APPENDIX I

Hydrology Report

TECHNICAL MEMORANDUM

ETIWANDA HEIGHTS NEIGHBORHOOD AND CONSERVATION PLAN

Onsite Drainage Analysis
For Neighborhood Area

Prepared for:

Sargent Town Planning

CRABTREE GROUP INC.
ENGINEERING SMART GROWTH™

325 D Street
Salida, CO 81201
719-221-1799

Table of Contents

INTRODUCTION AND PURPOSE OF STUDY 3

Project Background and Study Overview 4

Study Area 4

Regional Analysis 6

EXISTING CONDITIONS FOR ONSITE DEVELOPMENT AREAS 6

PROPOSED CONDITIONS FOR ONSITE DEVELOPMENT AREAS 8

MITIGATION ANALYSIS 10

ONSITE STORM DRAIN SYSTEM 11

CONCLUSIONS 12

APPENDICES 13

APPENDIX A - HYDROLOGIC DATA

APPENDIX B – EXISTING ONSITE RUNOFF MODELING

APPENDIX C – PROPOSED ONSITE RUNOFF MODELING

APPENDIX D – GREEN INFRASTRUCTURE EXHIBITS

Introduction and Purpose of Study

Crabtree Group, Inc. was contracted by Sargent Town Planning to prepare an onsite drainage analysis for the proposed project known as the Neighborhood Area (NA) of the Etiwanda Heights Neighborhood and Conservation Plan (EHNCP). The EHNCP will enable the annexation of a 4,393.3-acre area by the City of Rancho Cucamonga (City). The Plan area currently lies mainly within an unincorporated area within the County of San Bernardino, however, a small portion of the EHNCP containing 305.8 acres is already within the municipal boundaries of the City. The EHNCP is divided into two unique areas. The 3,565.5-acre area to the north of the City's foothill neighborhoods is designated as a Rural/Conservation Area (RCA). The Plan for the RCA will up to 100 new homes on private inholdings and is not contemplating any infrastructure improvements or annexation to the CVWD water district, so is not considered in this analysis. The Plan for the southern area of the EHNCP contains an 827.82-acre is designated the Neighborhood Area (NA). The NA will be planned for compact, sustainable, mixed-type single-family neighborhood and a mixed-use center of shops and restaurants to serve the NA and the surrounding Foothill Neighborhoods. The EHNCP with its RCA and NA is shown in *Figure 1.*

The proposed land use consists of single family residential of various building sizes and forms, shops and restaurants, schools, parks, and generous greenways. Green infrastructure is to be distributed throughout the NA. The area is bounded by the San Bernardino National Forest to the north and the existing Rancho Cucamonga city limits to the east, west, and south.

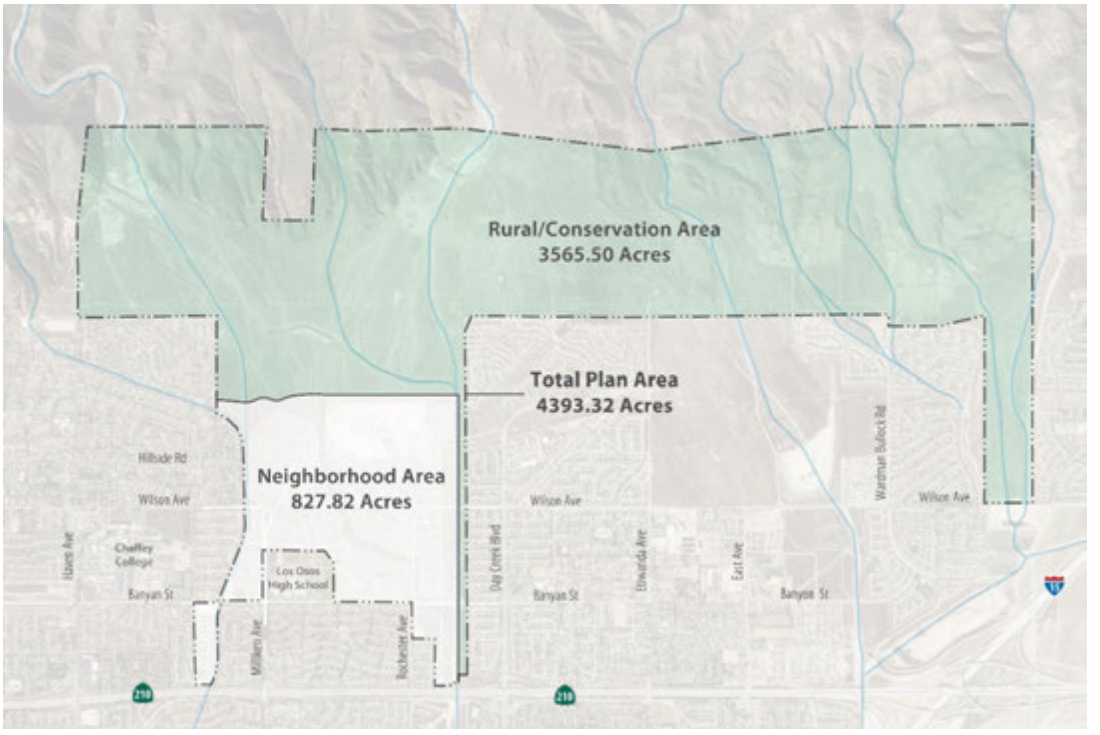


Figure 1: Neighborhood Area and Rural/Conservation Areas of the EHNCP – Vicinity Map

The purpose of the study is to perform a general hydrologic analysis of onsite project areas in accordance with the standards and guidelines set forth by the local reviewing agency (City of Rancho Cucamonga, County of San Bernardino). Baseline (existing) and NA (proposed) conditions will be evaluated to ultimately determine the NA-related flood hazard impacts in the event of a 100-year 24-hour design storm event.

Project Background and Study Overview

The Plan for the proposed NA land use consists of single family residential of various building sizes and forms, shops and restaurants, schools, parks, and several greenway channels. The NA is bounded by the RCA to the north and the existing Rancho Cucamonga city limits to the east, west, and south. The Neighborhood Area is shown in *Figure 2*.

The existing and proposed hydrology conditions were analyzed using the Unit Hydrograph Method. AutoCAD and CivilDesign programs were used to delineate the watersheds and compute the required hydrographs and peak flows for the 100-year 24-hr storm event. The increased runoff mitigation facilities (referred to as streetside bioswales, park ponds, and detention basins) were modeled for the 100-year, 24-hour duration event, such that the proposed conditions peak outflow for the entire development is not greater than the existing conditions peak outflow. The analysis results are used to quantify impacts and determine conceptual sizes of proposed drainage facilities. Further preliminary rational method design analysis will be required for detailed stormwater facilities design. This document is suitable as the drainage technical basis for the EHNCP and EIR. The development site plan is shown in *Figure 2*.

Study Area

The project is located at the foothills of the San Bernardino National Forest. The existing topography of the area slopes relatively uniformly from the north to the south. The proposed Phase 9 area will be located at the site of an existing gravel open cut mine. The mine will be filled, and the area graded.

The proposed land use for the 828-acre Neighborhood Area consists of:

Neighborhood Area	**Acres**
Gross Nghd Acres	827.82
Shops/Restaurants	13.00
Comm Parks External	71.59
Comm Parks Internal	27.10
School/Fire Station	17.54
Utility/Bank Easmts	98.51
Mod Gross Nghd Acres	**600.08**

Table 1. Neighborhood Area Land Use Mix

The Neighborhood Area consists of 2,900 residential units, 180,000 square feet of non-residential development, parks, schools, and easements as noted in *Table 1*. The residential units consist of a mix of low density and medium density detached single family homes in addition to some attached single-family homes. The 600.08 Modified Gross Nghd Acres of Table 1 includes 69.56 acres of Neighborhood Parks to be maintained by the Homeowners Association.

The Neighborhood Area is organized into ten Phases as indicated in *Figure 2*. Phases 1, 8 and 10 have marginal impacts to the channels so are not included in this analysis, though they will need to be included in future more-detailed analyses. The Neighborhood Area is part of two major watersheds: Cucamonga Creek and Day Creek. Both watersheds are separated by levees that run north to south. Deer Creek Channel, which drains Deer Creek watershed (tributary to Cucamonga Creek watershed) runs along the

west boundary of the project site and Day Creek Channel runs along the east boundary. To the north of the NA there is an existing levee that runs west to east, with a series of basins, that detains and diverts the runoff from offsite mountain and foothill areas, to the Day Creek channel.

Figure 2: Neighborhood Area Phasing/Regulating Plan (Provided by Sargent Town Planning 2/25/19)

Regional Analysis

Dudek was contracted by Sargent Town Planning to analyze the regional hydrology for the project site. The study analyzed the existing regional flood hazard impacts to the existing Cucamonga Creek and Day Creek watersheds in the vicinity of the NA. Mountain and foothill areas (offsite) north of the NA for both watersheds are analyzed for peak flow rates and routed to, around, and through the project site for the existing conditions. In short, there are significant tributaries upstream of the NA, but most of those offsite flows are intercepted by the northern levee and basins and directed into the Day or Deer Creek Channels before entering the Neighborhood Area (NA). Refer to the regional hydrological analysis performed by Dudek in the EHNCP EIR report for details.

The NA's main discharge points are at the southeast and southwest corners of the site at Banyan Street. Refer to the *Baseline Condition Existing Hydraulic Node Map* in *Figure 3* for the onsite conditions.

The intent of this report is to assess the flood hazard impacts and mitigation to the NA only. Streetside bioswales and park ponds are distributed throughout the NA, and detention basins located near Banyan street are proposed to ensure the peak flows are not increased in the development condition and do not have flood hazard impacts to the drainage structures at the southeast and southwest discharge locations.

Existing Conditions for Onsite Development Areas

The NA is part of two major watersheds: Cucamonga Creek and Day Creek watersheds. Both watersheds are separated by levees that run north to south. The portions of the site in Cucamonga Creek watershed generally drain southwesterly and discharge to Deer Creek Channel at the southwest corner of the project, and portions of the site in Day Creek watershed generally drain southeasterly and discharge into Day Creek Channel at the southeast corner of the site.

Existing conditions onsite drainage tributary areas were delineated based on the available 5-foot contour topographic data for the site. Approximated 57 acres of offsite Deer Creek tributary does enter the NA. The onsite outlet points where the peak flows were calculated are shown on the *Baseline Condition Existing Hydraulic Node Map* in *Figure 3*. These locations were identified as the most downstream point in the natural drain system where all the flow paths from the studied drainage area come together and exit the site.

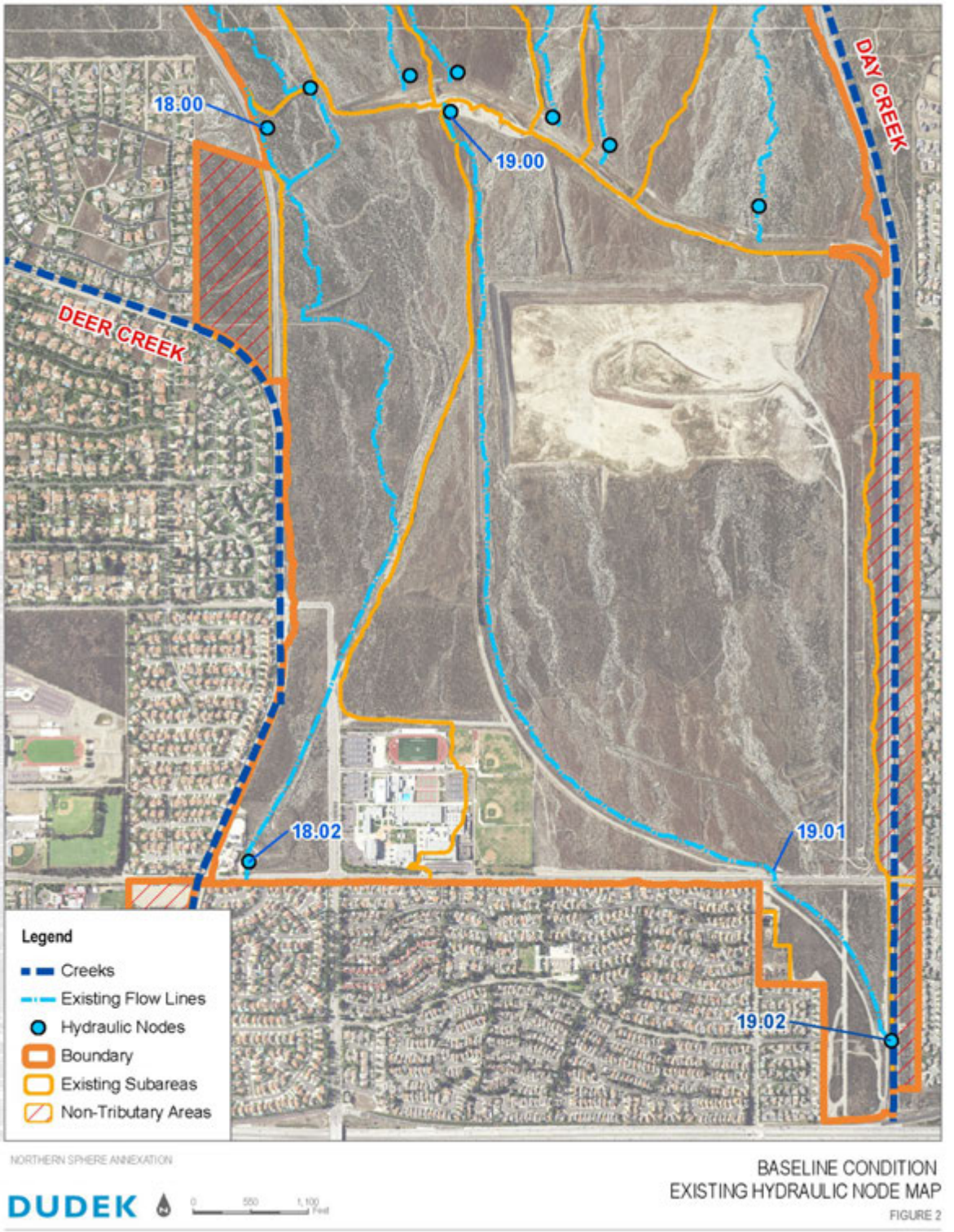


Figure 3: Baseline Condition Existing Hydraulic Node Map (Provided by Dudek)

The hydrologic soil group data of the site is obtained from the National Resources Conservation Services (NRCS) website. The entire NA has Type A soils. The existing land use information was obtained from field surveys and aerial photographs. Land cover for the existing conditions was fairly uniform and assumed to be mostly natural, chaparral narrow leaf in poor condition.

Precipitation point values for the 100-year, 24-hour storm event were obtained from the Precipitation Frequency Data Server, NOAA Atlas 14 website and included in *Appendix A*. *Table 2* presents the unadjusted total point precipitation depths used in the study.

Duration\ Return Period	1-hr	6-hr	24-hr
2-year	0.76	2.28	4.27
5-year	1.00	2.95	5.58
10-year	1.19	3.47	6.60
100-year	1.79	5.08	9.80

Table 2. Precipitation Depth in Inches (NOAA Atlas 14)

Infiltration rates were estimated based on Figure C-6 and Curve numbers (CN) were determined for soil type and land use condition based on Figure C-3 of the San Bernardino Hydrology Manual. Antecedent Soil Moisture Conditions (AMC) were assumed to be AMC III for the 100-year return period. *Table 3* presents the calculated loss rates (Fp) for each soil group and land use for existing conditions.

HYDROLOGIC SOIL GROUP	LAND USE	% IMPERVIOUS	CN Per AMC II	CN Per AMC III	Fp PER AMC III	Fm= (Fp*Ap)
A	Chaparral Narrowleaf Poor Conditions	0	71	87.8	0.233	0.233

Table 3. Calculated Loss Rate for Existing Conditions (in/hr)

The rainfall-runoff transformation was determined using the S-graph approach as outlined in Section E of the San Bernardino County Hydrology Manual (1986). Calculations for the 100-year 24-hour event are provided in *Appendix B* and indicate a Q100 of 560 cfs at the Deer Creek outlet (Node 18.02) at Banyan Street, and a Q100 of 1081 cfs at the Day Creek outlets (Node 19.01) at Banyan Street.

Proposed Conditions for Onsite Development Areas

The proposed condition drainage watershed was modeled and analyzed based on the EHNCP land use plan shown in *Figure 4 - Proposed Conditions Hydrology Map*. Like the existing condition drainage watersheds, the proposed condition model also drains to the same watershed discharge points without significantly altering existing drainage tributaries.

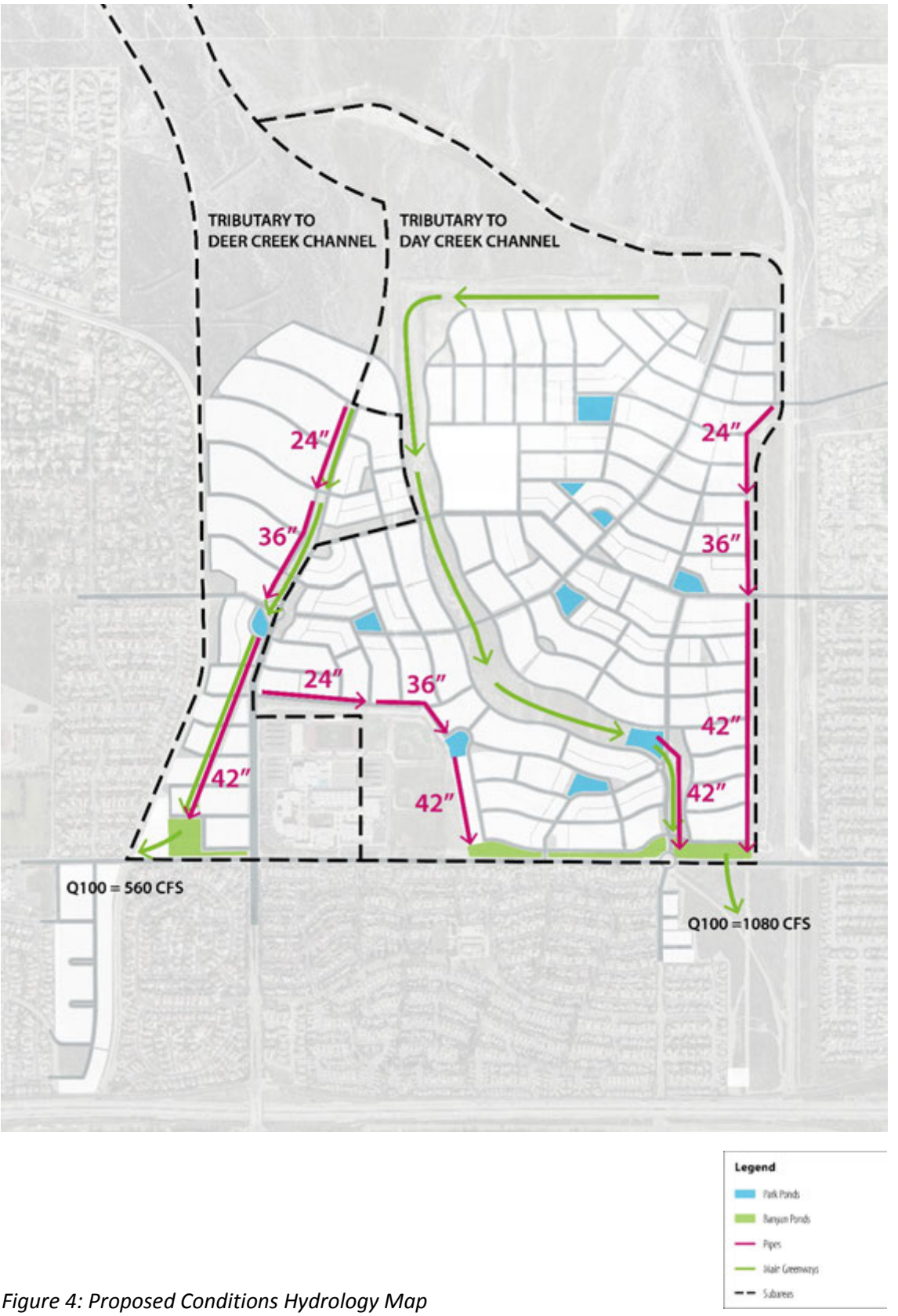


Figure 4: Proposed Conditions Hydrology Map

Channel grading is proposed in the new Day Creek greenway so the runoff can safely be routed downstream to the southeast discharge location. Channel modification is proposed in the Deer Creek greenway so the runoff can safely be routed to the southwest discharge location. Land use information was obtained from the EHNCP as indicated in *Table 1* and *Figure 2* and includes residential (single family and multi-family), parks, commercial (i.e. retail, office and institutional) urban landscape in good condition. Appropriate CN values were chosen for the land cover mix.

The rainfall-runoff transformation was conservatively estimated by Autodesk® Storm and Sanitary Analysis 2016 - Version 13.0.94 which utilizes SCS TR-55 Unit Hydrograph methodology. Several detention ponds were modeled within the watershed areas and iteratively sized until the post-development Qs approximated the predevelopment Qs. The detention requirements for Deer Creek were approximately 5.8 Acre-feet and the detention requirements for Day Creek were approximately 23.8 Acre-feet.

Refer to Proposed Condition 100-year 24-hour unit hydrograph analysis in *Appendix C*.

Mitigation Analysis

The NA of the EHNCP has been designed to deeply incorporate green infrastructure - AKA low impact development. Onsite mitigation in the form of streetside bioswales, park ponds, and conventional detention ponds were found to be effective in mitigating the impacts of frequent events (i.e., 2-year to 25-year storm events) as well as on low frequency events (i.e., 100-year storm event). This report analyzed runoff impacts in the event of a 100-year 24-hour storm.

Streetside bioswales, park ponds, and conventional detention ponds are distributed throughout the NA and sized to safely pass the 100-year, 24-hour storm without exceeding pre-development Qs.

For the conventional detention ponds and the park ponds an emergency spillway is designed for this purpose at the top of each basins to safely convey the existing condition peak flow rate. The difference in peak flow rate will be detained and allowed to percolate through the subsoils and release at a much lower peak flow than existing with a proposed outlet riser with orifices and grate inlet top. Design of the outlet structure and associated storm drain piping and drawdown calculations are not part of the scope of this report. The streetside bioswales will have checkdams with low-flow pipes and an emergency spillway that will meter some of the low-flows to be held and infiltrate behind the checkdams, and higher flows to pass over the spillway. Design of the outlet structure and associated storm drain piping and drawdown calculations are not part of the scope of this report.

The Thoroughfare Network Map and proposed street sections are provided in *Appendix D*. The tabulation of hydraulic values and quantities of streetside bioswales, park ponds and conventional detention ponds are provided in *Table 4*. As a conservative assumption, bioswales on north-south streets are not counted due to their tendency to be on steeper grades.

As indicated in *Table 4*, the distributed bioswales, park ponds, and detention ponds provide a detention volume that exceeds the required amount to ensure that the post-development Qs do not exceed the pre-development Qs.

STORMWATER DETENTION ESTIMATES										
STREET TYPES AND THEIR HYDRAULICS - NA OF THE EHNCP										
STREET TYPE	CLARIFY	RW (FT)	100-YEAR HYDRAULIC CAPACITY (CFS)	100-YEAR HYDRAULIC CAPACITY (CFS)	DETENTION (CF/LF)	LF OF E-W STREETS - DEER CREEK	DETENTION RETENTION VOLUME - DEER CREEK	LF OF E-W STREETS - DAY CREEK	DETENTION RETENTION VOLUME - DAY CREEK	
			5% L SLOPE	1% L SLOPE	1% L SLOPE					
MILLIKEN ENTRY	EXISTING	120			0	800	-	-	-	
NGHD AVE 1	WILSON, ROCHESTER W/ BIKE LANES	84	420	180	7.5	700	5,250	4,500	33,750	
NGHD AVE 2	WILSON	82	420	180	7.5	600	4,500	1,500	11,250	
MAINSTREET	WILSON MAINSTREET	84	370	170	0	-	-	1,600	-	
NGHD STREET 1	BIOSWALE	60	370	170	3.5	5,900	20,650	39,800	139,300	
NGHD STREET 1	RAINGARDEN	60	370	170	3.5	-	-	-	-	
NGHD STREET 1	CAL GOLD, BIO	60	370	170	3.5	-	-	-	-	
NGHD STREET 1	WIDE BIO 18 + 7	70	370	170	19	-	-	-	-	
NGHD STREET 2	WIDE BIO 23 + 10	66	370	170	27	1,000	27,000	-	-	
NGHD STREET 2	TRAIL. BIO 10 + 10	66	370	170	7.5	5,250	39,375	-	-	
NGHD STREET 2	WIDE BIO 16 + 10	66	370	170	18	-	-	-	-	
EDGE LANE	GRAVEL PIT	41	185	85	0	-	-	-	-	
NGHD EDGE LANE	UTIL EASEMENT - DISCONTINUOUS	32	185	85	0	-	-	-	-	
NGHD EDGE DRIVE	GREENWAYS	52	370	170	3.7	-	-	3,800	14,060	
ALLEY	FRENCH DRAIN	30	55	25	6	12,000	72,000	39,800	238,800	
SUB-TOTAL STREETS DETENTION							168,775		437,160	CF
BANYAN DETENTION BASINS 5'D							150,000		450,000	CF
PARK PONDS 1.5'D A/2 X 1.5							22,500		180,000	CF
TOTAL DETENTION PROVIDED (CF)							**341,275**		**1,067,160**	**CF**
TOTAL DETENTION PROVIDED (AF)							**7.8**		**24.5**	**AF**
TOTAL DETENTION REQUIRED (AF)							**5.8**		**23.8**	**AF**

Table 4. Estimated Detention Volumes of the Proposed Mitigation Practices.

Onsite Storm Drain System

Preliminary onsite drainage facilities for the project were calculated based on the peak flow rates obtained for onsite drainage sub-areas. The estimated sizes of these storm drain pipes and their approximate locations are intended for conceptual purposes only and will be refined in final engineering process. Pipes were preliminarily designed as reinforced concrete pipe, with a roughness coefficient of 0.013. Final hydraulic calculations using the computer program WSPG (Water Surface and Pressure Gradient) will be performed in the Final Engineering phase.

Catch basins and storm drain laterals will be sized for the appropriate design storm based on the San Bernardino County design guidelines and will be placed at locations to keep the 10-year flow below the top of curb and the 100-year flow below the right of way. Catch basins will also be sized in Final Engineering phase.

Refer to *Figure 4* for proposed drainage facilities locations and sizes.

Conclusions

This preliminary onsite drainage analysis has evaluated the potential impacts of increased runoff for the Neighborhood Area of the EHNCP. In addition, the report has addressed the methodology used to analyze the existing and proposed conditions, which was based on the San Bernardino County Hydrology Manual. This section provides a summary discussion that evaluates the potential impacts of the proposed project.

- The proposed drainage pattern is substantially consistent with existing drainage patterns.
- Mitigation elements proposed are preliminarily sized to detain the increase peak flow rates of the onsite development and discharge runoff equal to or less than the existing condition peak flow rates and will not adversely affect any downstream drainage facilities.
- Preliminary alignment and pipe sizes of storm drain lines were presented.
- Preliminary locations of mitigation elements were presented.
- As actual subdivision platting is undertaken final onsite Hydrology & Hydraulics Analysis must be prepared to fully model the proposed system and adjust the storm drainage elements sizes and characteristics accordingly.

APPENDICES

APPENDIX A – HYDROLOGIC DATA

APPENDIX B – EXISTING ONSITE RUNOFF MODELING

APPENDIX C – PROPOSED ONSITE RUNOFF MODELING

APPENDIX D – GREEN INFRASTRUCTURE EXHIBITS

APPENDIX A - HYDROLOGIC DATA

Curve (1) Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparral, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	71	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent.)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	25	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		77	86	91	94

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

CURVE NUMBERS FOR PERVIOUS AREAS

C-6

Figure C-3 (1 of 2)

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent (2)
Natural or Agriculture	0 - 0	0
Public Park	10 - 25	15
School	30 - 50	40
Single Family Residential: (3)		
2.5 acre lots	5 - 15	10
1 acre lots	10 - 25	20
2 dwellings/acre	20 - 40	30
3-4 dwellings/acre	30 - 50	40
5-7 dwellings/acre	35 - 55	50
8-10 dwellings/acre	50 - 70	60
More than 10 dwellings/acre	65 - 90	80
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 - 100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area shall always be made, and a review of aerial photos, where available, may assist in estimating the percentage of impervious cover in developed areas.

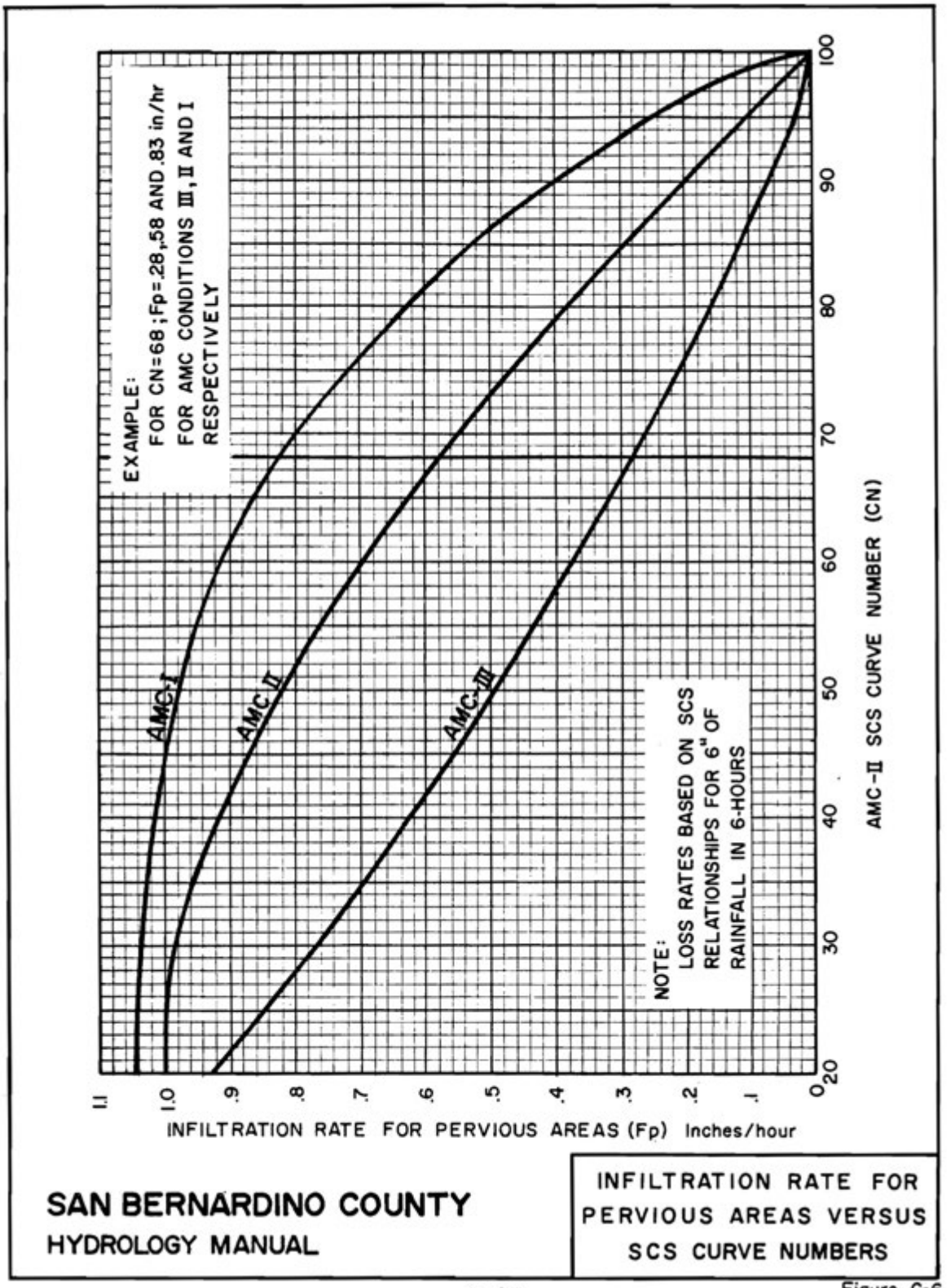
3. For typical equestrian subdivisions increase impervious area 5 percent over the values recommended in the table above.

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

ACTUAL IMPERVIOUS COVER
FOR
DEVELOPED AREAS

C-8

Figure C-4



C-15

Figure C-6

12/7/2017

Precipitation Frequency Data Server

NOAA Atlas 14, Volume 6, Version 2
Location name: Rancho Cucamonga, California, USA*
Latitude: 34.155°, Longitude: -117.5522°
Elevation: 1870.57 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.139 (0.116-0.169)	0.186 (0.154-0.226)	0.244 (0.202-0.297)	0.290 (0.238-0.356)	0.349 (0.277-0.444)	0.393 (0.305-0.510)	0.435 (0.330-0.580)	0.478 (0.352-0.656)	0.534 (0.377-0.764)	0.576 (0.392-0.854)
10-min	0.199 (0.166-0.242)	0.266 (0.221-0.324)	0.350 (0.290-0.426)	0.415 (0.342-0.510)	0.500 (0.397-0.636)	0.563 (0.437-0.731)	0.624 (0.473-0.831)	0.685 (0.504-0.940)	0.765 (0.540-1.10)	0.825 (0.562-1.23)
15-min	0.241 (0.201-0.292)	0.322 (0.268-0.391)	0.423 (0.351-0.515)	0.502 (0.413-0.617)	0.605 (0.480-0.769)	0.680 (0.529-0.884)	0.754 (0.572-1.00)	0.828 (0.610-1.14)	0.925 (0.653-1.33)	0.998 (0.680-1.48)
30-min	0.367 (0.306-0.446)	0.491 (0.408-0.597)	0.645 (0.535-0.786)	0.766 (0.630-0.941)	0.922 (0.733-1.17)	1.04 (0.806-1.35)	1.15 (0.872-1.53)	1.26 (0.930-1.73)	1.41 (0.995-2.02)	1.52 (1.04-2.26)
60-min	0.571 (0.475-0.693)	0.763 (0.635-0.927)	1.00 (0.831-1.22)	1.19 (0.979-1.46)	1.43 (1.14-1.82)	1.61 (1.25-2.10)	1.79 (1.36-2.38)	1.96 (1.45-2.69)	2.19 (1.55-3.14)	2.37 (1.61-3.51)
2-hr	0.902 (0.751-1.10)	1.20 (0.995-1.45)	1.56 (1.29-1.90)	1.84 (1.52-2.26)	2.21 (1.75-2.80)	2.47 (1.92-3.21)	2.73 (2.07-3.63)	2.98 (2.19-4.09)	3.31 (2.34-4.74)	3.56 (2.42-5.28)
3-hr	1.16 (0.965-1.41)	1.53 (1.27-1.86)	1.99 (1.65-2.42)	2.34 (1.92-2.88)	2.79 (2.22-3.55)	3.12 (2.42-4.05)	3.44 (2.61-4.58)	3.75 (2.76-5.15)	4.16 (2.93-5.96)	4.46 (3.04-6.62)
6-hr	1.74 (1.45-2.11)	2.28 (1.90-2.77)	2.95 (2.45-3.60)	3.47 (2.85-4.26)	4.13 (3.28-5.25)	4.61 (3.58-5.99)	5.08 (3.85-6.76)	5.53 (4.07-7.59)	6.12 (4.32-8.76)	6.56 (4.46-9.73)
12-hr	2.37 (1.97-2.87)	3.11 (2.59-3.78)	4.03 (3.34-4.91)	4.73 (3.89-5.82)	5.64 (4.48-7.17)	6.30 (4.89-8.18)	6.93 (5.25-9.24)	7.56 (5.57-10.4)	8.37 (5.90-12.0)	8.97 (6.11-13.3)
24-hr	3.22 (2.85-3.71)	4.27 (3.78-4.93)	5.58 (4.92-6.46)	6.60 (5.77-7.69)	7.91 (6.70-9.53)	8.86 (7.35-10.9)	9.80 (7.93-12.3)	10.7 (8.45-13.9)	11.9 (9.01-16.1)	12.8 (9.37-17.9)
2-day	3.90 (3.45-4.49)	5.29 (4.68-6.10)	7.05 (6.22-8.16)	8.44 (7.39-9.85)	10.3 (8.70-12.4)	11.6 (9.66-14.3)	13.0 (10.5-16.4)	14.4 (11.3-18.6)	16.2 (12.2-21.8)	17.5 (12.8-24.4)
3-day	4.18 (3.70-4.82)	5.77 (5.10-6.65)	7.80 (6.88-9.02)	9.43 (8.25-11.0)	11.6 (9.84-14.0)	13.3 (11.0-16.3)	14.9 (12.1-18.8)	16.6 (13.1-21.5)	18.9 (14.3-25.5)	20.6 (15.1-28.8)
4-day	4.40 (3.89-5.07)	6.14 (5.43-7.09)	8.40 (7.41-9.71)	10.2 (8.94-11.9)	12.7 (10.7-15.3)	14.6 (12.1-17.9)	16.5 (13.3-20.7)	18.4 (14.5-23.8)	21.0 (15.9-28.4)	23.1 (16.9-32.2)
7-day	4.93 (4.37-5.69)	7.03 (6.22-8.11)	9.77 (8.62-11.3)	12.0 (10.5-14.0)	15.0 (12.7-18.1)	17.4 (14.4-21.4)	19.8 (16.0-25.0)	22.3 (17.6-28.9)	25.7 (19.4-34.7)	28.4 (20.7-39.6)
10-day	5.37 (4.76-6.19)	7.74 (6.84-8.93)	10.8 (9.57-12.5)	13.4 (11.7-15.6)	16.9 (14.3-20.4)	19.6 (16.3-24.1)	22.4 (18.2-28.3)	25.4 (20.0-32.8)	29.4 (22.2-39.6)	32.5 (23.8-45.4)
20-day	6.62 (5.87-7.63)	9.63 (8.52-11.1)	13.7 (12.0-15.8)	17.0 (14.9-19.8)	21.7 (18.4-26.1)	25.4 (21.0-31.2)	29.2 (23.7-36.8)	33.3 (26.2-43.1)	39.0 (29.5-52.6)	43.6 (31.9-60.9)
30-day	7.69 (6.81-8.86)	11.1 (9.85-12.9)	15.8 (13.9-18.3)	19.7 (17.3-23.0)	25.3 (21.4-30.5)	29.7 (24.6-36.5)	34.4 (27.8-43.3)	39.4 (31.0-51.0)	46.5 (35.1-62.7)	52.2 (38.2-72.9)
45-day	9.28 (8.22-10.7)	13.2 (11.7-15.2)	18.6 (16.4-21.5)	23.2 (20.3-27.0)	29.7 (25.2-35.8)	35.0 (29.1-43.1)	40.7 (32.9-51.2)	46.8 (36.9-60.6)	55.6 (42.0-75.0)	62.8 (45.9-87.7)
60-day	10.9 (9.69-12.6)	15.2 (13.5-17.6)	21.2 (18.7-24.5)	26.3 (23.0-30.7)	33.7 (28.5-40.6)	39.7 (32.9-48.8)	46.2 (37.4-58.2)	53.3 (42.0-69.0)	63.5 (48.0-85.7)	72.0 (52.7-101)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

APPENDIX B – EXISTING ONSITE RUNOFF MODELING

```
                                                    NS100E2.RES
**************************************************************************

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
          (c) Copyright 1989-2014 Advanced Engineering Software (aes)
              Ver. 21.0  Release Date: 06/01/2014  License ID 1419

                         Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* Northern Sphere Annexation                                            *
* Existing Condition - Onsite Area                                      *
* Q 100-yr (AMC III)                                                    *
 ************************************************************************

  FILE NAME: NS100E2.DAT
  TIME/DATE OF STUDY: 15:19 09/15/2017
#


**************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.01 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
**************************************************************************

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      57.260 ACRES
         BASEFLOW =    0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.238 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.300
         LOW LOSS FRACTION = 0.170
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH) =  0.50
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  2.06
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  4.00
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.96
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 11.82

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.997
          30-MINUTE FACTOR = 0.997
           1-HOUR FACTOR = 0.997
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  35.014


**************************************************************************
                    UNIT HYDROGRAPH DETERMINATION

--------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
--------------------------------------------------------------------------
        1                3.531               24.449
        2               17.239               94.931
                                              Page 1
```

NS100E2.RES

3	40.939	164.119
4	60.528	135.648
5	70.715	70.545
6	76.906	42.871
7	81.315	30.533
8	84.657	23.144
9	87.280	18.162
10	89.381	14.552
11	91.146	12.224
12	92.617	10.184
13	93.889	8.807
14	94.961	7.428
15	95.949	6.839
16	96.674	5.021
17	97.354	4.708
18	97.969	4.261
19	98.264	2.040
20	98.515	1.741
21	98.766	1.741
22	99.018	1.740
23	99.269	1.740
24	99.520	1.740
25	99.771	1.740
26	100.000	1.583

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 9.2069
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 47.1633

♀

---

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 50.0 100.0 150.0 200.0
0.083	0.0028	0.41	Q
0.167	0.0167	2.01	Q
0.250	0.0496	4.78	Q
0.333	0.0983	7.07	VQ
0.417	0.1554	8.28	VQ
0.500	0.2175	9.02	VQ
0.583	0.2834	9.56	VQ
0.667	0.3521	9.98	VQ
0.750	0.4231	10.31	V Q
0.833	0.4960	10.58	V Q
0.917	0.5705	10.82	V Q
1.000	0.6464	11.02	V Q
1.083	0.7235	11.20	V Q
1.167	0.8017	11.35	V Q
1.250	0.8809	11.50	V Q
1.333	0.9609	11.62	V Q
1.417	1.0417	11.73	V Q
1.500	1.1232	11.83	V Q
1.583	1.2052	11.90	.VQ
1.667	1.2876	11.97	.VQ
1.750	1.3704	12.03	.VQ
1.833	1.4537	12.09	.VQ
1.917	1.5375	12.16	.VQ
2.000	1.6216	12.22	.VQ
2.083	1.7063	12.29	.VQ
2.167	1.7913	12.35	.VQ
2.250	1.8767	12.39	.VQ
2.333	1.9622	12.42	.VQ
2.417	2.0481	12.46	.VQ
2.500	2.1341	12.50	.VQ
2.583	2.2205	12.54	.VQ
2.667	2.3071	12.58	.VQ

Page 2

NS100E2.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	50.0	100.0	150.0	200.0
2.750	2.3940	12.62	. Q	.	.	.	.
2.833	2.4811	12.65	. Q	.	.	.	.
2.917	2.5686	12.69	. Q	.	.	.	.
3.000	2.6563	12.73	. Q	.	.	.	.
3.083	2.7442	12.77	. Q	.	.	.	.
3.167	2.8325	12.81	. Q	.	.	.	.
3.250	2.9210	12.86	. Q	.	.	.	.
3.333	3.0098	12.90	. Q	.	.	.	.
3.417	3.0989	12.94	. Q	.	.	.	.
3.500	3.1883	12.98	. Q	.	.	.	.
3.583	3.2780	13.02	. Q	.	.	.	.
3.667	3.3680	13.07	. Q	.	.	.	.
3.750	3.4583	13.11	. Q	.	.	.	.
3.833	3.5489	13.15	. QV	.	.	.	.
3.917	3.6398	13.20	. QV	.	.	.	.
4.000	3.7310	13.24	. QV	.	.	.	.
4.083	3.8225	13.29	. QV	.	.	.	.
4.167	3.9143	13.33	. QV	.	.	.	.
4.250	4.0065	13.38	. QV	.	.	.	.
4.333	4.0989	13.43	. QV	.	.	.	.
4.417	4.1917	13.47	. QV	.	.	.	.
4.500	4.2849	13.52	. QV	.	.	.	.
4.583	4.3783	13.57	. QV	.	.	.	.
4.667	4.4721	13.62	. QV	.	.	.	.
4.750	4.5662	13.67	. QV	.	.	.	.
4.833	4.6607	13.72	. QV	.	.	.	.
4.917	4.7555	13.77	. Q V	.	.	.	.
5.000	4.8506	13.82	. Q V	.	.	.	.
5.083	4.9462	13.87	. Q V	.	.	.	.
5.167	5.0420	13.92	. Q V	.	.	.	.
5.250	5.1383	13.97	. Q V	.	.	.	.
5.333	5.2349	14.03	. Q V	.	.	.	.
5.417	5.3318	14.08	. Q V	.	.	.	.
5.500	5.4292	14.13	. Q V	.	.	.	.
5.583	5.5269	14.19	. Q V	.	.	.	.
5.667	5.6250	14.24	. Q V	.	.	.	.
5.750	5.7235	14.30	. Q V	.	.	.	.
5.833	5.8224	14.36	. Q V	.	.	.	.
5.917	5.9216	14.42	. Q V	.	.	.	.
6.000	6.0213	14.47	. Q V	.	.	.	.
6.083	6.1214	14.53	. Q V	.	.	.	.
6.167	6.2219	14.59	. Q V	.	.	.	.
6.250	6.3228	14.65	. Q V	.	.	.	.
6.333	6.4241	14.71	. Q V	.	.	.	.
6.417	6.5259	14.78	. Q V	.	.	.	.
6.500	6.6281	14.84	. Q V	.	.	.	.
6.583	6.7307	14.90	. Q V	.	.	.	.
6.667	6.8338	14.97	. Q V	.	.	.	.
6.750	6.9373	15.03	. Q V	.	.	.	.
6.833	7.0413	15.10	. Q V	.	.	.	.
6.917	7.1457	15.16	. Q V	.	.	.	.
7.000	7.2506	15.23	. Q V	.	.	.	.
7.083	7.3560	15.30	. Q V	.	.	.	.
7.167	7.4618	15.37	. Q V	.	.	.	.
7.250	7.5682	15.44	. Q V	.	.	.	.
7.333	7.6750	15.51	. Q V	.	.	.	.
7.417	7.7824	15.58	. Q V	.	.	.	.
7.500	7.8902	15.66	. Q V	.	.	.	.
7.583	7.9985	15.73	. Q V	.	.	.	.
7.667	8.1074	15.81	. Q V	.	.	.	.
7.750	8.2168	15.89	. Q V	.	.	.	.
7.833	8.3268	15.96	. Q V	.	.	.	.
7.917	8.4372	16.04	. Q V	.	.	.	.
8.000	8.5483	16.12	. Q V	.	.	.	.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	50.0	100.0	150.0	200.0
8.083	8.6599	16.20	. Q V	.	.	.	.
8.167	8.7720	16.29	. Q V	.	.	.	.

NS100E2.RES

8.250	8.8848	16.37	.	Q	V	.	.	.	.	.
8.333	8.9981	16.46	.	Q	V	.	.	.	.	.
8.417	9.1121	16.54	.	Q	V	.	.	.	.	.
8.500	9.2266	16.63	.	Q	V	.	.	.	.	.
8.583	9.3417	16.72	.	Q	V	.	.	.	.	.
8.667	9.4575	16.81	.	Q		V .	.	.	.	.
8.750	9.5739	16.90	.	Q		V .	.	.	.	.
8.833	9.6910	17.00	.	Q		V .	.	.	.	.
8.917	9.8087	17.09	.	Q		V .	.	.	.	.
9.000	9.9271	17.19	.	Q		V .	.	.	.	.
9.083	10.0461	17.29	.	Q		V .	.	.	.	.
9.167	10.1659	17.39	.	Q		V .	.	.	.	.
9.250	10.2863	17.49	.	Q		V .	.	.	.	.
9.333	10.4075	17.59	.	Q		V .	.	.	.	.
9.417	10.5294	17.70	.	Q		V .	.	.	.	.
9.500	10.6521	17.81	.	Q		V.	.	.	.	.
9.583	10.7755	17.92	.	Q		V.	.	.	.	.
9.667	10.8996	18.03	.	Q		V.	.	.	.	.
9.750	11.0246	18.14	.	Q		V.	.	.	.	.
9.833	11.1503	18.26	.	Q		V.	.	.	.	.
9.917	11.2769	18.38	.	Q		V.	.	.	.	.
10.000	11.4043	18.50	.	Q		V.	.	.	.	.
10.083	11.5325	18.62	.	Q		V.	.	.	.	.
10.167	11.6616	18.75	.	Q		V.	.	.	.	.
10.250	11.7916	18.87	.	Q		V	.	.	.	.
10.333	11.9225	19.01	.	Q		V	.	.	.	.
10.417	12.0543	19.14	.	Q		V	.	.	.	.
10.500	12.1871	19.27	.	Q		V	.	.	.	.
10.583	12.3208	19.41	.	Q		V	.	.	.	.
10.667	12.4555	19.56	.	Q		V	.	.	.	.
10.750	12.5912	19.70	.	Q		V	.	.	.	.
10.833	12.7279	19.85	.	Q		V	.	.	.	.
10.917	12.8656	20.00	.		Q	V	.	.	.	.
11.000	13.0044	20.16	.		Q	.V	.	.	.	.
11.083	13.1444	20.32	.		Q	.V	.	.	.	.
11.167	13.2854	20.48	.		Q	.V	.	.	.	.
11.250	13.4276	20.65	.		Q	.V	.	.	.	.
11.333	13.5710	20.82	.		Q	.V	.	.	.	.
11.417	13.7156	20.99	.		Q	.V	.	.	.	.
11.500	13.8614	21.17	.		Q	.V	.	.	.	.
11.583	14.0085	21.36	.		Q	.V	.	.	.	.
11.667	14.1569	21.55	.		Q	. V	.	.	.	.
11.750	14.3066	21.74	.		Q	. V	.	.	.	.
11.833	14.4577	21.94	.		Q	. V	.	.	.	.
11.917	14.6103	22.15	.		Q	. V	.	.	.	.
12.000	14.7642	22.36	.		Q	. V	.	.	.	.
12.083	14.9207	22.71	.		Q	. V	.	.	.	.
12.167	15.0823	23.47	.		Q	. V	.	.	.	.

#

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.			50.0	100.0	150.0	200.0
12.250	15.2519	24.62	.		Q	. V	.	.	.
12.333	15.4283	25.61	.		Q	. V	.	.	.
12.417	15.6091	26.25	.		Q	. V	.	.	.
12.500	15.7932	26.74	.		Q	. V	.	.	.
12.583	15.9803	27.17	.		Q	. V	.	.	.
12.667	16.1701	27.56	.		Q	. V	.	.	.
12.750	16.3625	27.93	.		Q	. V	.	.	.
12.833	16.5574	28.30	.		Q	. V	.	.	.
12.917	16.7547	28.66	.		Q	. V	.	.	.
13.000	16.9546	29.01	.		Q	. V	.	.	.
13.083	17.1569	29.37	.		Q	. V	.	.	.
13.167	17.3617	29.74	.		Q	. V	.	.	.
13.250	17.5691	30.11	.		Q	. V	.	.	.
13.333	17.7790	30.49	.		Q	. V	.	.	.
13.417	17.9917	30.88	.		Q	. V	.	.	.
13.500	18.2071	31.28	.		Q	. V	.	.	.
13.583	18.4253	31.68	.		Q	. V	.	.	.
13.667	18.6464	32.10	.		Q	. V	.	.	.
13.750	18.8705	32.54	.		Q	. V	.	.	.
13.833	19.0977	33.00	.		Q	. V	.	.	.
13.917	19.3283	33.48	.		Q	. V	.	.	.
14.000	19.5623	33.98	.		Q	. V	.	.	.

NS100E2.RES

14.083	19.8004	34.58	Q V
14.167	20.0442	35.40	Q V
14.250	20.2951	36.43	Q V
14.333	20.5528	37.42	Q V
14.417	20.8163	38.25	Q V
14.500	21.0852	39.05	Q V
14.583	21.3597	39.85	Q V
14.667	21.6399	40.69	Q V
14.750	21.9261	41.56	Q V
14.833	22.2187	42.49	Q V
14.917	22.5182	43.48	Q V.
15.000	22.8250	44.55	Q V.
15.083	23.1398	45.71	Q. V.
15.167	23.4633	46.98	Q. V.
15.250	23.7965	48.38	Q. V
15.333	24.1404	49.94	Q. V
15.417	24.4973	51.82	Q V
15.500	24.8713	54.30	Q .V
15.583	25.2669	57.44	.Q .V
15.667	25.6857	60.81	. Q .V
15.750	26.1263	63.97	. Q . V
15.833	26.5845	66.54	. Q . V
15.917	27.0633	69.52	. Q . V
16.000	27.5917	76.72	. Q . V
16.083	28.2566	96.54	. Q. V
16.167	29.1420	128.57	. VQ
16.250	30.1767	150.23	. V Q
16.333	31.1021	134.37	. Q .

\#

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 50.0 100.0 150.0 200.0
16.417	31.8349	106.41	.Q V
16.500	32.4595	90.69	Q . V
16.583	33.0123	80.26	Q . V
16.667	33.5112	72.44	Q . V
16.750	33.9690	66.48	Q . V
16.833	34.3940	61.70	Q . V.
16.917	34.7923	57.84	.Q . V.
17.000	35.1676	54.49	Q . V.
17.083	35.5230	51.60	Q . V
17.167	35.8588	48.76	Q. . V
17.250	36.1767	46.16	Q. . V
17.333	36.4761	43.47	Q . . V
17.417	36.7623	41.55	Q . . .V
17.500	37.0358	39.71	Q . . .V
17.583	37.2944	37.55	Q . . .V
17.667	37.5438	36.21	Q . . .V
17.750	37.7855	35.09	Q . . . V
17.833	38.0203	34.09	Q . . . V
17.917	38.2488	33.18	Q . . . V
18.000	38.4715	32.34	Q . . . V
18.083	38.6873	31.34	Q . . . V
18.167	38.8931	29.87	Q . . . V
18.250	39.0837	27.69	Q . . . V
18.333	39.2645	26.25	Q . . . V
18.417	39.4383	25.23	Q . . . V
18.500	39.6065	24.43	Q . . . V
18.583	39.7701	23.75	Q . . . V
18.667	39.9294	23.14	Q . . . V
18.750	40.0851	22.59	Q . . . V
18.833	40.2372	22.09	Q . . . V
18.917	40.3862	21.63	Q . . . V
19.000	40.5322	21.20	Q . . . V
19.083	40.6755	20.80	Q . . . V
19.167	40.8161	20.42	Q . . . V
19.250	40.9543	20.06	Q . . . V
19.333	41.0902	19.74	Q . . . V
19.417	41.2239	19.42	Q . . . V
19.500	41.3556	19.12	Q . . . V
19.583	41.4854	18.85	Q . . . V
19.667	41.6134	18.58	Q . . . V
19.750	41.7397	18.33	Q . . . V
19.833	41.8643	18.09	Q . . . V

NS100E2.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	50.0	100.0	150.0	200.0
19.917	41.9872	17.85	Q				V
20.000	42.1086	17.63	Q				V
20.083	42.2285	17.41	Q				V
20.167	42.3470	17.20	Q				V
20.250	42.4641	17.01	Q				V
20.333	42.5799	16.82	Q				V
20.417	42.6945	16.64	Q				V
20.500	42.8079	16.46	Q				V

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	50.0	100.0	150.0	200.0
20.583	42.9200	16.29	Q				V
20.667	43.0311	16.12	Q				V
20.750	43.1410	15.96	Q				V
20.833	43.2499	15.81	Q				V
20.917	43.3577	15.66	Q				V
21.000	43.4646	15.51	Q				V
21.083	43.5704	15.37	Q				V
21.167	43.6753	15.23	Q				V
21.250	43.7792	15.09	Q				V
21.333	43.8822	14.96	Q				V
21.417	43.9844	14.83	Q				V
21.500	44.0857	14.71	Q				V
21.583	44.1862	14.59	Q				V
21.667	44.2858	14.47	Q				V
21.750	44.3846	14.35	Q				V
21.833	44.4827	14.24	Q				V
21.917	44.5800	14.13	Q				V
22.000	44.6765	14.02	Q				V
22.083	44.7724	13.91	Q				V
22.167	44.8675	13.81	Q				V
22.250	44.9619	13.71	Q				V
22.333	45.0556	13.61	Q				V
22.417	45.1487	13.51	Q				V
22.500	45.2411	13.42	Q				V
22.583	45.3329	13.33	Q				V
22.667	45.4240	13.23	Q				V
22.750	45.5145	13.15	Q				V
22.833	45.6045	13.06	Q				V
22.917	45.6938	12.97	Q				V
23.000	45.7826	12.89	Q				V
23.083	45.8708	12.81	Q				V
23.167	45.9584	12.73	Q				V
23.250	46.0455	12.65	Q				V.
23.333	46.1320	12.57	Q				V.
23.417	46.2181	12.49	Q				V.
23.500	46.3036	12.42	Q				V.
23.583	46.3886	12.34	Q				V.
23.667	46.4731	12.27	Q				V.
23.750	46.5571	12.20	Q				V.
23.833	46.6407	12.13	Q				V.
23.917	46.7237	12.06	Q				V.
24.000	46.8063	11.99	Q				V.
24.083	46.8856	11.52	Q				V.
24.167	46.9535	9.86	Q				V.
24.250	47.0020	7.04	Q				V.
24.333	47.0345	4.72	Q				V.
24.417	47.0587	3.51	Q				V.
24.500	47.0778	2.77	Q				V.
24.583	47.0933	2.24	Q				V.
24.667	47.1060	1.84	Q				V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	50.0	100.0	150.0	200.0
24.750	47.1165	1.53	Q				V.
24.833	47.1253	1.27	Q				V.
24.917	47.1326	1.06	Q				V.
25.000	47.1387	0.88	Q				V.
25.083	47.1437	0.73	Q				V.
25.167	47.1478	0.60	Q				V.
25.250	47.1512	0.48	Q				V.
25.333	47.1539	0.40	Q				V.

NS100E2.RES

25.417	47.1561	0.32	Q	.	.	.	V.
25.500	47.1577	0.24	Q	.	.	.	V.
25.583	47.1592	0.21	Q	.	.	.	V.
25.667	47.1604	0.18	Q	.	.	.	V.
25.750	47.1614	0.15	Q	.	.	.	V.
25.833	47.1622	0.12	Q	.	.	.	V.
25.917	47.1628	0.09	Q	.	.	.	V.
26.000	47.1632	0.06	Q	.	.	.	V.
26.083	47.1633	0.03	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1565.0
10%	875.0
20%	295.0
30%	135.0
40%	75.0
50%	40.0
60%	30.0
70%	20.0
80%	15.0
90%	5.0

#

****
FLOW PROCESS FROM NODE 12.01 TO NODE 18.01 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
****

THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 67.00 CHANNEL Z = 4.00
UPSTREAM ELEVATION(FT) = 2140.00
DOWNSTREAM ELEVATION(FT) = 1887.00
CHANNEL LENGTH(FT) = 5279.00 MANNING'S FACTOR = 0.030
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:
MAXIMUM INFLOW(CFS) = 150.23
AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 107.97
CHANNEL NORMAL VELOCITY FOR Q = 107.97 CFS = 5.06 FPS
ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.748

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.557

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
0.083	0.41	0.00	0.00
0.167	2.01	0.00	0.00
0.250	4.78	0.09	0.09
0.333	7.07	0.62	0.62
0.417	8.28	2.01	2.01
0.500	9.02	4.06	4.06
0.583	9.56	6.00	6.00
0.667	9.98	7.43	7.43

NS100E2.RES

0.750	10.31	8.44	8.44
0.833	10.58	9.16	9.16
0.917	10.82	9.69	9.69
1.000	11.02	10.09	10.09
1.083	11.20	10.42	10.42
1.167	11.35	10.69	10.69
1.250	11.50	10.91	10.91

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
1.333	11.62	11.11	11.11
1.417	11.73	11.28	11.28
1.500	11.83	11.43	11.43
1.583	11.90	11.56	11.56
1.667	11.97	11.68	11.68
1.750	12.03	11.78	11.78
1.833	12.09	11.86	11.86
1.917	12.16	11.93	11.93
2.000	12.22	12.00	12.00
2.083	12.29	12.07	12.07
2.167	12.35	12.13	12.13
2.250	12.39	12.20	12.20
2.333	12.42	12.26	12.26
2.417	12.46	12.32	12.32
2.500	12.50	12.37	12.37
2.583	12.54	12.41	12.41
2.667	12.58	12.45	12.45
2.750	12.62	12.48	12.48
2.833	12.65	12.52	12.52
2.917	12.69	12.56	12.56
3.000	12.73	12.60	12.60
3.083	12.77	12.64	12.64
3.167	12.81	12.68	12.68
3.250	12.86	12.72	12.72
3.333	12.90	12.76	12.76
3.417	12.94	12.80	12.80
3.500	12.98	12.84	12.84
3.583	13.02	12.88	12.88
3.667	13.07	12.92	12.92
3.750	13.11	12.96	12.96
3.833	13.15	13.01	13.01
3.917	13.20	13.05	13.05
4.000	13.24	13.09	13.09
4.083	13.29	13.14	13.14
4.167	13.33	13.18	13.18
4.250	13.38	13.22	13.22
4.333	13.43	13.27	13.27
4.417	13.47	13.32	13.32
4.500	13.52	13.36	13.36
4.583	13.57	13.41	13.41
4.667	13.62	13.45	13.45
4.750	13.67	13.50	13.50
4.833	13.72	13.55	13.55
4.917	13.77	13.60	13.60
5.000	13.82	13.65	13.65
5.083	13.87	13.70	13.70
5.167	13.92	13.75	13.75
5.250	13.97	13.80	13.80
5.333	14.03	13.85	13.85
5.417	14.08	13.90	13.90

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
5.500	14.13	13.95	13.95
5.583	14.19	14.01	14.01
5.667	14.24	14.06	14.06

5.750	14.30	14.11	14.11
5.833	14.36	14.17	14.17
5.917	14.42	14.22	14.22
6.000	14.47	14.28	14.28
6.083	14.53	14.34	14.34
6.167	14.59	14.39	14.39
6.250	14.65	14.45	14.45
6.333	14.71	14.51	14.51
6.417	14.78	14.57	14.57
6.500	14.84	14.63	14.63
6.583	14.90	14.69	14.69
6.667	14.97	14.75	14.75
6.750	15.03	14.81	14.81
6.833	15.10	14.88	14.88
6.917	15.16	14.94	14.94
7.000	15.23	15.01	15.01
7.083	15.30	15.07	15.07
7.167	15.37	15.14	15.14
7.250	15.44	15.21	15.21
7.333	15.51	15.27	15.27
7.417	15.58	15.34	15.34
7.500	15.66	15.41	15.41
7.583	15.73	15.48	15.48
7.667	15.81	15.56	15.56
7.750	15.89	15.63	15.63
7.833	15.96	15.70	15.70
7.917	16.04	15.78	15.78
8.000	16.12	15.86	15.86
8.083	16.20	15.93	15.93
8.167	16.29	16.01	16.01
8.250	16.37	16.09	16.09
8.333	16.46	16.17	16.17
8.417	16.54	16.25	16.25
8.500	16.63	16.34	16.34
8.583	16.72	16.42	16.42
8.667	16.81	16.51	16.51
8.750	16.90	16.60	16.60
8.833	17.00	16.68	16.68
8.917	17.09	16.78	16.78
9.000	17.19	16.87	16.87
9.083	17.29	16.96	16.96
9.167	17.39	17.05	17.05
9.250	17.49	17.15	17.15
9.333	17.59	17.25	17.25
9.417	17.70	17.35	17.35
9.500	17.81	17.45	17.45
9.583	17.92	17.55	17.55

‡

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
9.667	18.03	17.66	17.66
9.750	18.14	17.77	17.77
9.833	18.26	17.87	17.87
9.917	18.38	17.99	17.99
10.000	18.50	18.10	18.10
10.083	18.62	18.21	18.21
10.167	18.75	18.33	18.33
10.250	18.87	18.45	18.45
10.333	19.01	18.57	18.57
10.417	19.14	18.70	18.70
10.500	19.27	18.83	18.83
10.583	19.41	18.95	18.95
10.667	19.56	19.09	19.09
10.750	19.70	19.22	19.22
10.833	19.85	19.36	19.36
10.917	20.00	19.50	19.50
11.000	20.16	19.65	19.65
11.083	20.32	19.79	19.79
11.167	20.48	19.94	19.94
11.250	20.65	20.10	20.10

NS100E2.RES

11.333	20.82	20.26	20.26
11.417	20.99	20.42	20.42
11.500	21.17	20.58	20.58
11.583	21.36	20.75	20.75
11.667	21.55	20.93	20.93
11.750	21.74	21.10	21.10
11.833	21.94	21.29	21.29
11.917	22.15	21.47	21.47
12.000	22.36	21.67	21.67
12.083	22.71	21.87	21.87
12.167	23.47	22.07	22.07
12.250	24.62	22.31	22.31
12.333	25.61	22.70	22.70
12.417	26.25	23.38	23.38
12.500	26.74	24.29	24.29
12.583	27.17	25.17	25.17
12.667	27.56	25.88	25.88
12.750	27.93	26.45	26.45
12.833	28.30	26.94	26.94
12.917	28.66	27.37	27.37
13.000	29.01	27.76	27.76
13.083	29.37	28.14	28.14
13.167	29.74	28.51	28.51
13.250	30.11	28.87	28.87
13.333	30.49	29.23	29.23
13.417	30.88	29.60	29.60
13.500	31.28	29.97	29.97
13.583	31.68	30.34	30.34
13.667	32.10	30.73	30.73
13.750	32.54	31.12	31.12

‡

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
13.833	33.00	31.53	31.53
13.917	33.48	31.94	31.94
14.000	33.98	32.38	32.38
14.083	34.58	32.83	32.83
14.167	35.40	33.30	33.30
14.250	36.43	33.81	33.81
14.333	37.42	34.42	34.42
14.417	38.25	35.19	35.19
14.500	39.05	36.10	36.10
14.583	39.85	37.02	37.02
14.667	40.69	37.88	37.88
14.750	41.56	38.71	38.71
14.833	42.49	39.53	39.53
14.917	43.48	40.37	40.37
15.000	44.55	41.23	41.23
15.083	45.71	42.15	42.15
15.167	46.98	43.13	43.13
15.250	48.38	44.17	44.17
15.333	49.94	45.31	45.31
15.417	51.82	46.55	46.55
15.500	54.30	47.91	47.91
15.583	57.44	49.45	49.45
15.667	60.81	51.32	51.32
15.750	63.97	53.67	53.67
15.833	66.54	56.51	56.51
15.917	69.52	59.60	59.60
16.000	76.72	62.60	62.60
16.083	96.54	65.45	65.45
16.167	128.57	69.30	69.30
16.250	150.23	77.80	77.80
16.333	134.37	95.29	95.29
16.417	106.41	118.59	118.59
16.500	90.69	132.70	132.70
16.583	80.26	127.47	127.47
16.667	72.44	112.28	112.28
16.750	66.48	97.96	97.96
16.833	61.70	86.39	86.39

Page 10

NS100E2.RES

16.917	57.84	77.31	77.31
17.000	54.49	70.23	70.23
17.083	51.60	64.63	64.63
17.167	48.76	60.11	60.11
17.250	46.16	56.35	56.35
17.333	43.47	53.08	53.08
17.417	41.55	50.10	50.10
17.500	39.71	47.31	47.31
17.583	37.55	44.75	44.75
17.667	36.21	42.56	42.56
17.750	35.09	40.50	40.50
17.833	34.09	38.57	38.57
17.917	33.18	37.01	37.01

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
18.000	32.34	35.72	35.72
18.083	31.34	34.61	34.61
18.167	29.87	33.63	33.63
18.250	27.69	32.69	32.69
18.333	26.25	31.61	31.61
18.417	25.23	30.16	30.16
18.500	24.43	28.47	28.47
18.583	23.75	27.01	27.01
18.667	23.14	25.84	25.84
18.750	22.59	24.90	24.90
18.833	22.09	24.13	24.13
18.917	21.63	23.46	23.46
19.000	21.20	22.87	22.87
19.083	20.80	22.34	22.34
19.167	20.42	21.85	21.85
19.250	20.06	21.40	21.40
19.333	19.74	20.98	20.98
19.417	19.42	20.59	20.59
19.500	19.12	20.23	20.23
19.583	18.85	19.88	19.88
19.667	18.58	19.56	19.56
19.750	18.33	19.26	19.26
19.833	18.09	18.97	18.97
19.917	17.85	18.70	18.70
20.000	17.63	18.44	18.44
20.083	17.41	18.19	18.19
20.167	17.20	17.95	17.95
20.250	17.01	17.73	17.73
20.333	16.82	17.50	17.50
20.417	16.64	17.29	17.29
20.500	16.46	17.09	17.09
20.583	16.29	16.90	16.90
20.667	16.12	16.71	16.71
20.750	15.96	16.53	16.53
20.833	15.81	16.36	16.36
20.917	15.66	16.19	16.19
21.000	15.51	16.03	16.03
21.083	15.37	15.87	15.87
21.167	15.23	15.72	15.72
21.250	15.09	15.57	15.57
21.333	14.96	15.43	15.43
21.417	14.83	15.29	15.29
21.500	14.71	15.15	15.15
21.583	14.59	15.02	15.02
21.667	14.47	14.89	14.89
21.750	14.35	14.76	14.76
21.833	14.24	14.64	14.64
21.917	14.13	14.52	14.52
22.000	14.02	14.40	14.40
22.083	13.91	14.29	14.29

CONVEX METHOD CHANNEL ROUTING RESULTS:

OUTFLOW LESS

```
                                                          NS100E2.RES
 MODEL        INFLOW     ROUTED      LOSS
  TIME      (STREAM 1)    FLOW     (STREAM 1)
 (HRS)        (CFS)       (CFS)      (CFS)
22.167        13.81       14.17       14.17
22.250        13.71       14.06       14.06
22.333        13.61       13.96       13.96
22.417        13.51       13.85       13.85
22.500        13.42       13.75       13.75
22.583        13.33       13.65       13.65
22.667        13.23       13.55       13.55
22.750        13.15       13.46       13.46
22.833        13.06       13.36       13.36
22.917        12.97       13.27       13.27
23.000        12.89       13.18       13.18
23.083        12.81       13.09       13.09
23.167        12.73       13.01       13.01
23.250        12.65       12.92       12.92
23.333        12.57       12.84       12.84
23.417        12.49       12.76       12.76
23.500        12.42       12.68       12.68
23.583        12.34       12.60       12.60
23.667        12.27       12.52       12.52
23.750        12.20       12.45       12.45
23.833        12.13       12.37       12.37
23.917        12.06       12.30       12.30
24.000        11.99       12.23       12.23
24.083        11.52       12.16       12.16
24.167         9.86       12.09       12.09
24.250         7.04       11.93       11.93
24.333         4.72       11.33       11.33
24.417         3.51        9.89        9.89
24.500         2.77        7.80        7.80
24.583         2.24        5.82        5.82
24.667         1.84        4.37        4.37
24.750         1.53        3.37        3.37
24.833         1.27        2.65        2.65
24.917         1.06        2.13        2.13
25.000         0.88        1.74        1.74
================================================================================
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     47.163 AF
    OUTFLOW VOLUME =     47.163 AF
    LOSS    VOLUME =      0.000 AF
#


********************************************************************************
  FLOW PROCESS FROM NODE     18.01 TO NODE     18.02 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
================================================================================

         THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
         TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
         INTERVALS(Reference: the National Engineering Handbook,
         Hydrology, Chapter 17, page 17-52, August,1972,
         U.S. Department of Commerce).


         ASSUMED REGULAR CHANNEL INFORMATION:
           BASEWIDTH(FT) =   67.00     CHANNEL Z =  4.00
           UPSTREAM ELEVATION(FT) =    1887.00
           DOWNSTREAM ELEVATION(FT) =    1633.00
           CHANNEL LENGTH(FT) =    5279.00     MANNING'S FACTOR = 0.030
           CONSTANT LOSS RATE(CFS) =    0.00


         CHANNEL ROUTING COEFFICIENT ESTIMATED:
           MAXIMUM INFLOW(CFS) =   132.70
           AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =    96.85
           CHANNEL NORMAL VELOCITY FOR Q =    96.85 CFS =   4.77 FPS
           ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.737

         MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
```

NS100E2.RES

UNIT INTERVALS IS CSTAR = 0.539

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
0.083	0.00	0.00	0.00
0.167	0.00	0.00	0.00
0.250	0.09	0.00	0.00
0.333	0.62	0.00	0.00
0.417	2.01	0.01	0.01
0.500	4.06	0.14	0.14
0.583	6.00	0.61	0.61
0.667	7.43	1.67	1.67
0.750	8.44	3.25	3.25
0.833	9.16	4.95	4.95
0.917	9.69	6.44	6.44
1.000	10.09	7.63	7.63
1.083	10.42	8.53	8.53
1.167	10.69	9.21	9.21
1.250	10.91	9.74	9.74

#

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
1.333	11.11	10.14	10.14
1.417	11.28	10.47	10.47
1.500	11.43	10.74	10.74
1.583	11.56	10.96	10.96
1.667	11.68	11.15	11.15
1.750	11.78	11.32	11.32
1.833	11.86	11.47	11.47
1.917	11.93	11.60	11.60
2.000	12.00	11.71	11.71
2.083	12.07	11.80	11.80
2.167	12.13	11.88	11.88
2.250	12.20	11.96	11.96
2.333	12.26	12.03	12.03
2.417	12.32	12.09	12.09
2.500	12.37	12.16	12.16
2.583	12.41	12.22	12.22
2.667	12.45	12.28	12.28
2.750	12.48	12.33	12.33
2.833	12.52	12.38	12.38
2.917	12.56	12.42	12.42
3.000	12.60	12.46	12.46
3.083	12.64	12.50	12.50
3.167	12.68	12.54	12.54
3.250	12.72	12.58	12.58
3.333	12.76	12.62	12.62
3.417	12.80	12.66	12.66
3.500	12.84	12.70	12.70
3.583	12.88	12.74	12.74
3.667	12.92	12.78	12.78
3.750	12.96	12.82	12.82
3.833	13.01	12.86	12.86
3.917	13.05	12.90	12.90
4.000	13.09	12.94	12.94
4.083	13.14	12.98	12.98
4.167	13.18	13.02	13.02
4.250	13.22	13.07	13.07
4.333	13.27	13.11	13.11
4.417	13.32	13.16	13.16
4.500	13.36	13.20	13.20
4.583	13.41	13.24	13.24
4.667	13.45	13.29	13.29
4.750	13.50	13.34	13.34
4.833	13.55	13.38	13.38
4.917	13.60	13.43	13.43

Page 13

NS100E2.RES

5.000	13.65	13.48	13.48
5.083	13.70	13.52	13.52
5.167	13.75	13.57	13.57
5.250	13.80	13.62	13.62
5.333	13.85	13.67	13.67
5.417	13.90	13.72	13.72

‡

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
5.500	13.95	13.77	13.77
5.583	14.01	13.82	13.82
5.667	14.06	13.87	13.87
5.750	14.11	13.92	13.92
5.833	14.17	13.98	13.98
5.917	14.22	14.03	14.03
6.000	14.28	14.08	14.08
6.083	14.34	14.14	14.14
6.167	14.39	14.19	14.19
6.250	14.45	14.25	14.25
6.333	14.51	14.30	14.30
6.417	14.57	14.36	14.36
6.500	14.63	14.42	14.42
6.583	14.69	14.48	14.48
6.667	14.75	14.53	14.53
6.750	14.81	14.59	14.59
6.833	14.88	14.66	14.66
6.917	14.94	14.72	14.72
7.000	15.01	14.78	14.78
7.083	15.07	14.84	14.84
7.167	15.14	14.90	14.90
7.250	15.21	14.97	14.97
7.333	15.27	15.03	15.03
7.417	15.34	15.10	15.10
7.500	15.41	15.17	15.17
7.583	15.48	15.24	15.24
7.667	15.56	15.30	15.30
7.750	15.63	15.37	15.37
7.833	15.70	15.44	15.44
7.917	15.78	15.52	15.52
8.000	15.86	15.59	15.59
8.083	15.93	15.66	15.66
8.167	16.01	15.74	15.74
8.250	16.09	15.81	15.81
8.333	16.17	15.89	15.89
8.417	16.25	15.97	15.97
8.500	16.34	16.05	16.05
8.583	16.42	16.13	16.13
8.667	16.51	16.21	16.21
8.750	16.60	16.29	16.29
8.833	16.68	16.37	16.37
8.917	16.78	16.46	16.46
9.000	16.87	16.55	16.55
9.083	16.96	16.63	16.63
9.167	17.05	16.72	16.72
9.250	17.15	16.82	16.82
9.333	17.25	16.91	16.91
9.417	17.35	17.00	17.00
9.500	17.45	17.10	17.10
9.583	17.55	17.19	17.19

‡

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
9.667	17.66	17.29	17.29
9.750	17.77	17.39	17.39
9.833	17.87	17.50	17.50
9.917	17.99	17.60	17.60

NS100E2.RES

10.000	18.10	17.71	17.71
10.083	18.21	17.81	17.81
10.167	18.33	17.92	17.92
10.250	18.45	18.04	18.04
10.333	18.57	18.15	18.15
10.417	18.70	18.27	18.27
10.500	18.83	18.38	18.38
10.583	18.95	18.51	18.51
10.667	19.09	18.63	18.63
10.750	19.22	18.75	18.75
10.833	19.36	18.88	18.88
10.917	19.50	19.01	19.01
11.000	19.65	19.15	19.15
11.083	19.79	19.28	19.28
11.167	19.94	19.42	19.42
11.250	20.10	19.56	19.56
11.333	20.26	19.71	19.71
11.417	20.42	19.86	19.86
11.500	20.58	20.01	20.01
11.583	20.75	20.17	20.17
11.667	20.93	20.33	20.33
11.750	21.10	20.49	20.49
11.833	21.29	20.66	20.66
11.917	21.47	20.83	20.83
12.000	21.67	21.01	21.01
12.083	21.87	21.19	21.19
12.167	22.07	21.37	21.37
12.250	22.31	21.56	21.56
12.333	22.70	21.76	21.76
12.417	23.38	21.96	21.96
12.500	24.29	22.21	22.21
12.583	25.17	22.58	22.58
12.667	25.88	23.15	23.15
12.750	26.45	23.90	23.90
12.833	26.94	24.69	24.69
12.917	27.37	25.42	25.42
13.000	27.76	26.05	26.05
13.083	28.14	26.59	26.59
13.167	28.51	27.07	27.07
13.250	28.87	27.50	27.50
13.333	29.23	27.90	27.90
13.417	29.60	28.28	28.28
13.500	29.97	28.65	28.65
13.583	30.34	29.02	29.02
13.667	30.73	29.39	29.39
13.750	31.12	29.76	29.76

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
13.833	31.53	30.13	30.13
13.917	31.94	30.51	30.51
14.000	32.38	30.90	30.90
14.083	32.83	31.30	31.30
14.167	33.30	31.71	31.71
14.250	33.81	32.14	32.14
14.333	34.42	32.58	32.58
14.417	35.19	33.05	33.05
14.500	36.10	33.55	33.55
14.583	37.02	34.13	34.13
14.667	37.88	34.84	34.84
14.750	38.71	35.66	35.66
14.833	39.53	36.52	36.52
14.917	40.37	37.38	37.38
15.000	41.23	38.22	38.22
15.083	42.15	39.05	39.05
15.167	43.13	39.89	39.89
15.250	44.17	40.75	40.75
15.333	45.31	41.65	41.65
15.417	46.55	42.61	42.61
15.500	47.91	43.62	43.62

Page 15

NS100E2.RES

15.583	49.45	44.72	44.72
15.667	51.32	45.91	45.91
15.750	53.67	47.22	47.22
15.833	56.51	48.71	48.71
15.917	59.60	50.47	50.47
16.000	62.60	52.63	52.63
16.083	65.45	55.19	55.19
16.167	69.30	58.02	58.02
16.250	77.80	60.92	60.92
16.333	95.29	63.94	63.94
16.417	118.59	68.12	68.12
16.500	132.70	75.99	75.99
16.583	127.47	89.92	89.92
16.667	112.28	107.50	107.50
16.750	97.96	120.28	120.28
16.833	86.39	121.85	121.85
16.917	77.31	114.52	114.52
17.000	70.23	103.85	103.85
17.083	64.63	93.07	93.07
17.167	60.11	83.51	83.51
17.250	56.35	75.51	75.51
17.333	53.08	68.96	68.96
17.417	50.10	63.63	63.63
17.500	47.31	59.21	59.21
17.583	44.75	55.46	55.46
17.667	42.56	52.15	52.15
17.750	40.50	49.16	49.16
17.833	38.57	46.45	46.45
17.917	37.01	44.05	44.05

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
18.000	35.72	41.84	41.84
18.083	34.61	39.84	39.84
18.167	33.63	38.12	38.12
18.250	32.69	36.66	36.66
18.333	31.61	35.41	35.41
18.417	30.16	34.31	34.31
18.500	28.47	33.27	33.27
18.583	27.01	32.16	32.16
18.667	25.84	30.83	30.83
18.750	24.90	29.34	29.34
18.833	24.13	27.91	27.91
18.917	23.46	26.65	26.65
19.000	22.87	25.59	25.59
19.083	22.34	24.70	24.70
19.167	21.85	23.94	23.94
19.250	21.40	23.28	23.28
19.333	20.98	22.70	22.70
19.417	20.59	22.17	22.17
19.500	20.23	21.69	21.69
19.583	19.88	21.25	21.25
19.667	19.56	20.84	20.84
19.750	19.26	20.46	20.46
19.833	18.97	20.10	20.10
19.917	18.70	19.76	19.76
20.000	18.44	19.45	19.45
20.083	18.19	19.15	19.15
20.167	17.95	18.87	18.87
20.250	17.73	18.60	18.60
20.333	17.50	18.35	18.35
20.417	17.29	18.10	18.10
20.500	17.09	17.86	17.86
20.583	16.90	17.64	17.64
20.667	16.71	17.42	17.42
20.750	16.53	17.21	17.21
20.833	16.36	17.02	17.02
20.917	16.19	16.83	16.83
21.000	16.03	16.64	16.64
21.083	15.87	16.47	16.47

Page 16

NS100E2.RES

21.167	15.72	16.29	16.29
21.250	15.57	16.13	16.13
21.333	15.43	15.97	15.97
21.417	15.29	15.81	15.81
21.500	15.15	15.66	15.66
21.583	15.02	15.51	15.51
21.667	14.89	15.37	15.37
21.750	14.76	15.23	15.23
21.833	14.64	15.10	15.10
21.917	14.52	14.96	14.96
22.000	14.40	14.84	14.84
22.083	14.29	14.71	14.71

‡

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
22.167	14.17	14.59	14.59
22.250	14.06	14.47	14.47
22.333	13.96	14.35	14.35
22.417	13.85	14.24	14.24
22.500	13.75	14.13	14.13
22.583	13.65	14.02	14.02
22.667	13.55	13.91	13.91
22.750	13.46	13.81	13.81
22.833	13.36	13.71	13.71
22.917	13.27	13.61	13.61
23.000	13.18	13.51	13.51
23.083	13.09	13.42	13.42
23.167	13.01	13.33	13.33
23.250	12.92	13.24	13.24
23.333	12.84	13.15	13.15
23.417	12.76	13.06	13.06
23.500	12.68	12.97	12.97
23.583	12.60	12.89	12.89
23.667	12.52	12.81	12.81
23.750	12.45	12.73	12.73
23.833	12.37	12.65	12.65
23.917	12.30	12.57	12.57
24.000	12.23	12.49	12.49
24.083	12.16	12.42	12.42
24.167	12.09	12.34	12.34
24.250	11.93	12.27	12.27
24.333	11.33	12.20	12.20
24.417	9.89	12.12	12.12
24.500	7.80	11.93	11.93
24.583	5.82	11.39	11.39
24.667	4.37	10.26	10.26
24.750	3.37	8.63	8.63
24.833	2.65	6.90	6.90
24.917	2.13	5.38	5.38
25.000	1.74	4.19	4.19

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 47.163 AF
OUTFLOW VOLUME = 47.163 AF
LOSS VOLUME = 0.000 AF

‡

****

FLOW PROCESS FROM NODE 18.00 TO NODE 18.02 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

(UNIT-HYDROGRAPH ADDED TO STREAM #2)

WATERSHED AREA = 260.540 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.338 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.

```
 THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
 MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.321
LOW LOSS FRACTION = 0.236
*HYDROGRAPH MODEL #1 SPECIFIED*

SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.44
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.16
SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.79
SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.43
SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.06
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  9.83

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.988
 30-MINUTE FACTOR = 0.988
  1-HOUR FACTOR = 0.988
  3-HOUR FACTOR = 0.998
  6-HOUR FACTOR = 0.999
 24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =  24.655
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.230	70.276
2	9.397	225.824
3	22.558	414.691
4	40.122	553.416
5	55.762	492.794
6	65.126	295.058
7	71.365	196.582
8	75.790	139.444
9	79.242	108.752
10	82.021	87.556
11	84.354	73.522
12	86.317	61.868
13	87.958	51.693
14	89.401	45.471
15	90.674	40.113
16	91.807	35.697
17	92.771	30.358
18	93.681	28.700
19	94.474	24.968
20	95.199	22.850
21	95.905	22.240
22	96.429	16.509
23	96.908	15.081
24	97.386	15.081
25	97.858	14.867
26	98.127	8.487
27	98.304	5.566
28	98.481	5.581
29	98.658	5.566
30	98.835	5.581
31	99.012	5.576
32	99.189	5.576
33	99.366	5.576
34	99.543	5.576
35	99.720	5.576
36	99.897	5.576
37	100.000	3.253

NS100E2.RES

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 47.9091
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 165.3194

#

---

24 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 125.0 250.0 375.0 500.0
0.083	0.0061	0.88	Q
0.167	0.0316	3.70	Q
0.250	0.0928	8.90	Q
0.333	0.2019	15.84	VQ
0.417	0.3537	22.04	VQ
0.500	0.5313	25.79	V Q
0.583	0.7263	28.31	V Q
0.667	0.9338	30.13	V Q
0.750	1.1513	31.58	V Q
0.833	1.3769	32.76	V Q
0.917	1.6095	33.77	V Q
1.000	1.8480	34.64	V Q
1.083	2.0917	35.38	V Q
1.167	2.3400	36.05	V Q
1.250	2.5925	36.66	V Q
1.333	2.8487	37.21	V Q
1.417	3.1083	37.69	V Q
1.500	3.3711	38.16	V Q
1.583	3.6368	38.58	V Q
1.667	3.9053	38.98	V Q
1.750	4.1765	39.37	.V Q
1.833	4.4499	39.70	.V Q
1.917	4.7254	40.00	.V Q
2.000	5.0030	40.31	.V Q
2.083	5.2828	40.62	.V Q
2.167	5.5641	40.85	.V Q
2.250	5.8467	41.04	.V Q
2.333	6.1307	41.24	.V Q
2.417	6.4161	41.43	.V Q
2.500	6.7028	41.63	.V Q
2.583	6.9908	41.83	.V Q
2.667	7.2803	42.03	.V Q
2.750	7.5711	42.23	.V Q
2.833	7.8634	42.43	.V Q
2.917	8.1570	42.64	.V Q
3.000	8.4521	42.84	. VQ
3.083	8.7484	43.02	. VQ
3.167	9.0457	43.16	. VQ
3.250	9.3439	43.30	. VQ
3.333	9.6431	43.44	. VQ
3.417	9.9433	43.59	. VQ
3.500	10.2445	43.73	. VQ
3.583	10.5467	43.88	. VQ
3.667	10.8499	44.03	. VQ
3.750	11.1541	44.18	. VQ
3.833	11.4594	44.33	. VQ

#

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 125.0 250.0 375.0 500.0
3.917	11.7657	44.48	. VQ
4.000	12.0731	44.63	. VQ
4.083	12.3815	44.79	. VQ
4.167	12.6910	44.94	. Q
4.250	13.0017	45.10	. Q
4.333	13.3134	45.26	. Q
4.417	13.6262	45.42	. Q
4.500	13.9401	45.59	. Q
4.583	14.2552	45.75	. Q

NS100E2.RES

4.667	14.5715	45.92	.	Q	.	.	.	.
4.750	14.8889	46.09	.	Q	.	.	.	.
4.833	15.2074	46.26	.	Q	.	.	.	.
4.917	15.5272	46.43	.	Q	.	.	.	.
5.000	15.8481	46.60	.	Q	.	.	.	.
5.083	16.1703	46.78	.	Q	.	.	.	.
5.167	16.4937	46.96	.	Q	.	.	.	.
5.250	16.8183	47.14	.	QV	.	.	.	.
5.333	17.1442	47.32	.	QV	.	.	.	.
5.417	17.4713	47.50	.	QV	.	.	.	.
5.500	17.7997	47.69	.	QV	.	.	.	.
5.583	18.1295	47.88	.	QV	.	.	.	.
5.667	18.4605	48.07	.	QV	.	.	.	.
5.750	18.7929	48.26	.	QV	.	.	.	.
5.833	19.1266	48.45	.	QV	.	.	.	.
5.917	19.4616	48.65	.	QV	.	.	.	.
6.000	19.7981	48.85	.	QV	.	.	.	.
6.083	20.1359	49.05	.	QV	.	.	.	.
6.167	20.4752	49.26	.	QV	.	.	.	.
6.250	20.8158	49.47	.	Q V	.	.	.	.
6.333	21.1579	49.67	.	Q V	.	.	.	.
6.417	21.5015	49.89	.	Q V	.	.	.	.
6.500	21.8466	50.10	.	QV	.	.	.	.
6.583	22.1931	50.32	.	QV	.	.	.	.
6.667	22.5412	50.54	.	QV	.	.	.	.
6.750	22.8908	50.76	.	QV	.	.	.	.
6.833	23.2420	50.99	.	QV	.	.	.	.
6.917	23.5947	51.22	.	QV	.	.	.	.
7.000	23.9491	51.45	.	QV	.	.	.	.
7.083	24.3051	51.69	.	QV	.	.	.	.
7.167	24.6627	51.92	.	QV	.	.	.	.
7.250	25.0219	52.17	.	Q V	.	.	.	.
7.333	25.3829	52.41	.	Q V	.	.	.	.
7.417	25.7456	52.66	.	Q V	.	.	.	.
7.500	26.1100	52.91	.	Q V	.	.	.	.
7.583	26.4762	53.17	.	Q V	.	.	.	.
7.667	26.8441	53.43	.	Q V	.	.	.	.
7.750	27.2139	53.69	.	Q V	.	.	.	.
7.833	27.5855	53.96	.	Q V	.	.	.	.
7.917	27.9590	54.23	.	Q V	.	.	.	.
8.000	28.3343	54.50	.	Q V	.	.	.	.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
8.083	28.7116	54.78	.	Q V	.	.	.
8.167	29.0908	55.06	.	Q V	.	.	.
8.250	29.4720	55.35	.	Q V	.	.	.
8.333	29.8553	55.64	.	Q V	.	.	.
8.417	30.2405	55.94	.	Q V	.	.	.
8.500	30.6279	56.24	.	Q V	.	.	.
8.583	31.0173	56.55	.	Q V	.	.	.
8.667	31.4089	56.86	.	Q V	.	.	.
8.750	31.8026	57.17	.	Q V	.	.	.
8.833	32.1986	57.49	.	Q V	.	.	.
8.917	32.5968	57.82	.	Q V	.	.	.
9.000	32.9973	58.15	.	Q V	.	.	.
9.083	33.4001	58.49	.	Q V	.	.	.
9.167	33.8053	58.83	.	Q V	.	.	.
9.250	34.2129	59.18	.	Q V	.	.	.
9.333	34.6230	59.54	.	Q V	.	.	.
9.417	35.0355	59.90	.	Q V	.	.	.
9.500	35.4506	60.27	.	Q V	.	.	.
9.583	35.8682	60.64	.	Q V	.	.	.
9.667	36.2885	61.02	.	Q V	.	.	.
9.750	36.7115	61.41	.	Q V	.	.	.
9.833	37.1371	61.81	.	Q V	.	.	.
9.917	37.5656	62.21	.	Q V	.	.	.
10.000	37.9969	62.63	.	Q V	.	.	.
10.083	38.4311	63.05	.	Q V	.	.	.
10.167	38.8683	63.47	.	Q V	.	.	.
10.250	39.3084	63.91	.	Q V	.	.	.
10.333	39.7517	64.36	.	Q V	.	.	.
10.417	40.1980	64.81	.	Q V	.	.	.

NS100E2.RES

10.500	40.6476	65.28	.	Q	V.	.	.	.	
10.583	41.1004	65.75	.	Q	V.	.	.	.	
10.667	41.5566	66.24	.	Q	V	.	.	.	
10.750	42.0162	66.73	.	Q	V	.	.	.	
10.833	42.4793	67.24	.	Q	V	.	.	.	
10.917	42.9459	67.76	.	Q	V	.	.	.	
11.000	43.4162	68.29	.	Q	V	.	.	.	
11.083	43.8902	68.83	.	Q	V	.	.	.	
11.167	44.3681	69.38	.	Q	V	.	.	.	
11.250	44.8498	69.95	.	Q	V	.	.	.	
11.333	45.3356	70.53	.	Q	V	.	.	.	
11.417	45.8255	71.13	.	Q	.V	.	.	.	
11.500	46.3196	71.74	.	Q	.V	.	.	.	
11.583	46.8180	72.37	.	Q	.V	.	.	.	
11.667	47.3209	73.01	.	Q	.V	.	.	.	
11.750	47.8283	73.68	.	Q	.V	.	.	.	
11.833	48.3403	74.35	.	Q	.V	.	.	.	
11.917	48.8572	75.05	.	Q	.V	.	.	.	
12.000	49.3791	75.77	.	Q	.V	.	.	.	
12.083	49.9081	76.82	.	Q	. V	.	.	.	
12.167	50.4493	78.58	.	Q	. V	.	.	.	

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
12.250	51.0086	81.21	.	Q	. V	.	.	.	
12.333	51.5904	84.47	.	Q	. V	.	.	.	
12.417	52.1929	87.49	.	Q	. V	.	.	.	
12.500	52.8104	89.65	.	Q	. V	.	.	.	
12.583	53.4398	91.40	.	Q	. V	.	.	.	
12.667	54.0797	92.92	.	Q	. V	.	.	.	
12.750	54.7294	94.33	.	Q	. V	.	.	.	
12.833	55.3883	95.68	.	Q	. V	.	.	.	
12.917	56.0564	97.00	.	Q	. V	.	.	.	
13.000	56.7333	98.29	.	Q	. V	.	.	.	
13.083	57.4192	99.59	.	Q	. V	.	.	.	
13.167	58.1140	100.89	.	Q	. V	.	.	.	
13.250	58.8179	102.21	.	Q	. V	.	.	.	
13.333	59.5310	103.55	.	Q	. V	.	.	.	
13.417	60.2536	104.91	.	Q	. V	.	.	.	
13.500	60.9858	106.32	.	Q	. V	.	.	.	
13.583	61.7279	107.76	.	Q	. V	.	.	.	
13.667	62.4803	109.25	.	Q	. V	.	.	.	
13.750	63.2434	110.80	.	Q	. V	.	.	.	
13.833	64.0174	112.38	.	Q	. V	.	.	.	
13.917	64.8028	114.04	.	Q	. V	.	.	.	
14.000	65.6000	115.76	.	Q	. V	.	.	.	
14.083	66.4112	117.78	.	Q	. V	.	.	.	
14.167	67.2396	120.28	.	Q	. V	.	.	.	
14.250	68.0895	123.41	.	Q	. V	.	.	.	
14.333	68.9643	127.02	.	Q	. V	.	.	.	
14.417	69.8636	130.58	.	Q	. V	.	.	.	
14.500	70.7843	133.69	.	Q	. V	.	.	.	
14.583	71.7255	136.66	.	Q	. V	.	.	.	
14.667	72.6871	139.62	.	Q	. V	.	.	.	
14.750	73.6697	142.68	.	Q	. V	.	.	.	
14.833	74.6743	145.86	.	Q	. V	.	.	.	
14.917	75.7020	149.24	.	Q	. V	.	.	.	
15.000	76.7545	152.82	.	Q	. V	.	.	.	
15.083	77.8336	156.68	.	Q	. V	.	.	.	
15.167	78.9413	160.83	.	Q	. V	.	.	.	
15.250	80.0804	165.40	.	Q	. V	.	.	.	
15.333	81.2540	170.41	.	Q	. V	.	.	.	
15.417	82.4676	176.22	.	Q	. V	.	.	.	
15.500	83.7290	183.15	.	Q	. V	.	.	.	
15.583	85.0482	191.54	.	Q	. V	.	.	.	
15.667	86.4354	201.42	.	Q	. V	.	.	.	
15.750	87.8949	211.92	.	Q	. V	.	.	.	
15.833	89.4254	222.23	.	Q	. V	.	.	.	
15.917	91.0429	234.86	.	Q	. V	.	.	.	
16.000	92.8018	255.40	.	Q	. V	.	.	.	
16.083	94.9072	305.71	.	Q	. V	.	.	.	
16.167	97.5487	383.55	.	Q	. V	.	.	.	
16.250	100.7122	459.34	.	Q	. V	.	.	.	

NS100E2.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
16.333	104.1303	496.30	.	.	.	V .	Q.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
16.417	107.2864	458.26	.	.	.	V .	Q .
16.500	109.8913	378.24	.	.	.	V Q	.
16.583	112.1425	326.87	.	.	.	QV .	.
16.667	114.1400	290.04	.	.	. Q	V .	.
16.750	115.9582	264.00	.	.	.Q	V .	.
16.833	117.6367	243.73	.	.	Q.	V .	.
16.917	119.2042	227.60	.	.	Q .	V .	.
17.000	120.6767	213.80	.	.	Q .	V.	.
17.083	122.0654	201.64	.	.	Q .	V.	.
17.167	123.3819	191.16	.	.	Q .	V.	.
17.250	124.6299	181.21	.	.	Q .	V	.
17.333	125.8131	171.80	.	.	Q .	V	.
17.417	126.9356	162.98	.	.	Q .	V	.
17.500	128.0113	156.19	.	.	Q .	V	.
17.583	129.0416	149.59	.	.Q	.	.V	.
17.667	130.0326	143.89	.	.Q	.	.V	.
17.750	130.9886	138.82	.	.Q	.	.V	.
17.833	131.9038	132.89	.	Q	.	.V	.
17.917	132.7896	128.61	.	Q	.	. V	.
18.000	133.6492	124.82	.	Q.	.	. V	.
18.083	134.4798	120.59	.	Q.	.	. V	.
18.167	135.2671	114.33	.	Q.	.	. V	.
18.250	136.0153	108.64	.	Q .	.	. V	.
18.333	136.7279	103.47	.	Q .	.	. V	.
18.417	137.4084	98.80	.	Q .	.	. V	.
18.500	138.0641	95.21	.	Q .	.	. V	.
18.583	138.6991	92.20	.	Q .	.	. V	.
18.667	139.3158	89.55	.	Q .	.	. V	.
18.750	139.9159	87.14	.	Q .	.	. V	.
18.833	140.5008	84.92	.	Q .	.	. V	.
18.917	141.0706	82.74	.	Q .	.	. V	.
19.000	141.6248	80.47	.	Q .	.	. V	.
19.083	142.1594	77.62	.	Q .	.	. V	.
19.167	142.6747	74.82	.	Q .	.	. V	.
19.250	143.1783	73.12	.	Q .	.	. V	.
19.333	143.6713	71.58	.	Q .	.	. V	.
19.417	144.1546	70.17	.	Q .	.	. V	.
19.500	144.6289	68.87	.	Q .	.	. V	.
19.583	145.0947	67.64	.	Q .	.	. V	.
19.667	145.5527	66.49	.	Q .	.	. V	.
19.750	146.0030	65.39	.	Q .	.	. V	.
19.833	146.4463	64.36	.	Q .	.	. V	.
19.917	146.8828	63.39	.	Q .	.	. V	.
20.000	147.3129	62.45	.	Q .	.	. V	.
20.083	147.7368	61.55	.	Q .	.	. V	.
20.167	148.1550	60.72	.	Q .	.	. V	.
20.250	148.5678	59.94	.	Q .	.	. V	.
20.333	148.9755	59.19	.	Q .	.	. V	.
20.417	149.3781	58.46	.	Q .	.	. V	.
20.500	149.7759	57.76	.	Q .	.	. V	.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
20.583	150.1690	57.08	.	Q .	.	. V	.
20.667	150.5576	56.42	.	Q .	.	. V	.
20.750	150.9418	55.79	.	Q .	.	. V	.
20.833	151.3218	55.17	.	Q .	.	. V	.
20.917	151.6976	54.58	.	Q .	.	. V	.
21.000	152.0695	54.00	.	Q .	.	. V	.
21.083	152.4376	53.44	.	Q .	.	. V	.
21.167	152.8020	52.92	.	Q .	.	. V	.
21.250	153.1630	52.41	.	Q .	.	. V	.
21.333	153.5206	51.92	.	Q .	.	. V	.
21.417	153.8748	51.44	.	Q .	.	. V	.
21.500	154.2259	50.97	.	Q .	.	. V	.
21.583	154.5738	50.52	.	Q .	.	. V	.
21.667	154.9187	50.08	.	Q .	.	. V	.
21.750	155.2606	49.65	.	Q .	.	. V	.

NS100E2.RES

21.833	155.5997	49.23	. Q	.	.	.	V .
21.917	155.9359	48.82	. Q	.	.	.	V .
22.000	156.2693	48.42	. Q	.	.	.	V .
22.083	156.6001	48.03	. Q	.	.	.	V .
22.167	156.9282	47.65	. Q	.	.	.	V .
22.250	157.2538	47.27	. Q	.	.	.	V .
22.333	157.5769	46.91	. Q	.	.	.	V .
22.417	157.8975	46.55	. Q	.	.	.	V .
22.500	158.2157	46.21	. Q	.	.	.	V .
22.583	158.5316	45.87	. Q	.	.	.	V .
22.667	158.8452	45.53	. Q	.	.	.	V .
22.750	159.1565	45.21	. Q	.	.	.	V .
22.833	159.4657	44.89	. Q	.	.	.	V .
22.917	159.7727	44.58	. Q	.	.	.	V .
23.000	160.0776	44.27	. Q	.	.	.	V .
23.083	160.3804	43.97	. Q	.	.	.	V .
23.167	160.6812	43.68	. Q	.	.	.	V .
23.250	160.9801	43.39	. Q	.	.	.	V .
23.333	161.2769	43.11	. Q	.	.	.	V.
23.417	161.5719	42.83	. Q	.	.	.	V.
23.500	161.8650	42.56	. Q	.	.	.	V.
23.583	162.1562	42.29	. Q	.	.	.	V.
23.667	162.4457	42.03	. Q	.	.	.	V.
23.750	162.7334	41.77	. Q	.	.	.	V.
23.833	163.0193	41.52	. Q	.	.	.	V.
23.917	163.3035	41.27	. Q	.	.	.	V.
24.000	163.5860	41.02	. Q	.	.	.	V.
24.083	163.8609	39.91	. Q	.	.	.	V.
24.167	164.1147	36.86	. Q	.	.	.	V.
24.250	164.3315	31.47	. Q	.	.	.	V.
24.333	164.4994	24.38	.Q	.	.	.	V.
24.417	164.6240	18.09	.Q	.	.	.	V.
24.500	164.7225	14.30	.Q	.	.	.	V.
24.583	164.8035	11.77	Q	.	.	.	V.
24.667	164.8721	9.96	Q	.	.	.	V.

♀

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
24.750	164.9309	8.54	Q	.	.	.	V.
24.833	164.9819	7.40	Q	.	.	.	V.
24.917	165.0262	6.44	Q	.	.	.	V.
25.000	165.0650	5.63	Q	.	.	.	V.
25.083	165.0991	4.95	Q	.	.	.	V.
25.167	165.1291	4.35	Q	.	.	.	V.
25.250	165.1554	3.83	Q	.	.	.	V.
25.333	165.1785	3.36	Q	.	.	.	V.
25.417	165.1989	2.96	Q	.	.	.	V.
25.500	165.2167	2.59	Q	.	.	.	V.
25.583	165.2323	2.26	Q	.	.	.	V.
25.667	165.2458	1.96	Q	.	.	.	V.
25.750	165.2573	1.67	Q	.	.	.	V.
25.833	165.2673	1.46	Q	.	.	.	V.
25.917	165.2760	1.26	Q	.	.	.	V.
26.000	165.2833	1.06	Q	.	.	.	V.
26.083	165.2893	0.87	Q	.	.	.	V.
26.167	165.2946	0.76	Q	.	.	.	V.
26.250	165.2993	0.69	Q	.	.	.	V.
26.333	165.3035	0.61	Q	.	.	.	V.
26.417	165.3072	0.54	Q	.	.	.	V.
26.500	165.3105	0.47	Q	.	.	.	V.
26.583	165.3132	0.40	Q	.	.	.	V.
26.667	165.3154	0.32	Q	.	.	.	V.
26.750	165.3172	0.25	Q	.	.	.	V.
26.833	165.3184	0.18	Q	.	.	.	V.
26.917	165.3192	0.11	Q	.	.	.	V.
27.000	165.3194	0.04	Q	.	.	.	V

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)

NS100E2.RES

0%	1620.0
10%	930.0
20%	320.0
30%	165.0
40%	90.0
50%	50.0
60%	35.0
70%	25.0
80%	15.0
90%	15.0

FLOW PROCESS FROM NODE 18.02 TO NODE 18.02 IS CODE = 7

>>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<

FLOW PROCESS FROM NODE 18.02 TO NODE 18.02 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 150.0 300.0 450.0 600.0
0.083	0.0061	0.88	Q
0.167	0.0316	3.70	Q
0.250	0.0928	8.90	Q
0.333	0.2019	15.84	VQ
0.417	0.3538	22.05	VQ
0.500	0.5323	25.92	VQ
0.583	0.7315	28.92	VQ
0.667	0.9505	31.81	V Q
0.750	1.1904	34.83	V Q
0.833	1.4501	37.71	V Q
0.917	1.7271	40.21	V Q
1.000	2.0181	42.26	V Q
1.083	2.3205	43.91	V Q
1.167	2.6323	45.27	V Q
1.250	2.9518	46.39	V Q
1.333	3.2779	47.35	V Q
1.417	3.6096	48.16	V Q
1.500	3.9464	48.90	V Q
1.583	4.2876	49.54	V Q
1.667	4.6329	50.14	V Q
1.750	4.9820	50.70	V Q
1.833	5.3344	51.16	.V Q
1.917	5.6898	51.60	.V Q
2.000	6.0480	52.02	.V Q
2.083	6.4090	52.42	.V Q
2.167	6.7722	52.73	.V Q
2.250	7.1372	53.00	.V Q
2.333	7.5040	53.26	.V Q
2.417	7.8726	53.53	.V Q
2.500	8.2431	53.79	.V Q
2.583	8.6153	54.05	.V Q
2.667	8.9894	54.31	.V Q
2.750	9.3652	54.56	.V Q
2.833	9.7427	54.81	.V Q
2.917	10.1219	55.06	.V Q
3.000	10.5027	55.31	.V Q
3.083	10.8851	55.52	. VQ
3.167	11.2687	55.70	. VQ
3.250	11.6536	55.88	. VQ
3.333	12.0397	56.06	. VQ
3.417	12.4270	56.24	. VQ

3.500	12.8157	56.43	. VQ	.	.	.	.
3.583	13.2056	56.61	. VQ	.	.	.	.
3.667	13.5968	56.80	. VQ	.	.	.	.
3.750	13.9893	56.99	. VQ	.	.	.	.
3.833	14.3831	57.18	. VQ	.	.	.	.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
3.917	14.7782	57.38	. VQ	.	.	.	.
4.000	15.1747	57.57	. VQ	.	.	.	.
4.083	15.5726	57.77	. VQ	.	.	.	.
4.167	15.9718	57.97	. Q	.	.	.	.
4.250	16.3724	58.17	. Q	.	.	.	.
4.333	16.7744	58.37	. Q	.	.	.	.
4.417	17.1778	58.58	. Q	.	.	.	.
4.500	17.5827	58.78	. Q	.	.	.	.
4.583	17.9890	58.99	. Q	.	.	.	.
4.667	18.3967	59.21	. Q	.	.	.	.
4.750	18.8060	59.42	. Q	.	.	.	.
4.833	19.2167	59.64	. Q	.	.	.	.
4.917	19.6289	59.86	. Q	.	.	.	.
5.000	20.0427	60.08	. VQ	.	.	.	.
5.083	20.4580	60.30	. VQ	.	.	.	.
5.167	20.8748	60.53	. VQ	.	.	.	.
5.250	21.2933	60.76	. Q	.	.	.	.
5.333	21.7133	60.99	. Q	.	.	.	.
5.417	22.1349	61.22	. Q	.	.	.	.
5.500	22.5582	61.46	. Q	.	.	.	.
5.583	22.9831	61.70	. Q	.	.	.	.
5.667	23.4096	61.94	. Q	.	.	.	.
5.750	23.8379	62.18	. Q	.	.	.	.
5.833	24.2678	62.43	. Q	.	.	.	.
5.917	24.6995	62.68	. Q	.	.	.	.
6.000	25.1329	62.93	. Q	.	.	.	.
6.083	25.5681	63.19	. Q	.	.	.	.
6.167	26.0051	63.45	. Q	.	.	.	.
6.250	26.4439	63.71	. Q	.	.	.	.
6.333	26.8845	63.98	. QV	.	.	.	.
6.417	27.3270	64.25	. QV	.	.	.	.
6.500	27.7713	64.52	. QV	.	.	.	.
6.583	28.2176	64.80	. QV	.	.	.	.
6.667	28.6658	65.07	. QV	.	.	.	.
6.750	29.1159	65.36	. QV	.	.	.	.
6.833	29.5680	65.64	. QV	.	.	.	.
6.917	30.0221	65.94	. QV	.	.	.	.
7.000	30.4782	66.23	. QV	.	.	.	.
7.083	30.9364	66.53	. QV	.	.	.	.
7.167	31.3966	66.83	. QV	.	.	.	.
7.250	31.8590	67.14	. QV	.	.	.	.
7.333	32.3235	67.45	. Q V	.	.	.	.
7.417	32.7902	67.76	. Q V	.	.	.	.
7.500	33.2591	68.08	. Q V	.	.	.	.
7.583	33.7302	68.40	. Q V	.	.	.	.
7.667	34.2035	68.73	. Q V	.	.	.	.
7.750	34.6792	69.06	. Q V	.	.	.	.
7.833	35.1571	69.40	. Q V	.	.	.	.
7.917	35.6375	69.74	. Q V	.	.	.	.
8.000	36.1202	70.09	. Q V	.	.	.	.

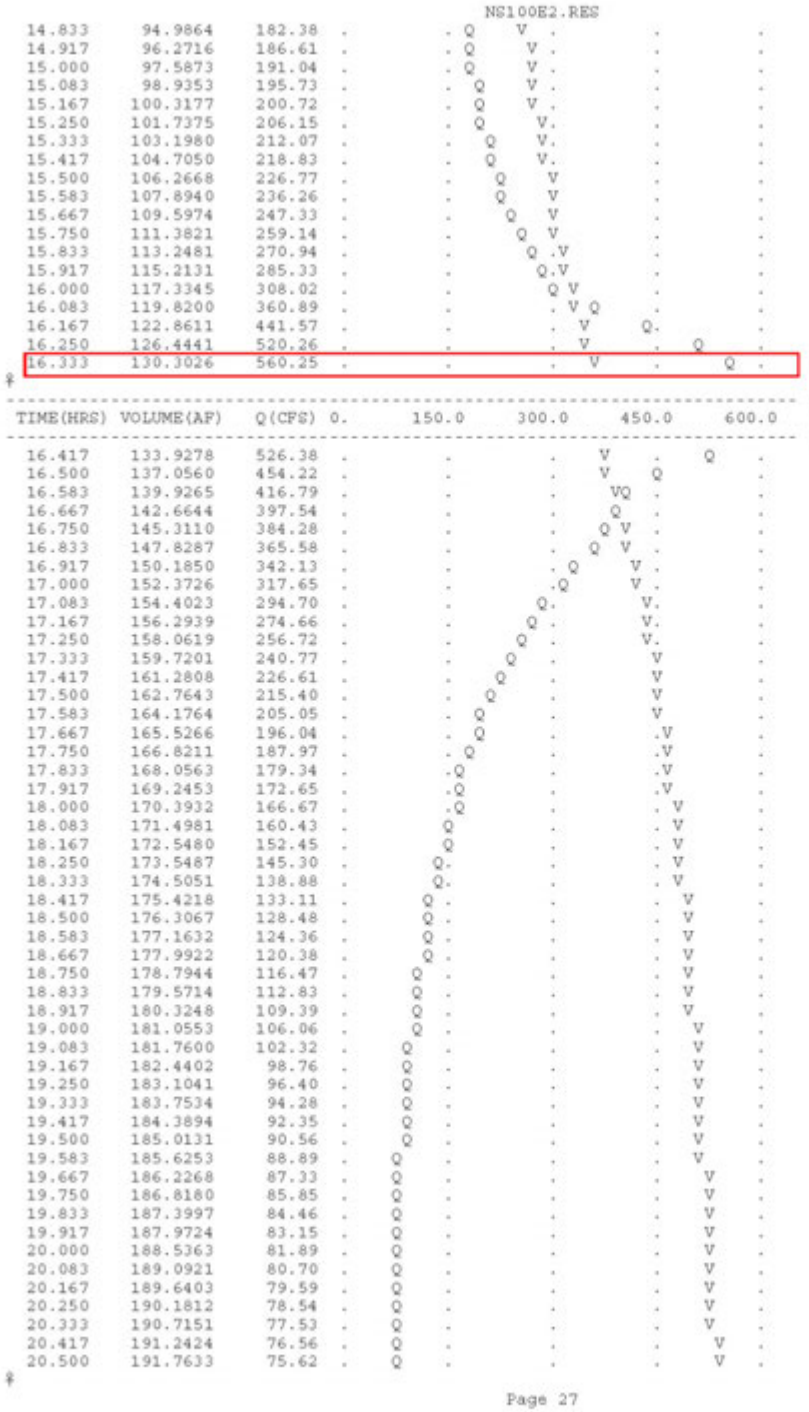
TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
8.083	36.6053	70.44	. Q V	.	.	.	.
8.167	37.0929	70.80	. Q V	.	.	.	.
8.250	37.5830	71.16	. Q V	.	.	.	.
8.333	38.0757	71.53	. Q V	.	.	.	.
8.417	38.5709	71.91	. Q V	.	.	.	.
8.500	39.0688	72.29	. Q V	.	.	.	.
8.583	39.5693	72.67	. Q V	.	.	.	.
8.667	40.0725	73.07	. Q V	.	.	.	.
8.750	40.5784	73.46	. Q V	.	.	.	.
8.833	41.0872	73.87	. Q V	.	.	.	.
8.917	41.5987	74.28	. Q V	.	.	.	.

NS100E2.RES

9.000	42.1132	74.70	.	Q	V	.	.	.	.
9.083	42.6306	75.13	.	Q	V	.	.	.	.
9.167	43.1510	75.56	.	Q	V	.	.	.	.
9.250	43.6744	76.00	.	Q	V	.	.	.	.
9.333	44.2008	76.45	.	Q	V	.	.	.	.
9.417	44.7305	76.90	.	Q	V	.	.	.	.
9.500	45.2633	77.36	.	Q	V	.	.	.	.
9.583	45.7994	77.84	.	Q	V	.	.	.	.
9.667	46.3387	78.32	.	Q	V	.	.	.	.
9.750	46.8815	78.81	.	Q	V	.	.	.	.
9.833	47.4277	79.31	.	Q	V	.	.	.	.
9.917	47.9774	79.81	.	Q	V.	.	.	.	.
10.000	48.5306	80.33	.	Q	V.	.	.	.	.
10.083	49.0875	80.86	.	Q	V.	.	.	.	.
10.167	49.6481	81.40	.	Q	V.	.	.	.	.
10.250	50.2125	81.95	.	Q	V.	.	.	.	.
10.333	50.7807	82.51	.	Q	V.	.	.	.	.
10.417	51.3528	83.08	.	Q	V.	.	.	.	.
10.500	51.9290	83.66	.	Q	V.	.	.	.	.
10.583	52.5093	84.26	.	Q	V.	.	.	.	.
10.667	53.0938	84.86	.	Q	V.	.	.	.	.
10.750	53.6825	85.49	.	Q	V	.	.	.	.
10.833	54.2756	86.12	.	Q	V	.	.	.	.
10.917	54.8732	86.77	.	Q	V	.	.	.	.
11.000	55.4754	87.43	.	Q	V	.	.	.	.
11.083	56.0822	88.11	.	Q	V	.	.	.	.
11.167	56.6938	88.81	.	Q	V	.	.	.	.
11.250	57.3103	89.52	.	Q	V	.	.	.	.
11.333	57.9318	90.24	.	Q	V	.	.	.	.
11.417	58.5585	90.99	.	Q	.V	.	.	.	.
11.500	59.1904	91.75	.	Q	.V	.	.	.	.
11.583	59.8277	92.54	.	Q	.V	.	.	.	.
11.667	60.4706	93.34	.	Q	.V	.	.	.	.
11.750	61.1191	94.17	.	Q	.V	.	.	.	.
11.833	61.7734	95.01	.	Q	.V	.	.	.	.
11.917	62.4338	95.88	.	Q	.V	.	.	.	.
12.000	63.1003	96.77	.	Q	.V	.	.	.	.
12.083	63.7753	98.01	.	Q	. V	.	.	.	.
12.167	64.4636	99.95	.	Q	. V	.	.	.	.

#

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
12.250	65.1714	102.77	.	Q	. V	.	.	.	.
12.333	65.9030	106.23	.	Q	. V	.	.	.	.
12.417	66.6568	109.45	.	Q	. V	.	.	.	.
12.500	67.4272	111.86	.	Q	. V	.	.	.	.
12.583	68.2121	113.97	.	Q	. V	.	.	.	.
12.667	69.0115	116.06	.	Q	. V	.	.	.	.
12.750	69.8257	118.23	.	Q	. V	.	.	.	.
12.833	70.6547	120.37	.	Q	. V	.	.	.	.
12.917	71.4977	122.41	.	Q	. V	.	.	.	.
13.000	72.3541	124.34	.	Q	. V	.	.	.	.
13.083	73.2231	126.18	.	Q	. V	.	.	.	.
13.167	74.1043	127.96	.	Q	. V	.	.	.	.
13.250	74.9976	129.71	.	Q	. V	.	.	.	.
13.333	75.9029	131.45	.	Q	. V	.	.	.	.
13.417	76.8202	133.19	.	Q	. V	.	.	.	.
13.500	77.7497	134.97	.	Q	. V	.	.	.	.
13.583	78.6918	136.78	.	Q.	V	.	.	.	.
13.667	79.6465	138.63	.	Q.	V	.	.	.	.
13.750	80.6145	140.55	.	Q.	V	.	.	.	.
13.833	81.5960	142.51	.	Q.	V	.	.	.	.
13.917	82.5916	144.55	.	Q.	V	.	.	.	.
14.000	83.6017	146.67	.	Q.	V	.	.	.	.
14.083	84.6284	149.08	.	Q.	V	.	.	.	.
14.167	85.6752	152.00	.	Q	V	.	.	.	.
14.250	86.7465	155.55	.	Q	V	.	.	.	.
14.333	87.8457	159.60	.	Q	V	.	.	.	.
14.417	88.9725	163.62	.	Q	V	.	.	.	.
14.500	90.1243	167.24	.	.Q	V	.	.	.	.
14.583	91.3006	170.80	.	.Q	V	.	.	.	.
14.667	92.5021	174.46	.	.Q	V	.	.	.	.
14.750	93.7303	178.34	.	.Q	V	.	.	.	.



NS100E2.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
14.833	94.9864	182.38					
14.917	96.2716	186.61					
15.000	97.5873	191.04					
15.083	98.9353	195.73					
15.167	100.3177	200.72					
15.250	101.7375	206.15					
15.333	103.1980	212.07					
15.417	104.7050	218.83					
15.500	106.2668	226.77					
15.583	107.8940	236.26					
15.667	109.5974	247.33					
15.750	111.3821	259.14					
15.833	113.2481	270.94					
15.917	115.2131	285.33					
16.000	117.3345	308.02					
16.083	119.8200	360.89					
16.167	122.8611	441.57					
16.250	126.4441	520.26					
16.333	130.3026	560.25					
16.417	133.9278	526.38					
16.500	137.0560	454.22					
16.583	139.9265	416.79					
16.667	142.6644	397.54					
16.750	145.3110	384.28					
16.833	147.8287	365.58					
16.917	150.1850	342.13					
17.000	152.3726	317.65					
17.083	154.4023	294.70					
17.167	156.2939	274.66					
17.250	158.0619	256.72					
17.333	159.7201	240.77					
17.417	161.2808	226.61					
17.500	162.7643	215.40					
17.583	164.1764	205.05					
17.667	165.5266	196.04					
17.750	166.8211	187.97					
17.833	168.0563	179.34					
17.917	169.2453	172.65					
18.000	170.3932	166.67					
18.083	171.4981	160.43					
18.167	172.5480	152.45					
18.250	173.5487	145.30					
18.333	174.5051	138.88					
18.417	175.4218	133.11					
18.500	176.3067	128.48					
18.583	177.1632	124.36					
18.667	177.9922	120.38					
18.750	178.7944	116.47					
18.833	179.5714	112.83					
18.917	180.3248	109.39					
19.000	181.0553	106.06					
19.083	181.7600	102.32					
19.167	182.4402	98.76					
19.250	183.1041	96.40					
19.333	183.7534	94.28					
19.417	184.3894	92.35					
19.500	185.0131	90.56					
19.583	185.6253	88.89					
19.667	186.2268	87.33					
19.750	186.8180	85.85					
19.833	187.3997	84.46					
19.917	187.9724	83.15					
20.000	188.5363	81.89					
20.083	189.0921	80.70					
20.167	189.6403	79.59					
20.250	190.1812	78.54					
20.333	190.7151	77.53					
20.417	191.2424	76.56					
20.500	191.7633	75.62					

Existing flows leaving onsite area to Deer Creek

Page 27

NS100E2.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
20.583	192.2778	74.72	. Q	.	.	.	V .
20.667	192.7864	73.85	. Q	.	.	.	V .
20.750	193.2892	73.00	. Q	.	.	.	V .
20.833	193.7864	72.19	. Q	.	.	.	V .
20.917	194.2781	71.40	. Q	.	.	.	V .
21.000	194.7646	70.64	. Q	.	.	.	V .
21.083	195.2461	69.91	. Q	.	.	.	V .
21.167	195.7228	69.22	. Q	.	.	.	V .
21.250	196.1948	68.54	. Q	.	.	.	V .
21.333	196.6624	67.89	. Q	.	.	.	V .
21.417	197.1255	67.25	. Q	.	.	.	V .
21.500	197.5844	66.63	. Q	.	.	.	V .
21.583	198.0392	66.03	. Q	.	.	.	V .
21.667	198.4899	65.45	. Q	.	.	.	V .
21.750	198.9368	64.88	. Q	.	.	.	V .
21.833	199.3798	64.32	. Q	.	.	.	V .
21.917	199.8190	63.78	. Q	.	.	.	V .
22.000	200.2546	63.25	. Q	.	.	.	V .
22.083	200.6867	62.74	. Q	.	.	.	V .
22.167	201.1153	62.23	. Q	.	.	.	V .
22.250	201.5405	61.74	. Q	.	.	.	V .
22.333	201.9625	61.26	. Q	.	.	.	V .
22.417	202.3811	60.79	. Q	.	.	.	V .
22.500	202.7967	60.34	. Q	.	.	.	V .
22.583	203.2091	59.89	. Q	.	.	.	V .
22.667	203.6185	59.45	. Q	.	.	.	V .
22.750	204.0250	59.02	. Q	.	.	.	V .
22.833	204.4286	58.60	. Q	.	.	.	V .
22.917	204.8293	58.19	. Q	.	.	.	V .
23.000	205.2273	57.79	. Q	.	.	.	V .
23.083	205.6225	57.39	. Q	.	.	.	V .
23.167	206.0151	57.00	. Q	.	.	.	V .
23.250	206.4051	56.62	. Q	.	.	.	V .
23.333	206.7925	56.25	. Q	.	.	.	V .
23.417	207.1774	55.89	. Q	.	.	.	V.
23.500	207.5598	55.53	. Q	.	.	.	V.
23.583	207.9398	55.18	. Q	.	.	.	V.
23.667	208.3175	54.83	. Q	.	.	.	V.
23.750	208.6928	54.50	. Q	.	.	.	V.
23.833	209.0658	54.16	. Q	.	.	.	V.
23.917	209.4366	53.84	. Q	.	.	.	V.
24.000	209.8052	53.52	. Q	.	.	.	V.
24.083	210.1656	52.32	. Q	.	.	.	V.
24.167	210.5044	49.20	. Q	.	.	.	V.
24.250	210.8056	43.74	. Q	.	.	.	V.
24.333	211.0576	36.58	. Q	.	.	.	V.
24.417	211.2656	30.21	. Q	.	.	.	V.
24.500	211.4463	26.23	.Q	.	.	.	V.
24.583	211.6057	23.16	.Q	.	.	.	V.
24.667	211.7450	20.22	.Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
24.750	211.8633	17.18	.Q	.	.	.	V.
24.833	211.9618	14.30	Q	.	.	.	V.
24.917	212.0432	11.82	Q	.	.	.	V.
25.000	212.1108	9.82	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1505.0
10%	1205.0
20%	380.0
30%	205.0
40%	120.0

```
                                        NS100E2.RES
            50%                         75.0
            60%                         55.0
            70%                         35.0
            80%                         20.0
            90%                         15.0
```

```
 ****************************************************************************
  FLOW PROCESS FROM NODE     18.02 TO NODE     18.02 IS CODE =   6
 ----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
 ****************************************************************************
```

```
 ****************************************************************************
  FLOW PROCESS FROM NODE     19.00 TO NODE     19.01 IS CODE =   1
 ----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
 ****************************************************************************

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =     641.200 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.376 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.354
         LOW LOSS FRACTION = 0.264
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.43
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.13
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.74
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.34
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.91
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  9.48

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.971
          30-MINUTE FACTOR = 0.971
           1-HOUR FACTOR = 0.971
           3-HOUR FACTOR = 0.996
           6-HOUR FACTOR = 0.998
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  22.163
```

```
 ****************************************************************************
                      UNIT HYDROGRAPH DETERMINATION

 ----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
 ----------------------------------------------------------------------------
          1                1.964               152.275
          2                7.947               463.940
          3               18.616               827.395
          4               33.689              1168.817
          5               49.462              1223.130
          6               60.511               856.787
          7               67.611               550.525
          8               72.542               382.417
          9               76.321               293.033
         10               79.373               236.708
         11               81.874               193.892
         12               83.999               164.818
```

NS100E2.RES

13	85.835	142.369
14	87.405	121.748
15	88.727	102.526
16	89.994	98.186
17	91.055	82.338
18	92.050	77.159
19	92.889	65.064
20	93.709	63.525
21	94.422	55.305
22	95.074	50.549
23	95.725	50.494
24	96.249	40.660
25	96.680	33.376
26	97.110	33.375
27	97.540	33.362
28	97.945	31.421
29	98.148	15.731
30	98.307	12.328
31	98.466	12.342
32	98.626	12.342
33	98.784	12.314
34	98.944	12.355
35	99.103	12.328
36	99.262	12.328
37	99.421	12.328
38	99.580	12.328
39	99.739	12.328
40	99.898	12.328
41	100.000	7.941

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 127.4034
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 378.2965

♀

==========

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

==========

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	275.0	550.0	825.0	1100.0
0.083	0.0121	1.75	Q	.	.	.	.
0.167	0.0609	7.09	Q	.	.	.	.
0.250	0.1755	16.63	Q	.	.	.	.
0.333	0.3830	30.12	VQ	.	.	.	.
0.417	0.6879	44.28	VQ	.	.	.	.
0.500	1.0615	54.25	VQ	.	.	.	.
0.583	1.4798	60.74	V Q	.	.	.	.
0.667	1.9296	65.30	V Q	.	.	.	.
0.750	2.4038	68.86	V Q	.	.	.	.
0.833	2.8981	71.77	V Q	.	.	.	.
0.917	3.4091	74.21	V Q	.	.	.	.
1.000	3.9347	76.31	V Q	.	.	.	.
1.083	4.4730	78.17	V Q	.	.	.	.
1.167	5.0225	79.79	V Q	.	.	.	.
1.250	5.5817	81.20	V Q	.	.	.	.
1.333	6.1503	82.56	V Q	.	.	.	.
1.417	6.7271	83.75	V Q	.	.	.	.
1.500	7.3117	84.88	V Q	.	.	.	.
1.583	7.9031	85.88	V Q	.	.	.	.
1.667	8.5013	86.86	V Q	.	.	.	.
1.750	9.1057	87.75	V Q	.	.	.	.
1.833	9.7159	88.60	.V Q	.	.	.	.
1.917	10.3318	89.44	.V Q	.	.	.	.
2.000	10.9529	90.18	.V Q	.	.	.	.
2.083	11.5785	90.83	.V Q	.	.	.	.
2.167	12.2086	91.49	.V Q	.	.	.	.
2.250	12.8433	92.16	.V Q	.	.	.	.

NS100E2.RES

2.333	13.4824	92.80	.V Q	
2.417	14.1248	93.27	.V Q	
2.500	14.7701	93.70	.V Q	
2.583	15.4184	94.13	.V Q	
2.667	16.0697	94.57	.V Q	
2.750	16.7241	95.01	.V Q	
2.833	17.3815	95.46	.V Q	
2.917	18.0420	95.90	.V Q	
3.000	18.7055	96.35	.V Q	
3.083	19.3722	96.80	. VQ	
3.167	20.0421	97.26	. VQ	
3.250	20.7151	97.72	. VQ	
3.333	21.3913	98.18	. VQ	
3.417	22.0704	98.60	. VQ	
3.500	22.7517	98.93	. VQ	
3.583	23.4353	99.26	. VQ	
3.667	24.1212	99.60	. VQ	
3.750	24.8095	99.93	. VQ	
3.833	25.5001	100.28	. VQ	

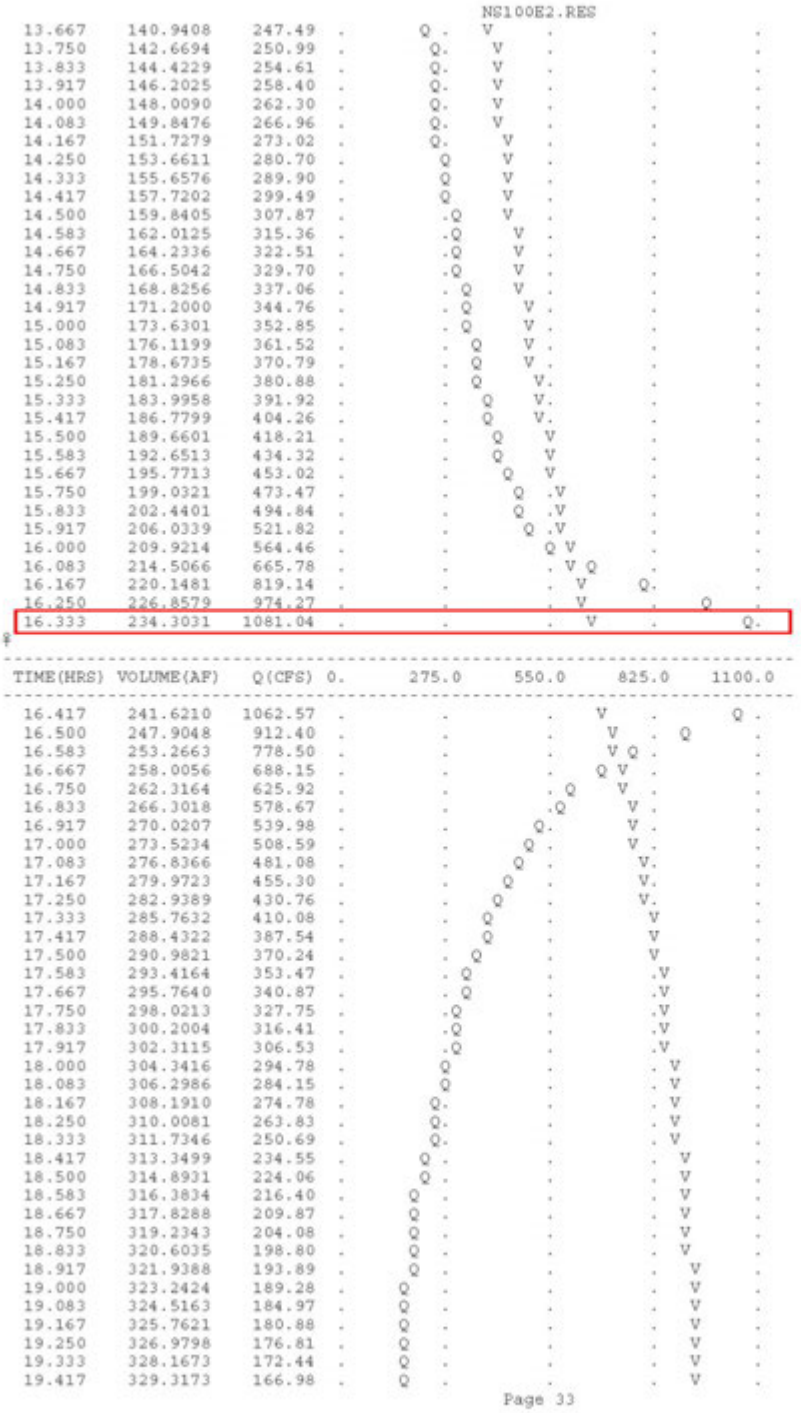
TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 275.0 550.0 825.0 1100.0
3.917	26.1931	100.62	. VQ
4.000	26.8885	100.97	. VQ
4.083	27.5863	101.32	. VQ
4.167	28.2865	101.68	. VQ
4.250	28.9893	102.04	. Q
4.333	29.6945	102.40	. Q
4.417	30.4022	102.77	. Q
4.500	31.1126	103.14	. Q
4.583	31.8254	103.51	. Q
4.667	32.5409	103.89	. Q
4.750	33.2591	104.27	. Q
4.833	33.9799	104.66	. Q
4.917	34.7034	105.05	. Q
5.000	35.4296	105.45	. Q
5.083	36.1585	105.85	. Q
5.167	36.8903	106.25	. Q
5.250	37.6248	106.66	. Q
5.333	38.3622	107.07	. QV
5.417	39.1025	107.49	. QV
5.500	39.8457	107.91	. QV
5.583	40.5918	108.34	. QV
5.667	41.3409	108.77	. QV
5.750	42.0930	109.21	. QV
5.833	42.8482	109.65	. QV
5.917	43.6065	110.10	. Q
6.000	44.3678	110.55	. Q
6.083	45.1324	111.01	. Q
6.167	45.9001	111.47	. Q
6.250	46.6711	111.94	. Q
6.333	47.4453	112.42	. QV
6.417	48.2229	112.90	. QV
6.500	49.0038	113.39	. QV
6.583	49.7881	113.88	. QV
6.667	50.5759	114.38	. QV
6.750	51.3671	114.89	. QV
6.833	52.1619	115.40	. QV
6.917	52.9603	115.93	. QV
7.000	53.7623	116.45	. QV
7.083	54.5680	116.99	. QV
7.167	55.3774	117.53	. QV
7.250	56.1906	118.08	. QV
7.333	57.0076	118.63	. Q V
7.417	57.8285	119.20	. Q V
7.500	58.6534	119.77	. Q V
7.583	59.4822	120.35	. Q V
7.667	60.3151	120.93	. Q V
7.750	61.1521	121.53	. Q V
7.833	61.9933	122.14	. Q V
7.917	62.8386	122.75	. Q V
8.000	63.6883	123.37	. Q V

NS100E2.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	275.0	550.0	825.0	1100.0
8.083	64.5424	124.01		Q V			
8.167	65.4008	124.65		Q V			
8.250	66.2638	125.30		Q V			
8.333	67.1313	125.96		Q V			
8.417	68.0034	126.63		Q V			
8.500	68.8802	127.32		Q V			
8.583	69.7618	128.01		Q V			
8.667	70.6483	128.71		Q V			
8.750	71.5397	129.43		Q V			
8.833	72.4361	130.16		Q V			
8.917	73.3376	130.90		Q V			
9.000	74.2443	131.65		Q V			
9.083	75.1562	132.42		Q V			
9.167	76.0735	133.19		Q V			
9.250	76.9963	133.99		Q V			
9.333	77.9246	134.79		Q V			
9.417	78.8586	135.61		Q V			
9.500	79.7983	136.44		Q V			
9.583	80.7438	137.30		Q V			
9.667	81.6953	138.16		Q V			
9.750	82.6529	139.04		Q V			
9.833	83.6167	139.94		Q V			
9.917	84.5868	140.86		Q V			
10.000	85.5633	141.79		Q V			
10.083	86.5463	142.74		Q V			
10.167	87.5360	143.71		Q V			
10.250	88.5326	144.70		Q V			
10.333	89.5361	145.71		Q V			
10.417	90.5467	146.74		Q V			
10.500	91.5645	147.79		Q V			
10.583	92.5898	148.87		Q V			
10.667	93.6226	149.96		Q V			
10.750	94.6631	151.09		Q V			
10.833	95.7115	152.23		Q V			
10.917	96.7680	153.40		Q V			
11.000	97.8328	154.60		Q V			
11.083	98.9060	155.83		Q V			
11.167	99.9878	157.08		Q V			
11.250	101.0785	158.37		Q V			
11.333	102.1783	159.69		Q V			
11.417	103.2874	161.04		Q V			
11.500	104.4059	162.42		Q .V			
11.583	105.5343	163.84		Q .V			
11.667	106.6727	165.29		Q .V			
11.750	107.8214	166.79		Q .V			
11.833	108.9807	168.32		Q .V			
11.917	110.1508	169.90		Q .V			
12.000	111.3320	171.52		Q .V			
12.083	112.5292	173.83		Q .V			
12.167	113.7516	177.49		Q . V			

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	275.0	550.0	825.0	1100.0
12.250	115.0100	182.72		Q . V			
12.333	116.3147	189.44		Q . V			
12.417	117.6676	196.44		Q . V			
12.500	119.0584	201.95		Q . V			
12.583	120.4788	206.24		Q . V			
12.667	121.9242	209.88		Q . V			
12.750	123.3926	213.21		Q . V			
12.833	124.8827	216.37		Q . V			
12.917	126.3939	219.42		Q . V			
13.000	127.9258	222.43		Q . V			
13.083	129.4783	225.42		Q . V			
13.167	131.0514	228.41		Q . V			
13.250	132.6452	231.42		Q . V			
13.333	134.2601	234.50		Q . V			
13.417	135.8967	237.62		Q . V			
13.500	137.5552	240.82		Q . V			
13.583	139.2363	244.10		Q . V			

Page 32



NS100E2.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	275.0	550.0	825.0	1100.0
13.667	140.9408	247.49					
13.750	142.6694	250.99					
13.833	144.4229	254.61					
13.917	146.2025	258.40					
14.000	148.0090	262.30					
14.083	149.8476	266.96					
14.167	151.7279	273.02					
14.250	153.6611	280.70					
14.333	155.6576	289.90					
14.417	157.7202	299.49					
14.500	159.8405	307.87					
14.583	162.0125	315.36					
14.667	164.2336	322.51					
14.750	166.5042	329.70					
14.833	168.8256	337.06					
14.917	171.2000	344.76					
15.000	173.6301	352.85					
15.083	176.1199	361.52					
15.167	178.6735	370.79					
15.250	181.2966	380.88					
15.333	183.9958	391.92					
15.417	186.7799	404.26					
15.500	189.6601	418.21					
15.583	192.6513	434.32					
15.667	195.7713	453.02					
15.750	199.0321	473.47					
15.833	202.4401	494.84					
15.917	206.0339	521.82					
16.000	209.9214	564.46					
16.083	214.5066	665.78					
16.167	220.1481	819.14					
16.250	226.8579	974.27					
16.333	234.3031	1081.04					
16.417	241.6210	1062.57					
16.500	247.9048	912.40					
16.583	253.2663	778.50					
16.667	258.0056	688.15					
16.750	262.3164	625.92					
16.833	266.3018	578.67					
16.917	270.0207	539.98					
17.000	273.5234	508.59					
17.083	276.8366	481.08					
17.167	279.9723	455.30					
17.250	282.9389	430.76					
17.333	285.7632	410.08					
17.417	288.4322	387.54					
17.500	290.9821	370.24					
17.583	293.4164	353.47					
17.667	295.7640	340.87					
17.750	298.0213	327.75					
17.833	300.2004	316.41					
17.917	302.3115	306.53					
18.000	304.3416	294.78					
18.083	306.2986	284.15					
18.167	308.1910	274.78					
18.250	310.0081	263.83					
18.333	311.7346	250.69					
18.417	313.3499	234.55					
18.500	314.8931	224.06					
18.583	316.3834	216.40					
18.667	317.8288	209.87					
18.750	319.2343	204.08					
18.833	320.6035	198.80					
18.917	321.9388	193.89					
19.000	323.2424	189.28					
19.083	324.5163	184.97					
19.167	325.7621	180.88					
19.250	326.9798	176.81					
19.333	328.1673	172.44					
19.417	329.3173	166.98					

Page 33

Existing flows leaving onsite area to Day Creek

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	275.0	550.0	825.0	1100.0
19.500	330.4271	161.14	. Q	.	.	. V	.
19.583	331.5141	157.83	. Q	.	.	. V	.
19.667	332.5801	154.79	. Q	.	.	. V	.
19.750	333.6270	152.00	. Q	.	.	. V	.
19.833	334.6558	149.39	. Q	.	.	. V	.
19.917	335.6676	146.91	. Q	.	.	. V	.
20.000	336.6634	144.59	. Q	.	.	. V	.
20.083	337.6440	142.40	. Q	.	.	. V	.
20.167	338.6103	140.29	. Q	.	.	. V	.
20.250	339.5626	138.27	. Q	.	.	. V	.
20.333	340.5015	136.34	. Q	.	.	. V	.
20.417	341.4282	134.55	. Q	.	.	. V	.
20.500	342.3433	132.88	. Q	.	.	. V	.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	275.0	550.0	825.0	1100.0
20.583	343.2473	131.26	. Q	.	.	. V	.
20.667	344.1406	129.70	. Q	.	.	. V	.
20.750	345.0234	128.19	. Q	.	.	. V	.
20.833	345.8963	126.74	. Q	.	.	. V	.
20.917	346.7594	125.33	. Q	.	.	. V	.
21.000	347.6131	123.96	. Q	.	.	. V	.
21.083	348.4577	122.63	. Q	.	.	. V	.
21.167	349.2934	121.35	. Q	.	.	. V	.
21.250	350.1205	120.10	. Q	.	.	. V	.
21.333	350.9392	118.88	. Q	.	.	. V	.
21.417	351.7500	117.72	. Q	.	.	. V	.
21.500	352.5531	116.62	. Q	.	.	. V	.
21.583	353.3489	115.55	. Q	.	.	. V	.
21.667	354.1376	114.51	. Q	.	.	. V	.
21.750	354.9193	113.50	. Q	.	.	. V	.
21.833	355.6942	112.51	. Q	.	.	. V	.
21.917	356.4624	111.55	. Q	.	.	. V	.
22.000	357.2242	110.62	. Q	.	.	. V	.
22.083	357.9798	109.70	. Q	.	.	. V	.
22.167	358.7292	108.81	. Q	.	.	. V	.
22.250	359.4726	107.94	. Q	.	.	. V	.
22.333	360.2101	107.09	. Q	.	.	. V	.
22.417	360.9420	106.26	. Q	.	.	. V	.
22.500	361.6682	105.45	. Q	.	.	. V	.
22.583	362.3889	104.66	. Q	.	.	. V	.
22.667	363.1044	103.88	. Q	.	.	. V	.
22.750	363.8146	103.12	. Q	.	.	. V	.
22.833	364.5197	102.38	. Q	.	.	. V	.
22.917	365.2197	101.65	. Q	.	.	. V	.
23.000	365.9149	100.94	. Q	.	.	. V	.
23.083	366.6053	100.24	. Q	.	.	. V	.
23.167	367.2909	99.56	. Q	.	.	. V	.
23.250	367.9719	98.89	. Q	.	.	. V	.
23.333	368.6484	98.23	. Q	.	.	. V	.
23.417	369.3205	97.58	. Q	.	.	. V.	
23.500	369.9882	96.95	. Q	.	.	. V.	
23.583	370.6517	96.33	. Q	.	.	. V.	
23.667	371.3109	95.72	. Q	.	.	. V.	
23.750	371.9661	95.13	. Q	.	.	. V.	
23.833	372.6172	94.54	. Q	.	.	. V.	
23.917	373.2643	93.96	. Q	.	.	. V.	
24.000	373.9076	93.40	. Q	.	.	. V.	
24.083	374.5349	91.09	. Q	.	.	. V.	
24.167	375.1219	85.23	. Q	.	.	. V.	
24.250	375.6399	75.22	. Q	.	.	. V.	
24.333	376.0625	61.36	. Q	.	.	. V.	
24.417	376.3858	46.95	.Q	.	.	. V.	
24.500	376.6395	36.83	.Q	.	.	. V.	
24.583	376.8480	30.28	.Q	.	.	. V.	
24.667	377.0251	25.71	Q	.	.	. V.	

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	275.0	550.0	825.0	1100.0
24.750	377.1779	22.19	Q	.	.	.	V.
24.833	377.3111	19.34	Q	.	.	.	V.
24.917	377.4281	17.00	Q	.	.	.	V.

NS100E2.RES

25.000	377.5314	15.00	Q	.	.	.	V.
25.083	377.6229	13.27	Q	.	.	.	V.
25.167	377.7041	11.80	Q	.	.	.	V.
25.250	377.7767	10.55	Q	.	.	.	V.
25.333	377.8412	9.36	Q	.	.	.	V.
25.417	377.8987	8.36	Q	.	.	.	V.
25.500	377.9498	7.42	Q	.	.	.	V.
25.583	377.9955	6.63	Q	.	.	.	V.
25.667	378.0358	5.86	Q	.	.	.	V.
25.750	378.0716	5.19	Q	.	.	.	V.
25.833	378.1031	4.58	Q	.	.	.	V.
25.917	378.1304	3.97	Q	.	.	.	V.
26.000	378.1544	3.48	Q	.	.	.	V.
26.083	378.1756	3.08	Q	.	.	.	V.
26.167	378.1940	2.68	Q	.	.	.	V.
26.250	378.2097	2.28	Q	.	.	.	V.
26.333	378.2228	1.90	Q	.	.	.	V.
26.417	378.2346	1.71	Q	.	.	.	V.
26.500	378.2453	1.56	Q	.	.	.	V.
26.583	378.2550	1.41	Q	.	.	.	V.
26.667	378.2637	1.26	Q	.	.	.	V.
26.750	378.2713	1.11	Q	.	.	.	V.
26.833	378.2779	0.96	Q	.	.	.	V.
26.917	378.2835	0.81	Q	.	.	.	V.
27.000	378.2881	0.67	Q	.	.	.	V.
27.083	378.2917	0.52	Q	.	.	.	V.
27.167	378.2943	0.38	Q	.	.	.	V.
27.250	378.2960	0.23	Q	.	.	.	V.
27.333	378.2966	0.09	Q	.	.	.	V

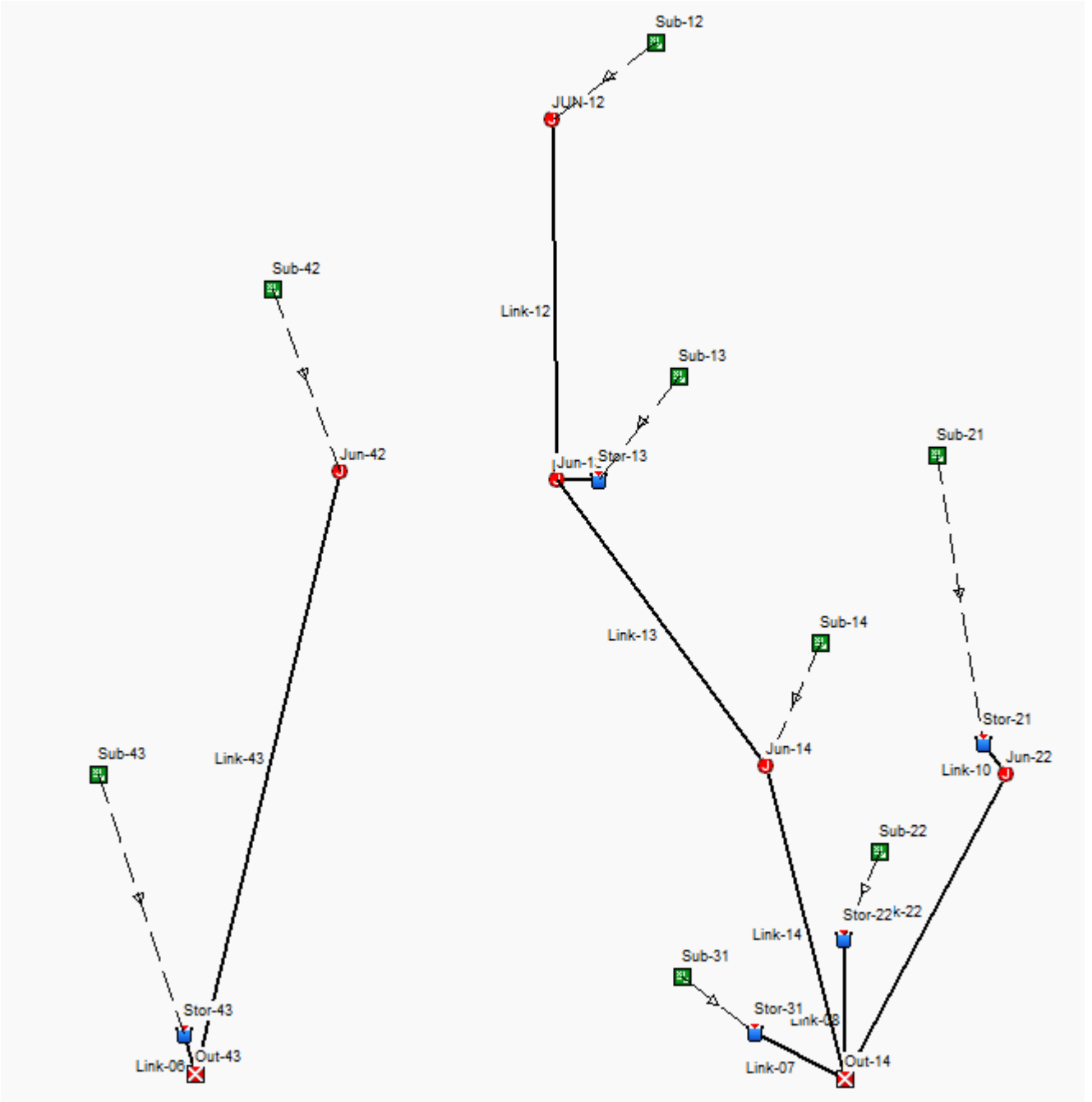
TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1640.0
10%	1000.0
20%	350.0
30%	185.0
40%	100.0
50%	55.0
60%	40.0
70%	30.0
80%	20.0
90%	15.0

END OF FLOODSCx ROUTING ANALYSIS

#

APPENDIX C – PROPOSED ONSITE RUNOFF MODELING


Sub-12
JUN-12
Link-12
Sub-42
Jun-42
Sub-13
Jun-1
Stor-13
Sub-21
Link-13
Sub-14
Stor-21
Jun-14
Jun-22
Link-10
Sub-43
Link-43
Sub-22
Stor-22
k-22
Link-14
Sub-31
Stor-31
Link-08
Stor-43
Out-43
Link-06
Link-07
Out-14

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.0.94 (Build 0)

****
Project Description
****
File Name ..... 18041-post w detention.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Constant rate, free surface area
Starting Date FEB-22-2019 00:00:00
Ending Date FEB-23-2019 00:00:00
Report Time Step 00:05:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 8
Number of nodes 12
Number of links 10

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min

Rain Gage-01 100yr-24hr CUMULATIVE 6.00

****

Subbasin Summary

****

Subbasin ID	Total Area acres
Sub-12	68.00
Sub-13	177.00
Sub-14	36.00
Sub-21	70.00
Sub-22	89.00
Sub-31	139.00
Sub-42	84.00
Sub-43	162.00

****

Node Summary

****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
JUN-12	JUNCTION	1951.00	1954.00	0.00	
Jun-13	JUNCTION	1759.00	1769.00	0.00	
Jun-14	JUNCTION	1698.00	1701.00	0.00	
Jun-22	JUNCTION	1749.00	1755.00	0.00	
Jun-42	JUNCTION	1913.00	1916.00	0.00	
Out-14	OUTFALL	1612.00	1616.00	0.00	
Out-43	OUTFALL	1634.00	1638.00	0.00	
Stor-13	STORAGE	1759.50	1769.00	0.00	
Stor-21	STORAGE	1749.50	1755.00	0.00	
Stor-22	STORAGE	1613.50	1618.00	0.00	

Stor-31	STORAGE	1613.50	1620.00	0.00
Stor-43	STORAGE	1635.50	1645.00	0.00

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
Link-06	Stor-43	Out-43	CHANNEL	50.0	6.0000	0.0320
Link-07	Stor-31	Out-14	CHANNEL	50.0	3.0000	0.0320
Link-08	Stor-22	Out-14	CHANNEL	50.0	3.0000	0.0320
Link-09	Stor-13	Jun-13	CHANNEL	50.0	1.0000	0.0320
Link-10	Stor-21	Jun-22	CHANNEL	50.0	1.0000	0.0320
Link-12	JUN-12	Jun-13	CHANNEL	3523.0	5.4499	0.0320
Link-13	Jun-13	Jun-14	CHANNEL	1314.0	4.6423	0.0320
Link-14	Jun-14	Out-14	CHANNEL	2290.0	3.7555	0.0320
Link-22	Jun-22	Out-14	CHANNEL	3217.0	4.2586	0.0320
Link-43	Jun-42	Out-43	CHANNEL	5462.0	5.1080	0.0320

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Link-06	TRAPEZOIDAL	4.00	23.00	1	60.00	2.41	1227.05
Link-07	TRAPEZOIDAL	4.00	16.50	1	34.00	1.85	411.97
Link-08	TRAPEZOIDAL	4.00	16.50	1	34.00	1.85	411.97
Link-09	TRAPEZOIDAL	6.00	24.50	1	75.00	2.74	

682.62

Link-10	TRAPEZOIDAL	4.00	16.50	1	34.00	1.85
237.85						
Link-12	IRREGULAR	3.00	52.00	1	118.00	1.57
1731.17						
Link-13	IRREGULAR	3.00	52.00	1	118.00	1.57
1597.76						
Link-14	IRREGULAR	3.00	52.00	1	118.00	1.57
1437.06						
Link-22	IRREGULAR	3.00	52.00	1	118.00	1.57
1530.31						
Link-43	IRREGULAR	3.00	52.00	1	118.00	1.57
1675.99						

****

Transect Summary

****

Transect XS-01

Area:

0.0153	0.0308	0.0463	0.0620	0.0778
0.0937	0.1098	0.1259	0.1422	0.1586
0.1752	0.1918	0.2086	0.2255	0.2425
0.2597	0.2770	0.2943	0.3119	0.3295
0.3472	0.3651	0.3831	0.4012	0.4195
0.4379	0.4563	0.4750	0.4937	0.5125
0.5315	0.5506	0.5698	0.5926	0.6171
0.6418	0.6666	0.6915	0.7165	0.7417
0.7670	0.7924	0.8179	0.8436	0.8693
0.8952	0.9212	0.9474	0.9736	1.0000

Hrad:

0.0270	0.0538	0.0803	0.1066	0.1326
0.1584	0.1839	0.2093	0.2344	0.2593
0.2840	0.3085	0.3328	0.3569	0.3808
0.4045	0.4280	0.4514	0.4746	0.4977
0.5205	0.5432	0.5658	0.5882	0.6104
0.6325	0.6545	0.6763	0.6980	0.7195

0.7409 0.7622 0.7834 0.6444 0.6674
0.6903 0.7132 0.7359 0.7584 0.7809
0.8033 0.8256 0.8477 0.8698 0.8917
0.9136 0.9353 0.9570 0.9785 1.0000
Width:
0.5815 0.5862 0.5908 0.5954 0.6000
0.6046 0.6092 0.6138 0.6185 0.6231
0.6277 0.6323 0.6369 0.6415 0.6462
0.6508 0.6554 0.6600 0.6646 0.6692
0.6738 0.6785 0.6831 0.6877 0.6923
0.6969 0.7015 0.7062 0.7108 0.7154
0.7200 0.7246 0.7292 0.9262 0.9308
0.9354 0.9400 0.9446 0.9492 0.9538
0.9585 0.9631 0.9677 0.9723 0.9769
0.9815 0.9862 0.9908 0.9954 1.0000

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	676.761	9.844
Surface Runoff	31.505	0.458
Continuity Error (%)	-0.000	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	308.445	100.511
Initial Stored Volume	0.000	0.000
Final Stored Volume	6.373	2.077
Continuity Error (%)	-0.000	

****
Composite Curve Number Computations Report
****

Subbasin Sub-12

Soil/Surface Description	Area (acres)	Soil Group	CN
Natural western desert	68.00	A	63.00
Composite Area & Weighted CN	68.00		63.00

Subbasin Sub-13

Soil/Surface Description	Area (acres)	Soil Group	CN
1 acre lots, 20% impervious	0.00	A	51.00
1/2 acre lots, 25% impervious	84.96	A	54.00
1/3 acre lots, 30% impervious	42.48	A	57.00
1/4 acre lots, 38% impervious	26.55	A	61.00
1/8 acre lots, 65% impervious	14.16	A	77.00
> 75% grass cover, Good	8.85	A	39.00
Composite Area & Weighted CN	177.00		56.86

Subbasin Sub-14

Soil/Surface Description	Area (acres)	Soil Group	CN
1 acre lots, 20% impervious	0.00	A	51.00
1/2 acre lots, 25% impervious	9.00	A	54.00
1/3 acre lots, 30% impervious	7.92	A	57.00
1/4 acre lots, 38% impervious	7.92	A	61.00
1/8 acre lots, 65% impervious	6.84	A	77.00
> 75% grass cover, Good	4.32	A	39.00
Composite Area & Weighted CN	36.00		58.77

Subbasin Sub-21

Soil/Surface Description	Area (acres)	Soil Group	CN
1 acre lots, 20% impervious	0.00	A	51.00
1/2 acre lots, 25% impervious	0.00	A	54.00
1/3 acre lots, 30% impervious	0.00	A	57.00
1/4 acre lots, 38% impervious	31.50	A	61.00
1/8 acre lots, 65% impervious	3.50	A	77.00
Composite Area & Weighted CN	35.00		62.60

Subbasin Sub-22

Soil/Surface Description	Area (acres)	Soil Group	CN
1 acre lots, 20% impervious	0.00	A	51.00
1/2 acre lots, 25% impervious	0.00	A	54.00
1/3 acre lots, 30% impervious	17.80	A	57.00
1/4 acre lots, 38% impervious	21.36	A	61.00
1/8 acre lots, 65% impervious	34.71	A	77.00
> 75% grass cover, Good	14.24	A	39.00
Composite Area & Weighted CN	88.11		62.94

Subbasin Sub-31

Soil/Surface Description	Area (acres)	Soil Group	CN
1 acre lots, 20% impervious	0.00	A	51.00
1/2 acre lots, 25% impervious	27.80	A	54.00
1/3 acre lots, 30% impervious	31.97	A	57.00
1/4 acre lots, 38% impervious	36.14	A	61.00
1/8 acre lots, 65% impervious	30.58	A	77.00

> 75% grass cover, Good	12.51	A	39.00
Composite Area & Weighted CN	139.00		60.22

Subbasin Sub-42

Soil/Surface Description	Area (acres)	Soil Group	CN
Natural western desert	84.00	A	63.00
Composite Area & Weighted CN	84.00		63.00

Subbasin Sub-43

Soil/Surface Description	Area (acres)	Soil Group	CN
1 acre lots, 20% impervious	113.40	A	51.00
1/2 acre lots, 25% impervious	21.06	A	54.00
1/3 acre lots, 30% impervious	16.20	A	57.00
1/4 acre lots, 38% impervious	9.72	A	61.00
1/8 acre lots, 65% impervious	1.62	A	77.00
Composite Area & Weighted CN	162.00		52.85

****

SCS TR-55 Time of Concentration Computations Report

****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)

n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft^2)

Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin Sub-12

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	11.00	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	1.24	0.00	0.00
Computed Flow Time (minutes):	1.34	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1000.00	0.00	0.00
Slope (%):	0.68	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.33	0.00	0.00
Computed Flow Time (minutes):	12.53	0.00	0.00

==========
Total TOC (minutes): 13.87

==========

Subbasin Sub-13

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	5.62	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	0.95	0.00	0.00
Computed Flow Time (minutes):	1.75	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1000.00	0.00	0.00
Slope (%):	5.43	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	4.74	0.00	0.00
Computed Flow Time (minutes):	3.52	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	4655.00	0.00	0.00
Channel Slope (%):	3.16	0.00	0.00
Cross Section Area (ft²):	6.00	0.00	0.00
Wetted Perimeter (ft):	5.00	0.00	0.00
Velocity (ft/sec):	27.19	0.00	0.00
Computed Flow Time (minutes):	2.85	0.00	0.00

==========

Total TOC (minutes): 8.12

==========

Subbasin Sub-14

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	4.23	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	0.85	0.00	0.00
Computed Flow Time (minutes):	1.96	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1000.00	0.00	0.00
Slope (%):	5.19	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	3.68	0.00	0.00
Computed Flow Time (minutes):	4.53	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.11	0.00	0.00
Flow Length (ft):	767.00	0.00	0.00
Channel Slope (%):	4.03	0.00	0.00
Cross Section Area (ft²):	6.00	0.00	0.00
Wetted Perimeter (ft):	5.00	0.00	0.00
Velocity (ft/sec):	3.07	0.00	0.00
Computed Flow Time (minutes):	4.16	0.00	0.00

==========

Total TOC (minutes): 10.65

==========

Subbasin Sub-21

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	6.13	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	0.99	0.00	0.00
Computed Flow Time (minutes):	1.69	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1000.00	0.00	0.00
Slope (%):	7.21	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	5.46	0.00	0.00
Computed Flow Time (minutes):	3.05	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	2298.00	0.00	0.00
Channel Slope (%):	6.80	0.00	0.00
Cross Section Area (ft²):	6.00	0.00	0.00
Wetted Perimeter (ft):	5.00	0.00	0.00
Velocity (ft/sec):	39.89	0.00	0.00

Computed Flow Time (minutes):	0.96	0.00	0.00

==========

Total TOC (minutes): 5.70

==========

Subbasin Sub-22

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.03	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	5.70	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	1.08	0.00	0.00
Computed Flow Time (minutes):	1.54	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1487.00	0.00	0.00
Slope (%):	2.60	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	3.28	0.00	0.00
Computed Flow Time (minutes):	7.56	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.02	0.00	0.00
Flow Length (ft):	2890.00	0.00	0.00

Channel Slope (%):	4.00	0.00	0.00
Cross Section Area (ft²):	6.00	0.00	0.00
Wetted Perimeter (ft):	5.00	0.00	0.00
Velocity (ft/sec):	14.63	0.00	0.00
Computed Flow Time (minutes):	3.29	0.00	0.00

==========

Total TOC (minutes): 12.39

==========

Subbasin Sub-31

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	2.40	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	0.68	0.00	0.00
Computed Flow Time (minutes):	2.46	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1000.00	0.00	0.00
Slope (%):	0.90	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.93	0.00	0.00
Computed Flow Time (minutes):	8.64	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	4817.00	0.00	0.00
Channel Slope (%):	3.50	0.00	0.00
Cross Section Area (ft²):	6.00	0.00	0.00
Wetted Perimeter (ft):	5.00	0.00	0.00
Velocity (ft/sec):	8.99	0.00	0.00
Computed Flow Time (minutes):	8.93	0.00	0.00

==========

Total TOC (minutes): 20.02

==========

Subbasin Sub-42

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	7.00	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	1.04	0.00	0.00
Computed Flow Time (minutes):	1.60	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1000.00	0.00	0.00
Slope (%):	8.00	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved

Velocity (ft/sec):	4.56	0.00	0.00
Computed Flow Time (minutes):	3.65	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	1719.00	0.00	0.00
Channel Slope (%):	6.00	0.00	0.00
Cross Section Area (ft²):	6.00	0.00	0.00
Wetted Perimeter (ft):	5.00	0.00	0.00
Velocity (ft/sec):	11.78	0.00	0.00
Computed Flow Time (minutes):	2.43	0.00	0.00

==========

Total TOC (minutes): 7.69

==========

Subbasin Sub-43

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.04	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	4.90	0.00	0.00
2 yr, 24 hr Rainfall (in):	4.27	0.00	0.00
Velocity (ft/sec):	0.90	0.00	0.00
Computed Flow Time (minutes):	1.85	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1000.00	0.00	0.00
Slope (%):	4.90	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	4.50	0.00	0.00
Computed Flow Time (minutes):	3.70	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	5563.00	0.00	0.00
Channel Slope (%):	4.90	0.00	0.00
Cross Section Area (ft²):	6.00	0.00	0.00
Wetted Perimeter (ft):	5.00	0.00	0.00
Velocity (ft/sec):	33.86	0.00	0.00
Computed Flow Time (minutes):	2.74	0.00	0.00

==========

Total TOC (minutes): 8.29

==========

****

Subbasin Runoff Summary

****

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days hh:mm:ss
Sub-12	9.80	5.13	220.32	63.000	0 00:13:52
Sub-13	9.80	4.32	523.73	56.860	0 00:08:07
Sub-14	9.80	4.58	108.09	58.770	0 00:10:39

Sub-21	9.80	5.08	272.25	62.600	0	00:05:42
Sub-22	9.80	5.12	296.72	62.940	0	00:12:23
Sub-31	9.80	4.77	359.42	60.220	0	00:20:01
Sub-42	9.80	5.13	312.05	63.000	0	00:07:41
Sub-43	9.80	3.79	400.81	52.850	0	00:08:17

****

Node Depth Summary

****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
JUN-12	0.14	0.88	1951.88	0 10:05	0	0	0:00:00
Jun-13	1.33	4.23	1763.23	0 10:13	0	0	0:00:00
Jun-14	0.34	1.72	1699.72	0 10:12	0	0	0:00:00
Jun-22	1.00	3.10	1752.10	0 10:10	0	0	0:00:00
Jun-42	0.16	1.08	1914.08	0 10:05	0	0	0:00:00
Out-14	1.03	3.34	1615.34	0 10:20	0	0	0:00:00
Out-43	0.38	1.90	1635.90	0 10:10	0	0	0:00:00
Stor-13	1.33	4.23	1763.73	0 10:13	0	0	0:00:00
Stor-21	1.00	3.10	1752.60	0 10:10	0	0	0:00:00
Stor-22	0.88	2.98	1616.48	0 10:14	0	0	0:00:00
Stor-31	1.02	3.34	1616.84	0 10:20	0	0	0:00:00
Stor-43	1.32	3.40	1638.90	0 10:10	0	0	0:00:00

****

Node Flow Summary

****

Node ID	Element Type	Maximum Lateral Inflow	Peak Inflow	Time of Peak Inflow Occurrence	Maximum Flooding Overflow	Time of Maximum Flooding Occurrence
		cfs	cfs	days hh:mm	cfs	days hh:mm
JUN-12	JUNCTION	214.35	214.35	0 10:05	0.00	
Jun-13	JUNCTION	0.00	481.06	0 10:12	0.00	
Jun-14	JUNCTION	108.08	547.35	0 10:12	0.00	
Jun-22	JUNCTION	0.00	123.34	0 10:10	0.00	
Jun-42	JUNCTION	292.15	292.15	0 10:05	0.00	
Out-14	OUTFALL	0.00	1099.80	0 10:16	0.00	
Out-43	OUTFALL	0.00	554.52	0 10:09	0.00	
Stor-13	STORAGE	505.17	505.17	0 10:05	0.00	
Stor-21	STORAGE	268.48	268.48	0 10:00	0.00	
Stor-22	STORAGE	294.99	294.99	0 10:05	0.00	
Stor-31	STORAGE	358.73	358.73	0 10:10	0.00	
Stor-43	STORAGE	392.19	392.19	0 10:05	0.00	

****
Storage Node Summary
****

Storage Node ID	Maximum Ponded Volume	Maximum Ponded Volume	Time of Max Ponded Volume		Average Ponded Volume	Average Ponded Volume	Maximum Storage Node Outflow	Maximum Exfiltration Rate	Time of Max. Exfiltration Rate	Total Exfiltrated Volume
	1000 ft³	(%)	days	hh:mm	1000 ft³	(%)	cfs	cfm	hh:mm:ss	1000 ft³
Stor-13	388.872	20	0	10:13	62.080	3	274.07	0.00	0:00:00	0.000
Stor-21	209.340	32	0	10:10	33.775	5	123.34	0.00		

0:00:00 0.000
Stor-22 194.058 44 0 10:14 26.541 6 193.81 0.00
0:00:00 0.000
Stor-31 243.261 26 0 10:19 35.779 4 259.01 0.00
0:00:00 0.000
Stor-43 252.135 13 0 10:10 60.427 3 282.05 0.00
0:00:00 0.000

****
Outfall Loading Summary
****

Outfall Node ID Flow Average Peak
Frequency Flow Inflow
(%) cfs cfs

Out-14 74.97 150.62 1099.80
Out-43 72.61 58.60 554.52

System 73.79 209.22 1591.38

****
Link Flow Summary
****

Link ID Element Time of Maximum Length Peak Flow Design Ratio of Ratio of Total Reported
Type Peak Flow Velocity Factor during Flow Maximum Maximum Time Condition
Occurrence Attained Analysis Capacity /Design Flow Surcharged
days hh:mm ft/sec cfs cfs Flow Depth minutes

Link-06	CHANNEL	0	10:10	13.72	1.00	282.05	1227.05	0.23	0.48	0	Calculated
Link-07	CHANNEL	0	10:20	10.79	1.00	259.01	411.97	0.63	0.84	0	Calculated
Link-08	CHANNEL	0	10:14	10.04	1.00	193.81	411.97	0.47	0.75	0	Calculated
Link-09	CHANNEL	0	10:13	7.25	1.00	274.07	682.62	0.40	0.70	0	Calculated
Link-10	CHANNEL	0	10:10	5.94	1.00	123.34	237.85	0.52	0.78	0	Calculated
Link-12	CHANNEL	0	10:12	8.01	1.00	207.65	1731.17	0.12	0.29	0	Calculated
Link-13	CHANNEL	0	10:13	9.77	1.00	479.46	1597.76	0.30	0.50	0	Calculated
Link-14	CHANNEL	0	10:15	9.60	1.00	543.14	1437.06	0.38	0.57	0	Calculated
Link-22	CHANNEL	0	10:17	5.76	1.00	119.32	1530.31	0.08	0.22	0	Calculated
Link-43	CHANNEL	0	10:09	9.36	1.00	273.82	1675.99	0.16	0.34	0	Calculated

****
Highest Flow Instability Indexes
****
All links are stable.

Analysis began on: Mon Feb 25 17:22:43 2019
Analysis ended on: Mon Feb 25 17:22:44 2019

APPENDIX D – GREEN INFRASTRUCTURE EXHIBITS

Street Types Plan and Legend

Neighborhood Ave 1

Neighborhood Ave 2

Neighborhood Ave 3

Neighborhood Ave 4

Entry Avenue

Wilson Main Street 1

Wilson Main Street 2

Wilson Main Street 3

Wilson Main Street 4

Neighborhood Street 1A

Neighborhood Street 1B

Neighborhood Street 1C

Neighborhood Street 2A

Neighborhood Street 2B

Neighborhood Street 2C

Rear Lane Commercial

Rear Lane Residential

Edge Drive

Edge Drive

Edge Lane A

Edge Lane B