Appendix G:
Hydrology Report

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HYDROLOGY REPORT

For

SDG Commerce 220 Distribution Center
American Canyon, CA

Prepared for:

SDG Commerce 220, LLC
413 W. Yosemite Avenue, Suite 105
Madera, CA 93637

Project #4122068.0
September 29, 2023

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I. Executive Summary

A hydrograph analysis was performed for the proposed SDG Commerce 220 Distribution Center project located at Commerce Boulevard in American Canyon, California.

The project site hydrology study was calculated using the following City of American Canyon Engineering Standards Plan and Specifications (ESPS):

Design Area: Detention Basin

Design Method: Unit Hydrograph

Design Return: 100-year/24-hour

Peak discharge from a detention basin shall not exceed 90% of the undeveloped peak flow from the 24-hour, 100-year event.

Pre-Project Peak Flow Rates:

Existing Watershed: $Q_{100\text{-yr-Pre}} = 29.3$ cfs
Existing Watershed: $Q_{100\text{-yr-Pre-90\%}} = 26.4$ cfs

Post-Project Watershed peak flow rates:

Proposed Detention: $V_{100\text{yr-Detained}} = 30{,}930\ ft^3$
Proposed Watershed: $Q_{100\text{-yr Post-Total}} = 24.5$ cfs < 26.4 cfs

Post-project peak runoff rates do not exceed the allowable 90% pre-project stormwater runoff rate, see SSA Output Files for detailed watershed calculations in Attachment 2.

II. Purpose

This report addresses City of American Canyon drainage and hydromodification requirements for the Commerce 220 Distribution Center, including a pre and post construction hydrologic analysis and on-site stormwater detention.

III. Existing Conditions

The Commerce 220 Distribution Center project is located on Commerce Court in American Canyon, California, see Vicinity Map in Attachment 1. The parcel APN is 058-030-069, and has an area of 10.17 acres. The existing site is currently undeveloped.

An additional 13.68 acres is included in the runoff calculations to account for run-on from the upslope drainage from the adjacent property, just east of this development. The run-on areas include a 0.98-acre segment of impervious area on Commerce Boulevard and 12.70 acres of wooded area. The point of concentration for this upslope drainage is the culvert and drain inlets at Commerce Court. Access to the site will be from Commerce Court.

The predominant soil type in the project area is Haire Clay Loam, which is of the Hydraulic Soil Group D, see Hydrologic Soil Map in Attachment 1. The property is relatively flat with gentle slopes draining toward the west. Runoff from the property flows via surface flows to the west property line. Stormwater is ultimately conveyed through the North Slough to the Napa River.

IV. Proposed Development

The project will include the construction of a new warehouse building, including a new driveway, loading docks, and parking areas. A detention pond with biotreatment will be installed on site per BASMAA standards.

IV.A. Run-On Subbasins

The site run-on analysis was determined using the American Canyon Engineering Standard Plans & Specifications (ESPS) and modeled in Autodesk Storm & Sanitary Analysis (SSA). Run-on flows east to west and will be capture by swales and conveyed under Commerce Boulevard by three (3) concrete culverts. Approximately one third of the project run-on will follow existing drainage paths through a series of mapped wetlands and will not be treated or detained in the detention pond. This portion of the run-on will be routed and discharged towards the northwest corner of the property. The remaining two thirds of the run-on will be routed through the on-site storm drain system to the detention pond, see Proposed Conditions Hydrology Exhibit in Attachment 1.

IV.B. On-site Subbasins

Subbasin B consists of the warehouse roof, ADA walkway access, parking lots and driveway surrounding the warehouse. Subbasin C consists of wetlands located to the north of the warehouse, and vegetated area located to the west. Subbasin D consists of the truck loading docks and two parking lots located to the south of the warehouse. Subbasin D has been accounted for in the Hydrology Analysis for ICC 330 Distribution Center, see Proposed Conditions Hydrology Exhibit in Attachment 1.

IV.C. Stormwater Detention

The detention pond is located along the west property line and is designed with biotreatment. The detention pond capacity is 87,684 cubic feet, and will store and treat stormwater from the on-site and offsite watershed. The hydrograph analysis results in a required storage volume of 30,930 cubic feet for the proposed development. Four storm drain outlet structures will be located on the west side of the pond. All structures will control the stormwater outflow through side opening cutouts in the precast structure and receives low flows from the bio-retention sub-drain network. Each side opening has a 12” wide by 9” tall cut-out at an elevation of 11.00 ft, as shown on the Use Permit Plans. The side openings allow stormwater to infiltrate into the biotreatment during smaller storm events per BASMAA standards. Stormwater from the detention pond will discharge to level spreaders along the western property line.

V. PRE & POST-DEVELOPMENT DRAINAGE STUDY

This drainage study computes the pre and post development peak flow rates from the project area for the 100-year, 24-hour design storm. The flow rates were calculated using the City of American Canyon Engineering Standards Plan and Specifications (ESPS). The stormwater quality design storm of intensity (I) = 0.2 in/hr is addressed by the BASMAA Stormwater Control Plan.

The following precipitation data for the project site was collected from the NOAA Atlas 14, Volume 6 – California, see NOAA Precipitation Frequency table in Attachment 1:

Table 1 - NOAA Precipitation Data

Storm Frequency	Precipitation Depth (inches, in 24-hour period)
100-yr	7.36

V. A. Existing Conditions

The method used for studying the site stormwater runoff is a hydrograph analysis. The unit hydrograph rainfall distribution for the City of American Canyon falls under Type IA - Distribution. The SCS hydrograph analysis is based on the National Resources Conservation Service Technical Release 55 for Urban Hydrology for Small Watersheds (TR-55) method.

One watershed was used to model the existing run-on from the upslope area and runoff from the project site. The existing runoff for the 100-year, 24-hour storm event is as follows, refer to SSA Output Files in Attachment 2 for calculations.

Table 2 – Existing Stormwater Runoff

Existing Watershed	A	23.84	[acre]
Existing Impervious Area	A_{Paved}	0.98	[acre]
Existing Curve Number	CN	83	
Existing Time of Concentration	T_C	28.15	[min]
Total Existing Peak Flow (100-yr)	**$Q_{100YEAR-EXIST}$**	**29.3**	**[cfs]**

V. B. Proposed Conditions

The post-development peak flow rates were designed not to exceed 90% of the pre-development peak flow rates for 100-year, 24-hour storm event per City of American Canyon ESPS. Stormwater detention will be provided by a detention pond with biotreatment. Benefits from infiltration within the detention pond were included in the hydrology calculations and were obtained from the USGS Web Soil Survey, see Attachment 1 for additional information.

The proposed watershed was modeled with four subbasin watersheds. Subbasin A is the run-on. Subbasin B is the proposed project run-off to be detained. Subbasin C is the undeveloped run-off that will drain directly off-site (un-detained). Subbasin D is the proposed project run-off that was

included in the Hydrology Analysis for ICC 330 Distribution Center project. The proposed runoff for the 100-year, 24-hour storm event can be found in the SSA Output Files in Attachment 2.

Table 3 – Proposed Stormwater Runoff

Proposed Total Watershed	A	26.62	[acre]
Proposed Total Impervious Area	A_{Paved}	4.25	[acre]
Proposed Curve Number	CN	Varies	
Proposed Time of Concentration	T_C	Varies	[min]
Total Proposed Peak Flow (100-yr)	**$Q_{100YEAR-EXIST}$**	**24.5**	**[cfs]**

Note: A summary of the subbasins can be found in the found in the SSA output files in Attachment 2.

VI. CONCLUSION

The proposed project will result in a net decrease in peak stormwater runoff rates from the existing site conditions. The proposed detention pond, metering structures, and outfalls along the western property line will result in a proposed peak runoff rate (24.5 cfs) that is less than the existing peak runoff rate (29.3 cfs) and less than 90% of the existing peak runoff rate (26.4 cfs). Therefore, the proposed stormwater detention and treatment satisfies the City of American Canyon ESPS and the BASMAA stormwater standards.

ATTACHMENT 1

SITE MAPS &
CALCULATION PARAMETERS

SDG COMMERCE 220 DISTRIBUTION CENTER

V I C I N I T Y M A P

AMERICAN CANYON CALIFORNIA

VICINITY MAP

SCALE: 1" = 3000'

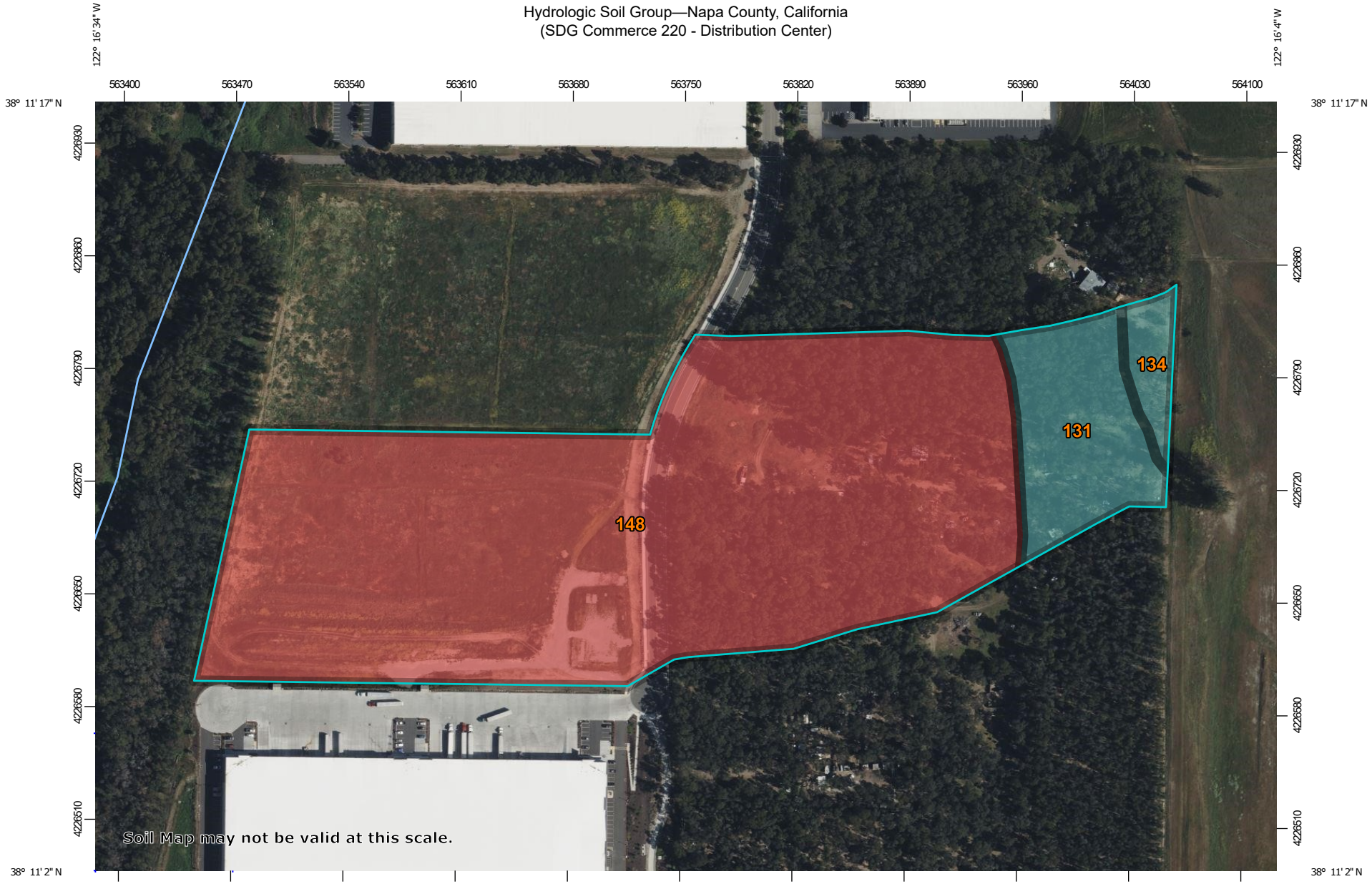
RSA+

1515 FOURTH STREET
NAPA, CALIF. 94559
OFFICE|707|252.3301
+ www.RSAcivil.com +

RSA+| CONSULTING CIVIL ENGINEERS + SURVEYORS + est. 1980

JUL. 20, 2023 4122068.0 Exh-Vic Map.dwg

Hydrologic Soil Group—Napa County, California
(SDG Commerce 220 - Distribution Center)



Map Scale: 1:3,370 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 15, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
131	Fagan clay loam, 5 to 15 percent slopes	C	2.6	10.9%
134	Fagan clay loam, 30 to 50 percent slopes, slipped	C	0.6	2.6%
148	Haire clay loam, 2 to 9 percent slopes	D	20.6	86.5%
Totals for Area of Interest			**23.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

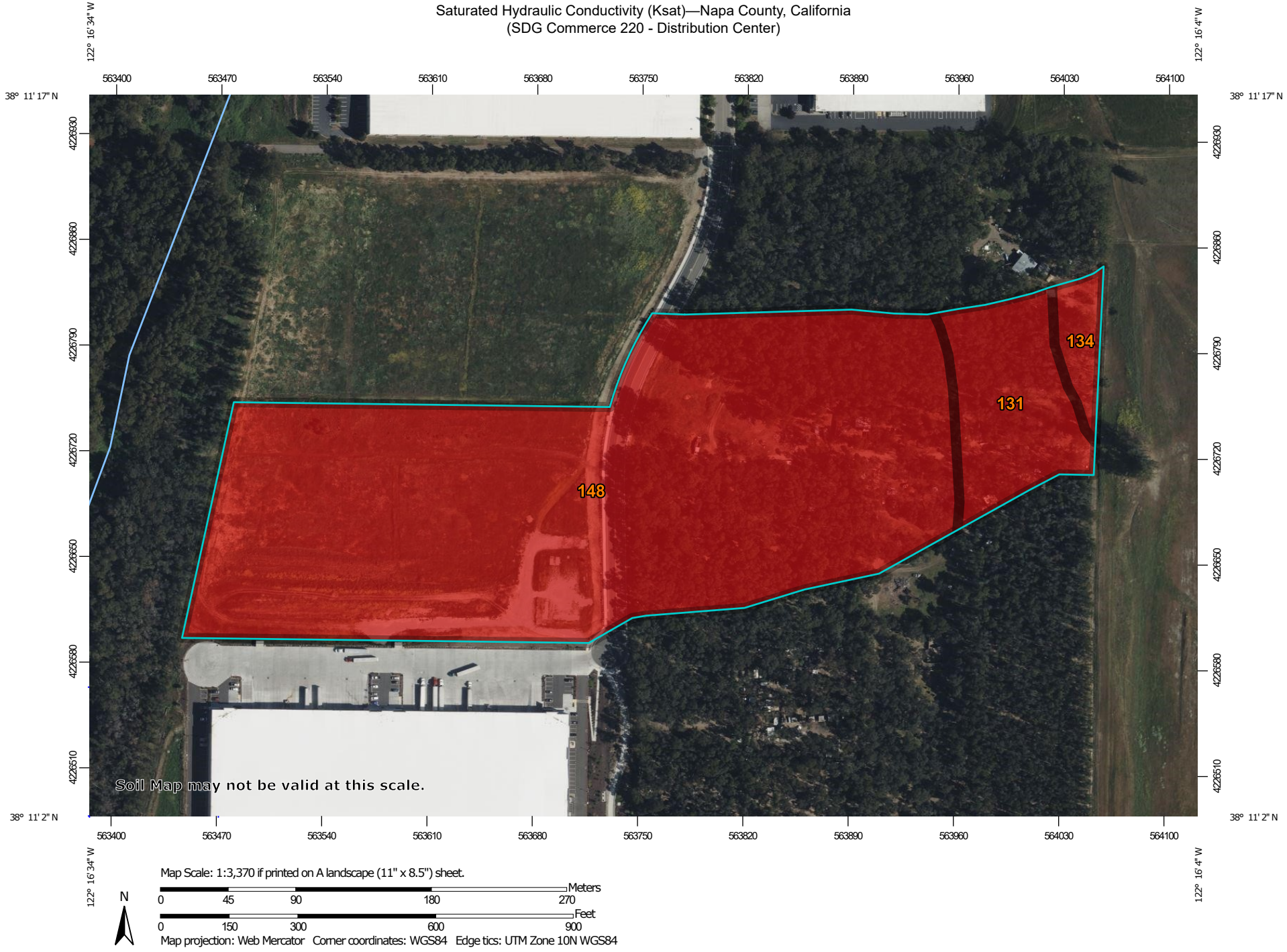
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Saturated Hydraulic Conductivity (Ksat)—Napa County, California
(SDG Commerce 220 - Distribution Center)



Map Scale: 1:3,370 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 2.7000

Not rated or not available

Soil Rating Lines

= 2.7000

Not rated or not available

Soil Rating Points

= 2.7000

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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Survey Area Data: Version 15, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
131	Fagan clay loam, 5 to 15 percent slopes	2.7000	2.6	10.9%
134	Fagan clay loam, 30 to 50 percent slopes, slipped	2.7000	0.6	2.6%
148	Haire clay loam, 2 to 9 percent slopes	2.7000	20.6	86.5%
Totals for Area of Interest			**23.8**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

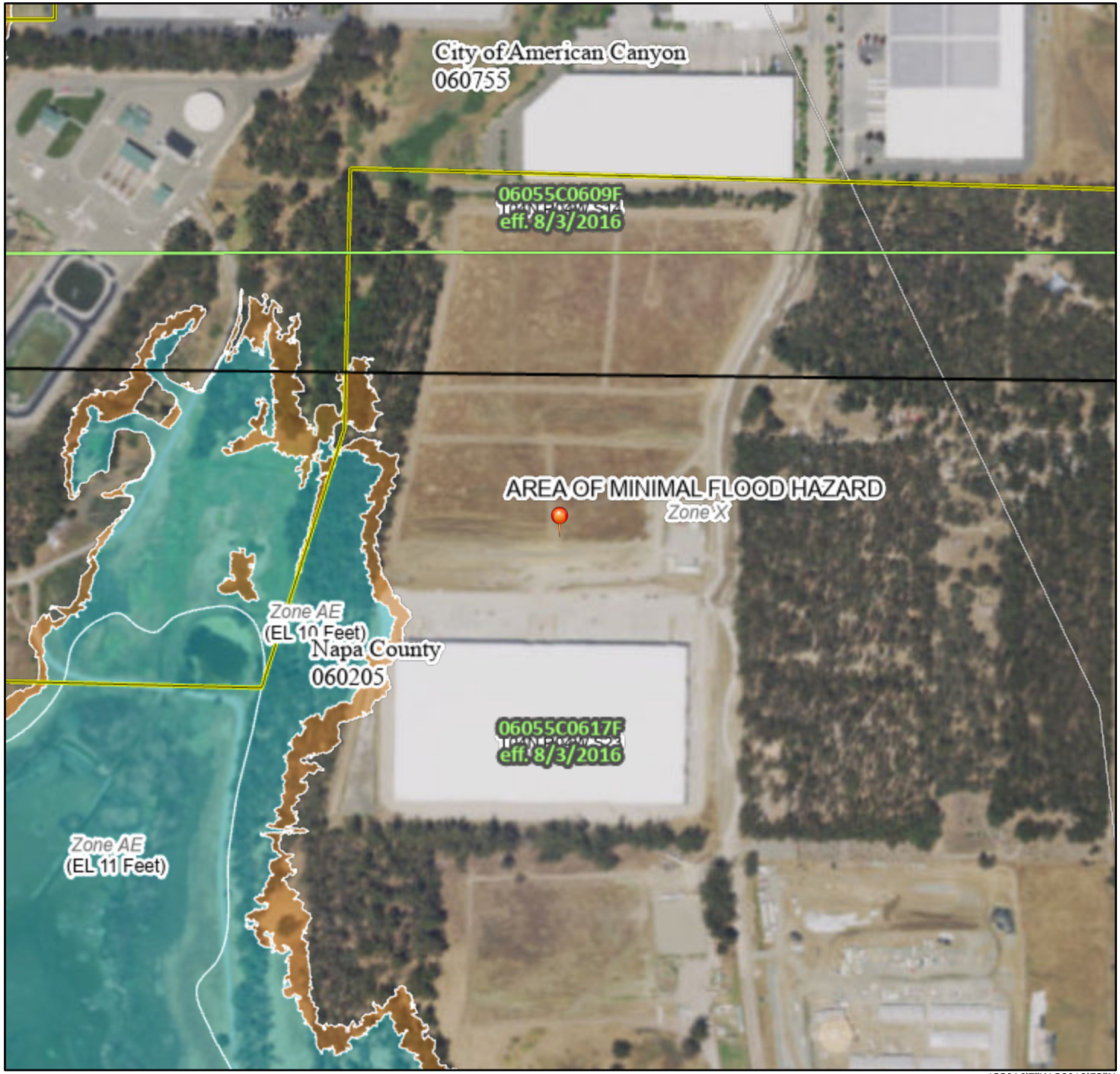
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

National Flood Hazard Layer FIRMette

FEMA

122°16'44"W 38°11'22"N



122°16'7"W 38°10'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/16/2022 at 2:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOAA Atlas 14, Volume 6, Version 2
Location name: American Canyon, California, USA*
Latitude: 38.1854°, Longitude: -122.2702°
Elevation: 30.98 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	0.116 (0.103-0.132)	0.145 (0.129-0.165)	0.185 (0.164-0.210)	0.218 (0.191-0.250)	0.265 (0.224-0.316)	0.302 (0.249-0.370)	0.341 (0.273-0.430)	0.383 (0.297-0.499)	0.442 (0.327-0.604)	0.489 (0.348-0.695)
10-min	0.166 (0.148-0.189)	0.208 (0.185-0.236)	0.264 (0.235-0.301)	0.312 (0.274-0.359)	0.379 (0.320-0.454)	0.433 (0.357-0.531)	0.489 (0.392-0.617)	0.549 (0.426-0.715)	0.633 (0.468-0.865)	0.701 (0.499-0.996)
15-min	0.201 (0.179-0.228)	0.251 (0.224-0.286)	0.320 (0.284-0.364)	0.377 (0.331-0.434)	0.459 (0.387-0.549)	0.524 (0.432-0.642)	0.592 (0.474-0.746)	0.664 (0.515-0.865)	0.766 (0.566-1.05)	0.848 (0.603-1.20)
30-min	0.281 (0.250-0.318)	0.350 (0.312-0.398)	0.446 (0.395-0.508)	0.526 (0.462-0.605)	0.639 (0.540-0.764)	0.730 (0.601-0.894)	0.825 (0.661-1.04)	0.926 (0.718-1.20)	1.07 (0.789-1.46)	1.18 (0.840-1.68)
60-min	0.398 (0.355-0.452)	0.498 (0.443-0.565)	0.633 (0.561-0.721)	0.747 (0.656-0.859)	0.908 (0.767-1.09)	1.04 (0.854-1.27)	1.17 (0.938-1.48)	1.32 (1.02-1.71)	1.52 (1.12-2.07)	1.68 (1.19-2.38)
2-hr	0.592 (0.528-0.672)	0.734 (0.653-0.834)	0.925 (0.820-1.05)	1.08 (0.952-1.25)	1.31 (1.10-1.56)	1.48 (1.22-1.81)	1.66 (1.33-2.09)	1.85 (1.44-2.41)	2.12 (1.56-2.89)	2.32 (1.65-3.30)
3-hr	0.750 (0.668-0.850)	0.929 (0.826-1.06)	1.17 (1.04-1.33)	1.37 (1.20-1.57)	1.64 (1.38-1.96)	1.86 (1.53-2.27)	2.08 (1.66-2.62)	2.31 (1.79-3.01)	2.63 (1.94-3.59)	2.88 (2.05-4.09)
6-hr	1.08 (0.964-1.23)	1.35 (1.20-1.53)	1.70 (1.51-1.94)	1.99 (1.74-2.28)	2.38 (2.01-2.85)	2.69 (2.22-3.29)	3.00 (2.40-3.78)	3.33 (2.58-4.33)	3.77 (2.79-5.15)	4.12 (2.93-5.85)
12-hr	1.44 (1.28-1.63)	1.83 (1.63-2.08)	2.35 (2.08-2.68)	2.77 (2.43-3.18)	3.34 (2.82-3.99)	3.78 (3.12-4.63)	4.22 (3.38-5.33)	4.68 (3.63-6.10)	5.31 (3.92-7.25)	5.79 (4.12-8.23)
24-hr	1.92 (1.73-2.18)	2.52 (2.26-2.85)	3.28 (2.95-3.74)	3.90 (3.48-4.47)	4.74 (4.11-5.58)	5.38 (4.59-6.44)	6.02 (5.03-7.36)	6.68 (5.46-8.36)	7.57 (5.97-9.81)	8.26 (6.32-11.0)
2-day	2.44 (2.19-2.76)	3.19 (2.87-3.62)	4.17 (3.74-4.74)	4.96 (4.42-5.68)	6.02 (5.22-7.08)	6.82 (5.82-8.17)	7.63 (6.38-9.32)	8.46 (6.90-10.6)	9.57 (7.54-12.4)	10.4 (7.98-13.9)
3-day	2.82 (2.54-3.20)	3.70 (3.33-4.20)	4.83 (4.33-5.49)	5.73 (5.11-6.56)	6.94 (6.02-8.17)	7.86 (6.70-9.41)	8.78 (7.33-10.7)	9.71 (7.93-12.1)	11.0 (8.64-14.2)	11.9 (9.13-15.9)
4-day	3.14 (2.83-3.56)	4.12 (3.70-4.67)	5.38 (4.82-6.11)	6.38 (5.68-7.30)	7.71 (6.69-9.07)	8.71 (7.43-10.4)	9.72 (8.12-11.9)	10.7 (8.76-13.4)	12.1 (9.52-15.6)	13.1 (10.0-17.5)
7-day	3.88 (3.50-4.40)	5.14 (4.62-5.83)	6.72 (6.03-7.64)	7.96 (7.10-9.11)	9.58 (8.31-11.3)	10.8 (9.19-12.9)	12.0 (9.99-14.6)	13.1 (10.7-16.4)	14.7 (11.6-19.0)	15.8 (12.1-21.1)
10-day	4.39 (3.95-4.97)	5.83 (5.24-6.62)	7.63 (6.84-8.67)	9.02 (8.04-10.3)	10.8 (9.39-12.7)	12.1 (10.4-14.5)	13.4 (11.2-16.4)	14.7 (12.0-18.4)	16.3 (12.9-21.2)	17.5 (13.4-23.4)
20-day	5.72 (5.15-6.48)	7.60 (6.83-8.62)	9.90 (8.88-11.3)	11.7 (10.4-13.4)	13.9 (12.1-16.4)	15.5 (13.2-18.6)	17.0 (14.2-20.8)	18.5 (15.1-23.2)	20.4 (16.1-26.5)	21.8 (16.7-29.1)
30-day	6.90 (6.21-7.82)	9.11 (8.19-10.3)	11.8 (10.6-13.4)	13.8 (12.3-15.8)	16.4 (14.2-19.3)	18.2 (15.5-21.8)	20.0 (16.7-24.4)	21.6 (17.7-27.0)	23.7 (18.7-30.7)	25.2 (19.3-33.6)
45-day	8.51 (7.66-9.64)	11.1 (9.96-12.6)	14.2 (12.7-16.1)	16.5 (14.7-18.9)	19.5 (16.9-22.9)	21.5 (18.4-25.8)	23.5 (19.6-28.7)	25.4 (20.7-31.7)	27.7 (21.8-35.8)	29.3 (22.5-39.1)
60-day	10.2 (9.20-11.6)	13.1 (11.8-14.9)	16.6 (14.9-18.9)	19.2 (17.1-22.0)	22.5 (19.5-26.4)	24.8 (21.1-29.7)	26.9 (22.5-32.9)	29.0 (23.7-36.3)	31.6 (24.9-40.9)	33.4 (25.5-44.5)

[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.

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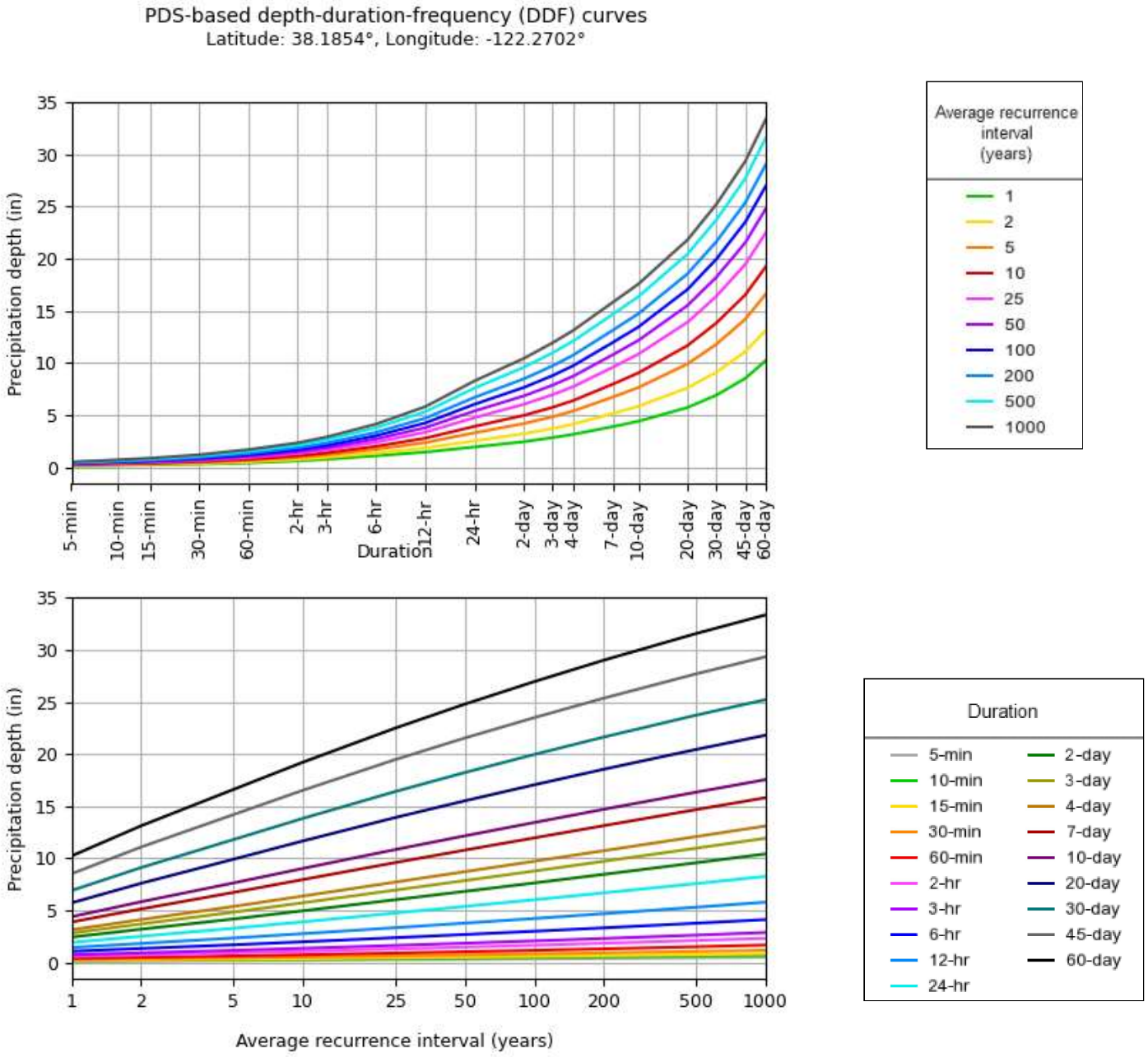
PF graphical



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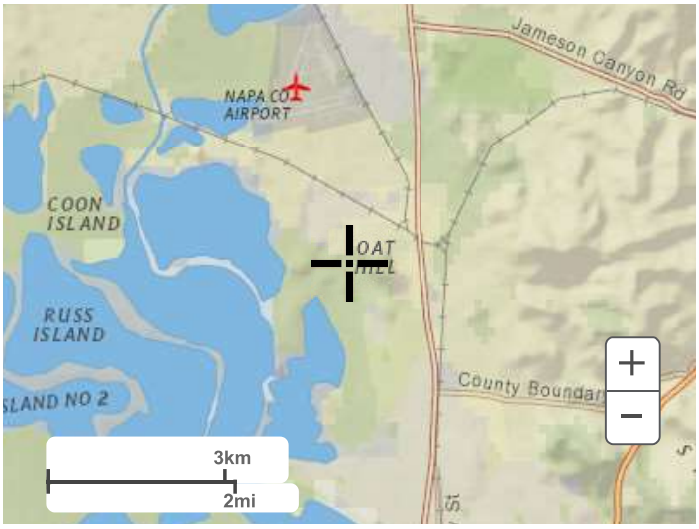
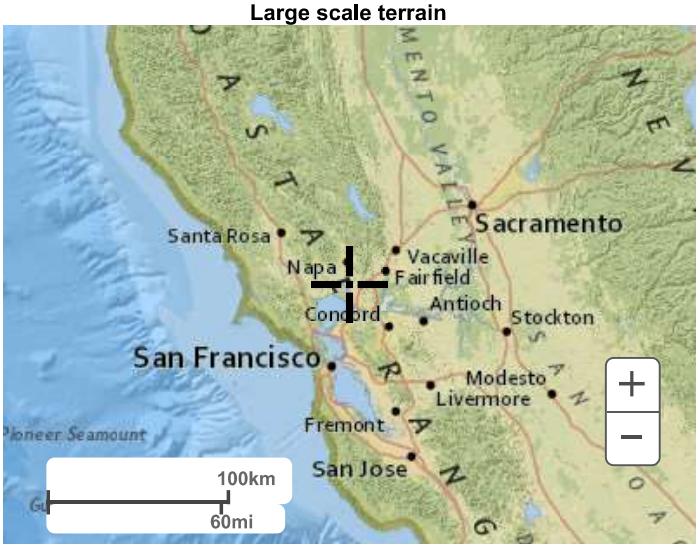
Maps & aerials

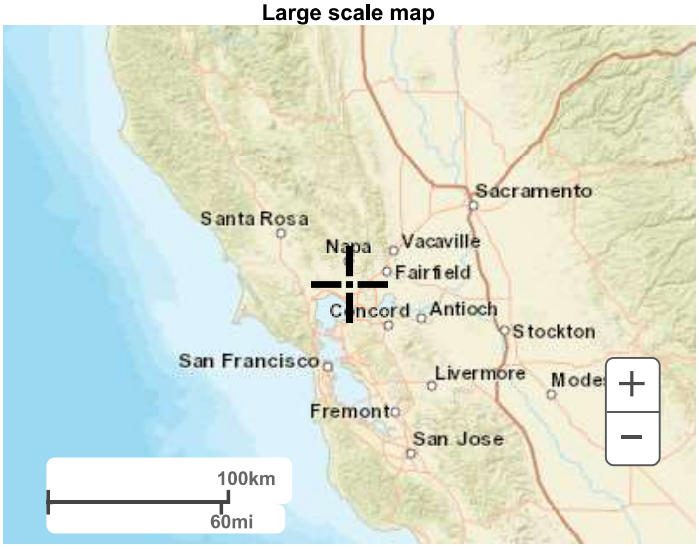
Small scale terrain



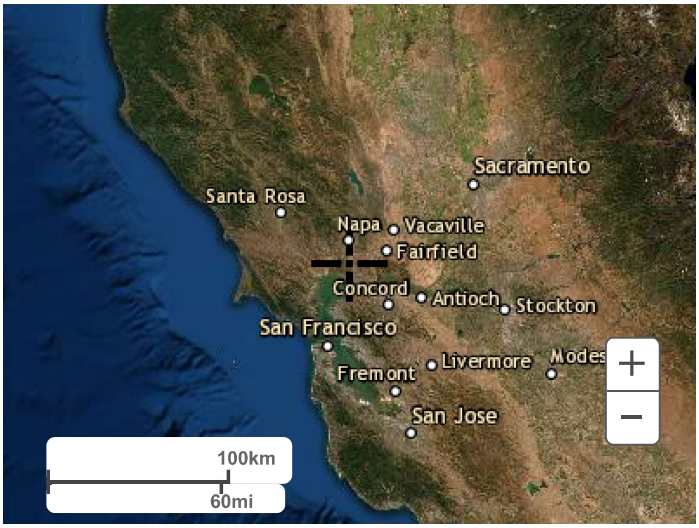
Large scale terrain



Large scale map



Large scale aerial



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National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

NOAA Atlas 14, Volume 6, Version 2
Location name: American Canyon, California, USA*
Latitude: 38.1857°, Longitude: -122.2732°
Elevation: m/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/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.39 (1.24-1.57)	1.73 (1.54-1.97)	2.21 (1.96-2.51)	2.59 (2.28-2.99)	3.16 (2.66-3.78)	3.60 (2.96-4.42)	4.07 (3.26-5.14)	4.57 (3.54-5.95)	5.27 (3.90-7.20)	5.83 (4.14-8.29)
10-min	0.996 (0.888-1.13)	1.24 (1.10-1.41)	1.58 (1.40-1.80)	1.86 (1.63-2.14)	2.26 (1.91-2.71)	2.58 (2.13-3.16)	2.92 (2.34-3.68)	3.28 (2.54-4.27)	3.77 (2.79-5.16)	4.18 (2.97-5.94)
15-min	0.800 (0.716-0.908)	1.00 (0.892-1.14)	1.27 (1.13-1.45)	1.50 (1.32-1.73)	1.82 (1.54-2.18)	2.08 (1.72-2.55)	2.35 (1.88-2.96)	2.64 (2.05-3.44)	3.04 (2.25-4.16)	3.37 (2.40-4.79)
30-min	0.558 (0.498-0.632)	0.696 (0.620-0.792)	0.886 (0.786-1.01)	1.04 (0.918-1.20)	1.27 (1.07-1.52)	1.45 (1.19-1.78)	1.64 (1.31-2.06)	1.84 (1.43-2.39)	2.12 (1.57-2.89)	2.35 (1.67-3.33)
60-min	0.396 (0.353-0.450)	0.495 (0.440-0.562)	0.629 (0.558-0.717)	0.742 (0.652-0.853)	0.902 (0.762-1.08)	1.03 (0.848-1.26)	1.16 (0.932-1.47)	1.31 (1.01-1.70)	1.51 (1.11-2.06)	1.67 (1.18-2.37)
2-hr	0.294 (0.262-0.334)	0.365 (0.324-0.414)	0.460 (0.408-0.524)	0.538 (0.473-0.619)	0.648 (0.548-0.775)	0.735 (0.606-0.900)	0.824 (0.660-1.04)	0.919 (0.713-1.20)	1.05 (0.776-1.43)	1.15 (0.820-1.64)
3-hr	0.248 (0.221-0.281)	0.307 (0.273-0.349)	0.386 (0.342-0.440)	0.452 (0.397-0.519)	0.542 (0.458-0.648)	0.613 (0.505-0.751)	0.686 (0.550-0.865)	0.763 (0.592-0.994)	0.869 (0.642-1.19)	0.952 (0.677-1.35)
6-hr	0.180 (0.160-0.204)	0.223 (0.199-0.254)	0.281 (0.249-0.320)	0.329 (0.289-0.378)	0.394 (0.333-0.472)	0.445 (0.367-0.545)	0.497 (0.398-0.627)	0.551 (0.427-0.717)	0.624 (0.462-0.853)	0.682 (0.485-0.969)
12-hr	0.118 (0.105-0.134)	0.151 (0.134-0.171)	0.193 (0.171-0.220)	0.228 (0.200-0.262)	0.275 (0.232-0.329)	0.311 (0.256-0.381)	0.347 (0.278-0.438)	0.385 (0.299-0.501)	0.436 (0.323-0.596)	0.476 (0.338-0.676)
24-hr	0.079 (0.072-0.090)	0.104 (0.093-0.118)	0.136 (0.122-0.154)	0.161 (0.144-0.184)	0.196 (0.170-0.230)	0.222 (0.189-0.266)	0.248 (0.207-0.304)	0.276 (0.225-0.345)	0.312 (0.246-0.404)	0.341 (0.261-0.454)
2-day	0.050 (0.045-0.057)	0.066 (0.059-0.075)	0.086 (0.077-0.098)	0.102 (0.091-0.117)	0.124 (0.108-0.146)	0.141 (0.120-0.168)	0.157 (0.131-0.192)	0.174 (0.142-0.218)	0.197 (0.155-0.255)	0.215 (0.164-0.286)
3-day	0.039 (0.035-0.044)	0.051 (0.046-0.058)	0.066 (0.060-0.075)	0.079 (0.070-0.090)	0.095 (0.083-0.112)	0.108 (0.092-0.129)	0.121 (0.101-0.147)	0.133 (0.109-0.167)	0.151 (0.119-0.195)	0.164 (0.125-0.218)
4-day	0.032 (0.029-0.037)	0.042 (0.038-0.048)	0.055 (0.050-0.063)	0.066 (0.059-0.075)	0.079 (0.069-0.094)	0.090 (0.077-0.108)	0.100 (0.084-0.122)	0.111 (0.090-0.138)	0.124 (0.098-0.161)	0.135 (0.103-0.180)
7-day	0.023 (0.021-0.026)	0.030 (0.027-0.034)	0.040 (0.036-0.045)	0.047 (0.042-0.054)	0.056 (0.049-0.066)	0.064 (0.054-0.076)	0.070 (0.059-0.086)	0.077 (0.063-0.097)	0.086 (0.068-0.112)	0.093 (0.071-0.124)
10-day	0.018 (0.016-0.021)	0.024 (0.022-0.027)	0.031 (0.028-0.036)	0.037 (0.033-0.043)	0.045 (0.039-0.053)	0.050 (0.043-0.060)	0.055 (0.046-0.068)	0.061 (0.049-0.076)	0.067 (0.053-0.087)	0.072 (0.055-0.096)
20-day	0.012 (0.011-0.013)	0.016 (0.014-0.018)	0.020 (0.018-0.023)	0.024 (0.021-0.028)	0.029 (0.025-0.034)	0.032 (0.027-0.038)	0.035 (0.029-0.043)	0.038 (0.031-0.048)	0.042 (0.033-0.055)	0.045 (0.034-0.060)
30-day	0.009 (0.009-0.011)	0.013 (0.011-0.014)	0.016 (0.015-0.018)	0.019 (0.017-0.022)	0.023 (0.020-0.027)	0.025 (0.021-0.030)	0.027 (0.023-0.034)	0.030 (0.024-0.037)	0.033 (0.026-0.042)	0.035 (0.027-0.046)
45-day	0.008 (0.007-0.009)	0.010 (0.009-0.012)	0.013 (0.012-0.015)	0.015 (0.014-0.017)	0.018 (0.015-0.021)	0.020 (0.017-0.024)	0.022 (0.018-0.026)	0.023 (0.019-0.029)	0.025 (0.020-0.033)	0.027 (0.021-0.036)
60-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.013 (0.012-0.015)	0.015 (0.013-0.018)	0.017 (0.015-0.020)	0.019 (0.016-0.023)	0.020 (0.016-0.025)	0.022 (0.017-0.028)	0.023 (0.018-0.031)

[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.

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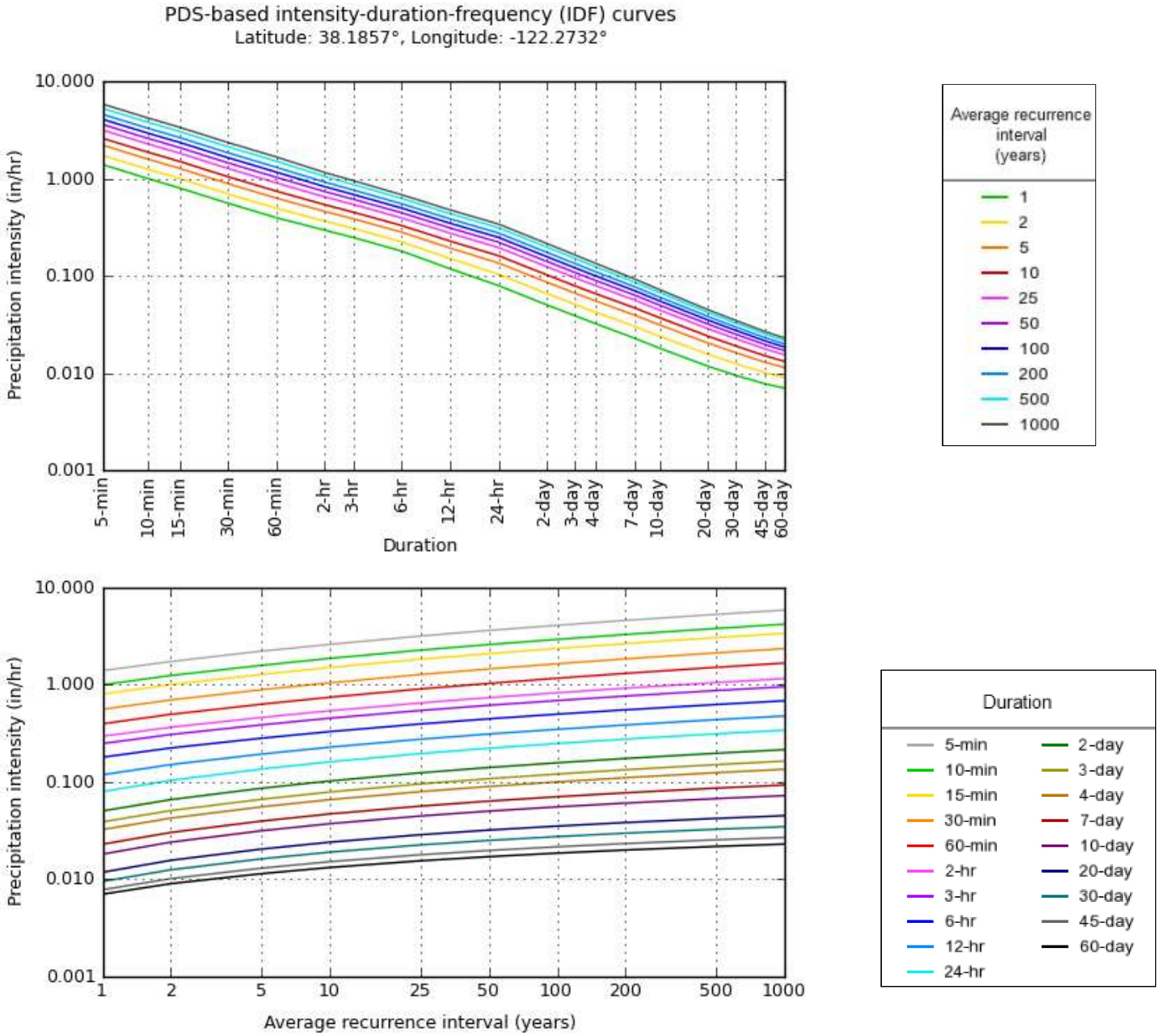
PF graphical



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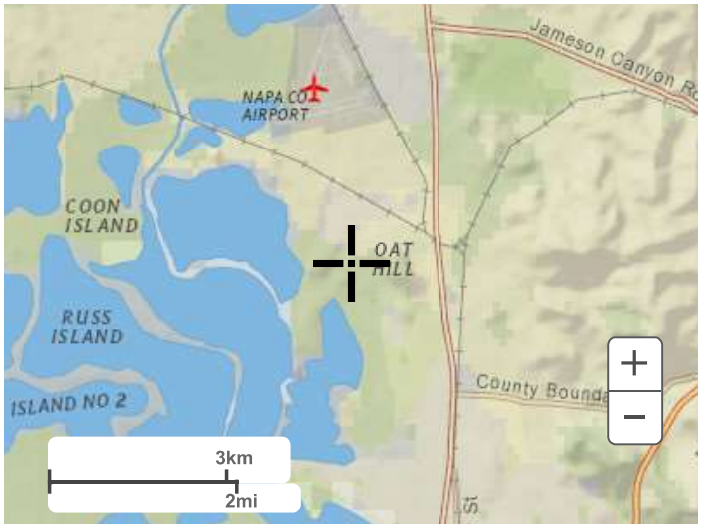
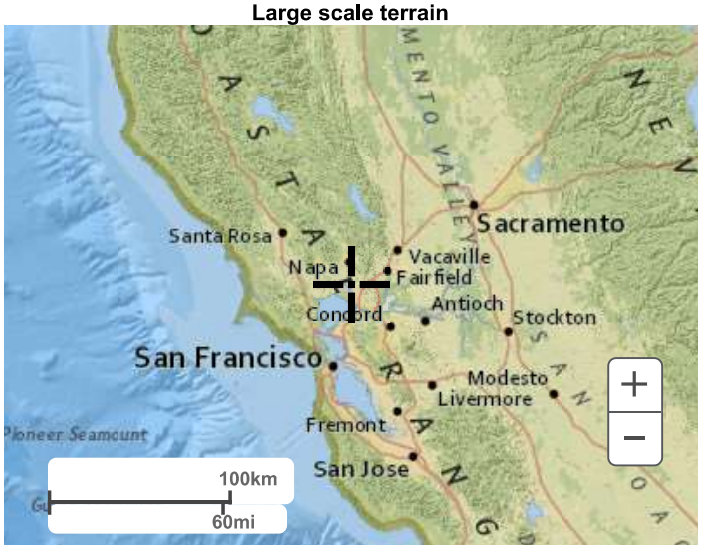
Maps & aerials

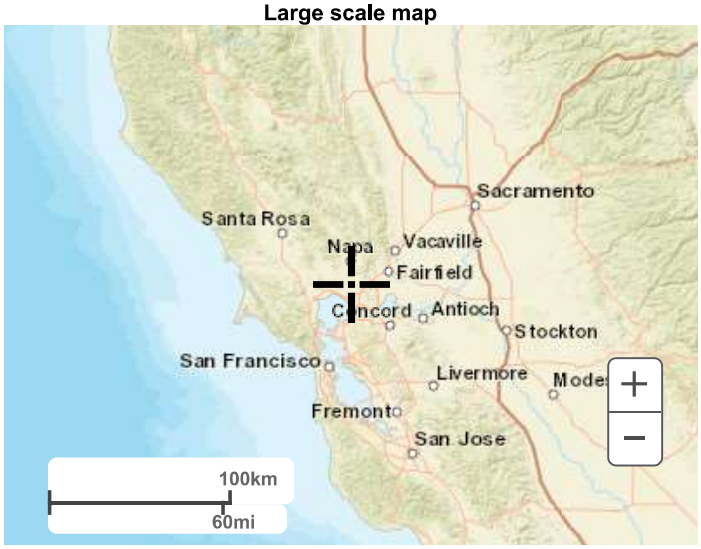
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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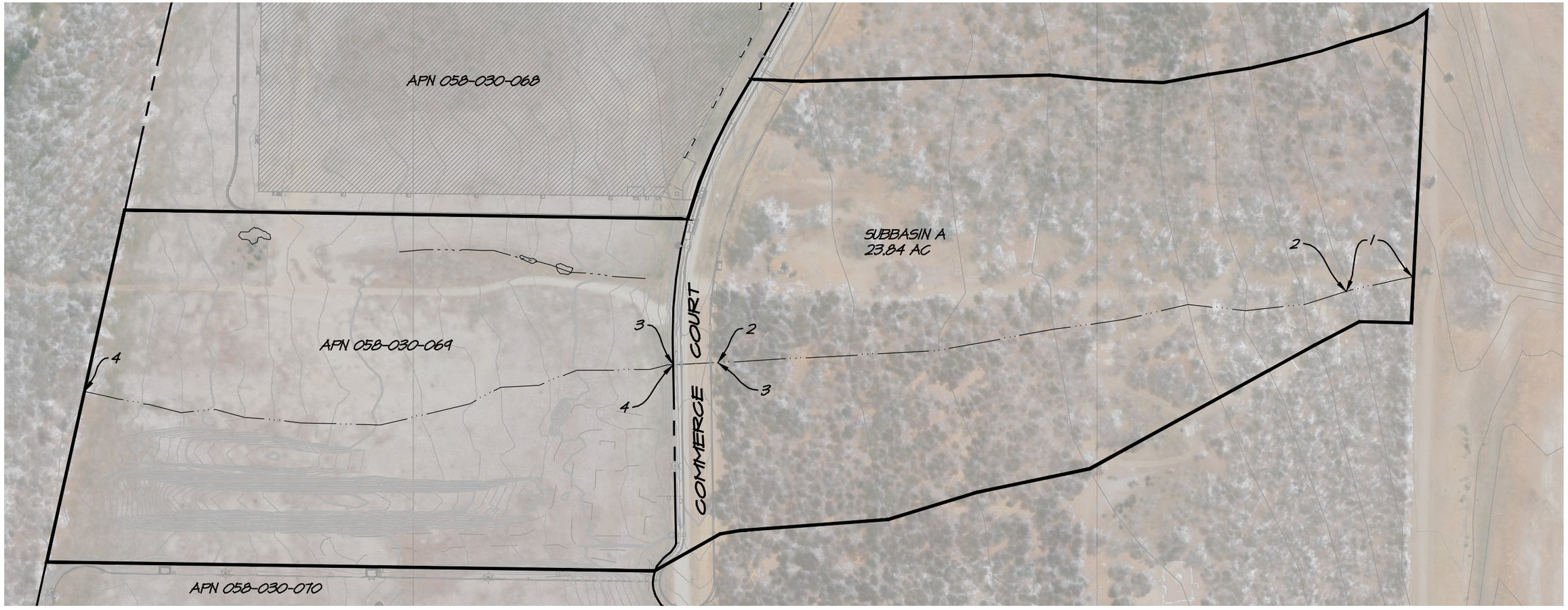

TIME OF CONCENTRATION

SUBBASIN	SEGMENT NUMBER	TYPE OF FLOW	SURFACE/PIPE DESCRIPTION	LENGTH (FEET)	AVG. SLOPE (%)
A	1	SHEET FLOW	UNPAVED	100	8.90
	2	SHALLOW FLOW	UNPAVED	933	4.80
	3	CHANNELIZED FLOW	PIPE	71	1.00
	4	SHALLOW FLOW	UNPAVED	881	2.12

GRAPHIC SCALE

150 0 150 300

(IN FEET)
1 inch = 150 FT

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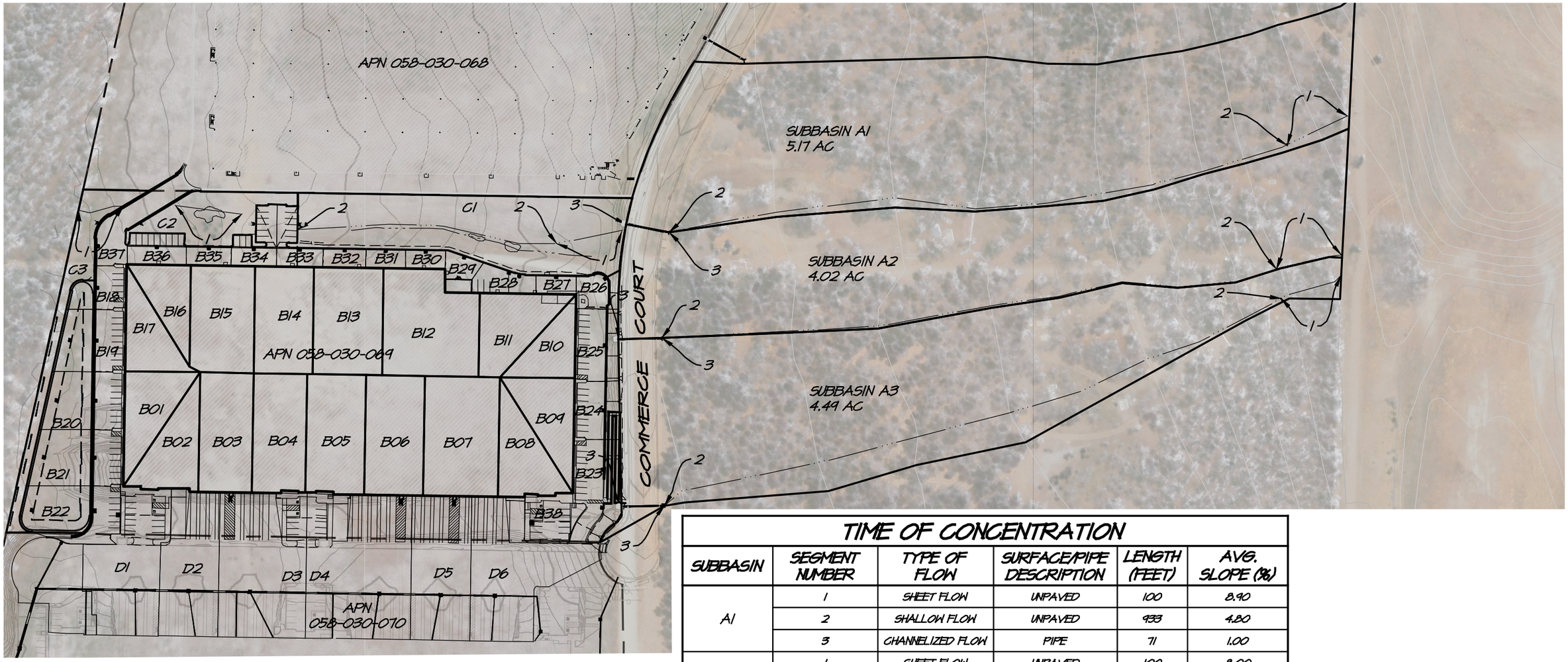

NOTES

MINIMUM TC FOR TR-55 IS 6 MINUTES

TIME OF CONCENTRATION

SUBBASIN	SEGMENT NUMBER	TYPE OF FLOW	SURFACE/PIPE DESCRIPTION	LENGTH (FEET)	AVG. SLOPE (%)
A1	1	SHEET FLOW	UNPAVED	100	8.90
	2	SHALLOW FLOW	UNPAVED	933	4.80
	3	CHANNELIZED FLOW	PIPE	71	1.00
A2	1	SHEET FLOW	UNPAVED	100	8.00
	2	SHALLOW FLOW	UNPAVED	925	4.00
	3	CHANNELIZED FLOW	PIPE	79	1.00
A3	1	SHEET FLOW	UNPAVED	100	7.00
	2	SHALLOW FLOW	UNPAVED	964	4.00
	3	CHANNELIZED FLOW	PIPE	75	1.00
B_{1-25}	ROOF TO DOWNSPOUT = 6 MIN (ASSUMED)*				
C1	1	SHEET FLOW	UNPAVED	100	4.30
	2	SHALLOW FLOW	UNPAVED	390	1.64
C2	1	SHEET FLOW	UNPAVED	100	0.60
C3	1	SHEET FLOW	UNPAVED	100	2.39
$D_{(OFF-SITE)}$	TC ESTIMATED ON SDG COMMERCE 220 HYDROLOGY REPORT**				

GRAPHIC SCALE

150 0 150 300

(IN FEET)
1 inch = 150 FT

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Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

ATTACHMENT 2

SSA OUTPUT FILES

Project Description

File Name ..... SDG 220 PRE -100YR.SPF

Project Options

Flow Units ..... CFS
Elevation Type ..... Elevation
Hydrology Method ..... SCS TR-55
Time of Concentration (TOC) Method ..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Enable Overflow Ponding at Nodes ..... YES
Skip Steady State Analysis Time Periods ... NO

Analysis Options

Start Analysis On ..... Mar 06, 2023 00:00:00
End Analysis On ..... Mar 07, 2023 00:00:00
Start Reporting On ..... Mar 06, 2023 00:00:00
Antecedent Dry Days ..... 0 days
Runoff (Dry Weather) Time Step ..... 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step ..... 0 00:05:00 days hh:mm:ss
Reporting Time Step ..... 0 00:00:30 days hh:mm:ss
Routing Time Step ..... 30 seconds

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1		Time Series	TS-02	Cumulative	inches	California	Napa (Napa Metro)	100	7.36	SCS Type IA 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	A	23.84	0.00	83	7.36	5.33	127.16	29.3	0 00:28:15

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft^2)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Jun-01	Junction	0.00	10.50	0.00	6.00	0.00	29.3	0.00	0.00	10.50	0 00:00	0.00	0.00
2	Out-01	Outfall	10.50					29.3	10.50					

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Reported Condition
1	Link-29	Pipe	Jun-01	Out-01	2018.28	0.00	0.00	0.0000	0.000	0.0150	29.3	0.0	0.00	0.00	0.00	0.00	0.00	

Subbasin Hydrology

Subbasin : A

Input Data

Area (ac) 23.84
Peak Rate Factor 0.00
Weighted Curve Number 82.70
Rain Gage ID ..... Rain Gage-01

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
50 - 75% grass cover, Fair	10.16	D	84.00
Woods & grass combination, Fair	2.60	C	76.00
Woods & grass combination, Fair	0.60	C	76.00
Woods & grass combination, Fair	9.50	D	82.00
Paved parking & roofs	0.98	D	98.00
Composite Area & Weighted CN	23.84		82.70

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

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

Where :

Tc = Time of Concentration (hr)
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 (hr)
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 (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.8	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	8.9	0.00	0.00
2 yr, 24 hr Rainfall (in) :	4.47	0.00	0.00
Velocity (ft/sec) :	0.10	0.00	0.00
Computed Flow Time (min) :	17.41	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	933	881	0.00
Slope (%) :	4.8	2.12	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.53	2.35	0.00
Computed Flow Time (min) :	4.41	6.25	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	71	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft²) :	1.77	0.00	0.00
Wetted Perimeter (ft) :	4.71	0.00	0.00
Velocity (ft/sec) :	6.47	0.00	0.00
Computed Flow Time (min) :	0.18	0.00	0.00

Total TOC (min) 28.25

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	5.33
Peak Runoff (cfs)	29.27
Weighted Curve Number	82.70
Time of Concentration (days hh:mm:ss)	0 00:28:15

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)
1	Jun-01	0.00	10.50	10.50	0.00	0.00	6.00	-4.50	0.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Jun-01	29.3	29.3	0.00	0.00	0.00	10.50	0.00	0.00	0 00:00	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Flap Gate	No. of Barrels
1	Link-29	2018.28	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	Link-29	29.3	0 08:08	0.0	0.00	0.00		0.00	0.00	0.00		

$Q_{100\text{-}YR\text{-}PRE}$

$Q_{100\text{-}YR\text{-}90\%} = 26.3$ CFS

Project Description

File Name ..... SDG 220 Post.SPF

Project Options

Flow Units ..... CFS
Elevation Type ..... Elevation
Hydrology Method ..... SCS TR-55
Time of Concentration (TOC) Method ..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Enable Overflow Ponding at Nodes ..... YES
Skip Steady State Analysis Time Periods ... YES

Analysis Options

Start Analysis On ..... Mar 13, 2023 00:00:00
End Analysis On ..... Mar 14, 2023 00:00:00
Start Reporting On ..... Mar 13, 2023 00:00:00
Antecedent Dry Days ..... 0 days
Runoff (Dry Weather) Time Step ..... 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step ..... 0 00:05:00 days hh:mm:ss
Reporting Time Step ..... 0 00:00:30 days hh:mm:ss
Routing Time Step ..... 30 seconds

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1		Time Series	TS- 100yr	Cumulative	inches	None	None	100	7.36	SCS Type IA 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	A01	5.17	484.00	81	7.36	5.19	26.80	6.7	0 00:15:27
2	A02	4.02	484.00	81	7.36	5.15	20.70	5.2	0 00:16:18
3	A03	4.49	484.00	83	7.36	5.34	23.96	5.9	0 00:18:52
4	B01	0.22	484.00	98	7.36	7.12	1.57	0.4	0 00:06:00
5	B02	0.23	484.00	98	7.36	7.12	1.62	0.4	0 00:06:00
6	B03	0.33	484.00	98	7.36	7.12	2.34	0.6	0 00:06:00
7	B04	0.33	484.00	98	7.36	7.12	2.32	0.6	0 00:06:00
8	B05	0.36	484.00	98	7.36	7.12	2.55	0.6	0 00:06:00
9	B06	0.36	484.00	98	7.36	7.12	2.57	0.7	0 00:06:00
10	B07	0.46	484.00	98	7.36	7.12	3.28	0.8	0 00:06:00
11	B08	0.23	484.00	98	7.36	7.12	1.64	0.4	0 00:06:00
12	B09	0.22	484.00	98	7.36	7.12	1.57	0.4	0 00:06:00
13	B10	0.16	484.00	98	7.36	7.12	1.14	0.3	0 00:06:00
14	B11	0.25	484.00	98	7.36	7.12	1.80	0.4	0 00:06:00
15	B12	0.49	484.00	98	7.36	7.12	3.47	0.9	0 00:06:00
16	B13	0.38	484.00	98	7.36	7.12	2.72	0.7	0 00:06:00
17	B14	0.32	484.00	98	7.36	7.12	2.30	0.6	0 00:06:00
18	B15	0.35	484.00	98	7.36	7.12	2.50	0.6	0 00:06:00
19	B16	0.17	484.00	98	7.36	7.12	1.19	0.3	0 00:06:00
20	B17	0.19	484.00	98	7.36	7.12	1.33	0.3	0 00:06:00
21	B18	0.11	484.00	98	7.36	7.12	0.77	0.2	0 00:06:00
22	B19	0.21	484.00	98	7.36	7.12	1.51	0.4	0 00:06:00
23	B20	0.24	484.00	98	7.36	7.12	1.68	0.4	0 00:06:00
24	B21	0.26	484.00	98	7.36	7.12	1.87	0.5	0 00:06:00
25	B22	0.27	484.00	98	7.36	7.12	1.93	0.5	0 00:06:00
26	B23	0.23	484.00	98	7.36	7.12	1.65	0.4	0 00:06:00
27	B24	0.14	484.00	98	7.36	7.12	0.97	0.2	0 00:06:00
28	B25	0.16	484.00	98	7.36	7.12	1.14	0.3	0 00:06:00
29	B26	0.08	484.00	98	7.36	7.12	0.57	0.2	0 00:06:00
30	B27	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
31	B28	0.08	484.00	98	7.36	7.12	0.57	0.2	0 00:06:00
32	B29	0.06	484.00	98	7.36	7.12	0.43	0.1	0 00:06:00
33	B30	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
34	B31	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
35	B32	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
36	B33	0.09	484.00	98	7.36	7.12	0.64	0.2	0 00:06:00
37	B34	0.10	484.00	98	7.36	7.12	0.70	0.2	0 00:06:00
38	B35	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
39	B36	0.09	484.00	98	7.36	7.12	0.65	0.2	0 00:06:00
40	B37	0.17	484.00	98	7.36	7.12	1.21	0.3	0 00:06:00
41	B38	0.13	484.00	98	7.36	7.12	0.91	0.2	0 00:06:00
42	C01	1.09	484.00	72	7.36	4.14	4.51	1.1	0 00:05:00
43	C02	0.28	484.00	72	7.36	4.14	1.16	0.3	0 00:29:07
44	C03	0.29	484.00	72	7.36	4.14	1.19	0.3	0 00:16:48
45	D01	0.48	484.00	98	7.36	7.12	3.45	0.9	0 00:06:00
46	D02	0.41	484.00	98	7.36	7.12	2.94	0.7	0 00:06:00
47	D03	0.65	484.00	98	7.36	7.12	4.62	1.1	0 00:06:00
48	D04	0.78	484.00	98	7.36	7.12	5.55	1.4	0 00:06:00
49	D05	0.44	484.00	98	7.36	7.12	3.14	0.8	0 00:06:00
50	D06	0.56	484.00	98	7.36	7.12	3.97	1.0	0 00:06:00
51	D07	0.29	484.00	98	7.36	7.12	2.06	0.5	0 00:06:00

Q_{max} to DI-36x36

Q_{max} to DI-36x36

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	A1.1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.3	19.28	0.00	1.73	0 00:00	0.00	0.00
2	A1-Structure	Junction	16.03	37.64	16.03	37.64	0.00	5.7	18.56	0.00	19.08	0 00:00	0.00	0.00
3	A2.1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.4	19.31	0.00	1.69	0 00:00	0.00	0.00
4	A2-Structure	Junction	15.56	20.55	15.56	20.55	0.00	6.3	18.43	0.00	2.12	0 00:00	0.00	0.00
5	A3-Structure	Junction	15.13	19.11	15.13	19.11	0.00	6.7	16.35	0.00	2.76	0 00:00	0.00	0.00
6	A4-Structure	Junction	14.86	20.27	14.86	20.27	0.00	12.6	17.16	0.00	3.11	0 00:00	0.00	0.00
7	A5-Structure	Junction	13.86	20.07	13.86	20.07	0.00	13.2	18.52	0.00	1.55	0 00:00	0.00	0.00
8	B1-Structure	Junction	12.20	20.13	12.20	20.13	0.00	0.5	12.33	0.00	7.80	0 00:00	0.00	0.00
9	C1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.4	19.31	0.00	1.69	0 00:00	0.00	0.00
10	C2-Structure	Junction	12.20	36.86	12.20	36.86	0.00	0.8	18.42	0.00	18.44	0 00:00	0.00	0.00
11	D1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.3	19.29	0.00	1.71	0 00:00	0.00	0.00
12	D2-Structure	Junction	12.20	38.65	12.20	38.65	0.00	0.7	18.40	0.00	20.25	0 00:00	0.00	0.00
13	D3-Structure	Junction	10.50	16.50	10.50	13.25	0.00	0.7	10.65	0.00	5.85	0 00:00	0.00	0.00
14	D4-Structure	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.53	0.00	1.57	0 00:00	0.00	0.00
15	E10.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.6	19.35	0.00	1.72	0 00:00	0.00	0.00
16	E10-Structure	Junction	12.29	20.26	12.29	20.26	0.00	3.4	18.70	0.00	1.56	0 00:00	0.00	0.00
17	E11-Structure	Junction	11.95	20.26	11.95	20.26	0.00	3.6	12.64	0.00	7.62	0 00:00	0.00	0.00
18	E13.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.6	19.37	0.00	1.70	0 00:00	0.00	0.00
19	E13-Structure	Junction	11.61	20.26	11.61	20.26	0.00	4.2	18.79	0.00	1.47	0 00:00	0.00	0.00
20	E14.2-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.3	19.28	0.00	1.79	0 00:00	0.00	0.00
21	E14-Structure	Junction	11.22	20.25	11.22	20.25	0.00	4.7	18.64	0.00	1.61	0 00:00	0.00	0.00
22	E15-Structure	Junction	10.79	20.25	10.79	20.25	0.00	5.0	11.77	0.00	8.48	0 00:00	0.00	0.00
23	E16-Structure	Junction	10.62	20.13	10.62	20.13	0.00	5.2	11.60	0.00	8.53	0 00:00	0.00	0.00
24	E1-Structure	Junction	15.10	19.22	15.10	19.22	0.00	0.2	15.26	0.00	3.96	0 00:00	0.00	0.00
25	E2-Structure	Junction	14.73	20.26	14.73	20.26	0.00	0.2	14.91	0.00	5.35	0 00:00	0.00	0.00
26	E4.1-Structure	Junction	19.10	21.08	19.10	21.08	0.00	0.4	19.32	0.00	1.76	0 00:00	0.00	0.00
27	E4-Structure	Junction	14.45	20.30	14.45	20.30	0.00	0.2	14.64	0.00	5.66	0 00:00	0.00	0.00
28	E5-Structure	Junction	14.37	20.09	14.37	20.09	0.00	0.8	18.64	0.00	1.45	0 00:00	0.00	0.00
29	E6-Structure	Junction	14.02	20.20	14.02	20.20	0.00	0.9	14.40	0.00	5.80	0 00:00	0.00	0.00
30	E7.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.9	19.41	0.00	1.66	0 00:00	0.00	0.00
31	E7-Structure	Junction	13.23	20.26	13.23	20.26	0.00	1.8	18.75	0.00	1.51	0 00:00	0.00	0.00
32	E8-Structure	Junction	12.93	20.26	12.93	20.26	0.00	1.9	13.43	0.00	6.83	0 00:00	0.00	0.00
33	E9.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.7	19.38	0.00	1.69	0 00:00	0.00	0.00
34	E9-Structure	Junction	12.62	20.26	12.62	20.26	0.00	2.7	18.87	0.00	1.39	0 00:00	0.00	0.00
35	Jun-01	Junction	0.00	10.50	0.00	0.00	0.00	6.4	0.00	0.00	10.50	0 00:00	0.00	0.00
36	Jun-02	Junction	0.00	6.00	0.00	6.00	0.00	6.7	32.70	0.00	0.80	0 00:00	0.00	0.00
37	Jun-03	Junction	0.00	6.00	0.00	6.00	0.00	6.7	30.70	0.00	0.80	0 00:00	0.00	0.00
38	Jun-04	Junction	19.20	6.00	0.00	6.00	0.00	7.8	19.20	0.00	0.00	0 00:00	0.00	0.00
39	Jun-05	Junction	18.20	6.00	0.00	6.00	0.00	7.8	19.13	0.00	0.57	0 00:00	0.00	0.00
40	Jun-06	Junction	14.60	6.00	0.00	6.00	0.00	8.1	14.60	0.00	0.00	0 00:00	0.00	0.00
41	Jun-07	Junction	13.20	6.00	0.00	6.00	0.00	8.3	14.04	0.00	0.66	0 00:00	0.00	0.00
42	Jun-08	Junction	19.20	6.00	0.00	6.00	0.00	7.8	20.13	0.00	0.57	0 00:00	0.00	0.00
43	Jun-09	Junction	14.60	6.00	0.00	0.00	0.00	8.1	15.44	0.00	0.66	0 00:00	0.00	0.00
44	Out-1A15-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	17.0	12.05	0.00	4.45	0 00:00	0.00	0.00
45	Out-1B1-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	0.5	10.63	0.00	5.87	0 00:00	0.00	0.00
46	Out-1C2-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	0.8	10.67	0.00	5.83	0 00:00	0.00	0.00
47	Out-1D4-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.40	0.00	5.10	0 00:00	0.00	0.00
48	Out-1E16-Pipe	Junction	10.50	16.50	10.50	0.00	0.00	5.2	11.37	0.00	5.13	0 00:00	0.00	0.00
49	Out-1Pipe (53)	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.29	0.00	5.21	0 00:00	0.00	0.00
50	Out-1Pipe (59)	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.39	0.00	5.11	0 00:00	0.00	0.00
51	Out-1Pipe (62)	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.39	0.00	5.11	0 00:00	0.00	0.00
52	Structure - 100	Junction	19.10	19.83	19.10	19.83	0.00	0.6	19.36	0.00	0.47	0 00:00	0.00	0.00
53	Structure - 101	Junction	11.91	19.47	11.91	19.47	0.00	15.7	18.66	0.00	0.81	0 00:00	0.00	0.00
54	Structure - 102	Junction	19.10	19.83	19.10	19.83	0.00	0.6	19.36	0.00	0.47	0 00:00	0.00	0.00
55	Structure - 103	Junction	11.59	19.48	11.59	19.48	0.00	16.2	18.66	0.00	0.82	0 00:00	0.00	0.00
56	Structure - 104	Junction	19.10	19.83	19.10	19.83	0.00	0.4	19.34	0.00	0.49	0 00:00	0.00	0.00
57	Structure - 105	Junction	11.09	19.41	11.09	19.41	0.00	16.6	18.55	0.00	0.86	0 00:00	0.00	0.00
58	Structure - 35	Junction	10.76	18.50	10.76	18.50	0.00	16.6	12.29	0.00	6.21	0 00:00	0.00	0.00
59	Structure - 36	Junction	10.59	20.13	10.59	20.13	0.00	17.0	12.14	0.00	7.99	0 00:00	0.00	0.00
60	Structure - 38	Junction	28.60	31.31	28.60	31.31	0.00	5.2	29.46	0.00	1.85	0 00:00	0.00	0.00
61	Structure - 39	Junction	27.61	32.57	27.61	32.57	0.00	5.2	29.08	0.00	3.49	0 00:00	0.00	0.00
62	Structure - 48	Junction	26.48	1.78	26.48	1.78	0.00	5.9	27.17	0.00	0.81	0 00:00	0.00	0.00
63	Structure - 49	Junction	25.31	29.72	25.31	29.72	0.00	5.9	26.48	0.00	3.24	0 00:00	0.00	0.00
64	Structure - 75	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.42	0.00	1.68	0 00:00	0.00	0.00
65	Structure - 83	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.52	0.00	1.58	0 00:00	0.00	0.00
66	Structure - 87	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.52	0.00	1.58	0 00:00	0.00	0.00
67	Structure - 91	Junction	19.10	21.10	19.10	21.10	0.00	0.4	19.32	0.00	1.78	0 00:00	0.00	0.00
68	Structure - 94	Junction	19.10	19.83	19.10	19.83	0.00	0.8	19.45	0.00	0.37	0 00:00	0.00	0.00
69	Structure - 95	Junction	13.30	19.40	13.30	19.40	0.00	13.9	18.76	0.00	0.64	0 00:00	0.00	0.00
70	Structure - 96	Junction	19.10	19.83	19.10	19.83	0.00	0.7	19.41	0.00	0.42	0 00:00	0.00	0.00
71	Structure - 97	Junction	12.86	19.42	12.86	19.42	0.00	14.5	18.71	0.00	0.71	0 00:00	0.00	0.00
72	Structure - 98	Junction	19.10	19.83	19.10	19.83	0.00	0.6	19.40	0.00	0.42	0 00:00	0.00	0.00
73	Structure - 99	Junction	12.39	19.44	12.39	19.44	0.00	15.1	18.70	0.00	0.73	0 00:00	0.00	0.00
74	Out-02	Outfall	0.00					24.5	0.00					
75	Detention-Basin	Storage Node	10.50	15.50	0.00		12634.80	23.9	12.66				0.00	0.00

$Q_{100\text{-yr Post-Total}}$

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
1	A1.1-Pipe	Pipe	A1.1-Structure	A1-Structure	43.57	19.10	18.23	2.0000	8.000	0.0120	0.3	1.9	0.15	3.84	0.18	0.26	0.00	Calculated
2	A10.1-Pipe	Pipe	Structure - 100	Structure - 101	34.83	19.10	18.40	2.0000	8.000	0.0120	0.6	1.9	0.31	4.68	0.26	0.38	0.00	Calculated
3	A10-Pipe	Pipe	Structure - 99	Structure - 101	91.67	12.39	11.91	0.5300	30.000	0.0150	15.1	25.9	0.58	5.47	1.37	0.55	0.00	Calculated
4	A11.1-Pipe	Pipe	Structure - 102	Structure - 103	34.86	19.10	18.40	2.0000	8.000	0.0120	0.6	1.9	0.31	4.68	0.26	0.38	0.00	Calculated
5	A11-Pipe	Pipe	Structure - 101	Structure - 103	67.33	11.91	11.59	0.4700	30.000	0.0150	15.7	24.5	0.64	5.28	1.45	0.58	0.00	Calculated
6	A12.1-Pipe	Pipe	Structure - 104	Structure - 105	39.58	19.10	18.31	2.0000	8.000	0.0150	0.4	1.5	0.27	3.62	0.24	0.36	0.00	Calculated
7	A12-Pipe	Pipe	Structure - 103	Structure - 105	100.61	11.59	11.09	0.4900	30.000	0.0150	16.2	25.0	0.65	5.41	1.47	0.59	0.00	Calculated
8	A13-Pipe	Pipe	Structure - 105	Structure - 35	63.49	11.09	10.76	0.5200	30.000	0.0150	16.6	25.7	0.64	5.57	1.46	0.58	0.00	Calculated
9	A14-Pipe	Pipe	Structure - 35	Structure - 36	37.44	10.76	10.59	0.4500	30.000	0.0150	16.6	24.0	0.69	5.26	1.53	0.61	0.00	Calculated
10	A15-Pipe	Pipe	Structure - 36	Out-1A15-Pipe	19.67	10.59	10.50	0.4600	30.000	0.0150	17.0	24.1	0.71	5.31	1.55	0.62	0.00	Calculated
11	A1-Pipe	Pipe	Structure - 39	A1-Structure	32.78	27.61	18.23	28.6100	18.000	0.0150	5.2	48.7	0.11	17.94	0.33	0.22	0.00	Calculated
12	A2.1-Pipe	Pipe	A2.1-Structure	A2-Structure	44.00	19.10	18.22	2.0000	8.000	0.0120	0.4	1.9	0.21	4.22	0.21	0.31	0.00	Calculated
13	A2-Pipe	Pipe	A1-Structure	A2-Structure	97.50	16.03	15.56	0.4800	18.000	0.0150	5.7	6.3	0.90	4.05	1.12	0.74	0.00	Calculated
14	A3-Pipe	Pipe	A2-Structure	A3-Structure	88.50	15.56	15.13	0.4900	18.000	0.0150	6.3	6.4	0.99	4.10	1.22	0.81	0.00	Calculated
15	A4.1-Pipe	Pipe	Structure - 49	A4-Structure	39.16	25.31	16.82	21.6900	18.000	0.0120	5.9	53.0	0.11	19.80	0.34	0.23	0.00	Calculated
16	A4-Pipe	Pipe	A3-Structure	A4-Structure	56.66	15.13	14.86	0.4800	30.000	0.0150	6.7	24.5	0.27	4.25	0.89	0.36	0.00	Calculated
17	A5-Pipe	Pipe	A4-Structure	A5-Structure	107.77	14.86	13.86	0.9300	30.000	0.0150	12.6	34.3	0.37	6.44	1.05	0.42	0.00	Calculated
18	A6.1-Pipe	Pipe	Structure - 91	A5-Structure	42.40	19.10	18.31	1.8700	8.000	0.0120	0.4	1.8	0.23	4.15	0.22	0.32	0.00	Calculated
19	A7.1-Pipe	Pipe	Structure - 94	Structure - 95	34.69	19.10	18.41	2.0000	8.000	0.0150	0.8	1.5	0.55	4.34	0.35	0.53	0.00	Calculated
20	A7-Pipe	Pipe	A5-Structure	Structure - 95	110.61	13.86	13.30	0.5100	30.000	0.0150	13.2	25.3	0.52	5.21	1.28	0.51	0.00	Calculated
21	A8.1-Pipe	Pipe	Structure - 96	Structure - 97	34.74	19.10	18.41	2.0000	8.000	0.0150	0.7	1.5	0.44	4.10	0.31	0.46	0.00	Calculated
22	A8-Pipe	Pipe	Structure - 95	Structure - 97	89.33	13.30	12.86	0.4900	30.000	0.0150	13.9	24.9	0.56	5.21	1.34	0.53	0.00	Calculated
23	A9.1-Pipe	Pipe	Structure - 98	Structure - 99	34.78	19.10	18.40	2.0100	8.000	0.0150	0.6	1.5	0.43	4.09	0.30	0.46	0.00	Calculated
24	A9-Pipe	Pipe	Structure - 97	Structure - 99	95.00	12.86	12.39	0.4900	30.000	0.0150	14.5	24.9	0.58	5.27	1.37	0.55	0.00	Calculated
25	B1-Pipe	Pipe	B1-Structure	Out-1B1-Pipe	19.69	12.20	10.50	8.6300	24.000	0.0150	0.5	57.6	0.01	5.50	0.13	0.06	0.00	Calculated
26	C1-Pipe	Pipe	C1-Structure	C2-Structure	44.64	19.10	18.21	2.0000	8.000	0.0120	0.4	1.9	0.21	4.22	0.21	0.31	0.00	Calculated
27	C2-Pipe	Pipe	C2-Structure	Out-1C2-Pipe	19.67	12.20	10.50	8.6400	24.000	0.0150	0.8	57.6	0.01	6.54	0.17	0.08	0.00	Calculated
28	D1-Pipe	Pipe	D1-Structure	D2-Structure	44.46	19.10	18.21	2.0000	8.000	0.0120	0.3	1.9	0.18	4.00	0.19	0.29	0.00	Calculated
29	D2-Pipe	Pipe	D2-Structure	D3-Structure	19.67	12.20	10.50	8.6400	24.000	0.0150	0.7	57.6	0.01	6.25	0.15	0.08	0.00	Calculated
30	D4-Pipe	Pipe	D4-Structure	Out-1D4-Pipe	26.30	10.63	10.50	0.4900	18.000	0.0150	4.3	6.4	0.67	3.88	0.90	0.60	0.00	Calculated
31	E10-Pipe	Pipe	E10-Structure	E11-Structure	68.72	12.29	11.95	0.5000	24.000	0.0150	3.4	13.9	0.24	3.64	0.67	0.34	0.00	Calculated
32	E11-Pipe	Pipe	E11-Structure	E13-Structure	67.31	11.95	11.61	0.5000	24.000	0.0150	3.6	13.9	0.26	3.69	0.69	0.35	0.00	Calculated
33	E12.1-Pipe	Pipe	E13.1-Structure	E13-Structure	28.75	19.10	18.52	2.0200	8.000	0.0120	0.6	1.9	0.33	4.79	0.27	0.40	0.00	Calculated
34	E13.1-Pipe	Pipe	E14.2-Structure	E14-Structure	31.82	19.10	18.46	2.0000	8.000	0.0120	0.3	1.9	0.16	3.88	0.18	0.27	0.00	Calculated
35	E13-Pipe	Pipe	E13-Structure	E14-Structure	77.56	11.61	11.22	0.5000	24.000	0.0150	4.2	13.9	0.31	3.88	0.76	0.38	0.00	Calculated
36	E14-Pipe	Pipe	E14-Structure	E15-Structure	88.49	11.22	10.79	0.4900	24.000	0.0150	4.7	13.7	0.34	3.94	0.81	0.40	0.00	Calculated
37	E15-Pipe	Pipe	E15-Structure	E16-Structure	61.58	10.79	10.62	0.2800	24.000	0.0150	5.0	10.3	0.49	3.25	0.98	0.49	0.00	Calculated
38	E16-Pipe	Pipe	E16-Structure	Out-1E16-Pipe	26.19	10.62	10.50	0.4600	24.000	0.0150	5.2	13.3	0.39	3.96	0.87	0.43	0.00	Calculated
39	E1-Pipe	Pipe	E1-Structure	E2-Structure	73.22	15.10	14.73	0.5000	18.000	0.0150	0.2	6.4	0.02	1.46	0.16	0.11	0.00	Calculated
40	E2-Pipe	Pipe	E2-Structure	E4-Structure	55.47	14.73	14.45	0.5000	18.000	0.0150	0.2	6.4	0.03	1.69	0.19	0.12	0.00	Calculated
41	E4-Pipe	Pipe	E4-Structure	E5-Structure	15.97	14.45	14.37	0.5000	18.000	0.0150	0.2	6.3	0.03	1.67	0.19	0.13	0.00	Calculated
42	E5.1-Pipe	Pipe	E4.1-Structure	E5-Structure	32.89	19.10	18.42	2.0800	8.000	0.0120	0.4	1.9	0.23	4.41	0.22	0.33	0.00	Calculated
43	E5-Pipe	Pipe	E5-Structure	E6-Structure	70.61	14.37	14.02	0.5000	18.000	0.0150	0.8	6.4	0.13	2.48	0.36	0.24	0.00	Calculated
44	E6.1-Pipe	Pipe	E7.1-Structure	E7-Structure	28.85	19.10	18.44	2.2800	8.000	0.0120	0.9	2.0	0.44	5.46	0.31	0.46	0.00	Calculated
45	E6-Pipe	Pipe	E6-Structure	E7-Structure	58.54	14.02	13.73	0.5000	18.000	0.0150	0.9	6.4	0.14	2.57	0.38	0.25	0.00	Calculated
46	E7-Pipe	Pipe	E7-Structure	E8-Structure	59.55	13.23	12.93	0.5000	24.000	0.0150	1.8	13.9	0.13	3.06	0.49	0.25	0.00	Calculated
47	E8.1-Pipe	Pipe	E9.1-Structure	E9-Structure	25.28	19.10	18.59	2.0000	8.000	0.0120	0.7	1.9	0.37	4.89	0.28	0.42	0.00	Calculated
48	E8-Pipe	Pipe	E8-Structure	E9-Structure	61.63	12.93	12.62	0.5000	24.000	0.0150	1.9	13.8	0.14	3.08	0.50	0.25	0.00	Calculated
49	E9.1-Pipe	Pipe	E10.1-Structure	E10-Structure	30.97	19.10	18.44	2.1200	8.000	0.0120	0.6	1.9	0.30	4.78	0.25	0.38	0.00	Calculated
50	E9-Pipe	Pipe	E9-Structure	E10-Structure	66.95	12.62	12.29	0.5000	24.000	0.0150	2.7	13.8	0.19	3.39	0.59	0.30	0.00	Calculated
51	Link-01	Pipe	Out-1E16-Pipe	Detention-Basin	178.44	10.50	0.00	5.8800	12.000	0.0150	5.2	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
52	Link-02	Pipe	D3-Structure	Detention-Basin	117.22	9.00	0.00	7.6800	12.000	0.0150	0.7	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
53	Link-03	Pipe	Out-1C2-Pipe	Detention-Basin	30.02	10.50	0.00	34.9800	12.000	0.0150	0.8	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
54	Link-04	Pipe	Out-1B1-Pipe	Detention-Basin	60.81	10.50	0.00	17.2700	12.000	0.0150	0.5	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
55	Link-05	Pipe	Out-1A15-Pipe	Detention-Basin	138.79	10.50	0.00	7.5700	12.000	0.0150	17.0	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
56	Link-11	Pipe	Jun-02	Jun-03	71.00	32.00	30.00	2.8200	18.000	0.0150	6.7	15.3	0.44	8.37	0.70	0.47	0.00	Calculated
57	Link-12	Pipe	Jun-03	Jun-04	417.20	0.00	0.00	0.0000	12.000	0.0150	6.7	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
58	Link-14	Pipe	Jun-05	Jun-06	128.08	0.00	0.00	0.0000	12.000	0.0150	7.8	0.0	0.44	0.00	0.70	0.47	0.00	Calculated

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
59	Link-16	Pipe	Jun-07	Out-02	317.29	0.00	0.00	0.0000	12.000	0.0150	8.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
60	Link-17	Pipe	Out-1D4-Pipe	Out-02	137.86	10.50	0.00	7.6200	0.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
61	Link-18	Pipe	Out-1Pipe (62)	Out-02	99.47	10.50	0.00	10.5600	0.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
62	Link-19	Pipe	Out-1Pipe (59)	Out-02	130.31	10.50	0.00	8.0600	12.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
63	Link-20	Pipe	Out-1Pipe (53)	Out-02	191.76	10.50	0.00	5.4800	12.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
64	Link-29	Pipe	Jun-04	Jun-08	48.58	19.20	18.82	0.7800	0.000	0.0150	7.8	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
65	Link-30	Pipe	Jun-08	Jun-05	67.00	19.20	18.20	1.4900	18.000	0.0150	7.8	11.1	0.70	6.81	0.93	0.62	0.00	Calculated
66	Link-31	Pipe	Jun-06	Jun-09	46.31	14.60	14.60	0.0000	0.000	0.0150	8.1	0.0	0.70	0.00	0.93	0.62	0.00	Calculated
67	Link-32	Pipe	Jun-09	Jun-07	64.00	14.60	13.20	2.1900	18.000	0.0150	8.1	13.5	0.60	7.95	0.84	0.56	0.00	Calculated
68	Pipe (24)	Pipe	Structure - 38	Structure - 39	45.94	28.60	28.22	0.8300	18.000	0.0150	5.2	8.3	0.62	4.94	0.86	0.57	0.00	Calculated
69	Pipe (34)	Pipe	Structure - 48	Structure - 49	46.55	26.48	25.79	1.4800	18.000	0.0120	5.9	13.9	0.43	7.54	0.69	0.46	0.00	Calculated
70	Pipe (53)	Pipe	Structure - 75	Out-1Pipe (53)	27.49	10.63	10.50	0.4700	18.000	0.0120	4.3	7.8	0.55	4.52	0.79	0.53	0.00	Calculated
71	Pipe (59)	Pipe	Structure - 83	Out-1Pipe (59)	25.67	10.63	10.50	0.5100	18.000	0.0150	4.3	6.5	0.66	3.91	0.89	0.59	0.00	Calculated
72	Pipe (62)	Pipe	Structure - 87	Out-1Pipe (62)	25.95	10.63	10.50	0.5000	18.000	0.0150	4.3	6.4	0.66	3.90	0.89	0.59	0.00	Calculated
73	Orifice-01	Orifice	Detention-Basin	Structure - 83		10.50	10.63		9.000		4.3							
74	Orifice-02	Orifice	Detention-Basin	D4-Structure		10.50	10.63		9.000		4.3							
75	Orifice-03	Orifice	Detention-Basin	Structure - 87		10.50	10.63		9.000		4.3							
76	Orifice-04	Orifice	Detention-Basin	Structure - 75		10.50	10.63		9.000		4.3							

Subbasin Hydrology

Subbasin : A01

Input Data

Area (ac)	5.17
Peak Rate Factor	484.00
Weighted Curve Number	81.40
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.37	D	98.00
Woods & grass combination, Fair	1.10	C	76.00
Woods & grass combination, Fair	0.40	C	76.00
Woods & grass combination, Fair	3.30	D	82.00
Composite Area & Weighted CN	5.17		81.40

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

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

Where :

Tc = Time of Concentration (hr)
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 (hr)
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 (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	8.9	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.74	0.00	0.00
Velocity (ft/sec) :	0.15	0.00	0.00
Computed Flow Time (min) :	10.93	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	933	0.00	0.00
Slope (%) :	4.8	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.53	0.00	0.00
Computed Flow Time (min) :	4.41	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	71	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft²) :	7	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	9.92	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 15.46

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	5.19
Peak Runoff (cfs)	6.74
Weighted Curve Number	81.40
Time of Concentration (days hh:mm:ss)	0 00:15:28

Subbasin : A02

Input Data

Area (ac) 4.02
Peak Rate Factor 484.00
Weighted Curve Number 81.08
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.22	D	98.00
Woods & grass combination, Fair	1.00	C	76.00
Woods & grass combination, Fair	0.20	C	76.00
Woods & grass combination, Fair	2.60	D	82.00
Composite Area & Weighted CN	4.02		81.08

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	8	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.74	0.00	0.00
Velocity (ft/sec) :	0.15	0.00	0.00
Computed Flow Time (min) :	11.41	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	925	0.00	0.00
Slope (%) :	4	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.23	0.00	0.00
Computed Flow Time (min) :	4.77	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	79	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft^2) :	7.7	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	10.57	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 16.31

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 5.15
Peak Runoff (cfs) 5.17
Weighted Curve Number 81.08
Time of Concentration (days hh:mm:ss) 0 00:16:19

Subbasin : A03

Input Data

Area (ac) 4.49
Peak Rate Factor 484.00
Weighted Curve Number 82.72
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.39	D	98.00
Woods & grass combination, Fair	0.50	C	76.00
Woods & grass combination, Fair	3.60	D	82.00
Composite Area & Weighted CN	4.49		82.72

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	7	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.85	0.00	0.00
Velocity (ft/sec) :	0.12	0.00	0.00
Computed Flow Time (min) :	13.79	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	964	0.00	0.00
Slope (%) :	4	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.23	0.00	0.00
Computed Flow Time (min) :	4.97	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	75	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft^2) :	7.74	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	10.61	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 18.88

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 5.34
Peak Runoff (cfs) 5.93
Weighted Curve Number 82.72
Time of Concentration (days hh:mm:ss) 0 00:18:53

Subbasin : B01

Input Data

Area (ac) 0.22
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.22	D	98.00
Composite Area & Weighted CN	0.22		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.40
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B02

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.41
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B03

Input Data

Area (ac)	0.33
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.33	D	98.00
Composite Area & Weighted CN	0.33		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.58
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B04

Input Data

Area (ac)	0.33
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.33	D	98.00
Composite Area & Weighted CN	0.33		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.58
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B05

Input Data

Area (ac) 0.36
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.36	D	98.00
Composite Area & Weighted CN	0.36		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.63
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B06

Input Data

Area (ac) 0.36
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.36	D	98.00
Composite Area & Weighted CN	0.36		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.65
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B07

Input Data

Area (ac)	0.46
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.46	D	98.00
Composite Area & Weighted CN	0.46		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.81
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B08

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.41
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B09

Input Data

Area (ac) 0.22
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.22	D	98.00
Composite Area & Weighted CN	0.22		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.40
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B10

Input Data

Area (ac)	0.16
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.16	D	98.00
Composite Area & Weighted CN	0.16		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.28
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B11

Input Data

Area (ac) 0.25
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.25	D	98.00
Composite Area & Weighted CN	0.25		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.44
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B12

Input Data

Area (ac) 0.49
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.49	D	98.00
Composite Area & Weighted CN	0.49		98.00

Time of Concentration

User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.86
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B13

Input Data

Area (ac) 0.38
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.38	D	98.00
Composite Area & Weighted CN	0.38		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.68
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B14

Input Data

Area (ac) 0.32
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.32	D	98.00
Composite Area & Weighted CN	0.32		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.58
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B15

Input Data

Area (ac) 0.35
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.35	D	98.00
Composite Area & Weighted CN	0.35		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.62
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B16

Input Data

Area (ac)	0.17
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.17	D	98.00
Composite Area & Weighted CN	0.17		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.29
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B17

Input Data

Area (ac) 0.19
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.19	D	98.00
Composite Area & Weighted CN	0.19		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.33
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B18

Input Data

Area (ac)	0.11
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.11	D	98.00
Composite Area & Weighted CN	0.11		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.19
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B19

Input Data

Area (ac) 0.21
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.21	D	98.00
Composite Area & Weighted CN	0.21		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.37
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B20

Input Data

Area (ac)	0.24
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.24	D	98.00
Composite Area & Weighted CN	0.24		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.42
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B21

Input Data

Area (ac) 0.26
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.26	D	98.00
Composite Area & Weighted CN	0.26		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.46
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B22

Input Data

Area (ac) 0.27
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.27	D	98.00
Composite Area & Weighted CN	0.27		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.48
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B23

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.41
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B24

Input Data

Area (ac)	0.14
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.14	D	98.00
Composite Area & Weighted CN	0.14		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.24
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B25

Input Data

Area (ac)	0.16
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.16	D	98.00
Composite Area & Weighted CN	0.16		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.28
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B26

Input Data

Area (ac) 0.08
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.08	D	98.00
Composite Area & Weighted CN	0.08		98.00

Time of Concentration

User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.15
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B27

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B28

Input Data

Area (ac) 0.08
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.08	D	98.00
Composite Area & Weighted CN	0.08		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.15
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B29

Input Data

Area (ac) 0.06
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.06	D	98.00
Composite Area & Weighted CN	0.06		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.10
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B30

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B31

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B32

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B33

Input Data

Area (ac)	0.09
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.09	D	98.00
Composite Area & Weighted CN	0.09		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.16
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B34

Input Data

Area (ac)	0.10
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.10	D	98.00
Composite Area & Weighted CN	0.10		98.00

Time of Concentration

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)
1	A1.1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
2	A1-Structure	16.03	37.64	21.61	16.03	0.00	37.64	0.00	0.00
3	A2.1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
4	A2-Structure	15.56	20.55	4.99	15.56	0.00	20.55	0.00	0.00
5	A3-Structure	15.13	19.11	3.98	15.13	0.00	19.11	0.00	0.00
6	A4-Structure	14.86	20.27	5.41	14.86	0.00	20.27	0.00	0.00
7	A5-Structure	13.86	20.07	6.21	13.86	0.00	20.07	0.00	0.00
8	B1-Structure	12.20	20.13	7.93	12.20	0.00	20.13	0.00	0.00
9	C1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
10	C2-Structure	12.20	36.86	24.66	12.20	0.00	36.86	0.00	0.00
11	D1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
12	D2-Structure	12.20	38.65	26.45	12.20	0.00	38.65	0.00	0.00
13	D3-Structure	10.50	16.50	6.00	10.50	0.00	13.25	-3.25	0.00
14	D4-Structure	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
15	E10.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
16	E10-Structure	12.29	20.26	7.97	12.29	0.00	20.26	0.00	0.00
17	E11-Structure	11.95	20.26	8.31	11.95	0.00	20.26	0.00	0.00
18	E13.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
19	E13-Structure	11.61	20.26	8.65	11.61	0.00	20.26	0.00	0.00
20	E14.2-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
21	E14-Structure	11.22	20.25	9.03	11.22	0.00	20.25	0.00	0.00
22	E15-Structure	10.79	20.25	9.46	10.79	0.00	20.25	0.00	0.00
23	E16-Structure	10.62	20.13	9.51	10.62	0.00	20.13	0.00	0.00
24	E1-Structure	15.10	19.22	4.12	15.10	0.00	19.22	0.00	0.00
25	E2-Structure	14.73	20.26	5.53	14.73	0.00	20.26	0.00	0.00
26	E4.1-Structure	19.10	21.08	1.98	19.10	0.00	21.08	0.00	0.00
27	E4-Structure	14.45	20.30	5.85	14.45	0.00	20.30	0.00	0.00
28	E5-Structure	14.37	20.09	5.72	14.37	0.00	20.09	0.00	0.00
29	E6-Structure	14.02	20.20	6.18	14.02	0.00	20.20	0.00	0.00
30	E7.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
31	E7-Structure	13.23	20.26	7.03	13.23	0.00	20.26	0.00	0.00
32	E8-Structure	12.93	20.26	7.33	12.93	0.00	20.26	0.00	0.00
33	E9.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
34	E9-Structure	12.62	20.26	7.64	12.62	0.00	20.26	0.00	0.00
35	Jun-01	0.00	10.50	10.50	0.00	0.00	0.00	-10.50	0.00
36	Jun-02	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00
37	Jun-03	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00
38	Jun-04	19.20	6.00	-13.20	0.00	-19.20	6.00	0.00	0.00
39	Jun-05	18.20	6.00	-12.20	0.00	-18.20	6.00	0.00	0.00
40	Jun-06	14.60	6.00	-8.60	0.00	-14.60	6.00	0.00	0.00
41	Jun-07	13.20	6.00	-7.20	0.00	-13.20	6.00	0.00	0.00
42	Jun-08	19.20	6.00	-13.20	0.00	-19.20	6.00	0.00	0.00
43	Jun-09	14.60	6.00	-8.60	0.00	-14.60	0.00	-6.00	0.00
44	Out-1A15-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
45	Out-1B1-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
46	Out-1C2-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
47	Out-1D4-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
48	Out-1E16-Pipe	10.50	16.50	6.00	10.50	0.00	0.00	-16.50	0.00
49	Out-1Pipe (53)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
50	Out-1Pipe (59)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
51	Out-1Pipe (62)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
52	Structure - 100	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
53	Structure - 101	11.91	19.47	7.56	11.91	0.00	19.47	0.00	0.00
54	Structure - 102	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
55	Structure - 103	11.59	19.48	7.89	11.59	0.00	19.48	0.00	0.00
56	Structure - 104	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
57	Structure - 105	11.09	19.41	8.31	11.09	0.00	19.41	0.00	0.00
58	Structure - 35	10.76	18.50	7.74	10.76	0.00	18.50	0.00	0.00
59	Structure - 36	10.59	20.13	9.54	10.59	0.00	20.13	0.00	0.00
60	Structure - 38	28.60	31.31	2.71	28.60	0.00	31.31	0.00	0.00
61	Structure - 39	27.61	32.57	4.96	27.61	0.00	32.57	0.00	0.00
62	Structure - 48	26.48	1.78	-24.70	26.48	0.00	1.78	0.00	0.00
63	Structure - 49	25.31	29.72	4.41	25.31	0.00	29.72	0.00	0.00
64	Structure - 75	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
65	Structure - 83	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
66	Structure - 87	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
67	Structure - 91	19.10	21.10	2.00	19.10	0.00	21.10	0.00	0.00
68	Structure - 94	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
69	Structure - 95	13.30	19.40	6.10	13.30	0.00	19.40	0.00	0.00
70	Structure - 96	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
71	Structure - 97	12.86	19.42	6.56	12.86	0.00	19.42	0.00	0.00
72	Structure - 98	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
73	Structure - 99	12.39	19.44	7.04	12.39	0.00	19.44	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	A1.1-Structure	0.3	0.3	19.28	0.18	0.00	1.73	19.17	0.07	0 07:49	0 00:00	0.00	0.00
2	A1-Structure	5.7	0.3	18.56	2.53	0.00	19.08	18.36	2.33	0 08:02	0 00:00	0.00	0.00
3	A2.1-Structure	0.4	0.4	19.31	0.21	0.00	1.69	19.18	0.08	0 07:49	0 00:00	0.00	0.00
4	A2-Structure	6.3	0.2	18.43	2.87	0.00	2.12	18.30	2.74	0 07:50	0 00:00	0.00	0.00
5	A3-Structure	6.7	0.4	16.35	1.22	0.00	2.76	15.52	0.39	0 08:01	0 00:00	0.00	0.00
6	A4-Structure	12.6	0.0	17.16	2.30	0.00	3.11	16.95	2.09	0 08:03	0 00:00	0.00	0.00
7	A5-Structure	13.2	0.2	18.52	4.66	0.00	1.55	18.39	4.53	0 07:50	0 00:00	0.00	0.00
8	B1-Structure	0.5	0.5	12.33	0.13	0.00	7.80	12.25	0.05	0 07:50	0 00:00	0.00	0.00
9	C1-Structure	0.4	0.4	19.31	0.21	0.00	1.69	19.18	0.08	0 07:49	0 00:00	0.00	0.00
10	C2-Structure	0.8	0.4	18.42	6.22	0.00	18.44	18.29	6.09	0 07:50	0 00:00	0.00	0.00
11	D1-Structure	0.3	0.3	19.29	0.19	0.00	1.71	19.18	0.08	0 07:49	0 00:00	0.00	0.00
12	D2-Structure	0.7	0.4	18.40	6.20	0.00	20.25	18.29	6.09	0 07:50	0 00:00	0.00	0.00
13	D3-Structure	0.7	0.0	10.65	0.15	0.00	5.85	10.56	0.06	0 07:50	0 00:00	0.00	0.00
14	D4-Structure	4.3	0.0	11.53	0.90	0.00	1.57	11.00	0.37	0 08:13	0 00:00	0.00	0.00
15	E10.1-Structure	0.6	0.6	19.35	0.25	0.00	1.72	19.20	0.10	0 07:50	0 00:00	0.00	0.00
16	E10-Structure	3.4	0.2	18.70	6.41	0.00	1.56	18.54	6.25	0 07:50	0 00:00	0.00	0.00
17	E11-Structure	3.6	0.2	12.64	0.69	0.00	7.62	12.22	0.27	0 07:52	0 00:00	0.00	0.00
18	E13.1-Structure	0.6	0.6	19.37	0.27	0.00	1.70	19.20	0.10	0 07:50	0 00:00	0.00	0.00
19	E13-Structure	4.2	0.1	18.79	7.18	0.00	1.47	18.62	7.01	0 07:50	0 00:00	0.00	0.00
20	E14.2-Structure	0.3	0.3	19.28	0.18	0.00	1.79	19.17	0.07	0 07:49	0 00:00	0.00	0.00
21	E14-Structure	4.7	0.2	18.64	7.42	0.00	1.61	18.53	7.31	0 07:49	0 00:00	0.00	0.00
22	E15-Structure	5.0	0.3	11.77	0.98	0.00	8.48	11.16	0.37	0 07:52	0 00:00	0.00	0.00
23	E16-Structure	5.2	0.2	11.60	0.98	0.00	8.53	10.99	0.37	0 07:52	0 00:00	0.00	0.00
24	E1-Structure	0.2	0.2	15.26	0.16	0.00	3.96	15.16	0.06	0 07:49	0 00:00	0.00	0.00
25	E2-Structure	0.2	0.1	14.91	0.18	0.00	5.35	14.80	0.07	0 07:54	0 00:00	0.00	0.00
26	E4.1-Structure	0.4	0.4	19.32	0.22	0.00	1.76	19.19	0.09	0 07:49	0 00:00	0.00	0.00
27	E4-Structure	0.2	0.0	14.64	0.19	0.00	5.66	14.53	0.08	0 07:54	0 00:00	0.00	0.00
28	E5-Structure	0.8	0.2	18.64	4.27	0.00	1.45	18.50	4.13	0 07:50	0 00:00	0.00	0.00
29	E6-Structure	0.9	0.1	14.40	0.38	0.00	5.80	14.17	0.15	0 07:52	0 00:00	0.00	0.00
30	E7.1-Structure	0.9	0.9	19.41	0.31	0.00	1.66	19.22	0.12	0 07:50	0 00:00	0.00	0.00
31	E7-Structure	1.8	0.1	18.75	5.52	0.00	1.51	18.56	5.33	0 07:50	0 00:00	0.00	0.00
32	E8-Structure	1.9	0.1	13.43	0.50	0.00	6.83	13.13	0.20	0 07:51	0 00:00	0.00	0.00
33	E9.1-Structure	0.7	0.7	19.38	0.28	0.00	1.69	19.21	0.11	0 07:50	0 00:00	0.00	0.00
34	E9-Structure	2.7	0.1	18.87	6.25	0.00	1.39	18.70	6.08	0 07:50	0 00:00	0.00	0.00
35	Jun-01	6.4	6.4	0.00	0.00	0.00	10.50	0.00	0.00	0 00:00	0 00:00	0.00	0.00
36	Jun-02	6.7	6.7	32.70	32.70	0.00	0.80	32.25	32.25	0 08:01	0 00:00	0.00	0.00
37	Jun-03	6.7	0.0	30.70	30.70	0.00	0.80	30.25	30.25	0 08:01	0 00:00	0.00	0.00
38	Jun-04	7.8	1.1	19.20	0.00	0.00	0.00	19.20	0.00	0 00:00	0 00:00	0.00	0.00
39	Jun-05	7.8	0.0	19.13	0.93	0.00	0.57	18.51	0.31	0 08:01	0 00:00	0.00	0.00
40	Jun-06	8.1	0.3	14.60	0.00	0.00	0.00	14.60	0.00	0 00:00	0 00:00	0.00	0.00
41	Jun-07	8.3	0.3	14.04	0.84	0.00	0.66	13.49	0.29	0 08:01	0 00:00	0.00	0.00
42	Jun-08	7.8	0.0	20.13	0.93	0.00	0.57	19.51	0.31	0 08:01	0 00:00	0.00	0.00
43	Jun-09	8.1	0.0	15.44	0.84	0.00	0.66	14.89	0.29	0 08:01	0 00:00	0.00	0.00
44	Out-1A15-Pipe	17.0	0.0	12.05	1.55	0.00	4.45	11.05	0.55	0 08:02	0 00:00	0.00	0.00
45	Out-1B1-Pipe	0.5	0.0	10.63	0.13	0.00	5.87	10.55	0.05	0 07:50	0 00:00	0.00	0.00
46	Out-1C2-Pipe	0.8	0.0	10.67	0.17	0.00	5.83	10.57	0.07	0 07:50	0 00:00	0.00	0.00
47	Out-1D4-Pipe	4.3	0.0	11.40	0.90	0.00	5.10	10.87	0.37	0 08:13	0 00:00	0.00	0.00
48	Out-1E16-Pipe	5.2	0.0	11.37	0.87	0.00	5.13	10.83	0.33	0 07:52	0 00:00	0.00	0.00
49	Out-1Pipe (53)	4.3	0.0	11.29	0.79	0.00	5.21	10.83	0.33	0 08:13	0 00:00	0.00	0.00
50	Out-1Pipe (59)	4.3	0.0	11.39	0.89	0.00	5.11	10.86	0.36	0 08:13	0 00:00	0.00	0.00
51	Out-1Pipe (62)	4.3	0.0	11.39	0.89	0.00	5.11	10.87	0.37	0 08:13	0 00:00	0.00	0.00
52	Structure - 100	0.6	0.6	19.36	0.26	0.00	0.47	19.20	0.10	0 07:50	0 00:00	0.00	0.00
53	Structure - 101	15.7	0.0	18.66	6.75	0.00	0.81	18.50	6.59	0 07:50	0 00:00	0.00	0.00
54	Structure - 102	0.6	0.6	19.36	0.26	0.00	0.47	19.20	0.10	0 07:50	0 00:00	0.00	0.00
55	Structure - 103	16.2	0.0	18.66	7.07	0.00	0.82	18.50	6.91	0 07:50	0 00:00	0.00	0.00
56	Structure - 104	0.4	0.4	19.34	0.24	0.00	0.49	19.19	0.09	0 07:49	0 00:00	0.00	0.00
57	Structure - 105	16.6	0.0	18.55	7.46	0.00	0.86	18.40	7.31	0 07:50	0 00:00	0.00	0.00
58	Structure - 35	16.6	0.0	12.29	1.53	0.00	6.21	11.31	0.55	0 08:01	0 00:00	0.00	0.00
59	Structure - 36	17.0	0.5	12.14	1.55	0.00	7.99	11.14	0.55	0 08:01	0 00:00	0.00	0.00
60	Structure - 38	5.2	5.2	29.46	0.86	0.00	1.85	28.89	0.29	0 08:01	0 00:00	0.00	0.00
61	Structure - 39	5.2	0.0	29.08	1.47	0.00	3.49	28.51	0.90	0 08:02	0 00:00	0.00	0.00
62	Structure - 48	5.9	5.9	27.17	0.69	0.00	0.81	26.73	0.25	0 08:03	0 00:00	0.00	0.00
63	Structure - 49	5.9	0.0	26.48	1.17	0.00	3.24	26.04	0.73	0 08:03	0 00:00	0.00	0.00
64	Structure - 75	4.3	0.0	11.42	0.79	0.00	1.68	10.96	0.33	0 08:13	0 00:00	0.00	0.00
65	Structure - 83	4.3	0.0	11.52	0.89	0.00	1.58	10.99	0.36	0 08:13	0 00:00	0.00	0.00
66	Structure - 87	4.3	0.0	11.52	0.89	0.00	1.58	11.00	0.37	0 08:13	0 00:00	0.00	0.00
67	Structure - 91	0.4	0.4	19.32	0.22	0.00	1.78	19.19	0.09	0 07:49	0 00:00	0.00	0.00
68	Structure - 94	0.8	0.8	19.45	0.35	0.00	0.37	19.23	0.13	0 07:50	0 00:00	0.00	0.00
69	Structure - 95	13.9	0.0	18.76	5.46	0.00	0.64	18.54	5.24	0 07:51	0 00:00	0.00	0.00
70	Structure - 96	0.7	0.7	19.41	0.31	0.00	0.42	19.22	0.12	0 07:50	0 00:00	0.00	0.00
71	Structure - 97	14.5	0.0	18.71	5.85	0.00	0.71	18.52	5.66	0 07:50	0 00:00	0.00	0.00
72	Structure - 98	0.6	0.6	19.40	0.30	0.00	0.42	19.22	0.12	0 07:50	0 00:00	0.00	0.00
73	Structure - 99	15.1	0.0	18.70	6.31	0.00	0.73	18.52	6.13	0 07:51	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Flap Gate	No. of Barrels
1	A1.1-Pipe	43.57	19.10	18.23	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
2	A10.1-Pipe	34.83	19.10	18.40	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
3	A10-Pipe	91.67	12.39	11.91	0.5300	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
4	A11.1-Pipe	34.86	19.10	18.40	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
5	A11-Pipe	67.33	11.91	11.59	0.4700	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
6	A12.1-Pipe	39.58	19.10	18.31	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
7	A12-Pipe	100.61	11.59	11.09	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
8	A13-Pipe	63.49	11.09	10.76	0.5200	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
9	A14-Pipe	37.44	10.76	10.59	0.4500	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
10	A15-Pipe	19.67	10.59	10.50	0.4600	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
11	A1-Pipe	32.78	27.61	18.23	28.6100	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
12	A2.1-Pipe	44.00	19.10	18.22	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
13	A2-Pipe	97.50	16.03	15.56	0.4800	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
14	A3-Pipe	88.50	15.56	15.13	0.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
15	A4.1-Pipe	39.16	25.31	16.82	21.6900	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
16	A4-Pipe	56.66	15.13	14.86	0.4800	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
17	A5-Pipe	107.77	14.86	13.86	0.9300	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
18	A6.1-Pipe	42.40	19.10	18.31	1.8700	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
19	A7.1-Pipe	34.69	19.10	18.41	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
20	A7-Pipe	110.61	13.86	13.30	0.5100	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
21	A8.1-Pipe	34.74	19.10	18.41	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
22	A8-Pipe	89.33	13.30	12.86	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
23	A9.1-Pipe	34.78	19.10	18.40	2.0100	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
24	A9-Pipe	95.00	12.86	12.39	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
25	B1-Pipe	19.69	12.20	10.50	8.6300	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
26	C1-Pipe	44.64	19.10	18.21	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
27	C2-Pipe	19.67	12.20	10.50	8.6400	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
28	D1-Pipe	44.46	19.10	18.21	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
29	D2-Pipe	19.67	12.20	10.50	8.6400	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
30	D4-Pipe	26.30	10.63	10.50	0.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
31	E10-Pipe	68.72	12.29	11.95	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
32	E11-Pipe	67.31	11.95	11.61	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
33	E12.1-Pipe	28.75	19.10	18.52	2.0200	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
34	E13.1-Pipe	31.82	19.10	18.46	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
35	E13-Pipe	77.56	11.61	11.22	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
36	E14-Pipe	88.49	11.22	10.79	0.4900	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
37	E15-Pipe	61.58	10.79	10.62	0.2800	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
38	E16-Pipe	26.19	10.62	10.50	0.4600	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
39	E1-Pipe	73.22	15.10	14.73	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
40	E2-Pipe	55.47	14.73	14.45	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
41	E4-Pipe	15.97	14.45	14.37	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
42	E5.1-Pipe	32.89	19.10	18.42	2.0800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
43	E5-Pipe	70.61	14.37	14.02	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
44	E6.1-Pipe	28.85	19.10	18.44	2.2800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
45	E6-Pipe	58.54	14.02	13.73	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
46	E7-Pipe	59.55	13.23	12.93	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
47	E8.1-Pipe	25.28	19.10	18.59	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
48	E8-Pipe	61.63	12.93	12.62	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
49	E9.1-Pipe	30.97	19.10	18.44	2.1200	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
50	E9-Pipe	66.95	12.62	12.29	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
51	Link-01	178.44	10.50	0.00	5.8800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
52	Link-02	117.22	9.00	0.00	7.6800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
53	Link-03	30.02	10.50	0.00	34.9800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
54	Link-04	60.81	10.50	0.00	17.2700	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
55	Link-05	138.79	10.50	0.00	7.5700	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
56	Link-11	71.00	32.00	30.00	2.8200	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
57	Link-12	417.20	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
58	Link-14	128.08	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
59	Link-16	317.29	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
60	Link-17	137.86	10.50	0.00	7.6200	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
61	Link-18	99.47	10.50	0.00	10.5600	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
62	Link-19	130.31	10.50	0.00	8.0600	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
63	Link-20	191.76	10.50	0.00	5.4800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
64	Link-29	48.58	19.20	18.82	0.7800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
65	Link-30	67.00	19.20	18.20	1.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
66	Link-31	46.31	14.60	14.60	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
67	Link-32	64.00	14.60	13.20	2.1900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
68	Pipe (24)	45.94	28.60	28.22	0.8300	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
69	Pipe (34)	46.55	26.48	25.79	1.4800	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
70	Pipe (53)	27.49	10.63	10.50	0.4700	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
71	Pipe (59)	25.67	10.63	10.50	0.5100	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
72	Pipe (62)	25.95	10.63	10.50	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	A1.1-Pipe	0.3	0 07:50	1.9	0.15	3.84	0.19	0.18	0.26	0.00		Calculated
2	A10.1-Pipe	0.6	0 07:50	1.9	0.31	4.68	0.12	0.26	0.38	0.00		Calculated
3	A10-Pipe	15.1	0 08:02	25.9	0.58	5.47	0.28	1.37	0.55	0.00		Calculated
4	A11.1-Pipe	0.6	0 07:50	1.9	0.31	4.68	0.12	0.26	0.38	0.00		Calculated
5	A11-Pipe	15.7	0 08:02	24.5	0.64	5.28	0.21	1.45	0.58	0.00		Calculated
6	A12.1-Pipe	0.4	0 07:50	1.5	0.27	3.62	0.18	0.24	0.36	0.00		Calculated
7	A12-Pipe	16.2	0 08:02	25.0	0.65	5.41	0.31	1.47	0.59	0.00		Calculated
8	A13-Pipe	16.6	0 08:01	25.7	0.64	5.57	0.19	1.46	0.58	0.00		Calculated
9	A14-Pipe	16.6	0 08:02	24.0	0.69	5.26	0.12	1.53	0.61	0.00		Calculated
10	A15-Pipe	17.0	0 08:02	24.1	0.71	5.31	0.06	1.55	0.62	0.00		Calculated
11	A1-Pipe	5.2	0 08:02	48.7	0.11	17.94	0.03	0.33	0.22	0.00		Calculated
12	A2.1-Pipe	0.4	0 07:50	1.9	0.21	4.22	0.17	0.21	0.31	0.00		Calculated
13	A2-Pipe	5.7	0 08:02	6.3	0.90	4.05	0.40	1.12	0.74	0.00		Calculated
14	A3-Pipe	6.3	0 08:01	6.4	0.99	4.10	0.36	1.22	0.81	0.00		Calculated
15	A4.1-Pipe	5.9	0 08:03	53.0	0.11	19.80	0.03	0.34	0.23	0.00		Calculated
16	A4-Pipe	6.7	0 08:01	24.5	0.27	4.25	0.22	0.89	0.36	0.00		Calculated
17	A5-Pipe	12.6	0 08:02	34.3	0.37	6.44	0.28	1.05	0.42	0.00		Calculated
18	A6.1-Pipe	0.4	0 07:50	1.8	0.23	4.15	0.17	0.22	0.32	0.00		Calculated
19	A7.1-Pipe	0.8	0 07:51	1.5	0.55	4.34	0.13	0.35	0.53	0.00		Calculated
20	A7-Pipe	13.2	0 08:02	25.3	0.52	5.21	0.35	1.28	0.51	0.00		Calculated
21	A8.1-Pipe	0.7	0 07:50	1.5	0.44	4.10	0.14	0.31	0.46	0.00		Calculated
22	A8-Pipe	13.9	0 08:02	24.9	0.56	5.21	0.29	1.34	0.53	0.00		Calculated
23	A9.1-Pipe	0.6	0 07:51	1.5	0.43	4.09	0.14	0.30	0.46	0.00		Calculated
24	A9-Pipe	14.5	0 08:02	24.9	0.58	5.27	0.30	1.37	0.55	0.00		Calculated
25	B1-Pipe	0.5	0 07:50	57.6	0.01	5.50	0.06	0.13	0.06	0.00		Calculated
26	C1-Pipe	0.4	0 07:50	1.9	0.21	4.22	0.18	0.21	0.31	0.00		Calculated
27	C2-Pipe	0.8	0 07:50	57.6	0.01	6.54	0.05	0.17	0.08	0.00		Calculated
28	D1-Pipe	0.3	0 07:50	1.9	0.18	4.00	0.19	0.19	0.29	0.00		Calculated
29	D2-Pipe	0.7	0 07:50	57.6	0.01	6.25	0.05	0.15	0.08	0.00		Calculated
30	D4-Pipe	4.3	0 08:13	6.4	0.67	3.88	0.11	0.90	0.60	0.00		Calculated
31	E10-Pipe	3.4	0 07:52	13.9	0.24	3.64	0.31	0.67	0.34	0.00		Calculated
32	E11-Pipe	3.6	0 07:52	13.9	0.26	3.69	0.30	0.69	0.35	0.00		Calculated
33	E12.1-Pipe	0.6	0 07:50	1.9	0.33	4.79	0.10	0.27	0.40	0.00		Calculated
34	E13.1-Pipe	0.3	0 07:49	1.9	0.16	3.88	0.14	0.18	0.27	0.00		Calculated
35	E13-Pipe	4.2	0 07:52	13.9	0.31	3.88	0.33	0.76	0.38	0.00		Calculated
36	E14-Pipe	4.7	0 07:52	13.7	0.34	3.94	0.37	0.81	0.40	0.00		Calculated
37	E15-Pipe	5.0	0 07:52	10.3	0.49	3.25	0.32	0.98	0.49	0.00		Calculated
38	E16-Pipe	5.2	0 07:52	13.3	0.39	3.96	0.11	0.87	0.43	0.00		Calculated
39	E1-Pipe	0.2	0 07:54	6.4	0.02	1.46	0.84	0.16	0.11	0.00		Calculated
40	E2-Pipe	0.2	0 07:54	6.4	0.03	1.69	0.55	0.19	0.12	0.00		Calculated
41	E4-Pipe	0.2	0 07:53	6.3	0.03	1.67	0.16	0.19	0.13	0.00		Calculated
42	E5.1-Pipe	0.4	0 07:50	1.9	0.23	4.41	0.12	0.22	0.33	0.00		Calculated
43	E5-Pipe	0.8	0 07:52	6.4	0.13	2.48	0.47	0.36	0.24	0.00		Calculated
44	E6.1-Pipe	0.9	0 07:50	2.0	0.44	5.46	0.09	0.31	0.46	0.00		Calculated
45	E6-Pipe	0.9	0 07:52	6.4	0.14	2.57	0.38	0.38	0.25	0.00		Calculated
46	E7-Pipe	1.8	0 07:51	13.9	0.13	3.06	0.32	0.49	0.25	0.00		Calculated
47	E8.1-Pipe	0.7	0 07:50	1.9	0.37	4.89	0.09	0.28	0.42	0.00		Calculated
48	E8-Pipe	1.9	0 07:51	13.8	0.14	3.08	0.33	0.50	0.25	0.00		Calculated
49	E9.1-Pipe	0.6	0 07:50	1.9	0.30	4.78	0.11	0.25	0.38	0.00		Calculated
50	E9-Pipe	2.7	0 07:51	13.8	0.19	3.39	0.33	0.59	0.30	0.00		Calculated
51	Link-01	5.2	0 07:52	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
52	Link-02	0.7	0 07:50	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
53	Link-03	0.8	0 07:50	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
54	Link-04	0.5	0 07:50	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
55	Link-05	17.0	0 08:02	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
56	Link-11	6.7	0 08:01	15.3	0.44	8.37	0.14	0.70	0.47	0.00		Calculated
57	Link-12	6.7	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
58	Link-14	7.8	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
59	Link-16	8.3	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
60	Link-17	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
61	Link-18	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
62	Link-19	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
63	Link-20	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
64	Link-29	7.8	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
65	Link-30	7.8	0 08:01	11.1	0.70	6.81	0.16	0.93	0.62	0.00		Calculated
66	Link-31	8.1	0 08:01	0.0	0.70	0.00		0.93	0.62	0.00		Calculated
67	Link-32	8.1	0 08:01	13.5	0.60	7.95	0.13	0.84	0.56	0.00		Calculated
68	Pipe (24)	5.2	0 08:02	8.3	0.62	4.94	0.15	0.86	0.57	0.00		Calculated
69	Pipe (34)	5.9	0 08:03	13.9	0.43	7.54	0.10	0.69	0.46	0.00		Calculated
70	Pipe (53)	4.3	0 08:13	7.8	0.55	4.52	0.10	0.79	0.53	0.00		Calculated
71	Pipe (59)	4.3	0 08:13	6.5	0.66	3.91	0.11	0.89	0.59	0.00		Calculated
72	Pipe (62)	4.3	0 08:13	6.4	0.66	3.90	0.11	0.89	0.59	0.00		Calculated

Storage Nodes

Storage Node : Detention-Basin

Input Data

Invert Elevation (ft)	10.50
Max (Rim) Elevation (ft)	15.50
Max (Rim) Offset (ft)	5.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-10.50
Ponded Area (ft²)	12634.80
Evaporation Loss	0.00

Infiltration/Exfiltration

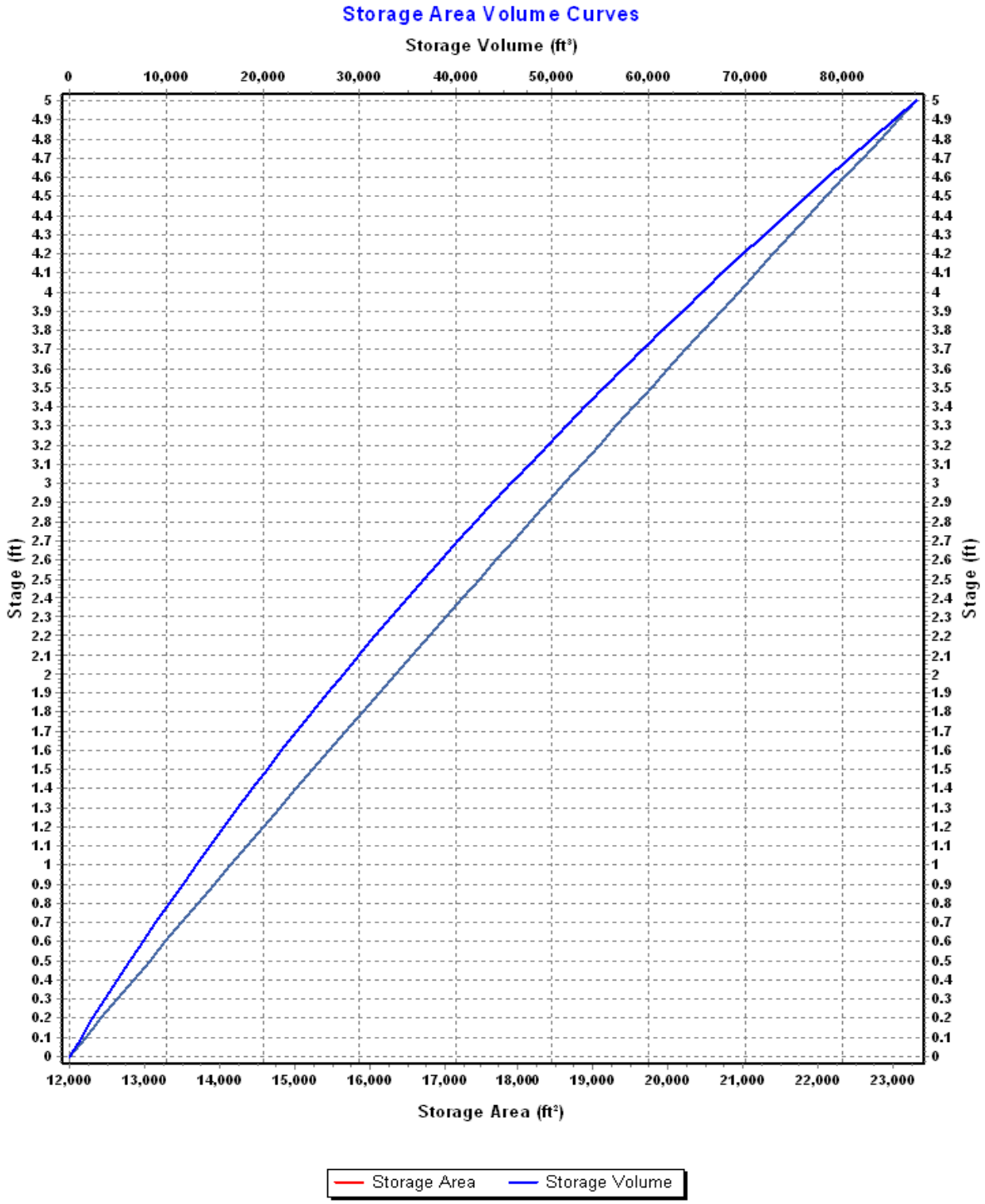
Exfiltration Rate (in/hr)	0.0900

Storage Area Volume Curves

Storage Curve : Storage-01

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	11997.07	0.000
0.1	12209.57	1210.33
0.2	12422.63	2441.94
0.3	12636.25	3694.88
0.4	12850.44	4969.21
0.5	13065.18	6264.99
0.6	13280.49	7582.27
0.7	13496.37	8921.11
0.8	13712.80	10281.57
0.9	13929.80	11663.70
1	14147.36	13067.56
1.1	14365.48	14493.20
1.2	14584.17	15940.68
1.3	14803.41	17410.06
1.4	15023.22	18901.39
1.5	15243.59	20414.73
1.6	15464.53	21950.14
1.7	15686.02	23507.67
1.8	15908.08	25087.38
1.9	16130.71	26689.32
2	16353.89	28313.55
2.1	16577.64	29960.13
2.2	16801.95	31629.11
2.3	17026.82	33320.55
2.4	17252.25	35034.50
2.5	17478.25	36771.03
2.6	17704.81	38530.18
2.7	17931.93	40312.02
2.8	18159.61	42116.60
2.9	18387.86	43943.97
3	18616.66	45794.20
3.1	18846.04	47667.34
3.2	19075.97	49563.44
3.3	19306.46	51482.56
3.4	19537.52	53424.76
3.5	19769.14	55390.09
3.6	20001.33	57378.61
3.7	20234.07	59390.38
3.8	20467.38	61425.45
3.9	20701.25	63483.88
4	20935.68	65565.73
4.1	21170.68	67671.05
4.2	21406.24	69799.90
4.3	21642.36	71952.33
4.4	21879.04	74128.40
4.5	22116.28	76328.17
4.6	22354.09	78551.69
4.7	22592.46	80799.02
4.8	22831.39	83070.21
4.9	23070.89	85365.32
5	23310.95	87684.41

MAX VOLUME = 30,930 FT^3


Storage Area Volume Curves
Storage Volume (ft³)
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
Stage (ft)
Stage (ft)
12,000
13,000
14,000
15,000
16,000
17,000
18,000
19,000
20,000
21,000
22,000
23,000
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : Detention-Basin (continued)

Outflow Orifices

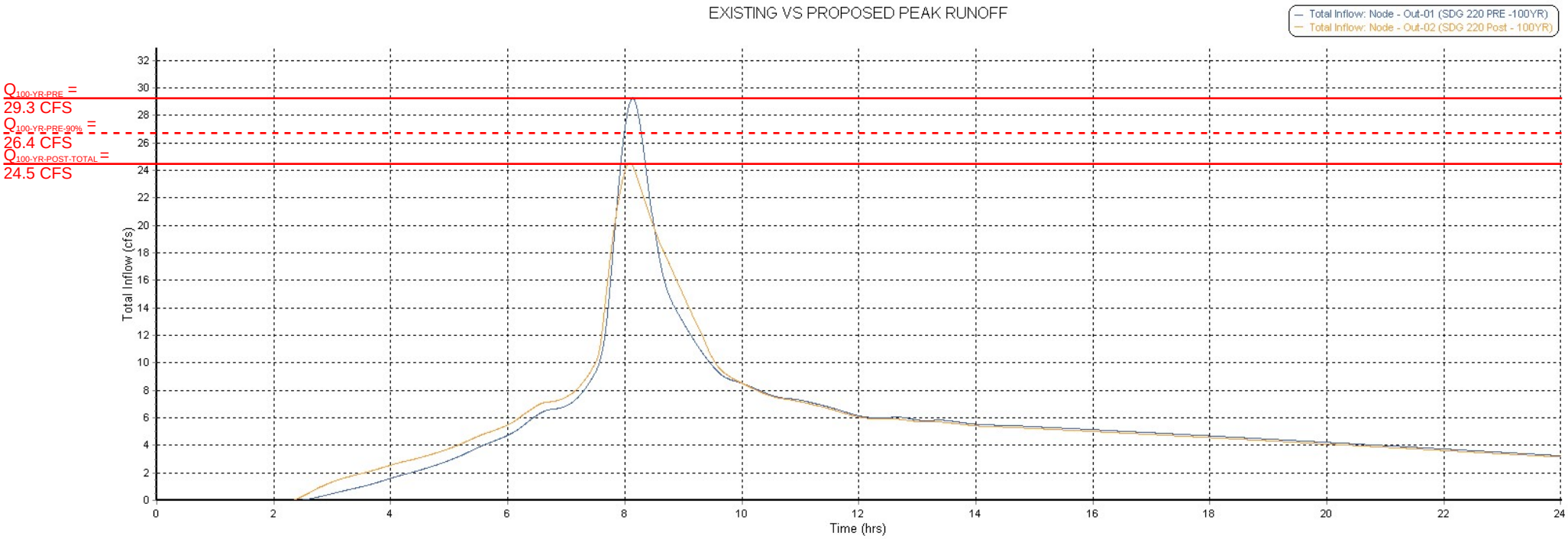
SN	Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1	Orifice-01	Side	Rectangular	No		9.00	12.00	11.00	0.63
2	Orifice-02	Side	Rectangular	No		9.00	12.00	11.00	0.63
3	Orifice-03	Side	Rectangular	No		9.00	12.00	11.00	0.63
4	Orifice-04	Side	Rectangular	No		9.00	12.00	11.00	0.63

FOUR (4) ORIFICES 9" x 12" @ 11.00'

Output Summary Results

$Q_{100\text{-YR-POST DETAINED}}$ →

Peak Inflow (cfs)	23.85
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	17.07
Peak Exfiltration Flow Rate (cfm)	2.10
Max HGL Elevation Attained (ft)	12.66
Max HGL Depth Attained (ft)	2.16
Average HGL Elevation Attained (ft)	11.38
Average HGL Depth Attained (ft)	0.88
Time of Max HGL Occurrence (days hh:mm)	0 08:13
Total Exfiltration Volume (1000-ft³)	2.470
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00


EXISTING VS PROPOSED PEAK RUNOFF
Total Inflow: Node - Out-01 (SDG 220 PRE -100YR)
Total Inflow: Node - Out-02 (SDG 220 Post - 100YR)
Q100-YR-PRE = 29.3 CFS
Q100-YR-PRE-90% = 26.4 CFS
Q100-YR-POST-TOTAL = 24.5 CFS
Total Inflow (cfs)
Time (hrs)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32

HYDRAULIC CALCULATIONS

For

SDG Commerce 220 Distribution Center
American Canyon, CA

Prepared for:

SDG Commerce 220, LLC
413 W. Yosemite Ave, Suite 105
Madera, Ca 93637

Project No. 4122068.0
September 29, 2023

1515 Fourth Street, Napa, CA 94559 www.rsacivil.com 707.252.3301.v 707.252.4966.f

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II. OFF SITE STORMWATER RUN-ON 1
III. METHODOLOGY 1
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ATTACHMENTS

1. ON-SITE HYDRAULIC CALCULATIONS
2. 10-YEAR HGL ANALYSIS
3. 10-YEAR HGL PIPE PROFILES

I. Introduction

This report demonstrates that the proposed on-site storm drains, drop inlets, and spillways have sufficient capacity to convey stormwater, as intended, for the SDG Commerce 220 Distribution Center project.

II. Off Site Stormwater Run-on

Stormwater run-on to the site is generated by 12.7 acres of up-slope tributary east of the project site. The area is undeveloped with slopes ranging from 5 - 20%. Three existing culverts convey run-on across Commerce Boulevard. Approximately 1/3 of the project run-on will follow existing drainage paths through a series of mapped wetlands and will not be treated or detained in the detention pond. This portion of the run-on will be routed and discharged towards the northwest corner of the property. The remaining 2/3 of the run-on will be routed through the on-site storm drain system to the detention pond. The runoff is ultimately conveyed to the North Slough.

III. Methodology

Hydraulic calculations are included for all stormwater conveyance systems on the proposed site. The storm drain pipe network & conveyance systems have been designed for the 10-year design storm event without surcharge per City of American Canyon standards. Drain inlets, outlets, and spillways are designed for the 100-year design storm. The storm drain network was modeled using Storm & Sanitary Analysis (SSA) while the capacity of the other structures were determined using hydraulic equations pertaining to that structure. A time of concentration of 6 minutes has been assumed for all developed areas, see On-site Hydraulic Calculation in Attachment 1. Additionally, a hydraulic grade line analysis has been performed for all storm drains during the 10-year, 24-hour storm event, see 10-year HGL Analysis in Attachment 2. The maximum water elevation for the 10-year storm in the Detention Pond was used as the tailwater for the storm drain system. There was no tailwater elevation for the outfall conditions to the west to the property.

Refer to Use Permit Plans for grading and drainage design. See Proposed Conditions Hydrology Exhibit and schematic maps attached in On-site Hydraulic Calculation in Attachment 1.

IV. Storm Drain Hydraulics

The sites storm drains range from 8 to 30 inches. All storm drains flow by gravity to their designated outfalls. Each storm drain is designed to convey the 10-year and 100-year storm event for the area captured by the storm drain. Autodesk SSA was used to model the storm drain network and determine the capacity of proposed storm drain system.

Mannings Equation: $Q = VA = [(k/n)(R_h^{2/3})(S^{1/2})](A)$

k = 1.49 n = 0.012 (Smooth Walled Corrugated Polyethylene Pipe)

R_h = Varies S = Varies

A = Varies

The SSA model produced profiles of the hydraulic grade line (HGL) for the 10-year design storm event. The profile of the HGL shows the system is adequately sized for the 10-year storm event, see 10-year HGL Analysis in Attachment 2.

V. DI Hydraulics

The drop inlets will capture sheet flow runoff from paved areas around the site. The drop inlets are 36-inch by 36-inch and 48-inch by 48-inch. The peak flows from the areas flowing to each drop inlet were modeled in Autodesk SSA and have been included in Attachment 2. Based on the attached weir hydraulics and the 100-yr peak flows, none of the drain inlets are calculated to exceed one (1) inch of head on the inlets during the 100-yr peak flows.

Weir Equation: $Q = 3.3P(h^{1.5}) \rightarrow h = [Q/(3.3P)]^{2/3}$

$Q_{max\ 36x36}$ = 0.50 cfs (from subbasin B21)

$Q_{max\ 48x48}$ = 0.50 cfs (from subbasin B22)

P = 77% of total grate perimeter

VI. Spillway Hydraulics

The detention pond will require a spillway for emergency overflows and an overland release route for the detention pond. The Ogee Spillway calculation was used to determine the spillway flow rates. The maximum capacity of a 15' wide, 1.8' high spillway (height based on spillway elevation to top of pond) is 142.2 cfs. The peak flows from the 100-yr storm are calculated to be 23.9 cfs. Therefore, the spillway would have sufficient capacity for overland release of the 100-yr peak flows.

Ogee Spillway Equation: $Q = C_d(2g)^{1/2}(H_d)^{3/2}$

C_d = From attached chart $g = 32.2\ ft/sec^2$ H_d = 1.8 ft

$Q_{100\text{-}yr\ Post\text{-}Detained}$ = 23.9 cfs

VII. Level Spreader Hydraulics

There are five 24" diameter, 20' long level spreaders that inlet to the detention pond. Each inflow level spreader has sufficient hydraulic capacity for the calculated flows, which were modeled in Autodesk SSA. The total inflow into the detention pond is 23.9 cfs.

There are four 24" diameter, 60' long level spreaders proposed for the detention pond overflow structures. Each overflow level spreader receives 4.3 cfs from the detention pond and has sufficient hydraulic capacity for the calculated flows, which were also modeled in Autodesk SSA. The total outflow from the detention pond is 17.07 cfs. Refer to the Level Spreader Hydraulics in Attachment 2 for a summary of flows to each level spreader.

The Francis formula was used to determine the level spreader outflow rates.

Francis Formula

Rectangular Weir Equation: $Q = 3.33\ (b-0.2h)(h)^{3/2}$

b = width of weir h= height of water above weir

VIII. Run-on Hydraulics

The run-on from the upslope tributary area, east of Commerce Boulevard is collected will be capture by swales and conveyed under Commerce Boulevard by three existing concrete culverts. Approximately 1/3 of the project run-on will be routed through the north undisturbed area of the site via surface flow and will not be treated or detained in the detention pond. This portion of the run-on will be routed and discharged towards the northwest corner of the property. Two (2) 18" storm drain pipes route this run-on. The hydraulic grade line analysis has been performed for the storm drains during the 10-year, 24-hour storm event, see 10-year HGL Analysis in Attachment 2.

IX. Conclusion

The stormwater conveyance systems for the SDG Commerce 220 Distribution Center have been designed to satisfy the City of American Canyon ESPS. All stormwater structures and conveyance systems have been designed to accommodate flows during the 10-yr design storm event. Additionally , the project provides appropriate overland release routes where the storm drain system has not been designed to accommodate the 100-year flows.

ATTACHMENT 1

ON-SITE HYDRAULIC CALCULATIONS

SDG COMMERCE 220 DISTRIBUTION CENTER

V I C I N I T Y M A P

AMERICAN CANYON CALIFORNIA

VICINITY MAP

SCALE: 1" = 3000'

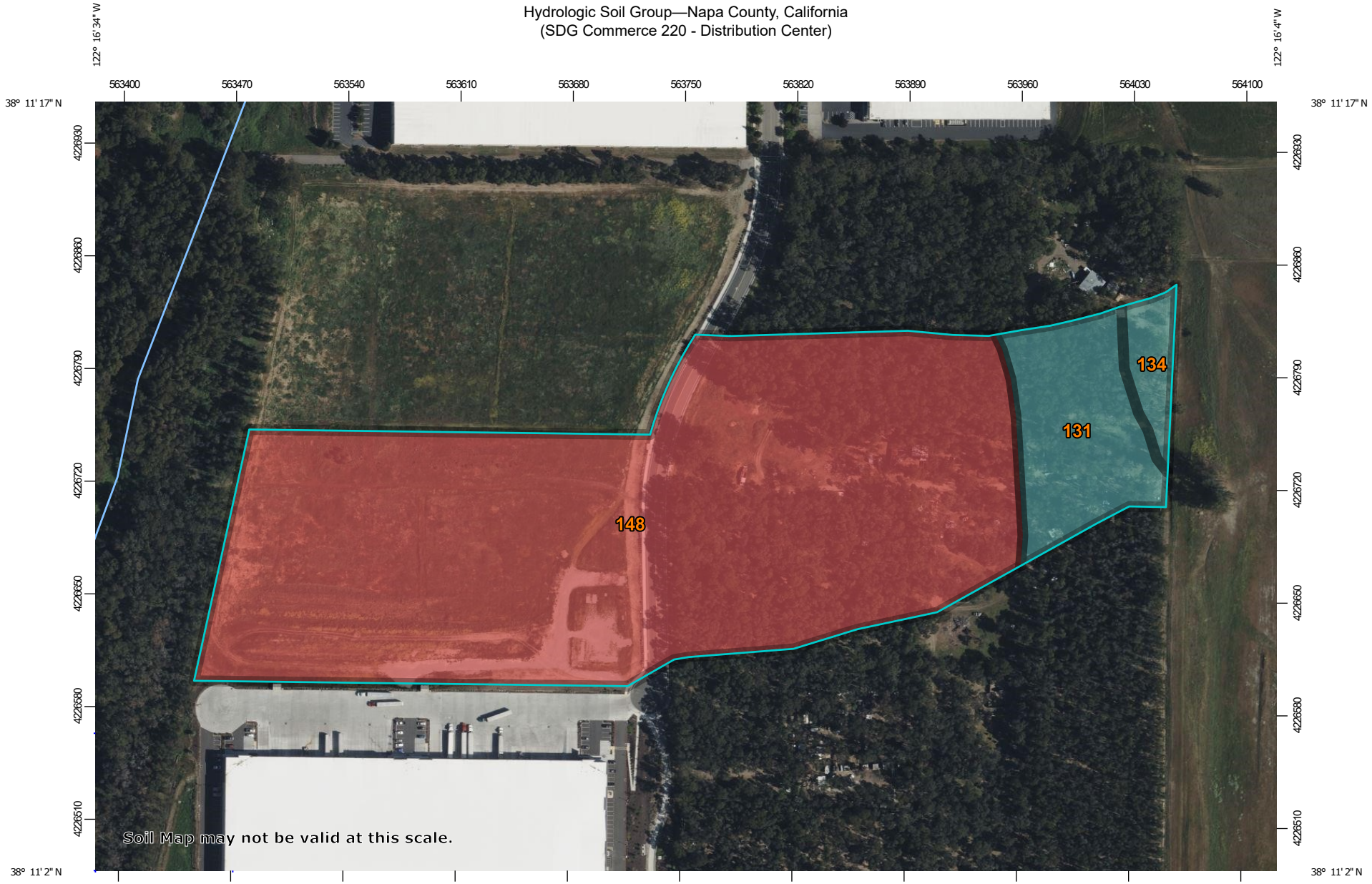
RSA+

1515 FOURTH STREET
NAPA, CALIF. 94559
OFFICE|707|252.3301
+ www.RSAcivil.com +

RSA+| CONSULTING CIVIL ENGINEERS + SURVEYORS + est. 1980

JUL. 20, 2023 4122068.0 Exh-Vic Map.dwg

Hydrologic Soil Group—Napa County, California
(SDG Commerce 220 - Distribution Center)



Map Scale: 1:3,370 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 15, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
131	Fagan clay loam, 5 to 15 percent slopes	C	2.6	10.9%
134	Fagan clay loam, 30 to 50 percent slopes, slipped	C	0.6	2.6%
148	Haire clay loam, 2 to 9 percent slopes	D	20.6	86.5%
Totals for Area of Interest			**23.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

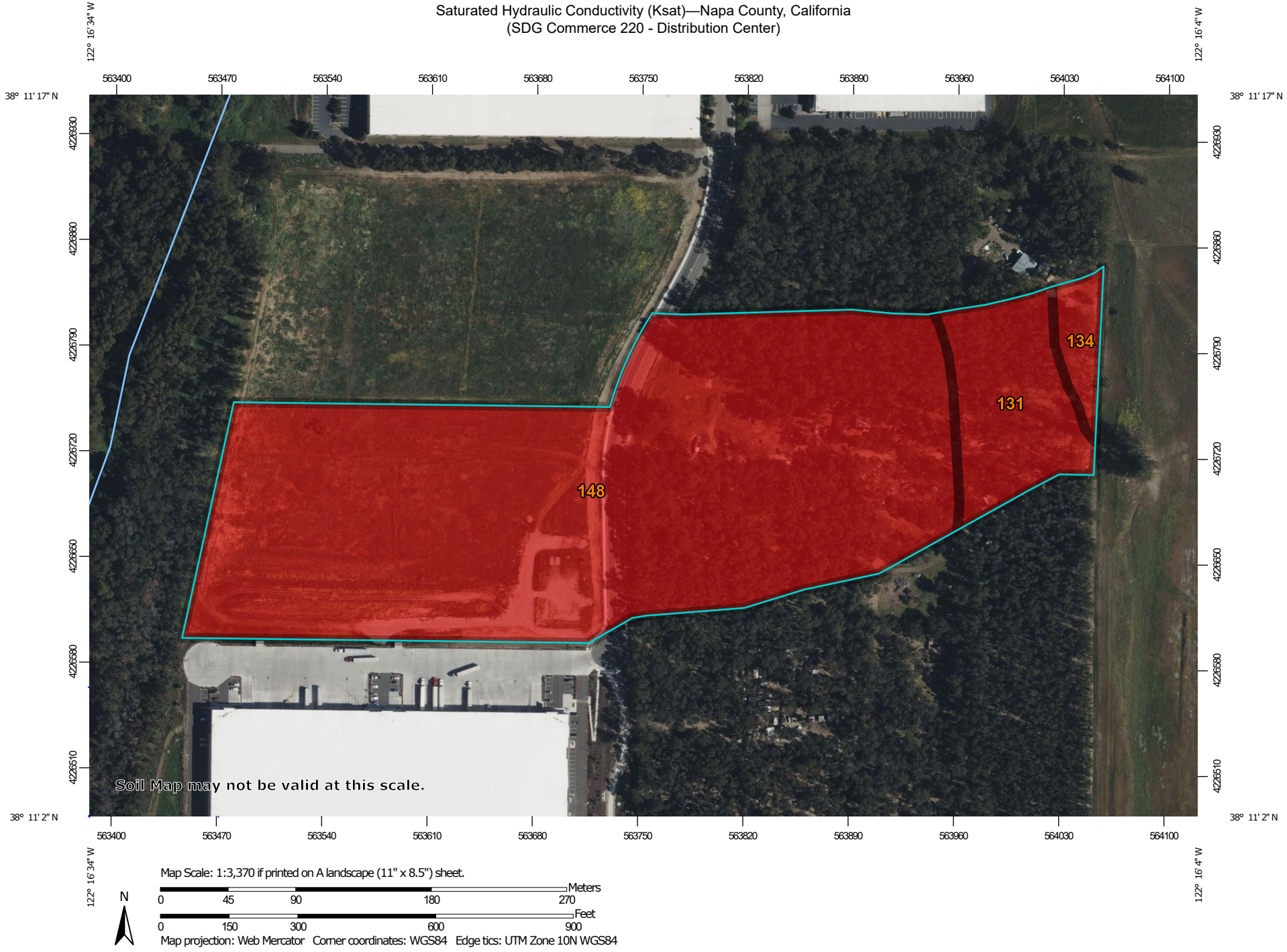
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Saturated Hydraulic Conductivity (Ksat)—Napa County, California
(SDG Commerce 220 - Distribution Center)



Map Scale: 1:3,370 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 2.7000

Not rated or not available

Soil Rating Lines

= 2.7000

Not rated or not available

Soil Rating Points

= 2.7000

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 15, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
131	Fagan clay loam, 5 to 15 percent slopes	2.7000	2.6	10.9%
134	Fagan clay loam, 30 to 50 percent slopes, slipped	2.7000	0.6	2.6%
148	Haire clay loam, 2 to 9 percent slopes	2.7000	20.6	86.5%
Totals for Area of Interest			**23.8**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

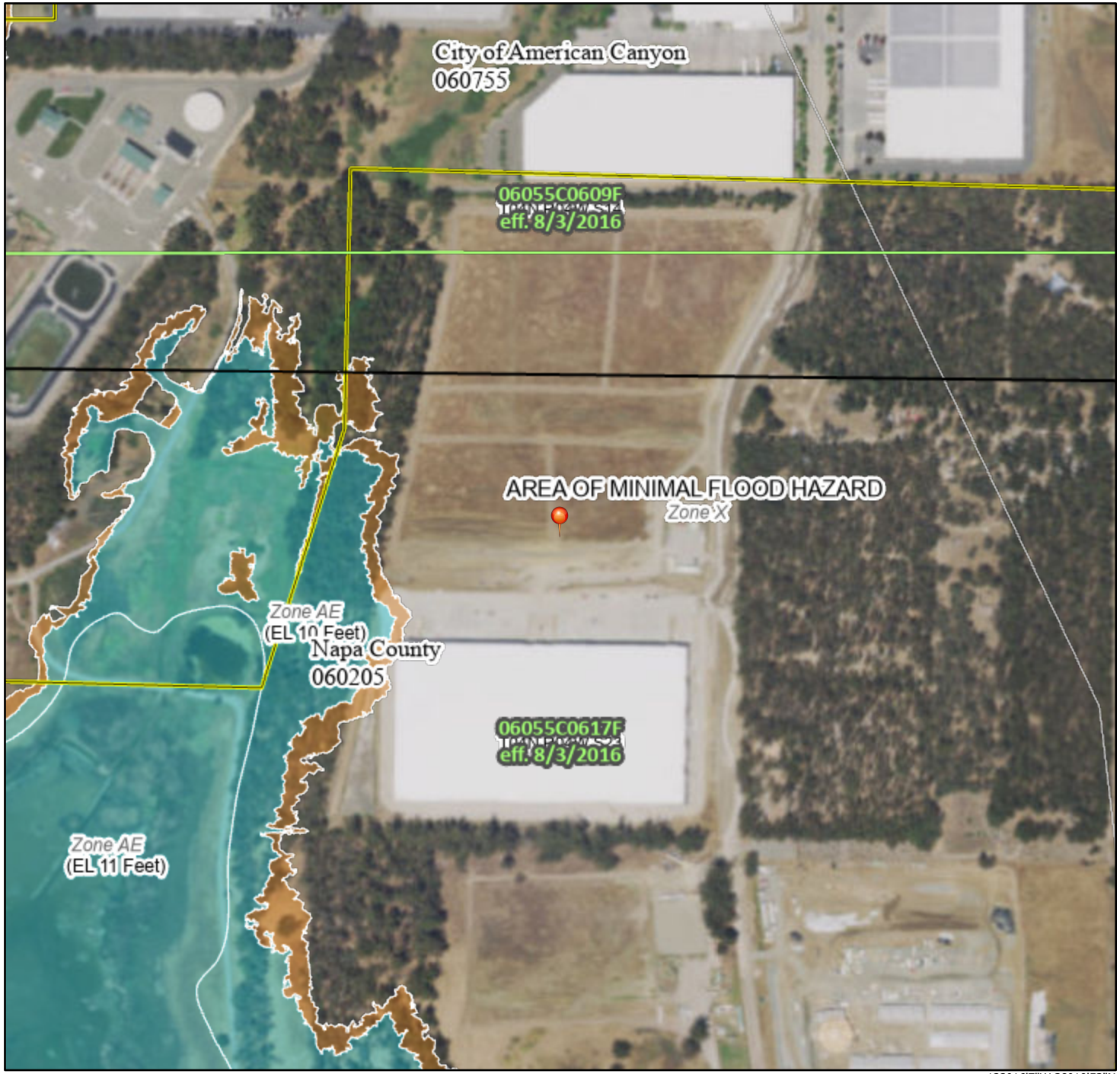
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

National Flood Hazard Layer FIRMette

FEMA

122°16'44"W 38°11'22"N



122°16'7"W 38°10'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/16/2022 at 2:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOAA Atlas 14, Volume 6, Version 2
Location name: American Canyon, California, USA*
Latitude: 38.1854°, Longitude: -122.2702°
Elevation: 30.98 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	0.116 (0.103-0.132)	0.145 (0.129-0.165)	0.185 (0.164-0.210)	0.218 (0.191-0.250)	0.265 (0.224-0.316)	0.302 (0.249-0.370)	0.341 (0.273-0.430)	0.383 (0.297-0.499)	0.442 (0.327-0.604)	0.489 (0.348-0.695)
10-min	0.166 (0.148-0.189)	0.208 (0.185-0.236)	0.264 (0.235-0.301)	0.312 (0.274-0.359)	0.379 (0.320-0.454)	0.433 (0.357-0.531)	0.489 (0.392-0.617)	0.549 (0.426-0.715)	0.633 (0.468-0.865)	0.701 (0.499-0.996)
15-min	0.201 (0.179-0.228)	0.251 (0.224-0.286)	0.320 (0.284-0.364)	0.377 (0.331-0.434)	0.459 (0.387-0.549)	0.524 (0.432-0.642)	0.592 (0.474-0.746)	0.664 (0.515-0.865)	0.766 (0.566-1.05)	0.848 (0.603-1.20)
30-min	0.281 (0.250-0.318)	0.350 (0.312-0.398)	0.446 (0.395-0.508)	0.526 (0.462-0.605)	0.639 (0.540-0.764)	0.730 (0.601-0.894)	0.825 (0.661-1.04)	0.926 (0.718-1.20)	1.07 (0.789-1.46)	1.18 (0.840-1.68)
60-min	0.398 (0.355-0.452)	0.498 (0.443-0.565)	0.633 (0.561-0.721)	0.747 (0.656-0.859)	0.908 (0.767-1.09)	1.04 (0.854-1.27)	1.17 (0.938-1.48)	1.32 (1.02-1.71)	1.52 (1.12-2.07)	1.68 (1.19-2.38)
2-hr	0.592 (0.528-0.672)	0.734 (0.653-0.834)	0.925 (0.820-1.05)	1.08 (0.952-1.25)	1.31 (1.10-1.56)	1.48 (1.22-1.81)	1.66 (1.33-2.09)	1.85 (1.44-2.41)	2.12 (1.56-2.89)	2.32 (1.65-3.30)
3-hr	0.750 (0.668-0.850)	0.929 (0.826-1.06)	1.17 (1.04-1.33)	1.37 (1.20-1.57)	1.64 (1.38-1.96)	1.86 (1.53-2.27)	2.08 (1.66-2.62)	2.31 (1.79-3.01)	2.63 (1.94-3.59)	2.88 (2.05-4.09)
6-hr	1.08 (0.964-1.23)	1.35 (1.20-1.53)	1.70 (1.51-1.94)	1.99 (1.74-2.28)	2.38 (2.01-2.85)	2.69 (2.22-3.29)	3.00 (2.40-3.78)	3.33 (2.58-4.33)	3.77 (2.79-5.15)	4.12 (2.93-5.85)
12-hr	1.44 (1.28-1.63)	1.83 (1.63-2.08)	2.35 (2.08-2.68)	2.77 (2.43-3.18)	3.34 (2.82-3.99)	3.78 (3.12-4.63)	4.22 (3.38-5.33)	4.68 (3.63-6.10)	5.31 (3.92-7.25)	5.79 (4.12-8.23)
24-hr	1.92 (1.73-2.18)	2.52 (2.26-2.85)	3.28 (2.95-3.74)	3.90 (3.48-4.47)	4.74 (4.11-5.58)	5.38 (4.59-6.44)	6.02 (5.03-7.36)	6.68 (5.46-8.36)	7.57 (5.97-9.81)	8.26 (6.32-11.0)
2-day	2.44 (2.19-2.76)	3.19 (2.87-3.62)	4.17 (3.74-4.74)	4.96 (4.42-5.68)	6.02 (5.22-7.08)	6.82 (5.82-8.17)	7.63 (6.38-9.32)	8.46 (6.90-10.6)	9.57 (7.54-12.4)	10.4 (7.98-13.9)
3-day	2.82 (2.54-3.20)	3.70 (3.33-4.20)	4.83 (4.33-5.49)	5.73 (5.11-6.56)	6.94 (6.02-8.17)	7.86 (6.70-9.41)	8.78 (7.33-10.7)	9.71 (7.93-12.1)	11.0 (8.64-14.2)	11.9 (9.13-15.9)
4-day	3.14 (2.83-3.56)	4.12 (3.70-4.67)	5.38 (4.82-6.11)	6.38 (5.68-7.30)	7.71 (6.69-9.07)	8.71 (7.43-10.4)	9.72 (8.12-11.9)	10.7 (8.76-13.4)	12.1 (9.52-15.6)	13.1 (10.0-17.5)
7-day	3.88 (3.50-4.40)	5.14 (4.62-5.83)	6.72 (6.03-7.64)	7.96 (7.10-9.11)	9.58 (8.31-11.3)	10.8 (9.19-12.9)	12.0 (9.99-14.6)	13.1 (10.7-16.4)	14.7 (11.6-19.0)	15.8 (12.1-21.1)
10-day	4.39 (3.95-4.97)	5.83 (5.24-6.62)	7.63 (6.84-8.67)	9.02 (8.04-10.3)	10.8 (9.39-12.7)	12.1 (10.4-14.5)	13.4 (11.2-16.4)	14.7 (12.0-18.4)	16.3 (12.9-21.2)	17.5 (13.4-23.4)
20-day	5.72 (5.15-6.48)	7.60 (6.83-8.62)	9.90 (8.88-11.3)	11.7 (10.4-13.4)	13.9 (12.1-16.4)	15.5 (13.2-18.6)	17.0 (14.2-20.8)	18.5 (15.1-23.2)	20.4 (16.1-26.5)	21.8 (16.7-29.1)
30-day	6.90 (6.21-7.82)	9.11 (8.19-10.3)	11.8 (10.6-13.4)	13.8 (12.3-15.8)	16.4 (14.2-19.3)	18.2 (15.5-21.8)	20.0 (16.7-24.4)	21.6 (17.7-27.0)	23.7 (18.7-30.7)	25.2 (19.3-33.6)
45-day	8.51 (7.66-9.64)	11.1 (9.96-12.6)	14.2 (12.7-16.1)	16.5 (14.7-18.9)	19.5 (16.9-22.9)	21.5 (18.4-25.8)	23.5 (19.6-28.7)	25.4 (20.7-31.7)	27.7 (21.8-35.8)	29.3 (22.5-39.1)
60-day	10.2 (9.20-11.6)	13.1 (11.8-14.9)	16.6 (14.9-18.9)	19.2 (17.1-22.0)	22.5 (19.5-26.4)	24.8 (21.1-29.7)	26.9 (22.5-32.9)	29.0 (23.7-36.3)	31.6 (24.9-40.9)	33.4 (25.5-44.5)

[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.

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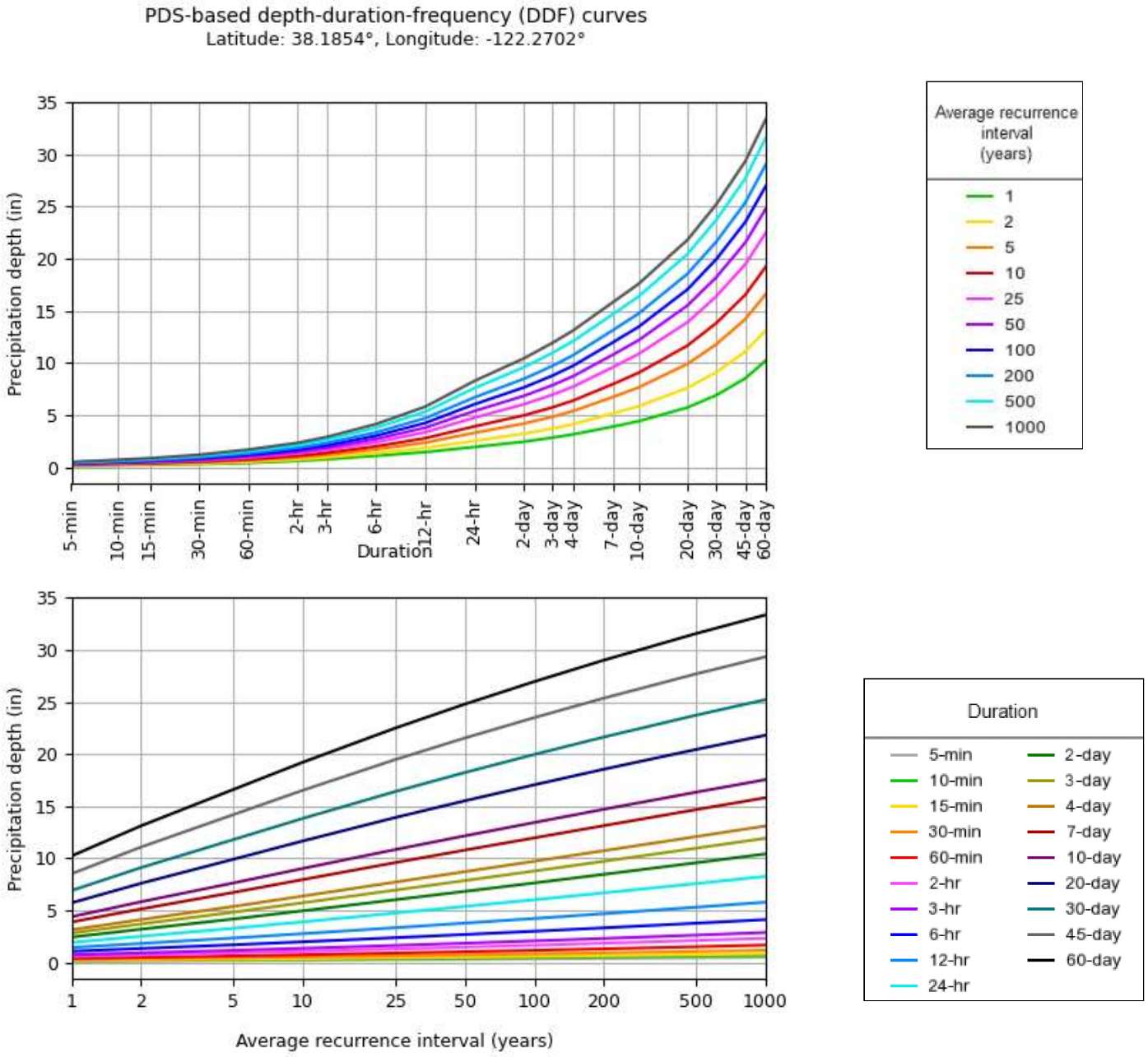
PF graphical



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Maps & aerials

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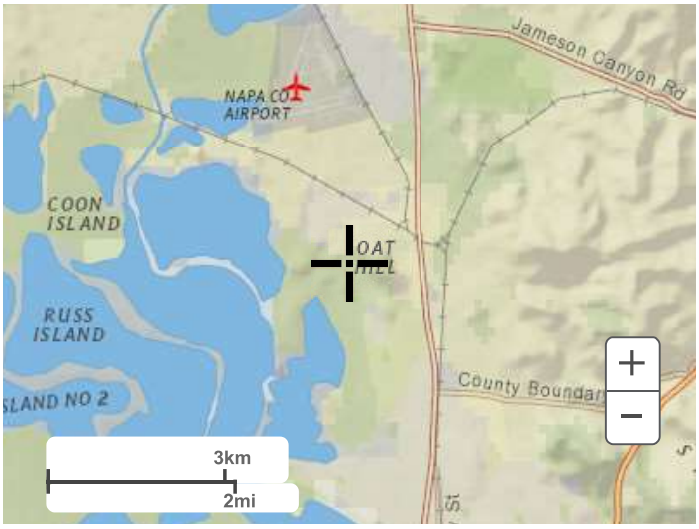
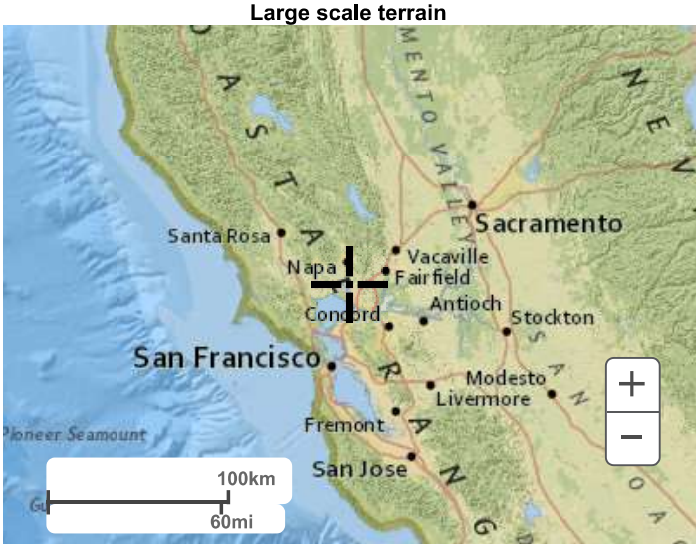
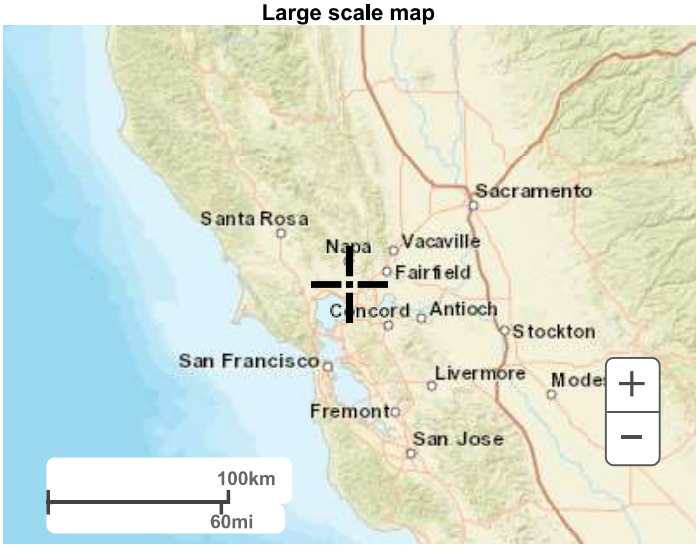


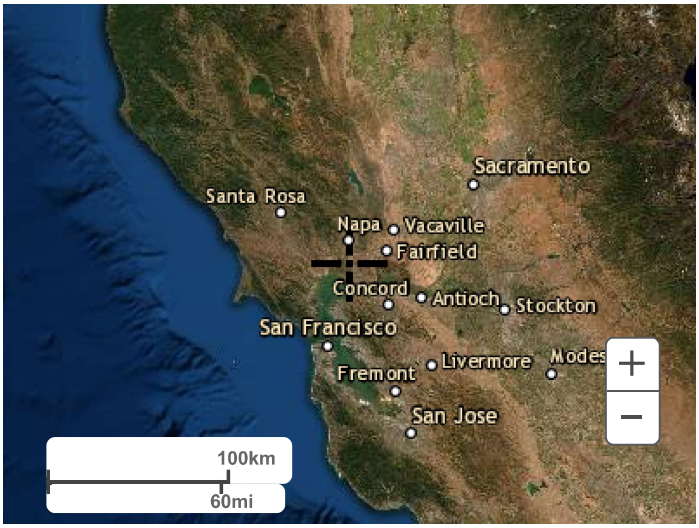
Large scale terrain



Large scale map



Large scale aerial



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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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Location name: American Canyon, California, USA*
Latitude: 38.1857°, Longitude: -122.2732°
Elevation: m/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/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.39 (1.24-1.57)	1.73 (1.54-1.97)	2.21 (1.96-2.51)	2.59 (2.28-2.99)	3.16 (2.66-3.78)	3.60 (2.96-4.42)	4.07 (3.26-5.14)	4.57 (3.54-5.95)	5.27 (3.90-7.20)	5.83 (4.14-8.29)
10-min	0.996 (0.888-1.13)	1.24 (1.10-1.41)	1.58 (1.40-1.80)	1.86 (1.63-2.14)	2.26 (1.91-2.71)	2.58 (2.13-3.16)	2.92 (2.34-3.68)	3.28 (2.54-4.27)	3.77 (2.79-5.16)	4.18 (2.97-5.94)
15-min	0.800 (0.716-0.908)	1.00 (0.892-1.14)	1.27 (1.13-1.45)	1.50 (1.32-1.73)	1.82 (1.54-2.18)	2.08 (1.72-2.55)	2.35 (1.88-2.96)	2.64 (2.05-3.44)	3.04 (2.25-4.16)	3.37 (2.40-4.79)
30-min	0.558 (0.498-0.632)	0.696 (0.620-0.792)	0.886 (0.786-1.01)	1.04 (0.918-1.20)	1.27 (1.07-1.52)	1.45 (1.19-1.78)	1.64 (1.31-2.06)	1.84 (1.43-2.39)	2.12 (1.57-2.89)	2.35 (1.67-3.33)
60-min	0.396 (0.353-0.450)	0.495 (0.440-0.562)	0.629 (0.558-0.717)	0.742 (0.652-0.853)	0.902 (0.762-1.08)	1.03 (0.848-1.26)	1.16 (0.932-1.47)	1.31 (1.01-1.70)	1.51 (1.11-2.06)	1.67 (1.18-2.37)
2-hr	0.294 (0.262-0.334)	0.365 (0.324-0.414)	0.460 (0.408-0.524)	0.538 (0.473-0.619)	0.648 (0.548-0.775)	0.735 (0.606-0.900)	0.824 (0.660-1.04)	0.919 (0.713-1.20)	1.05 (0.776-1.43)	1.15 (0.820-1.64)
3-hr	0.248 (0.221-0.281)	0.307 (0.273-0.349)	0.386 (0.342-0.440)	0.452 (0.397-0.519)	0.542 (0.458-0.648)	0.613 (0.505-0.751)	0.686 (0.550-0.865)	0.763 (0.592-0.994)	0.869 (0.642-1.19)	0.952 (0.677-1.35)
6-hr	0.180 (0.160-0.204)	0.223 (0.199-0.254)	0.281 (0.249-0.320)	0.329 (0.289-0.378)	0.394 (0.333-0.472)	0.445 (0.367-0.545)	0.497 (0.398-0.627)	0.551 (0.427-0.717)	0.624 (0.462-0.853)	0.682 (0.485-0.969)
12-hr	0.118 (0.105-0.134)	0.151 (0.134-0.171)	0.193 (0.171-0.220)	0.228 (0.200-0.262)	0.275 (0.232-0.329)	0.311 (0.256-0.381)	0.347 (0.278-0.438)	0.385 (0.299-0.501)	0.436 (0.323-0.596)	0.476 (0.338-0.676)
24-hr	0.079 (0.072-0.090)	0.104 (0.093-0.118)	0.136 (0.122-0.154)	0.161 (0.144-0.184)	0.196 (0.170-0.230)	0.222 (0.189-0.266)	0.248 (0.207-0.304)	0.276 (0.225-0.345)	0.312 (0.246-0.404)	0.341 (0.261-0.454)
2-day	0.050 (0.045-0.057)	0.066 (0.059-0.075)	0.086 (0.077-0.098)	0.102 (0.091-0.117)	0.124 (0.108-0.146)	0.141 (0.120-0.168)	0.157 (0.131-0.192)	0.174 (0.142-0.218)	0.197 (0.155-0.255)	0.215 (0.164-0.286)
3-day	0.039 (0.035-0.044)	0.051 (0.046-0.058)	0.066 (0.060-0.075)	0.079 (0.070-0.090)	0.095 (0.083-0.112)	0.108 (0.092-0.129)	0.121 (0.101-0.147)	0.133 (0.109-0.167)	0.151 (0.119-0.195)	0.164 (0.125-0.218)
4-day	0.032 (0.029-0.037)	0.042 (0.038-0.048)	0.055 (0.050-0.063)	0.066 (0.059-0.075)	0.079 (0.069-0.094)	0.090 (0.077-0.108)	0.100 (0.084-0.122)	0.111 (0.090-0.138)	0.124 (0.098-0.161)	0.135 (0.103-0.180)
7-day	0.023 (0.021-0.026)	0.030 (0.027-0.034)	0.040 (0.036-0.045)	0.047 (0.042-0.054)	0.056 (0.049-0.066)	0.064 (0.054-0.076)	0.070 (0.059-0.086)	0.077 (0.063-0.097)	0.086 (0.068-0.112)	0.093 (0.071-0.124)
10-day	0.018 (0.016-0.021)	0.024 (0.022-0.027)	0.031 (0.028-0.036)	0.037 (0.033-0.043)	0.045 (0.039-0.053)	0.050 (0.043-0.060)	0.055 (0.046-0.068)	0.061 (0.049-0.076)	0.067 (0.053-0.087)	0.072 (0.055-0.096)
20-day	0.012 (0.011-0.013)	0.016 (0.014-0.018)	0.020 (0.018-0.023)	0.024 (0.021-0.028)	0.029 (0.025-0.034)	0.032 (0.027-0.038)	0.035 (0.029-0.043)	0.038 (0.031-0.048)	0.042 (0.033-0.055)	0.045 (0.034-0.060)
30-day	0.009 (0.009-0.011)	0.013 (0.011-0.014)	0.016 (0.015-0.018)	0.019 (0.017-0.022)	0.023 (0.020-0.027)	0.025 (0.021-0.030)	0.027 (0.023-0.034)	0.030 (0.024-0.037)	0.033 (0.026-0.042)	0.035 (0.027-0.046)
45-day	0.008 (0.007-0.009)	0.010 (0.009-0.012)	0.013 (0.012-0.015)	0.015 (0.014-0.017)	0.018 (0.015-0.021)	0.020 (0.017-0.024)	0.022 (0.018-0.026)	0.023 (0.019-0.029)	0.025 (0.020-0.033)	0.027 (0.021-0.036)
60-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.013 (0.012-0.015)	0.015 (0.013-0.018)	0.017 (0.015-0.020)	0.019 (0.016-0.023)	0.020 (0.016-0.025)	0.022 (0.017-0.028)	0.023 (0.018-0.031)

[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.

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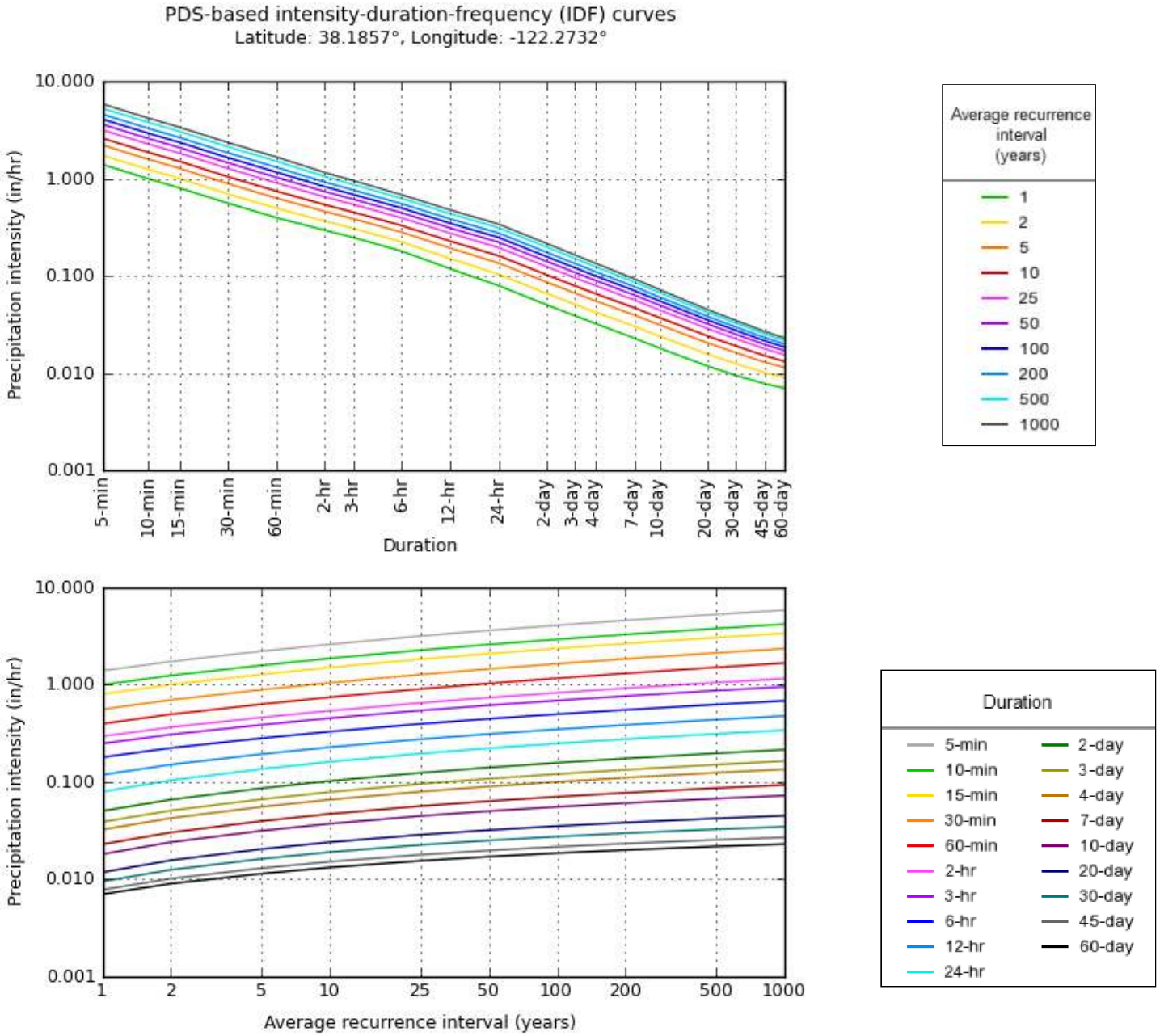
PF graphical



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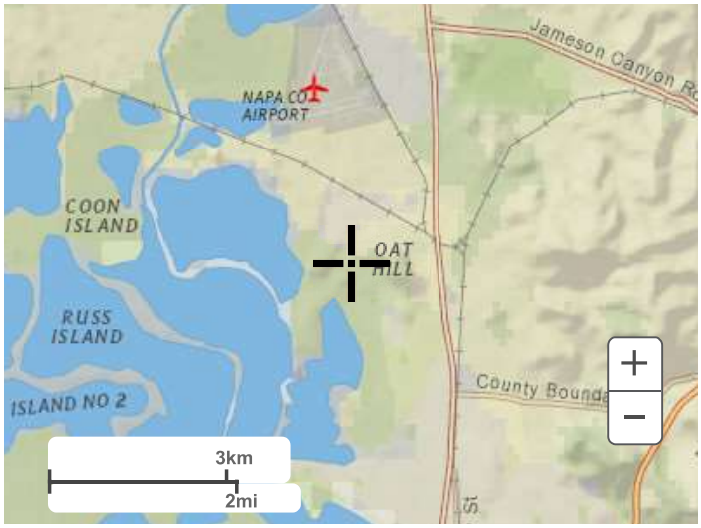
Small scale terrain



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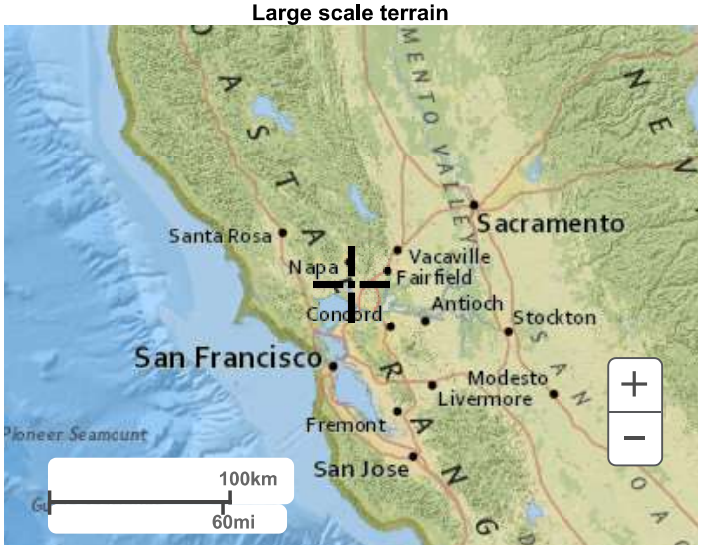
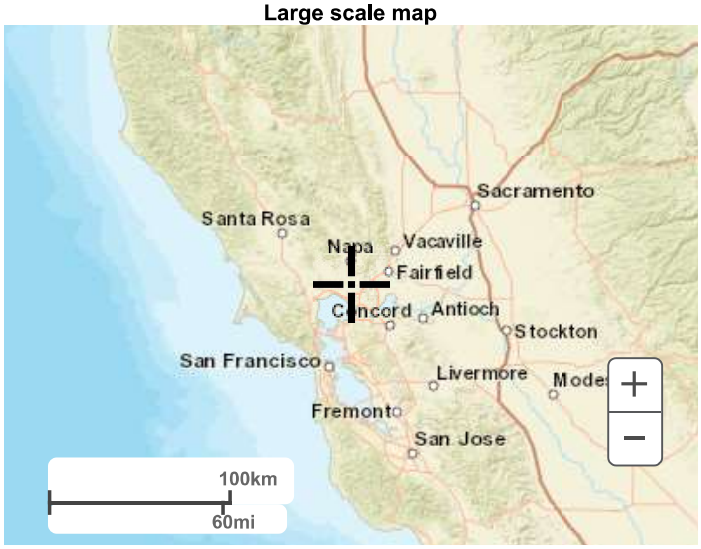


Large scale map



Large scale aerial

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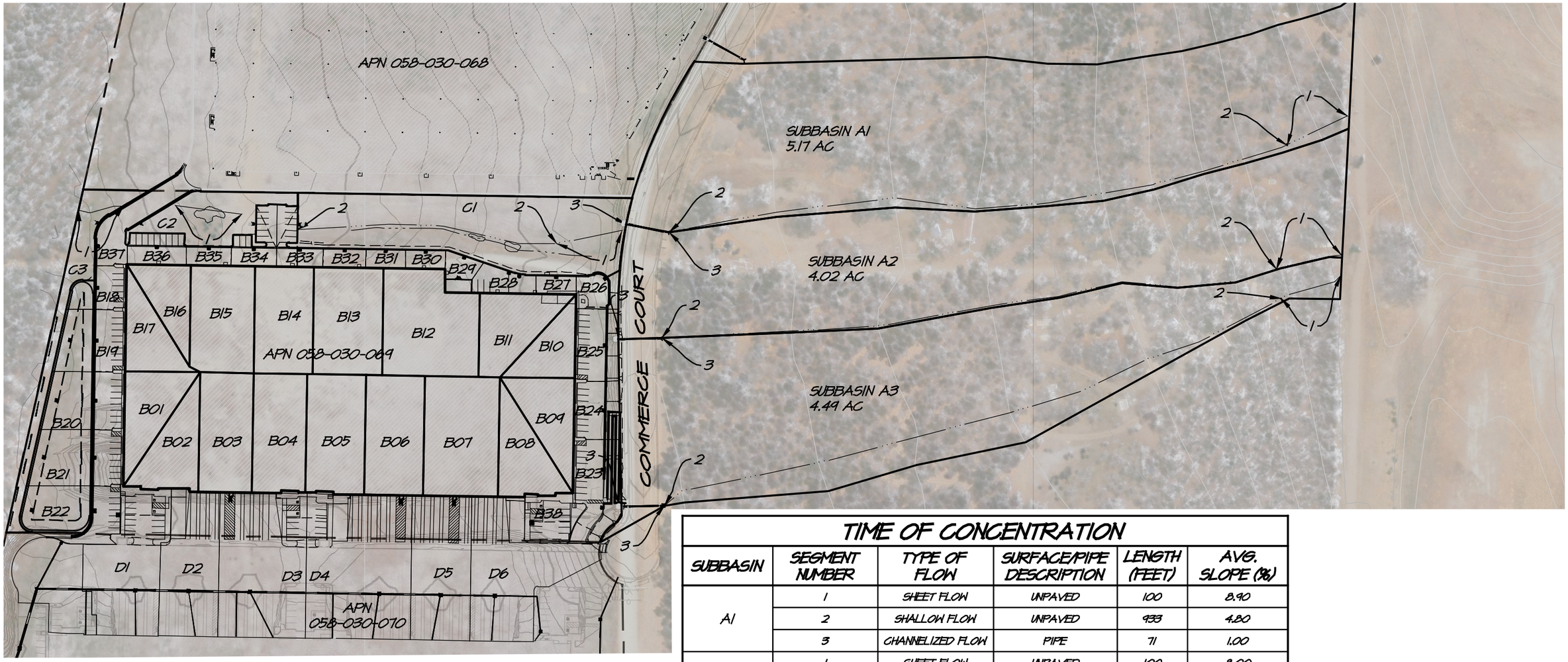

NOTES

MINIMUM TC FOR TR-55 IS 6 MINUTES

TIME OF CONCENTRATION

SUBBASIN	SEGMENT NUMBER	TYPE OF FLOW	SURFACE/PIPE DESCRIPTION	LENGTH (FEET)	AVG. SLOPE (%)
A1	1	SHEET FLOW	UNPAVED	100	8.90
	2	SHALLOW FLOW	UNPAVED	933	4.80
	3	CHANNELIZED FLOW	PIPE	71	1.00
A2	1	SHEET FLOW	UNPAVED	100	8.00
	2	SHALLOW FLOW	UNPAVED	925	4.00
	3	CHANNELIZED FLOW	PIPE	79	1.00
A3	1	SHEET FLOW	UNPAVED	100	7.00
	2	SHALLOW FLOW	UNPAVED	964	4.00
	3	CHANNELIZED FLOW	PIPE	75	1.00
B_{1-25}	ROOF TO DOWNSPOUT = 6 MIN (ASSUMED)*				
C1	1	SHEET FLOW	UNPAVED	100	4.30
	2	SHALLOW FLOW	UNPAVED	390	1.64
C2	1	SHEET FLOW	UNPAVED	100	0.60
C3	1	SHEET FLOW	UNPAVED	100	2.39
$D_{(OFF-SITE)}$	TC ESTIMATED ON SDG COMMERCE 220 HYDROLOGY REPORT**				

GRAPHIC SCALE

150 0 150 300

(IN FEET)
1 inch = 150 FT

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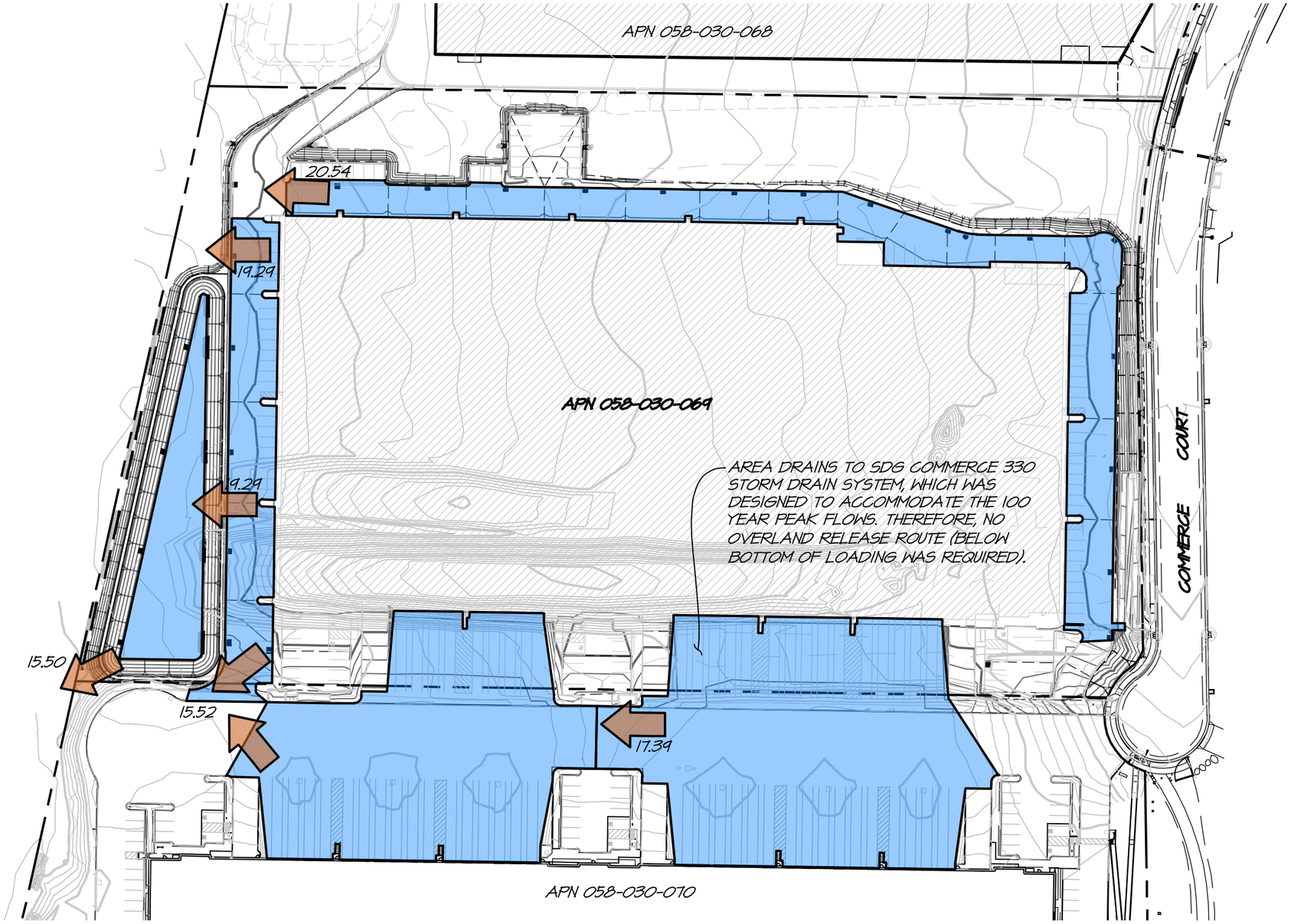

GRAPHIC SCALE

100 0 100 200

(IN FEET)
1 inch = 100 FT

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Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

SDG COMMERCE 220 DISTRIBUTION CENTER

100-Year DI Hydraulics

$Q_{capacity} = 3.3P(h^{1.5})$	
P	77% of Total Perimeter (ft)
h	Weir Flow Height (ft)

DI Hydraulics						
Length (in)	**Width (in)**	**Grate Perimeter (ft^2)**	**Q_{100} (cfs)**	**Head On Grate (in)**	**Head On Grate (ft)**	**$Q_{capacity}$ (cfs)**
36	36	12	0.5	1	0.08	0.73
				2	0.17	2.07
				3	0.25	3.81
48	48	16	0.5	1	0.08	0.98
				2	0.17	2.77
				3	0.25	5.08

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	A01	5.17	484.00	81	7.36	5.19	26.80	6.7	0 00:15:27
2	A02	4.02	484.00	81	7.36	5.15	20.70	5.2	0 00:16:18
3	A03	4.49	484.00	83	7.36	5.34	23.96	5.9	0 00:18:52
4	B01	0.22	484.00	98	7.36	7.12	1.57	0.4	0 00:06:00
5	B02	0.23	484.00	98	7.36	7.12	1.62	0.4	0 00:06:00
6	B03	0.33	484.00	98	7.36	7.12	2.34	0.6	0 00:06:00
7	B04	0.33	484.00	98	7.36	7.12	2.32	0.6	0 00:06:00
8	B05	0.36	484.00	98	7.36	7.12	2.55	0.6	0 00:06:00
9	B06	0.36	484.00	98	7.36	7.12	2.57	0.7	0 00:06:00
10	B07	0.46	484.00	98	7.36	7.12	3.28	0.8	0 00:06:00
11	B08	0.23	484.00	98	7.36	7.12	1.64	0.4	0 00:06:00
12	B09	0.22	484.00	98	7.36	7.12	1.57	0.4	0 00:06:00
13	B10	0.16	484.00	98	7.36	7.12	1.14	0.3	0 00:06:00
14	B11	0.25	484.00	98	7.36	7.12	1.80	0.4	0 00:06:00
15	B12	0.49	484.00	98	7.36	7.12	3.47	0.9	0 00:06:00
16	B13	0.38	484.00	98	7.36	7.12	2.72	0.7	0 00:06:00
17	B14	0.32	484.00	98	7.36	7.12	2.30	0.6	0 00:06:00
18	B15	0.35	484.00	98	7.36	7.12	2.50	0.6	0 00:06:00
19	B16	0.17	484.00	98	7.36	7.12	1.19	0.3	0 00:06:00
20	B17	0.19	484.00	98	7.36	7.12	1.33	0.3	0 00:06:00
21	B18	0.11	484.00	98	7.36	7.12	0.77	0.2	0 00:06:00
22	B19	0.21	484.00	98	7.36	7.12	1.51	0.4	0 00:06:00
23	B20	0.24	484.00	98	7.36	7.12	1.68	0.4	0 00:06:00
24	B21	0.26	484.00	98	7.36	7.12	1.87	0.5	0 00:06:00
25	B22	0.27	484.00	98	7.36	7.12	1.93	0.5	0 00:06:00
26	B23	0.23	484.00	98	7.36	7.12	1.65	0.4	0 00:06:00
27	B24	0.14	484.00	98	7.36	7.12	0.97	0.2	0 00:06:00
28	B25	0.16	484.00	98	7.36	7.12	1.14	0.3	0 00:06:00
29	B26	0.08	484.00	98	7.36	7.12	0.57	0.2	0 00:06:00
30	B27	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
31	B28	0.08	484.00	98	7.36	7.12	0.57	0.2	0 00:06:00
32	B29	0.06	484.00	98	7.36	7.12	0.43	0.1	0 00:06:00
33	B30	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
34	B31	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
35	B32	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
36	B33	0.09	484.00	98	7.36	7.12	0.64	0.2	0 00:06:00
37	B34	0.10	484.00	98	7.36	7.12	0.70	0.2	0 00:06:00
38	B35	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
39	B36	0.09	484.00	98	7.36	7.12	0.65	0.2	0 00:06:00
40	B37	0.17	484.00	98	7.36	7.12	1.21	0.3	0 00:06:00
41	B38	0.13	484.00	98	7.36	7.12	0.91	0.2	0 00:06:00
42	C01	1.09	484.00	72	7.36	4.14	4.51	1.1	0 00:05:00
43	C02	0.28	484.00	72	7.36	4.14	1.16	0.3	0 00:29:07
44	C03	0.29	484.00	72	7.36	4.14	1.19	0.3	0 00:16:48
45	D01	0.48	484.00	98	7.36	7.12	3.45	0.9	0 00:06:00
46	D02	0.41	484.00	98	7.36	7.12	2.94	0.7	0 00:06:00
47	D03	0.65	484.00	98	7.36	7.12	4.62	1.1	0 00:06:00
48	D04	0.78	484.00	98	7.36	7.12	5.55	1.4	0 00:06:00
49	D05	0.44	484.00	98	7.36	7.12	3.14	0.8	0 00:06:00
50	D06	0.56	484.00	98	7.36	7.12	3.97	1.0	0 00:06:00
51	D07	0.29	484.00	98	7.36	7.12	2.06	0.5	0 00:06:00

Q_{max} to DI-36x36

Q_{max} to DI-48x48

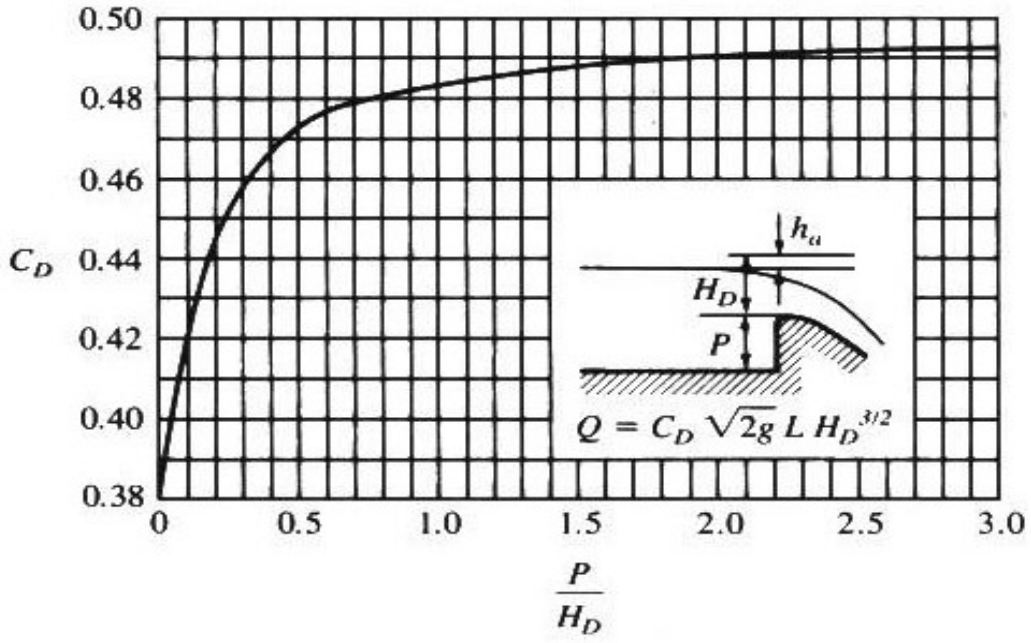
SDG COMMERCE 220 DISTRIBUTION CENTER
100-Year Spillway Hydraulics

$$Q = C_D\sqrt{2g}LH_D{}^{3/2}$$

g	32.2	(ft/sec^2)

Spillway Hydraulics						
Spillway	Length (ft)	H_D (ft)	P (ft)	C_D	$Q_{capacity}$ (cfs)	Q_{actual} (cfs)*
1	15	1.8	3.2	0.489	142.15	23.90

* Flow rate from Detention Hydrographs



SDG COMMERCE 220 DISTRIBUTION CENTER

100-Year Level Spread Calcs

100-Year Level Spreader Calcs

Sharp-Crested Weir
Q=3.33(b-0.2h)h^3/2

b= width of weir = D

Location		LS Diameter (in)	LS Length (ft)	D (in)	Number of Weir Openings	Q (cfs)	h (in)	$h_{opening}$ (in)
BRB Inflow 1	Out-1E16-Pipe	24	20	24	3	5.20	5.00	16
BRB Inflow 2	D3-Structure	24	20	24	3	0.70	1.30	16
BRB Inflow 3	Out-1C2-Pipe	24	20	24	3	0.80	1.40	16
BRB Inflow 4	Out-1B1-Pipe	24	20	24	3	0.50	1.00	16
BRB Inflow 5	Out-1A15-Pipe	24	20	24	3	17.00	11.50	16
BRB Overflow 1	Out-1D4-Pipe	24	60	24	13	4.30	1.65	16
BRB Overflow 2	Out-1Pipe (53)	24	60	24	13	4.30	1.65	16
BRB Overflow 3	Out-1Pipe (59)	24	60	24	13	4.30	1.65	16
BRB Overflow 4	Out-1Pipe (62)	24	60	24	13	4.30	1.65	16

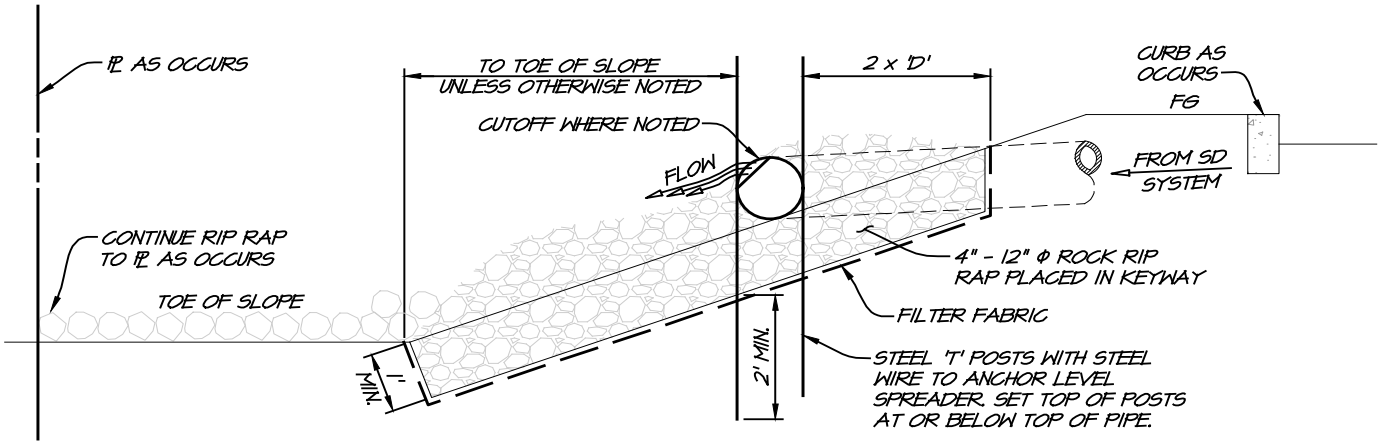
Assumptions:

-Width of weir is equal to the diameter of Level Spreader(LS)

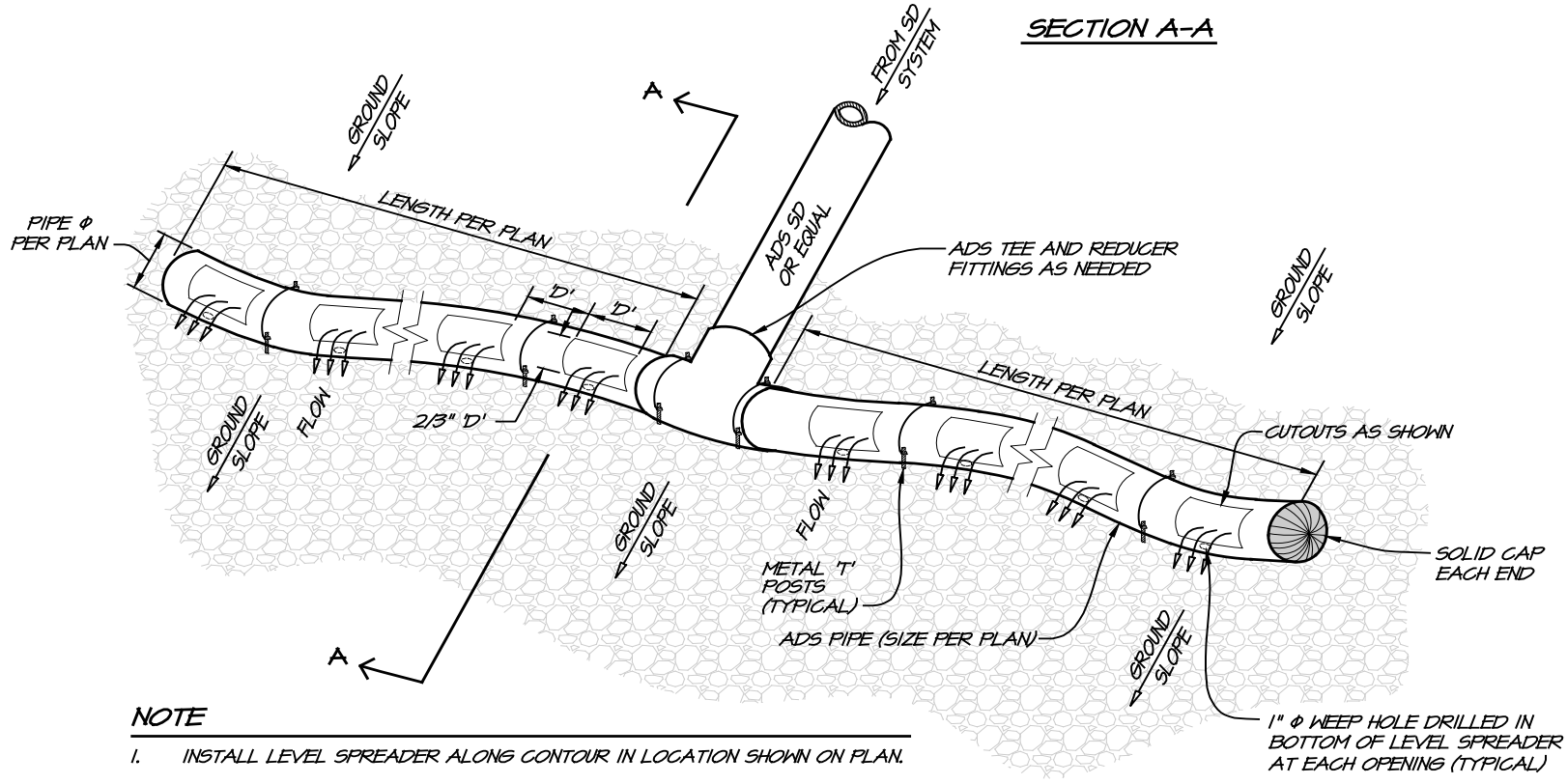
-Spacing between weirs is equal to the diameter of LS

-Height of weir is equal to 2/3 the diameter of LS

-Maximum # of weir openings account for Tee fitting from inlet pipe of same size as level spreader. Remaining length is used at the ends.



SECTION A-A



NOTE

1. INSTALL LEVEL SPREADER ALONG CONTOUR IN LOCATION SHOWN ON PLAN.
2. D - DIAMETER OF LEVEL SPREADER.

STORM DRAIN LEVEL SPREADER DETAIL

ATTACHMENT 2

10-YEAR HGL ANALYSIS

Project Description

File Name ..... SDG 220 Post.SPF

Project Options

Flow Units ..... CFS
Elevation Type ..... Elevation
Hydrology Method ..... SCS TR-55
Time of Concentration (TOC) Method ..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Enable Overflow Ponding at Nodes ..... YES
Skip Steady State Analysis Time Periods ... YES

Analysis Options

Start Analysis On ..... Mar 13, 2023 00:00:00
End Analysis On ..... Mar 14, 2023 00:00:00
Start Reporting On ..... Mar 13, 2023 00:00:00
Antecedent Dry Days ..... 0 days
Runoff (Dry Weather) Time Step ..... 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step ..... 0 00:05:00 days hh:mm:ss
Reporting Time Step ..... 0 00:00:30 days hh:mm:ss
Routing Time Step ..... 30 seconds

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1		Time Series	TS- 100yr	Cumulative	inches	None	None	100	7.36	SCS Type IA 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	A01	5.17	484.00	81	4.47	2.56	13.22	3.2	0 00:15:27
2	A02	4.02	484.00	81	4.47	2.53	10.17	2.4	0 00:16:18
3	A03	4.49	484.00	83	4.47	2.67	12.01	2.8	0 00:18:52
4	B01	0.22	484.00	98	4.47	4.23	0.94	0.2	0 00:06:00
5	B02	0.23	484.00	98	4.47	4.23	0.96	0.3	0 00:06:00
6	B03	0.33	484.00	98	4.47	4.23	1.39	0.4	0 00:06:00
7	B04	0.33	484.00	98	4.47	4.23	1.38	0.4	0 00:06:00
8	B05	0.36	484.00	98	4.47	4.23	1.52	0.4	0 00:06:00
9	B06	0.36	484.00	98	4.47	4.23	1.53	0.4	0 00:06:00
10	B07	0.46	484.00	98	4.47	4.23	1.95	0.5	0 00:06:00
11	B08	0.23	484.00	98	4.47	4.23	0.98	0.3	0 00:06:00
12	B09	0.22	484.00	98	4.47	4.23	0.94	0.2	0 00:06:00
13	B10	0.16	484.00	98	4.47	4.23	0.68	0.2	0 00:06:00
14	B11	0.25	484.00	98	4.47	4.23	1.07	0.3	0 00:06:00
15	B12	0.49	484.00	98	4.47	4.23	2.06	0.5	0 00:06:00
16	B13	0.38	484.00	98	4.47	4.23	1.62	0.4	0 00:06:00
17	B14	0.32	484.00	98	4.47	4.23	1.37	0.4	0 00:06:00
18	B15	0.35	484.00	98	4.47	4.23	1.49	0.4	0 00:06:00
19	B16	0.17	484.00	98	4.47	4.23	0.71	0.2	0 00:06:00
20	B17	0.19	484.00	98	4.47	4.23	0.79	0.2	0 00:06:00
21	B18	0.11	484.00	98	4.47	4.23	0.46	0.1	0 00:06:00
22	B19	0.21	484.00	98	4.47	4.23	0.90	0.2	0 00:06:00
23	B20	0.24	484.00	98	4.47	4.23	1.00	0.3	0 00:06:00
24	B21	0.26	484.00	98	4.47	4.23	1.11	0.3	0 00:06:00
25	B22	0.27	484.00	98	4.47	4.23	1.15	0.3	0 00:06:00
26	B23	0.23	484.00	98	4.47	4.23	0.98	0.3	0 00:06:00
27	B24	0.14	484.00	98	4.47	4.23	0.58	0.1	0 00:06:00
28	B25	0.16	484.00	98	4.47	4.23	0.68	0.2	0 00:06:00
29	B26	0.08	484.00	98	4.47	4.23	0.34	0.1	0 00:06:00
30	B27	0.04	484.00	98	4.47	4.23	0.17	0.0	0 00:06:00
31	B28	0.08	484.00	98	4.47	4.23	0.34	0.1	0 00:06:00
32	B29	0.06	484.00	98	4.47	4.23	0.25	0.1	0 00:06:00
33	B30	0.04	484.00	98	4.47	4.23	0.17	0.0	0 00:06:00
34	B31	0.04	484.00	98	4.47	4.23	0.17	0.0	0 00:06:00
35	B32	0.04	484.00	98	4.47	4.23	0.17	0.0	0 00:06:00
36	B33	0.09	484.00	98	4.47	4.23	0.38	0.1	0 00:06:00
37	B34	0.10	484.00	98	4.47	4.23	0.41	0.1	0 00:06:00
38	B35	0.04	484.00	98	4.47	4.23	0.17	0.0	0 00:06:00
39	B36	0.09	484.00	98	4.47	4.23	0.39	0.1	0 00:06:00
40	B37	0.17	484.00	98	4.47	4.23	0.72	0.2	0 00:06:00
41	B38	0.13	484.00	98	4.47	4.23	0.54	0.1	0 00:06:00
42	C01	1.09	484.00	72	4.47	1.80	1.96	0.4	0 00:05:00
43	C02	0.28	484.00	72	4.47	1.80	0.50	0.1	0 00:29:07
44	C03	0.29	484.00	72	4.47	1.80	0.52	0.1	0 00:16:48
45	D01	0.48	484.00	98	4.47	4.23	2.05	0.5	0 00:06:00
46	D02	0.41	484.00	98	4.47	4.23	1.75	0.4	0 00:06:00
47	D03	0.65	484.00	98	4.47	4.23	2.75	0.7	0 00:06:00
48	D04	0.78	484.00	98	4.47	4.23	3.30	0.8	0 00:06:00
49	D05	0.44	484.00	98	4.47	4.23	1.87	0.5	0 00:06:00
50	D06	0.56	484.00	98	4.47	4.23	2.36	0.6	0 00:06:00
51	D07	0.29	484.00	98	4.47	4.23	1.23	0.3	0 00:06:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	A1.1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.2	19.24	0.00	1.77	0 00:00	0.00	0.00
2	A1-Structure	Junction	16.03	37.64	16.03	37.64	0.00	2.7	18.46	0.00	19.18	0 00:00	0.00	0.00
3	A2.1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.2	19.26	0.00	1.74	0 00:00	0.00	0.00
4	A2-Structure	Junction	15.56	20.55	15.56	20.55	0.00	3.1	18.38	0.00	2.16	0 00:00	0.00	0.00
5	A3-Structure	Junction	15.13	19.11	15.13	19.11	0.00	3.3	15.87	0.00	3.25	0 00:00	0.00	0.00
6	A4-Structure	Junction	14.86	20.27	14.86	20.27	0.00	6.1	17.05	0.00	3.22	0 00:00	0.00	0.00
7	A5-Structure	Junction	13.86	20.07	13.86	20.07	0.00	6.5	18.47	0.00	1.60	0 00:00	0.00	0.00
8	B1-Structure	Junction	12.20	20.13	12.20	20.13	0.00	0.3	12.30	0.00	7.83	0 00:00	0.00	0.00
9	C1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.2	19.26	0.00	1.74	0 00:00	0.00	0.00
10	C2-Structure	Junction	12.20	36.86	12.20	36.86	0.00	0.5	18.37	0.00	18.49	0 00:00	0.00	0.00
11	D1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.2	19.25	0.00	1.76	0 00:00	0.00	0.00
12	D2-Structure	Junction	12.20	38.65	12.20	38.65	0.00	0.4	18.36	0.00	20.29	0 00:00	0.00	0.00
13	D3-Structure	Junction	10.50	16.50	10.50	13.25	0.00	0.4	10.62	0.00	5.88	0 00:00	0.00	0.00
14	D4-Structure	Junction	10.63	13.10	10.63	14.00	0.00	2.7	11.30	0.00	1.80	0 00:00	0.00	0.00
15	E10.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.4	19.29	0.00	1.78	0 00:00	0.00	0.00
16	E10-Structure	Junction	12.29	20.26	12.29	20.26	0.00	2.0	18.64	0.00	1.62	0 00:00	0.00	0.00
17	E11-Structure	Junction	11.95	20.26	11.95	20.26	0.00	2.1	12.48	0.00	7.78	0 00:00	0.00	0.00
18	E13.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.4	19.30	0.00	1.77	0 00:00	0.00	0.00
19	E13-Structure	Junction	11.61	20.26	11.61	20.26	0.00	2.6	18.72	0.00	1.54	0 00:00	0.00	0.00
20	E14.2-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.2	19.24	0.00	1.83	0 00:00	0.00	0.00
21	E14-Structure	Junction	11.22	20.25	11.22	20.25	0.00	2.8	18.60	0.00	1.65	0 00:00	0.00	0.00
22	E15-Structure	Junction	10.79	20.25	10.79	20.25	0.00	3.0	11.53	0.00	8.72	0 00:00	0.00	0.00
23	E16-Structure	Junction	10.62	20.13	10.62	20.13	0.00	3.1	11.36	0.00	8.77	0 00:00	0.00	0.00
24	E1-Structure	Junction	15.10	19.22	15.10	19.22	0.00	0.1	15.22	0.00	4.00	0 00:00	0.00	0.00
25	E2-Structure	Junction	14.73	20.26	14.73	20.26	0.00	0.1	14.88	0.00	5.38	0 00:00	0.00	0.00
26	E4.1-Structure	Junction	19.10	21.08	19.10	21.08	0.00	0.3	19.27	0.00	1.81	0 00:00	0.00	0.00
27	E4-Structure	Junction	14.45	20.30	14.45	20.30	0.00	0.1	14.60	0.00	5.70	0 00:00	0.00	0.00
28	E5-Structure	Junction	14.37	20.09	14.37	20.09	0.00	0.5	18.59	0.00	1.50	0 00:00	0.00	0.00
29	E6-Structure	Junction	14.02	20.20	14.02	20.20	0.00	0.6	14.32	0.00	5.88	0 00:00	0.00	0.00
30	E7.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.5	19.33	0.00	1.74	0 00:00	0.00	0.00
31	E7-Structure	Junction	13.23	20.26	13.23	20.26	0.00	1.1	18.68	0.00	1.58	0 00:00	0.00	0.00
32	E8-Structure	Junction	12.93	20.26	12.93	20.26	0.00	1.2	13.32	0.00	6.94	0 00:00	0.00	0.00
33	E9.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.4	19.31	0.00	1.76	0 00:00	0.00	0.00
34	E9-Structure	Junction	12.62	20.26	12.62	20.26	0.00	1.6	18.81	0.00	1.45	0 00:00	0.00	0.00
35	Jun-01	Junction	0.00	10.50	0.00	0.00	0.00	3.9	0.00	0.00	10.50	0 00:00	0.00	0.00
36	Jun-02	Junction	0.00	6.00	0.00	6.00	0.00	3.2	32.46	0.00	1.04	0 00:00	0.00	0.00
37	Jun-03	Junction	0.00	6.00	0.00	6.00	0.00	3.2	30.46	0.00	1.04	0 00:00	0.00	0.00
38	Jun-04	Junction	19.20	6.00	0.00	6.00	0.00	3.6	19.20	0.00	0.00	0 00:00	0.00	0.00
39	Jun-05	Junction	18.20	6.00	0.00	6.00	0.00	3.6	18.78	0.00	0.92	0 00:00	0.00	0.00
40	Jun-06	Junction	14.60	6.00	0.00	6.00	0.00	3.7	14.60	0.00	0.00	0 00:00	0.00	0.00
41	Jun-07	Junction	13.20	6.00	0.00	6.00	0.00	3.8	13.73	0.00	0.97	0 00:00	0.00	0.00
42	Jun-08	Junction	19.20	6.00	0.00	6.00	0.00	3.6	19.78	0.00	0.92	0 00:00	0.00	0.00
43	Jun-09	Junction	14.60	6.00	0.00	0.00	0.00	3.7	15.13	0.00	0.97	0 00:00	0.00	0.00
44	Out-1A15-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	8.8	11.54	0.00	4.96	0 00:00	0.00	0.00
45	Out-1B1-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	0.3	10.60	0.00	5.90	0 00:00	0.00	0.00
46	Out-1C2-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	0.5	10.63	0.00	5.87	0 00:00	0.00	0.00
47	Out-1D4-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	2.7	11.17	0.00	5.33	0 00:00	0.00	0.00
48	Out-1E16-Pipe	Junction	10.50	16.50	10.50	0.00	0.00	3.1	11.16	0.00	5.34	0 00:00	0.00	0.00
49	Out-1Pipe (53)	Junction	10.50	16.50	10.50	16.50	0.00	2.7	11.10	0.00	5.40	0 00:00	0.00	0.00
50	Out-1Pipe (59)	Junction	10.50	16.50	10.50	16.50	0.00	2.7	11.17	0.00	5.33	0 00:00	0.00	0.00
51	Out-1Pipe (62)	Junction	10.50	16.50	10.50	16.50	0.00	2.7	11.17	0.00	5.33	0 00:00	0.00	0.00
52	Structure - 100	Junction	19.10	19.83	19.10	19.83	0.00	0.4	19.30	0.00	0.53	0 00:00	0.00	0.00
53	Structure - 101	Junction	11.91	19.47	11.91	19.47	0.00	8.0	18.60	0.00	0.87	0 00:00	0.00	0.00
54	Structure - 102	Junction	19.10	19.83	19.10	19.83	0.00	0.4	19.30	0.00	0.53	0 00:00	0.00	0.00
55	Structure - 103	Junction	11.59	19.48	11.59	19.48	0.00	8.3	18.60	0.00	0.88	0 00:00	0.00	0.00
56	Structure - 104	Junction	19.10	19.83	19.10	19.83	0.00	0.3	19.28	0.00	0.54	0 00:00	0.00	0.00
57	Structure - 105	Junction	11.09	19.41	11.09	19.41	0.00	8.5	18.49	0.00	0.91	0 00:00	0.00	0.00
58	Structure - 35	Junction	10.76	18.50	10.76	18.50	0.00	8.5	11.79	0.00	6.72	0 00:00	0.00	0.00
59	Structure - 36	Junction	10.59	20.13	10.59	20.13	0.00	8.8	11.63	0.00	8.50	0 00:00	0.00	0.00
60	Structure - 38	Junction	28.60	31.31	28.60	31.31	0.00	2.4	29.15	0.00	2.16	0 00:00	0.00	0.00
61	Structure - 39	Junction	27.61	32.57	27.61	32.57	0.00	2.4	28.77	0.00	3.79	0 00:00	0.00	0.00
62	Structure - 48	Junction	26.48	1.78	26.48	1.78	0.00	2.8	26.94	0.00	1.04	0 00:00	0.00	0.00
63	Structure - 49	Junction	25.31	29.72	25.31	29.72	0.00	2.8	26.25	0.00	3.47	0 00:00	0.00	0.00
64	Structure - 75	Junction	10.63	13.10	10.63	14.00	0.00	2.7	11.23	0.00	1.87	0 00:00	0.00	0.00
65	Structure - 83	Junction	10.63	13.10	10.63	14.00	0.00	2.7	11.30	0.00	1.80	0 00:00	0.00	0.00
66	Structure - 87	Junction	10.63	13.10	10.63	14.00	0.00	2.7	11.30	0.00	1.80	0 00:00	0.00	0.00
67	Structure - 91	Junction	19.10	21.10	19.10	21.10	0.00	0.3	19.27	0.00	1.83	0 00:00	0.00	0.00
68	Structure - 94	Junction	19.10	19.83	19.10	19.83	0.00	0.5	19.36	0.00	0.46	0 00:00	0.00	0.00
69	Structure - 95	Junction	13.30	19.40	13.30	19.40	0.00	6.9	18.67	0.00	0.73	0 00:00	0.00	0.00
70	Structure - 96	Junction	19.10	19.83	19.10	19.83	0.00	0.4	19.33	0.00	0.49	0 00:00	0.00	0.00
71	Structure - 97	Junction	12.86	19.42	12.86	19.42	0.00	7.3	18.64	0.00	0.78	0 00:00	0.00	0.00
72	Structure - 98	Junction	19.10	19.83	19.10	19.83	0.00	0.4	19.33	0.00	0.50	0 00:00	0.00	0.00
73	Structure - 99	Junction	12.39	19.44	12.39	19.44	0.00	7.6	18.63	0.00	0.81	0 00:00	0.00	0.00
74	Out-02	Outfall	0.00					14.2	0.00					
75	Detention-Basin	Storage Node	10.50	15.50	0.00		12634.80	12.9	11.87				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
1	A1.1-Pipe	Pipe	A1.1-Structure	A1-Structure	43.57	19.10	18.23	2.0000	8.000	0.0120	0.2	1.9	0.09	3.32	0.14	0.21	0.00	Calculated
2	A10.1-Pipe	Pipe	Structure - 100	Structure - 101	34.83	19.10	18.40	2.0000	8.000	0.0120	0.4	1.9	0.19	4.07	0.20	0.29	0.00	Calculated
3	A10-Pipe	Pipe	Structure - 99	Structure - 101	91.67	12.39	11.91	0.5300	30.000	0.0150	7.6	25.9	0.29	4.59	0.93	0.37	0.00	Calculated
4	A11.1-Pipe	Pipe	Structure - 102	Structure - 103	34.86	19.10	18.40	2.0000	8.000	0.0120	0.4	1.9	0.19	4.07	0.20	0.29	0.00	Calculated
5	A11-Pipe	Pipe	Structure - 101	Structure - 103	67.33	11.91	11.59	0.4700	30.000	0.0150	8.0	24.5	0.32	4.45	0.98	0.39	0.00	Calculated
6	A12.1-Pipe	Pipe	Structure - 104	Structure - 105	39.58	19.10	18.31	2.0000	8.000	0.0150	0.3	1.5	0.17	3.14	0.18	0.28	0.00	Calculated
7	A12-Pipe	Pipe	Structure - 103	Structure - 105	100.61	11.59	11.09	0.4900	30.000	0.0150	8.3	25.0	0.33	4.56	0.99	0.40	0.00	Calculated
8	A13-Pipe	Pipe	Structure - 105	Structure - 35	63.49	11.09	10.76	0.5200	30.000	0.0150	8.5	25.7	0.33	4.70	0.99	0.40	0.00	Calculated
9	A14-Pipe	Pipe	Structure - 35	Structure - 36	37.44	10.76	10.59	0.4500	30.000	0.0150	8.5	24.0	0.35	4.46	1.03	0.41	0.00	Calculated
10	A15-Pipe	Pipe	Structure - 36	Out-1A15-Pipe	19.67	10.59	10.50	0.4600	30.000	0.0150	8.8	24.1	0.36	4.51	1.04	0.42	0.00	Calculated
11	A1-Pipe	Pipe	Structure - 39	A1-Structure	32.78	27.61	18.23	28.6100	18.000	0.0150	2.4	48.7	0.05	14.33	0.23	0.15	0.00	Calculated
12	A2.1-Pipe	Pipe	A2.1-Structure	A2-Structure	44.00	19.10	18.22	2.0000	8.000	0.0120	0.2	1.9	0.13	3.66	0.16	0.24	0.00	Calculated
13	A2-Pipe	Pipe	A1-Structure	A2-Structure	97.50	16.03	15.56	0.4800	18.000	0.0150	2.7	6.3	0.43	3.44	0.69	0.46	0.00	Calculated
14	A3-Pipe	Pipe	A2-Structure	A3-Structure	88.50	15.56	15.13	0.4900	18.000	0.0150	3.1	6.4	0.48	3.56	0.74	0.49	0.00	Calculated
15	A4.1-Pipe	Pipe	Structure - 49	A4-Structure	39.16	25.31	16.82	21.6900	18.000	0.0120	2.8	53.0	0.05	15.95	0.24	0.16	0.00	Calculated
16	A4-Pipe	Pipe	A3-Structure	A4-Structure	56.66	15.13	14.86	0.4800	30.000	0.0150	3.3	24.5	0.13	3.49	0.62	0.25	0.00	Calculated
17	A5-Pipe	Pipe	A4-Structure	A5-Structure	107.77	14.86	13.86	0.9300	30.000	0.0150	6.1	34.3	0.18	5.27	0.72	0.29	0.00	Calculated
18	A6.1-Pipe	Pipe	Structure - 91	A5-Structure	42.40	19.10	18.31	1.8700	8.000	0.0120	0.3	1.8	0.14	3.60	0.17	0.25	0.00	Calculated
19	A7.1-Pipe	Pipe	Structure - 94	Structure - 95	34.69	19.10	18.41	2.0000	8.000	0.0150	0.5	1.5	0.33	3.81	0.26	0.40	0.00	Calculated
20	A7-Pipe	Pipe	A5-Structure	Structure - 95	110.61	13.86	13.30	0.5100	30.000	0.0150	6.5	25.3	0.26	4.31	0.86	0.34	0.00	Calculated
21	A8.1-Pipe	Pipe	Structure - 96	Structure - 97	34.74	19.10	18.41	2.0000	8.000	0.0150	0.4	1.5	0.26	3.58	0.23	0.35	0.00	Calculated
22	A8-Pipe	Pipe	Structure - 95	Structure - 97	89.33	13.30	12.86	0.4900	30.000	0.0150	6.9	24.9	0.28	4.34	0.90	0.36	0.00	Calculated
23	A9.1-Pipe	Pipe	Structure - 98	Structure - 99	34.78	19.10	18.40	2.0100	8.000	0.0150	0.4	1.5	0.26	3.57	0.23	0.35	0.00	Calculated
24	A9-Pipe	Pipe	Structure - 97	Structure - 99	95.00	12.86	12.39	0.4900	30.000	0.0150	7.3	24.9	0.29	4.40	0.93	0.37	0.00	Calculated
25	B1-Pipe	Pipe	B1-Structure	Out-1B1-Pipe	19.69	12.20	10.50	8.6300	24.000	0.0150	0.3	57.6	0.00	4.67	0.10	0.05	0.00	Calculated
26	C1-Pipe	Pipe	C1-Structure	C2-Structure	44.64	19.10	18.21	2.0000	8.000	0.0120	0.2	1.9	0.13	3.66	0.16	0.24	0.00	Calculated
27	C2-Pipe	Pipe	C2-Structure	Out-1C2-Pipe	19.67	12.20	10.50	8.6400	24.000	0.0150	0.5	57.6	0.01	5.59	0.13	0.07	0.00	Calculated
28	D1-Pipe	Pipe	D1-Structure	D2-Structure	44.46	19.10	18.21	2.0000	8.000	0.0120	0.2	1.9	0.11	3.46	0.15	0.22	0.00	Calculated
29	D2-Pipe	Pipe	D2-Structure	D3-Structure	19.67	12.20	10.50	8.6400	24.000	0.0150	0.4	57.6	0.01	5.37	0.12	0.06	0.00	Calculated
30	D4-Pipe	Pipe	D4-Structure	Out-1D4-Pipe	26.30	10.63	10.50	0.4900	18.000	0.0150	2.7	6.4	0.41	3.45	0.67	0.45	0.00	Calculated
31	E10-Pipe	Pipe	E10-Structure	E11-Structure	68.72	12.29	11.95	0.5000	24.000	0.0150	2.0	13.9	0.15	3.16	0.52	0.26	0.00	Calculated
32	E11-Pipe	Pipe	E11-Structure	E13-Structure	67.31	11.95	11.61	0.5000	24.000	0.0150	2.1	13.9	0.15	3.20	0.53	0.27	0.00	Calculated
33	E12.1-Pipe	Pipe	E13.1-Structure	E13-Structure	28.75	19.10	18.52	2.0200	8.000	0.0120	0.4	1.9	0.20	4.17	0.20	0.30	0.00	Calculated
34	E13.1-Pipe	Pipe	E14.2-Structure	E14-Structure	31.82	19.10	18.46	2.0000	8.000	0.0120	0.2	1.9	0.10	3.35	0.14	0.21	0.00	Calculated
35	E13-Pipe	Pipe	E13-Structure	E14-Structure	77.56	11.61	11.22	0.5000	24.000	0.0150	2.6	13.9	0.18	3.36	0.58	0.29	0.00	Calculated
36	E14-Pipe	Pipe	E14-Structure	E15-Structure	88.49	11.22	10.79	0.4900	24.000	0.0150	2.8	13.7	0.21	3.43	0.62	0.31	0.00	Calculated
37	E15-Pipe	Pipe	E15-Structure	E16-Structure	61.58	10.79	10.62	0.2800	24.000	0.0150	3.0	10.3	0.29	2.85	0.74	0.37	0.00	Calculated
38	E16-Pipe	Pipe	E16-Structure	Out-1E16-Pipe	26.19	10.62	10.50	0.4600	24.000	0.0150	3.1	13.3	0.24	3.45	0.66	0.33	0.00	Calculated
39	E1-Pipe	Pipe	E1-Structure	E2-Structure	73.22	15.10	14.73	0.5000	18.000	0.0150	0.1	6.4	0.01	1.29	0.12	0.08	0.00	Calculated
40	E2-Pipe	Pipe	E2-Structure	E4-Structure	55.47	14.73	14.45	0.5000	18.000	0.0150	0.1	6.4	0.02	1.43	0.15	0.10	0.00	Calculated
41	E4-Pipe	Pipe	E4-Structure	E5-Structure	15.97	14.45	14.37	0.5000	18.000	0.0150	0.1	6.3	0.02	1.41	0.15	0.10	0.00	Calculated
42	E5.1-Pipe	Pipe	E4.1-Structure	E5-Structure	32.89	19.10	18.42	2.0800	8.000	0.0120	0.3	1.9	0.14	3.82	0.17	0.25	0.00	Calculated
43	E5-Pipe	Pipe	E5-Structure	E6-Structure	70.61	14.37	14.02	0.5000	18.000	0.0150	0.5	6.4	0.08	2.14	0.28	0.19	0.00	Calculated
44	E6.1-Pipe	Pipe	E7.1-Structure	E7-Structure	28.85	19.10	18.44	2.2800	8.000	0.0120	0.5	2.0	0.26	4.77	0.23	0.35	0.00	Calculated
45	E6-Pipe	Pipe	E6-Structure	E7-Structure	58.54	14.02	13.73	0.5000	18.000	0.0150	0.6	6.4	0.08	2.22	0.30	0.20	0.00	Calculated
46	E7-Pipe	Pipe	E7-Structure	E8-Structure	59.55	13.23	12.93	0.5000	24.000	0.0150	1.1	13.9	0.08	2.64	0.38	0.19	0.00	Calculated
47	E8.1-Pipe	Pipe	E9.1-Structure	E9-Structure	25.28	19.10	18.59	2.0000	8.000	0.0120	0.4	1.9	0.22	4.26	0.21	0.32	0.00	Calculated
48	E8-Pipe	Pipe	E8-Structure	E9-Structure	61.63	12.93	12.62	0.5000	24.000	0.0150	1.2	13.8	0.08	2.66	0.39	0.20	0.00	Calculated
49	E9.1-Pipe	Pipe	E10.1-Structure	E10-Structure	30.97	19.10	18.44	2.1200	8.000	0.0120	0.4	1.9	0.18	4.15	0.19	0.29	0.00	Calculated
50	E9-Pipe	Pipe	E9-Structure	E10-Structure	66.95	12.62	12.29	0.5000	24.000	0.0150	1.6	13.8	0.12	2.92	0.46	0.23	0.00	Calculated
51	Link-01	Pipe	Out-1E16-Pipe	Detention-Basin	178.44	10.50	0.00	5.8800	12.000	0.0150	3.1	0.0	0.12	0.00	0.46	0.23	0.00	Calculated
52	Link-02	Pipe	D3-Structure	Detention-Basin	117.22	9.00	0.00	7.6800	12.000	0.0150	0.4	0.0	0.12	0.00	0.46	0.23	0.00	Calculated
53	Link-03	Pipe	Out-1C2-Pipe	Detention-Basin	30.02	10.50	0.00	34.9800	12.000	0.0150	0.5	0.0	0.12	0.00	0.46	0.23	0.00	Calculated
54	Link-04	Pipe	Out-1B1-Pipe	Detention-Basin	60.81	10.50	0.00	17.2700	12.000	0.0150	0.3	0.0	0.12	0.00	0.46	0.23	0.00	Calculated
55	Link-05	Pipe	Out-1A15-Pipe	Detention-Basin	138.79	10.50	0.00	7.5700	12.000	0.0150	8.8	0.0	0.12	0.00	0.46	0.23	0.00	Calculated
56	Link-11	Pipe	Jun-02	Jun-03	71.00	32.00	30.00	2.8200	18.000	0.0150	3.2	15.3	0.21	6.81	0.46	0.31	0.00	Calculated
57	Link-12	Pipe	Jun-03	Jun-04	417.20	0.00	0.00	0.0000	12.000	0.0150	3.2	0.0	0.21	0.00	0.46	0.31	0.00	Calculated
58	Link-14	Pipe	Jun-05	Jun-06	128.08	0.00	0.00	0.0000	12.000	0.0150	3.6	0.0	0.21	0.00	0.46	0.31	0.00	Calculated

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
59	Link-16	Pipe	Jun-07	Out-02	317.29	0.00	0.00	0.0000	12.000	0.0150	3.8	0.0	0.21	0.00	0.46	0.31	0.00	Calculated
60	Link-17	Pipe	Out-1D4-Pipe	Out-02	137.86	10.50	0.00	7.6200	0.000	0.0150	2.7	0.0	0.21	0.00	0.46	0.31	0.00	Calculated
61	Link-18	Pipe	Out-1Pipe (62)	Out-02	99.47	10.50	0.00	10.5600	0.000	0.0150	2.7	0.0	0.21	0.00	0.46	0.31	0.00	Calculated
62	Link-19	Pipe	Out-1Pipe (59)	Out-02	130.31	10.50	0.00	8.0600	12.000	0.0150	2.7	0.0	0.21	0.00	0.46	0.31	0.00	Calculated
63	Link-20	Pipe	Out-1Pipe (53)	Out-02	191.76	10.50	0.00	5.4800	12.000	0.0150	2.7	0.0	0.21	0.00	0.46	0.31	0.00	Calculated
64	Link-29	Pipe	Jun-04	Jun-08	48.58	19.20	18.82	0.7800	0.000	0.0150	3.6	0.0	0.21	0.00	0.46	0.31	0.00	Calculated
65	Link-30	Pipe	Jun-08	Jun-05	67.00	19.20	18.20	1.4900	18.000	0.0150	3.6	11.1	0.32	5.60	0.58	0.39	0.00	Calculated
66	Link-31	Pipe	Jun-06	Jun-09	46.31	14.60	14.60	0.0000	0.000	0.0150	3.7	0.0	0.32	0.00	0.58	0.39	0.00	Calculated
67	Link-32	Pipe	Jun-09	Jun-07	64.00	14.60	13.20	2.1900	18.000	0.0150	3.7	13.5	0.27	6.48	0.53	0.36	0.00	Calculated
68	Pipe (24)	Pipe	Structure - 38	Structure - 39	45.94	28.60	28.22	0.8300	18.000	0.0150	2.4	8.3	0.29	4.06	0.55	0.37	0.00	Calculated
69	Pipe (34)	Pipe	Structure - 48	Structure - 49	46.55	26.48	25.79	1.4800	18.000	0.0120	2.8	13.9	0.20	6.16	0.46	0.31	0.00	Calculated
70	Pipe (53)	Pipe	Structure - 75	Out-1Pipe (53)	27.49	10.63	10.50	0.4700	18.000	0.0120	2.7	7.8	0.34	4.00	0.60	0.40	0.00	Calculated
71	Pipe (59)	Pipe	Structure - 83	Out-1Pipe (59)	25.67	10.63	10.50	0.5100	18.000	0.0150	2.7	6.5	0.41	3.48	0.67	0.45	0.00	Calculated
72	Pipe (62)	Pipe	Structure - 87	Out-1Pipe (62)	25.95	10.63	10.50	0.5000	18.000	0.0150	2.7	6.4	0.41	3.47	0.67	0.45	0.00	Calculated
73	Orifice-01	Orifice	Detention-Basin	Structure - 83		10.50	10.63		9.000		2.7							
74	Orifice-02	Orifice	Detention-Basin	D4-Structure		10.50	10.63		9.000		2.7							
75	Orifice-03	Orifice	Detention-Basin	Structure - 87		10.50	10.63		9.000		2.7							
76	Orifice-04	Orifice	Detention-Basin	Structure - 75		10.50	10.63		9.000		2.7							

Subbasin Hydrology

Subbasin : A01

Input Data

Area (ac)	5.17
Peak Rate Factor	484.00
Weighted Curve Number	81.40
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.37	D	98.00
Woods & grass combination, Fair	1.10	C	76.00
Woods & grass combination, Fair	0.40	C	76.00
Woods & grass combination, Fair	3.30	D	82.00
Composite Area & Weighted CN	5.17		81.40

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

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

Where :

Tc = Time of Concentration (hr)
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 (hr)
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 (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	8.9	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.74	0.00	0.00
Velocity (ft/sec) :	0.15	0.00	0.00
Computed Flow Time (min) :	10.93	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	933	0.00	0.00
Slope (%) :	4.8	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.53	0.00	0.00
Computed Flow Time (min) :	4.41	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	71	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft²) :	7	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	9.92	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 15.46

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	2.56
Peak Runoff (cfs)	3.15
Weighted Curve Number	81.40
Time of Concentration (days hh:mm:ss)	0 00:15:28

Subbasin : A02

Input Data

Area (ac) 4.02
Peak Rate Factor 484.00
Weighted Curve Number 81.08
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.22	D	98.00
Woods & grass combination, Fair	1.00	C	76.00
Woods & grass combination, Fair	0.20	C	76.00
Woods & grass combination, Fair	2.60	D	82.00
Composite Area & Weighted CN	4.02		81.08

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	8	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.74	0.00	0.00
Velocity (ft/sec) :	0.15	0.00	0.00
Computed Flow Time (min) :	11.41	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	925	0.00	0.00
Slope (%) :	4	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.23	0.00	0.00
Computed Flow Time (min) :	4.77	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	79	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft^2) :	7.7	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	10.57	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 16.31

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 2.53
Peak Runoff (cfs) 2.40
Weighted Curve Number 81.08
Time of Concentration (days hh:mm:ss) 0 00:16:19

Subbasin : A03

Input Data

Area (ac)	4.49
Peak Rate Factor	484.00
Weighted Curve Number	82.72
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.39	D	98.00
Woods & grass combination, Fair	0.50	C	76.00
Woods & grass combination, Fair	3.60	D	82.00
Composite Area & Weighted CN	4.49		82.72

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	7	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.85	0.00	0.00
Velocity (ft/sec) :	0.12	0.00	0.00
Computed Flow Time (min) :	13.79	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	964	0.00	0.00
Slope (%) :	4	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.23	0.00	0.00
Computed Flow Time (min) :	4.97	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	75	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft^2) :	7.74	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	10.61	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 18.88

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	2.67
Peak Runoff (cfs)	2.84
Weighted Curve Number	82.72
Time of Concentration (days hh:mm:ss)	0 00:18:53

Subbasin : B01

Input Data

Area (ac) 0.22
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.22	D	98.00
Composite Area & Weighted CN	0.22		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.24
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B02

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.25
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B03

Input Data

Area (ac)	0.33
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.33	D	98.00
Composite Area & Weighted CN	0.33		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	4.23
Peak Runoff (cfs)	0.35
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B04

Input Data

Area (ac)	0.33
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.33	D	98.00
Composite Area & Weighted CN	0.33		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	4.23
Peak Runoff (cfs)	0.35
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B05

Input Data

Area (ac) 0.36
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.36	D	98.00
Composite Area & Weighted CN	0.36		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.38
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B06

Input Data

Area (ac) 0.36
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.36	D	98.00
Composite Area & Weighted CN	0.36		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.39
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B07

Input Data

Area (ac)	0.46
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.46	D	98.00
Composite Area & Weighted CN	0.46		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	4.23
Peak Runoff (cfs)	0.49
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B08

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.25
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B09

Input Data

Area (ac) 0.22
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.22	D	98.00
Composite Area & Weighted CN	0.22		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.24
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B10

Input Data

Area (ac) 0.16
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.16	D	98.00
Composite Area & Weighted CN	0.16		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.17
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B11

Input Data

Area (ac) 0.25
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.25	D	98.00
Composite Area & Weighted CN	0.25		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.27
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B12

Input Data

Area (ac) 0.49
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.49	D	98.00
Composite Area & Weighted CN	0.49		98.00

Time of Concentration

User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.52
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B13

Input Data

Area (ac) 0.38
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.38	D	98.00
Composite Area & Weighted CN	0.38		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.41
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B14

Input Data

Area (ac)	0.32
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.32	D	98.00
Composite Area & Weighted CN	0.32		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	4.23
Peak Runoff (cfs)	0.35
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B15

Input Data

Area (ac) 0.35
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.35	D	98.00
Composite Area & Weighted CN	0.35		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.38
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B16

Input Data

Area (ac) 0.17
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.17	D	98.00
Composite Area & Weighted CN	0.17		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.18
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B17

Input Data

Area (ac) 0.19
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.19	D	98.00
Composite Area & Weighted CN	0.19		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.20
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B18

Input Data

Area (ac) 0.11
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.11	D	98.00
Composite Area & Weighted CN	0.11		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.12
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B19

Input Data

Area (ac) 0.21
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.21	D	98.00
Composite Area & Weighted CN	0.21		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.23
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B20

Input Data

Area (ac) 0.24
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.24	D	98.00
Composite Area & Weighted CN	0.24		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.25
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B21

Input Data

Area (ac) 0.26
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.26	D	98.00
Composite Area & Weighted CN	0.26		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.28
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B22

Input Data

Area (ac)	0.27
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.27	D	98.00
Composite Area & Weighted CN	0.27		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	4.23
Peak Runoff (cfs)	0.29
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B23

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.25
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B24

Input Data

Area (ac) 0.14
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.14	D	98.00
Composite Area & Weighted CN	0.14		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.14
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B25

Input Data

Area (ac) 0.16
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.16	D	98.00
Composite Area & Weighted CN	0.16		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.17
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B26

Input Data

Area (ac) 0.08
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.08	D	98.00
Composite Area & Weighted CN	0.08		98.00

Time of Concentration

User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.09
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B27

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.04
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B28

Input Data

Area (ac) 0.08
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.08	D	98.00
Composite Area & Weighted CN	0.08		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.09
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B29

Input Data

Area (ac)	0.06
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.06	D	98.00
Composite Area & Weighted CN	0.06		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	4.23
Peak Runoff (cfs)	0.06
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B30

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.04
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B31

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.04
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B32

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 4.47
Total Runoff (in) 4.23
Peak Runoff (cfs) 0.04
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B33

Input Data

Area (ac)	0.09
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.09	D	98.00
Composite Area & Weighted CN	0.09		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	4.47
Total Runoff (in)	4.23
Peak Runoff (cfs)	0.10
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B34

Input Data

Area (ac)	0.10
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.10	D	98.00
Composite Area & Weighted CN	0.10		98.00

Time of Concentration

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)
1	A1.1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
2	A1-Structure	16.03	37.64	21.61	16.03	0.00	37.64	0.00	0.00
3	A2.1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
4	A2-Structure	15.56	20.55	4.99	15.56	0.00	20.55	0.00	0.00
5	A3-Structure	15.13	19.11	3.98	15.13	0.00	19.11	0.00	0.00
6	A4-Structure	14.86	20.27	5.41	14.86	0.00	20.27	0.00	0.00
7	A5-Structure	13.86	20.07	6.21	13.86	0.00	20.07	0.00	0.00
8	B1-Structure	12.20	20.13	7.93	12.20	0.00	20.13	0.00	0.00
9	C1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
10	C2-Structure	12.20	36.86	24.66	12.20	0.00	36.86	0.00	0.00
11	D1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
12	D2-Structure	12.20	38.65	26.45	12.20	0.00	38.65	0.00	0.00
13	D3-Structure	10.50	16.50	6.00	10.50	0.00	13.25	-3.25	0.00
14	D4-Structure	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
15	E10.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
16	E10-Structure	12.29	20.26	7.97	12.29	0.00	20.26	0.00	0.00
17	E11-Structure	11.95	20.26	8.31	11.95	0.00	20.26	0.00	0.00
18	E13.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
19	E13-Structure	11.61	20.26	8.65	11.61	0.00	20.26	0.00	0.00
20	E14.2-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
21	E14-Structure	11.22	20.25	9.03	11.22	0.00	20.25	0.00	0.00
22	E15-Structure	10.79	20.25	9.46	10.79	0.00	20.25	0.00	0.00
23	E16-Structure	10.62	20.13	9.51	10.62	0.00	20.13	0.00	0.00
24	E1-Structure	15.10	19.22	4.12	15.10	0.00	19.22	0.00	0.00
25	E2-Structure	14.73	20.26	5.53	14.73	0.00	20.26	0.00	0.00
26	E4.1-Structure	19.10	21.08	1.98	19.10	0.00	21.08	0.00	0.00
27	E4-Structure	14.45	20.30	5.85	14.45	0.00	20.30	0.00	0.00
28	E5-Structure	14.37	20.09	5.72	14.37	0.00	20.09	0.00	0.00
29	E6-Structure	14.02	20.20	6.18	14.02	0.00	20.20	0.00	0.00
30	E7.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
31	E7-Structure	13.23	20.26	7.03	13.23	0.00	20.26	0.00	0.00
32	E8-Structure	12.93	20.26	7.33	12.93	0.00	20.26	0.00	0.00
33	E9.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
34	E9-Structure	12.62	20.26	7.64	12.62	0.00	20.26	0.00	0.00
35	Jun-01	0.00	10.50	10.50	0.00	0.00	0.00	-10.50	0.00
36	Jun-02	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00
37	Jun-03	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00
38	Jun-04	19.20	6.00	-13.20	0.00	-19.20	6.00	0.00	0.00
39	Jun-05	18.20	6.00	-12.20	0.00	-18.20	6.00	0.00	0.00
40	Jun-06	14.60	6.00	-8.60	0.00	-14.60	6.00	0.00	0.00
41	Jun-07	13.20	6.00	-7.20	0.00	-13.20	6.00	0.00	0.00
42	Jun-08	19.20	6.00	-13.20	0.00	-19.20	6.00	0.00	0.00
43	Jun-09	14.60	6.00	-8.60	0.00	-14.60	0.00	-6.00	0.00
44	Out-1A15-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
45	Out-1B1-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
46	Out-1C2-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
47	Out-1D4-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
48	Out-1E16-Pipe	10.50	16.50	6.00	10.50	0.00	0.00	-16.50	0.00
49	Out-1Pipe (53)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
50	Out-1Pipe (59)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
51	Out-1Pipe (62)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
52	Structure - 100	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
53	Structure - 101	11.91	19.47	7.56	11.91	0.00	19.47	0.00	0.00
54	Structure - 102	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
55	Structure - 103	11.59	19.48	7.89	11.59	0.00	19.48	0.00	0.00
56	Structure - 104	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
57	Structure - 105	11.09	19.41	8.31	11.09	0.00	19.41	0.00	0.00
58	Structure - 35	10.76	18.50	7.74	10.76	0.00	18.50	0.00	0.00
59	Structure - 36	10.59	20.13	9.54	10.59	0.00	20.13	0.00	0.00
60	Structure - 38	28.60	31.31	2.71	28.60	0.00	31.31	0.00	0.00
61	Structure - 39	27.61	32.57	4.96	27.61	0.00	32.57	0.00	0.00
62	Structure - 48	26.48	1.78	-24.70	26.48	0.00	1.78	0.00	0.00
63	Structure - 49	25.31	29.72	4.41	25.31	0.00	29.72	0.00	0.00
64	Structure - 75	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
65	Structure - 83	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
66	Structure - 87	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
67	Structure - 91	19.10	21.10	2.00	19.10	0.00	21.10	0.00	0.00
68	Structure - 94	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
69	Structure - 95	13.30	19.40	6.10	13.30	0.00	19.40	0.00	0.00
70	Structure - 96	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
71	Structure - 97	12.86	19.42	6.56	12.86	0.00	19.42	0.00	0.00
72	Structure - 98	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
73	Structure - 99	12.39	19.44	7.04	12.39	0.00	19.44	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	A1.1-Structure	0.2	0.2	19.24	0.14	0.00	1.77	19.15	0.05	0 07:50	0 00:00	0.00	0.00
2	A1-Structure	2.7	0.2	18.46	2.43	0.00	19.18	18.32	2.29	0 08:03	0 00:00	0.00	0.00
3	A2.1-Structure	0.2	0.2	19.26	0.16	0.00	1.74	19.16	0.06	0 07:50	0 00:00	0.00	0.00
4	A2-Structure	3.1	0.1	18.38	2.82	0.00	2.16	18.28	2.72	0 07:50	0 00:00	0.00	0.00
5	A3-Structure	3.3	0.3	15.87	0.74	0.00	3.25	15.40	0.27	0 08:02	0 00:00	0.00	0.00
6	A4-Structure	6.1	0.0	17.05	2.19	0.00	3.22	16.91	2.05	0 08:04	0 00:00	0.00	0.00
7	A5-Structure	6.5	0.1	18.47	4.61	0.00	1.60	18.37	4.51	0 07:51	0 00:00	0.00	0.00
8	B1-Structure	0.3	0.3	12.30	0.10	0.00	7.83	12.24	0.04	0 07:50	0 00:00	0.00	0.00
9	C1-Structure	0.2	0.2	19.26	0.16	0.00	1.74	19.16	0.06	0 07:50	0 00:00	0.00	0.00
10	C2-Structure	0.5	0.3	18.37	6.17	0.00	18.49	18.27	6.07	0 07:50	0 00:00	0.00	0.00
11	D1-Structure	0.2	0.2	19.25	0.15	0.00	1.76	19.16	0.06	0 07:49	0 00:00	0.00	0.00
12	D2-Structure	0.4	0.2	18.36	6.16	0.00	20.29	18.27	6.07	0 07:50	0 00:00	0.00	0.00
13	D3-Structure	0.4	0.0	10.62	0.12	0.00	5.88	10.55	0.05	0 07:50	0 00:00	0.00	0.00
14	D4-Structure	2.7	0.0	11.30	0.67	0.00	1.80	10.89	0.26	0 08:08	0 00:00	0.00	0.00
15	E10.1-Structure	0.4	0.4	19.29	0.19	0.00	1.78	19.18	0.08	0 07:49	0 00:00	0.00	0.00
16	E10-Structure	2.0	0.1	18.64	6.35	0.00	1.62	18.52	6.23	0 07:50	0 00:00	0.00	0.00
17	E11-Structure	2.1	0.1	12.48	0.53	0.00	7.78	12.16	0.21	0 07:52	0 00:00	0.00	0.00
18	E13.1-Structure	0.4	0.4	19.30	0.20	0.00	1.77	19.18	0.08	0 07:49	0 00:00	0.00	0.00
19	E13-Structure	2.6	0.0	18.72	7.11	0.00	1.54	18.60	6.99	0 07:50	0 00:00	0.00	0.00
20	E14.2-Structure	0.2	0.2	19.24	0.14	0.00	1.83	19.16	0.06	0 07:49	0 00:00	0.00	0.00
21	E14-Structure	2.8	0.1	18.60	7.38	0.00	1.65	18.52	7.30	0 07:49	0 00:00	0.00	0.00
22	E15-Structure	3.0	0.2	11.53	0.74	0.00	8.72	11.07	0.28	0 07:52	0 00:00	0.00	0.00
23	E16-Structure	3.1	0.1	11.36	0.74	0.00	8.77	10.90	0.28	0 07:53	0 00:00	0.00	0.00
24	E1-Structure	0.1	0.1	15.22	0.12	0.00	4.00	15.15	0.05	0 07:49	0 00:00	0.00	0.00
25	E2-Structure	0.1	0.0	14.88	0.15	0.00	5.38	14.79	0.06	0 07:52	0 00:00	0.00	0.00
26	E4.1-Structure	0.3	0.3	19.27	0.17	0.00	1.81	19.17	0.07	0 07:49	0 00:00	0.00	0.00
27	E4-Structure	0.1	0.0	14.60	0.15	0.00	5.70	14.51	0.06	0 07:52	0 00:00	0.00	0.00
28	E5-Structure	0.5	0.1	18.59	4.22	0.00	1.50	18.48	4.11	0 07:50	0 00:00	0.00	0.00
29	E6-Structure	0.6	0.1	14.32	0.30	0.00	5.88	14.14	0.12	0 07:52	0 00:00	0.00	0.00
30	E7.1-Structure	0.5	0.5	19.33	0.23	0.00	1.74	19.19	0.09	0 07:50	0 00:00	0.00	0.00
31	E7-Structure	1.1	0.0	18.68	5.45	0.00	1.58	18.53	5.30	0 07:50	0 00:00	0.00	0.00
32	E8-Structure	1.2	0.0	13.32	0.39	0.00	6.94	13.08	0.15	0 07:52	0 00:00	0.00	0.00
33	E9.1-Structure	0.4	0.4	19.31	0.21	0.00	1.76	19.18	0.08	0 07:50	0 00:00	0.00	0.00
34	E9-Structure	1.6	0.0	18.81	6.19	0.00	1.45	18.68	6.06	0 07:50	0 00:00	0.00	0.00
35	Jun-01	3.9	3.9	0.00	0.00	0.00	10.50	0.00	0.00	0 00:00	0 00:00	0.00	0.00
36	Jun-02	3.2	3.2	32.46	32.46	0.00	1.04	32.17	32.17	0 08:02	0 00:00	0.00	0.00
37	Jun-03	3.2	0.0	30.46	30.46	0.00	1.04	30.17	30.17	0 08:02	0 00:00	0.00	0.00
38	Jun-04	3.6	0.4	19.20	0.00	0.00	0.00	19.20	0.00	0 00:00	0 00:00	0.00	0.00
39	Jun-05	3.6	0.0	18.78	0.58	0.00	0.92	18.41	0.21	0 08:01	0 00:00	0.00	0.00
40	Jun-06	3.7	0.1	14.60	0.00	0.00	0.00	14.60	0.00	0 00:00	0 00:00	0.00	0.00
41	Jun-07	3.8	0.1	13.73	0.53	0.00	0.97	13.40	0.20	0 08:02	0 00:00	0.00	0.00
42	Jun-08	3.6	0.0	19.78	0.58	0.00	0.92	19.41	0.21	0 08:01	0 00:00	0.00	0.00
43	Jun-09	3.7	0.0	15.13	0.53	0.00	0.97	14.80	0.20	0 08:02	0 00:00	0.00	0.00
44	Out-1A15-Pipe	8.8	0.0	11.54	1.04	0.00	4.96	10.90	0.40	0 08:02	0 00:00	0.00	0.00
45	Out-1B1-Pipe	0.3	0.0	10.60	0.10	0.00	5.90	10.54	0.04	0 07:51	0 00:00	0.00	0.00
46	Out-1C2-Pipe	0.5	0.0	10.63	0.13	0.00	5.87	10.55	0.05	0 07:50	0 00:00	0.00	0.00
47	Out-1D4-Pipe	2.7	0.0	11.17	0.67	0.00	5.33	10.76	0.26	0 08:08	0 00:00	0.00	0.00
48	Out-1E16-Pipe	3.1	0.0	11.16	0.66	0.00	5.34	10.75	0.25	0 07:53	0 00:00	0.00	0.00
49	Out-1Pipe (53)	2.7	0.0	11.10	0.60	0.00	5.40	10.74	0.24	0 08:08	0 00:00	0.00	0.00
50	Out-1Pipe (59)	2.7	0.0	11.17	0.67	0.00	5.33	10.76	0.26	0 08:08	0 00:00	0.00	0.00
51	Out-1Pipe (62)	2.7	0.0	11.17	0.67	0.00	5.33	10.76	0.26	0 08:08	0 00:00	0.00	0.00
52	Structure - 100	0.4	0.4	19.30	0.20	0.00	0.53	19.18	0.08	0 07:50	0 00:00	0.00	0.00
53	Structure - 101	8.0	0.0	18.60	6.69	0.00	0.87	18.48	6.57	0 07:50	0 00:00	0.00	0.00
54	Structure - 102	0.4	0.4	19.30	0.20	0.00	0.53	19.18	0.08	0 07:50	0 00:00	0.00	0.00
55	Structure - 103	8.3	0.0	18.60	7.01	0.00	0.88	18.48	6.89	0 07:50	0 00:00	0.00	0.00
56	Structure - 104	0.3	0.3	19.28	0.18	0.00	0.54	19.17	0.07	0 07:50	0 00:00	0.00	0.00
57	Structure - 105	8.5	0.0	18.49	7.40	0.00	0.91	18.38	7.29	0 07:51	0 00:00	0.00	0.00
58	Structure - 35	8.5	0.0	11.79	1.03	0.00	6.72	11.16	0.40	0 08:02	0 00:00	0.00	0.00
59	Structure - 36	8.8	0.3	11.63	1.04	0.00	8.50	10.99	0.40	0 08:02	0 00:00	0.00	0.00
60	Structure - 38	2.4	2.4	29.15	0.55	0.00	2.16	28.80	0.20	0 08:03	0 00:00	0.00	0.00
61	Structure - 39	2.4	0.0	28.77	1.16	0.00	3.79	28.42	0.81	0 08:03	0 00:00	0.00	0.00
62	Structure - 48	2.8	2.8	26.94	0.46	0.00	1.04	26.65	0.17	0 08:04	0 00:00	0.00	0.00
63	Structure - 49	2.8	0.0	26.25	0.94	0.00	3.47	25.96	0.65	0 08:04	0 00:00	0.00	0.00
64	Structure - 75	2.7	0.0	11.23	0.60	0.00	1.87	10.87	0.24	0 08:08	0 00:00	0.00	0.00
65	Structure - 83	2.7	0.0	11.30	0.67	0.00	1.80	10.89	0.26	0 08:08	0 00:00	0.00	0.00
66	Structure - 87	2.7	0.0	11.30	0.67	0.00	1.80	10.89	0.26	0 08:08	0 00:00	0.00	0.00
67	Structure - 91	0.3	0.3	19.27	0.17	0.00	1.83	19.17	0.07	0 07:50	0 00:00	0.00	0.00
68	Structure - 94	0.5	0.5	19.36	0.26	0.00	0.46	19.20	0.10	0 07:50	0 00:00	0.00	0.00
69	Structure - 95	6.9	0.0	18.67	5.37	0.00	0.73	18.51	5.21	0 07:50	0 00:00	0.00	0.00
70	Structure - 96	0.4	0.4	19.33	0.23	0.00	0.49	19.19	0.09	0 07:50	0 00:00	0.00	0.00
71	Structure - 97	7.3	0.0	18.64	5.78	0.00	0.78	18.49	5.63	0 07:50	0 00:00	0.00	0.00
72	Structure - 98	0.4	0.4	19.33	0.23	0.00	0.50	19.19	0.09	0 07:50	0 00:00	0.00	0.00
73	Structure - 99	7.6	0.0	18.63	6.24	0.00	0.81	18.49	6.10	0 07:50	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Flap Gate	No. of Barrels
1	A1.1-Pipe	43.57	19.10	18.23	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
2	A10.1-Pipe	34.83	19.10	18.40	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
3	A10-Pipe	91.67	12.39	11.91	0.5300	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
4	A11.1-Pipe	34.86	19.10	18.40	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
5	A11-Pipe	67.33	11.91	11.59	0.4700	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
6	A12.1-Pipe	39.58	19.10	18.31	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
7	A12-Pipe	100.61	11.59	11.09	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
8	A13-Pipe	63.49	11.09	10.76	0.5200	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
9	A14-Pipe	37.44	10.76	10.59	0.4500	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
10	A15-Pipe	19.67	10.59	10.50	0.4600	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
11	A1-Pipe	32.78	27.61	18.23	28.6100	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
12	A2.1-Pipe	44.00	19.10	18.22	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
13	A2-Pipe	97.50	16.03	15.56	0.4800	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
14	A3-Pipe	88.50	15.56	15.13	0.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
15	A4.1-Pipe	39.16	25.31	16.82	21.6900	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
16	A4-Pipe	56.66	15.13	14.86	0.4800	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
17	A5-Pipe	107.77	14.86	13.86	0.9300	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
18	A6.1-Pipe	42.40	19.10	18.31	1.8700	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
19	A7.1-Pipe	34.69	19.10	18.41	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
20	A7-Pipe	110.61	13.86	13.30	0.5100	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
21	A8.1-Pipe	34.74	19.10	18.41	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
22	A8-Pipe	89.33	13.30	12.86	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
23	A9.1-Pipe	34.78	19.10	18.40	2.0100	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
24	A9-Pipe	95.00	12.86	12.39	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
25	B1-Pipe	19.69	12.20	10.50	8.6300	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
26	C1-Pipe	44.64	19.10	18.21	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
27	C2-Pipe	19.67	12.20	10.50	8.6400	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
28	D1-Pipe	44.46	19.10	18.21	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
29	D2-Pipe	19.67	12.20	10.50	8.6400	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
30	D4-Pipe	26.30	10.63	10.50	0.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
31	E10-Pipe	68.72	12.29	11.95	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
32	E11-Pipe	67.31	11.95	11.61	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
33	E12.1-Pipe	28.75	19.10	18.52	2.0200	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
34	E13.1-Pipe	31.82	19.10	18.46	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
35	E13-Pipe	77.56	11.61	11.22	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
36	E14-Pipe	88.49	11.22	10.79	0.4900	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
37	E15-Pipe	61.58	10.79	10.62	0.2800	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
38	E16-Pipe	26.19	10.62	10.50	0.4600	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
39	E1-Pipe	73.22	15.10	14.73	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
40	E2-Pipe	55.47	14.73	14.45	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
41	E4-Pipe	15.97	14.45	14.37	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
42	E5.1-Pipe	32.89	19.10	18.42	2.0800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
43	E5-Pipe	70.61	14.37	14.02	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
44	E6.1-Pipe	28.85	19.10	18.44	2.2800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
45	E6-Pipe	58.54	14.02	13.73	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
46	E7-Pipe	59.55	13.23	12.93	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
47	E8.1-Pipe	25.28	19.10	18.59	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
48	E8-Pipe	61.63	12.93	12.62	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
49	E9.1-Pipe	30.97	19.10	18.44	2.1200	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
50	E9-Pipe	66.95	12.62	12.29	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
51	Link-01	178.44	10.50	0.00	5.8800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
52	Link-02	117.22	9.00	0.00	7.6800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
53	Link-03	30.02	10.50	0.00	34.9800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
54	Link-04	60.81	10.50	0.00	17.2700	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
55	Link-05	138.79	10.50	0.00	7.5700	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
56	Link-11	71.00	32.00	30.00	2.8200	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
57	Link-12	417.20	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
58	Link-14	128.08	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
59	Link-16	317.29	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
60	Link-17	137.86	10.50	0.00	7.6200	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
61	Link-18	99.47	10.50	0.00	10.5600	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
62	Link-19	130.31	10.50	0.00	8.0600	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
63	Link-20	191.76	10.50	0.00	5.4800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
64	Link-29	48.58	19.20	18.82	0.7800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
65	Link-30	67.00	19.20	18.20	1.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
66	Link-31	46.31	14.60	14.60	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
67	Link-32	64.00	14.60	13.20	2.1900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
68	Pipe (24)	45.94	28.60	28.22	0.8300	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
69	Pipe (34)	46.55	26.48	25.79	1.4800	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
70	Pipe (53)	27.49	10.63	10.50	0.4700	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
71	Pipe (59)	25.67	10.63	10.50	0.5100	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
72	Pipe (62)	25.95	10.63	10.50	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1	A1.1-Pipe	0.2	0 07:51	1.9	0.09	3.32	0.22	0.14	0.21	0.00		Calculated
2	A10.1-Pipe	0.4	0 07:50	1.9	0.19	4.07	0.14	0.20	0.29	0.00		Calculated
3	A10-Pipe	7.6	0 08:02	25.9	0.29	4.59	0.33	0.93	0.37	0.00		Calculated
4	A11.1-Pipe	0.4	0 07:50	1.9	0.19	4.07	0.14	0.20	0.29	0.00		Calculated
5	A11-Pipe	8.0	0 08:02	24.5	0.32	4.45	0.25	0.98	0.39	0.00		Calculated
6	A12.1-Pipe	0.3	0 07:51	1.5	0.17	3.14	0.21	0.18	0.28	0.00		Calculated
7	A12-Pipe	8.3	0 08:02	25.0	0.33	4.56	0.37	0.99	0.40	0.00		Calculated
8	A13-Pipe	8.5	0 08:02	25.7	0.33	4.70	0.23	0.99	0.40	0.00		Calculated
9	A14-Pipe	8.5	0 08:02	24.0	0.35	4.46	0.14	1.03	0.41	0.00		Calculated
10	A15-Pipe	8.8	0 08:02	24.1	0.36	4.51	0.07	1.04	0.42	0.00		Calculated
11	A1-Pipe	2.4	0 08:03	48.7	0.05	14.33	0.04	0.23	0.15	0.00		Calculated
12	A2.1-Pipe	0.2	0 07:50	1.9	0.13	3.66	0.20	0.16	0.24	0.00		Calculated
13	A2-Pipe	2.7	0 08:02	6.3	0.43	3.44	0.47	0.69	0.46	0.00		Calculated
14	A3-Pipe	3.1	0 08:02	6.4	0.48	3.56	0.41	0.74	0.49	0.00		Calculated
15	A4.1-Pipe	2.8	0 08:04	53.0	0.05	15.95	0.04	0.24	0.16	0.00		Calculated
16	A4-Pipe	3.3	0 08:02	24.5	0.13	3.49	0.27	0.62	0.25	0.00		Calculated
17	A5-Pipe	6.1	0 08:02	34.3	0.18	5.27	0.34	0.72	0.29	0.00		Calculated
18	A6.1-Pipe	0.3	0 07:51	1.8	0.14	3.60	0.20	0.17	0.25	0.00		Calculated
19	A7.1-Pipe	0.5	0 07:50	1.5	0.33	3.81	0.15	0.26	0.40	0.00		Calculated
20	A7-Pipe	6.5	0 08:02	25.3	0.26	4.31	0.43	0.86	0.34	0.00		Calculated
21	A8.1-Pipe	0.4	0 07:50	1.5	0.26	3.58	0.16	0.23	0.35	0.00		Calculated
22	A8-Pipe	6.9	0 08:02	24.9	0.28	4.34	0.34	0.90	0.36	0.00		Calculated
23	A9.1-Pipe	0.4	0 07:50	1.5	0.26	3.57	0.16	0.23	0.35	0.00		Calculated
24	A9-Pipe	7.3	0 08:02	24.9	0.29	4.40	0.36	0.93	0.37	0.00		Calculated
25	B1-Pipe	0.3	0 07:51	57.6	0.00	4.67	0.07	0.10	0.05	0.00		Calculated
26	C1-Pipe	0.2	0 07:50	1.9	0.13	3.66	0.20	0.16	0.24	0.00		Calculated
27	C2-Pipe	0.5	0 07:50	57.6	0.01	5.59	0.06	0.13	0.07	0.00		Calculated
28	D1-Pipe	0.2	0 07:50	1.9	0.11	3.46	0.21	0.15	0.22	0.00		Calculated
29	D2-Pipe	0.4	0 07:50	57.6	0.01	5.37	0.06	0.12	0.06	0.00		Calculated
30	D4-Pipe	2.7	0 08:08	6.4	0.41	3.45	0.13	0.67	0.45	0.00		Calculated
31	E10-Pipe	2.0	0 07:52	13.9	0.15	3.16	0.36	0.52	0.26	0.00		Calculated
32	E11-Pipe	2.1	0 07:52	13.9	0.15	3.20	0.35	0.53	0.27	0.00		Calculated
33	E12.1-Pipe	0.4	0 07:50	1.9	0.20	4.17	0.11	0.20	0.30	0.00		Calculated
34	E13.1-Pipe	0.2	0 07:49	1.9	0.10	3.35	0.16	0.14	0.21	0.00		Calculated
35	E13-Pipe	2.6	0 07:52	13.9	0.18	3.36	0.38	0.58	0.29	0.00		Calculated
36	E14-Pipe	2.8	0 07:52	13.7	0.21	3.43	0.43	0.62	0.31	0.00		Calculated
37	E15-Pipe	3.0	0 07:53	10.3	0.29	2.85	0.36	0.74	0.37	0.00		Calculated
38	E16-Pipe	3.1	0 07:53	13.3	0.24	3.45	0.13	0.66	0.33	0.00		Calculated
39	E1-Pipe	0.1	0 07:52	6.4	0.01	1.29	0.95	0.12	0.08	0.00		Calculated
40	E2-Pipe	0.1	0 07:52	6.4	0.02	1.43	0.65	0.15	0.10	0.00		Calculated
41	E4-Pipe	0.1	0 07:53	6.3	0.02	1.41	0.19	0.15	0.10	0.00		Calculated
42	E5.1-Pipe	0.3	0 07:50	1.9	0.14	3.82	0.14	0.17	0.25	0.00		Calculated
43	E5-Pipe	0.5	0 07:52	6.4	0.08	2.14	0.55	0.28	0.19	0.00		Calculated
44	E6.1-Pipe	0.5	0 07:50	2.0	0.26	4.77	0.10	0.23	0.35	0.00		Calculated
45	E6-Pipe	0.6	0 07:52	6.4	0.08	2.22	0.44	0.30	0.20	0.00		Calculated
46	E7-Pipe	1.1	0 07:52	13.9	0.08	2.64	0.38	0.38	0.19	0.00		Calculated
47	E8.1-Pipe	0.4	0 07:50	1.9	0.22	4.26	0.10	0.21	0.32	0.00		Calculated
48	E8-Pipe	1.2	0 07:52	13.8	0.08	2.66	0.39	0.39	0.20	0.00		Calculated
49	E9.1-Pipe	0.4	0 07:50	1.9	0.18	4.15	0.12	0.19	0.29	0.00		Calculated
50	E9-Pipe	1.6	0 07:52	13.8	0.12	2.92	0.38	0.46	0.23	0.00		Calculated
51	Link-01	3.1	0 07:53	0.0	0.12	0.00		0.46	0.23	0.00		Calculated
52	Link-02	0.4	0 07:50	0.0	0.12	0.00		0.46	0.23	0.00		Calculated
53	Link-03	0.5	0 07:50	0.0	0.12	0.00		0.46	0.23	0.00		Calculated
54	Link-04	0.3	0 07:51	0.0	0.12	0.00		0.46	0.23	0.00		Calculated
55	Link-05	8.8	0 08:02	0.0	0.12	0.00		0.46	0.23	0.00		Calculated
56	Link-11	3.2	0 08:02	15.3	0.21	6.81	0.17	0.46	0.31	0.00		Calculated
57	Link-12	3.2	0 08:02	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
58	Link-14	3.6	0 08:01	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
59	Link-16	3.8	0 08:02	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
60	Link-17	2.7	0 08:08	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
61	Link-18	2.7	0 08:08	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
62	Link-19	2.7	0 08:08	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
63	Link-20	2.7	0 08:08	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
64	Link-29	3.6	0 08:01	0.0	0.21	0.00		0.46	0.31	0.00		Calculated
65	Link-30	3.6	0 08:01	11.1	0.32	5.60	0.20	0.58	0.39	0.00		Calculated
66	Link-31	3.7	0 08:02	0.0	0.32	0.00		0.58	0.39	0.00		Calculated
67	Link-32	3.7	0 08:02	13.5	0.27	6.48	0.16	0.53	0.36	0.00		Calculated
68	Pipe (24)	2.4	0 08:03	8.3	0.29	4.06	0.19	0.55	0.37	0.00		Calculated
69	Pipe (34)	2.8	0 08:04	13.9	0.20	6.16	0.13	0.46	0.31	0.00		Calculated
70	Pipe (53)	2.7	0 08:08	7.8	0.34	4.00	0.11	0.60	0.40	0.00		Calculated
71	Pipe (59)	2.7	0 08:08	6.5	0.41	3.48	0.12	0.67	0.45	0.00		Calculated
72	Pipe (62)	2.7	0 08:08	6.4	0.41	3.47	0.12	0.67	0.45	0.00		Calculated

Storage Nodes

Storage Node : Detention-Basin

Input Data

Invert Elevation (ft) 10.50
Max (Rim) Elevation (ft) 15.50
Max (Rim) Offset (ft) 5.00
Initial Water Elevation (ft) 0.00
Initial Water Depth (ft) ..... -10.50
Ponded Area (ft²) 12634.80
Evaporation Loss 0.00

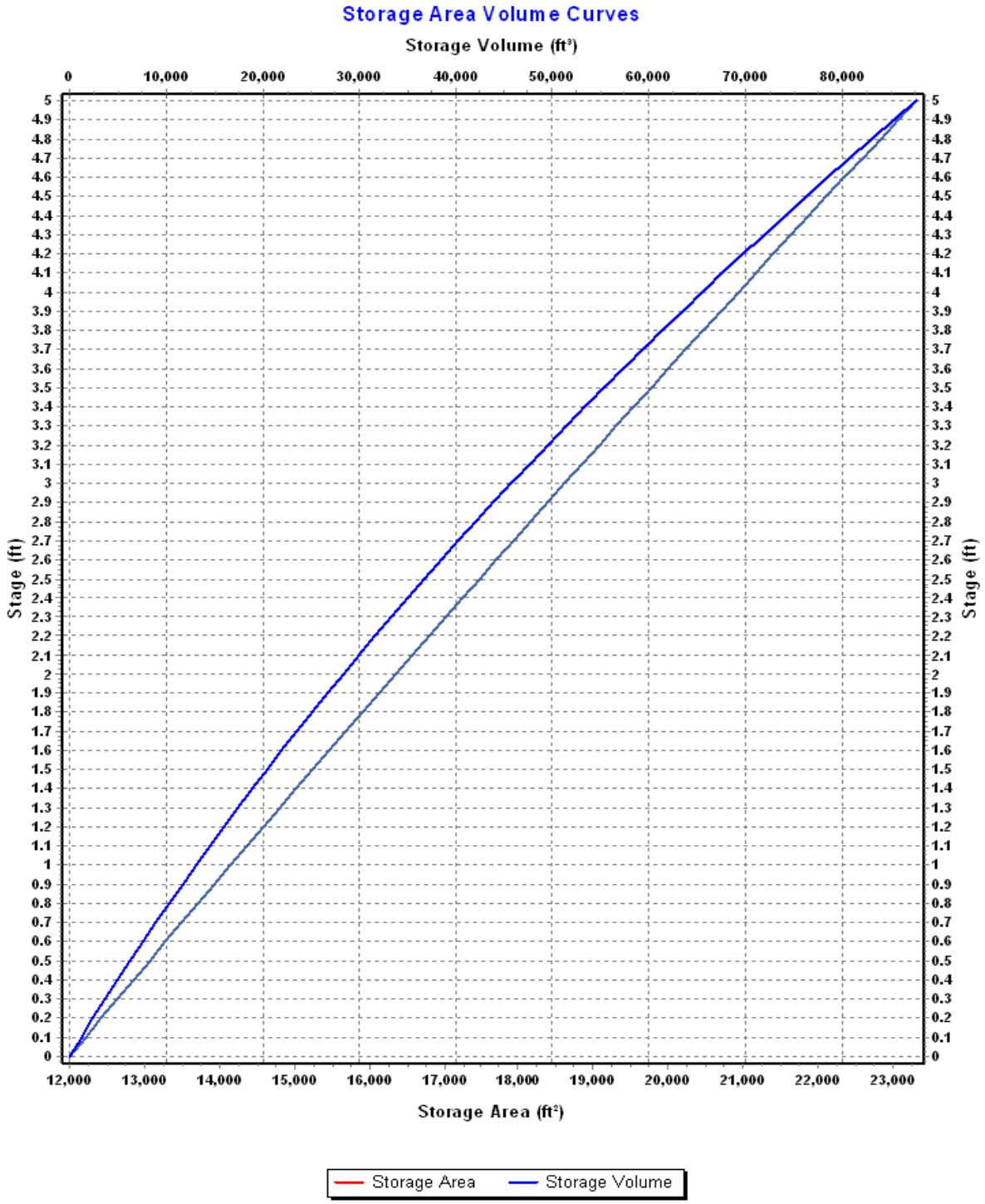
Infiltration/Exfiltration

Exfiltration Rate (in/hr) 0.0900

Storage Area Volume Curves

Storage Curve : Storage-01

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	11997.07	0.000
0.1	12209.57	1210.33
0.2	12422.63	2441.94
0.3	12636.25	3694.88
0.4	12850.44	4969.21
0.5	13065.18	6264.99
0.6	13280.49	7582.27
0.7	13496.37	8921.11
0.8	13712.80	10281.57
0.9	13929.80	11663.70
1	14147.36	13067.56
1.1	14365.48	14493.20
1.2	14584.17	15940.68
1.3	14803.41	17410.06
1.4	15023.22	18901.39
1.5	15243.59	20414.73
1.6	15464.53	21950.14
1.7	15686.02	23507.67
1.8	15908.08	25087.38
1.9	16130.71	26689.32
2	16353.89	28313.55
2.1	16577.64	29960.13
2.2	16801.95	31629.11
2.3	17026.82	33320.55
2.4	17252.25	35034.50
2.5	17478.25	36771.03
2.6	17704.81	38530.18
2.7	17931.93	40312.02
2.8	18159.61	42116.60
2.9	18387.86	43943.97
3	18616.66	45794.20
3.1	18846.04	47667.34
3.2	19075.97	49563.44
3.3	19306.46	51482.56
3.4	19537.52	53424.76
3.5	19769.14	55390.09
3.6	20001.33	57378.61
3.7	20234.07	59390.38
3.8	20467.38	61425.45
3.9	20701.25	63483.88
4	20935.68	65565.73
4.1	21170.68	67671.05
4.2	21406.24	69799.90
4.3	21642.36	71952.33
4.4	21879.04	74128.40
4.5	22116.28	76328.17
4.6	22354.09	78551.69
4.7	22592.46	80799.02
4.8	22831.39	83070.21
4.9	23070.89	85365.32
5	23310.95	87684.41


Storage Area Volume Curves
Storage Volume (ft³)
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
Stage (ft)
Stage (ft)
12,000
13,000
14,000
15,000
16,000
17,000
18,000
19,000
20,000
21,000
22,000
23,000
Storage Area (ft²)
Storage Area
Storage Volume

Storage Node : Detention-Basin (continued)

Outflow Orifices

SN	Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1	Orifice-01	Side	Rectangular	No		9.00	12.00	11.00	0.63
2	Orifice-02	Side	Rectangular	No		9.00	12.00	11.00	0.63
3	Orifice-03	Side	Rectangular	No		9.00	12.00	11.00	0.63
4	Orifice-04	Side	Rectangular	No		9.00	12.00	11.00	0.63

Output Summary Results

Peak Inflow (cfs)	12.87
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	10.61
Peak Exfiltration Flow Rate (cfm)	1.88
Max HGL Elevation Attained (ft)	11.87
Max HGL Depth Attained (ft)	1.37
Average HGL Elevation Attained (ft)	11.21
Average HGL Depth Attained (ft)	0.71
Time of Max HGL Occurrence (days hh:mm)	0 08:08
Total Exfiltration Volume (1000-ft³)	2.374
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00

Project Description

File Name ..... SDG 220 Post.SPF

Project Options

Flow Units ..... CFS
Elevation Type ..... Elevation
Hydrology Method ..... SCS TR-55
Time of Concentration (TOC) Method ..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Enable Overflow Ponding at Nodes ..... YES
Skip Steady State Analysis Time Periods ... YES

Analysis Options

Start Analysis On ..... Mar 13, 2023 00:00:00
End Analysis On ..... Mar 14, 2023 00:00:00
Start Reporting On ..... Mar 13, 2023 00:00:00
Antecedent Dry Days ..... 0 days
Runoff (Dry Weather) Time Step ..... 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step ..... 0 00:05:00 days hh:mm:ss
Reporting Time Step ..... 0 00:00:30 days hh:mm:ss
Routing Time Step ..... 30 seconds

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1		Time Series	TS- 100yr	Cumulative	inches	None	None	100	7.36	SCS Type IA 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	A01	5.17	484.00	81	7.36	5.19	26.80	6.7	0 00:15:27
2	A02	4.02	484.00	81	7.36	5.15	20.70	5.2	0 00:16:18
3	A03	4.49	484.00	83	7.36	5.34	23.96	5.9	0 00:18:52
4	B01	0.22	484.00	98	7.36	7.12	1.57	0.4	0 00:06:00
5	B02	0.23	484.00	98	7.36	7.12	1.62	0.4	0 00:06:00
6	B03	0.33	484.00	98	7.36	7.12	2.34	0.6	0 00:06:00
7	B04	0.33	484.00	98	7.36	7.12	2.32	0.6	0 00:06:00
8	B05	0.36	484.00	98	7.36	7.12	2.55	0.6	0 00:06:00
9	B06	0.36	484.00	98	7.36	7.12	2.57	0.7	0 00:06:00
10	B07	0.46	484.00	98	7.36	7.12	3.28	0.8	0 00:06:00
11	B08	0.23	484.00	98	7.36	7.12	1.64	0.4	0 00:06:00
12	B09	0.22	484.00	98	7.36	7.12	1.57	0.4	0 00:06:00
13	B10	0.16	484.00	98	7.36	7.12	1.14	0.3	0 00:06:00
14	B11	0.25	484.00	98	7.36	7.12	1.80	0.4	0 00:06:00
15	B12	0.49	484.00	98	7.36	7.12	3.47	0.9	0 00:06:00
16	B13	0.38	484.00	98	7.36	7.12	2.72	0.7	0 00:06:00
17	B14	0.32	484.00	98	7.36	7.12	2.30	0.6	0 00:06:00
18	B15	0.35	484.00	98	7.36	7.12	2.50	0.6	0 00:06:00
19	B16	0.17	484.00	98	7.36	7.12	1.19	0.3	0 00:06:00
20	B17	0.19	484.00	98	7.36	7.12	1.33	0.3	0 00:06:00
21	B18	0.11	484.00	98	7.36	7.12	0.77	0.2	0 00:06:00
22	B19	0.21	484.00	98	7.36	7.12	1.51	0.4	0 00:06:00
23	B20	0.24	484.00	98	7.36	7.12	1.68	0.4	0 00:06:00
24	B21	0.26	484.00	98	7.36	7.12	1.87	0.5	0 00:06:00
25	B22	0.27	484.00	98	7.36	7.12	1.93	0.5	0 00:06:00
26	B23	0.23	484.00	98	7.36	7.12	1.65	0.4	0 00:06:00
27	B24	0.14	484.00	98	7.36	7.12	0.97	0.2	0 00:06:00
28	B25	0.16	484.00	98	7.36	7.12	1.14	0.3	0 00:06:00
29	B26	0.08	484.00	98	7.36	7.12	0.57	0.2	0 00:06:00
30	B27	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
31	B28	0.08	484.00	98	7.36	7.12	0.57	0.2	0 00:06:00
32	B29	0.06	484.00	98	7.36	7.12	0.43	0.1	0 00:06:00
33	B30	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
34	B31	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
35	B32	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
36	B33	0.09	484.00	98	7.36	7.12	0.64	0.2	0 00:06:00
37	B34	0.10	484.00	98	7.36	7.12	0.70	0.2	0 00:06:00
38	B35	0.04	484.00	98	7.36	7.12	0.28	0.1	0 00:06:00
39	B36	0.09	484.00	98	7.36	7.12	0.65	0.2	0 00:06:00
40	B37	0.17	484.00	98	7.36	7.12	1.21	0.3	0 00:06:00
41	B38	0.13	484.00	98	7.36	7.12	0.91	0.2	0 00:06:00
42	C01	1.09	484.00	72	7.36	4.14	4.51	1.1	0 00:05:00
43	C02	0.28	484.00	72	7.36	4.14	1.16	0.3	0 00:29:07
44	C03	0.29	484.00	72	7.36	4.14	1.19	0.3	0 00:16:48
45	D01	0.48	484.00	98	7.36	7.12	3.45	0.9	0 00:06:00
46	D02	0.41	484.00	98	7.36	7.12	2.94	0.7	0 00:06:00
47	D03	0.65	484.00	98	7.36	7.12	4.62	1.1	0 00:06:00
48	D04	0.78	484.00	98	7.36	7.12	5.55	1.4	0 00:06:00
49	D05	0.44	484.00	98	7.36	7.12	3.14	0.8	0 00:06:00
50	D06	0.56	484.00	98	7.36	7.12	3.97	1.0	0 00:06:00
51	D07	0.29	484.00	98	7.36	7.12	2.06	0.5	0 00:06:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	A1.1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.3	19.28	0.00	1.73	0 00:00	0.00	0.00
2	A1-Structure	Junction	16.03	37.64	16.03	37.64	0.00	5.7	18.56	0.00	19.08	0 00:00	0.00	0.00
3	A2.1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.4	19.31	0.00	1.69	0 00:00	0.00	0.00
4	A2-Structure	Junction	15.56	20.55	15.56	20.55	0.00	6.3	18.43	0.00	2.12	0 00:00	0.00	0.00
5	A3-Structure	Junction	15.13	19.11	15.13	19.11	0.00	6.7	16.35	0.00	2.76	0 00:00	0.00	0.00
6	A4-Structure	Junction	14.86	20.27	14.86	20.27	0.00	12.6	17.16	0.00	3.11	0 00:00	0.00	0.00
7	A5-Structure	Junction	13.86	20.07	13.86	20.07	0.00	13.2	18.52	0.00	1.55	0 00:00	0.00	0.00
8	B1-Structure	Junction	12.20	20.13	12.20	20.13	0.00	0.5	12.33	0.00	7.80	0 00:00	0.00	0.00
9	C1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.4	19.31	0.00	1.69	0 00:00	0.00	0.00
10	C2-Structure	Junction	12.20	36.86	12.20	36.86	0.00	0.8	18.42	0.00	18.44	0 00:00	0.00	0.00
11	D1-Structure	Junction	19.10	21.00	19.10	21.00	0.00	0.3	19.29	0.00	1.71	0 00:00	0.00	0.00
12	D2-Structure	Junction	12.20	38.65	12.20	38.65	0.00	0.7	18.40	0.00	20.25	0 00:00	0.00	0.00
13	D3-Structure	Junction	10.50	16.50	10.50	13.25	0.00	0.7	10.65	0.00	5.85	0 00:00	0.00	0.00
14	D4-Structure	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.53	0.00	1.57	0 00:00	0.00	0.00
15	E10.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.6	19.35	0.00	1.72	0 00:00	0.00	0.00
16	E10-Structure	Junction	12.29	20.26	12.29	20.26	0.00	3.4	18.70	0.00	1.56	0 00:00	0.00	0.00
17	E11-Structure	Junction	11.95	20.26	11.95	20.26	0.00	3.6	12.64	0.00	7.62	0 00:00	0.00	0.00
18	E13.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.6	19.37	0.00	1.70	0 00:00	0.00	0.00
19	E13-Structure	Junction	11.61	20.26	11.61	20.26	0.00	4.2	18.79	0.00	1.47	0 00:00	0.00	0.00
20	E14.2-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.3	19.28	0.00	1.79	0 00:00	0.00	0.00
21	E14-Structure	Junction	11.22	20.25	11.22	20.25	0.00	4.7	18.64	0.00	1.61	0 00:00	0.00	0.00
22	E15-Structure	Junction	10.79	20.25	10.79	20.25	0.00	5.0	11.77	0.00	8.48	0 00:00	0.00	0.00
23	E16-Structure	Junction	10.62	20.13	10.62	20.13	0.00	5.2	11.60	0.00	8.53	0 00:00	0.00	0.00
24	E1-Structure	Junction	15.10	19.22	15.10	19.22	0.00	0.2	15.26	0.00	3.96	0 00:00	0.00	0.00
25	E2-Structure	Junction	14.73	20.26	14.73	20.26	0.00	0.2	14.91	0.00	5.35	0 00:00	0.00	0.00
26	E4.1-Structure	Junction	19.10	21.08	19.10	21.08	0.00	0.4	19.32	0.00	1.76	0 00:00	0.00	0.00
27	E4-Structure	Junction	14.45	20.30	14.45	20.30	0.00	0.2	14.64	0.00	5.66	0 00:00	0.00	0.00
28	E5-Structure	Junction	14.37	20.09	14.37	20.09	0.00	0.8	18.64	0.00	1.45	0 00:00	0.00	0.00
29	E6-Structure	Junction	14.02	20.20	14.02	20.20	0.00	0.9	14.40	0.00	5.80	0 00:00	0.00	0.00
30	E7.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.9	19.41	0.00	1.66	0 00:00	0.00	0.00
31	E7-Structure	Junction	13.23	20.26	13.23	20.26	0.00	1.8	18.75	0.00	1.51	0 00:00	0.00	0.00
32	E8-Structure	Junction	12.93	20.26	12.93	20.26	0.00	1.9	13.43	0.00	6.83	0 00:00	0.00	0.00
33	E9.1-Structure	Junction	19.10	21.07	19.10	21.07	0.00	0.7	19.38	0.00	1.69	0 00:00	0.00	0.00
34	E9-Structure	Junction	12.62	20.26	12.62	20.26	0.00	2.7	18.87	0.00	1.39	0 00:00	0.00	0.00
35	Jun-01	Junction	0.00	10.50	0.00	0.00	0.00	6.4	0.00	0.00	10.50	0 00:00	0.00	0.00
36	Jun-02	Junction	0.00	6.00	0.00	6.00	0.00	6.7	32.70	0.00	0.80	0 00:00	0.00	0.00
37	Jun-03	Junction	0.00	6.00	0.00	6.00	0.00	6.7	30.70	0.00	0.80	0 00:00	0.00	0.00
38	Jun-04	Junction	19.20	6.00	0.00	6.00	0.00	7.8	19.20	0.00	0.00	0 00:00	0.00	0.00
39	Jun-05	Junction	18.20	6.00	0.00	6.00	0.00	7.8	19.13	0.00	0.57	0 00:00	0.00	0.00
40	Jun-06	Junction	14.60	6.00	0.00	6.00	0.00	8.1	14.60	0.00	0.00	0 00:00	0.00	0.00
41	Jun-07	Junction	13.20	6.00	0.00	6.00	0.00	8.3	14.04	0.00	0.66	0 00:00	0.00	0.00
42	Jun-08	Junction	19.20	6.00	0.00	6.00	0.00	7.8	20.13	0.00	0.57	0 00:00	0.00	0.00
43	Jun-09	Junction	14.60	6.00	0.00	0.00	0.00	8.1	15.44	0.00	0.66	0 00:00	0.00	0.00
44	Out-1A15-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	17.0	12.05	0.00	4.45	0 00:00	0.00	0.00
45	Out-1B1-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	0.5	10.63	0.00	5.87	0 00:00	0.00	0.00
46	Out-1C2-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	0.8	10.67	0.00	5.83	0 00:00	0.00	0.00
47	Out-1D4-Pipe	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.40	0.00	5.10	0 00:00	0.00	0.00
48	Out-1E16-Pipe	Junction	10.50	16.50	10.50	0.00	0.00	5.2	11.37	0.00	5.13	0 00:00	0.00	0.00
49	Out-1Pipe (53)	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.29	0.00	5.21	0 00:00	0.00	0.00
50	Out-1Pipe (59)	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.39	0.00	5.11	0 00:00	0.00	0.00
51	Out-1Pipe (62)	Junction	10.50	16.50	10.50	16.50	0.00	4.3	11.39	0.00	5.11	0 00:00	0.00	0.00
52	Structure - 100	Junction	19.10	19.83	19.10	19.83	0.00	0.6	19.36	0.00	0.47	0 00:00	0.00	0.00
53	Structure - 101	Junction	11.91	19.47	11.91	19.47	0.00	15.7	18.66	0.00	0.81	0 00:00	0.00	0.00
54	Structure - 102	Junction	19.10	19.83	19.10	19.83	0.00	0.6	19.36	0.00	0.47	0 00:00	0.00	0.00
55	Structure - 103	Junction	11.59	19.48	11.59	19.48	0.00	16.2	18.66	0.00	0.82	0 00:00	0.00	0.00
56	Structure - 104	Junction	19.10	19.83	19.10	19.83	0.00	0.4	19.34	0.00	0.49	0 00:00	0.00	0.00
57	Structure - 105	Junction	11.09	19.41	11.09	19.41	0.00	16.6	18.55	0.00	0.86	0 00:00	0.00	0.00
58	Structure - 35	Junction	10.76	18.50	10.76	18.50	0.00	16.6	12.29	0.00	6.21	0 00:00	0.00	0.00
59	Structure - 36	Junction	10.59	20.13	10.59	20.13	0.00	17.0	12.14	0.00	7.99	0 00:00	0.00	0.00
60	Structure - 38	Junction	28.60	31.31	28.60	31.31	0.00	5.2	29.46	0.00	1.85	0 00:00	0.00	0.00
61	Structure - 39	Junction	27.61	32.57	27.61	32.57	0.00	5.2	29.08	0.00	3.49	0 00:00	0.00	0.00
62	Structure - 48	Junction	26.48	1.78	26.48	1.78	0.00	5.9	27.17	0.00	0.81	0 00:00	0.00	0.00
63	Structure - 49	Junction	25.31	29.72	25.31	29.72	0.00	5.9	26.48	0.00	3.24	0 00:00	0.00	0.00
64	Structure - 75	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.42	0.00	1.68	0 00:00	0.00	0.00
65	Structure - 83	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.52	0.00	1.58	0 00:00	0.00	0.00
66	Structure - 87	Junction	10.63	13.10	10.63	14.00	0.00	4.3	11.52	0.00	1.58	0 00:00	0.00	0.00
67	Structure - 91	Junction	19.10	21.10	19.10	21.10	0.00	0.4	19.32	0.00	1.78	0 00:00	0.00	0.00
68	Structure - 94	Junction	19.10	19.83	19.10	19.83	0.00	0.8	19.45	0.00	0.37	0 00:00	0.00	0.00
69	Structure - 95	Junction	13.30	19.40	13.30	19.40	0.00	13.9	18.76	0.00	0.64	0 00:00	0.00	0.00
70	Structure - 96	Junction	19.10	19.83	19.10	19.83	0.00	0.7	19.41	0.00	0.42	0 00:00	0.00	0.00
71	Structure - 97	Junction	12.86	19.42	12.86	19.42	0.00	14.5	18.71	0.00	0.71	0 00:00	0.00	0.00
72	Structure - 98	Junction	19.10	19.83	19.10	19.83	0.00	0.6	19.40	0.00	0.42	0 00:00	0.00	0.00
73	Structure - 99	Junction	12.39	19.44	12.39	19.44	0.00	15.1	18.70	0.00	0.73	0 00:00	0.00	0.00
74	Out-02	Outfall	0.00					24.5	0.00					
75	Detention-Basin	Storage Node	10.50	15.50	0.00		12634.80	23.9	12.66				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
1	A1.1-Pipe	Pipe	A1.1-Structure	A1-Structure	43.57	19.10	18.23	2.0000	8.000	0.0120	0.3	1.9	0.15	3.84	0.18	0.26	0.00	Calculated
2	A10.1-Pipe	Pipe	Structure - 100	Structure - 101	34.83	19.10	18.40	2.0000	8.000	0.0120	0.6	1.9	0.31	4.68	0.26	0.38	0.00	Calculated
3	A10-Pipe	Pipe	Structure - 99	Structure - 101	91.67	12.39	11.91	0.5300	30.000	0.0150	15.1	25.9	0.58	5.47	1.37	0.55	0.00	Calculated
4	A11.1-Pipe	Pipe	Structure - 102	Structure - 103	34.86	19.10	18.40	2.0000	8.000	0.0120	0.6	1.9	0.31	4.68	0.26	0.38	0.00	Calculated
5	A11-Pipe	Pipe	Structure - 101	Structure - 103	67.33	11.91	11.59	0.4700	30.000	0.0150	15.7	24.5	0.64	5.28	1.45	0.58	0.00	Calculated
6	A12.1-Pipe	Pipe	Structure - 104	Structure - 105	39.58	19.10	18.31	2.0000	8.000	0.0150	0.4	1.5	0.27	3.62	0.24	0.36	0.00	Calculated
7	A12-Pipe	Pipe	Structure - 103	Structure - 105	100.61	11.59	11.09	0.4900	30.000	0.0150	16.2	25.0	0.65	5.41	1.47	0.59	0.00	Calculated
8	A13-Pipe	Pipe	Structure - 105	Structure - 35	63.49	11.09	10.76	0.5200	30.000	0.0150	16.6	25.7	0.64	5.57	1.46	0.58	0.00	Calculated
9	A14-Pipe	Pipe	Structure - 35	Structure - 36	37.44	10.76	10.59	0.4500	30.000	0.0150	16.6	24.0	0.69	5.26	1.53	0.61	0.00	Calculated
10	A15-Pipe	Pipe	Structure - 36	Out-1A15-Pipe	19.67	10.59	10.50	0.4600	30.000	0.0150	17.0	24.1	0.71	5.31	1.55	0.62	0.00	Calculated
11	A1-Pipe	Pipe	Structure - 39	A1-Structure	32.78	27.61	18.23	28.6100	18.000	0.0150	5.2	48.7	0.11	17.94	0.33	0.22	0.00	Calculated
12	A2.1-Pipe	Pipe	A2.1-Structure	A2-Structure	44.00	19.10	18.22	2.0000	8.000	0.0120	0.4	1.9	0.21	4.22	0.21	0.31	0.00	Calculated
13	A2-Pipe	Pipe	A1-Structure	A2-Structure	97.50	16.03	15.56	0.4800	18.000	0.0150	5.7	6.3	0.90	4.05	1.12	0.74	0.00	Calculated
14	A3-Pipe	Pipe	A2-Structure	A3-Structure	88.50	15.56	15.13	0.4900	18.000	0.0150	6.3	6.4	0.99	4.10	1.22	0.81	0.00	Calculated
15	A4.1-Pipe	Pipe	Structure - 49	A4-Structure	39.16	25.31	16.82	21.6900	18.000	0.0120	5.9	53.0	0.11	19.80	0.34	0.23	0.00	Calculated
16	A4-Pipe	Pipe	A3-Structure	A4-Structure	56.66	15.13	14.86	0.4800	30.000	0.0150	6.7	24.5	0.27	4.25	0.89	0.36	0.00	Calculated
17	A5-Pipe	Pipe	A4-Structure	A5-Structure	107.77	14.86	13.86	0.9300	30.000	0.0150	12.6	34.3	0.37	6.44	1.05	0.42	0.00	Calculated
18	A6.1-Pipe	Pipe	Structure - 91	A5-Structure	42.40	19.10	18.31	1.8700	8.000	0.0120	0.4	1.8	0.23	4.15	0.22	0.32	0.00	Calculated
19	A7.1-Pipe	Pipe	Structure - 94	Structure - 95	34.69	19.10	18.41	2.0000	8.000	0.0150	0.8	1.5	0.55	4.34	0.35	0.53	0.00	Calculated
20	A7-Pipe	Pipe	A5-Structure	Structure - 95	110.61	13.86	13.30	0.5100	30.000	0.0150	13.2	25.3	0.52	5.21	1.28	0.51	0.00	Calculated
21	A8.1-Pipe	Pipe	Structure - 96	Structure - 97	34.74	19.10	18.41	2.0000	8.000	0.0150	0.7	1.5	0.44	4.10	0.31	0.46	0.00	Calculated
22	A8-Pipe	Pipe	Structure - 95	Structure - 97	89.33	13.30	12.86	0.4900	30.000	0.0150	13.9	24.9	0.56	5.21	1.34	0.53	0.00	Calculated
23	A9.1-Pipe	Pipe	Structure - 98	Structure - 99	34.78	19.10	18.40	2.0100	8.000	0.0150	0.6	1.5	0.43	4.09	0.30	0.46	0.00	Calculated
24	A9-Pipe	Pipe	Structure - 97	Structure - 99	95.00	12.86	12.39	0.4900	30.000	0.0150	14.5	24.9	0.58	5.27	1.37	0.55	0.00	Calculated
25	B1-Pipe	Pipe	B1-Structure	Out-1B1-Pipe	19.69	12.20	10.50	8.6300	24.000	0.0150	0.5	57.6	0.01	5.50	0.13	0.06	0.00	Calculated
26	C1-Pipe	Pipe	C1-Structure	C2-Structure	44.64	19.10	18.21	2.0000	8.000	0.0120	0.4	1.9	0.21	4.22	0.21	0.31	0.00	Calculated
27	C2-Pipe	Pipe	C2-Structure	Out-1C2-Pipe	19.67	12.20	10.50	8.6400	24.000	0.0150	0.8	57.6	0.01	6.54	0.17	0.08	0.00	Calculated
28	D1-Pipe	Pipe	D1-Structure	D2-Structure	44.46	19.10	18.21	2.0000	8.000	0.0120	0.3	1.9	0.18	4.00	0.19	0.29	0.00	Calculated
29	D2-Pipe	Pipe	D2-Structure	D3-Structure	19.67	12.20	10.50	8.6400	24.000	0.0150	0.7	57.6	0.01	6.25	0.15	0.08	0.00	Calculated
30	D4-Pipe	Pipe	D4-Structure	Out-1D4-Pipe	26.30	10.63	10.50	0.4900	18.000	0.0150	4.3	6.4	0.67	3.88	0.90	0.60	0.00	Calculated
31	E10-Pipe	Pipe	E10-Structure	E11-Structure	68.72	12.29	11.95	0.5000	24.000	0.0150	3.4	13.9	0.24	3.64	0.67	0.34	0.00	Calculated
32	E11-Pipe	Pipe	E11-Structure	E13-Structure	67.31	11.95	11.61	0.5000	24.000	0.0150	3.6	13.9	0.26	3.69	0.69	0.35	0.00	Calculated
33	E12.1-Pipe	Pipe	E13.1-Structure	E13-Structure	28.75	19.10	18.52	2.0200	8.000	0.0120	0.6	1.9	0.33	4.79	0.27	0.40	0.00	Calculated
34	E13.1-Pipe	Pipe	E14.2-Structure	E14-Structure	31.82	19.10	18.46	2.0000	8.000	0.0120	0.3	1.9	0.16	3.88	0.18	0.27	0.00	Calculated
35	E13-Pipe	Pipe	E13-Structure	E14-Structure	77.56	11.61	11.22	0.5000	24.000	0.0150	4.2	13.9	0.31	3.88	0.76	0.38	0.00	Calculated
36	E14-Pipe	Pipe	E14-Structure	E15-Structure	88.49	11.22	10.79	0.4900	24.000	0.0150	4.7	13.7	0.34	3.94	0.81	0.40	0.00	Calculated
37	E15-Pipe	Pipe	E15-Structure	E16-Structure	61.58	10.79	10.62	0.2800	24.000	0.0150	5.0	10.3	0.49	3.25	0.98	0.49	0.00	Calculated
38	E16-Pipe	Pipe	E16-Structure	Out-1E16-Pipe	26.19	10.62	10.50	0.4600	24.000	0.0150	5.2	13.3	0.39	3.96	0.87	0.43	0.00	Calculated
39	E1-Pipe	Pipe	E1-Structure	E2-Structure	73.22	15.10	14.73	0.5000	18.000	0.0150	0.2	6.4	0.02	1.46	0.16	0.11	0.00	Calculated
40	E2-Pipe	Pipe	E2-Structure	E4-Structure	55.47	14.73	14.45	0.5000	18.000	0.0150	0.2	6.4	0.03	1.69	0.19	0.12	0.00	Calculated
41	E4-Pipe	Pipe	E4-Structure	E5-Structure	15.97	14.45	14.37	0.5000	18.000	0.0150	0.2	6.3	0.03	1.67	0.19	0.13	0.00	Calculated
42	E5.1-Pipe	Pipe	E4.1-Structure	E5-Structure	32.89	19.10	18.42	2.0800	8.000	0.0120	0.4	1.9	0.23	4.41	0.22	0.33	0.00	Calculated
43	E5-Pipe	Pipe	E5-Structure	E6-Structure	70.61	14.37	14.02	0.5000	18.000	0.0150	0.8	6.4	0.13	2.48	0.36	0.24	0.00	Calculated
44	E6.1-Pipe	Pipe	E7.1-Structure	E7-Structure	28.85	19.10	18.44	2.2800	8.000	0.0120	0.9	2.0	0.44	5.46	0.31	0.46	0.00	Calculated
45	E6-Pipe	Pipe	E6-Structure	E7-Structure	58.54	14.02	13.73	0.5000	18.000	0.0150	0.9	6.4	0.14	2.57	0.38	0.25	0.00	Calculated
46	E7-Pipe	Pipe	E7-Structure	E8-Structure	59.55	13.23	12.93	0.5000	24.000	0.0150	1.8	13.9	0.13	3.06	0.49	0.25	0.00	Calculated
47	E8.1-Pipe	Pipe	E9.1-Structure	E9-Structure	25.28	19.10	18.59	2.0000	8.000	0.0120	0.7	1.9	0.37	4.89	0.28	0.42	0.00	Calculated
48	E8-Pipe	Pipe	E8-Structure	E9-Structure	61.63	12.93	12.62	0.5000	24.000	0.0150	1.9	13.8	0.14	3.08	0.50	0.25	0.00	Calculated
49	E9.1-Pipe	Pipe	E10.1-Structure	E10-Structure	30.97	19.10	18.44	2.1200	8.000	0.0120	0.6	1.9	0.30	4.78	0.25	0.38	0.00	Calculated
50	E9-Pipe	Pipe	E9-Structure	E10-Structure	66.95	12.62	12.29	0.5000	24.000	0.0150	2.7	13.8	0.19	3.39	0.59	0.30	0.00	Calculated
51	Link-01	Pipe	Out-1E16-Pipe	Detention-Basin	178.44	10.50	0.00	5.8800	12.000	0.0150	5.2	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
52	Link-02	Pipe	D3-Structure	Detention-Basin	117.22	9.00	0.00	7.6800	12.000	0.0150	0.7	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
53	Link-03	Pipe	Out-1C2-Pipe	Detention-Basin	30.02	10.50	0.00	34.9800	12.000	0.0150	0.8	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
54	Link-04	Pipe	Out-1B1-Pipe	Detention-Basin	60.81	10.50	0.00	17.2700	12.000	0.0150	0.5	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
55	Link-05	Pipe	Out-1A15-Pipe	Detention-Basin	138.79	10.50	0.00	7.5700	12.000	0.0150	17.0	0.0	0.19	0.00	0.59	0.30	0.00	Calculated
56	Link-11	Pipe	Jun-02	Jun-03	71.00	32.00	30.00	2.8200	18.000	0.0150	6.7	15.3	0.44	8.37	0.70	0.47	0.00	Calculated
57	Link-12	Pipe	Jun-03	Jun-04	417.20	0.00	0.00	0.0000	12.000	0.0150	6.7	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
58	Link-14	Pipe	Jun-05	Jun-06	128.08	0.00	0.00	0.0000	12.000	0.0150	7.8	0.0	0.44	0.00	0.70	0.47	0.00	Calculated

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
59	Link-16	Pipe	Jun-07	Out-02	317.29	0.00	0.00	0.0000	12.000	0.0150	8.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
60	Link-17	Pipe	Out-1D4-Pipe	Out-02	137.86	10.50	0.00	7.6200	0.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
61	Link-18	Pipe	Out-1Pipe (62)	Out-02	99.47	10.50	0.00	10.5600	0.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
62	Link-19	Pipe	Out-1Pipe (59)	Out-02	130.31	10.50	0.00	8.0600	12.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
63	Link-20	Pipe	Out-1Pipe (53)	Out-02	191.76	10.50	0.00	5.4800	12.000	0.0150	4.3	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
64	Link-29	Pipe	Jun-04	Jun-08	48.58	19.20	18.82	0.7800	0.000	0.0150	7.8	0.0	0.44	0.00	0.70	0.47	0.00	Calculated
65	Link-30	Pipe	Jun-08	Jun-05	67.00	19.20	18.20	1.4900	18.000	0.0150	7.8	11.1	0.70	6.81	0.93	0.62	0.00	Calculated
66	Link-31	Pipe	Jun-06	Jun-09	46.31	14.60	14.60	0.0000	0.000	0.0150	8.1	0.0	0.70	0.00	0.93	0.62	0.00	Calculated
67	Link-32	Pipe	Jun-09	Jun-07	64.00	14.60	13.20	2.1900	18.000	0.0150	8.1	13.5	0.60	7.95	0.84	0.56	0.00	Calculated
68	Pipe (24)	Pipe	Structure - 38	Structure - 39	45.94	28.60	28.22	0.8300	18.000	0.0150	5.2	8.3	0.62	4.94	0.86	0.57	0.00	Calculated
69	Pipe (34)	Pipe	Structure - 48	Structure - 49	46.55	26.48	25.79	1.4800	18.000	0.0120	5.9	13.9	0.43	7.54	0.69	0.46	0.00	Calculated
70	Pipe (53)	Pipe	Structure - 75	Out-1Pipe (53)	27.49	10.63	10.50	0.4700	18.000	0.0120	4.3	7.8	0.55	4.52	0.79	0.53	0.00	Calculated
71	Pipe (59)	Pipe	Structure - 83	Out-1Pipe (59)	25.67	10.63	10.50	0.5100	18.000	0.0150	4.3	6.5	0.66	3.91	0.89	0.59	0.00	Calculated
72	Pipe (62)	Pipe	Structure - 87	Out-1Pipe (62)	25.95	10.63	10.50	0.5000	18.000	0.0150	4.3	6.4	0.66	3.90	0.89	0.59	0.00	Calculated
73	Orifice-01	Orifice	Detention-Basin	Structure - 83		10.50	10.63		9.000		4.3							
74	Orifice-02	Orifice	Detention-Basin	D4-Structure		10.50	10.63		9.000		4.3							
75	Orifice-03	Orifice	Detention-Basin	Structure - 87		10.50	10.63		9.000		4.3							
76	Orifice-04	Orifice	Detention-Basin	Structure - 75		10.50	10.63		9.000		4.3							

Subbasin Hydrology

Subbasin : A01

Input Data

Area (ac)	5.17
Peak Rate Factor	484.00
Weighted Curve Number	81.40
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.37	D	98.00
Woods & grass combination, Fair	1.10	C	76.00
Woods & grass combination, Fair	0.40	C	76.00
Woods & grass combination, Fair	3.30	D	82.00
Composite Area & Weighted CN	5.17		81.40

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

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

Where :

Tc = Time of Concentration (hr)
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 (hr)
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 (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	8.9	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.74	0.00	0.00
Velocity (ft/sec) :	0.15	0.00	0.00
Computed Flow Time (min) :	10.93	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	933	0.00	0.00
Slope (%) :	4.8	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.53	0.00	0.00
Computed Flow Time (min) :	4.41	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	71	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft²) :	7	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	9.92	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 15.46

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	5.19
Peak Runoff (cfs)	6.74
Weighted Curve Number	81.40
Time of Concentration (days hh:mm:ss)	0 00:15:28

Subbasin : A02

Input Data

Area (ac) 4.02
Peak Rate Factor 484.00
Weighted Curve Number 81.08
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.22	D	98.00
Woods & grass combination, Fair	1.00	C	76.00
Woods & grass combination, Fair	0.20	C	76.00
Woods & grass combination, Fair	2.60	D	82.00
Composite Area & Weighted CN	4.02		81.08

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	8	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.74	0.00	0.00
Velocity (ft/sec) :	0.15	0.00	0.00
Computed Flow Time (min) :	11.41	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	925	0.00	0.00
Slope (%) :	4	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.23	0.00	0.00
Computed Flow Time (min) :	4.77	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	79	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft^2) :	7.7	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	10.57	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 16.31

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 5.15
Peak Runoff (cfs) 5.17
Weighted Curve Number 81.08
Time of Concentration (days hh:mm:ss) 0 00:16:19

Subbasin : A03

Input Data

Area (ac) 4.49
Peak Rate Factor 484.00
Weighted Curve Number 82.72
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved roads with curbs & sewers	0.39	D	98.00
Woods & grass combination, Fair	0.50	C	76.00
Woods & grass combination, Fair	3.60	D	82.00
Composite Area & Weighted CN	4.49		82.72

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	100	0.00	0.00
Slope (%) :	7	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.85	0.00	0.00
Velocity (ft/sec) :	0.12	0.00	0.00
Computed Flow Time (min) :	13.79	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	964	0.00	0.00
Slope (%) :	4	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	3.23	0.00	0.00
Computed Flow Time (min) :	4.97	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.012	0.00	0.00
Flow Length (ft) :	75	0.00	0.00
Channel Slope (%) :	1	0.00	0.00
Cross Section Area (ft^2) :	7.74	0.00	0.00
Wetted Perimeter (ft) :	9.8	0.00	0.00
Velocity (ft/sec) :	10.61	0.00	0.00
Computed Flow Time (min) :	0.12	0.00	0.00

Total TOC (min) 18.88

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 5.34
Peak Runoff (cfs) 5.93
Weighted Curve Number 82.72
Time of Concentration (days hh:mm:ss) 0 00:18:53

Subbasin : B01

Input Data

Area (ac) 0.22
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.22	D	98.00
Composite Area & Weighted CN	0.22		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.40
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B02

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.41
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B03

Input Data

Area (ac)	0.33
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.33	D	98.00
Composite Area & Weighted CN	0.33		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.58
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B04

Input Data

Area (ac)	0.33
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.33	D	98.00
Composite Area & Weighted CN	0.33		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.58
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B05

Input Data

Area (ac) 0.36
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.36	D	98.00
Composite Area & Weighted CN	0.36		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.63
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B06

Input Data

Area (ac) 0.36
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.36	D	98.00
Composite Area & Weighted CN	0.36		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.65
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B07

Input Data

Area (ac)	0.46
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.46	D	98.00
Composite Area & Weighted CN	0.46		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.81
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B08

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.41
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B09

Input Data

Area (ac) 0.22
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.22	D	98.00
Composite Area & Weighted CN	0.22		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.40
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B10

Input Data

Area (ac)	0.16
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.16	D	98.00
Composite Area & Weighted CN	0.16		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.28
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B11

Input Data

Area (ac) 0.25
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.25	D	98.00
Composite Area & Weighted CN	0.25		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.44
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B12

Input Data

Area (ac) 0.49
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.49	D	98.00
Composite Area & Weighted CN	0.49		98.00

Time of Concentration

User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.86
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B13

Input Data

Area (ac) 0.38
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.38	D	98.00
Composite Area & Weighted CN	0.38		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.68
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B14

Input Data

Area (ac) 0.32
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.32	D	98.00
Composite Area & Weighted CN	0.32		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.58
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B15

Input Data

Area (ac) 0.35
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.35	D	98.00
Composite Area & Weighted CN	0.35		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.62
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B16

Input Data

Area (ac)	0.17
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.17	D	98.00
Composite Area & Weighted CN	0.17		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.29
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B17

Input Data

Area (ac) 0.19
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.19	D	98.00
Composite Area & Weighted CN	0.19		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.33
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B18

Input Data

Area (ac)	0.11
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.11	D	98.00
Composite Area & Weighted CN	0.11		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.19
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B19

Input Data

Area (ac) 0.21
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.21	D	98.00
Composite Area & Weighted CN	0.21		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.37
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B20

Input Data

Area (ac)	0.24
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.24	D	98.00
Composite Area & Weighted CN	0.24		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.42
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B21

Input Data

Area (ac) 0.26
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.26	D	98.00
Composite Area & Weighted CN	0.26		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.46
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B22

Input Data

Area (ac) 0.27
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.27	D	98.00
Composite Area & Weighted CN	0.27		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.48
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B23

Input Data

Area (ac) 0.23
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.23	D	98.00
Composite Area & Weighted CN	0.23		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.41
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B24

Input Data

Area (ac)	0.14
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.14	D	98.00
Composite Area & Weighted CN	0.14		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.24
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B25

Input Data

Area (ac)	0.16
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.16	D	98.00
Composite Area & Weighted CN	0.16		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.28
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B26

Input Data

Area (ac) 0.08
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.08	D	98.00
Composite Area & Weighted CN	0.08		98.00

Time of Concentration

User-Defined TOC override (minutes): 6.00

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.15
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B27

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B28

Input Data

Area (ac) 0.08
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.08	D	98.00
Composite Area & Weighted CN	0.08		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.15
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B29

Input Data

Area (ac) 0.06
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.06	D	98.00
Composite Area & Weighted CN	0.06		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.10
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B30

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B31

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B32

Input Data

Area (ac) 0.04
Peak Rate Factor 484.00
Weighted Curve Number 98.00
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	D	98.00
Composite Area & Weighted CN	0.04		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in) 7.36
Total Runoff (in) 7.12
Peak Runoff (cfs) 0.07
Weighted Curve Number 98.00
Time of Concentration (days hh:mm:ss) 0 00:06:00

Subbasin : B33

Input Data

Area (ac)	0.09
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.09	D	98.00
Composite Area & Weighted CN	0.09		98.00

Time of Concentration

User-Defined TOC override (minutes): 6

Subbasin Runoff Results

Total Rainfall (in)	7.36
Total Runoff (in)	7.12
Peak Runoff (cfs)	0.16
Weighted Curve Number	98.00
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : B34

Input Data

Area (ac)	0.10
Peak Rate Factor	484.00
Weighted Curve Number	98.00
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.10	D	98.00
Composite Area & Weighted CN	0.10		98.00

Time of Concentration

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)
1	A1.1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
2	A1-Structure	16.03	37.64	21.61	16.03	0.00	37.64	0.00	0.00
3	A2.1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
4	A2-Structure	15.56	20.55	4.99	15.56	0.00	20.55	0.00	0.00
5	A3-Structure	15.13	19.11	3.98	15.13	0.00	19.11	0.00	0.00
6	A4-Structure	14.86	20.27	5.41	14.86	0.00	20.27	0.00	0.00
7	A5-Structure	13.86	20.07	6.21	13.86	0.00	20.07	0.00	0.00
8	B1-Structure	12.20	20.13	7.93	12.20	0.00	20.13	0.00	0.00
9	C1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
10	C2-Structure	12.20	36.86	24.66	12.20	0.00	36.86	0.00	0.00
11	D1-Structure	19.10	21.00	1.90	19.10	0.00	21.00	0.00	0.00
12	D2-Structure	12.20	38.65	26.45	12.20	0.00	38.65	0.00	0.00
13	D3-Structure	10.50	16.50	6.00	10.50	0.00	13.25	-3.25	0.00
14	D4-Structure	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
15	E10.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
16	E10-Structure	12.29	20.26	7.97	12.29	0.00	20.26	0.00	0.00
17	E11-Structure	11.95	20.26	8.31	11.95	0.00	20.26	0.00	0.00
18	E13.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
19	E13-Structure	11.61	20.26	8.65	11.61	0.00	20.26	0.00	0.00
20	E14.2-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
21	E14-Structure	11.22	20.25	9.03	11.22	0.00	20.25	0.00	0.00
22	E15-Structure	10.79	20.25	9.46	10.79	0.00	20.25	0.00	0.00
23	E16-Structure	10.62	20.13	9.51	10.62	0.00	20.13	0.00	0.00
24	E1-Structure	15.10	19.22	4.12	15.10	0.00	19.22	0.00	0.00
25	E2-Structure	14.73	20.26	5.53	14.73	0.00	20.26	0.00	0.00
26	E4.1-Structure	19.10	21.08	1.98	19.10	0.00	21.08	0.00	0.00
27	E4-Structure	14.45	20.30	5.85	14.45	0.00	20.30	0.00	0.00
28	E5-Structure	14.37	20.09	5.72	14.37	0.00	20.09	0.00	0.00
29	E6-Structure	14.02	20.20	6.18	14.02	0.00	20.20	0.00	0.00
30	E7.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
31	E7-Structure	13.23	20.26	7.03	13.23	0.00	20.26	0.00	0.00
32	E8-Structure	12.93	20.26	7.33	12.93	0.00	20.26	0.00	0.00
33	E9.1-Structure	19.10	21.07	1.97	19.10	0.00	21.07	0.00	0.00
34	E9-Structure	12.62	20.26	7.64	12.62	0.00	20.26	0.00	0.00
35	Jun-01	0.00	10.50	10.50	0.00	0.00	0.00	-10.50	0.00
36	Jun-02	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00
37	Jun-03	0.00	6.00	6.00	0.00	0.00	6.00	0.00	0.00
38	Jun-04	19.20	6.00	-13.20	0.00	-19.20	6.00	0.00	0.00
39	Jun-05	18.20	6.00	-12.20	0.00	-18.20	6.00	0.00	0.00
40	Jun-06	14.60	6.00	-8.60	0.00	-14.60	6.00	0.00	0.00
41	Jun-07	13.20	6.00	-7.20	0.00	-13.20	6.00	0.00	0.00
42	Jun-08	19.20	6.00	-13.20	0.00	-19.20	6.00	0.00	0.00
43	Jun-09	14.60	6.00	-8.60	0.00	-14.60	0.00	-6.00	0.00
44	Out-1A15-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
45	Out-1B1-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
46	Out-1C2-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
47	Out-1D4-Pipe	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
48	Out-1E16-Pipe	10.50	16.50	6.00	10.50	0.00	0.00	-16.50	0.00
49	Out-1Pipe (53)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
50	Out-1Pipe (59)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
51	Out-1Pipe (62)	10.50	16.50	6.00	10.50	0.00	16.50	0.00	0.00
52	Structure - 100	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
53	Structure - 101	11.91	19.47	7.56	11.91	0.00	19.47	0.00	0.00
54	Structure - 102	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
55	Structure - 103	11.59	19.48	7.89	11.59	0.00	19.48	0.00	0.00
56	Structure - 104	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
57	Structure - 105	11.09	19.41	8.31	11.09	0.00	19.41	0.00	0.00
58	Structure - 35	10.76	18.50	7.74	10.76	0.00	18.50	0.00	0.00
59	Structure - 36	10.59	20.13	9.54	10.59	0.00	20.13	0.00	0.00
60	Structure - 38	28.60	31.31	2.71	28.60	0.00	31.31	0.00	0.00
61	Structure - 39	27.61	32.57	4.96	27.61	0.00	32.57	0.00	0.00
62	Structure - 48	26.48	1.78	-24.70	26.48	0.00	1.78	0.00	0.00
63	Structure - 49	25.31	29.72	4.41	25.31	0.00	29.72	0.00	0.00
64	Structure - 75	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
65	Structure - 83	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
66	Structure - 87	10.63	13.10	2.47	10.63	0.00	14.00	0.90	0.00
67	Structure - 91	19.10	21.10	2.00	19.10	0.00	21.10	0.00	0.00
68	Structure - 94	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
69	Structure - 95	13.30	19.40	6.10	13.30	0.00	19.40	0.00	0.00
70	Structure - 96	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
71	Structure - 97	12.86	19.42	6.56	12.86	0.00	19.42	0.00	0.00
72	Structure - 98	19.10	19.83	0.73	19.10	0.00	19.83	0.00	0.00
73	Structure - 99	12.39	19.44	7.04	12.39	0.00	19.44	0.00	0.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	A1.1-Structure	0.3	0.3	19.28	0.18	0.00	1.73	19.17	0.07	0 07:49	0 00:00	0.00	0.00
2	A1-Structure	5.7	0.3	18.56	2.53	0.00	19.08	18.36	2.33	0 08:02	0 00:00	0.00	0.00
3	A2.1-Structure	0.4	0.4	19.31	0.21	0.00	1.69	19.18	0.08	0 07:49	0 00:00	0.00	0.00
4	A2-Structure	6.3	0.2	18.43	2.87	0.00	2.12	18.30	2.74	0 07:50	0 00:00	0.00	0.00
5	A3-Structure	6.7	0.4	16.35	1.22	0.00	2.76	15.52	0.39	0 08:01	0 00:00	0.00	0.00
6	A4-Structure	12.6	0.0	17.16	2.30	0.00	3.11	16.95	2.09	0 08:03	0 00:00	0.00	0.00
7	A5-Structure	13.2	0.2	18.52	4.66	0.00	1.55	18.39	4.53	0 07:50	0 00:00	0.00	0.00
8	B1-Structure	0.5	0.5	12.33	0.13	0.00	7.80	12.25	0.05	0 07:50	0 00:00	0.00	0.00
9	C1-Structure	0.4	0.4	19.31	0.21	0.00	1.69	19.18	0.08	0 07:49	0 00:00	0.00	0.00
10	C2-Structure	0.8	0.4	18.42	6.22	0.00	18.44	18.29	6.09	0 07:50	0 00:00	0.00	0.00
11	D1-Structure	0.3	0.3	19.29	0.19	0.00	1.71	19.18	0.08	0 07:49	0 00:00	0.00	0.00
12	D2-Structure	0.7	0.4	18.40	6.20	0.00	20.25	18.29	6.09	0 07:50	0 00:00	0.00	0.00
13	D3-Structure	0.7	0.0	10.65	0.15	0.00	5.85	10.56	0.06	0 07:50	0 00:00	0.00	0.00
14	D4-Structure	4.3	0.0	11.53	0.90	0.00	1.57	11.00	0.37	0 08:13	0 00:00	0.00	0.00
15	E10.1-Structure	0.6	0.6	19.35	0.25	0.00	1.72	19.20	0.10	0 07:50	0 00:00	0.00	0.00
16	E10-Structure	3.4	0.2	18.70	6.41	0.00	1.56	18.54	6.25	0 07:50	0 00:00	0.00	0.00
17	E11-Structure	3.6	0.2	12.64	0.69	0.00	7.62	12.22	0.27	0 07:52	0 00:00	0.00	0.00
18	E13.1-Structure	0.6	0.6	19.37	0.27	0.00	1.70	19.20	0.10	0 07:50	0 00:00	0.00	0.00
19	E13-Structure	4.2	0.1	18.79	7.18	0.00	1.47	18.62	7.01	0 07:50	0 00:00	0.00	0.00
20	E14.2-Structure	0.3	0.3	19.28	0.18	0.00	1.79	19.17	0.07	0 07:49	0 00:00	0.00	0.00
21	E14-Structure	4.7	0.2	18.64	7.42	0.00	1.61	18.53	7.31	0 07:49	0 00:00	0.00	0.00
22	E15-Structure	5.0	0.3	11.77	0.98	0.00	8.48	11.16	0.37	0 07:52	0 00:00	0.00	0.00
23	E16-Structure	5.2	0.2	11.60	0.98	0.00	8.53	10.99	0.37	0 07:52	0 00:00	0.00	0.00
24	E1-Structure	0.2	0.2	15.26	0.16	0.00	3.96	15.16	0.06	0 07:49	0 00:00	0.00	0.00
25	E2-Structure	0.2	0.1	14.91	0.18	0.00	5.35	14.80	0.07	0 07:54	0 00:00	0.00	0.00
26	E4.1-Structure	0.4	0.4	19.32	0.22	0.00	1.76	19.19	0.09	0 07:49	0 00:00	0.00	0.00
27	E4-Structure	0.2	0.0	14.64	0.19	0.00	5.66	14.53	0.08	0 07:54	0 00:00	0.00	0.00
28	E5-Structure	0.8	0.2	18.64	4.27	0.00	1.45	18.50	4.13	0 07:50	0 00:00	0.00	0.00
29	E6-Structure	0.9	0.1	14.40	0.38	0.00	5.80	14.17	0.15	0 07:52	0 00:00	0.00	0.00
30	E7.1-Structure	0.9	0.9	19.41	0.31	0.00	1.66	19.22	0.12	0 07:50	0 00:00	0.00	0.00
31	E7-Structure	1.8	0.1	18.75	5.52	0.00	1.51	18.56	5.33	0 07:50	0 00:00	0.00	0.00
32	E8-Structure	1.9	0.1	13.43	0.50	0.00	6.83	13.13	0.20	0 07:51	0 00:00	0.00	0.00
33	E9.1-Structure	0.7	0.7	19.38	0.28	0.00	1.69	19.21	0.11	0 07:50	0 00:00	0.00	0.00
34	E9-Structure	2.7	0.1	18.87	6.25	0.00	1.39	18.70	6.08	0 07:50	0 00:00	0.00	0.00
35	Jun-01	6.4	6.4	0.00	0.00	0.00	10.50	0.00	0.00	0 00:00	0 00:00	0.00	0.00
36	Jun-02	6.7	6.7	32.70	32.70	0.00	0.80	32.25	32.25	0 08:01	0 00:00	0.00	0.00
37	Jun-03	6.7	0.0	30.70	30.70	0.00	0.80	30.25	30.25	0 08:01	0 00:00	0.00	0.00
38	Jun-04	7.8	1.1	19.20	0.00	0.00	0.00	19.20	0.00	0 00:00	0 00:00	0.00	0.00
39	Jun-05	7.8	0.0	19.13	0.93	0.00	0.57	18.51	0.31	0 08:01	0 00:00	0.00	0.00
40	Jun-06	8.1	0.3	14.60	0.00	0.00	0.00	14.60	0.00	0 00:00	0 00:00	0.00	0.00
41	Jun-07	8.3	0.3	14.04	0.84	0.00	0.66	13.49	0.29	0 08:01	0 00:00	0.00	0.00
42	Jun-08	7.8	0.0	20.13	0.93	0.00	0.57	19.51	0.31	0 08:01	0 00:00	0.00	0.00
43	Jun-09	8.1	0.0	15.44	0.84	0.00	0.66	14.89	0.29	0 08:01	0 00:00	0.00	0.00
44	Out-1A15-Pipe	17.0	0.0	12.05	1.55	0.00	4.45	11.05	0.55	0 08:02	0 00:00	0.00	0.00
45	Out-1B1-Pipe	0.5	0.0	10.63	0.13	0.00	5.87	10.55	0.05	0 07:50	0 00:00	0.00	0.00
46	Out-1C2-Pipe	0.8	0.0	10.67	0.17	0.00	5.83	10.57	0.07	0 07:50	0 00:00	0.00	0.00
47	Out-1D4-Pipe	4.3	0.0	11.40	0.90	0.00	5.10	10.87	0.37	0 08:13	0 00:00	0.00	0.00
48	Out-1E16-Pipe	5.2	0.0	11.37	0.87	0.00	5.13	10.83	0.33	0 07:52	0 00:00	0.00	0.00
49	Out-1Pipe (53)	4.3	0.0	11.29	0.79	0.00	5.21	10.83	0.33	0 08:13	0 00:00	0.00	0.00
50	Out-1Pipe (59)	4.3	0.0	11.39	0.89	0.00	5.11	10.86	0.36	0 08:13	0 00:00	0.00	0.00
51	Out-1Pipe (62)	4.3	0.0	11.39	0.89	0.00	5.11	10.87	0.37	0 08:13	0 00:00	0.00	0.00
52	Structure - 100	0.6	0.6	19.36	0.26	0.00	0.47	19.20	0.10	0 07:50	0 00:00	0.00	0.00
53	Structure - 101	15.7	0.0	18.66	6.75	0.00	0.81	18.50	6.59	0 07:50	0 00:00	0.00	0.00
54	Structure - 102	0.6	0.6	19.36	0.26	0.00	0.47	19.20	0.10	0 07:50	0 00:00	0.00	0.00
55	Structure - 103	16.2	0.0	18.66	7.07	0.00	0.82	18.50	6.91	0 07:50	0 00:00	0.00	0.00
56	Structure - 104	0.4	0.4	19.34	0.24	0.00	0.49	19.19	0.09	0 07:49	0 00:00	0.00	0.00
57	Structure - 105	16.6	0.0	18.55	7.46	0.00	0.86	18.40	7.31	0 07:50	0 00:00	0.00	0.00
58	Structure - 35	16.6	0.0	12.29	1.53	0.00	6.21	11.31	0.55	0 08:01	0 00:00	0.00	0.00
59	Structure - 36	17.0	0.5	12.14	1.55	0.00	7.99	11.14	0.55	0 08:01	0 00:00	0.00	0.00
60	Structure - 38	5.2	5.2	29.46	0.86	0.00	1.85	28.89	0.29	0 08:01	0 00:00	0.00	0.00
61	Structure - 39	5.2	0.0	29.08	1.47	0.00	3.49	28.51	0.90	0 08:02	0 00:00	0.00	0.00
62	Structure - 48	5.9	5.9	27.17	0.69	0.00	0.81	26.73	0.25	0 08:03	0 00:00	0.00	0.00
63	Structure - 49	5.9	0.0	26.48	1.17	0.00	3.24	26.04	0.73	0 08:03	0 00:00	0.00	0.00
64	Structure - 75	4.3	0.0	11.42	0.79	0.00	1.68	10.96	0.33	0 08:13	0 00:00	0.00	0.00
65	Structure - 83	4.3	0.0	11.52	0.89	0.00	1.58	10.99	0.36	0 08:13	0 00:00	0.00	0.00
66	Structure - 87	4.3	0.0	11.52	0.89	0.00	1.58	11.00	0.37	0 08:13	0 00:00	0.00	0.00
67	Structure - 91	0.4	0.4	19.32	0.22	0.00	1.78	19.19	0.09	0 07:49	0 00:00	0.00	0.00
68	Structure - 94	0.8	0.8	19.45	0.35	0.00	0.37	19.23	0.13	0 07:50	0 00:00	0.00	0.00
69	Structure - 95	13.9	0.0	18.76	5.46	0.00	0.64	18.54	5.24	0 07:51	0 00:00	0.00	0.00
70	Structure - 96	0.7	0.7	19.41	0.31	0.00	0.42	19.22	0.12	0 07:50	0 00:00	0.00	0.00
71	Structure - 97	14.5	0.0	18.71	5.85	0.00	0.71	18.52	5.66	0 07:50	0 00:00	0.00	0.00
72	Structure - 98	0.6	0.6	19.40	0.30	0.00	0.42	19.22	0.12	0 07:50	0 00:00	0.00	0.00
73	Structure - 99	15.1	0.0	18.70	6.31	0.00	0.73	18.52	6.13	0 07:51	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Flap Gate	No. of Barrels
1	A1.1-Pipe	43.57	19.10	18.23	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
2	A10.1-Pipe	34.83	19.10	18.40	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
3	A10-Pipe	91.67	12.39	11.91	0.5300	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
4	A11.1-Pipe	34.86	19.10	18.40	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
5	A11-Pipe	67.33	11.91	11.59	0.4700	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
6	A12.1-Pipe	39.58	19.10	18.31	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
7	A12-Pipe	100.61	11.59	11.09	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
8	A13-Pipe	63.49	11.09	10.76	0.5200	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
9	A14-Pipe	37.44	10.76	10.59	0.4500	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
10	A15-Pipe	19.67	10.59	10.50	0.4600	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
11	A1-Pipe	32.78	27.61	18.23	28.6100	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
12	A2.1-Pipe	44.00	19.10	18.22	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
13	A2-Pipe	97.50	16.03	15.56	0.4800	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
14	A3-Pipe	88.50	15.56	15.13	0.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
15	A4.1-Pipe	39.16	25.31	16.82	21.6900	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
16	A4-Pipe	56.66	15.13	14.86	0.4800	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
17	A5-Pipe	107.77	14.86	13.86	0.9300	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
18	A6.1-Pipe	42.40	19.10	18.31	1.8700	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
19	A7.1-Pipe	34.69	19.10	18.41	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
20	A7-Pipe	110.61	13.86	13.30	0.5100	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
21	A8.1-Pipe	34.74	19.10	18.41	2.0000	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
22	A8-Pipe	89.33	13.30	12.86	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
23	A9.1-Pipe	34.78	19.10	18.40	2.0100	CIRCULAR	8.040	8.040	0.0150	0.5000	0.5000	0.0000	No	1
24	A9-Pipe	95.00	12.86	12.39	0.4900	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	No	1
25	B1-Pipe	19.69	12.20	10.50	8.6300	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
26	C1-Pipe	44.64	19.10	18.21	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
27	C2-Pipe	19.67	12.20	10.50	8.6400	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
28	D1-Pipe	44.46	19.10	18.21	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
29	D2-Pipe	19.67	12.20	10.50	8.6400	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
30	D4-Pipe	26.30	10.63	10.50	0.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
31	E10-Pipe	68.72	12.29	11.95	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
32	E11-Pipe	67.31	11.95	11.61	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
33	E12.1-Pipe	28.75	19.10	18.52	2.0200	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
34	E13.1-Pipe	31.82	19.10	18.46	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
35	E13-Pipe	77.56	11.61	11.22	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
36	E14-Pipe	88.49	11.22	10.79	0.4900	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
37	E15-Pipe	61.58	10.79	10.62	0.2800	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
38	E16-Pipe	26.19	10.62	10.50	0.4600	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
39	E1-Pipe	73.22	15.10	14.73	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
40	E2-Pipe	55.47	14.73	14.45	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
41	E4-Pipe	15.97	14.45	14.37	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
42	E5.1-Pipe	32.89	19.10	18.42	2.0800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
43	E5-Pipe	70.61	14.37	14.02	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
44	E6.1-Pipe	28.85	19.10	18.44	2.2800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
45	E6-Pipe	58.54	14.02	13.73	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
46	E7-Pipe	59.55	13.23	12.93	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
47	E8.1-Pipe	25.28	19.10	18.59	2.0000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
48	E8-Pipe	61.63	12.93	12.62	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
49	E9.1-Pipe	30.97	19.10	18.44	2.1200	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	No	1
50	E9-Pipe	66.95	12.62	12.29	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	No	1
51	Link-01	178.44	10.50	0.00	5.8800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
52	Link-02	117.22	9.00	0.00	7.6800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
53	Link-03	30.02	10.50	0.00	34.9800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
54	Link-04	60.81	10.50	0.00	17.2700	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
55	Link-05	138.79	10.50	0.00	7.5700	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
56	Link-11	71.00	32.00	30.00	2.8200	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
57	Link-12	417.20	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
58	Link-14	128.08	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
59	Link-16	317.29	0.00	0.00	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
60	Link-17	137.86	10.50	0.00	7.6200	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
61	Link-18	99.47	10.50	0.00	10.5600	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
62	Link-19	130.31	10.50	0.00	8.0600	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
63	Link-20	191.76	10.50	0.00	5.4800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
64	Link-29	48.58	19.20	18.82	0.7800	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
65	Link-30	67.00	19.20	18.20	1.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
66	Link-31	46.31	14.60	14.60	0.0000	Dummy	0.000	0.000	0.0150	0.5000	0.5000	0.0000	No	1
67	Link-32	64.00	14.60	13.20	2.1900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
68	Pipe (24)	45.94	28.60	28.22	0.8300	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
69	Pipe (34)	46.55	26.48	25.79	1.4800	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
70	Pipe (53)	27.49	10.63	10.50	0.4700	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	No	1
71	Pipe (59)	25.67	10.63	10.50	0.5100	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1
72	Pipe (62)	25.95	10.63	10.50	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	A1.1-Pipe	0.3	0 07:50	1.9	0.15	3.84	0.19	0.18	0.26	0.00		Calculated
2	A10.1-Pipe	0.6	0 07:50	1.9	0.31	4.68	0.12	0.26	0.38	0.00		Calculated
3	A10-Pipe	15.1	0 08:02	25.9	0.58	5.47	0.28	1.37	0.55	0.00		Calculated
4	A11.1-Pipe	0.6	0 07:50	1.9	0.31	4.68	0.12	0.26	0.38	0.00		Calculated
5	A11-Pipe	15.7	0 08:02	24.5	0.64	5.28	0.21	1.45	0.58	0.00		Calculated
6	A12.1-Pipe	0.4	0 07:50	1.5	0.27	3.62	0.18	0.24	0.36	0.00		Calculated
7	A12-Pipe	16.2	0 08:02	25.0	0.65	5.41	0.31	1.47	0.59	0.00		Calculated
8	A13-Pipe	16.6	0 08:01	25.7	0.64	5.57	0.19	1.46	0.58	0.00		Calculated
9	A14-Pipe	16.6	0 08:02	24.0	0.69	5.26	0.12	1.53	0.61	0.00		Calculated
10	A15-Pipe	17.0	0 08:02	24.1	0.71	5.31	0.06	1.55	0.62	0.00		Calculated
11	A1-Pipe	5.2	0 08:02	48.7	0.11	17.94	0.03	0.33	0.22	0.00		Calculated
12	A2.1-Pipe	0.4	0 07:50	1.9	0.21	4.22	0.17	0.21	0.31	0.00		Calculated
13	A2-Pipe	5.7	0 08:02	6.3	0.90	4.05	0.40	1.12	0.74	0.00		Calculated
14	A3-Pipe	6.3	0 08:01	6.4	0.99	4.10	0.36	1.22	0.81	0.00		Calculated
15	A4.1-Pipe	5.9	0 08:03	53.0	0.11	19.80	0.03	0.34	0.23	0.00		Calculated
16	A4-Pipe	6.7	0 08:01	24.5	0.27	4.25	0.22	0.89	0.36	0.00		Calculated
17	A5-Pipe	12.6	0 08:02	34.3	0.37	6.44	0.28	1.05	0.42	0.00		Calculated
18	A6.1-Pipe	0.4	0 07:50	1.8	0.23	4.15	0.17	0.22	0.32	0.00		Calculated
19	A7.1-Pipe	0.8	0 07:51	1.5	0.55	4.34	0.13	0.35	0.53	0.00		Calculated
20	A7-Pipe	13.2	0 08:02	25.3	0.52	5.21	0.35	1.28	0.51	0.00		Calculated
21	A8.1-Pipe	0.7	0 07:50	1.5	0.44	4.10	0.14	0.31	0.46	0.00		Calculated
22	A8-Pipe	13.9	0 08:02	24.9	0.56	5.21	0.29	1.34	0.53	0.00		Calculated
23	A9.1-Pipe	0.6	0 07:51	1.5	0.43	4.09	0.14	0.30	0.46	0.00		Calculated
24	A9-Pipe	14.5	0 08:02	24.9	0.58	5.27	0.30	1.37	0.55	0.00		Calculated
25	B1-Pipe	0.5	0 07:50	57.6	0.01	5.50	0.06	0.13	0.06	0.00		Calculated
26	C1-Pipe	0.4	0 07:50	1.9	0.21	4.22	0.18	0.21	0.31	0.00		Calculated
27	C2-Pipe	0.8	0 07:50	57.6	0.01	6.54	0.05	0.17	0.08	0.00		Calculated
28	D1-Pipe	0.3	0 07:50	1.9	0.18	4.00	0.19	0.19	0.29	0.00		Calculated
29	D2-Pipe	0.7	0 07:50	57.6	0.01	6.25	0.05	0.15	0.08	0.00		Calculated
30	D4-Pipe	4.3	0 08:13	6.4	0.67	3.88	0.11	0.90	0.60	0.00		Calculated
31	E10-Pipe	3.4	0 07:52	13.9	0.24	3.64	0.31	0.67	0.34	0.00		Calculated
32	E11-Pipe	3.6	0 07:52	13.9	0.26	3.69	0.30	0.69	0.35	0.00		Calculated
33	E12.1-Pipe	0.6	0 07:50	1.9	0.33	4.79	0.10	0.27	0.40	0.00		Calculated
34	E13.1-Pipe	0.3	0 07:49	1.9	0.16	3.88	0.14	0.18	0.27	0.00		Calculated
35	E13-Pipe	4.2	0 07:52	13.9	0.31	3.88	0.33	0.76	0.38	0.00		Calculated
36	E14-Pipe	4.7	0 07:52	13.7	0.34	3.94	0.37	0.81	0.40	0.00		Calculated
37	E15-Pipe	5.0	0 07:52	10.3	0.49	3.25	0.32	0.98	0.49	0.00		Calculated
38	E16-Pipe	5.2	0 07:52	13.3	0.39	3.96	0.11	0.87	0.43	0.00		Calculated
39	E1-Pipe	0.2	0 07:54	6.4	0.02	1.46	0.84	0.16	0.11	0.00		Calculated
40	E2-Pipe	0.2	0 07:54	6.4	0.03	1.69	0.55	0.19	0.12	0.00		Calculated
41	E4-Pipe	0.2	0 07:53	6.3	0.03	1.67	0.16	0.19	0.13	0.00		Calculated
42	E5.1-Pipe	0.4	0 07:50	1.9	0.23	4.41	0.12	0.22	0.33	0.00		Calculated
43	E5-Pipe	0.8	0 07:52	6.4	0.13	2.48	0.47	0.36	0.24	0.00		Calculated
44	E6.1-Pipe	0.9	0 07:50	2.0	0.44	5.46	0.09	0.31	0.46	0.00		Calculated
45	E6-Pipe	0.9	0 07:52	6.4	0.14	2.57	0.38	0.38	0.25	0.00		Calculated
46	E7-Pipe	1.8	0 07:51	13.9	0.13	3.06	0.32	0.49	0.25	0.00		Calculated
47	E8.1-Pipe	0.7	0 07:50	1.9	0.37	4.89	0.09	0.28	0.42	0.00		Calculated
48	E8-Pipe	1.9	0 07:51	13.8	0.14	3.08	0.33	0.50	0.25	0.00		Calculated
49	E9.1-Pipe	0.6	0 07:50	1.9	0.30	4.78	0.11	0.25	0.38	0.00		Calculated
50	E9-Pipe	2.7	0 07:51	13.8	0.19	3.39	0.33	0.59	0.30	0.00		Calculated
51	Link-01	5.2	0 07:52	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
52	Link-02	0.7	0 07:50	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
53	Link-03	0.8	0 07:50	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
54	Link-04	0.5	0 07:50	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
55	Link-05	17.0	0 08:02	0.0	0.19	0.00		0.59	0.30	0.00		Calculated
56	Link-11	6.7	0 08:01	15.3	0.44	8.37	0.14	0.70	0.47	0.00		Calculated
57	Link-12	6.7	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
58	Link-14	7.8	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
59	Link-16	8.3	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
60	Link-17	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
61	Link-18	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
62	Link-19	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
63	Link-20	4.3	0 08:13	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
64	Link-29	7.8	0 08:01	0.0	0.44	0.00		0.70	0.47	0.00		Calculated
65	Link-30	7.8	0 08:01	11.1	0.70	6.81	0.16	0.93	0.62	0.00		Calculated
66	Link-31	8.1	0 08:01	0.0	0.70	0.00		0.93	0.62	0.00		Calculated
67	Link-32	8.1	0 08:01	13.5	0.60	7.95	0.13	0.84	0.56	0.00		Calculated
68	Pipe (24)	5.2	0 08:02	8.3	0.62	4.94	0.15	0.86	0.57	0.00		Calculated
69	Pipe (34)	5.9	0 08:03	13.9	0.43	7.54	0.10	0.69	0.46	0.00		Calculated
70	Pipe (53)	4.3	0 08:13	7.8	0.55	4.52	0.10	0.79	0.53	0.00		Calculated
71	Pipe (59)	4.3	0 08:13	6.5	0.66	3.91	0.11	0.89	0.59	0.00		Calculated
72	Pipe (62)	4.3	0 08:13	6.4	0.66	3.90	0.11	0.89	0.59	0.00		Calculated

Storage Nodes

Storage Node : Detention-Basin

Input Data

Invert Elevation (ft) 10.50
Max (Rim) Elevation (ft) 15.50
Max (Rim) Offset (ft) 5.00
Initial Water Elevation (ft) 0.00
Initial Water Depth (ft) ..... -10.50
Ponded Area (ft²) 12634.80
Evaporation Loss 0.00

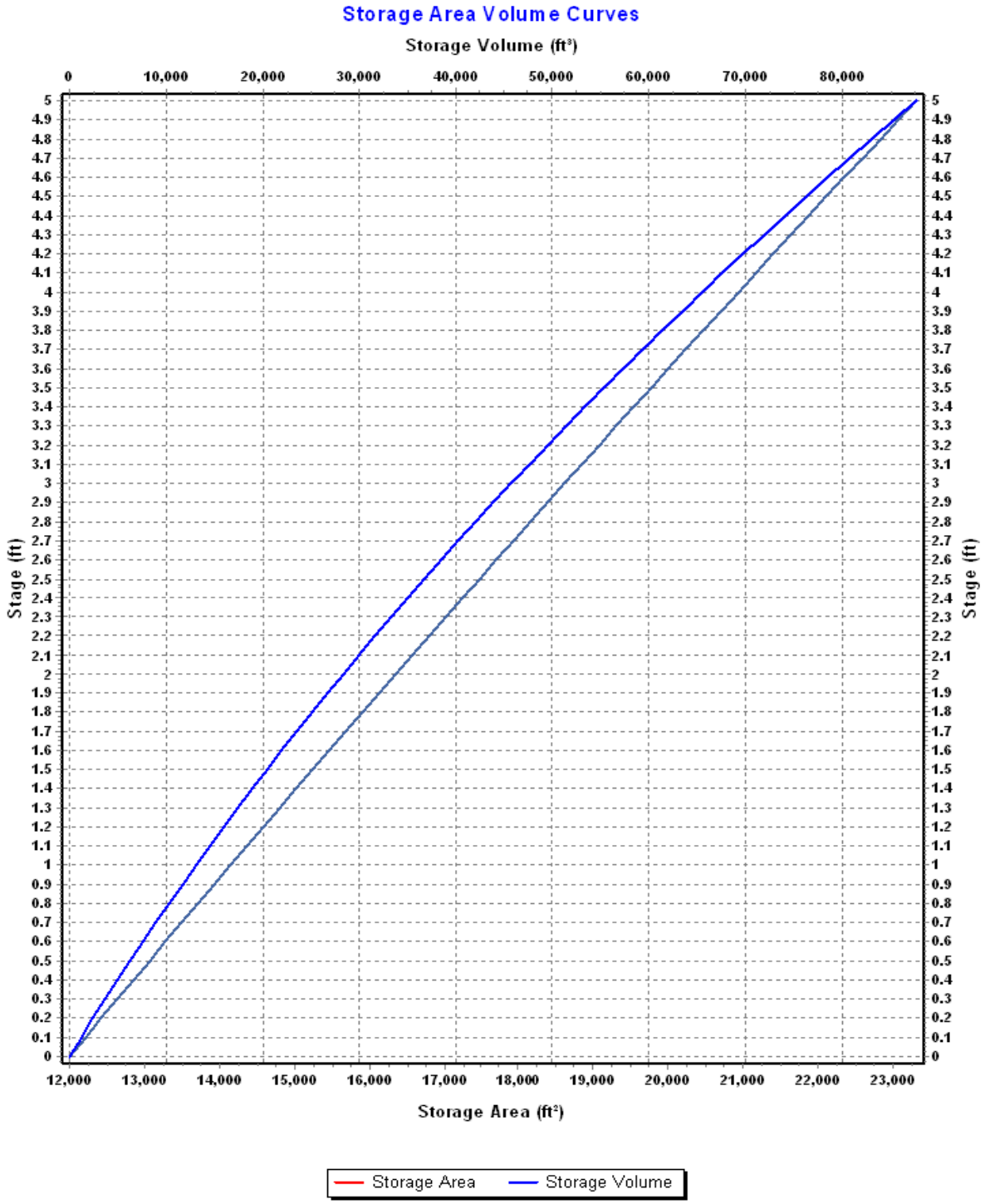
Infiltration/Exfiltration

Exfiltration Rate (in/hr) 0.0900

Storage Area Volume Curves

Storage Curve : Storage-01

Stage (ft)	Storage Area (ft²)	Storage Volume (ft³)
0	11997.07	0.000
0.1	12209.57	1210.33
0.2	12422.63	2441.94
0.3	12636.25	3694.88
0.4	12850.44	4969.21
0.5	13065.18	6264.99
0.6	13280.49	7582.27
0.7	13496.37	8921.11
0.8	13712.80	10281.57
0.9	13929.80	11663.70
1	14147.36	13067.56
1.1	14365.48	14493.20
1.2	14584.17	15940.68
1.3	14803.41	17410.06
1.4	15023.22	18901.39
1.5	15243.59	20414.73
1.6	15464.53	21950.14
1.7	15686.02	23507.67
1.8	15908.08	25087.38
1.9	16130.71	26689.32
2	16353.89	28313.55
2.1	16577.64	29960.13
2.2	16801.95	31629.11
2.3	17026.82	33320.55
2.4	17252.25	35034.50
2.5	17478.25	36771.03
2.6	17704.81	38530.18
2.7	17931.93	40312.02
2.8	18159.61	42116.60
2.9	18387.86	43943.97
3	18616.66	45794.20
3.1	18846.04	47667.34
3.2	19075.97	49563.44
3.3	19306.46	51482.56
3.4	19537.52	53424.76
3.5	19769.14	55390.09
3.6	20001.33	57378.61
3.7	20234.07	59390.38
3.8	20467.38	61425.45
3.9	20701.25	63483.88
4	20935.68	65565.73
4.1	21170.68	67671.05
4.2	21406.24	69799.90
4.3	21642.36	71952.33
4.4	21879.04	74128.40
4.5	22116.28	76328.17
4.6	22354.09	78551.69
4.7	22592.46	80799.02
4.8	22831.39	83070.21
4.9	23070.89	85365.32
5	23310.95	87684.41


Storage Area Volume Curves
Storage Volume (ft³)
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
80,000
Stage (ft)
Stage (ft)
12,000
13,000
14,000
15,000
16,000
17,000
18,000
19,000
20,000
21,000
22,000
23,000
Storage Area (ft²)
Storage Area
Storage Volume

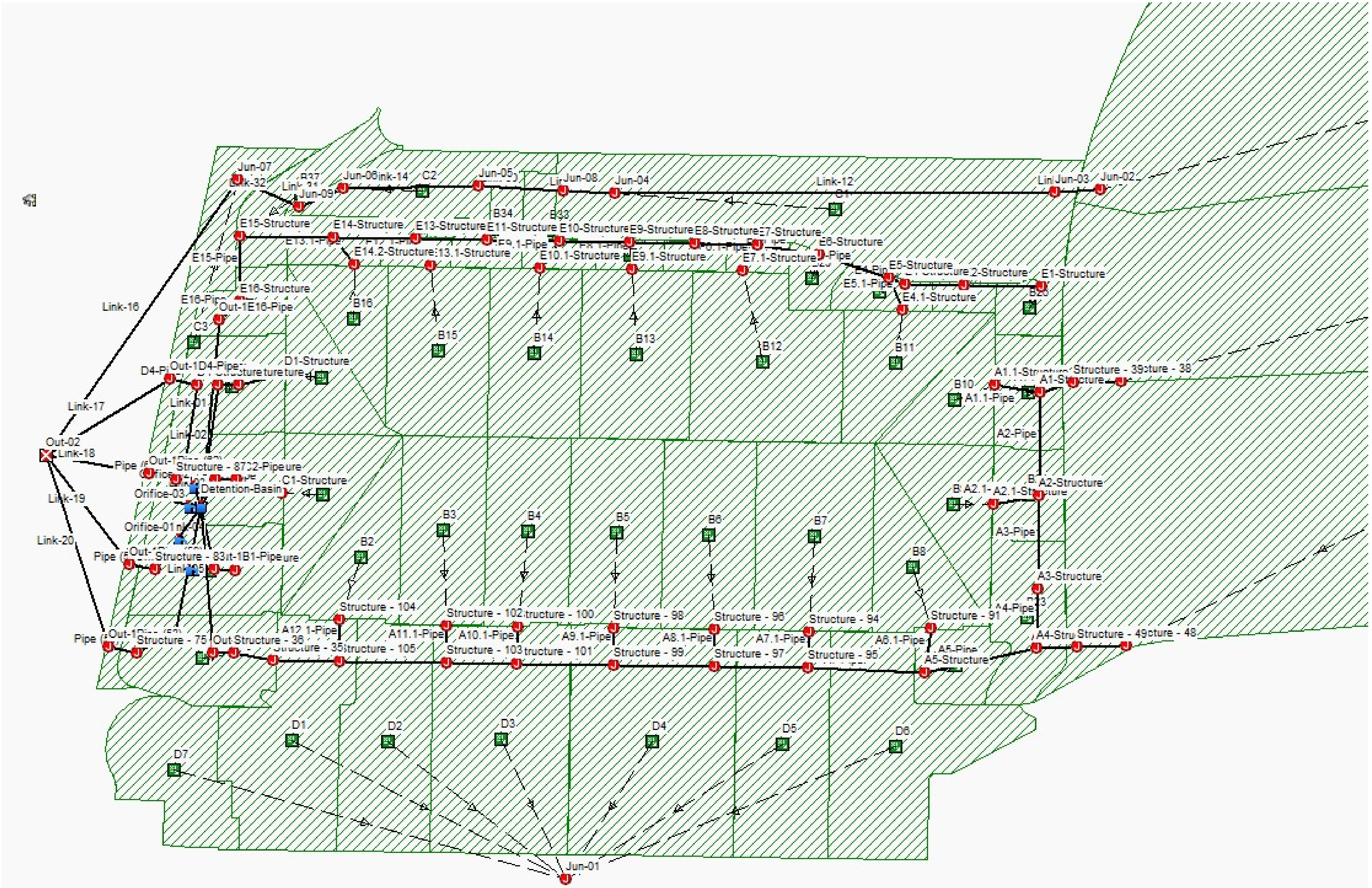
Storage Node : Detention-Basin (continued)

Outflow Orifices

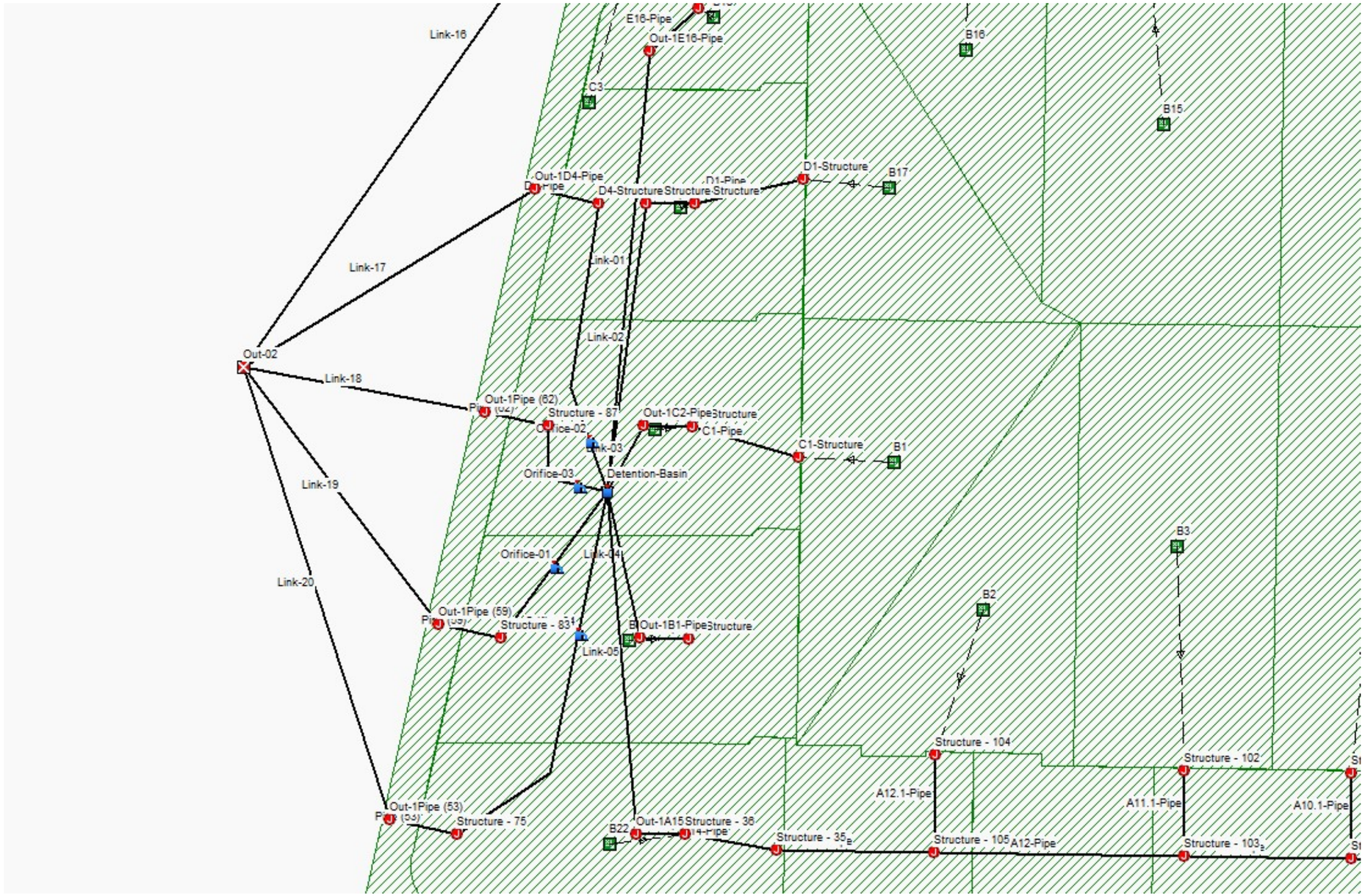
SN	Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1	Orifice-01	Side	Rectangular	No		9.00	12.00	11.00	0.63
2	Orifice-02	Side	Rectangular	No		9.00	12.00	11.00	0.63
3	Orifice-03	Side	Rectangular	No		9.00	12.00	11.00	0.63
4	Orifice-04	Side	Rectangular	No		9.00	12.00	11.00	0.63

Output Summary Results

Peak Inflow (cfs)	23.85
Peak Lateral Inflow (cfs)	0.00
Peak Outflow (cfs)	17.07
Peak Exfiltration Flow Rate (cfm)	2.10
Max HGL Elevation Attained (ft)	12.66
Max HGL Depth Attained (ft)	2.16
Average HGL Elevation Attained (ft)	11.38
Average HGL Depth Attained (ft)	0.88
Time of Max HGL Occurrence (days hh:mm)	0 08:13
Total Exfiltration Volume (1000-ft³)	2.470
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0.00



Jun-07
Link-32
Jun-09
Jun-06
C2
Jun-05
Jun-08
Jun-04
Link-12
Jun-03
Jun-02
B34
B33
E15-Structure
E14-Structure
E13-Structure
E11-Structure
E10-Structure
E9-Structure
E8-Structure
E6-Structure
E14.2-Structure
E10.1-Structure
E9.1-Structure
E7.1-Structure
E5-Structure
E1-Structure
E5.1-Pipe
E4.1-Structure
E15-Pipe
E16-Structure
Link-16
C3
B16
B15
B14
B13
B12
B11
D1-Structure
Link-17
Link-01
Link-02
Out-02
Link-18
Link-19
Link-20
Detention-Basin
C1-Structure
Orifice-03
Orifice-01
A1.1-Pipe
A2-Pipe
A2-Structure
A3-Pipe
A3-Structure
A4-Pipe
B10
B2
B3
B4
B5
B6
B7
B8
Structure - 104
Structure - 102
Structure - 98
Structure - 96
Structure - 94
Structure - 91
Structure - 105
Structure - 103
Structure - 99
Structure - 97
Structure - 95
Structure - 75
A11.1-Pipe
A10.1-Pipe
A9.1-Pipe
A8.1-Pipe
A7.1-Pipe
A6.1-Pipe
A5-Structure
D1
D2
D3
D4
D5
D6
D7
Jun-01

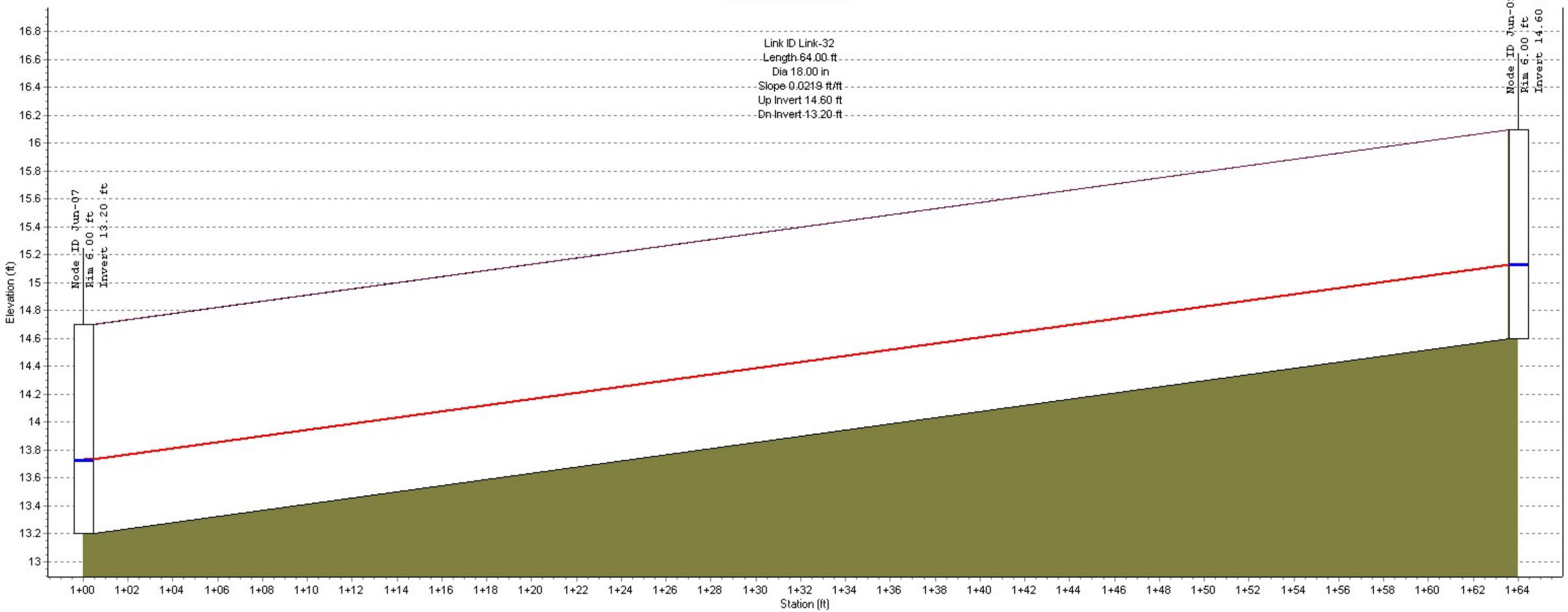

Link-16
E16-Pipe
Out-1E16-Pipe
B16
C3
B15
Out-1D4-Pipe
D4-Structure
D1-Pipe
D1-Structure
B17
Link-17
Link-01
Link-02
Out-02
Link-18
Out-1Pipe (62)
Structure - 87
Out-1C2-Pipe
C1-Pipe
C1-Structure
B1
Orifice-02
Orifice-03
Detention-Basin
Link-19
B3
Orifice-01
Link-04
Link-20
B2
Out-1Pipe (59)
Structure - 831
Out-1B1-Pipe
Link-05
Structure - 104
Structure - 102
A12.1-Pipe
A11.1-Pipe
A10.1-Pipe
Out-1Pipe (53)
Structure - 75
B22
Out-1A15
Structure - 36
Structure - 35
Structure - 105
A12-Pipe
Structure - 103

ATTACHMENT 3

10-Year HGL PIPE PROFILE

Profile Plot

Main Street Storm Sewer

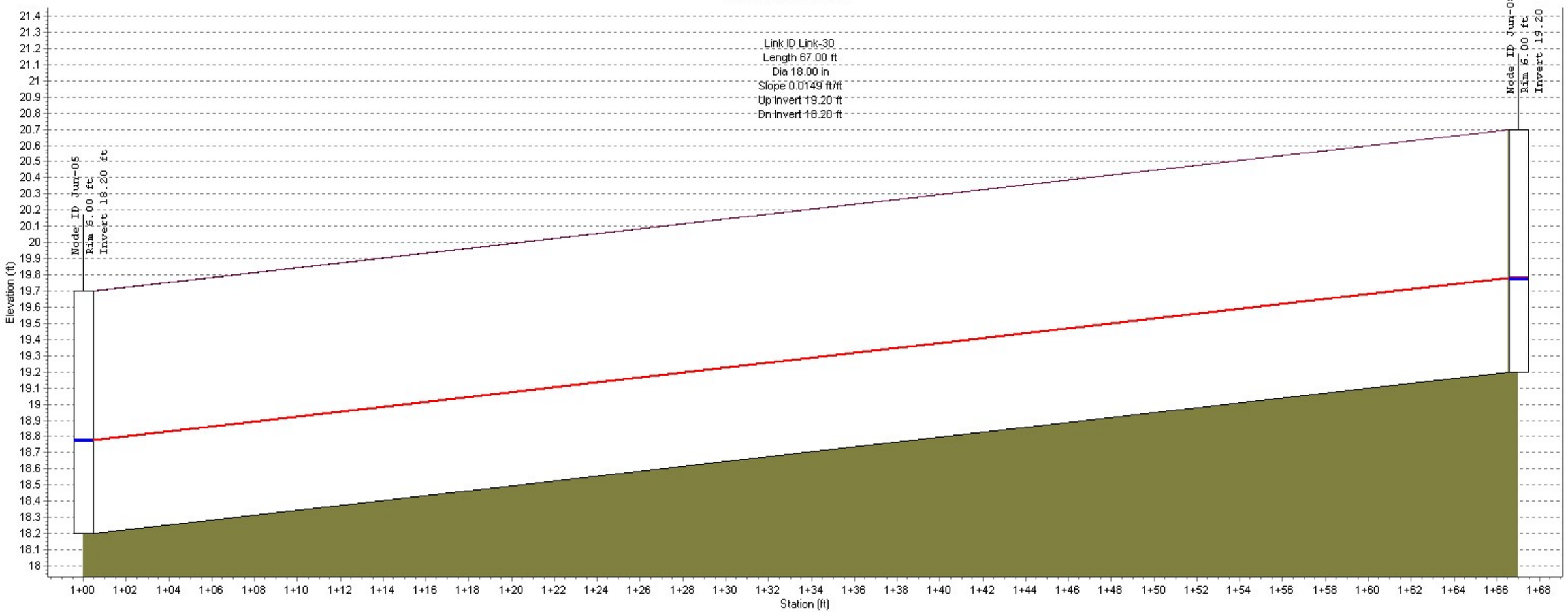


Node ID:	Jun-07	Jun-09
Rim (ft):	6.00	6.00
Invert (ft):	13.20	14.60
Min Pipe Cover (ft):	0.00	0.00
Max HGL (ft):	13.73	15.13

Link ID:	Link-32
Length (ft):	64.00
Dia (in):	18.00
Slope (ft/ft):	0.0219
Up Invert (ft):	14.60
Dn Invert (ft):	13.20
Max Q (cfs):	3.65
Max Vel (ft/s):	6.48
Max Depth (ft):	0.53

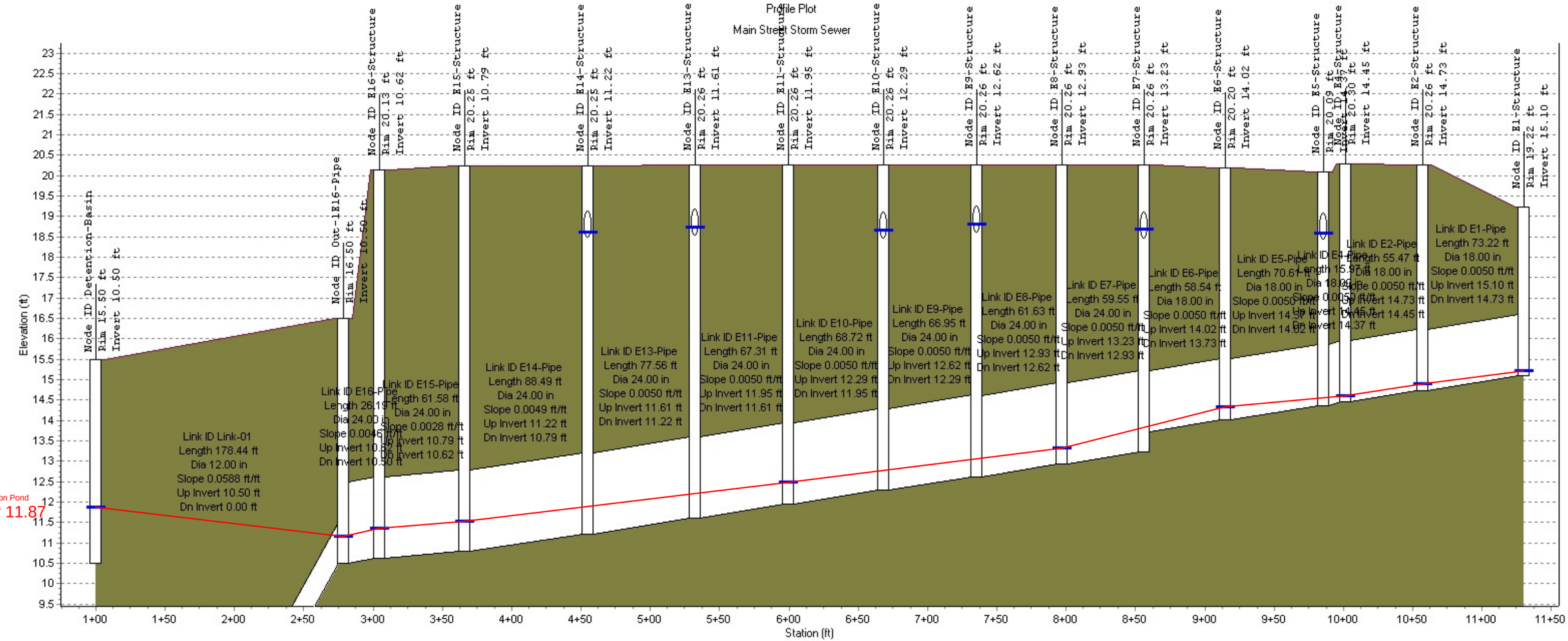
Profile Plot

Main Street Storm Sewer



Node ID:	Jun-05	Jun-08
Rim (ft):	6.00	6.00
Invert (ft):	18.20	19.20
Min Pipe Cover (ft):	0.00	0.00
Max HGL (ft):	18.78	19.78

Link ID:	Link-30
Length (ft):	67.00
Dia (in):	18.00
Slope (ft/ft):	0.0149
Up Invert (ft):	19.20
Dn Invert (ft):	18.20
Max Q (cfs):	3.57
Max Vel (ft/s):	5.60
Max Depth (ft):	0.58

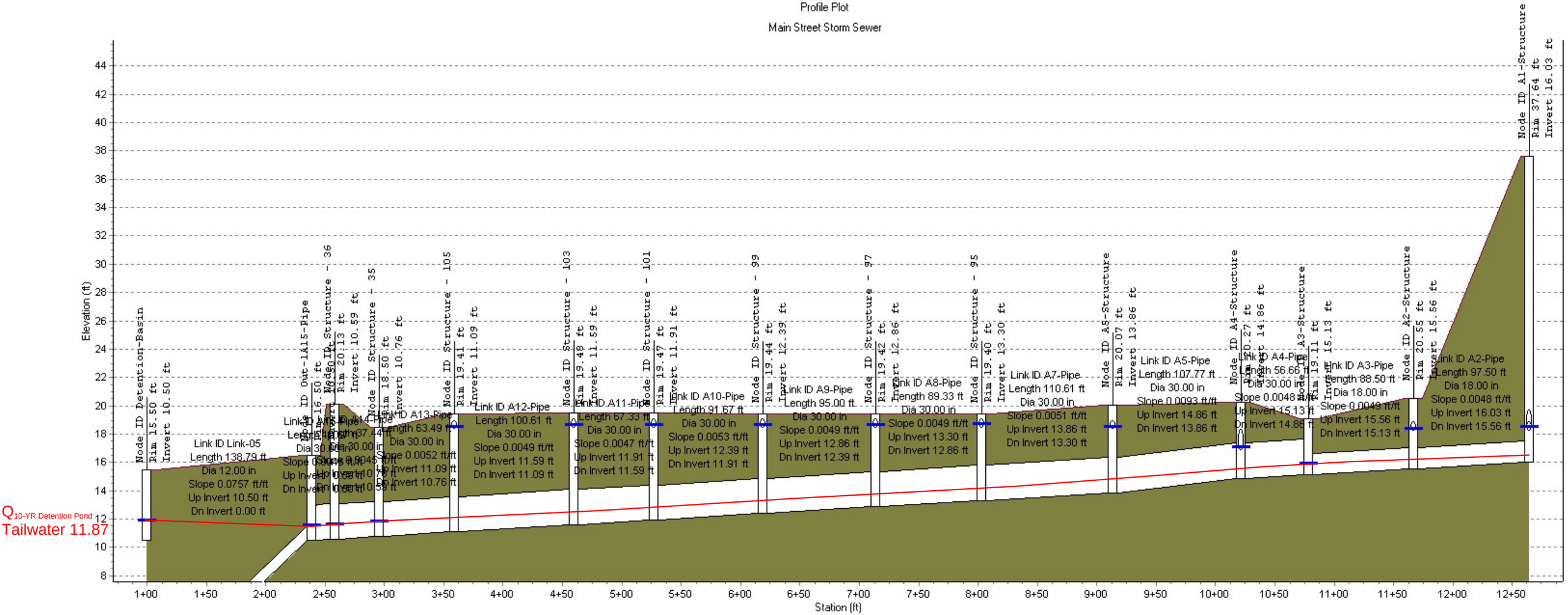


Node ID:		Out-1E16-Pipe	E16-Structure	E15-Structure	E14-Structure	E13-Structure	E11-Structure	E10-Structure	E9-Structure	E8-Structure	E7-Structure	E6-Structure	E5-Structure	E4-Structure	E2-Structure	E1-Structure
Rim (ft):	15.50	16.50	20.13	20.25	20.25	20.26	20.26	20.26	20.26	20.26	20.26	20.20	20.09	20.30	20.26	19.22
Invert (ft):	10.50	10.50	10.62	10.79	11.22	11.61	11.95	12.29	12.62	12.93	13.23	14.02	14.37	14.45	14.73	15.10
Min Pipe Cover (ft):		4.00	7.51	7.46	1.12	1.07	6.31	1.15	1.00	5.33	1.15	4.68	1.01	4.35	4.03	2.62
Max HGL (ft):	11.87	11.16	11.36	11.53	18.60	18.72	12.48	18.64	18.81	13.32	18.68	14.32	18.59	14.60	14.88	15.22

Link ID:	Link-01	E16-Pipe	E15-Pipe	E14-Pipe	E13-Pipe	E11-Pipe	E10-Pipe	E9-Pipe	E8-Pipe	E7-Pipe	E6-Pipe	E5-Pipe	E4-Pipe	E2-Pipe	E1-Pipe
Length (ft):	178.44	26.19	61.58	88.49	77.56	67.31	68.72	66.95	61.63	59.55	58.54	70.61	15.97	55.47	73.22
Dia (in):	12.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	18.00	18.00	18.00	18.00	18.00
Slope (ft/ft):	0.0588	0.0046	0.0028	0.0049	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Up Invert (ft):	10.50	10.62	10.79	11.22	11.61	11.95	12.29	12.62	12.93	13.23	14.02	14.37	14.45	14.73	15.10
Dn Invert (ft):	0.00	10.50	10.62	10.79	11.22	11.61	11.95	12.29	12.62	12.93	13.73	14.02	14.37	14.45	14.73
Max Q (cfs):	0.00	3.13	3.01	2.83	2.56	2.14	2.04	1.60	1.15	1.10	0.55	0.48	0.13	0.13	0.09
Max Vel (ft/s):	0.00	3.45	2.85	3.43	3.36	3.20	3.16	2.92	2.66	2.64	2.22	2.14	1.41	1.43	1.29
Max Depth (ft):	0.00	0.66	0.74	0.62	0.58	0.53	0.52	0.46	0.39	0.38	0.30	0.28	0.15	0.15	0.12

Profile Plot

Main Street Storm Sewer



Node ID:		Out-1A15-Pipe	Structure - 35	Structure - 105	Structure - 103	Structure - 101	Structure - 99	Structure - 97	Structure - 95	A5-Structure	A4-Structure	A3-Structure	A2-Structure	A1-Structure
Rim (ft):	15.50	16.50	18.50	19.41	19.48	19.47	19.44	19.42	19.40	20.07	20.27	19.11	20.55	37.64
Invert (ft):	10.50	10.50	10.76	11.09	11.59	11.91	12.39	12.86	13.30	13.86	14.86	15.13	15.56	16.03
Min Pipe Cover (ft):		3.50	5.24	0.43	0.41	0.40	0.37	0.35	0.33	1.10	1.95	1.48	1.66	17.91
Max HGL (ft):	11.87	11.54	11.79	18.49	18.60	18.60	18.63	18.64	18.67	18.47	17.05	15.87	18.38	18.46

Link ID:	Link-05	A15-Pipe	A14-Pipe	A13-Pipe	A12-Pipe	A11-Pipe	A10-Pipe	A9-Pipe	A8-Pipe	A7-Pipe	A5-Pipe	A4-Pipe	A3-Pipe	A2-Pipe
Length (ft):	138.79	19.67	37.44	63.49	100.61	67.33	91.67	95.00	89.33	110.61	107.77	56.66	88.50	97.50
Dia (in):	12.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	18.00	18.00
Slope (ft/ft):	0.0757	0.0045	0.0045	0.0052	0.0049	0.0047	0.0053	0.0049	0.0049	0.0051	0.0093	0.0048	0.0049	0.0048
Up Invert (ft):	10.50	10.59	10.76	11.09	11.59	11.91	12.39	12.86	13.30	13.86	14.86	15.13	15.56	16.03
Dn Invert (ft):	0.00	10.50	10.59	10.76	11.09	11.59	11.91	12.39	12.86	13.30	13.86	14.86	15.13	15.56
Max Q (cfs):	0.00	8.76	8.50	8.50	8.27	7.95	7.63	7.28	6.92	6.47	6.12	3.30	3.07	2.72
Max Vel (ft/s):	0.00	4.51	4.46	4.70	4.56	4.45	4.59	4.40	4.34	4.31	5.27	3.49	3.56	3.44
Max Depth (ft):	0.00	1.04	1.03	0.99	0.99	0.98	0.93	0.93	0.90	0.86	0.72	0.62	0.74	0.69

STORMWATER CONTROL PLAN FOR A REGULATED PROJECT

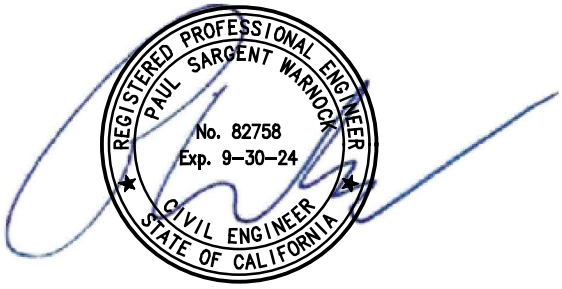
For

Commerce 220 Distribution Center
American Canyon, CA

THIS REPORT WAS PREPARED IN CONJUNCTION WITH THE INSTRUCTIONS, CRITERIA, AND MINIMUM REQUIREMENTS IN THE BAY AREA STORMWATER MANAGEMENT AGENCIES ASSOCIATION'S (BASMAA'S) POST CONSTRUCTION MANUAL.

Prepared for:

SDG Commerce 220, LLC
413 W. Yosemite Avenue, Suite 105
Madera, CA 93637



Project No. 4122068.0

July 21, 2023

1515 Fourth Street, Napa, CA 94559 www.rsacivil.com (707) 252-3301 v. (707) 252-4966 f.

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I. Project Data

Table 1. Project Data Form

Project Name/Number	Commerce 220 Distribution Center (4122068.0)
Application Submittal Date	March 17, 2023
Project Location	1055 Commerce Ct. American Canyon, California 94503 APN: 058-030-069
Project Phase	Conditional Use Permit
Project Type and Description	New warehouse
Total Project Site Area (acres)	10.2 Acres
Total New and Replaced Impervious Surface Area	346,605 sq. ft
Total Pre-Project Impervious Surface Area	0 sq. ft
Total Post-Project Impervious Surface Area	346,605 sq. ft

II. Setting

II.A. Project Location and Description

The Commerce 220 Distribution Center project is located on Commerce Ct. in American Canyon, California 94503. The APN is 058-030-069. Refer to Attachment 1 for the Vicinity Map. The parcel is zoned as Commercial Recreation (CR) by the City of American Canyon and is currently undeveloped. The project will include the construction of a new warehouse and parking area. The warehouse will function as a distribution center. This project will not be phased and will be built in a single phase of construction. Refer to Attachment 2 for Site Stormwater Control Plan.

The proposed area to be disturbed is greater than 1 acre, so a Stormwater Pollution Prevention Plan will be prepared and a Notice of Intent (NOI) will be obtained prior to the beginning of construction.

II.B. Existing Site Features and Conditions

The existing site is currently an undeveloped grassy field. Access to the parcel is off of Commerce Ct. Features of the site include grasses and shrubs and a gravel road along the eastern side of the parcel. The site is bounded by undeveloped parcels to the east and west, a commercial warehouse to the south and a commercial warehouse currently under construction to the north.

The predominant soil type in the project area is Haire clay loam, which is of the Hydraulic Soil Group D. Refer to Attachment 1 for the Soils Map. The project area is relatively flat with gentle slopes to the west. Stormwater is ultimately conveyed to the Napa River.

II.C. Opportunities and Constraints for Stormwater Control

Stormwater treatment facilities have been integrated into the planning, design, construction, operation, and maintenance of the proposed development. The following potential opportunities and constraints were considered in determining the best stormwater control design for this development.

Opportunities for the site include landscaped areas to the west of the building. A bioretention basin will be installed in this area to treat stormwater runoff prior to discharge from the site. Runoff will be conveyed to the bioretention basin via surface flows and an on-site storm drain network.

Constraints include the site location and existing grades. The site is generally flat and is not located near an existing storm drain system. To accommodate this, the warehouse was designed at a finished floor elevation so that stormwater could flow into the bioretention basin, and the subsequent outflow from this basin would outfall onto nearby fields along existing drainage patterns.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

1. Limitation of development envelope

   The shallow slopes of the site make the chosen development areas suitable for development.

2. Preservation of natural drainage features

   Natural existing drainage features include mapped wetlands on-site as well as gently sloping terrain that allows stormwater runoff to remain as predominantly sheet flow. A bioretention/detention basin has been proposed for the project to treat and detain storm water before it leaves the site. Level spreaders are proposed at the outfall of the proposed bioretention/detention basin to allow post-development stormwater runoff to be returned to sheet flow.

3. Minimization of imperviousness

   Walkways and parking areas are designed to the minimum widths necessary without compromising public safety and a walkable environment.

4. Use of drainage as a design element

   A bioretention/detention basin is incorporated into the aesthetic landscape design of the site.

III.B. Use of Permeable Pavements

Permeable pavements are not proposed at this time.

III.C. Dispersal of Runoff to Pervious Areas

Stormwater runoff will be directed to the bioretention/detention basin.

III.D. Stormwater Control Measures

A bioretention basin has been incorporated as a stormwater control measure. The bioretention basin will collect and treat onsite stormwater as well as from portions of Commerce Boulevard. Refer to Attachment 2 for Stormwater Control Plan.

IV. Documentation of Drainage

IV.A Drainage Management Areas

Table 2. Drainage Management Areas

DMA Name	Impervious Area (square feet)	Pervious Area (square feet)	Total Area (square feet)
DMA 1	297,608	11,720	309,328
DMA 2	0	12,083	12,083
DMA 3	48,997	1,744	50,741

Drainage Management Area Description

DMA 1 consists of the warehouse roof area, the parking areas, and drive aisles. Stormwater is conveyed via storm drains to Bioretention Facility 1 on the west side of the property.

DMA 2 consists of the landscaped area within the proposed bioretention/detention basin west of the warehouse and parking areas. This area will drain to Bioretention Facility 1.

DMA 3 consists of the parking lot and landscaped area south of the warehouse. This area will drain to the south via sheet flow and storm drains to neighboring Bioretention Facility located on Commerce 330 Distribution Center. The Commerce 330 Bioretention Facility was designed to accommodate up to 56,200 SF of new impervious area from the Commerce 220 parcel.

STA 1 is a Self-Treating area that does not receive stormwater runoff from the proposed improvements and consists of grassy areas on the west side of the parcel that drains directly off-site.

STA 2 is a Self-Treating area that does not receive stormwater runoff from the proposed improvements and consists of grassy areas and mapped wetlands on the north side of the parcel that drains directly off-site.

IV.B. Tabulation and Sizing Calculations

Table 3. Information Summary for Bioretention Basin and Alternate BMP Design

DMA	Total Project Area (Square Feet)
DMA 1	309,328
DMA 2	12,083

Table 4. Self-Treating Areas

DMA	Total Project Area (Square Feet)
STA 1	14,747
STA 2	62,066

Table 5. Self-Retaining Areas

There are no Self-Retaining Areas.

Table 6. Areas Draining to Self-Retaining Areas

There are no impervious areas draining to Self-Retaining Areas.

Table 7. Areas Draining to Bioretention Basins

DMA Name	DMA Area (Square Feet)	Post-project surface type	DMA Runoff Factor	DMA Area x Runoff Factor	Basin Name		
					Bioretention Facility 1		
DMA 1	297,608	Impervious	1	297,608	Sizing Factor	Minimum Basin size	Proposed Basin
DMA 1	11,720	Pervious	0.1	1,172			
DMA 2	0	Impervious	1	0			
DMA 2	12,083	Pervious	0.1	1,208			
Total>				299,988	0.04	12,000	12,638

Table 8. Alternate BMPs

There are no Alternate BMPs.

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

The site activities and potential sources of pollutants for the Commerce 220 Distribution Center project are listed in table 9, below:

Table 9. Control Table

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets (unauthorized non-stormwater discharges and accidental spills or leaks)	▪ Mark all inlets with the words “No Dumping! Flows to River” or similar.	▪ Maintain and periodically repaint or replace inlet markings. ▪ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ▪ See applicable operational BMPs in Fact Sheet SC-74, “Drainage System Maintenance.” ▪ Include the following in lease agreements: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
B. Interior floor drains and elevator shaft sump pumps	▪ Interior floor drains will be plumbed to the sanitary sewer.	▪ Inspect and maintain drains to prevent blockages and overflow.
C. Interior parking garages	N/A	N/A
D_1. Need for future indoor & structural pest control	▪ Building design shall incorporate features that discourage entry of pests.	▪ Provide Integrated Pest Management information to owners, lessees, and operators.
D_2. Landscape / outdoor pesticide use / building and grounds maintenance	▪ Final landscape plans will accomplish all of the following: ▪ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ▪ Minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ▪ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ▪ Use pest-resistant plants, especially adjacent to hardscape. ▪ To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	▪ Maintain landscaping using minimum or no pesticides. ▪ See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance." ▪ Provide IPM information to new owners, lessees and operators.
E. Pools, spas, ponds, decorative fountains, and other water features	N/A	N/A
F. Food service	N/A	N/A
G. Refuse areas	▪ Refuse areas shall be paved with an impervious surface, designed not to allow run-on from adjoining areas, and screened to prevent off-site transport of trash. ▪ Refuse areas shall contain a roof to minimize direct precipitation. ▪ Refuse areas will consist of shared trash enclosures with the Commerce 330 Distribution Center. These do not have connections to the sanitary sewer and will	▪ Provide adequate number of receptacles. ▪ Inspect receptacles regularly; repair or replace leaky receptacles. ▪ Keep receptacles covered. ▪ Prohibit/prevent dumping of liquid or hazardous wastes. ▪ Post "no hazardous materials" signs. ▪ Inspect and pick up litter daily and clean up spills immediately. ▪ Keep spill control materials available on-site.

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
	continue to be cleaned and dry swept as necessary.	▪ Clean by dry-sweeping only, or with wet/dry vacuum. ▪ See Fact Sheet SC-34, "Waste Handling and Disposal"
H. Industrial processes	N/A	N/A
I. Outdoor Storage of Equipment or Materials	N/A	N/A
J. Vehicle / equipment cleaning	N/A	N/A
K. Vehicle / equipment repair and maintenance	N/A	N/A
L. Fuel dispensing areas	N/A	N/A
M. Loading docks	▪ Loading docks utilize a dock seal at each dock to prevent spills and leaks from reaching exterior storm drain system.	▪ Clean up spills prior to disconnecting trucks from loading docks.
N. Fire sprinkler test water	▪ Fire sprinkler test water shall be discharged to the sanitary sewer.	▪ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance"
O. Miscellaneous drain or wash water or other sources • Boiler drain lines • Condensate drain lines • Rooftop equipment • Drainage sumps • Roofing, gutters, and trim • Other sources	▪ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain. ▪ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ▪ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ▪ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.	▪ If architectural copper is used, implement the following BMPs for management of rinse water during installation: ▪ If possible, purchase copper materials that have been pre-patinated at the factory. ▪ If patination is done on-site, prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling off-site. ▪ Consider coating the copper materials with an impervious coating that prevents further corrosion and runoff. ▪ Implement the following BMPs during routine maintenance: ▪ Prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling off-site.
P. Plazas, sidewalks, and parking lots		▪ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

V.B. Features, Materials, and Methods of Construction of Source Control BMPs

Source control BMPs will be designed and implemented per construction specifications and CASQA BMP fact sheets.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

The applicant accepts responsibility for interim operation and maintenance of stormwater treatment and flow-control facilities until such time as this responsibility is formally transferred to a subsequent owner.

The owner shall execute a Post-Construction BMP Maintenance Agreement with the City of American Canyon upon request.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

The site incorporates one bioretention facility. The bioretention facility requires as-needed maintenance for any damage that may occur. Semi-annual inspections are required for possible erosion, damaged vegetation, debris, and health of any trees or shrubs. These inspections usually occur at the beginning of the wet season and end of the wet season. Any dead or diseased vegetation should be removed and replaced during the inspection. An annual inspection is required to complete the annual report for the bioretention basin. During this inspection mulch may be added, and tree stakes and wires replaced.

VII. Construction Checklist

Table 10. Construction Checklist

Stormwater Control Plan Page #	Source Control or Treatment Control Measure	Sheet
3	Bioretention Basin	DMA, UP3.0, UP3.3
4	A. On-site storm drain inlets	UP3.0, UP3.1, UP4.0
4	B. Interior floor drains and elevator shaft sump pumps	See Architectural Plan
4	D1. Need for future indoor & structural pest control	See Architectural Plan
4 & 5	D2. Landscape/ outdoor pesticide use/ building and ground maintenance	See Landscape Plan
5	G. Refuse areas	See Architectural Plan
6	M. Loading docks	See Architectural Plan
6	N. Fire sprinkler test water	See Architectural Plan
6	O. Miscellaneous drain or wash	See Architectural Plan
6	P. Plazas, sidewalks, and parking lots	UP3.0, UP3.1

VIII. Certifications

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this Stormwater Control Plan are in accordance with the current edition of the BASMAA Post-Construction Manual.

ATTACHMENT 1

Vicinity Map, FEMA FIRMette, Hydrologic Soil Group Map

SDG COMMERCE 220 DISTRIBUTION CENTER

V I C I N I T Y M A P

AMERICAN CANYON CALIFORNIA

VICINITY MAP

SCALE: 1" = 3000'

RSA+

1515 FOURTH STREET
NAPA, CALIF. 94559
OFFICE|707|252.3301
+ www.RSAcivil.com +

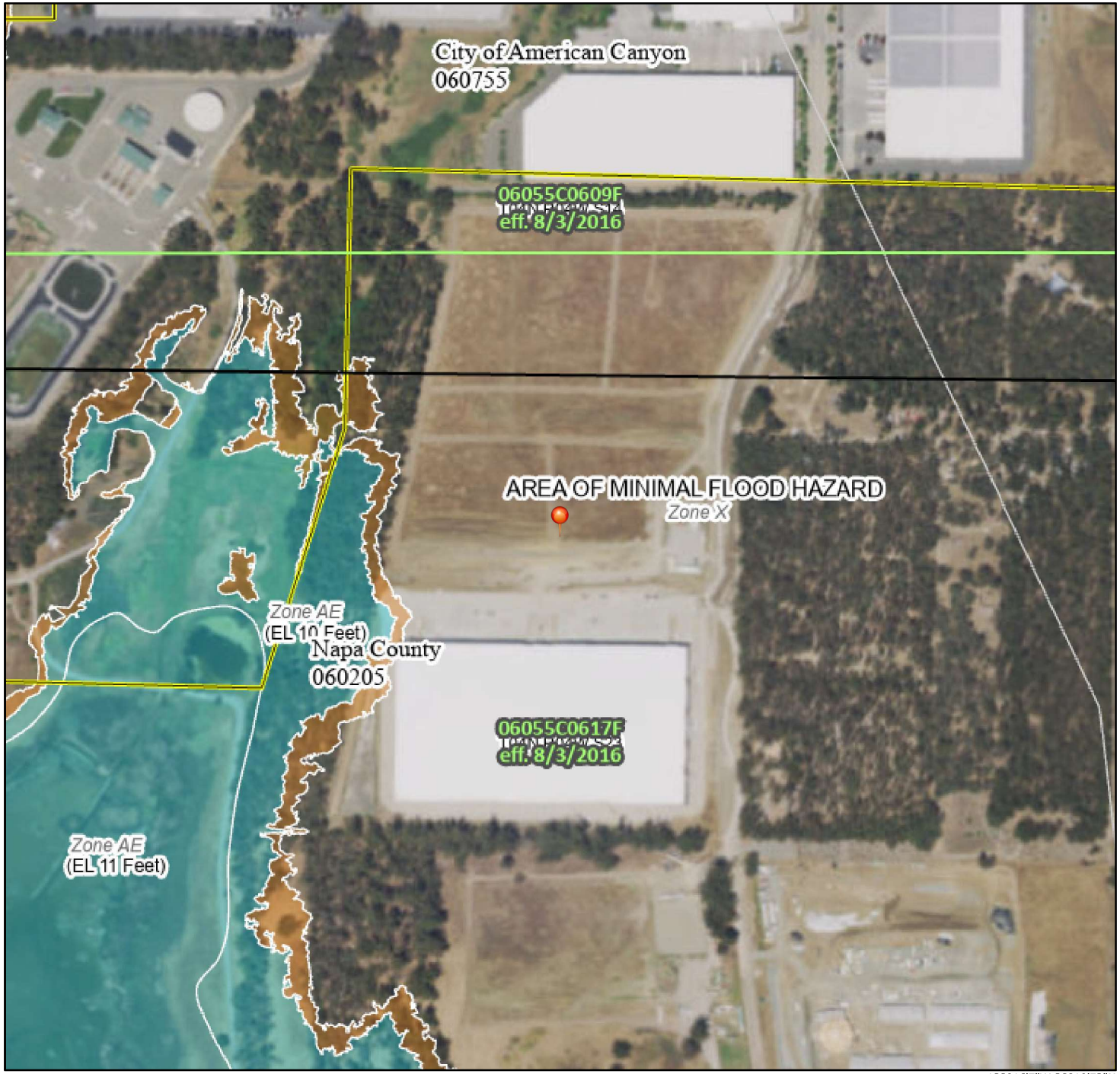
RSA+| CONSULTING CIVIL ENGINEERS + SURVEYORS + est. 1980

JUL. 20, 2023 4122068.0 Exh-Vic Map.dwg

National Flood Hazard Layer FIRMette

FEMA

122°16'44"W 38°11'22"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

122°16'7"W 38°10'53"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/9/2023 at 12:16 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—Napa County, California
(SDG Commerce 220 - Distribution Center)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 15, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
148	Haire clay loam, 2 to 9 percent slopes	D	10.2	100.0%
Totals for Area of Interest			**10.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

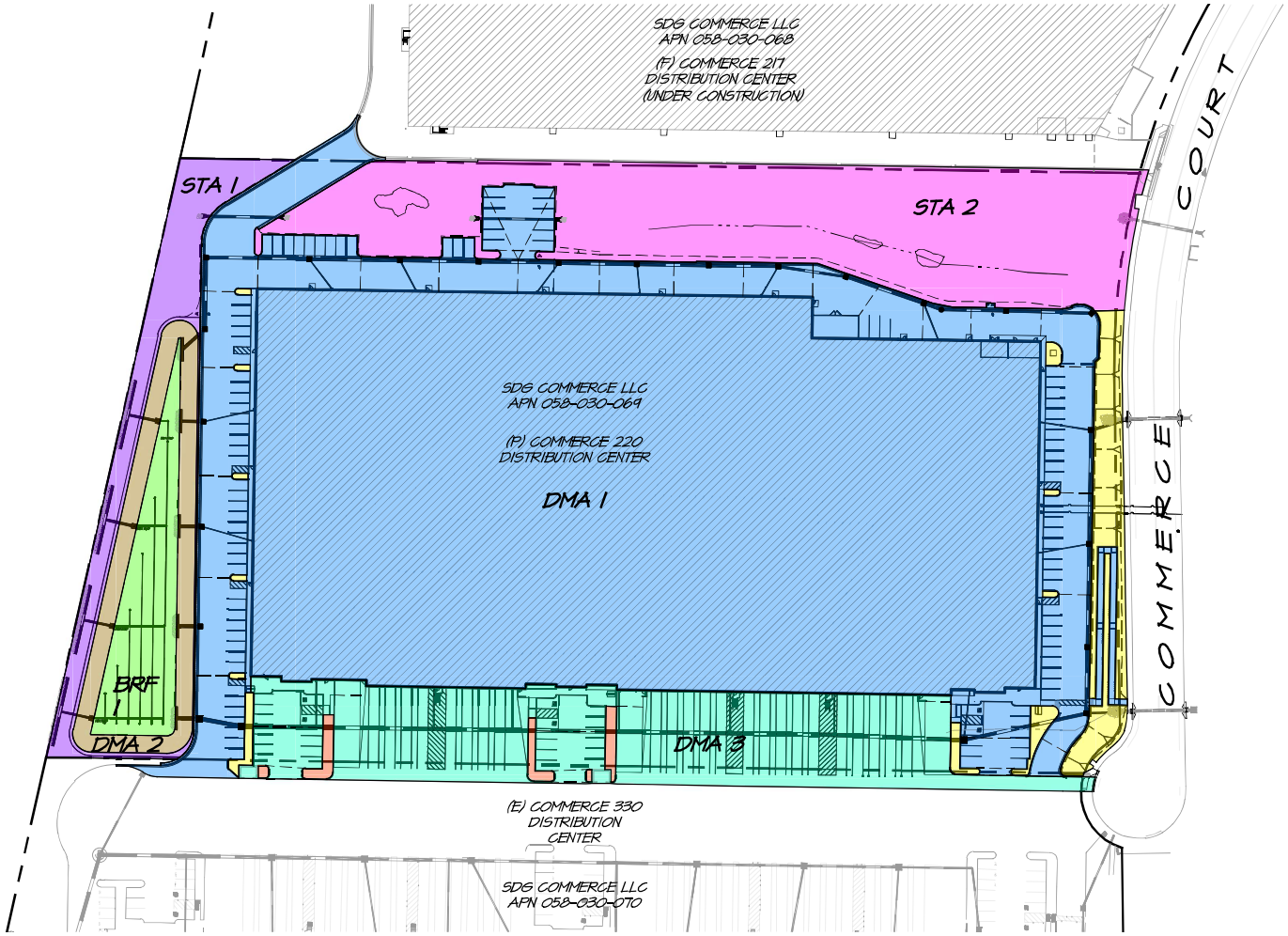
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ATTACHMENT 2

Stormwater Control Plan

SDG COMMERCE 220 DISTRIBUTION CENTER
STORMWATER CONTROL PLAN
AMERICAN CANYON CALIFORNIA



DRAINAGE MANAGEMENT AREAS		
DMA	IMPERVIOUS	PERVIOUS
DMA 1	297,608 SF	11,720 SF
DMA 2	0 SF	12,083 SF
DMA 3	48,997 SF	1,744 SF
STA 1	0 SF	14,747 SF
STA 2	0 SF	62,066 SF
BRF 1	0 SF	12,638 SF

NOTES

DMA 3 DRAINS TO BIORETENTION/DETENTION POND ON COMMERCE 330 DISTRIBUTION CENTER PARCEL TO THE SOUTH. THE COMMERCE 330 BIORETENTION FACILITY WAS DESIGNED TO ACCOMMODATE UP TO 56,200 SF OF NEW IMPERVIOUS AREA FROM THE COMMERCE 220 PARCEL.

GRAPHIC SCALE

100 0 100 200

(IN FEET)
1 inch = 100 FT

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+ www.RSAcivil.com +

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