02	37.82	27.79	39.86
50YR	21.83	9.62	10.00	0.0012	478772.18	14.52	41.66	24.18	46.78
100YR	21.42	10.02	10.00	0.0010	490391.74	20.37	60.22	23.84	54.13
500YR	21.26	10.48	10.00	0.0008	524465.23	20.65	71.60	25.47	62.83
*** Node Name: N-B150		Group: HH							
2YR	19.59	7.45	10.00	0.0013	157472.21	0.00	0.00	28.24	7.15
10YR	21.35	8.73	10.00	0.0015	352848.91	0.00	0.00	24.77	12.24
25YR	21.64	9.16	10.00	0.0014	355020.31	0.00	0.00	27.56	12.93
50YR	21.83	9.62	10.00	0.0012	363481.37	0.00	0.00	29.16	14.22
100YR	21.42	10.02	10.00	0.0010	398197.77	0.00	0.00	24.50	35.62
500YR	21.26	10.48	10.00	0.0008	500259.37	0.00	0.00	25.47	45.90
*** Node Name: N-B160		Group: HH							
2YR	18.86	7.74	10.00	0.0006	342282.80	14.03	310.99	17.24	294.73
10YR	21.08	8.86	10.00	0.0008	590326.94	18.64	509.77	19.50	500.90
25YR	21.37	9.27	10.00	0.0008	725943.35	19.33	616.97	19.43	604.74
50YR	21.60	9.70	10.00	0.0008	799563.39	19.31	755.46	19.76	734.56
100YR	21.06	10.11	10.00	0.0008	862852.77	20.35	904.17	20.39	899.92
500YR	20.89	10.55	10.00	0.0007	878225.86	19.14	1126.83	19.61	1103.15
*** Node Name: N-B170		Group: HH							
2YR	18.88	7.74	9.50	0.0006	67701.19	12.42	26.34	12.34	5.35
10YR	21.10	8.86	9.50	0.0008	71017.11	12.42	42.86	12.33	8.01
25YR	21.38	9.27	9.50	0.0008	92437.76	12.42	50.34	12.34	10.18
50YR	21.62	9.71	9.50	0.0008	110642.40	12.42	57.79	12.35	13.43
100YR	21.07	10.11	9.50	0.0008	110642.40	12.42	66.69	12.42	20.30
500YR	20.90	10.55	9.50	0.0007	110642.40	12.42	77.76	12.42	32.10
*** Node Name: N-B180		Group: HH							
2YR	18.41	7.84	10.00	0.0013	47345.30	13.97	201.66	14.03	189.00
10YR	20.62	8.94	10.00	0.0011	94817.24	15.29	273.70	15.33	269.30
25YR	21.06	9.35	10.00	0.0010	133629.15	14.79	317.48	14.87	310.99
50YR	21.37	9.78	10.00	0.0009	160142.09	14.42	357.19	14.48	348.97
100YR	20.81	10.19	10.00	0.0009	169236.63	14.11	400.31	14.11	389.97
500YR	20.76	10.63	10.00	0.0010	175491.42	13.83	449.05	13.88	435.56

```
--------Class: Basin----------------------------------------------------------
Basin: B-F080     Node: N-F080     Status: On Site    Type: SCS Unit Hydr
Group: MC
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 7.55        Concentration Time(min): 38
            Curve #: 73                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B-AB1A

--------Class: Basin----------------------------------------------------------
Basin: B-A030     Node: N-A030     Status: On Site    Type: SCS Unit Hydr
Group: RR
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 536.7       Concentration Time(min): 300
            Curve #: 84                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin----------------------------------------------------------
Basin: B-A040     Node: N-A040     Status: On Site    Type: SCS Unit Hydr
Group: RR
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 402.6       Concentration Time(min): 275
            Curve #: 83                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin----------------------------------------------------------
Basin: B-A041     Node: N-A040     Status: On Site    Type: SCS Unit Hydr
Group: RR
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 388.4       Concentration Time(min): 270
            Curve #: 85                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin----------------------------------------------------------
Basin: B-A060     Node: N-A060     Status: On Site    Type: SCS Unit Hydr
Group: RR
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 62.8        Concentration Time(min): 133
            Curve #: 76                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin----------------------------------------------------------
Basin: B-A100     Node: N-A100     Status: On Site    Type: SCS Unit Hydr
Group: RR
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 52          Concentration Time(min): 129
            Curve #: 82                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin----------------------------------------------------------
Basin: B-A120     Node: N-A120     Status: On Site    Type: SCS Unit Hydr
Group: RR
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 99.3        Concentration Time(min): 135
            Curve #: 83                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin----------------------------------------------------------
Basin: B-A140     Node: N-A140     Status: On Site    Type: SCS Unit Hydr
Group: RR
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 348.5       Concentration Time(min): 260
            Curve #: 79                  Time Shift(hrs): 0
            DCIA(%): 0
```

```
--------Class: Basin-----------------------------------------------------------
Basin: B-C010     Node: N-C010     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 27.6         Concentration Time(min): 52
            Curve #: 83                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C050     Node: N-C050     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 7.6          Concentration Time(min): 51
            Curve #: 80                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C080     Node: N-C080     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 84.5         Concentration Time(min): 116
            Curve #: 81                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C120     Node: N-C120     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 60.7         Concentration Time(min): 100
            Curve #: 84                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C130     Node: N-C130     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 40.6         Concentration Time(min): 40
            Curve #: 83                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C140     Node: N-C140     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 12.2         Concentration Time(min): 37
            Curve #: 85                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C150     Node: N-C150     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 36.1         Concentration Time(min): 88
            Curve #: 78                  Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C170     Node: N-C170     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 101.2        Concentration Time(min): 61
```

```
            Curve #: 82                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C190     Node: N-C190     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 23.5         Concentration Time(min): 48
            Curve #: 82                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C230     Node: N-C230     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 48           Concentration Time(min): 28
            Curve #: 84                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-C270     Node: N-C270     Status: On Site    Type: SCS Unit Hydr
Group: SM1
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 35.7         Concentration Time(min): 81
            Curve #: 77                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D010     Node: N-D010     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 23.1         Concentration Time(min): 103
            Curve #: 76                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D020     Node: N-D020     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 30.5         Concentration Time(min): 74
            Curve #: 81                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D030     Node: N-D030     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 56.5         Concentration Time(min): 84
            Curve #: 86                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D050     Node: N-D050     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 22.6         Concentration Time(min): 33
            Curve #: 86                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D080     Node: N-D080     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
```

```
Rainfall Amount(in): 4.6
          Area(ac): 6.8          Concentration Time(min): 38
           Curve #: 84                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D110     Node: N-D110     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII          Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
          Area(ac): 29.8         Concentration Time(min): 43
           Curve #: 84                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D130     Node: N-D130     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII          Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
          Area(ac): 15.6         Concentration Time(min): 71
           Curve #: 85                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D131     Node: N-D130     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII          Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
          Area(ac): 24.9         Concentration Time(min): 96
           Curve #: 63                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D132     Node: N-D130     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII          Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
          Area(ac): 46.3         Concentration Time(min): 93
           Curve #: 80                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D140     Node: N-D140     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII          Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
          Area(ac): 19.8         Concentration Time(min): 62
           Curve #: 84                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D160     Node: N-D160     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII          Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
          Area(ac): 76.4         Concentration Time(min): 42
           Curve #: 86                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D190     Node: N-D190     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII          Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
          Area(ac): 5.7          Concentration Time(min): 23
           Curve #: 86                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-D210     Node: N-D210     Status: On Site    Type: SCS Unit Hydr
Group: SM2
```

```
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 18.53        Concentration Time(min): 54
            Curve #: 83                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B010A

--------Class: Basin-----------------------------------------------------------
Basin: B-D220     Node: N-D220     Status: On Site    Type: SCS Unit Hydr
Group: SM2
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 11.75        Concentration Time(min): 45
            Curve #: 83                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B010

--------Class: Basin-----------------------------------------------------------
Basin: B-E010     Node: N-E010     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 223.4        Concentration Time(min): 225
            Curve #: 72                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------
Basin: B-E020     Node: N-E020     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 5.75         Concentration Time(min): 18
            Curve #: 85                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B024

--------Class: Basin-----------------------------------------------------------
Basin: B-E030     Node: N-E030     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 6.47         Concentration Time(min): 24
            Curve #: 85                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B023

--------Class: Basin-----------------------------------------------------------
Basin: B-E040     Node: N-E040     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 20.89        Concentration Time(min): 29
            Curve #: 85                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B022

--------Class: Basin-----------------------------------------------------------
Basin: B-E050     Node: N-E050     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 14.49        Concentration Time(min): 20
            Curve #: 85                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B021

--------Class: Basin-----------------------------------------------------------
Basin: B-E060     Node: N-E060     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 4.25         Concentration Time(min): 13
            Curve #: 85                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B020

--------Class: Basin-----------------------------------------------------------
```

```
Basin: B-E070     Node: N-E070     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 5.64        Concentration Time(min): 17
            Curve #: 84                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B019

--------Class: Basin-----------------------------------------------------------
Basin: B-E080     Node: N-E080     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 7.61        Concentration Time(min): 16
            Curve #: 84                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B018

--------Class: Basin-----------------------------------------------------------
Basin: B-E090     Node: N-E090     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 14.98       Concentration Time(min): 49
            Curve #: 84                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B012

--------Class: Basin-----------------------------------------------------------
Basin: B-E100     Node: N-E100     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 18.64       Concentration Time(min): 53
            Curve #: 83                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B011

--------Class: Basin-----------------------------------------------------------
Basin: B-E110     Node: N-E110     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 13.04       Concentration Time(min): 45
            Curve #: 83                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B005A

--------Class: Basin-----------------------------------------------------------
Basin: B-E120     Node: N-E120     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 4.37        Concentration Time(min): 25
            Curve #: 82                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B008

--------Class: Basin-----------------------------------------------------------
Basin: B-E130     Node: N-E130     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 3.57        Concentration Time(min): 20
            Curve #: 83                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B007

--------Class: Basin-----------------------------------------------------------
Basin: B-E140     Node: N-E140     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 5.37        Concentration Time(min): 25
            Curve #: 81                  Time Shift(hrs): 0
            DCIA(%): 0

          PS B006
```

```
--------Class: Basin-----------------------------------------------------------
Basin: B-E150     Node: N-E150     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 2.97         Concentration Time(min): 23
            Curve #: 83                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B002

--------Class: Basin-----------------------------------------------------------
Basin: B-E160     Node: N-E160     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 3.97         Concentration Time(min): 29
            Curve #: 83                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B001

--------Class: Basin-----------------------------------------------------------
Basin: B-E170     Node: N-E170     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 9.21         Concentration Time(min): 38
            Curve #: 83                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B005

--------Class: Basin-----------------------------------------------------------
Basin: B-E180     Node: N-E180     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 3.2          Concentration Time(min): 26
            Curve #: 83                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B004

--------Class: Basin-----------------------------------------------------------
Basin: B-E190     Node: N-E190     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 5.1          Concentration Time(min): 30
            Curve #: 83                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B003

--------Class: Basin-----------------------------------------------------------
Basin: B-E200     Node: N-E200     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 6.45         Concentration Time(min): 15
            Curve #: 84                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B017A

--------Class: Basin-----------------------------------------------------------
Basin: B-E210     Node: N-E210     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 2.15         Concentration Time(min): 10
            Curve #: 84                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B017

--------Class: Basin-----------------------------------------------------------
Basin: B-E220     Node: N-E220     Status: On Site    Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 6.73         Concentration Time(min): 15
            Curve #: 84                   Time Shift(hrs): 0
            DCIA(%): 0
```

```
          PS B016

--------Class: Basin----------------------------------------------------------
Basin: B-E230      Node: N-E230      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 20.1         Concentration Time(min): 30
            Curve #: 84                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B01S

--------Class: Basin----------------------------------------------------------
Basin: B-E231      Node: N-E230      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 4            Concentration Time(min): 47
            Curve #: 79                   Time Shift(hrs): 0
            DCIA(%): 0

          PS BOFF3

--------Class: Basin----------------------------------------------------------
Basin: B-E240      Node: N-E240      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 4.48         Concentration Time(min): 12
            Curve #: 84                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B014

--------Class: Basin----------------------------------------------------------
Basin: B-E250      Node: N-E250      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 5.35         Concentration Time(min): 20
            Curve #: 84                   Time Shift(hrs): 0
            DCIA(%): 0

          PS B013

--------Class: Basin----------------------------------------------------------
Basin: B-E251      Node: N-E250      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 59           Concentration Time(min): 142
            Curve #: 79                   Time Shift(hrs): 0
            DCIA(%): 0

          PS BOFF2

--------Class: Basin----------------------------------------------------------
Basin: B-E252      Node: N-E250      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 58           Concentration Time(min): 145
            Curve #: 79                   Time Shift(hrs): 0
            DCIA(%): 0

          PS BOFF1

--------Class: Basin----------------------------------------------------------
Basin: B-E260      Node: N-E260      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 743.9        Concentration Time(min): 330
            Curve #: 77                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin----------------------------------------------------------
Basin: B-E270      Node: N-E270      Status: On Site     Type: SCS Unit Hydr
Group: VG
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: SCSIII           Storm Duration(hrs): 24
Rainfall Amount(in): 4.6
           Area(ac): 7.94         Concentration Time(min): 49
```

```
            Curve #: 81                    Time Shift(hrs): 0
            DCIA(%): 0

          PS BOFF4

--------Class: Pipe-----------------------------------------------------------

           Name: L-G020P1      From Node: N-G020    Length(ft): 28
          Group: BL              To Node: N-G010         Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 48            48           Entrance Loss Coef: 0.2
       Rise(in): 48            48               Exit Loss Coef: 0.2
     Invert(ft): 2.99          2.96             Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-G020P2      From Node: N-G020    Length(ft): 68
          Group: BL              To Node: N-G010         Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 48            48           Entrance Loss Coef: 0.2
       Rise(in): 48            48               Exit Loss Coef: 0.2
     Invert(ft): 2.77          2.73             Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-G040P1      From Node: N-G040    Length(ft): 24
          Group: BL              To Node: N-G030         Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 36            36           Entrance Loss Coef: 0.9
       Rise(in): 36            36               Exit Loss Coef: 0.9
     Invert(ft): 6             6                Bend Loss Coef: 0
    Manning's N: 0.025         0.025         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 6             6              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 6             6             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

--------Class: Pipe-----------------------------------------------------------

           Name: L-G060P1      From Node: N-G060    Length(ft): 42
          Group: BL              To Node: N-G050         Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 8             8            Entrance Loss Coef: 0.5
       Rise(in): 8             8                Exit Loss Coef: 0.5
     Invert(ft): 9.5           9.25             Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
```

```
     Circular Concrete: Groove end projecting                    1     3

                  PS L-I1
--------Class: Pipe-----------------------------------------------------------

           Name: L-G070P1     From Node: N-G070    Length(ft): 32
          Group: BL             To Node: N-G050         Count: 1

                UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 15           15          Entrance Loss Coef: 0.5
       Rise(in): 15           15              Exit Loss Coef: 0
     Invert(ft): 9.5          9.45            Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                  PS L-H1
--------Class: Pipe-----------------------------------------------------------

           Name: L-G080P1     From Node: N-G080    Length(ft): 106
          Group: BL             To Node: N-G070         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Arch         Arch                      Flow: Both
       Span(in): 38           38          Entrance Loss Coef: 0.5
       Rise(in): 24           24              Exit Loss Coef: 0.5
     Invert(ft): 8.65         8.65            Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Pipe Arch 18" Corner Radius CM: 90ø headwall                34    1

     Downstream FHWA Inlet Edge Description:
     Pipe Arch 18" Corner Radius CM: 90ø headwall                34    1

                  PS L-G1
--------Class: Pipe-----------------------------------------------------------

           Name: L-G090P1     From Node: N-G090    Length(ft): 104
          Group: BL             To Node: N-G080         Count: 1

                UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 30           30          Entrance Loss Coef: 0.5
       Rise(in): 30           30              Exit Loss Coef: 0.5
     Invert(ft): 12           6.5             Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                  PS L-F1
--------Class: Pipe-----------------------------------------------------------

           Name: L-G110P1     From Node: N-G110    Length(ft): 381
          Group: BL             To Node: N-G100         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 36           36          Entrance Loss Coef: 0.5
       Rise(in): 36           36              Exit Loss Coef: 0.5
     Invert(ft): 9            8.5             Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3
```

```
                PS L-D1
--------Class: Pipe-----------------------------------------------------------

          Name: L-G120P1     From Node: N-G120    Length(ft): 104
         Group: BL             To Node: N-G110         Count: 3

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 42           42          Entrance Loss Coef: 0.5
      Rise(in): 42           42              Exit Loss Coef: 0.5
    Invert(ft): 4.5          4.5             Bend Loss Coef: 0
  Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0            Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS L-C1
--------Class: Pipe-----------------------------------------------------------

          Name: L-G130P1     From Node: N-G130    Length(ft): 186
         Group: BL             To Node: N-G120         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 36           36          Entrance Loss Coef: 0.5
      Rise(in): 36           36              Exit Loss Coef: 0.5
    Invert(ft): 10.5         6.5             Bend Loss Coef: 0
  Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0            Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS L-B1
--------Class: Pipe-----------------------------------------------------------

          Name: L-G140P1     From Node: N-G140    Length(ft): 370
         Group: BL             To Node: N-G130         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 36           36          Entrance Loss Coef: 0.5
      Rise(in): 36           36              Exit Loss Coef: 0.5
    Invert(ft): 7            7               Bend Loss Coef: 0
  Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0            Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS L-A1
--------Class: Pipe-----------------------------------------------------------

          Name: L-G150P1     From Node: N-G150    Length(ft): 282
         Group: BL             To Node: N-G140         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 36           36          Entrance Loss Coef: 0.5
      Rise(in): 36           36              Exit Loss Coef: 0.5
    Invert(ft): 10.75        10.5            Bend Loss Coef: 0
  Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0            Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS L-OFF
--------Class: Pipe-----------------------------------------------------------
```

```
          Name: L-G160P1     From Node: N-G160    Length(ft): 38
         Group: BL             To Node: N-G100         Count: 1

                UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular     Circular                   Flow: Both
      Span(in): 8            8             Entrance Loss Coef: 0.5
      Rise(in): 8            8                 Exit Loss Coef: 0.5
    Invert(ft): 11           10.8              Bend Loss Coef: 0
  Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                 PS L-E1
--------Class: Pipe-----------------------------------------------------------

          Name: L-G180P1     From Node: N-G180    Length(ft): 28
         Group: BL             To Node: N-G170         Count: 1

                UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular     Circular                   Flow: Both
      Span(in): 36           36            Entrance Loss Coef: 0.9
      Rise(in): 36           36                Exit Loss Coef: 0.9
    Invert(ft): 5.7          5.7               Bend Loss Coef: 0
  Manning's N: 0.025         0.025         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular CMP: Projecting                                  2     3

    Downstream FHWA Inlet Edge Description:
    Circular CMP: Projecting                                  2     3

                 Existing dirt road over 36" pipe
--------Class: Pipe-----------------------------------------------------------

          Name: L-B060P1     From Node: N-B060    Length(ft): 68
         Group: HH             To Node: N-B050         Count: 1

                UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular     Circular                   Flow: Both
      Span(in): 24           24            Entrance Loss Coef: 0.2
      Rise(in): 24           24                Exit Loss Coef: 0.2
    Invert(ft): 2.25         1.74              Bend Loss Coef: 0
  Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall                1     1

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-B230P1     From Node: N-B230    Length(ft): 40
         Group: HH             To Node: N-B220         Count: 1

                UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular     Circular                   Flow: Both
      Span(in): 24           24            Entrance Loss Coef: 0.2
      Rise(in): 24           24                Exit Loss Coef: 0.2
    Invert(ft): 9            4.6               Bend Loss Coef: 0
  Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-F020P1     From Node: N-F020    Length(ft): 222
```

```
          Group: MC              To Node: N-F010          Count: 1

                 UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 60           60          Entrance Loss Coef: 0.4
       Rise(in): 60           60              Exit Loss Coef: 0
     Invert(ft): 3            2.94            Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end w/ headwall                  1     2

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1     3

                  PS L-AB4A
--------Class: Pipe-----------------------------------------------------------

           Name: L-F030P1     From Node: N-F030    Length(ft): 425
          Group: MC             To Node: N-F020          Count: 2

                 UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 36           36          Entrance Loss Coef: 0.4
       Rise(in): 36           36              Exit Loss Coef: 0
     Invert(ft): 7            4               Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end w/ headwall                  1     2

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end w/ headwall                  1     2

                  PS L-AB4
--------Class: Pipe-----------------------------------------------------------

           Name: L-F040P1     From Node: N-F040    Length(ft): 120
          Group: MC             To Node: N-F030          Count: 3

                 UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 30           30          Entrance Loss Coef: 0.4
       Rise(in): 30           30              Exit Loss Coef: 0
     Invert(ft): 9            7               Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1     3

                  PS L-AB3
--------Class: Pipe-----------------------------------------------------------

           Name: L-F050P1     From Node: N-F050    Length(ft): 362
          Group: MC             To Node: N-F040          Count: 1

                 UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 48           48          Entrance Loss Coef: 0.4
       Rise(in): 48           48              Exit Loss Coef: 0
     Invert(ft): 7            5.5             Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end w/ headwall                  1     2

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1     3

                  PS L-AB2A
--------Class: Pipe-----------------------------------------------------------

           Name: L-F060P1     From Node: N-F060    Length(ft): 20
          Group: MC             To Node: N-F050          Count: 2
```

```
                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 36           36           Entrance Loss Coef: 0.4
      Rise(in): 36           36               Exit Loss Coef: 0
    Invert(ft): 9.5          7                Bend Loss Coef: 0
   Manning's N: 0.012        0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                 1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end w/ headwall                1     2

                PS L-AB2
--------Class: Pipe-----------------------------------------------------------

          Name: L-F070P1     From Node: N-F070    Length(ft): 320
         Group: MC             To Node: N-F060         Count: 1

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 36           36           Entrance Loss Coef: 0.5
      Rise(in): 36           36               Exit Loss Coef: 0
    Invert(ft): 10.5         9                Bend Loss Coef: 0
   Manning's N: 0.012        0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end w/ headwall                1     2

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                 1     3

                PS L-AB1
--------Class: Pipe-----------------------------------------------------------

          Name: L-F080P1     From Node: N-F080    Length(ft): 260
         Group: MC             To Node: N-F070         Count: 1

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 24           24           Entrance Loss Coef: 0.5
      Rise(in): 24           24               Exit Loss Coef: 0
    Invert(ft): 12.3         11               Bend Loss Coef: 0
   Manning's N: 0.012        0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                 1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end w/ headwall                1     2

                PS L-AB1A
--------Class: Pipe-----------------------------------------------------------

          Name: L-A060P1     From Node: N-A060    Length(ft): 43
         Group: RR             To Node: N-A050         Count: 1

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 12           12           Entrance Loss Coef: 0.2
      Rise(in): 12           12               Exit Loss Coef: 0.2
    Invert(ft): 3            3                Bend Loss Coef: 0
   Manning's N: 0.012        0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall               1     1

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall               1     1

--------Class: Pipe-----------------------------------------------------------

          Name: L-A060P2     From Node: N-A060    Length(ft): 43
         Group: RR             To Node: N-A050         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Rectangular  Rectangular              Flow: Both
```

```
        Span(in): 96          96          Entrance Loss Coef: 0.2
        Rise(in): 30          30              Exit Loss Coef: 0.2
      Invert(ft): 4           4               Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Rectangular Box: 30ø to 75ø wingwall flares                8     1

     Downstream FHWA Inlet Edge Description:
     Rectangular Box: 30ø to 75ø wingwall flares                8     1

--------Class: Pipe-----------------------------------------------------------

           Name: L-A100P1      From Node: N-A100     Length(ft): 52
          Group: RR              To Node: N-A090          Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 30            30           Entrance Loss Coef: 0.2
       Rise(in): 30            30               Exit Loss Coef: 0.2
      Invert(ft): 5.85         6.76             Bend Loss Coef: 0
    Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-A120P1      From Node: N-A120     Length(ft): 74
          Group: RR              To Node: N-A110          Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 68            68           Entrance Loss Coef: 0.2
       Rise(in): 68            68               Exit Loss Coef: 0.2
      Invert(ft): 1.81         2.06             Bend Loss Coef: 0
    Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 34            34           Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                   1

                 Arch part of concrete culvert under RR
--------Class: Pipe-----------------------------------------------------------

           Name: L-A120P2      From Node: N-A120     Length(ft): 74
          Group: RR              To Node: N-A110          Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Rectangular   Rectangular                Flow: Both
       Span(in): 68            68           Entrance Loss Coef: 0.2
       Rise(in): 38            38               Exit Loss Coef: 0.2
      Invert(ft): 1.48         1.73             Bend Loss Coef: 0
    Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Rectangular Box: 30ø to 75ø wingwall flares                8     1

     Downstream FHWA Inlet Edge Description:
     Rectangular Box: 30ø to 75ø wingwall flares                8     1

                 Bottom part of concrete culvert under RR
--------Class: Pipe-----------------------------------------------------------

           Name: L-A120P3      From Node: N-A120     Length(ft): 74
          Group: RR              To Node: N-A110          Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 72            72           Entrance Loss Coef: 0.2
       Rise(in): 72            72               Exit Loss Coef: 0.2
```

Reach RR
XING

```
     Invert(ft): 1.82          1.73            Bend Loss Coef: 0
    Manning's N: 0.012         0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                 steel pipe #1
--------Class: Pipe-----------------------------------------------------------

           Name: L-A120P4      From Node: N-A120    Length(ft): 74
          Group: RR              To Node: N-A110         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular     Circular                    Flow: Both
       Span(in): 72           72           Entrance Loss Coef: 0.2
       Rise(in): 72           72               Exit Loss Coef: 0.2
     Invert(ft): 1.5          1.73            Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                 steel pipe #2
--------Class: Pipe-----------------------------------------------------------

           Name: L-A120P5      From Node: N-A120    Length(ft): 74
          Group: RR              To Node: N-A110         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular     Circular                    Flow: Both
       Span(in): 72           72           Entrance Loss Coef: 0.2
       Rise(in): 72           72               Exit Loss Coef: 0.2
     Invert(ft): 1.03         1.7             Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                 steel pipe #3
--------Class: Pipe-----------------------------------------------------------

           Name: L-A120P6      From Node: N-A120    Length(ft): 46
          Group: RR              To Node: N-A110         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular     Circular                    Flow: Both
       Span(in): 48           48           Entrance Loss Coef: 0.2
       Rise(in): 48           48               Exit Loss Coef: 0.2
     Invert(ft): 2.39         3.17            Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                 Pipe off to the side
--------Class: Pipe-----------------------------------------------------------

           Name: L-A120P7      From Node: N-A120    Length(ft): 46
          Group: RR              To Node: N-A110         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular     Circular                    Flow: Both
       Span(in): 48           48           Entrance Loss Coef: 0.2
       Rise(in): 48           48               Exit Loss Coef: 0.2
     Invert(ft): 2.97         3.51            Bend Loss Coef: 0
    Manning's N: 0.012        0.012        Outlet Cntrl Spec: Use dc or tw
```

```
   Top Clip(in): 0            0            Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0           Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                 Pipe off to the side
--------Class: Pipe-------------------------------------------------------------

          Name: L-A140P1     From Node: N-A140    Length(ft): 46
         Group: RR             To Node: N-A130         Count: 1

               UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular    Circular                    Flow: Both
      Span(in): 48          48             Entrance Loss Coef: 0.2
      Rise(in): 48          48                 Exit Loss Coef: 0.2
    Invert(ft): 3.33        3.39               Bend Loss Coef: 0
   Manning's N: 0.012       0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0          0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0          0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-------------------------------------------------------------

          Name: L-A140P2     From Node: N-A140    Length(ft): 46
         Group: RR             To Node: N-A130         Count: 1

               UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular    Circular                    Flow: Both
      Span(in): 48          48             Entrance Loss Coef: 0.2
      Rise(in): 48          48                 Exit Loss Coef: 0.2
    Invert(ft): 3.47        3.81               Bend Loss Coef: 0
   Manning's N: 0.012       0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0          0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0          0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-------------------------------------------------------------

          Name: L-C010P1     From Node: N-C010    Length(ft): 48
         Group: SM1            To Node: N-B210         Count: 1

               UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular    Circular                    Flow: Both
      Span(in): 60          60             Entrance Loss Coef: 0.9
      Rise(in): 60          60                 Exit Loss Coef: 0.9
    Invert(ft): 2.93        2.5                Bend Loss Coef: 0
   Manning's N: 0.025       0.025         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0          0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0          0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                    2     3

     Downstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                    2     3

--------Class: Pipe-------------------------------------------------------------

          Name: L-C050P1     From Node: N-C050    Length(ft): 66
         Group: SM1            To Node: N-C040         Count: 1

               UPSTREAM     DOWNSTREAM             Equation: Average K
      Geometry: Circular    Circular                    Flow: Both
      Span(in): 36          36             Entrance Loss Coef: 0.2
      Rise(in): 36          36                 Exit Loss Coef: 0.2
    Invert(ft): 3.63        3.7                Bend Loss Coef: 0
   Manning's N: 0.012       0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0          0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0          0             Stabilizer Option: None
```

2-60's - OUT

STILL SHADOWING

? 36" @

```
     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-C050P2      From Node: N-C050    Length(ft): 66
          Group: SM1             To Node: N-C040         Count: 1

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 36            36           Entrance Loss Coef: 0.2
       Rise(in): 36            36               Exit Loss Coef: 0.2
     Invert(ft): 3.94          3.88             Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-C060P1      From Node: N-C060    Length(ft): 138
          Group: SM1             To Node: N-C020         Count: 2

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 18            18           Entrance Loss Coef: 0.2
       Rise(in): 18            18               Exit Loss Coef: 0.2
     Invert(ft): 5.48          4.7              Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                  1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                  Pipes leaving curb inlet
--------Class: Pipe-----------------------------------------------------------

           Name: L-C060P2      From Node: N-C060    Length(ft): 134
          Group: SM1             To Node: N-C030         Count: 2

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 18            18           Entrance Loss Coef: 0.2
       Rise(in): 18            18               Exit Loss Coef: 0.2
     Invert(ft): 4.78          3.86             Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                  1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                  Pipes leaving curb inlet
--------Class: Pipe-----------------------------------------------------------

           Name: L-C060P3      From Node: N-C060    Length(ft): 130
          Group: SM1             To Node: N-C040         Count: 2

                 UPSTREAM      DOWNSTREAM             Equation: Average K
       Geometry: Circular      Circular                   Flow: Both
       Span(in): 18            18           Entrance Loss Coef: 0.2
       Rise(in): 18            18               Exit Loss Coef: 0.2
     Invert(ft): 6.15          5.41             Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None
```

```
Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall                1     1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting                  1     3

                Pipes leaving curb inlet
--------Class: Pipe-----------------------------------------------------------

          Name: L-C080P1      From Node: N-C080    Length(ft): 60
         Group: SM1             To Node: N-C070         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 48            48           Entrance Loss Coef: 0.2
      Rise(in): 48            48               Exit Loss Coef: 0.2
    Invert(ft): 4.59          4.16             Bend Loss Coef: 0
   Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting                  1     3

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting                  1     3

                Pipe #1 under BeesFerry
--------Class: Pipe-----------------------------------------------------------

          Name: L-C080P2      From Node: N-C080    Length(ft): 60
         Group: SM1             To Node: N-C070         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 48            48           Entrance Loss Coef: 0.2
      Rise(in): 48            48               Exit Loss Coef: 0.2
    Invert(ft): 3.98          4.07             Bend Loss Coef: 0
   Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting                  1     3

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting                  1     3

                Pipe #2 under BeesFerry
--------Class: Pipe-----------------------------------------------------------

          Name: L-C100P1      From Node: N-C100    Length(ft): 60
         Group: SM1             To Node: N-C090         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 48            48           Entrance Loss Coef: 0.2
      Rise(in): 48            48               Exit Loss Coef: 0.2
    Invert(ft): 4.3           3.93             Bend Loss Coef: 0
   Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting                  1     3

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting                  1     3

                Pipe #1 under BeesFerry
--------Class: Pipe-----------------------------------------------------------

          Name: L-C100P2      From Node: N-C100    Length(ft): 60
         Group: SM1             To Node: N-C090         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 48            48           Entrance Loss Coef: 0.2
      Rise(in): 48            48               Exit Loss Coef: 0.2
    Invert(ft): 3.96          4.19             Bend Loss Coef: 0
   Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
```

Bees Ferry

```
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

                  Pipe #2 under BeesFerry
--------Class: Pipe-----------------------------------------------------------

           Name: L-C140P1      From Node: N-C140    Length(ft): 28
          Group: SM1             To Node: N-C130         Count: 1

                 UPSTREAM      DOWNSTREAM            Equation: Average K
       Geometry: Circular      Circular                  Flow: Both
       Span(in): 18            18            Entrance Loss Coef: 0.2
       Rise(in): 18            18                Exit Loss Coef: 0.2
     Invert(ft): 9.5           9                 Bend Loss Coef: 0
    Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-C170P1      From Node: N-C170    Length(ft): 88
          Group: SM1             To Node: N-C160         Count: 2

                 UPSTREAM      DOWNSTREAM            Equation: Average K
       Geometry: Circular      Circular                  Flow: Both
       Span(in): 48            48            Entrance Loss Coef: 0.9
       Rise(in): 48            48                Exit Loss Coef: 0.9
     Invert(ft): 4.3           3.86              Bend Loss Coef: 0
    Manning's N: 0.025         0.025         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                    2     3

     Downstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                    2     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-C190P1      From Node: N-C190    Length(ft): 44
          Group: SM1             To Node: N-B200         Count: 1

                 UPSTREAM      DOWNSTREAM            Equation: Average K
       Geometry: Circular      Circular                  Flow: Both
       Span(in): 66            66            Entrance Loss Coef: 0.9
       Rise(in): 66            66                Exit Loss Coef: 0.9
     Invert(ft): 3             2.5               Bend Loss Coef: 0
    Manning's N: 0.025         0.025         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                    2     3

     Downstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                    2     3

--------Class: Pipe-----------------------------------------------------------

           Name: L-C210P1      From Node: N-C210    Length(ft): 20
          Group: SM1             To Node: N-C200         Count: 2

                 UPSTREAM      DOWNSTREAM            Equation: Average K
       Geometry: Arch          Arch                      Flow: Both
       Span(in): 48            48            Entrance Loss Coef: 0.9
       Rise(in): 36            36                Exit Loss Coef: 0.9
     Invert(ft): 3.75          3.75              Bend Loss Coef: 0
    Manning's N: 0.025         0.025         Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Pipe Arch 18" Corner Radius CM: Projecting                  34    3
```

```
     Downstream FHWA Inlet Edge Description:
     Pipe Arch 18" Corner Radius CM: Projecting                34    3

--------Class: Pipe-----------------------------------------------------------

          Name: L-C230P1      From Node: N-C230    Length(ft): 64
         Group: SM1             To Node: N-C220         Count: 5

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 36            36           Entrance Loss Coef: 0.2
      Rise(in): 36            36               Exit Loss Coef: 0.2
    Invert(ft): 5.95          5.55             Bend Loss Coef: 0
  Manning's N: 0.012          0.012        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                 Inverts are average of all 5 pipes
--------Class: Pipe-----------------------------------------------------------

          Name: L-C240P1      From Node: N-C240    Length(ft): 54
         Group: SM1             To Node: N-C230         Count: 5

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 36            36           Entrance Loss Coef: 0.2
      Rise(in): 36            36               Exit Loss Coef: 0.2
    Invert(ft): 6.2           6.2              Bend Loss Coef: 0
  Manning's N: 0.012          0.012        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-C270P1      From Node: N-C270    Length(ft): 100
         Group: SM1             To Node: N-B190         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 18            18           Entrance Loss Coef: 0.2
      Rise(in): 18            18               Exit Loss Coef: 0.2
    Invert(ft): 7             2                Bend Loss Coef: 0
  Manning's N: 0.012          0.012        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D020P1      From Node: N-D020    Length(ft): 24
         Group: SM2             To Node: N-D010         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 18            18           Entrance Loss Coef: 0.9
      Rise(in): 18            18               Exit Loss Coef: 0.9
    Invert(ft): 4             4                Bend Loss Coef: 0
  Manning's N: 0.025          0.025        Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                  2     3

     Downstream FHWA Inlet Edge Description:
     Circular CMP: Projecting                                  2     3
```

```
--------Class: Pipe-----------------------------------------------------------

          Name: L-D030P1      From Node: N-D030    Length(ft): 20
         Group: SM2             To Node: N-D120         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 18            18            Entrance Loss Coef: 0.9
      Rise(in): 18            18                Exit Loss Coef: 0.9
    Invert(ft): 6             6                 Bend Loss Coef: 0
  Manning's N: 0.025          0.025         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular CMP: Projecting                                    2     3

    Downstream FHWA Inlet Edge Description:
    Circular CMP: Projecting                                    2     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D040P1      From Node: N-D040    Length(ft): 56
         Group: SM2             To Node: N-D030         Count: 5

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 18            18            Entrance Loss Coef: 0.2
      Rise(in): 18            18                Exit Loss Coef: 0.2
    Invert(ft): 6.17          5.38              Bend Loss Coef: 0
  Manning's N: 0.012          0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D050P1      From Node: N-D050    Length(ft): 60
         Group: SM2             To Node: N-D040         Count: 2

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 8             8             Entrance Loss Coef: 0.2
      Rise(in): 8             8                 Exit Loss Coef: 0.2
    Invert(ft): 9             7                 Bend Loss Coef: 0
  Manning's N: 0.012          0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall                  1     1

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D060P1      From Node: N-D060    Length(ft): 225
         Group: SM2             To Node: N-D050         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 24            24            Entrance Loss Coef: 0.9
      Rise(in): 24            24                Exit Loss Coef: 0.9
    Invert(ft): 10            8                 Bend Loss Coef: 0
  Manning's N: 0.025          0.025         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular CMP: Projecting                                    2     3

    Downstream FHWA Inlet Edge Description:
    Circular CMP: Projecting                                    2     3
```

```
--------Class: Pipe-----------------------------------------------------------

          Name: L-D090P1      From Node: N-D090    Length(ft): 108
         Group: SM2             To Node: N-D030         Count: 4

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 36            36           Entrance Loss Coef: 0.2
      Rise(in): 36            36               Exit Loss Coef: 0.2
    Invert(ft): 6.2           5.3              Bend Loss Coef: 0
  Manning's N: 0.012          0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D110P1      From Node: N-D110    Length(ft): 24
         Group: SM2             To Node: N-D100         Count: 1

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 24            24           Entrance Loss Coef: 0.2
      Rise(in): 24            24               Exit Loss Coef: 0.2
    Invert(ft): 6.2           6.2              Bend Loss Coef: 0
  Manning's N: 0.012          0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D160P1      From Node: N-D160    Length(ft): 12
         Group: SM2             To Node: N-D150         Count: 1

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 12            12           Entrance Loss Coef: 0.2
      Rise(in): 12            12               Exit Loss Coef: 0.2
    Invert(ft): 7             7                Bend Loss Coef: 0
  Manning's N: 0.012          0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D170P1      From Node: N-D170    Length(ft): 56
         Group: SM2             To Node: N-D160         Count: 3

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 30            30           Entrance Loss Coef: 0.2
      Rise(in): 30            30               Exit Loss Coef: 0.2
    Invert(ft): 7.5           7.5              Bend Loss Coef: 0
  Manning's N: 0.012          0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                    1     3

--------Class: Pipe-----------------------------------------------------------
```

```
          Name: L-D190P1      From Node: N-D190    Length(ft): 16
         Group: SM2             To Node: N-D180         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 24            24            Entrance Loss Coef: 0.2
      Rise(in): 24            24                Exit Loss Coef: 0.2
    Invert(ft): 10.5          10.5              Bend Loss Coef: 0
   Manning's N: 0.012         0.012         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

--------Class: Pipe-----------------------------------------------------------

          Name: L-D210P1      From Node: N-D210    Length(ft): 222
         Group: SM2             To Node: N-D200         Count: 2

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 24            24            Entrance Loss Coef: 0.5
      Rise(in): 24            24                Exit Loss Coef: 0.2
    Invert(ft): 9             8.25              Bend Loss Coef: 0
   Manning's N: 0.011         0.011         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                PS R010A
--------Class: Pipe-----------------------------------------------------------

          Name: L-D220P1      From Node: N-D220    Length(ft): 332
         Group: SM2             To Node: N-D210         Count: 1

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 30            30            Entrance Loss Coef: 0.5
      Rise(in): 30            30                Exit Loss Coef: 0.2
    Invert(ft): 10.5          9.5               Bend Loss Coef: 0
   Manning's N: 0.013         0.013         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                PS R010
--------Class: Pipe-----------------------------------------------------------

          Name: L-E030P1      From Node: N-E030    Length(ft): 488
         Group: VG              To Node: N-E020         Count: 2

                UPSTREAM      DOWNSTREAM             Equation: Average K
      Geometry: Circular      Circular                   Flow: Both
      Span(in): 30            30            Entrance Loss Coef: 0.5
      Rise(in): 30            30                Exit Loss Coef: 0.2
    Invert(ft): 8             7                 Bend Loss Coef: 0
   Manning's N: 0.011         0.011         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0             0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0             Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                PS R023
--------Class: Pipe-----------------------------------------------------------

          Name: L-E050P1      From Node: N-E050    Length(ft): 430
         Group: VG              To Node: N-E040         Count: 2
```

```
                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 36           36           Entrance Loss Coef: 0.5
      Rise(in): 36           36               Exit Loss Coef: 0.2
    Invert(ft): 9            7                Bend Loss Coef: 0
   Manning's N: 0.013        0.013         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS R021
--------Class: Pipe-----------------------------------------------------------

          Name: L-E060P1     From Node: N-E060    Length(ft): 420
         Group: VG             To Node: N-E050         Count: 1

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 15           15           Entrance Loss Coef: 0.5
      Rise(in): 15           15               Exit Loss Coef: 0.2
    Invert(ft): 10           9                Bend Loss Coef: 0
   Manning's N: 0.013        0.013         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS R020
--------Class: Pipe-----------------------------------------------------------

          Name: L-E080P1     From Node: N-E080    Length(ft): 78
         Group: VG             To Node: N-E070         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 48           48           Entrance Loss Coef: 0.5
      Rise(in): 48           48               Exit Loss Coef: 0.2
    Invert(ft): 10           8                Bend Loss Coef: 0
   Manning's N: 0.013        0.013         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS R018
--------Class: Pipe-----------------------------------------------------------

          Name: L-E090P1     From Node: N-E090    Length(ft): 338
         Group: VG             To Node: N-E080         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                 Flow: Both
      Span(in): 54           54           Entrance Loss Coef: 0.5
      Rise(in): 54           54               Exit Loss Coef: 0.2
    Invert(ft): 10.5         8                Bend Loss Coef: 0
   Manning's N: 0.013        0.013         Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0              Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0             Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS R012
--------Class: Pipe-----------------------------------------------------------

          Name: L-E100P1     From Node: N-E100    Length(ft): 384
         Group: VG             To Node: N-E090         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
```

```
        Geometry: Circular     Circular                  Flow: Both
        Span(in): 42           42          Entrance Loss Coef: 0.5
        Rise(in): 42           42              Exit Loss Coef: 0.2
      Invert(ft): 11           9.84            Bend Loss Coef: 0
    Manning's N: 0.013         0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0             0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0             0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                 PS R011
--------Class: Pipe-----------------------------------------------------------

           Name: L-E110P1     From Node: N-E110    Length(ft): 68
          Group: VG             To Node: N-E100         Count: 2

                UPSTREAM     DOWNSTREAM             Equation: Average K
        Geometry: Circular   Circular                  Flow: Both
        Span(in): 36         36          Entrance Loss Coef: 0.5
        Rise(in): 36         36              Exit Loss Coef: 0.2
      Invert(ft): 11         10.5            Bend Loss Coef: 0
    Manning's N: 0.013       0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0           0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

                 PS R005A
--------Class: Pipe-----------------------------------------------------------

           Name: L-E120P1     From Node: N-E120    Length(ft): 126
          Group: VG             To Node: N-E110         Count: 1

                UPSTREAM     DOWNSTREAM             Equation: Average K
        Geometry: Circular   Circular                  Flow: Both
        Span(in): 36         36          Entrance Loss Coef: 0.5
        Rise(in): 36         36              Exit Loss Coef: 0.2
      Invert(ft): 13         9.65            Bend Loss Coef: 0
    Manning's N: 0.013       0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0           0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                 PS R008
--------Class: Pipe-----------------------------------------------------------

           Name: L-E130P1     From Node: N-E130    Length(ft): 176
          Group: VG             To Node: N-E120         Count: 1

                UPSTREAM     DOWNSTREAM             Equation: Average K
        Geometry: Circular   Circular                  Flow: Both
        Span(in): 30         30          Entrance Loss Coef: 0.5
        Rise(in): 30         30              Exit Loss Coef: 0.2
      Invert(ft): 13         12.63           Bend Loss Coef: 0
    Manning's N: 0.013       0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0           0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                 PS R007
--------Class: Pipe-----------------------------------------------------------

           Name: L-E140P1     From Node: N-E140    Length(ft): 68
          Group: VG             To Node: N-E130         Count: 1

                UPSTREAM     DOWNSTREAM             Equation: Average K
        Geometry: Circular   Circular                  Flow: Both
        Span(in): 24         24          Entrance Loss Coef: 0.5
```

```
       Rise(in): 24          24            Exit Loss Coef: 0.2
     Invert(ft): 15          14            Bend Loss Coef: 0
   Manning's N: 0.013        0.013       Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0            Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0           Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall                1     1

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall                1     1

                PS R006
--------Class: Pipe-----------------------------------------------------------

          Name: L-E150P1     From Node: N-E150    Length(ft): 643
         Group: VG             To Node: N-E110         Count: 1

               UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 18           18          Entrance Loss Coef: 0.5
      Rise(in): 18           18              Exit Loss Coef: 0.2
     Invert(ft): 14          9.65            Bend Loss Coef: 0
   Manning's N: 0.013        0.013       Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0            Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0           Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS R002
--------Class: Pipe-----------------------------------------------------------

          Name: L-E160P1     From Node: N-E160    Length(ft): 70
         Group: VG             To Node: N-E150         Count: 1

               UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 24           24          Entrance Loss Coef: 0.5
      Rise(in): 24           24              Exit Loss Coef: 0.2
     Invert(ft): 15          14              Bend Loss Coef: 0
   Manning's N: 0.013        0.013       Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0            Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0           Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall                1     1

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Square edge w/ headwall                1     1

                PS R001
--------Class: Pipe-----------------------------------------------------------

          Name: L-E170P1     From Node: N-E170    Length(ft): 84
         Group: VG             To Node: N-E110         Count: 1

               UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 36           36          Entrance Loss Coef: 0.5
      Rise(in): 36           36              Exit Loss Coef: 0.2
     Invert(ft): 13          11.45           Bend Loss Coef: 0
   Manning's N: 0.013        0.013       Outlet Cntrl Spec: Use dc or tw
  Top Clip(in): 0            0            Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0           0           Stabilizer Option: None


    Upstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

    Downstream FHWA Inlet Edge Description:
    Circular Concrete: Groove end projecting                  1     3

                PS R005
--------Class: Pipe-----------------------------------------------------------

          Name: L-E180P1     From Node: N-E180    Length(ft): 386
         Group: VG             To Node: N-E170         Count: 1

               UPSTREAM     DOWNSTREAM            Equation: Average K
      Geometry: Circular     Circular                  Flow: Both
      Span(in): 24           24          Entrance Loss Coef: 0.5
      Rise(in): 24           24              Exit Loss Coef: 0.2
     Invert(ft): 14          10.85           Bend Loss Coef: 0
```

```
    Manning's N: 0.013        0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                  PS R004
--------Class: Pipe-----------------------------------------------------------

          Name: L-E190P1      From Node: N-E190    Length(ft): 206
         Group: VG              To Node: N-E180         Count: 1

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 18            18           Entrance Loss Coef: 0.5
      Rise(in): 18            18               Exit Loss Coef: 0.2
    Invert(ft): 15            13.9             Bend Loss Coef: 0
    Manning's N: 0.013        0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                  PS R003
--------Class: Pipe-----------------------------------------------------------

          Name: L-E210P1      From Node: N-E210    Length(ft): 80
         Group: VG              To Node: N-E200         Count: 2

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 54            54           Entrance Loss Coef: 0.5
      Rise(in): 54            54               Exit Loss Coef: 0.2
    Invert(ft): 9             7                Bend Loss Coef: 0
    Manning's N: 0.013        0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

                  PS R017
--------Class: Pipe-----------------------------------------------------------

          Name: L-E230P1      From Node: N-E230    Length(ft): 52
         Group: VG              To Node: N-E220         Count: 2

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 54            54           Entrance Loss Coef: 0.5
      Rise(in): 54            54               Exit Loss Coef: 0.2
    Invert(ft): 13            10               Bend Loss Coef: 0
    Manning's N: 0.013        0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

                  PS R015
--------Class: Pipe-----------------------------------------------------------

          Name: L-E240P1      From Node: N-E240    Length(ft): 84
         Group: VG              To Node: N-E230         Count: 2

                UPSTREAM      DOWNSTREAM            Equation: Average K
      Geometry: Circular      Circular                  Flow: Both
      Span(in): 54            54           Entrance Loss Coef: 0.5
      Rise(in): 54            54               Exit Loss Coef: 0.2
    Invert(ft): 14            10               Bend Loss Coef: 0
    Manning's N: 0.013        0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
```

```
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

                  PS R014
--------Class: Pipe-------------------------------------------------------------

           Name: L-E250P1     From Node: N-E250    Length(ft): 72
          Group: VG             To Node: N-E240         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 54           54          Entrance Loss Coef: 0.5
       Rise(in): 54           54              Exit Loss Coef: 0.2
     Invert(ft): 14           10              Bend Loss Coef: 0
    Manning's N: 0.013        0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Square edge w/ headwall                1     1

                  PS R013
--------Class: Pipe-------------------------------------------------------------

           Name: L-E270P1     From Node: N-E270    Length(ft): 180
          Group: VG             To Node: N-E260         Count: 2

                UPSTREAM     DOWNSTREAM            Equation: Average K
       Geometry: Circular     Circular                  Flow: Both
       Span(in): 18           18          Entrance Loss Coef: 0.2
       Rise(in): 18           18              Exit Loss Coef: 0.2
     Invert(ft): 7            6.64            Bend Loss Coef: 0
    Manning's N: 0.013        0.013        Outlet Cntrl Spec: Use dc or tw
   Top Clip(in): 0            0             Inlet Cntrl Spec: Use dn
Bottom Clip(in): 0            0            Stabilizer Option: None


     Upstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

     Downstream FHWA Inlet Edge Description:
     Circular Concrete: Groove end projecting                  1     3

                  PS R025
--------Class: Channel----------------------------------------------------------
  Name: L-G010C1          From Node: N-G010        Length(ft): 6500
 Group: BL                  To Node: N-A140             Count: 1

               UPSTREAM    DOWNSTREAM
    Geometry: Irregular    Irregular             Equation: Aver Conveyance
   Invert(ft): 3.5         1                         Flow: Both
TclpInitZ(ft): 9999        9999         Eddy Contrac Coef: 0.1
  Manning's N:                           Eddy Expans Coef: 0.3
    TClip(ft): 0           0           Entrance Loss Coef: 0
    BClip(ft): 0           0               Exit Loss Coef: 0
    Main Xsec: X-G010-1    X-G010-2     Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0           0             Inlet Cntrl Spec: Use dn
    Aux Xsec1:                          Stabilizer Option: None
    AxEl2(ft): 0           0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


--------Class: Channel----------------------------------------------------------
  Name: L-G030C1          From Node: N-G030        Length(ft): 3300
 Group: BL                  To Node: N-G020             Count: 1

               UPSTREAM    DOWNSTREAM
    Geometry: Irregular    Irregular             Equation: Aver Conveyance
   Invert(ft): 6           2.7                       Flow: Both
TclpInitZ(ft): 9999        9999         Eddy Contrac Coef: 0.1
  Manning's N:                           Eddy Expans Coef: 0.3
    TClip(ft): 0           0           Entrance Loss Coef: 0
    BClip(ft): 0           0               Exit Loss Coef: 0
    Main Xsec: X-G030-1    X-G030-1     Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0           0             Inlet Cntrl Spec: Use dn
```

```
     Aux Xsec1:                                Stabilizer Option: None
     AxEl2(ft): 0              0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-G050C1          From Node: N-G050        Length(ft): 2800
   Group: BL                  To Node: N-G020             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
    Invert(ft): 4.3          2.7                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-G050-1     X-G050-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-G100C1          From Node: N-G100        Length(ft): 2600
   Group: BL                  To Node: N-G050             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
    Invert(ft): 4.6          4.3                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-G100-1     X-G100-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-G170C1          From Node: N-G170        Length(ft): 825
   Group: BL                  To Node: N-G100             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
    Invert(ft): 5.7          4.6                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-G170-1     X-G170-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B010C1          From Node: N-B010        Length(ft): 1500
   Group: HH                  To Node: N-A120             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
    Invert(ft): 1.5          1                          Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
```

```
     Main Xsec: X-B010-1      X-B010-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0             0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B050C1           From Node: N-B050        Length(ft): 200
   Group: HH                   To Node: N-B020             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 1.7          1.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B050-1     X-B050-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B070C1           From Node: N-B070        Length(ft): 550
   Group: HH                   To Node: N-B060             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 2.5          2                          Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B070-1     X-B070-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B080C1           From Node: N-B080        Length(ft): 950
   Group: HH                   To Node: N-B020             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 1.5          1.5                        Flow: Both
 TclpInitZ(ft): 99999        99999         Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B080-1     X-B080-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B090C1           From Node: N-B090        Length(ft): 260
   Group: HH                   To Node: N-B080             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 2            1.5                        Flow: Both
 TclpInitZ(ft): 99999        99999         Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
```

```
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B090-1     X-B090-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B110C1          From Node: N-B110        Length(ft): 900
   Group: HH                  To Node: N-B100             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 4            3.5                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B110-1     X-B110-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B120C1          From Node: N-B120        Length(ft): 900
   Group: HH                  To Node: N-B080             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 1.5          1.5                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B120-1     X-B120-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B130C1          From Node: N-B130        Length(ft): 260
   Group: HH                  To Node: N-B120             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 1.5          1.5                        Flow: Both
TclpInitZ(ft): 999          999           Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B130-1     X-B130-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B150C1          From Node: N-B150        Length(ft): 1200
   Group: HH                  To Node: N-B140             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 1.5          1.5                        Flow: Both
```

```
 TclpInitZ(ft): 9999          9999          Eddy Contrac Coef: 0.1
   Manning's N:                              Eddy Expans Coef: 0.3
     TClip(ft): 0             0            Entrance Loss Coef: 0
     BClip(ft): 0             0                Exit Loss Coef: 0
     Main Xsec: X-B150-1      X-B150-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0             0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------------
   Name: L-B160C1          From Node: N-B160        Length(ft): 1400
  Group: HH                  To Node: N-B120             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
   Invert(ft): 1.5           1.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                              Eddy Expans Coef: 0.3
     TClip(ft): 0             0            Entrance Loss Coef: 0
     BClip(ft): 0             0                Exit Loss Coef: 0
     Main Xsec: X-B160-1      X-B160-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0             0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------------
   Name: L-B180C1          From Node: N-B180        Length(ft): 460
  Group: HH                  To Node: N-B160             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
   Invert(ft): 1.5           1.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                              Eddy Expans Coef: 0.3
     TClip(ft): 0             0            Entrance Loss Coef: 0
     BClip(ft): 0             0                Exit Loss Coef: 0
     Main Xsec: X-B180-1      X-B180-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0             0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------------
   Name: L-B190C1          From Node: N-B190        Length(ft): 1650
  Group: HH                  To Node: N-B180             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
   Invert(ft): 1.7           1.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                              Eddy Expans Coef: 0.3
     TClip(ft): 0             0            Entrance Loss Coef: 0
     BClip(ft): 0             0                Exit Loss Coef: 0
     Main Xsec: X-B190-1      X-B190-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0             0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------------
   Name: L-B200C1          From Node: N-B200        Length(ft): 975
  Group: HH                  To Node: N-B190             Count: 1

                UPSTREAM     DOWNSTREAM
```

```
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 1.8          1.7                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B200-1     X-B200-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B210C1          From Node: N-B210        Length(ft): 940
   Group: HH                  To Node: N-B200             Count: 1

                UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 1.9          1.8                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B210-1     X-B210-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-B220C1          From Node: N-B220        Length(ft): 470
   Group: HH                  To Node: N-B210             Count: 1

                UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 2            1.9                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-B210-1     X-B210-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-A015C1          From Node: N-A015        Length(ft): 3000
   Group: RR                  To Node: N-A010             Count: 1

                UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): -4.2         -4.2                       Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.3
   Manning's N:                             Eddy Expans Coef: 0.5
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-A020-1     X-A020-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-A020C1          From Node: N-A020        Length(ft): 700
   Group: RR                  To Node: N-A015             Count: 1
```

32" btm

```
                 UPSTREAM     DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): -4.2         -4.2                       Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.3
   Manning's N:                             Eddy Expans Coef: 0.5
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-A020-1     X-A020-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-A040C1          From Node: N-A040        Length(ft): 6000
   Group: RR                  To Node: N-A030             Count: 1

                 UPSTREAM     DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): -1           -4.2                       Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-A040-1     X-A040-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-A050C1          From Node: N-A050        Length(ft): 1300
   Group: RR                  To Node: N-A040             Count: 1

                 UPSTREAM     DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 2            -1                         Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-A050-1     X-A050-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-A090C1          From Node: N-A090        Length(ft): 2170
   Group: RR                  To Node: N-A060             Count: 1

                 UPSTREAM     DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 5            3                          Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-A090-1     X-A090-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
```

```
   Name: L-A110C1          From Node: N-A110        Length(ft): 5100
  Group: RR                  To Node: N-A040             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
   Invert(ft): 0             -1                         Flow: Both
TclpInitZ(ft): 9999          9999          Eddy Contrac Coef: 0.1
  Manning's N:                              Eddy Expans Coef: 0.3
    TClip(ft): 0             0            Entrance Loss Coef: 0
    BClip(ft): 0             0                Exit Loss Coef: 0
    Main Xsec: X-A110-1      X-A110-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                             Stabilizer Option: None
    AxEl2(ft): 0             0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------
   Name: L-A130C1          From Node: N-A130        Length(ft): 1100
  Group: RR                  To Node: N-A110             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
   Invert(ft): 3             1                          Flow: Both
TclpInitZ(ft): 9999          9999          Eddy Contrac Coef: 0.1
  Manning's N:                              Eddy Expans Coef: 0.3
    TClip(ft): 0             0            Entrance Loss Coef: 0
    BClip(ft): 0             0                Exit Loss Coef: 0
    Main Xsec: X-A130-1      X-A130-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                             Stabilizer Option: None
    AxEl2(ft): 0             0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------
   Name: L-A140C1          From Node: N-A140        Length(ft): 1100
  Group: RR                  To Node: N-A120             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
   Invert(ft): 1             1                          Flow: Both
TclpInitZ(ft): 9999          9999          Eddy Contrac Coef: 0.1
  Manning's N:                              Eddy Expans Coef: 0.3
    TClip(ft): 0             0            Entrance Loss Coef: 0
    BClip(ft): 0             0                Exit Loss Coef: 0
    Main Xsec: X-A140-1      X-A140-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                             Stabilizer Option: None
    AxEl2(ft): 0             0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------
   Name: L-C020C1          From Node: N-C020        Length(ft): 300
  Group: SM1                 To Node: N-C010             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
   Invert(ft): 3.2           3                          Flow: Both
TclpInitZ(ft): 9999          9999          Eddy Contrac Coef: 0.1
  Manning's N:                              Eddy Expans Coef: 0.3
    TClip(ft): 0             0            Entrance Loss Coef: 0
    BClip(ft): 0             0                Exit Loss Coef: 0
    Main Xsec: X-C020-1      X-C020-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                             Stabilizer Option: None
    AxEl2(ft): 0             0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):
```

```
--------Class: Channel----------------------------------------------------------
 Name: L-C030C1          From Node: N-C030        Length(ft): 325
Group: SM1                 To Node: N-C020             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3.4          3.2                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C030-1     X-C030-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                            Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


--------Class: Channel----------------------------------------------------------
 Name: L-C040C1          From Node: N-C040        Length(ft): 525
Group: SM1                 To Node: N-C030             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3.6          3.4                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C040-1     X-C040-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                            Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


--------Class: Channel----------------------------------------------------------
 Name: L-C070C1          From Node: N-C070        Length(ft): 325
Group: SM1                 To Node: N-C050             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3.6          3.6                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C070-1     X-C070-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                            Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


--------Class: Channel----------------------------------------------------------
 Name: L-C090C1          From Node: N-C090        Length(ft): 400
Group: SM1                 To Node: N-C080             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 4            4                          Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C090-1     X-C090-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                            Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):
```

```
--------Class: Channel----------------------------------------------------------
 Name: L-C120C1          From Node: N-C120        Length(ft): 475
Group: SM1                 To Node: N-C110             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3.5          3.5                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C120-1     X-C120-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


--------Class: Channel----------------------------------------------------------
 Name: L-C120C2          From Node: N-C120        Length(ft): 500
Group: SM1                 To Node: N-C260             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3.5          3.5                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C120-2     X-C120-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


--------Class: Channel----------------------------------------------------------
 Name: L-C130C1          From Node: N-C130        Length(ft): 1400
Group: SM1                 To Node: N-C120             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3.5          3.5                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C130-1     X-C130-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


--------Class: Channel----------------------------------------------------------
 Name: L-C150C1          From Node: N-C150        Length(ft): 1200
Group: SM1                 To Node: N-C130             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3.5          3.5                        Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C150-1     X-C150-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
```

```
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-C160C1          From Node: N-C160        Length(ft): 550
   Group: SM1                 To Node: N-C130             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 3.5          3.5                        Flow: Both
 TclpInitZ(ft): 9999         9999         Eddy Contrac Coef: 0.1
   Manning's N:                            Eddy Expans Coef: 0.3
     TClip(ft): 0            0           Entrance Loss Coef: 0
     BClip(ft): 0            0               Exit Loss Coef: 0
     Main Xsec: X-C160-1     X-C160-1     Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0             Inlet Cntrl Spec: Use dn
     Aux Xsec1:                           Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-C180C1          From Node: N-C180        Length(ft): 775
   Group: SM1                 To Node: N-C170             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 4            4                          Flow: Both
 TclpInitZ(ft): 9999         9999         Eddy Contrac Coef: 0.1
   Manning's N:                            Eddy Expans Coef: 0.3
     TClip(ft): 0            0           Entrance Loss Coef: 0
     BClip(ft): 0            0               Exit Loss Coef: 0
     Main Xsec: X-C180-1     X-C180-1     Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0             Inlet Cntrl Spec: Use dn
     Aux Xsec1:                           Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-C200C1          From Node: N-C200        Length(ft): 415
   Group: SM1                 To Node: N-C190             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 3.75         3                          Flow: Both
 TclpInitZ(ft): 9999         9999         Eddy Contrac Coef: 0.1
   Manning's N:                            Eddy Expans Coef: 0.3
     TClip(ft): 0            0           Entrance Loss Coef: 0
     BClip(ft): 0            0               Exit Loss Coef: 0
     Main Xsec: X-C200-1     X-C200-2     Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0             Inlet Cntrl Spec: Use dn
     Aux Xsec1:                           Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-C210C1          From Node: N-C210        Length(ft): 100
   Group: SM1                 To Node: N-C030             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Trapezoidal  Trapezoidal            Equation: Aver Conveyance
    Invert(ft): 4            4                          Flow: Both
 TclpInitZ(ft): 9999         9999         Eddy Contrac Coef: 0.1
   Manning's N: 0.045        0.045         Eddy Expans Coef: 0.3
     TClip(ft): 0            0           Entrance Loss Coef: 0
     BClip(ft): 0            0               Exit Loss Coef: 0
     Main Xsec:                           Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft):                            Inlet Cntrl Spec: Use dn
     Aux Xsec1:                           Stabilizer Option: None
     AxEl2(ft):
     Aux Xsec2:
    TWidth(ft):
```

```
    Depth(ft):
   BWidth(ft): 4            4
  LSdSlp(h/v): 2            2
  RSdSlp(h/v): 2            2


  --------Class: Channel-----------------------------------------------------------
   Name: L-C220C1          From Node: N-C220        Length(ft): 575
  Group: SM1                 To Node: N-C210             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 4.5          3.75                       Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C220-1     X-C220-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------------
   Name: L-C250C1          From Node: N-C250        Length(ft): 500
  Group: SM1                 To Node: N-C240             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 7.5          6                          Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C250-1     X-C250-2      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------------
   Name: L-C260C1          From Node: N-C260        Length(ft): 600
  Group: SM1                 To Node: N-C100             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 8.3          4.5                        Flow: Both
TclpInitZ(ft): 999          999           Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-C260-1     X-C260-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
    Aux Xsec2:
   TWidth(ft):
    Depth(ft):
   BWidth(ft):
  LSdSlp(h/v):
  RSdSlp(h/v):


  --------Class: Channel-----------------------------------------------------------
   Name: L-D010C1          From Node: N-D010        Length(ft): 700
  Group: SM2                 To Node: N-B160             Count: 1

                UPSTREAM    DOWNSTREAM
     Geometry: Irregular    Irregular              Equation: Aver Conveyance
   Invert(ft): 3            2                          Flow: Both
TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
  Manning's N:                             Eddy Expans Coef: 0.3
    TClip(ft): 0            0            Entrance Loss Coef: 0
    BClip(ft): 0            0                Exit Loss Coef: 0
    Main Xsec: X-D010-1     X-D010-1      Outlet Cntrl Spec: Use dc or tw
    AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
    Aux Xsec1:                           Stabilizer Option: None
    AxEl2(ft): 0            0
```

```
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D020C1          From Node: N-D020        Length(ft): 55
   Group: SM2                 To Node: N-B180             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 3.5          3                          Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-D020-1     X-D020-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D070C1          From Node: N-D070        Length(ft): 680
   Group: SM2                 To Node: N-D060             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 13.6         9.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-D070-1     X-D070-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D100C1          From Node: N-D100        Length(ft): 400
   Group: SM2                 To Node: N-D090             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Irregular    Irregular              Equation: Aver Conveyance
    Invert(ft): 5.5          5.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-D100-1     X-D100-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                            Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D120C1          From Node: N-D120        Length(ft): 675
   Group: SM2                 To Node: N-D020             Count: 1

                 UPSTREAM    DOWNSTREAM
      Geometry: Trapezoidal  Trapezoidal            Equation: Aver Conveyance
    Invert(ft): 4.8          3.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N: 0.04         0.04           Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec:                            Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft):                             Inlet Cntrl Spec: Use dn
```

```
     Aux Xsec1:                                Stabilizer Option: None
     AxEl2(ft):
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft): 3            3
   LSdSlp(h/v): 2            2
   RSdSlp(h/v): 2            2


   --------Class: Channel-----------------------------------------------------------
    Name: L-D120C2          From Node: N-D120        Length(ft): 1200
   Group: SM2                 To Node: N-D130             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Trapezoidal  Trapezoidal            Equation: Aver Conveyance
    Invert(ft): 4.8         4.5                        Flow: Both
 TclpInitZ(ft): 9999        9999          Eddy Contrac Coef: 0.1
   Manning's N: 0.04        0.04           Eddy Expans Coef: 0.3
     TClip(ft): 0           0            Entrance Loss Coef: 0
     BClip(ft): 0           0                Exit Loss Coef: 0
     Main Xsec:                           Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft):                            Inlet Cntrl Spec: Use dn
     Aux Xsec1:                           Stabilizer Option: None
     AxEl2(ft):
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft): 3            3
   LSdSlp(h/v): 2            2
   RSdSlp(h/v): 2            2


   --------Class: Channel-----------------------------------------------------------
    Name: L-D130C1          From Node: N-D130        Length(ft): 1800
   Group: SM2                 To Node: N-D010             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Irregular     Irregular                Equation: Aver Conveyance
    Invert(ft): 4.5          3                           Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-D130-2     X-D130-1     Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0             Inlet Cntrl Spec: Use dn
     Aux Xsec1:                           Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D140C1          From Node: N-D140        Length(ft): 1050
   Group: SM2                 To Node: N-D130             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Irregular     Irregular                Equation: Aver Conveyance
    Invert(ft): 5            4.5                         Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-D140-1     X-D140-1     Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0             Inlet Cntrl Spec: Use dn
     Aux Xsec1:                           Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D150C1          From Node: N-D150        Length(ft): 2300
   Group: SM2                 To Node: N-D140             Count: 1

                 UPSTREAM    DOWNSTREAM
     Geometry: Irregular     Irregular                Equation: Aver Conveyance
    Invert(ft): 7            5                           Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
```

```
     Main Xsec: X-D150-1      X-D150-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0             0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0             0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D180Cl          From Node: N-D180        Length(ft): 1250
   Group: SM2                 To Node: N-D170             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
    Invert(ft): 10.5         7.5                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-D180-1     X-D180-2      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-D200Cl          From Node: N-D200        Length(ft): 900
   Group: SM2                 To Node: N-D160             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Trapezoidal   Trapezoidal            Equation: Aver Conveyance
    Invert(ft): 8            7                          Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N: 0.06         0.06           Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec:                             Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft):                              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft):
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft): 4            4
   LSdSlp(h/v): 2            2
   RSdSlp(h/v): 2            2


   --------Class: Channel-----------------------------------------------------------
    Name: L-E010Cl          From Node: N-E010        Length(ft): 2300
   Group: VG                  To Node: N-D140             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
    Invert(ft): 5.2          5                          Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
     TClip(ft): 0            0            Entrance Loss Coef: 0
     BClip(ft): 0            0                Exit Loss Coef: 0
     Main Xsec: X-E010-1     X-E010-1      Outlet Cntrl Spec: Use dc or tw
     AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
     Aux Xsec1:                             Stabilizer Option: None
     AxEl2(ft): 0            0
     Aux Xsec2:
    TWidth(ft):
     Depth(ft):
    BWidth(ft):
   LSdSlp(h/v):
   RSdSlp(h/v):


   --------Class: Channel-----------------------------------------------------------
    Name: L-E260Cl          From Node: N-E260        Length(ft): 1500
   Group: VG                  To Node: N-E010             Count: 1

                UPSTREAM     DOWNSTREAM
     Geometry: Irregular     Irregular              Equation: Aver Conveyance
    Invert(ft): 5.4          5.2                        Flow: Both
 TclpInitZ(ft): 9999         9999          Eddy Contrac Coef: 0.1
   Manning's N:                             Eddy Expans Coef: 0.3
```

```
  TClip(ft): 0            0            Entrance Loss Coef: 0
  BClip(ft): 0            0                Exit Loss Coef: 0
  Main Xsec: X-E260-1     X-E260-1      Outlet Cntrl Spec: Use dc or tw
  AxEl1(ft): 0            0              Inlet Cntrl Spec: Use dn
  Aux Xsec1:                            Stabilizer Option: None
  AxEl2(ft): 0            0
  Aux Xsec2:
 TWidth(ft):
  Depth(ft):
 BWidth(ft):
LSdSlp(h/v):
RSdSlp(h/v):


--------Class: Weir-----------------------------------------------------------
    Name: L-G020W1            From Node: N-G020
   Group: BL                    To Node: N-G010
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-G020-1


            Invert(ft): 12.92
       Control Elev(ft): 12.92
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-G040W1            From Node: N-G040
   Group: BL                    To Node: N-G030
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 50
  Left Side Slope(h/v): 30
 Right Side Slope(h/v): 30
            Invert(ft): 11.5
       Control Elev(ft): 11.5
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-G060W1            From Node: N-G060
   Group: BL                    To Node: N-G050
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 8
  Left Side Slope(h/v): 1
 Right Side Slope(h/v): 1
            Invert(ft): 12.5
       Control Elev(ft): 12.5
  StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   PS W-I2

--------Class: Weir-----------------------------------------------------------
    Name: L-G060W2            From Node: N-G060
   Group: BL                    To Node: N-G050
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
            Invert(ft): 13
       Control Elev(ft): 13
  StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   OVERTOPPING
```

```
--------Class: Weir----------------------------------------------------------------
    Name: L-G070W1            From Node: N-G070
   Group: BL                    To Node: N-G050
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 10
  Left Side Slope(h/v): 1
 Right Side Slope(h/v): 1
            Invert(ft): 11
      Control Elev(ft): 11
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   PS W-H2

--------Class: Weir----------------------------------------------------------------
    Name: L-G070W2            From Node: N-G070
   Group: BL                    To Node: N-G050
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
            Invert(ft): 13
      Control Elev(ft): 13
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   OVERTOPPING

--------Class: Weir----------------------------------------------------------------
    Name: L-G110W1            From Node: N-G110
   Group: BL                    To Node: N-G100
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
            Invert(ft): 14
      Control Elev(ft): 14
  StructOpeningDim(ft): 9999        TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   OVERTOPPING

--------Class: Weir----------------------------------------------------------------
    Name: L-G160W1            From Node: N-G160
   Group: BL                    To Node: N-G100
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 8
  Left Side Slope(h/v): 1
 Right Side Slope(h/v): 1
            Invert(ft): 12.5
      Control Elev(ft): 12.5
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   PS W-E2

--------Class: Weir----------------------------------------------------------------
    Name: L-G160W2            From Node: N-G160
   Group: BL                    To Node: N-G100
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
            Invert(ft): 14
      Control Elev(ft): 14
  StructOpeningDim(ft): 99999       TABLE
```

```
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3.2
 Orifice Discharge Coef: 0.6

    OVERTOPPING

--------Class: Weir-----------------------------------------------------------
     Name: L-G180W1            From Node: N-G180
    Group: BL                    To Node: N-G170
    Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

              XSec Name: X-G180-1


            Invert(ft): 10.74
       Control Elev(ft): 10.74
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3
 Orifice Discharge Coef: 0.6

    Dirt road

--------Class: Weir-----------------------------------------------------------
     Name: L-B030W1            From Node: N-B030
    Group: HH                    To Node: N-B020
    Count: 1

 Type: Navis    Flow: Both       Geometry: Trapezoidal

       Bottom Width(ft): 10
   Left Side Slope(h/v): 1.5
  Right Side Slope(h/v): 1.5
            Invert(ft): 2
       Control Elev(ft): 2
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3.3
 Orifice Discharge Coef: 0.6

    Channel section leaving lake area

--------Class: Weir-----------------------------------------------------------
     Name: L-B040W1            From Node: N-B040
    Group: HH                    To Node: N-B030
    Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

       Bottom Width(ft): 30
   Left Side Slope(h/v): 2
  Right Side Slope(h/v): 20
            Invert(ft): 10
       Control Elev(ft): 10
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 2.8
 Orifice Discharge Coef: 0.6

    Elevation of pond is set 3 ft lower than plans

--------Class: Weir-----------------------------------------------------------
     Name: L-B060W1            From Node: N-B060
    Group: HH                    To Node: N-B050
    Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

              XSec Name: X-B060-1


            Invert(ft): 8.82
       Control Elev(ft): 8.82
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3
 Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
     Name: L-B100W1            From Node: N-B100
    Group: HH                    To Node: N-B090
    Count: 1

 Type: Fread    Flow: Both       Geometry: Rectangular
```

```
              Span(in): 150
              Rise(in): 5
            Invert(ft): 7.6
      Control Elev(ft): 7.6
                                        TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-B140W1            From Node: N-B140
   Group: HH                    To Node: N-B130
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-B140-1


            Invert(ft): 7.39
      Control Elev(ft): 7.39
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-B170W1            From Node: N-B170
   Group: HH                    To Node: N-B160
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 10
  Left Side Slope(h/v): 2
 Right Side Slope(h/v): 2
            Invert(ft): 2
      Control Elev(ft): 2
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-B230W1            From Node: N-B230
   Group: HH                    To Node: N-B220
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 100
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
            Invert(ft): 12
      Control Elev(ft): 12
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-A060W1            From Node: N-A060
   Group: RR                    To Node: N-A050
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-A060-1


            Invert(ft): 7.19
      Control Elev(ft): 7.19
  StructOpeningDim(ft): 999         TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
```

```
    Name: L-A100W1            From Node: N-A100
   Group: RR                    To Node: N-A090
   Count: 1

 Type: Fread    Flow: Both       Geometry: Rectangular


              Span(in): 500
              Rise(in): 2
            Invert(ft): 14.88
      Control Elev(ft): 14.88
                                        TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-A120W1            From Node: N-A120
   Group: RR                    To Node: N-A110
   Count: 1

 Type: Fread    Flow: Both       Geometry: Rectangular


              Span(in): 1000
              Rise(in): 4
            Invert(ft): 12.23
      Control Elev(ft): 12.23
                                        TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-A140W1            From Node: N-A140
   Group: RR                    To Node: N-A130
   Count: 1

 Type: Fread    Flow: Both       Geometry: Rectangular


              Span(in): 500
              Rise(in): 4
            Invert(ft): 12.16
      Control Elev(ft): 12.16
                                        TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C010W1            From Node: N-C010
   Group: SM1                   To Node: N-B210
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 100
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
            Invert(ft): 12.4
      Control Elev(ft): 12.4
  StructOpeningDim(ft): 9999        TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C050W1            From Node: N-C050
   Group: SM1                   To Node: N-C060
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

            XSec Name: X-C050-1


            Invert(ft): 8.9
      Control Elev(ft): 8.9
  StructOpeningDim(ft): 9999        TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
```

```
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6

   Portion of road that drains to Wolk Dr

--------Class: Weir-----------------------------------------------------------
    Name: L-C050W2            From Node: N-C050
   Group: SM1                   To Node: N-C040
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-C050-2


            Invert(ft): 8.9
      Control Elev(ft): 8.9
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6

   Portion of road that drains to golf course

--------Class: Weir-----------------------------------------------------------
    Name: L-C080W1            From Node: N-C080
   Group: SM1                   To Node: N-C070
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-C080-1


            Invert(ft): 11.39
      Control Elev(ft): 11.39
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C100W1            From Node: N-C100
   Group: SM1                   To Node: N-C090
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-C100-1


            Invert(ft): 12.35
      Control Elev(ft): 12.35
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6

   BeesFerry

--------Class: Weir-----------------------------------------------------------
    Name: L-C110W1            From Node: N-C110
   Group: SM1                   To Node: N-C100
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 10
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
            Invert(ft): 7.48
      Control Elev(ft): 7.48
  StructOpeningDim(ft): 9999        TABLE
       Bottom Clip(ft): 2
          Top Clip(ft): 0
   Weir Discharge Coef: 3.3
Orifice Discharge Coef: 0.6

   2 FT Flashboard in weir

--------Class: Weir-----------------------------------------------------------
    Name: L-C140W1            From Node: N-C140
   Group: SM1                   To Node: N-C130
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 10
  Left Side Slope(h/v): 40
```

```
 Right Side Slope(h/v): 40
            Invert(ft): 12
       Control Elev(ft): 12
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C170W1            From Node: N-C170
   Group: SM1                   To Node: N-C160
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-C170-1


            Invert(ft): 11.88
       Control Elev(ft): 11.88
  StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C190W1            From Node: N-C190
   Group: SM1                   To Node: N-B200
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 100
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
            Invert(ft): 14.5
       Control Elev(ft): 14.5
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C210W1            From Node: N-C210
   Group: SM1                   To Node: N-C200
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 50
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
            Invert(ft): 9.7
       Control Elev(ft): 9.7
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6

   Cartpath

--------Class: Weir-----------------------------------------------------------
    Name: L-C230W1            From Node: N-C230
   Group: SM1                   To Node: N-C220
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 200
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
            Invert(ft): 10.18
       Control Elev(ft): 10.18
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C240W1            From Node: N-C240
   Group: SM1                   To Node: N-C230
```

```
    Count: 1

  Type: Fread    Flow: Both       Geometry: Irregular

              XSec Name: X-C240-1


             Invert(ft): 10.91
       Control Elev(ft): 10.91
   StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3
 Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C260W1            From Node: N-C260
   Group: SM1                   To Node: N-C250
   Count: 1

  Type: Fread    Flow: Both       Geometry: Trapezoidal

       Bottom Width(ft): 26
   Left Side Slope(h/v): 0
  Right Side Slope(h/v): 0
             Invert(ft): 7.85
       Control Elev(ft): 7.85
   StructOpeningDim(ft): 2           TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3
 Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C260W2            From Node: N-C260
   Group: SM1                   To Node: N-C250
   Count: 1

  Type: Fread    Flow: Both       Geometry: Trapezoidal

       Bottom Width(ft): 30
   Left Side Slope(h/v): 50
  Right Side Slope(h/v): 50
             Invert(ft): 11
       Control Elev(ft): 11
   StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3
 Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-C270W1            From Node: N-C270
   Group: SM1                   To Node: N-B190
   Count: 1

  Type: Fread    Flow: Both       Geometry: Trapezoidal

       Bottom Width(ft): 50
   Left Side Slope(h/v): 50
  Right Side Slope(h/v): 50
             Invert(ft): 14
       Control Elev(ft): 14
   StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 3
 Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D020W1            From Node: N-D020
   Group: SM2                   To Node: N-D010
   Count: 1

  Type: Fread    Flow: Both       Geometry: Trapezoidal

       Bottom Width(ft): 30
   Left Side Slope(h/v): 50
  Right Side Slope(h/v): 50
             Invert(ft): 9
       Control Elev(ft): 9
   StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
    Weir Discharge Coef: 2.8
 Orifice Discharge Coef: 0.6
```

```
--------Class: Weir-----------------------------------------------------------
    Name: L-D030W1            From Node: N-D030
   Group: SM2                   To Node: N-D020
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 13
  Left Side Slope(h/v): 1.5
 Right Side Slope(h/v): 1.5
             Invert(ft): 5.6
       Control Elev(ft): 5.6
  StructOpeningDim(ft): 9999         TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D030W2            From Node: N-D030
   Group: SM2                   To Node: N-D120
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 9
  Left Side Slope(h/v): 2
 Right Side Slope(h/v): 2
             Invert(ft): 7.3
       Control Elev(ft): 7.3
  StructOpeningDim(ft): 999          TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D040W1            From Node: N-D040
   Group: SM2                   To Node: N-D030
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-D040-1


             Invert(ft): 9.11
       Control Elev(ft): 9.11
  StructOpeningDim(ft): 9999         TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D050W1            From Node: N-D050
   Group: SM2                   To Node: N-D040
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 20
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
             Invert(ft): 10
       Control Elev(ft): 10
  StructOpeningDim(ft): 9999         TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D060W1            From Node: N-D060
   Group: SM2                   To Node: N-D050
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 50
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
             Invert(ft): 16
```

```
      Control Elev(ft): 16
  StructOpeningDim(ft): 9999        TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D080W1            From Node: N-D080
   Group: SM2                   To Node: N-D070
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 8
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
             Invert(ft): 14.2
      Control Elev(ft): 14.2
  StructOpeningDim(ft): 999         TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D080W2            From Node: N-D080
   Group: SM2                   To Node: N-D070
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 50
  Left Side Slope(h/v): 100
 Right Side Slope(h/v): 100
             Invert(ft): 15.2
      Control Elev(ft): 15.2
  StructOpeningDim(ft): 999         TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D090W1            From Node: N-D090
   Group: SM2                   To Node: N-D030
   Count: 1

 Type: Fread    Flow: Both       Geometry: Irregular

             XSec Name: X-D090-1


             Invert(ft): 10.49
      Control Elev(ft): 10.49
  StructOpeningDim(ft): 9999        TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D110W1            From Node: N-D110
   Group: SM2                   To Node: N-D100
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 5
  Left Side Slope(h/v): 2.5
 Right Side Slope(h/v): 2.5
             Invert(ft): 9
      Control Elev(ft): 9
  StructOpeningDim(ft): 9999        TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D160W1            From Node: N-D160
   Group: SM2                   To Node: N-D150
   Count: 1
```

```
 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 10
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
             Invert(ft): 10.6
      Control Elev(ft): 10.6
  StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D160W2            From Node: N-D160
   Group: SM2                   To Node: N-D150
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 20
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
             Invert(ft): 12.1
      Control Elev(ft): 12.1
  StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D170W1            From Node: N-D170
   Group: SM2                   To Node: N-D160
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 100
 Right Side Slope(h/v): 100
             Invert(ft): 10.8
      Control Elev(ft): 10.8
  StructOpeningDim(ft): 9999        TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-D190W1            From Node: N-D190
   Group: SM2                   To Node: N-D110
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 50
 Right Side Slope(h/v): 50
             Invert(ft): 11.5
      Control Elev(ft): 11.5
  StructOpeningDim(ft): 999         TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------
    Name: L-E020W1            From Node: N-E020
   Group: VG                    To Node: N-E010
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 10
  Left Side Slope(h/v): 4
 Right Side Slope(h/v): 4
             Invert(ft): 9.2
      Control Elev(ft): 9.2
  StructOpeningDim(ft): 1.5         TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   PS R024       MODIFIED
```

```
--------Class: Weir-----------------------------------------------------------
    Name: L-E020W2            From Node: N-E020
   Group: VG                    To Node: N-E010
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Rectangular


              Span(in): 14
              Rise(in): 14
            Invert(ft): 8
      Control Elev(ft): 8
                                        TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   PS R024A     MODIFIED

--------Class: Weir-----------------------------------------------------------
    Name: L-E020W3            From Node: N-E020
   Group: VG                    To Node: N-E010
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
            Invert(ft): 10.7
      Control Elev(ft): 10.7
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   OVERTOPPING

--------Class: Weir-----------------------------------------------------------
    Name: L-E200W1            From Node: N-E200
   Group: VG                    To Node: N-E010
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 1
  Left Side Slope(h/v): 3
 Right Side Slope(h/v): 3
            Invert(ft): 8
      Control Elev(ft): 8
  StructOpeningDim(ft): 3           TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   PS R017A

--------Class: Weir-----------------------------------------------------------
    Name: L-E200W2            From Node: N-E200
   Group: VG                    To Node: N-E010
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
            Invert(ft): 11
      Control Elev(ft): 11
  StructOpeningDim(ft): 99999       TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   OVERTOPPING

--------Class: Weir-----------------------------------------------------------
    Name: L-E270W1            From Node: N-E270
   Group: VG                    To Node: N-E260
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 3
  Left Side Slope(h/v): 1.5
 Right Side Slope(h/v): 1.5
            Invert(ft): 10.3
      Control Elev(ft): 10.3
  StructOpeningDim(ft): 1.5         TABLE
```

```
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   OVERTOPPING  #1

--------Class: Weir-----------------------------------------------------------
    Name: L-E270W2            From Node: N-E270
   Group: VG                    To Node: N-E260
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 30
  Left Side Slope(h/v): 0
 Right Side Slope(h/v): 0
             Invert(ft): 11.8
       Control Elev(ft): 11.8
  StructOpeningDim(ft): 99999       TABLE
        Bottom Clip(ft): 0
           Top Clip(ft): 0
   Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6

   OVERTOPPING  #2

--------Class: Drop Structure-------------------------------------------------
     Name: L-G110D1       From Node: N-G110        Length(ft): 381
    Group: BL               To Node: N-G100             Count: 1

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                            UPSTREAM              DOWNSTREAM
               Span(in): 36                    36
               Rise(in): 36                    36
             Invert(ft): 9                     8.5
            Manning's N: 0.012                 0.012
           Top Clip(in): 0                     0
        Bottom Clip(in): 0                     0

     Entrance Loss Coef: 0                      Flow: Both
         Exit Loss Coef: 0                  Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular Concrete: Groove end projecting                  1     3
      Downstream FHWA Inlet Edge Description:
      Circular Concrete: Groove end projecting                  1     3

               PS L-D2
 *** Weir 1 of 1 for Drop Structure L-G110D1 ***               [TABLE]
   Count: 1                     Bottom Clip(in): 0
    Type: Horiz                    Top Clip(in): 0
    Flow: Both              Weir Discharge Coef: 3.2
Geometry: Rectangular  Orifice Discharge Coef: 0.6

         Span(in): 36                          Invert(ft): 11
         Rise(in): 100                    Control Elev(ft): 11


--------Class: Drop Structure-------------------------------------------------
     Name: L-B040D1       From Node: N-B040        Length(ft): 40
    Group: HH               To Node: N-B030             Count: 1

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                            UPSTREAM              DOWNSTREAM
               Span(in): 30                    30
               Rise(in): 30                    30
             Invert(ft): 2.1                   2.1
            Manning's N: 0.025                 0.025
           Top Clip(in): 0                     0
        Bottom Clip(in): 0                     0

     Entrance Loss Coef: 0.5                    Flow: Both
         Exit Loss Coef: 1                  Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular CMP: Headwall                                    2     1
      Downstream FHWA Inlet Edge Description:
      Circular CMP: Projecting                                  2     3


 *** Weir 1 of 1 for Drop Structure L-B040D1 ***               [TABLE]
   Count: 1                     Bottom Clip(in): 15
    Type: Horiz                    Top Clip(in): 0
    Flow: Both              Weir Discharge Coef: 3.3
Geometry: Circular     Orifice Discharge Coef: 0.6

         Span(in): 30                          Invert(ft): 8
         Rise(in): 30                     Control Elev(ft): 8


--------Class: Drop Structure-------------------------------------------------
```

```
     Name: L-B100D1      From Node: N-B100        Length(ft): 70
    Group: HH              To Node: N-B090             Count: 1

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                          UPSTREAM              DOWNSTREAM
              Span(in): 36                    36
              Rise(in): 36                    36
            Invert(ft): 3.51                  2.87
           Manning's N: 0.012                 0.012
          Top Clip(in): 0                     0
       Bottom Clip(in): 0                     0

     Entrance Loss Coef: 0.2                   Flow: Both
         Exit Loss Coef: 1                 Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular Concrete: Square edge w/ headwall                1     1
      Downstream FHWA Inlet Edge Description:
      Circular Concrete: Groove end projecting                  1     3


 *** Weir 1 of 2 for Drop Structure L-B100D1 ***              [TABLE]
   Count: 1                  Bottom Clip(in): 0
    Type: Horiz                 Top Clip(in): 0
    Flow: Both            Weir Discharge Coef: 3.3
Geometry: Rectangular  Orifice Discharge Coef: 0.6

         Span(in): 48                         Invert(ft): 6.5
         Rise(in): 42                    Control Elev(ft): 6.5


 *** Weir 2 of 2 for Drop Structure L-B100D1 ***              [TABLE]
   Count: 1                  Bottom Clip(in): 0
    Type: Mavis                 Top Clip(in): 0
    Flow: Both            Weir Discharge Coef: 3.3
Geometry: Rectangular  Orifice Discharge Coef: 0.6

         Span(in): 32                         Invert(ft): 6.25
         Rise(in): 3                     Control Elev(ft): 6.25


--------Class: Drop Structure-----------------------------------------------
     Name: L-B140D1      From Node: N-B140        Length(ft): 65
    Group: HH              To Node: N-B130             Count: 3

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                          UPSTREAM              DOWNSTREAM
              Span(in): 36                    36
              Rise(in): 36                    36
            Invert(ft): 1.5                   2.3
           Manning's N: 0.012                 0.012
          Top Clip(in): 0                     0
       Bottom Clip(in): 0                     0

     Entrance Loss Coef: 0.2                   Flow: Both
         Exit Loss Coef: 1                 Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular Concrete: Square edge w/ headwall                1     1
      Downstream FHWA Inlet Edge Description:
      Circular Concrete: Groove end projecting                  1     3


 *** Weir 1 of 1 for Drop Structure L-B140D1 ***              [TABLE]
   Count: 1                  Bottom Clip(in): 0
    Type: Mavis                 Top Clip(in): 0
    Flow: Both            Weir Discharge Coef: 3.3
Geometry: Rectangular  Orifice Discharge Coef: 0.6

         Span(in): 178                        Invert(ft): 4
         Rise(in): 1000                  Control Elev(ft): 4


--------Class: Drop Structure-----------------------------------------------
     Name: L-B230D1      From Node: N-B230        Length(ft): 40
    Group: HH              To Node: N-B220             Count: 1

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                          UPSTREAM              DOWNSTREAM
              Span(in): 30                    30
              Rise(in): 30                    30
            Invert(ft): 4.7                   4.6
           Manning's N: 0.025                 0.025
          Top Clip(in): 0                     0
       Bottom Clip(in): 0                     0

     Entrance Loss Coef: 0                     Flow: Both
         Exit Loss Coef: 0                 Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular CMP: Headwall                                    2     1
```

Runs reversely

```
      Downstream FHWA Inlet Edge Description:
      Circular CMP: Projecting                                    2     3

 *** Weir 1 of 1 for Drop Structure L-B230D1 ***                [TABLE]
   Count: 1                    Bottom Clip(in): 24
    Type: Horiz                   Top Clip(in): 0
    Flow: Both             Weir Discharge Coef: 3.3
Geometry: Circular      Orifice Discharge Coef: 0.6

         Span(in): 48                          Invert(ft): 9
         Rise(in): 48                     Control Elev(ft): 9


--------Class: Drop Structure-------------------------------------------------
     Name: L-F010D1       From Node: N-F010        Length(ft): 150
    Group: MC               To Node: N-B160             Count: 2

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                            UPSTREAM              DOWNSTREAM
               Span(in): 42                    42
               Rise(in): 42                    42
             Invert(ft): 3.5                   3
            Manning's N: 0.012                 0.012
           Top Clip(in): 0                     0
        Bottom Clip(in): 0                     0

     Entrance Loss Coef: 0.5                    Flow: Both
         Exit Loss Coef: 0                 Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular Concrete: Groove end w/ headwall                   1     2
      Downstream FHWA Inlet Edge Description:
      Circular Concrete: Groove end w/ headwall                   1     2

              PS DS-BB1
 *** Weir 1 of 2 for Drop Structure L-F010D1 ***                [TABLE]
   Count: 1                    Bottom Clip(in): 0
    Type: Horiz                   Top Clip(in): 0
    Flow: Both             Weir Discharge Coef: 3.2
Geometry: Rectangular  Orifice Discharge Coef: 0.6

         Span(in): 108                         Invert(ft): 12.5
         Rise(in): 48                     Control Elev(ft): 12.5


 *** Weir 2 of 2 for Drop Structure L-F010D1 ***                [TABLE]
   Count: 1                    Bottom Clip(ft): 0
    Type: Horiz                   Top Clip(ft): 0
    Flow: Both             Weir Discharge Coef: 3.2
Geometry: Irregular     Orifice Discharge Coef: 0.6

    Cross Section: X-F010-1              Control Elev(ft):  7
       Invert(ft): 7                 StructOpeningDim(ft):  5.5


--------Class: Drop Structure-------------------------------------------------
     Name: L-E040D1       From Node: N-E040        Length(ft): 70
    Group: VG               To Node: N-E020             Count: 2

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                            UPSTREAM              DOWNSTREAM
               Span(in): 54                    54
               Rise(in): 54                    54
             Invert(ft): 6                     5.15
            Manning's N: 0.013                 0.013
           Top Clip(in): 0                     0
        Bottom Clip(in): 0                     0

     Entrance Loss Coef: 0                      Flow: Both
         Exit Loss Coef: 0                 Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular Concrete: Square edge w/ headwall                  1     1
      Downstream FHWA Inlet Edge Description:
      Circular Concrete: Square edge w/ headwall                  1     1

              PS R022
 *** Weir 1 of 1 for Drop Structure L-E040D1 ***                [TABLE]
   Count: 1                    Bottom Clip(in): 0
    Type: Horiz                   Top Clip(in): 0
    Flow: Both             Weir Discharge Coef: 3.2
Geometry: Rectangular  Orifice Discharge Coef: 0.6

         Span(in): 96                          Invert(ft): 9
         Rise(in): 36                     Control Elev(ft): 9


--------Class: Drop Structure-------------------------------------------------
     Name: L-E070D1       From Node: N-E070        Length(ft): 462
    Group: VG               To Node: N-E040             Count: 2
```

```
    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                          UPSTREAM              DOWNSTREAM
              Span(in): 48                  48
              Rise(in): 48                  48
            Invert(ft): 8                   7
           Manning's N: 0.013               0.013
          Top Clip(in): 0                   0
       Bottom Clip(in): 0                   0

     Entrance Loss Coef: 0.5                  Flow: Both
         Exit Loss Coef: 0.2              Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular Concrete: Square edge w/ headwall                1     1
      Downstream FHWA Inlet Edge Description:
      Circular Concrete: Square edge w/ headwall                1     1

              PS R019
 *** Weir 1 of 1 for Drop Structure L-E070D1 ***              [TABLE]
   Count: 1                    Bottom Clip(ft): 0
    Type: Horiz                   Top Clip(ft): 0
    Flow: Both             Weir Discharge Coef: 3.2
Geometry: Trapezoidal  Orifice Discharge Coef: 0.6

     Bottom Width(ft): 1                      Invert(ft): 10
 Left Side Slope(h/v): 1                Control Elev(ft): 10
Right Side Slope(h/v): 1             StructOpeningDim(ft): 9999

--------Class: Drop Structure-------------------------------------------------
     Name: L-E220D1       From Node: N-E220        Length(ft): 35
    Group: VG               To Node: N-E210             Count: 2

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dn
    Upstream Geometry: Circular      Downstream Geometry: Circular
                          UPSTREAM              DOWNSTREAM
              Span(in): 54                  54
              Rise(in): 54                  54
            Invert(ft): 6                   4
           Manning's N: 0.013               0.013
          Top Clip(in): 0                   0
       Bottom Clip(in): 0                   0

     Entrance Loss Coef: 0.5                  Flow: Both
         Exit Loss Coef: 0.2              Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Circular Concrete: Square edge w/ headwall                1     1
      Downstream FHWA Inlet Edge Description:
      Circular Concrete: Groove end projecting                  1     3

              PS R016
 *** Weir 1 of 1 for Drop Structure L-E220D1 ***              [TABLE]
   Count: 1                    Bottom Clip(in): 0
    Type: Horiz                   Top Clip(in): 0
    Flow: Both             Weir Discharge Coef: 3.2
Geometry: Rectangular  Orifice Discharge Coef: 0.6

         Span(in): 96                         Invert(ft): 10.5
         Rise(in): 54                   Control Elev(ft): 10.5


--------Class: Bridge---------------------------------------------------------
  Name: L-B020B1          From Node: N-B020            Flow: Both
 Group: HH                  To Node: N-B010       Run WSPRO: No

  XSEC TYPE      NAME      INV(ft)   STAT(ft)  SKEW(deg) EXPAN.    CONTRAC.
  Exit           X-B010-1 1.5        0         0         0.5       0
  Full Valley    X-B010-1 1.5        50        0         0.5       0
  Approach       X-B080-1 1.5        130       0         0.5       0
  Roadway        X-B020-2 9.9        50        0

            Road Surface Material: Paved
    Road Embankment Top Width(ft): 30
     Road Unsubmerged Weir Q Coef: 0

     Comment: BEES FERRY

RATING CURVE CONTROL
TW(ft)        QMin(cfs)     QMax(cfs)     QInc(cfs)
2             0             400           50
2.5           0             400           50
3.5           0             400           50
4             50            450           50
4.5           50            500           50
5             50            600           50
5.5           50            650           50
6             50            650           50
6.5           50            700           50
7             50            750           50
7.5           50            800           50
8             50            850           50
8.3           50            1200          50
9             50            1200          50
```

10	100	1300	100
11	100	1300	100

*** Opening 1 of 1 for Bridge L-B020B1 ***

Opening Type: Slp Embank/Slp Spillthrough Abut

XSec Name:	X-B020-1	Spur Dike Type:	Elliptical
Invert(ft):	1.5	XSec Name:	
Station(ft):	50	Invert(ft):	0
Skew(deg):	0	Station(ft):	0
Expan:	0.5	Skew(deg):	0
Contrac:	0	Expan:	0.5
Total Width(ft):	30	Contrac:	0
Orifice Dis Coef:	0.6		
Low Chord Elev(ft):	8.3		
Embankment Sd Slp(h/v):	2		
Embankment Elev(ft):	9.9		

PIER DATA

Elev(ft)	Width(ft)
2	2
8.3	2

*** WSPRO Output for Bridge L-B020B1 ***

TW(ft)	HW(ft)	Q(cfs)	TW(ft)	HW(ft)	Q(cfs)
2	2	0	7	8.2234	500
2	4.2257	50	7	8.4401	550
2	5.0626	100	7	8.684	600
2	5.7296	150	7	8.9527	650
2	6.2679	200	7	9.2467	700
2	6.7844	250	7	9.5676	750
2	7.2892	300	7.5	7.5092	50
2	7.7887	350	7.5	7.5369	100
2	8.1278	400	7.5	7.583	150
2.5	2.5	0	7.5	7.6474	200
2.5	4.2255	50	7.5	7.7297	250
2.5	5.062	100	7.5	7.8291	300
2.5	5.731	150	7.5	7.9447	350
2.5	6.2678	200	7.5	8.0716	400
2.5	6.7844	250	7.5	8.2135	450
2.5	7.2892	300	7.5	8.3684	500
2.5	7.7887	350	7.5	8.5377	550
2.5	8.1278	400	7.5	8.7234	600
3.5	3.5	0	7.5	8.9256	650
3.5	3.8996	50	7.5	9.1441	700
3.5	5.0615	100	7.5	9.3798	750
3.5	5.7301	150	7.5	9.6342	800
3.5	6.2677	200	8	8.0071	50
3.5	6.7841	250	8	8.0282	100
3.5	7.289	300	8	8.0632	150
3.5	7.7886	350	8	8.1115	200
3.5	8.1363	400	8	8.1727	250
4	4.171	50	8	8.2463	300
4	4.6951	100	8	8.3319	350
4	5.731	150	8	8.4303	400
4	6.2684	200	8	8.5399	450
4	6.7837	250	8	8.6612	500
4	7.2896	300	8	8.7947	550
4	7.7883	350	8	8.9397	600
4	8.1286	400	8	9.0965	650
4	8.4342	450	8	9.2653	700
4.5	4.5847	50	8	9.4465	750
4.5	4.8419	100	8	9.6406	800
4.5	5.3103	150	8	9.8485	850
4.5	6.0864	200	8.3	8.3049	50
4.5	6.7833	250	8.3	8.3198	100
4.5	7.2896	300	8.3	8.3428	150
4.5	7.7861	350	8.3	8.379	200
4.5	8.1302	400	8.3	8.4186	250
4.5	8.4315	450	8.3	8.4713	300
4.5	8.7114	500	8.3	8.524	350
5	5.0485	50	8.3	8.5899	400
5	5.1963	100	8.3	8.6689	450
5	5.4518	150	8.3	8.748	500
5	5.8341	200	8.3	8.8271	550
5	6.388	250	8.3	8.9324	600
5	7.2866	300	8.3	9.0378	650
5	7.7853	350	8.3	9.1431	700
5	8.1351	400	8.3	9.2486	750
5	8.4287	450	8.3	9.354	800
5	8.7101	500	8.3	9.4595	850
5	9.0119	550	8.3	9.5649	900
5	9.2869	600	8.3	9.7227	950
5.5	5.5305	50	8.3	9.8804	1000
5.5	5.6228	100	8.3	9.986	1050
5.5	5.7794	150	8.3	10.0915	1100
5.5	6.0067	200	8.3	10.1448	1150
5.5	6.3152	250	8.3	10.1981	1200
5.5	6.7261	300	9	9.0041	50
5.5	7.3522	350	9	9.0162	100
5.5	8.1317	400	9	9.0354	150
5.5	8.4225	450	9	9.0648	200
5.5	8.708	500	9	9.1002	250

5.5	9.01	550	9	9.1414	300
5.5	9.2854	600	9	9.1886	350
5.5	9.5704	650	9	9.2475	400
6	6.022	50	9	9.3065	450
6	6.088	100	9	9.3772	500
6	6.1982	150	9	9.4714	550
6	6.3528	200	9	9.5421	600
6	6.553	250	9	9.6129	650
6	6.8025	300	9	9.754	700
6	7.1315	350	9	9.8483	750
6	7.5864	400	9	9.9426	800
6	8.0139	450	9	10.0369	850
6	8.4554	500	9	10.0844	900
6	9.0115	550	9	10.1319	950
6	9.2841	600	9	10.1794	1000
6	9.5695	650	9	10.227	1050
6.5	6.5163	50	9	10.2512	1100
6.5	6.5652	100	9	10.2988	1150
6.5	6.6464	150	9	10.3231	1200
6.5	6.7595	200	10	10.0122	100
6.5	6.9045	250	10	10.049	200
6.5	7.0939	300	10	10.098	300
6.5	7.3195	350	10	10.1568	400
6.5	7.6194	400	10	10.2059	500
6.5	7.8997	450	10	10.2649	600
6.5	8.1778	500	10	10.3141	700
6.5	8.4806	550	10	10.3634	800
6.5	8.8304	600	10	10.4127	900
6.5	9.2283	650	10	10.4524	1000
6.5	9.6808	700	10	10.4921	1100
7	7.0123	50	10	10.5318	1200
7	7.0494	100	10	10.5716	1300
7	7.1115	150	11	11.0001	700
7	7.199	200	11	11.0039	800
7	7.3119	250	11	11.0078	900
7	7.4495	300	11	11.0117	1000
7	7.6367	350	11	11.0176	1100
7	7.8218	400	11	11.0215	1200
7	8.0194	450	11	11.0254	1300

--------Class: Bridge----------

Name: L-A030B1 From Node: N-A030 Flow: Both
Group: RR To Node: N-A020 Run WSPRO: No

XSEC TYPE	NAME	INV(ft)	STAT(ft)	SKEW(deg)	EXPAN.	CONTRAC.
Exit	X-A020-1	-4.2	0	0	0.5	0.3
Full Valley	X-A020-1	-4.2	100	0	0.5	0.3
Approach	X-A040-2	-4.2	230	0	0.5	0.3
Roadway	X-A030-2	6.6	100	0		

Road Surface Material: Paved
Road Embankment Top Width(ft): 30
Road Unsubmerged Weir Q Coef: 0

Comment: SC 61

RATING CURVE CONTROL

TW(ft)	QMin(cfs)	QMax(cfs)	QInc(cfs)
-1.2	0	1600	200
0	0	1600	200
2	0	1600	200
3	0	1600	200
4	0	1600	200
5	0	1600	200
6	0	1600	200
7	200	1800	200
8	200	1800	200

*** Opening 1 of 1 for Bridge L-A030B1 ***

Opening Type: Slp Embank/Slp Spillthrough Abut

XSec Name: X-A030-1
Invert(ft): -4.2
Station(ft): 100
Skew(deg): 0
Expan: 0.5
Contrac: 0
Total Width(ft): 30
Orifice Dis Coef: 0.6
Low Chord Elev(ft): 6.95
Embankment Sd Slp(h/v): 2
Embankment Elev(ft): 6.6

Spur Dike Type: Elliptical
XSec Name:
Invert(ft): 0
Station(ft): 0
Skew(deg): 0
Expan: 0.5
Contrac: 0

PIER DATA

Elev(ft)	Width(ft)
-4	3
7	3

*** WSPRO Output for Bridge L-A030B1 ***

TW(ft)	HW(ft)	Q(cfs)	TW(ft)	HW(ft)	Q(cfs)
-1.2	-1.2	0	4	4.2203	600
-1.2	-0.7207	200	4	4.3671	800
-1.2	0.3909	400	4	4.5403	1000
-1.2	1.5279	600	4	4.7244	1200

```
    -1.2        2.9767      800         4           4.9093      1400
    -1.2        3.7814      1000        4           5.0985      1600
    -1.2        4.5323      1200        5           5           0
    -1.2        5.1741      1400        5           5.0127      200
    -1.2        5.0792      1600        5           5.0499      400
    0           0           0           5           5.1096      600
    0           0.2021      200         5           5.1887      800
    0           0.7619      400         5           5.284       1000
    0           1.5501      600         5           5.3955      1200
    0           2.9775      800         5           5.5174      1400
    0           3.7814      1000        5           5.6484      1600
    0           4.5323      1200        6           6           0
    0           5.1741      1400        6           6.0066      200
    0           5.0792      1600        6           6.0264      400
    2           2           0           6           6.059       600
    2           2.0688      200         6           6.1042      800
    2           2.2726      400         6           6.1616      1000
    2           2.9812      600         6           6.2305      1200
    2           3.4455      800         6           6.3102      1400
    2           3.9903      1000        6           6.3997      1600
    2           4.5805      1200        7           7.0095      400
    2           5.1628      1400        7           7.0225      600
    2           5.0792      1600        7           7.0414      800
    3           3           0           7           7.0655      1000
    3           3.0851      200         7           7.0931      1200
    3           3.3139      400         7           7.1243      1400
    3           3.6064      600         7           7.1655      1600
    3           3.9654      800         7           7.2069      1800
    3           4.4019      1000        8           8.0014      800
    3           4.8831      1200        8           8.0054      1000
    3           5.3403      1400        8           8.0099      1200
    3           5.0792      1600        8           8.0156      1400
    4           4           0           8           8.0222      1600
    4           4.0268      200         8           8.0288      1800
    4           4.1032      400
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\2YR\2YR
 Execution: Both
    Header: Church Creek Watershed
            Existing Conditions
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 24
Drop Structure Optimizer: 10               Rain Amount(in): 4.6
     Sim Start Time(hrs): 0                  Rainfall File: SCSIII
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         9          15
        9          30                         20         5
        12         5                          24         15
        16         1                          48         60
        20         5
        24         15
        48         30
        96         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE      [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1       [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC        [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\10YR\10YR
 Execution: Both
    Header: Church Creek Watershed
            Existing Conditions
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 24
Drop Structure Optimizer: 10               Rain Amount(in): 6.8
     Sim Start Time(hrs): 0                  Rainfall File: SCSIII
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         9          15
        9          30                         20         5
        12         5                          24         15
        16         1                          48         60
        20         5
        24         15
        48         30
        96         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE      [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1       [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC        [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\25YR\25YR
 Execution: Both
```

```
    Header: Church Creek Watershed
            Existing Conditions
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 24
Drop Structure Optimizer: 10               Rain Amount(in): 7.8
     Sim Start Time(hrs): 0                  Rainfall File: SCSIII
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         9          15
        9          30                         20         5
        12         5                          24         15
        16         1                          48         60
        20         5
        24         15
        48         30
        96         60
---------GROUP SELECTIONS----------------------------------------------------
+ BASE     [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1      [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC       [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\50YR\50YR
 Execution: Both
    Header: Church Creek Watershed
            Existing Conditions
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 24
Drop Structure Optimizer: 10               Rain Amount(in): 8.8
     Sim Start Time(hrs): 0                  Rainfall File: SCSIII
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         9          15
        9          30                         20         5
        12         5                          24         15
        16         1                          48         60
        20         5
        24         15
        48         30
        96         60
---------GROUP SELECTIONS----------------------------------------------------
+ BASE     [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1      [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC       [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\100YR\100Y
 Execution: Both
    Header: Church Creek Watershed
            Existing Conditions
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 24
Drop Structure Optimizer: 10               Rain Amount(in): 10
     Sim Start Time(hrs): 0                  Rainfall File: SCSIII
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         9          15
        9          30                         20         5
        12         5                          24         15
        16         1                          48         60
        20         5
        24         15
        48         30
        96         60
---------GROUP SELECTIONS----------------------------------------------------
+ BASE     [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1      [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC       [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\500YR\500Y
 Execution: Both
    Header: Church Creek Watershed
            Existing Conditions
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 24
Drop Structure Optimizer: 10               Rain Amount(in): 11.5
     Sim Start Time(hrs): 0                  Rainfall File: SCSIII
       Sim End Time(hrs): 72
```

```
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                    To Hour:   PInc(min):
        0          60                            9          15
        9          30                            20         5
        12         5                             24         15
        16         1                             48         60
        20         5
        24         15
        48         30
        96         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1      [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC       [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\21SEPT98\2
 Execution: Both
    Header: Church Creek Watershed
            Storm Event on September 21, 1998
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 24
Drop Structure Optimizer: 10               Rain Amount(in): 10.52
     Sim Start Time(hrs): 0                  Rainfall File: 21SEPT98
       Sim End Time(hrs): 60
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                    To Hour:   PInc(min):
        12         30                            12         15
        20         5                             30         5
        30         1                             48         15
        36         5
        48         30
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1      [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC       [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\16FEB98\16
 Execution: Both
    Header: Church Creek Watershed
            Storm Event on February 16, 1998
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 48
Drop Structure Optimizer: 10               Rain Amount(in): 5.92
     Sim Start Time(hrs): 0                  Rainfall File: 16FEB98
       Sim End Time(hrs): 60
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                    To Hour:   PInc(min):
        12         30                            12         15
        30         5                             32         5
        32         1                             48         15
        48         30
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1      [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC       [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\27SEPT99\2
 Execution: Both
    Header: Church Creek Watershed
            Storm Event on September 27, 1999
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 72
Drop Structure Optimizer: 10               Rain Amount(in): 5.98
     Sim Start Time(hrs): 0                  Rainfall File: 27SEPT99
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                    To Hour:   PInc(min):
        20         60                            20         15
        48         5                             48         5
        60         15                            60         15
        65         5                             65         5
        72         30                            72         15
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [09/17/01]       + RR       [09/17/01]       + HH       [09/17/01]
+ SM1      [09/17/01]       + SM2      [09/17/01]       + VG       [09/17/01]
+ MC       [09/17/01]       + BL       [09/17/01]
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\03OCT94\03
 Execution: Both
    Header: Church Creek Watershed
            Storm Event on October 3, 1994
```

```
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 72
Drop Structure Optimizer: 10               Rain Amount(in): 5.91
     Sim Start Time(hrs): 0                  Rainfall File: 03OCT94
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        8          60                         8          60
        50         5                          50         5
        72         15                         72         15
---------GROUP SELECTIONS----------------------------------------------------
- BASE      [ NO RUN ]        + RR       [09/17/01]       + HH       [09/17/01]
+ SM1       [09/17/01]        + SM2      [09/17/01]       + VG       [09/17/01]
+ MC        [09/17/01]        + BL       [09/17/01]
    --------Class: Simulation-----------------------------------------------------
 C:\ICPR2\PROJECTS\CHURCH\EXIST\27JULY01\2
 Execution: Both
    Header: Church Creek Watershed
            Storm Event on July 27, 2001
            $$DATE$$
---------HYDRAULICS----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 0.005
          Delta Z Factor: 0.1            Override Defaults: Yes
     Time Step Optimizer: 0.1               Storm Dur(hrs): 32
Drop Structure Optimizer: 10               Rain Amount(in): 4.67
     Sim Start Time(hrs): 0                  Rainfall File: 27JULY01
       Sim End Time(hrs): 32
      Min Calc Time(sec): 1
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          5                          0          5
        15         5                          15         5
        32         15                         32         15
---------GROUP SELECTIONS----------------------------------------------------
+ BASE      [09/17/01]        + RR       [09/17/01]       + HH       [09/17/01]
+ SM1       [09/17/01]        + SM2      [09/17/01]       + VG       [09/17/01]
+ MC        [09/17/01]        + BL       [09/17/01]
```