DRAINAGE STUDY

829 S. ESCONDIDO BLVD.
ESCONDIDO, CA

DWG#

4C ENGINEERING
+ GEOMATICS

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DRAINAGE STUDY

FOR

829 S. ESCONDIDO BLVD.
ESCONDIDO, CA 92025
DWG#
APN 233-371-15

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I. PURPOSE

The purpose of this Drainage Study is to evaluate the existing and proposed drainage conditions (i.e. anticipated runoff flows) for the development of the 829 S. Escondido Apartment complex, in the City Escondido, California, located at the address 829 S. Escondido Boulevard. This technical document has been prepared to identify any potential hydrologic impacts as a result of the proposed development.

II. PROJECT DESCRIPTION

PROJECT LOCATION

Located to the west of the Centre City Parkway, south of W. 8th Avenue, and north of W. 9th Avenue, and bordered to the north by an unnamed alley. The project fronts both S Escondido Boulevard (to the east) and W 9th Avenue (to the south).

FIGURE 1 – VICINITY MAP (NO SCALE)

BACKGROUND

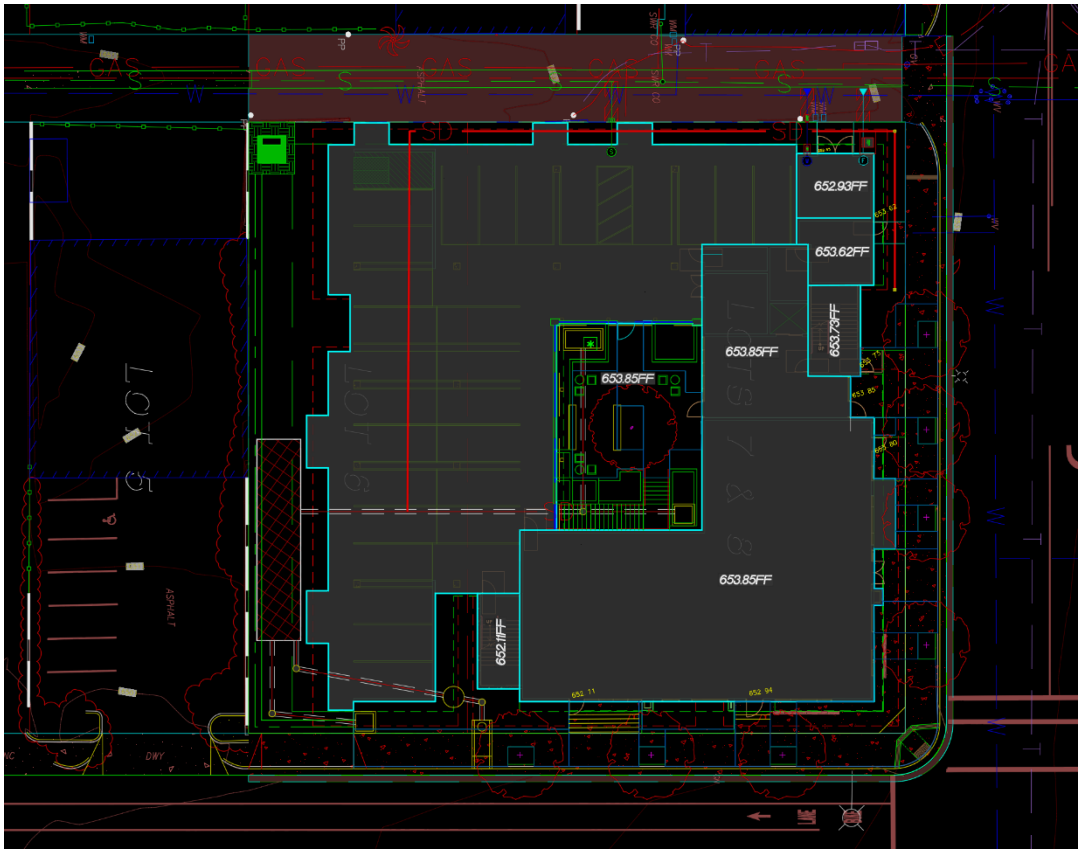
The proposed project site is located near existing commercial and residential buildings. The property is comprised of four existing commercial buildings, an asphalt driveway and small asphalt surface parking lot. Access to the site is solely via W 9th Ave, there is an unnamed public alley to the north as well as buildings and a wall that front the property adjoining the alley. The site itself, drains from north to south, entirely to W 9th Ave. The site is raised up from the adjacent street and sits roughly 2-3' higher than the neighbor to the west.

FIGURE 2 – EXISTING AERIAL

PROPOSED PROJECT DESCRIPTION

The proposed development will consist of 38 apartment units, over approximately four floors. There will be tuck under parking at level one. The proposed project site will generate most of its runoff via the roof.

FIGURE 3 – PROPOSED SITE PLAN



III. METHODOLOGY

The estimate of both the existing and proposed drainage flows has been performed in conformance with the City of Escondido Design Standards (2014 Edition). In this drainage study, all basins were analyzed using the Rational Method from the City of Escondido Design Standards to calculate storm runoff for a 100-year frequency storm. Other criteria are described on the following page;

- A runoff coefficient of 0.85 was used for the existing commercial property. For the proposed runoff coefficient, a value of 0.70 was used. This "C" value is based on the runoff coefficients provided in Figure 1 of the City of Escondido Design Standards.

+ Intensity values were calculated using the City of Escondido Run-off Intensity Duration Curves from the City of Escondido Design Manual. A Copy of this chart is provided in Appendix 'A'.

+ Chart 1-104.12, "Gutter and Roadway Discharge - Velocity Chart" and Manning's Equation were used to determine the flow velocity for concentrated flows in curb and gutters, drainage channels and conduits. Travel times were then determined by dividing the flow distance by the velocity of flow.

+ Final times of concentration (T_C) values for each basin were calculated by adding the initial and final travel times.

+ A 100-yr design storm interval was used in analyzing the storm drain systems.

The rational method module of the Autodesk Storm and Sanitary Analysis (SSA) was used to perform the hydrologic analysis. The analysis represents the basins represented via a Junction-Link model. Refer to Exhibits 1 and 2 included in this report that delineates the drainage basin boundaries and junctions. Printed results are included in Appendix 'A' and 'B' for reference.

Method of Analysis – The Rational Method is the most widely used hydrologic model for estimating peak runoff rates. Applied to small urban and semi-urban areas with drainage areas less than 0.5 square miles, the Rational Method relates storm rainfall intensity, a runoff coefficient, and drainage area to peak runoff rate. This relationship is expressed by the equation: Q = CIA, where:

Q = The peak runoff rate in cubic feet per second at the point of analysis.
C = A runoff coefficient representing the area – averaged ratio of runoff to rainfall intensity.
I = The time-averaged rainfall intensity in inches per hour corresponding to the time of concentration.
A = The drainage basin area in acres.

EXISTING DRAINAGE CONDITION

The project area is composed of one overall basin and one POC. POC "A" is located at the south west corner of the site adjacent to W 9th Ave at the R/W. The existing property does not have any storm drain infrastructure on site and all drainage is handled via surface discharge. Refer to the 'Existing Hydrology Map' contained with Appendix 'A',

Basin E.1
Runoff from this basin is composed of impervious areas from the existing commercial buildings, driveway and surface parking area. The runoff is conveyed from to roof to the concrete/paving below to the south west. The surface runoff from the parking area sheet flows south west as well. It then exits via the driveway to the flowline of the gutter located in W 9th Ave, which is described as POC "A".

There is no offsite drainage that enters the existing site.

Refer to the table below for a summary of existing flow estimates analyzed in this report.

Table No. 1 – Existing Hydrology Summary

POC	AREA (AC)	RUNOFF 'C'	Q 100-YR (CFS)
A	0.48	0.85	1.79

PROPOSED DRAINAGE CONDITION

The proposed improvements include the construction of one building, with tuck under parking. The existing drainage patterns will remain the same for the site, with storm drain infrastructure being provided to convey the roof runoff after it is treated via proprietary treatment BMPs.

Basin P.1
This basin is composed of the building roof/footprint, and all runoff is captured via gutters and then discharged to a single treatment BMP within a raised planter within the courtyard.

Basin P.2
This basin is composed of the courtyard area, all runoff within this area will sheet flow to a treatment BMP inlet that then conveys runoff via 12" storm drain pipe into the hydromod storage facility.

Basin P.3
This basin is composed of the area outside of the roof, and encompasses the westerly drive aisle. The runoff sheet flows south west to a ribbon gutter that straddles the westerly property line. The runoff is then routed via concentrated channel flow to a treatment BMP, after which it enters the storm drain system. From there, as in the previous basins, the runoff is conveyed to a hydromodification storage facility, then to a pump, and ultimately out into W. 9th Ave via a curb outlet.

Refer to the table below for a summary of proposed flow estimates analyzed in this report.

Table No. 2 – Proposed Hydrology Summary

POC	AREA (AC)	RUNOFF 'C'	Q 100-YR (CFS)
A	0.48	0.70	1.44

IV. FLOOD ZONE

There is no flood zone for this site and the FEMA FIRM Panel number is 06073C1077G.

V. DISCUSSION

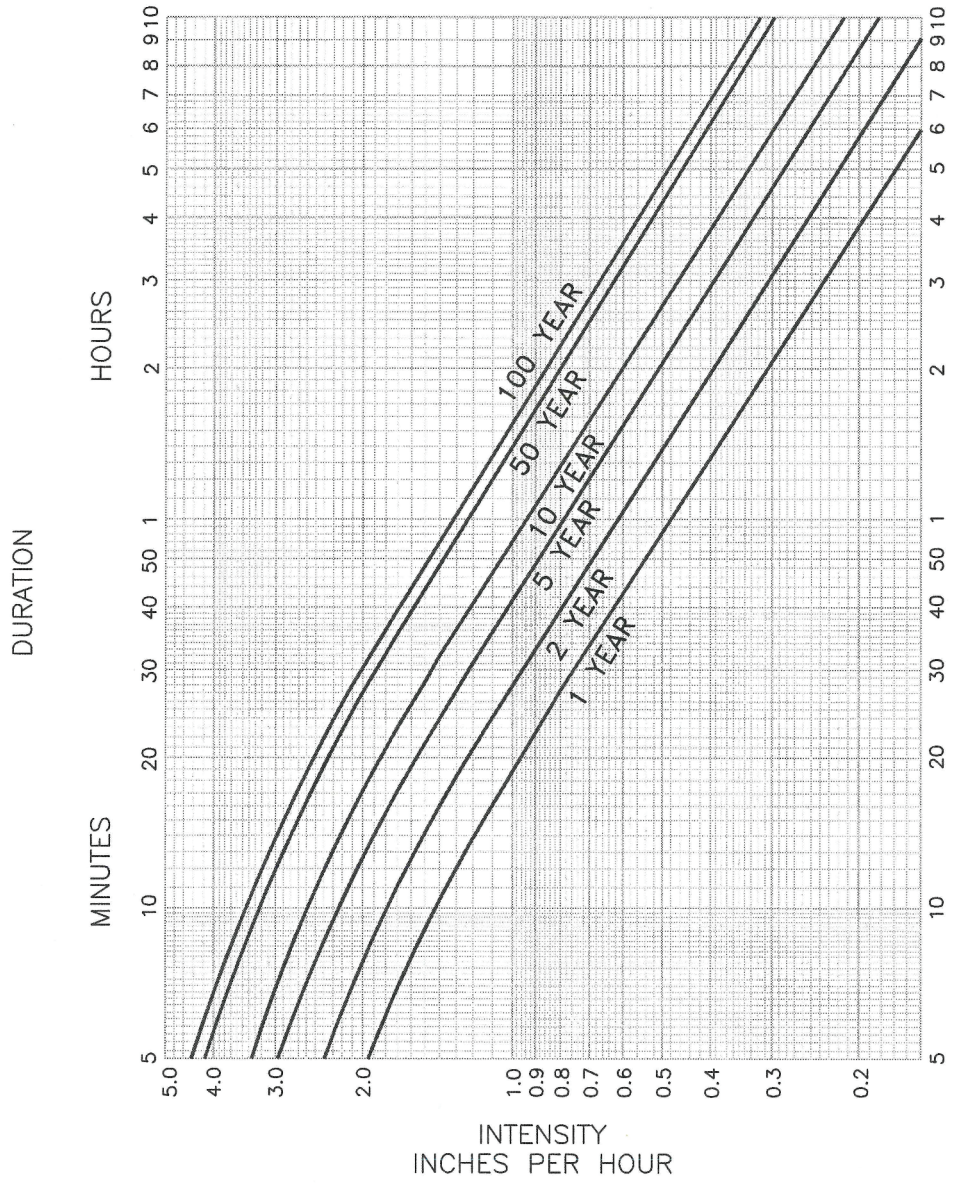
Based on the supporting calculations contained herein, it is anticipated that the project will result in a decrease in peak flow for the 100-year storm frequency at the point of convergence for POC "A". This is due to a change in the composition of the site due to the change from a purely commercial site, to a multi-family-based project.

Additionally, the project is not subject to regulations set forth in CWA 401/404 as it does not discharge to any impaired waters and outlets only to existing surface streets/alleys. It does not negatively impact adjacent properties.

VII. CONCLUSIONS

This study has documented the existing and developed drainage conditions for the Rutherford project. According to the hydrology analysis and supporting calculations, it is anticipated there will be no adverse drainage impacts on the hydrologic condition of the site via mitigation of the proposed condition Q100 flows. It is anticipated that peak flows will be decreased for the 100-year storm event analyzed in this study for POC "A". Additionally, there will be no negative impacts to any adjacent properties.

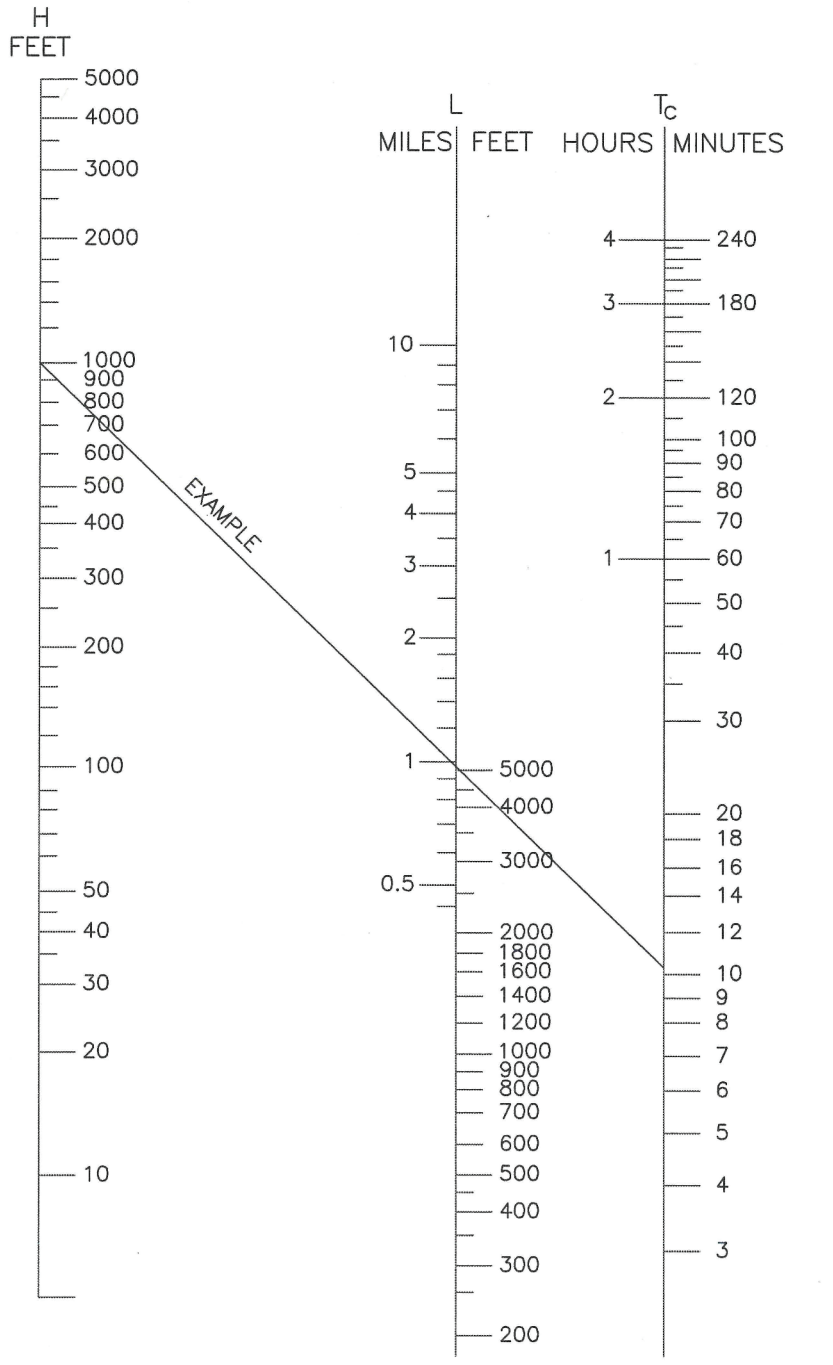
APPENDIX A
REFERENCE MATERIAL



ESCONDIDO RUNOFF COEFFICIENTS

PARKS, GOLF COURSES, CEMETERIES	0.25
UNDEVELOPED LAND, OPEN SPACE	0.35
RURAL – OVER 1/2 ACRE LOTS	0.45
SINGLE FAMILY	0.55
MOBILE HOME	0.65
MULTIPLE UNITS	0.70
COMMERCIAL	0.85
INDUSTRIAL	0.95

APPROVED: DATE: 04-02-2014 P. W. DIRECTOR/CITY ENGINEER		CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED	APPROVED	RUN-OFF INTENSITY DURATION CURVE	FIGURE NO. 1



$$Tc = \left(\frac{11.9\ L^3}{H}\right)^{.385}$$

NOTE:

THIS CHART SHALL BE USED FOR ALL BASINS WITHIN THE CITY OF ESCONDIDO LESS 0.5 SQUARE MILE. THE MINIMUM Tc TO BE USED IS 10 MINUTES

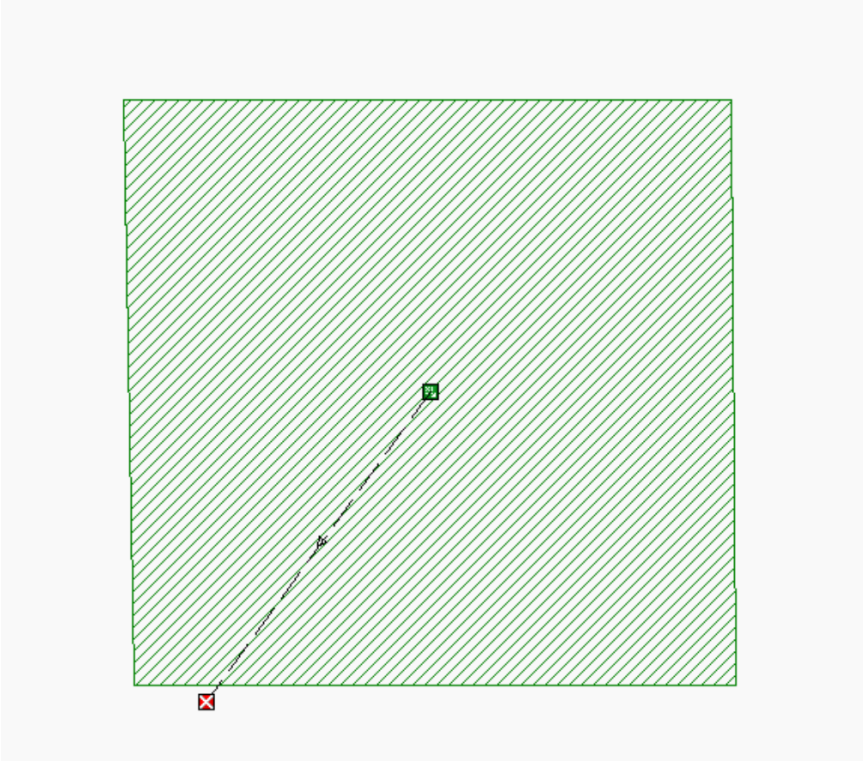
Tc = TIME OF CONCENTRATION (HOURS)
L = LENGTH OF DRAINAGE COURSE (MILES)
H = DIFFERENCE IN ELEVATION FROM FURTHER MOST POINT OF DESIGN (FEET)

APPROVED: Edward N. Domingue P. W. DIRECTOR/CITY ENGINEER — DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED / APPROVED	RUNOFF TIME CHART	FIGURE NO. 2

APPENDIX B

EXISTING HYDROLOGY

[CALCULATIONS FROM AUTODESK SSA]



UNNAMED ALLEY

S. ESCONDIDO BOULEVARD

LOT 6

LOT 5

LOT 7 & 8

E.1
0.48 AC | 1.79 CFS

POC "A"
Q100=1.79 CFS

ASPHALT

CONC

DWY

NO PARKING

OBSCURED AREA

SWR CO

WM

PP

GV

WV

ST

SDMH

LINE

101
651.15
gcp1

104
651.99
gcp4

103
652.99
gcp3

LEGEND

- BASIN (AC | CFS)
- POINT OF COMPLIANCE . . . . . POC "A"
- FLOW PATH
- FLOW DIRECTION
- JUNCTION/LINK NODE . . . . . #

N

20 10 0 20 40 60

SCALE: 1"=20'

EXISTING BASINS

SCALE:	1"=20'	JOB NO.:	141.00
DATE:	2022-10-20	SHEET:	1 OF 1

D:\4C Engineering and Geomatics\4C Engineering and Geomatics - Documents\Engineering\141.00 829 S. Escondido Blvd\Engineering\Reports\Drainage\141.00 EXISTING BASINS.dwg 10/20/2022 1:05:37 PM

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.3.206 (Build 0)

****
Project Description
****
File Name ..... 141.00 EX SSA.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. CITY OF ESCONDIDO RATIONAL METHOD
Time of Concentration..... CITY OF ESCONDIDO RUNOFF TIME CHART (5 MINUTES MINIMUM)
Return Period..... 100 years
Storage Node Exfiltration.. None
Starting Date OCT-06-2022 00:00:00
Ending Date OCT-06-2022 01:00:00
Report Time Step 00:00:10

****
Element Count
****
Number of subbasins 1
Number of nodes 1
Number of links 0

****
Subbasin Summary
****

Subbasin ID	Total Area acres
E.1	0.48

****

Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
POCA	OUTFALL	650.63	650.63	0.00	

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	0.015	0.365
Continuity Error (%)	0.157	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.012	0.004
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Runoff Coefficient Computations Report
****

Subbasin E.1

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
COMMERCIAL	0.48	D	0.85
Composite Area & Weighted Runoff Coeff.	0.48		0.85

****
SCS TR-55 Time of Concentration Computations Report

****

Sheet Flow Equation

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

Where:

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

Shallow Concentrated Flow Equation

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

Where:

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

Channel Flow Equation

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

Where:

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

Subbasin E.1

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	213.00	0.00	0.00
Slope (%):	1.70	0.00	0.00
2 yr, 24 hr Rainfall (in):	2.40	2.40	2.40
Velocity (ft/sec):	1.14	0.00	0.00
Computed Flow Time (minutes):	3.12	0.00	0.00
Total TOC (minutes):	3.12		

****

Subbasin Runoff Summary

****

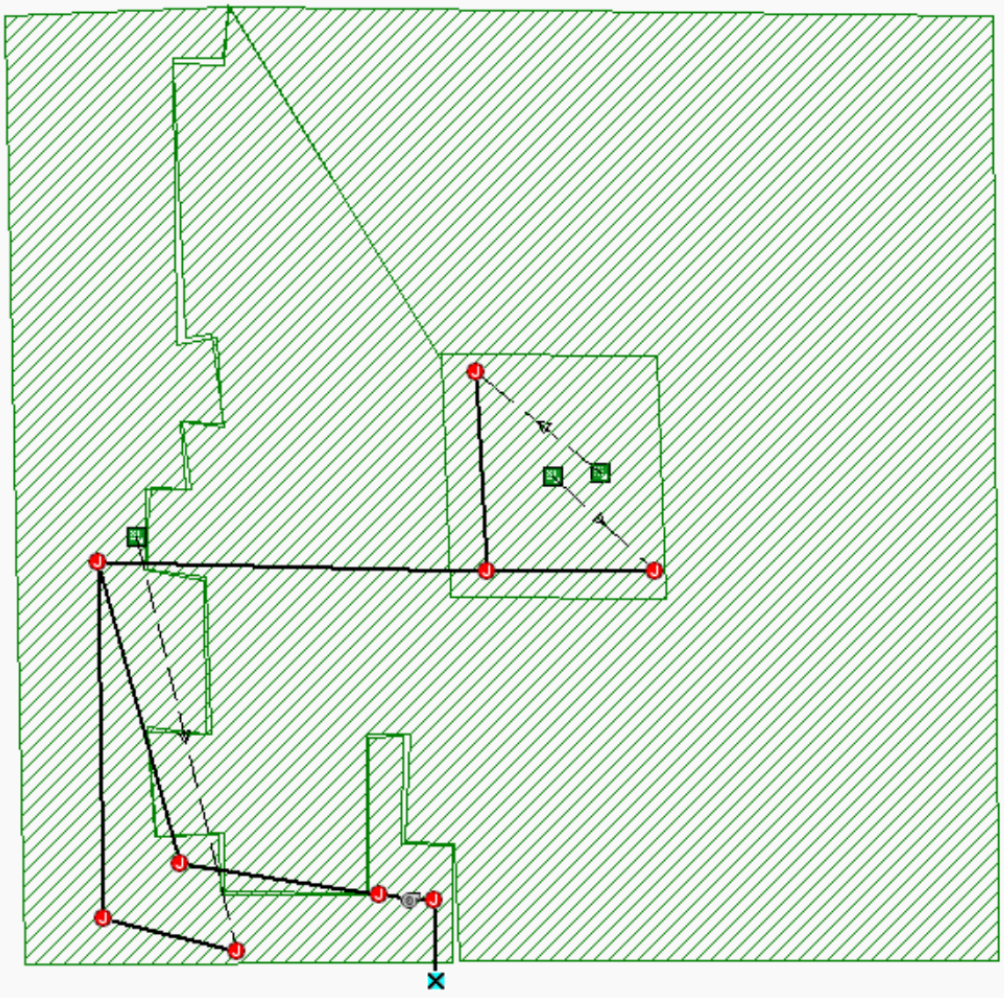
Subbasin ID	Accumulated Precip in	Rainfall Intensity in/hr	Total Runoff in	Peak Runoff cfs	Weighted Runoff Coeff	Time of Concentration days	Time of Concentration hh:mm:ss
E.1	0.37	4.38	0.31	1.79	0.850	0	00:05:00

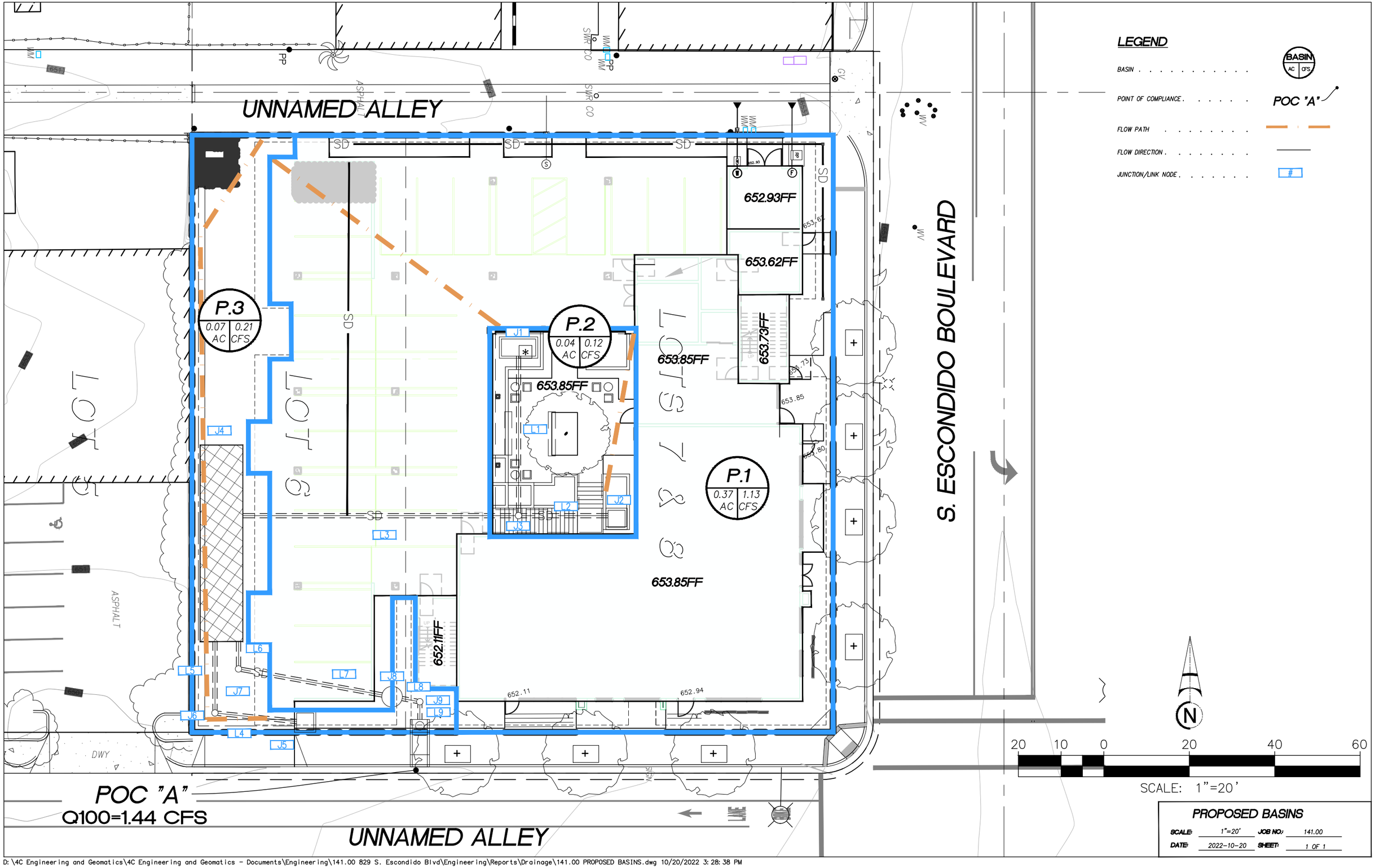
```
Analysis began on:  Sat Oct 22 15:51:08 2022
Analysis ended on:  Sat Oct 22 15:51:08 2022
Total elapsed time: < 1 sec
```

APPENDIX C

PROPOSED HYDROLOGY

[CALCULATIONS FROM AUTODESK SSA]





D:\4C Engineering and Geomatics\4C Engineering and Geomatics - Documents\Engineering\141.00 829 S. Escondido Blvd\Engineering\Reports\Drainage\141.00 PROPOSED BASINS.dwg 10/20/2022 3:28:38 PM

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.3.206 (Build 0)

****
Project Description
****
File Name ..... 141.00 PR SSA.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. Rational
Subbasin Hydrograph Method. CITY OF ESCONDIDO RATIONAL METHOD
Time of Concentration..... CITY OF ESCONDIDO RUNOFF TIME CHART (5 MINUTES MINIMUM)
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. None
Starting Date OCT-06-2022 00:00:00
Ending Date OCT-06-2022 01:00:00
Report Time Step 00:00:10

****
Element Count
****
Number of subbasins 3
Number of nodes 10
Number of links 9

****
Subbasin Summary
****

Subbasin ID	Total Area acres
P.1	0.37
P.2	0.04
P.3	0.07

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
J1	JUNCTION	650.35	653.85	0.00	
J2	JUNCTION	650.35	653.85	0.00	
J3	JUNCTION	647.14	653.85	0.00	
J4	JUNCTION	642.50	648.00	0.00	
J5	JUNCTION	646.80	650.20	0.00	
J6	JUNCTION	646.66	650.44	0.00	
J7	JUNCTION	642.44	650.56	0.00	
J8	JUNCTION	642.10	651.60	0.00	
J9	JUNCTION	650.91	651.96	0.00	
POCA	OUTFALL	650.63	651.63	0.00	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
L6	J4	J7	CONDUIT	6.4	0.9390	0.0150
L7	J7	J8	CONDUIT	34.1	0.9971	0.0150
L9	J9	POCA	CONDUIT	4.1	6.8293	0.0150
Link-01	J1	J3	CONDUIT	37.3	8.6059	0.0150
Link-02	J2	J3	CONDUIT	20.9	15.3368	0.0150
Link-03	J3	J4	CONDUIT	64.5	0.9922	0.0150
Link-04	J5	J6	CONDUIT	13.4	1.0417	0.0150
Link-05	J6	J4	CONDUIT	16.7	24.9102	0.0150
L8	J8	J9	IDEAL PUMP			

****
Cross Section Summary
****

Link	Shape	Depth/	Width	No. of	Cross	Full Flow	Design

ID		Diameter		Barrels	Sectional Area	Hydraulic Radius	Flow Capacity
		ft	ft		ft²	ft	cfs
L6	CIRCULAR	1.00	1.00	1	0.79	0.25	2.99
L7	CIRCULAR	1.00	1.00	1	0.79	0.25	3.08
L9	CIRCULAR	1.00	1.00	1	0.79	0.25	8.07
Link-01	CIRCULAR	1.00	1.00	1	0.79	0.25	9.06
Link-02	CIRCULAR	1.00	1.00	1	0.79	0.25	12.09
Link-03	CIRCULAR	1.50	1.50	1	1.77	0.38	9.07
Link-04	CIRCULAR	1.50	1.50	1	1.77	0.38	9.29
Link-05	CIRCULAR	1.50	1.50	1	1.77	0.38	45.44

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	0.015	0.365
Continuity Error (%)	0.306	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.010	0.003
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.007	

Runoff Coefficient Computations Report

Subbasin P.1

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
MULTIFAMILY	0.37	D	0.70

Composite Area & Weighted Runoff Coeff.	0.37		0.70

Subbasin P.2

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
MULTIFAMILY	0.04	D	0.70
Composite Area & Weighted Runoff Coeff.	0.04		0.70

Subbasin P.3

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
MULTIFAMILY	0.07	D	0.70
Composite Area & Weighted Runoff Coeff.	0.07		0.70

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

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

Where:

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

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)

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

Where:

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

Channel Flow Equation

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

Where:

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

Subbasin P.1

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00

Flow Length (ft):	66.00	0.00	0.00
Slope (%):	1.00	0.00	0.00
2 yr, 24 hr Rainfall (in):	2.40	2.40	2.40
Velocity (ft/sec):	0.73	0.00	0.00
Computed Flow Time (minutes):	1.51	0.00	0.00
Total TOC (minutes):	1.51		

Subbasin P.2

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	37.80	0.00	0.00
Slope (%):	1.00	0.00	0.00
2 yr, 24 hr Rainfall (in):	2.40	2.40	2.40
Velocity (ft/sec):	0.65	0.00	0.00
Computed Flow Time (minutes):	0.97	0.00	0.00
Total TOC (minutes):	0.97		

Subbasin P.3

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	27.70	0.00	0.00
Slope (%):	0.70	0.00	0.00
2 yr, 24 hr Rainfall (in):	2.40	2.40	2.40
Velocity (ft/sec):	0.53	0.00	0.00
Computed Flow Time (minutes):	0.87	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	128.00	0.00	0.00
Channel Slope (%):	0.65	0.00	0.00
Cross Section Area (ft²):	0.20	0.00	0.00
Wetted Perimeter (ft):	3.00	0.00	0.00
Velocity (ft/sec):	1.49	0.00	0.00
Computed Flow Time (minutes):	1.43	0.00	0.00
Total TOC (minutes):	2.30		

****
Subbasin Runoff Summary
****

Subbasin ID	Accumulated Precip in	Rainfall Intensity in/hr	Total Runoff in	Peak Runoff cfs	Weighted Runoff Coeff	Time of Concentration days	Time of Concentration hh:mm:ss
P.1	0.37	4.38	0.26	1.13	0.700	0	00:05:00
P.2	0.37	4.38	0.26	0.12	0.700	0	00:05:00
P.3	0.37	4.38	0.26	0.21	0.700	0	00:05:00

****
Node Depth Summary
****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Flooded Time minutes	Retention Time hh:mm:ss
J1	0.03	0.24	650.59	0	00:05	0	0	0:00:00
J2	0.01	0.07	650.42	0	00:05	0	0	0:00:00

J3	0.04	0.38	647.52	0	00:05	0	0	0:00:00
J4	4.04	4.37	646.87	0	00:05	0	0	0:00:00
J5	0.02	0.16	646.96	0	00:05	0	0	0:00:00
J6	0.02	0.16	646.82	0	00:05	0	0	0:00:00
J7	0.06	0.49	642.93	0	00:05	0	0	0:00:00
J8	0.06	0.48	642.58	0	00:05	0	0	0:00:00
J9	0.03	0.29	651.20	0	00:05	0	0	0:00:00
POCA	0.03	0.29	650.92	0	00:05	0	0	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
J1	JUNCTION	1.13	1.13	0	00:05	0.00		
J2	JUNCTION	0.12	0.12	0	00:05	0.00		
J3	JUNCTION	0.00	1.25	0	00:05	0.00		
J4	JUNCTION	0.00	1.45	0	00:05	0.00		
J5	JUNCTION	0.21	0.21	0	00:05	0.00		
J6	JUNCTION	0.00	0.21	0	00:05	0.00		
J7	JUNCTION	0.00	1.45	0	00:05	0.00		
J8	JUNCTION	0.00	1.44	0	00:05	0.00		
J9	JUNCTION	0.00	1.44	0	00:05	0.00		
POCA	OUTFALL	0.00	1.44	0	00:05	0.00		

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
POCA	22.47	0.54	1.44

System	22.47	0.54	1.44

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence days	Time of Peak Flow Occurrence hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time Surcharged minutes	Reported Condition
L6	CONDUIT	0	00:05	3.78	1.00	1.45	2.99	0.48	0.49	0	Calculated
L7	CONDUIT	0	00:05	3.88	1.00	1.44	3.08	0.47	0.48	0	Calculated
L9	CONDUIT	0	00:05	7.75	1.00	1.44	8.07	0.18	0.29	0	Calculated
Link-01	CONDUIT	0	00:05	8.16	1.00	1.13	9.06	0.12	0.24	0	Calculated
Link-02	CONDUIT	0	00:05	4.95	1.00	0.12	12.09	0.01	0.07	0	Calculated
Link-03	CONDUIT	0	00:05	3.63	1.00	1.24	9.07	0.14	0.25	0	Calculated
Link-04	CONDUIT	0	00:05	2.26	1.00	0.21	9.29	0.02	0.11	0	Calculated
Link-05	CONDUIT	0	00:05	6.48	1.00	0.21	45.44	0.00	0.05	0	Calculated
L8	PUMP	0	00:05								

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Highest Flow Instability Indexes
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All links are stable.

Analysis began on: Sat Oct 22 15:47:14 2022
Analysis ended on: Sat Oct 22 15:47:15 2022
Total elapsed time: 00:00:01

APPENDIX D
REFERENCE DRAWINGS