



City of Lemon Grove
City Council Regular Meeting Agenda
Tuesday, February 18, 2020, 6:00 p.m.

Lemon Grove Community Center
3146 School Lane, Lemon Grove, CA

The City Council also sits as the Lemon Grove Housing Authority, Lemon Grove Sanitation District Board, Lemon Grove Roadway Lighting District Board, and Lemon Grove Successor Agency

Call to Order

Pledge of Allegiance:

Changes to the Agenda:

Public Comment:

(Note: In accordance with State Law, the general public may bring forward an item not scheduled on the agenda; however, the City Council may not take any action at this meeting. If appropriate, the item will be referred to staff or placed on a future agenda.)

City Council Oral Comments and Reports on Meetings Attended at the Expense of the City.

(GC 53232.3 (d)) (53232.3.(d) states that members of a legislative body shall provide brief reports on meetings attended at the expense of the local agency at the next regular meeting of the legislative body.)

City Manager Report:

1. Consent Calendar:

(Note: The items listed on the Consent Calendar will be enacted in one motion unless removed from the Consent Calendar by Council, staff, or the public.)

A. Waive Full Text Reading of All Ordinances on the Agenda

Reference: Kristen Steinke, City Attorney

Recommendation: Waive the full text reading of all ordinances included in this agenda; Ordinances shall be introduced and adopted by title only.

B. City of Lemon Grove Payment Demands

Reference: Rod Greek, Interim Finance Manager

Recommendation: Ratify Demands

C. Approval of Meeting Minutes

Regular Meeting
February 4, 2020

Reference: Shelley Chapel, City Clerk

Recommendation: Approve Minutes

D. Accept FY 2017-2018 Sewer CIP Project as Complete (Sanitation District Item)

Reference: Mike James, Assistant City Manager / Public Works Director
Recommendation: Adopt Resolution entitled, "A Resolution of the Lemon Grove Sanitation District, California, Accepting the Fiscal Year 2017-18 Sewer Capital Improvement Project (Contract No. 2019-11) as Complete."

Continued Public Hearing:

2. Continuation of Public Hearing to Consider Conditional Use Permit Application CUP-190-0002, A Request to Establish a Medical Marijuana Dispensary at 3515-3521 Harris Street in Special Treatment Area III, Regional Commercial.

Reference: Noah Alvey, Community Development Manager
Recommendation: Continue the Public Hearing for consideration of CUP-190-0002, direct staff to re-notice the public hearing based on actions by the San Diego Superior Court, and provide that no new sensitive uses shall prejudice the application.

Reports to Council:

3. Acceptance of the Drainage Master Plan Update Final Report

Reference: Mike James, Assistant City Manager / Public Works Director
Recommendation: That the City Council adopt a resolution accepting the Drainage Master Plan Update.

4. Lemon Grove Homelessness Partnership Plan

Reference: Mike James, Assistant City Manager / Public Works Director
Recommendation: Receive report and direction to staff regarding the Lemon Grove Homelessness Partnership Plan.

5. FY 2019-2020 Mid-Year Budget

Reference: Rod Greek, Interim Finance Manager
Recommendation:

- 1) Adopt a resolution approving the Fiscal Year 2019-20 City of Lemon Grove Mid-Year Budget, and
- 2) Adopt a resolution approving the Fiscal Year 2019-20 Appropriations Limit, and
- 3) Authorize the transfer of \$804,924 from the FY 18-19 Fund balance to the City's 115 Trust for investment towards future CalPERS obligations.

Closed Session:

1. CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION
Government Code Section 54956.9b
Number of potential cases: 1

Adjournment

In compliance with the Americans with Disabilities Act (ADA), the City of Lemon Grove will provide special accommodations for persons who require assistance to access, attend and/or participate in meetings of the City Council. If you require such assistance, please contact the City Clerk at (619) 825-3800 or email schapel@lemongrove.ca.gov. A full agenda packet is available for public review at City Hall.

AFFIDAVIT OF NOTIFICATION AND POSTING

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) SS
CITY OF LEMON GROVE)

I, Shelley Chapel, MMC, City Clerk of the City of Lemon Grove, hereby declare under penalty of perjury that a copy of the above Agenda of the Regular Meeting of the City Council of the City of Lemon Grove, California, was delivered and/or notice by email not less than 72 hours before the hour of 5:00 p.m. on February 14, 2019, to the members of the governing agency, and caused the agenda to be posted on the City's website at www.lemongrove.ca.gov and at Lemon Grove City Hall, 3232 Main Street Lemon Grove, CA 91945.

/s/: Shelley Chapel

Shelley Chapel, MMC, City Clerk



CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 1.A

Meeting Date: February 18, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: **City Manager's Office**

Staff Contact: Kristen Steinke, City Attorney

Item Title: Waive the Full Text Reading of all Ordinances

Summary: Waive the full text reading of all ordinances included in this agenda. Ordinances shall be introduced and adopted by title only.

Environmental Review:

Not subject to review

Negative Declaration

Categorical Exemption, Section |

Mitigated Negative Declaration

Fiscal Impact: None.

Public Notification: None.



CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 1.B

Meeting Date: February 18, 2020
Submitted to: Honorable Mayor and Members of the City Council
Department: City Manager's Office
Staff Contact: Rod Greek, Interim Finance Manager
Item Title: **City of Lemon Grove Payment Demands**

Recommended Action: Ratify Demands.

Environmental Review:

- Not subject to review Negative Declaration
 Categorical Exemption, Section | Mitigated Negative Declaration

Fiscal Impact: None.

Public Notification: None.

City of Lemon Grove Demands Summary

Approved as Submitted:

Rod Greek, Interim Administrative Services Director
For Council Meeting: 02/18/20

ACH/AP Checks 01/23/20-02/05/20 376,815.24

Payroll - 01/28/20 124,646.28

Total Demands 501,461.52

CHECK NO	INVOICE NO	VENDOR NAME	CHECK DATE	Description	INVOICE AMOUNT	CHECK AMOUNT
ACH	63284730	WEX Bank	01/23/2020	Fuel - Fire Dept - Dec'19	74.27	74.27
ACH	Refill 1/22/20	Pitney Bowes Global Financial Services LLC	01/23/2020	Postage Usage 1/22/20	250.00	250.00
ACH	Jan15-Jan28 20	Calpers Supplemental Income 457 Plan	01/30/2020	457 Plan 1/15/20-1/28/20	8,160.63	8,160.63
ACH	Jan28 20	Employment Development Department	01/30/2020	State Taxes 1/28/20	6,828.25	6,828.25
ACH	Jan28 20	US Treasury	01/31/2020	Federal Taxes 1/28/20	24,568.75	24,568.75
ACH	Jan20	Wage Works	01/31/2020	FSA Reimbursement - Jan'20	2,813.60	2,813.60
ACH	Jan20	Power Pay Biz/Evo	02/03/2020	Online Credit Card Processing - Jan'20	92.76	92.76
ACH	Feb 2020	Pers Health	02/04/2020	Pers Health Insurance - Feb'20	48,165.58	48,165.58
ACH	Refill 2/3/20	Pitney Bowes Global Financial Services LLC	02/04/2020	Postage Usage 2/3/20	250.00	250.00
ACH	Jan20	Authorize.Net	02/05/2020	Merchant Fees -Jan'20	30.15	30.15
ACH	10251588	LEAF	02/05/2020	Ricoh C3502 Copier System-PW Yard - Jan'20	160.51	160.51
12523	14172063 14221190	AT&T	01/29/2020	Phone Service- 12/13/19-1/12/20 Fire Backup Phone Line- 12/22/19-1/21/20	84.16 40.27	124.43
12524	5656001542 5656005373 5656920858	AutoZone, Inc.	01/29/2020	High Mileage Motor Oil - LGPW#17 '99 Ford F350 Windshield Wiper - LGPW Backhoe 420E Diesel Exhaust Fluid/Cleaner/Degreaser - Sanitation	15.48 17.23 43.09	75.80
12525	34592-IN	Aztec Landscaping Inc.	01/29/2020	Landscape Mgmt Svc - Dec'19	9,183.41	9,183.41
12526	1/28/20	California State Disbursement Unit	01/29/2020	Wage Withholding Pay Period Ending 1/28/20	161.53	161.53
12527	2304 2305 2315	Clark Telecom & Electric Inc.	01/29/2020	Street Light Dig-Alert Markouts - Dec'19 Street Light Repairs - Dec'19 St Light Knockdown Pole Replacement/7909 Broadway - Dec'19	255.35 3,276.05 2,708.85	6,240.25
12528	202000007	County of SD/Assessor/Recorder/Clerk	01/29/2020	Recording Services- 12/2/19	32.00	32.00
12529	20199630 20199631	Dudek	01/29/2020	Prof Svcs: Inspection Support Svc/Grove Hill Proj 11/30-12/27/19 Prof Svcs: Inspection Support Svc/Sewer CIP Proj 11/30-12/27/19	2,375.00 675.00	3,050.00
12530	INV1016984	George Hills Company	01/29/2020	TPA Claims- Adjusting/Other Services - Dec 19	1,595.50	1,595.50
12531	100000010942395	Globalstar USA, Inc.	01/29/2020	Satellite Service 12/16/19-1/15/20	172.59	172.59
12532	43581	Harris & Associates	01/29/2020	Prof Svcs:LG Rdwy & Lighting Dist-Review&Audit 11/24/19-12/28/19	13,938.75	13,938.75
12533	PS020046747	Hawthorne Machinery Co	01/29/2020	Equip Maint- CAT 420E Backhoe- Edge Cutting/Bolts/Nuts	198.91	198.91
12534	97770 97925 98410	Horton, Oberrecht, Kirkpatrick & Martha, APC	01/29/2020	Legal Svcs: GHC0019886 Legal Svcs: GHC0019886 Legal Svcs: GHC0019886	5,000.00 5,000.00 5,345.34	15,345.34
12535	00071928	Hudson Safe-T- Lite Rentals	01/29/2020	Parking Markers/Bollard Installation at 8119 Broadway	97.43	97.43
12536	Jan28 20	ICMA	01/29/2020	ICMA Deferred Compensation Pay Period Ending 1/28/20	780.77	780.77
12537	4775211	Mallory Safety and Supply, LLC	01/29/2020	HazMat Spill Kit/Safety Glasses/Hi Visibility Sign	175.35	175.35
12538	Reimb: 1/27/20	Malone, Audrey	01/29/2020	Reimb: Certificate Holders & Foil Seals - KIVA Graduation	105.51	105.51
12539	1070223	Michael Baker International	01/29/2020	Prof Svc: As-Needed Engineering Svcs thru 11/30/19	26,379.75	26,379.75
12540	19087	Norman A Traub Associates LLC	01/29/2020	Legal Svcs - 8/24/19-11/22/19	4,403.77	4,403.77
12541	WO-64752-1 WO-64752-2	Office Advantage, Inc.	01/29/2020	Office Supplies- Fire Office Supplies- Fire	89.56 12.70	102.26
12542	150918 151119	Pacific Sweeping	01/29/2020	Street Sweeping/Parking Lot - Nov'19 Street Sweeping/Parking Lot - Dec'19	6,428.55 6,428.55	12,857.10
12543	1/20/2020	SDG&E	01/29/2020	3225 Olive- 12/18/19-1/20/20	147.19	147.19
12544	Jan 2	Southern CA Firefighters Benefit Trust	01/29/2020	LG Firefighters Benefit Trust 1/2/20	830.70	2,492.10

	Jan 16			LG Firefighters Benefit Trust 1/16/20	830.70	
	Jan 30			LG Firefighters Benefit Trust 1/30/20	830.70	
12545	0462-8	The Sherwin-Williams Co.	01/29/2020	Graffiti Paint	144.33	144.33
12546	72460513 72468183 72468184	Vulcan Materials Company	01/29/2020	Asphalt Asphalt Asphalt	373.57 102.36 102.36	578.29
12547	1/22/2020 1900909910 4036195180 4036778607 4037358807 4037944601 4038470447 4039045552 4039666785 81995051 12/1/2019 12/12/2019 12/19/2019 12/6/2019 12/10/2019 12/1/2019 11/29/2019 12/18/2019 11/27/2019 11/29/2019 12/4/2019 75954 3103566492 9843463522 9844131337 9844131893 9844131338	Wells Fargo	01/29/2020	AT&T - Backup City Hall Internet- 12/23/19-1/22/20 Cintas - Janitorial Supplies - 11/14/19 Cintas - Janitorial Supplies - 11/27/19 Cintas - Janitorial Supplies - 12/5/19 Cintas - Janitorial Supplies - 12/12/19 Cintas - Fire - Janitorial Supplies - 12/19/19 Cintas - Janitorial Supplies - 12/26/2019 Cintas - Janitorial Supplies - 1/2/20 Cintas - Janitorial Supplies - 1/9/20 Corelogic - Image Requests - Nov'19 Cox - Main Phone/Fire 12/1/19-12/30/19 Cox - Calsense Modem Line:2259 Washington 12/11/19-1/10/20 Cox - Phone/PW Yard/2873 Skyline- 12/19/19-1/18/20 Cox - Calsense Modem Line: 7071 Mt Vernon 12/6/19-1/5/20 Cox - Calsense Modem Line:8235 Mt Vernon 12/9/19-1/8/20 Cox - Phone/City Hall 12/1/19-12/31/19 Cox - Internet/Comm Ctr- 11/29/19-12/29/19 Cox - City Manager/Copy Room Fax Line- 12/18/19-1/17/20 Cox - City Hall Fire Alarm 11/27/19-12/26/19 Cox - PEG Circuit Svc- 11/30/19-12/29/19 Cox - Phone/Rec Ctr/3131 School Ln- 12/4/19-1/3/20 House of Automation - Service Call - PW Yard Pitney Bowes - Postage Meter Rental 9/30/19-12/29/19 Verizon - Modems- Cardiac Monitors - 11/4/19-12/3/19 Verizon - City Phone Charges- 11/13/19-12/12/19 Verizon - Mobile Broadband Access- 11/13/19-12/12/19 Verizon - PW Tablets- 11/13/19-12/12/19	85.60 1,012.63 201.34 201.34 201.34 359.39 201.34 201.34 201.34 11.00 441.17 23.11 214.93 20.32 94.39 978.77 75.00 4.25 45.63 2,896.56 98.02 335.00 180.75 14.04 129.35 76.02 198.80	8,502.77
12548	2619-4 Rev	Charles King Company, Inc.	02/05/2020	2017-18 Sewer CIP Contract # 2019-11 thru 9/30/19	20,601.48	20,601.48
12549	FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 FRS0000189 HCA0000303 HFTA000167	City of El Cajon	02/05/2020	Overtime Reimbursement - Hays 12/8/19 Overtime Reimbursement - Kinoshita 11/30/19 Overtime Reimbursement - Cameron 12/21/19 Overtime Reimbursement - Diaz 12/22/19 Overtime Reimbursement - Garcia 12/19/19 Overtime Reimbursement - Kelsen 12/18/19 Overtime Reimbursement - Kinoshita 12/14/19 Overtime Reimbursement - Nevin 12/14/19 Overtime Reimbursement - Paddock 12/17/19 Overtime Reimbursement - Pinson 12/20/19 Overtime Reimbursement - Sanchez 12/30/19 HCFA Assessments - QTR 3 FY19/20 HFTA Fees - QTR 3 FY19/20	1,179.09 1,208.74 1,238.93 1,269.68 1,238.93 1,301.53 1,208.74 1,443.73 1,269.68 1,238.93 1,179.09 65,300.00 4,356.00	83,433.07
12550	FY18-19 LG	County of San Diego- Dept of Public Works	02/05/2020	District Operation & Maintenance Charges FY2018-19	6,904.00	6,904.00
12551	3501 3521	County of San Diego- Registrar of Voters	02/05/2020	Petition Signature Verification - Trans & Use Tax Mar 3, 2020 Presidential Primary Election - Advance Deposit	12,007.00 19,000.00	31,007.00
12552	Cox Home	Cox Home Security	02/05/2020	Refund/Cox Home Security/Overpaid Business License Fees	190.00	190.00
12553	2020CA Election	DFM Associates	02/05/2020	2020 CA Elections Code Book/Paperback	56.84	56.84
12554	dsb20190292	Dig Safe Board	02/05/2020	State Fee/Regulatory Monthly Costs/Dig Alert 2019	57.13	57.13
12555	Oct-Dec19	Division of the State Architect	02/05/2020	State CASP Fee (\$1),(4) - 10/1/19-12/31/19	194.80	194.80
12556	Reissue 1/3/17	Drum, Daryn	02/05/2020	Re-issue: Data Analysis Training/San Jose/Meals/Drum 11/14-17/16	47.48	47.48
12557	Feb-20	Fidelity Security Life Insurance Company	02/05/2020	Vision Insurance -Feb20	310.26	310.26
12558	2018.024	Firewerx	02/05/2020	FireWerx Wildland Hose Pack 2+1	173.60	173.60
12559	Harris	Harris, Donald	02/05/2020	Refund/Harris, Donald/Diversion Deposit CD1-900-0066	500.00	500.00
12560	628266	League of California Cities	02/05/2020	League Membership Dues for 2020	10,682.00	10,682.00
12561	1657	League of California Cities,San Diego Division	02/05/2020	2020 League Membership Dues & Meetings- SD County Division	1,200.00	1,200.00
12562	1072956	Michael Baker International	02/05/2020	Prof Svc: As-Needed Engineering Svcs thru 12/31/19	9,301.63	9,301.63
12563	235169 235170	Ninyo & Moore	02/05/2020	6800 Mallard Ct Inspection Svcs thru 12/27/19 1963 Berry St Inspection Svcs thru 12/27/19	1,882.00 3,082.00	4,964.00
12564	Owens	Owens, Beverly	02/05/2020	Refund/Owens, Beverly/Deposit - LBH- 1/25/20	200.00	200.00
12565	INV00009759	RapidScale Inc.	02/05/2020	Virtual Hosting/Back Up Svc/Cloud Storage 1/31/20 - 2/28/20	3,675.78	3,675.78
12566	Reimb: 1/27/20	Romero, Lydia	02/05/2020	Reimb: Airfare/LCC Homeless Mtg/Sacramento/Romero 11/4/19	204.97	204.97
12567	Jan-Jun 20	San Diego County Sheriff's Department	02/05/2020	Cal-ID Program Costs 1/1/20-6/30/20	3,144.00	3,144.00
12568	8129114508	Shred-It USA	02/05/2020	Shredding Services 1/22/20	80.22	80.22

12569	CINV-007937	Trusaic	02/05/2020	2020 ACA Basic Plus Svcs - Initial Deposit	1,500.00	1,500.00
12570	120200391	Underground Service Alert of Southern Ca.	02/05/2020	59 New Ticket Charges - Jan'20	107.35	107.35
					376,815.24	376,815.24



CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 1.C

Meeting Date: February 18, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: City Manager's Office

Staff Contact: Shelley Chapel, City Clerk

Schapel@lemongrove.ca.gov

Item Title: **Approval of City Council Meeting Minutes**

Recommended Action: Approval of City Council Meeting Minutes.

Environmental Review:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Not subject to review Negative | <input type="checkbox"/> Declaration |
| <input type="checkbox"/> Categorical Exemption, Section | <input type="checkbox"/> Mitigated Negative Declaration |

Fiscal Impact: None.

Public Notification: None.

**MINUTES OF A MEETING OF
THE LEMON GROVE CITY COUNCIL
TUESDAY, FEBRUARY 4, 2020**

*The City Council also sits as the Lemon Grove Housing Authority,
Lemon Grove Sanitation District Board, Lemon Grove Roadway Lighting District Board,
and Lemon Grove Successor Agency.*

Call To Order:

Mayor Vasquez called the Regular Meeting to order at 6:02 p.m.

Present: Mayor Racquel Vasquez, Mayor Pro Tem Jennifer Mendoza, Councilmember Yadira Altamirano, and Councilmember Jerry Jones.

Absent: Councilmember David Arambula

Staff Members Present:

Lydia Romero, City Manager, Kristen Steinke, City Attorney, Mike James, Assistant City Manager/Public Works Director, Noah Alvey, Community Development Manager, Shelley Chapel, City Clerk, Steven Swaney, Fire Chief, Lieutenant Stranger, San Diego County Sheriff's Office - Lemon Grove Substation, and Roberto Hidalgo, Human Resources Manager.

Pledge of Allegiance:

Pledge of Allegiance to the Flag was led by Councilmember Jones.

Public Comments: No comments.

City Council Oral Comments & Reports on Meetings Attended At City Expense: (G.C. 53232.3(d))

Councilmember Y. Altamirano attended the following meetings and events:

- New City Councilmember Academy hosted by the League of CA Cities
- Young Men's Leadership Conference
- McAlister Graduation Ceremony

Mayor Pro Tem Mendoza attended the following meetings and events:

- Vice-Chair to Transportation, Communication and Public Works Committee Meeting with the League of California Cities
- East County Meeting of the SANDAG Board with Councilmember Jones
- MTS Board Meeting as Alternate

Mayor Vasquez attended the following meetings and events:

- SANDAG Meeting

1. Consent Calendar:

- A. Waive Full Text Reading of All Ordinances on the Agenda.
- B. Ratification of Payment of Demands
- C. City Council Meeting Minutes for Regular Meeting January 21, 2020.
Approval of Resolution No. 2020-3504, Authorizing the Submittal of a CalRecycle Local Government Waste Tire Enforcement Grant Application in Partnership with the City of San Diego – Solid Waste Local Enforcement Agency and Authorizing the City of San Diego to Act on Behalf of the City of Lemon Grove to Execute All Necessary Grant Documents.
- D. Rejection of Claim – Edward Dominick
- F. Rejection of Claim – Diane Ravelle
- G. Rejection of Claim – Edward Wong

Action: Motion by Councilmember Jones, seconded by Mayor Pro Tem Mendoza to approve Consent Calendar Items A-G.

The motion passed by the following vote:

Ayes: Vasquez, Mendoza, Altamirano, Jones

Noes: Arambula

Reports to Council:

2. Adopted Resolution No. 2020-3705 entitled, "A Resolution of the City Council of the City of Lemon Grove, California, Changing the Name of Civic Center Park to Treganza Heritage Park."

Mayor Vasquez introduced Mike James, Assistant City Manager / Public Works Director who gave the report and PowerPoint presentation.

Appeared to comment were: Laura Hook, Helen Ofield, Cynthia Hughes-Doyle, Roberta Bulling,

Action: Motion by Councilmember Jones, seconded by Councilmember Altamirano to adopt Resolution. The motion passed by the following vote:

Ayes: Vasquez, Mendoza, Altamirano, Jones

Noes: Arambula

3. State of California Senate Bill 50

Mayor Vasquez introduced Noah Alvey, Community Development Manager who gave the report. This item failed on the Senate floor so not valid.

Action: Staff recommendation was to receive and file.

Closed Session:

1. CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION
Government Code Section 54956.9b
Number of potential cases: 1
2. CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION
Government Code Section 54956.9
Name of Case: Citrus St. Partners LLC v. City of Lemon Grove; City Council of the City of Lemon Grove
(CASE NO. 37-2019-00064690-CU-MC-CTL)

City Attorney Kristen Steinke announced the City Council will be adjourning to closed session at 6:46 p.m. for the purposes above.

City Attorney Steinke reported no reportable action on items discussed in Closed Session.

Adjournment:

There being no further business to come before the Council, the meeting was adjourned at 6:59 p.m. to a meeting to be held Tuesday, February 18, 2020, in the Lemon Grove Community Center located at 3146 School Lane, for a Regular Meeting.

Shelley Chapel, MMC
City Clerk



LEMON GROVE SANITATION DISTRICT

DISTRICT BOARD STAFF REPORT

Item No. 1.D

Meeting Date: February 18, 2020

Submitted to: Honorable Chair and Members of the Lemon Grove Sanitation District

Department: Public Works Department

Staff Contact: Mike James, Assistant City Manager / Public Works Director

mjames@lemongrove.ca.gov

Stephanie Boyce, Senior Management Analyst

sboyce@lemongrove.ca.gov

Item Title: Accept the Fiscal Year 2017-18 Sewer Capital Improvement Project (Contract No. 2019-11) as Complete

Recommended Action: Adopt a resolution accepting the Fiscal Year 2017-18 Sewer Capital Improvement Project (Contract No. 2019-11) as complete.

Summary: In support of the Sanitary Sewer Master Plan and associated capital improvement project, the Lemon Grove Sanitation District Board (District Board) awarded the Fiscal Year 2017-18 Sewer Capital Improvement Project to Charles King Company in February 2019.

Background: On February 19, 2019, Charles King Company was awarded the Fiscal Year 2017-18 Sewer Capital Improvement Project (Contract No. 2019-11) with a total bid cost of \$338,290.00 and a project budget not to exceed \$437,896.00. Since the project was awarded, there have been three (3) change orders. Change Order No.1 was issued for additional potholing, Change Order No. 2 was issued for the import and export of unsuitable backfill material, and Change Order No. 3 was issued for the deduction of items not necessary in the completion of the project including monumentation allowance, fence repair and a field order. The overall change orders reflect the deduction of items and unforeseen construction items totaled \$9,845.10. The final project cost totaled \$401,843.60 which includes bid advertisement, construction costs, material testing and inspection. On October 21, 2019, **the District's inspector and** staff completed the final inspection of the improvements and determined the work was completed per the contract specifications.

Staff recommends that the District Board adopt a resolution (Attachment A) accepting the work as complete, authorizes the District Manager or designee to file a Notice of Completion with the County of San Diego, and authorizes staff to release the retention no sooner than thirty (30) days after the Notice of Completion has been filed.

Environmental Review:

- Not subject to review Negative Declaration
 Categorical Exemption, Section | Mitigated Negative Declaration

Fiscal Impact: Funding has been allocated from the Sanitation District Capital fund.

Public Notification: None.

Staff Recommendation: Adopt a resolution accepting the Fiscal Year 2017-18 Sewer Capital Improvement Project (Contract No. 2019-11) as complete.

Attachment:
Attachment A – Resolution

RESOLUTION NO. 2020 -

A RESOLUTION OF THE LEMON GROVE SANITATION DISTRICT,
CALIFORNIA, ACCEPTING THE FISCAL YEAR 2017-18 SEWER CAPITAL
IMPROVEMENT PROJECT (CONTRACT NO. 2019-11) AS COMPLETE

WHEREAS, on February 19, 2019, the Lemon Grove Sanitation Board awarded the 2017-18 Sewer Capital Improvement Project (Contract No. 2019-11) to Charles King Company; and

WHEREAS, the contract bid amount was established at \$338,290.00 and a total project budget not to exceed \$437,896.00; and

WHEREAS, three change orders in the total amount of \$9,845.10 increased the original contract price of \$338,290.00 to 348,135.10; and

WHEREAS, the final project cost of \$401,843.60 was allocated for this project from the Sanitation District; and

WHEREAS, on October 21, 2019, Charles King Company completed the scope of work as defined by the original contract and change orders; and

WHEREAS, the District inspector inspected all of the improvements and determined that Charles King Company fulfilled its contractual obligations.

NOW, THEREFORE, BE IT RESOLVED that the Lemon Grove Sanitation District hereby:

1. Accepts the work for the FISCAL YEAR 2017-18 Sewer Capital Improvement Project (Contract No. 2019-11) as complete; and
2. Authorizes the District Manager or designee to file a Notice of Completion with the County of San Diego; and
3. Authorizes district staff to release the retention no sooner than thirty (30) days after the Notice of Completion is filed.

PASSED AND ADOPTED on _____, 2020, the Lemon Grove Sanitation District, California, adopted Resolution No. _____, passed by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

Racquel Vasquez, Chair

Attest:

Shelley Chapel, MMC, District Clerk

Approved as to Form:

Kristen Steinke, District Attorney



CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 2

Meeting Date: February 18, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: Community Development Department

Staff Contact: Noah Alvey, Community Development Department

nalvey@lemongrove.ca.gov

Item Title: Continuation of Public Hearing to Consider Conditional Use Permit Application CUP-190-0002, A Request to Establish a Medical Marijuana Dispensary at 3515-3521 Harris Street in Special Treatment Area III, Regional Commercial

Recommended Action: Continue the public hearing for consideration of CUP-190-0002, direct staff to re-notice the public hearing based on actions by the San Diego Superior Court, and provide that no new sensitive uses shall prejudice the application.

Summary: This is a request to establish a medical marijuana dispensary (MMD) at 3515-3521 Harris Street in General Plan Special Treatment Area III, Regional Commercial. The project proposes demolition of an existing duplex and improvements to two existing buildings to create sales and staff spaces for the MMD as well as off-site parking for dispensary staff. Proposed site improvements include new landscape and trees, commercial driveway and parking area, and city standard street improvements.

The Application is the subject of a Temporary Restraining Order (TRO) issued by the San Diego Superior Court in pending litigation entitled Citrus St Partners LLC v. City of Lemon Grove, et al. (SDSC Case No.: 37-2019-00064690-CU-MC-CTL). The TRO restricts the City and the City Council from making a final determination on the subject CUP application until the Court makes a ruling on the request for Preliminary Injunction **and includes other restrictions pending the outcome of Petitioner's motion for preliminary injunction.**

Prior to the adjournment of the duly noticed public hearing on January 21, 2020, City Council moved to continue the public hearing to a date certain of February 18, 2020, with the provision that no new sensitive uses shall prejudice the application.

On January 28, 2020, KIM Investments, LLC filed a peremptory challenge with the San Diego Superior Court resulting in the re-assignment of the case to a new judge and a new hearing date for the motion for a preliminary injunction of May 1, 2020.

Staff recommends that the hearing be continued and that a new public hearing notice be distributed based on the outcome of the May 1, 2020, hearing date or subsequent hearing dates, as applicable.

Environmental Review:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Not subject to review | <input type="checkbox"/> Negative Declaration |
| <input type="checkbox"/> Categorical Exemption, Section | <input type="checkbox"/> Mitigated Negative Declaration |

Fiscal Impact: There is no fiscal impact.

Public Notification: Notice of Public Hearing for this item was given in accordance with LGMC Section 17.28.020(F) on January 9, 2020. The item was continued at the January 21, 2020 to a date certain of February 18, 2020, without further notice pursuant to Section 17.28.020(G).

Staff Recommendation: Continue the public hearing for consideration of CUP-190-0002, direct staff to renote the public hearing based on actions by the San Diego Superior Court, and provide that no new sensitive uses shall prejudice the application.



CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 3

Meeting Date: February 18, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: Public Works Department

Staff Contact: Mike James, Assistant City Manager / Public Works Director

mjames@lemongrove.ca.gov

Item Title: **Acceptance of the Drainage Master Plan Update**

Recommended Action: That the City Council adopt a resolution accepting the Drainage Master Plan Update.

Summary: On June 18, 2019, the City Council received and accepted the first, of two, phases of the Citywide Drainage Master Plan (DMP) update. That first phase addressed the regulatory drivers that apply to drainage system, created a high resolution geospatial data set, assessed all drainage areas in the City, and recommended improvements based on closed circuit television results for the corrugated metal pipe (CMP) system. At that same meeting, the City Council directed staff to move forward with the second phase of the DMP update that included: researching and updating the probable construction costs and prioritizing recommended capital improvement projects.

The second phase of the DMP update is now complete and staff presents the DMP update for acceptance. The remaining portion of this report highlights the second phase activities that were added to the DMP update.

Discussion: The DMP update is a comprehensive plan and tool to highlight existing storm water conveyance system deficient along with a condition assessment of the CMP storm drains throughout the City. Like the City's pavement and sewer master plans, the DMP update prioritizes capital improvement projects with current cost estimates that will be used by the City to make future funding and construction decisions.

As a brief summary, the City is responsible for managing the public storm drain system within the City limits (approximately 3.9 square miles) and ensuring that an adequate level of service is provided to protect the public from excessive surface flooding conditions. To this end, the need for a comprehensive and high-resolution hydrologic and hydraulic (H&H) analysis to evaluate the existing storm water conveyance system level of service citywide was identified. The intent of this study and final report is to build off of past micro-studies, and provide a holistic understanding of the City's storm water infrastructure thus, allowing the City to prioritize its maintenance and repairs efforts.

The first phase of the report consisted of four areas:

1. **Regulatory Framework**: The City must be responsive to a number of regulatory drivers that apply to drainage, storm water infrastructure management, and water quality specific to each storm drain outfall system. These drivers focus on addressing one particular storm water related component, each with different compliance metrics, timelines, and monitoring requirements. All of these nuances are critical to develop any DMP.
2. **High Resolution Geospatial Data**: A high resolution geospatial dataset is essential to perform the detailed hydrologic and hydraulic drainage and water quality analyses. Geospatial data necessary for these modeling efforts include: an accurate topographic representation of the study area, ground cover/land use information, and existing storm drain inventory. This section focused on receiving and evaluating raw data layers, adjusting the data and making corrections as needed, and summarizing the revised dataset for future modeling with field verification.
3. **Drainage Assessment**: The assessment was accomplished using an integrated 1-D/2-D H&H model that combines surface and sub-surface drainage patterns within the study area to provide a high-resolution surface inundation and storage of storm water flow for the duration of a design storm. This study considers the 2-year, 10-year and 100-year storm events in order to understand the performance of the drainage conveyance system during storms with a higher probability of occurrence.
4. **Recommended Improvements**: The CMP systems were televised using closed-circuit television (CCTV) and the results were used to create a condition rating from very poor to good. With each condition a recommended repair technique was provided that include the following options:
 - a. Cured in place pipe (CIPP) lining,
 - b. CIPP sectional repairs,
 - c. Top Hat (TH) in lateral/main connection sealing,
 - d. Pressurized hydrophilic grout and urethane sealant,
 - e. Hydro-scouring, and
 - f. Pipe removal and replacement.

A summary of the pipe segments rating and quantity is provided in the report. Additionally, all repair techniques and number of repairs necessary were included. Lastly, ten regional improvement opportunities were included in the report that could provide detention or water quality benefits. The list of each location, the size and parcel ownership (in addition to the City) were included in the report.

The second phase of the DMP update focused on the following two (2) tasks:

1. **Probable Construction Costs:** Research available unit costs for project construction based on historical bid history or other readily available sources. Unit costs will be provided to the City. Additionally, a generalized order of magnitude opinion of probable construction cost for each of the recommended facilities will be provided to aid in the prioritization of projects.
2. **Bundling and Prioritization of Recommended Improvements:** Provide prioritization scores for each recommended facility to assist in ranking the benefit of each potential improvement. A matrix will consider modeling results as well as relevant fields from the existing GIS data. Areas will be bundled into relevant project areas and forecasted for a ten-year period.

The final report (**Attachment B**) now contains an updated single source of information that:

1. Analyzed existing storm water conveyance system deficiencies,
2. Completed a condition assessment of the CMP storm drainage,
3. Provides for prioritized drainage improvement recommendations for use in the City's capital improvement program, and
4. Provides surface and subsurface drainage patterns, flowrates, deficiencies, and ultimately proposed project recommendations.

The third and fourth comments above identify the critical needs that have not been consolidated prior to this current update to the Master Plan. The needs identified in the report highlight forty-two (42) projects varying in cost from \$25,000 up to \$10 million with a combined cost of \$78 million. These improvements provide storm drain capacity benefits and reduce the total volume of surface ponding from 87 acre-feet to 66 acre-feet in the 10-year storm event model. Additionally, staff asked Rick Engineering Company to look towards the City's neighbors and determine if there are areas where the City can partner with other public entities to create regional projects for future water quality best management practices. That yielded at least ten (10) potential project locations that could involve partnerships with the City of La Mesa, County of San Diego, and City of San Diego.

This DMP update successfully utilized high-resolution data with an integrated model to determine existing deficiencies and identify recommended improvements for drainage infrastructure. The results from this report will assist staff by utilizing it as a guide and a resource tool to manage the drainage Capital Improvement Projects (CIP) moving forward and will be reflected in the City's Capital Improvement Program.

Environmental Review:

- Not subject to review Negative Declaration
 Categorical Exemption, Section | Mitigated Negative Declaration

Fiscal Impact: \$50,000 was allocated in the Fiscal Year 2019-2020 budget from Fund 02 – Gas Tax Fund (SB-1 Roadway Maintenance and Rehabilitation Act).

Public Notification: None.

Staff Recommendation: That the City Council adopt a resolution (**Attachment A**) approving the Drainage Master Plan Update.

Attachments:

Attachment A – Resolution

Attachment B – Drainage Master Plan Update

RESOLUTION NO. 2020 -

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LEMON GROVE, CALIFORNIA, APPROVING THE DRAINAGE MASTER PLAN

WHEREAS, in 1997, the City contracted with ASL Consulting Engineers to create a drainage master plan (master plan); and

WHEREAS, there was a need to perform and update to the master plan that would include data collection and compilation, CCTV of the corrugated metal pipe storm drain system, existing condition hydrologic and hydraulic analysis, recommend improvements, identifying regional improvement opportunities, and develop a final drainage master plan update; and

WHEREAS, in order to complete this update in an economically efficient process the expertise of a consulting firm that possess the knowledge, skills, and abilities in completing master plans would be needed; and

WHEREAS, Rick Engineering Company was identified by City staff as a consulting firm that has -proven experience in creating and updating master plans in the County; and

WHEREAS, in February 2020, Rick Engineering Company completed the final phase of the City’s drainage master plan and submitted the final report to the City; and

WHEREAS, the City Council reviewed and accepted the final report.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Lemon Grove hereby:

1. Accepts the citywide drainage master plan update prepared by Rick Engineering Company; and
2. Authorizes the City Manager, or designee, to manage the project close out process.

PASSED AND ADOPTED on _____, 2020, the City Council of the City of Lemon Grove, California, adopted Resolution No. _____, passed by the following vote:

- AYES:**
- NOES:**
- ABSENT:**
- ABSTAIN:**

Racquel Vasquez, Mayor

Attest:

Shelley Chapel, MMC, City Clerk

Approved as to Form:

Kristen Steinke, City Attorney

DRAINAGE MASTER PLAN

City of Lemon Grove

February 2020



RICK
ENGINEERING COMPANY

City of Lemon Grove Drainage Master Plan

February 12, 2020

Presented To

**City of Lemon Grove Public
Works Department**

3232 Main Street
Lemon Grove, California 91945



Presented By

Rick Engineering Company

5620 Friars Road
San Diego, California 92110

P: 1-619-291-0707

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rickengineering.com

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- C. GIS DATASET EXHIBITS
- D. INUNDATION MAPS
- E. PROPOSED CONDITIONS
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- G. COSTS AND PRIORITIZATION

Acronyms/Abbreviations

Acronym/Abbreviation	Definition
BMP	best management practice
cfs	cubic feet per second
DEM	digital elevation model
DMP	drainage master plan
ft	foot, feet
GIS	geographic information system
H&H	hydrology and hydraulics
LF	linear foot, linear feet
LIDAR	Light Detection and Ranging
LOS	level of service
NOAA	National Oceanic and Atmospheric Administration
NWP	nationwide permits
RCB	reinforced concrete box
RCP	reinforced concrete pipe
ROW	right-of-way
SANDAG	San Diego Association of Governments
SanGIS	San Diego Geographic Information Source
sq. mi.	square miles
SSURGO	Soil Survey Geographic Database
SWMM	Storm Water Management Model
TMDL	total maximum daily load

Limitations:

The City of Lemon Grove Drainage Master Plan is a comprehensive plan for existing drainage needs within the City of Lemon Grove. This report has been prepared for master planning purposes only, as a guide for engineers, planners, developers, and City staff. Detailed engineering calculations and investigations should be prepared for the implementation of any of the facilities outlined in this study. In addition, coordination with adjacent municipalities or state agencies may be required to coordinate drainage improvement efforts that cross jurisdictional boundaries.

1.0 Introduction

The *Drainage Master Plan* (DMP) has been prepared for the City of Lemon Grove (City) to significantly advance the City's storm water management goals by analyzing existing storm water conveyance system deficiencies along with a condition assessment of the CMP storm drains throughout the City in order to inform future decisions pertaining to public storm drain infrastructure improvements. The City is responsible for managing the public storm drain system within the City limits, and ensuring that an adequate level of service is provided to protect the public from excessive surface flooding conditions. To this end, the need for a comprehensive and high-resolution hydrologic and hydraulic (H&H) analysis to evaluate the existing storm water conveyance system level of service citywide was identified. The City has undergone multiple studies to address the known "hot spots" of the City. The intent of this project is to build off of these past efforts and provide a holistic understanding of the City's storm water infrastructure allowing the City to prioritize their efforts.

The City of Lemon Grove study area limit is approximately 3.9 square miles in area. However, the entire watershed area tributary to the City of Lemon Grove study area covers approximately 5.5 square miles due to areas draining into and out of the City from the City of San Diego, City of La Mesa, and Spring Valley, a community of unincorporated area in San Diego County. Most of the City is within the Chollas Sub-basin draining to the West through South Las Chollas Creek, Radio Drive Branch, Encanto Branch, and Jamacha Branch going from the north of the City to the South, respectively. The remaining portion to the east of the City drains to the east to the La Nacion Sub-basin through Brookside Branch and Spring Valley Creek from north to south respectively. Figure 1-1 and the following paragraph provide an overview of the DMP components and the overall process that was developed for this project.

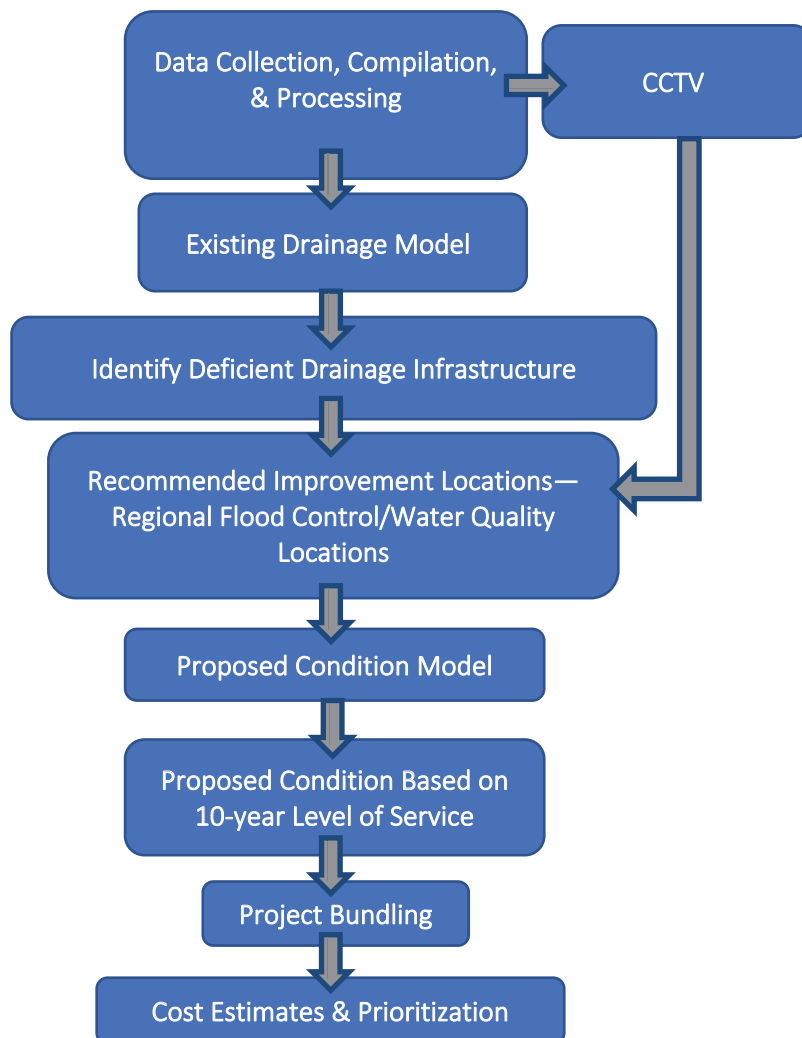
The first, and arguably most critical, component in the DMP framework is the data collection regarding the existing storm drain infrastructure and drainage conditions, including corrections to a Geographic Information System (GIS) inventory of structure and conveyance features within the study area. The second process in the DMP framework is modeling the existing drainage condition to establish a baseline and identify existing drainage issues within the study area. Results from the analysis of existing drainage conditions can then be used to review locations with problematic drainage patterns and assist in informing solutions including potential areas for detention or water quality projects. The third process includes incorporating the proposed drainage recommendations into the baseline drainage model creating the ultimate condition proposed condition model. The final process is grouping proposed improvements into bundled projects.

A total of forty-two (42) bundled projects were identified as a part of the DMP. These projects were then prioritized based on a prioritization matrix that assesses the length, CCTV rating, and severity of existing capacity among other variables and costs. **The total cost for the forty-two (42) projects is \$78,183,649 and they will remove 121 inundated structures from the 10-year storm event.** The top five (5) projects based on

the prioritization that was established provide much needed backbone infrastructure along the Federal Boulevard system and have an estimated cost of \$15,459,541 and remove 42 inundated structures from the 10-year storm event.

The DMP along with the associated GIS data set, web tool, and spreadsheets will provide a highly detailed drainage improvement plan that will allow the City to easily assess and implement improvements for the area’s current flooding issues. This DMP summarizes the recommendations and presents them within the City of Lemon Grove Drainage Master Plan Web Mapping Application (<https://maps.rickengineering.com/lqdmp/>).

Figure 1-1: DMP Framework



1.1 Regulatory Framework

When evaluating potential infrastructure improvements, the City must be responsive to a number of regulatory drivers that apply to drainage, storm water infrastructure management, and water quality specific to each storm drain outfall system. These regulatory drivers are typically focused on addressing one particular storm water-related component, each with different compliance metrics, timelines, and monitoring requirements. Understanding the nuances inherent in meeting the overall regulatory framework in the watershed was a critical component in developing the DMP and is summarized in the sections below.

1.1.1 Drainage Infrastructure Requirements

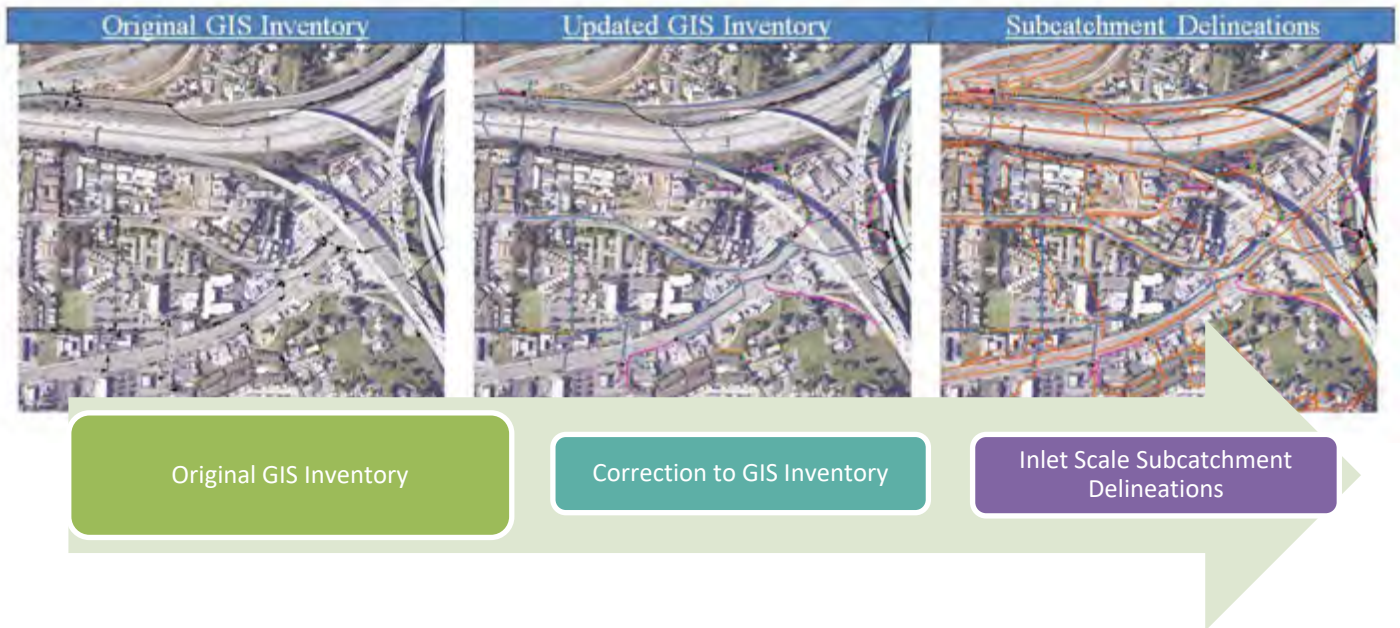
The County of San Diego maintains certain regulatory standards for storm water improvements as stipulated in the *San Diego County Hydraulic Design Manual*, dated September 2014. The governing design storm typically used as the basis for drainage recommendations is the 100-year storm event, which is consistent with the requirements per the 2014 *San Diego County Hydraulic Design Manual*. One of this study's objectives was to assess the existing drainage infrastructure to determine the current Level of Service (LOS) relative to the County's policies for drainage design. Based on the results of the existing condition models and conversations with City staff, a more frequently returning 10-year storm event was selected as the desired LOS for the recommendations of this study. The proposed improvements provide an improved system compared to the existing condition with the goal to have capacity in the pipes contain the more frequent 10-year storm event that routinely affects residents. In addition to not being economically feasible, if the system was upsized to contain the 100-year storm event flow, the downstream receiving waters would be negatively affected at every culvert, and crossing. Additionally, based on the 2014 *San Diego County Hydraulic Design Manual*, the storm water conveyance system shall be designed so that the combination of storm drain system capacity and overflow (streets and gutter) will be able to carry the 100-year frequency storm. Therefore, this DMP modeled the 10-year storm events to assess LOS as well as analyzed the 100-year to assess street conveyance.

2.0 High Resolution Geospatial Data

A high resolution geospatial dataset is essential to perform detailed hydrologic and hydraulic drainage and water quality analyses. Geospatial data necessary for these modeling efforts include: an accurate topographic representation of the study area, ground cover/land use information, and existing storm drain inventory. While evaluating the data initially collected, it was determined that certain data components (such as the storm drain inventory junction points and line work) did not accurately reflect the field conditions and/or did not align spatially when compared against the aerial imagery of the study area. An effort to correct and compile the data from various sources into one comprehensive dataset was undertaken. Of particular focus during this effort was to ensure a correct spatial representation of the storm drain infrastructure, and collect any missing information. A revised dataset will also be useful for any future projects that the City or other consultants undertake within the study area.

Figure 2-1 displays a snapshot of the changes that were made to the GIS inventory, which demonstrates the amount of new information that was compiled in a representative portion of the study area.

Figure 2-1: Snapshot of New Storm Drain Information Added to GIS Inventory



The following sections of this report describe the geospatial data received, the process of correcting and compiling certain data sets, and the resultant data from the correction process.

This section presents:

- Raw data layers received and sources (Section 2.1)
- Data adjustment and correction process (Section 2.2)
- Summary of the revised dataset (Section 2.3)

2.1 Raw Geospatial Data

Rick Engineering Company (RICK) used several data sets in addition to the original data from the City for this DMP. All utilized data sets are summarized in Table 2-1 with their associated version dates.

Table 2-1: Geospatial Data Inventory

Data Layer	Version Date	Source (Agency)
LiDAR	2014	SanGIS, SANDAG, NGA, LECC, Regional Public Safety GIS, 18 Incorporated Cities
Aerial Imagery	2017	County of San Diego
Topography	2014	SANGIS
Storm Drain Network Files (Drain Conveyance, Drain Structures)	September 7, 2018	City of Lemon Grove, SanGIS, SANDAG
Land Use	January 1, 2017	SanGIS, SANDAG
Hydrologic Soil Groups (SSURGO)	November 11, 2013	Natural Resources Conservation Service
Parcel Layer	February 15, 2018	SanGIS, SANDAG, Assessor/Recorder/County Clerk
Floodplain Layers	April 7, 2016	Federal Emergency Management Agency
Municipal Boundaries	July 25, 2011	SanGIS, SANDAG

2.2 Corrections to GIS Inventory

Corrections to the GIS storm drain inventory were required to model the existing conditions of the City of Lemon Grove. The completeness of storm drain inventory data was critical in ensuring the effectiveness and practicality of subsequent modeling analyses. RICK was tasked with updating the City's storm drain inventory to more accurately reflect the current existing condition of the study area. For the purposes of preparing a DMP, the storm drain data necessary for this study consists of the horizontal layout of the existing storm drain system, size and material of conduits, and flowline elevations (if feasible). As displayed in Figure 2-2, storm drain inventory revisions were conducted in a two-step process; (1) desktop analyses and (2) field verification.

Figure 2-2: Corrections to GIS Inventory Flowchart



2.2.1 Desktop Analyses

Desktop analyses involved updating the storm drain structures and conveyance information in the City’s existing GIS dataset based on previous survey data, as-built drawings, aerial imagery, CCTV data, and Google Earth observations. The horizontal location of drainage structures in the inventory was corrected to match the aerial imagery. RICK utilized survey data from previous projects to assist in assigning invert elevations to drainage structures. For structures in which depth measurements were not accessible on site and survey or as-built drawing data was not available, engineering judgment was used to assign an invert elevation based on upstream

and downstream drainage connections. A Digital Elevation Model (DEM) was utilized to update rim elevations for drainage structures not previously identified in the received data. Google Earth and Street View were used to update the location and type of each inlet and drainage structure.

2.2.2 Field Verification

Several field visits were conducted as part of the DMP effort to supplement the desktop analyses in correcting the GIS inventory. These assessments included storm drain system inventory verification to assess the status of assets including inlet locations and sizes, storm drain diameters and materials, structure depths, connectivity, and drainage patterns.

**Figure 2-3: CMP conduit in the northern portion of Lemon Grove (Left).
Spillway in the northern portion of Lemon Grove (Right).**



2.3 Revised Geospatial Data

The main objective of the GIS storm drain data revisions was to ensure that a complete and accurate representation of the existing drainage system was reflected on the GIS shapefiles. The revisions incorporated into the GIS shapefiles were provided back to the City for use outside of this DMP.

Table 2-2 provides a summary of the changes to the original storm drain inventory received from the City of Lemon Grove. The existing inventory was updated for storm drains that were larger than 36 inches in diameter

(or considered part of the primary backbone system). The inventory was also updated to add missing drainage structures such as inlets, pipe segments, cleanouts, and outlets. Facilities were updated through referencing survey and as-built data as well as through Google Earth and Google Street observations conducted via desktop analysis. Certain facilities were flagged to be checked in person and those facilities were assessed via site visits that were conducted over the course of about three (3) days. As shown, multiple structures and conveyance segments were added to the inventory via this process.

Table 2-2: Data Source of Drainage Asset Properties

	Desktop Analyses				Field Verification
	Surveying Data	As-built Data	DEM	Google Earth/Street View Observations	
Structures					
Location	X	X		X	X
Type of Structures	X	X		X	X
Rim Elevation	X	X	X		X
Invert Elevation	X	X	X		X
Depth			X		X
Conveyance					
Location / Orientation	X	X		X	X
Type of Conveyance	X	X		X	X
Material	X	X			X
Diameter	X	X			X
Pipe Offsets					X

Below, Table 2-3, provides a summary of the changes to the original storm drain inventory received from the City.

Table 2-3: Summary of Original and Existing (revised) Storm Drain Inventory

Asset Type	Original Data Set Provided	Existing Condition Revised Data	Change in Features	Percent Change
Structure				
Fitting	7	0	-7	-100%
Inlet	703	782	79	11%
Manhole	85	103	18	21%
Clean out	14	44	30	214%
Discharge	173	18	-155	-90%
Channel confluence	0	77	77	100%
Conduit connection ¹	0	90	90	100%
Downstream headwall	0	152	152	100%
Flowline connection	0	21	21	100%
Headwall	0	112	112	100%
Not present	0	1	1	100%
Outlet	0	21	21	100%
Outlet, D-25	0	57	57	100%
Spillway	0	31	31	100%
Unimproved	0	37	37	100%
Total	982	1546	564	57%
Conveyance				
Culvert	3	0	-3	-100%
Ditch	51	89	38	75%
Drainage facility	698	1058	360	52%
Earthen channel	46	57	11	24%
Earthen ditch	13	13	0	0%
Open channel	52	131	79	152%
Surface flow/flowline	0	193	193	100%
swGravity Main	860	0	-860	-100%
Total	1723	1541	-182	-11%

1. A conduit connection can be categorized as a structure that connects two (2) or more conduits but was not verified in the field.

In order to better define the inventory, the conveyance and structure facilities were reclassified into subcategories that are more informative for future needs while keeping the integrity of the existing inventory. While the number of assets may have reduced, the overall value of the data has increased and become more robust.

3.0 Drainage Assessment

Drainage assessment was accomplished using an integrated 1-D/2-D hydrologic and hydraulic (H&H) model that combines surface and sub-surface drainage patterns within the study area. One of the most beneficial aspects of integrated 1-D/2-D modeling is the ability to render high-resolution surface inundation and storage of storm water flow for the duration of a design storm. An existing condition model was prepared, which presented a high resolution visual rendering of the combined surface and sub-surface drainage patterns within the study area. For the purposes of this study, the 100-year storm event was used to evaluate the storm drain infrastructure to inform infrastructure improvements. Other storm events (2-year and 10-year) were also modeled in order to understand the performance of the drainage conveyance system during storms with a higher probability of occurrence.

The existing condition H&H model highlighted several areas where the existing drainage infrastructure (i.e., inlets, storm drains, and surface street conveyance) is considered deficient in terms of storm water conveyance during a 100-year storm event. These deficiencies include locations with storm water ponding above the curb and extending onto the sidewalk and into private property.

The 2-D component of the analysis allowed for the evaluation of the benefit provided to surface conveyance capacity after the addition of storm drain infrastructure (i.e. to quantify the benefit of proposed drainage improvements). A reasonable objective for future drainage improvements is to reduce flood depths in the ROW to 6 inches or less, (i.e., flood depths would be less than the standard curb height per San Diego Regional Standard Drawings – 2018 and storm water conveyance would be contained within the ROW). Additional information regarding the specific drainage H&H methodology used in this study can be found in a memo located in Appendix A.

This section presents the following:

- Overview of the existing drainage patterns (Section 3.1)
- Model Setup Methodology (Section 133.2.1)
- Modeling Results (Section 3.2.2)

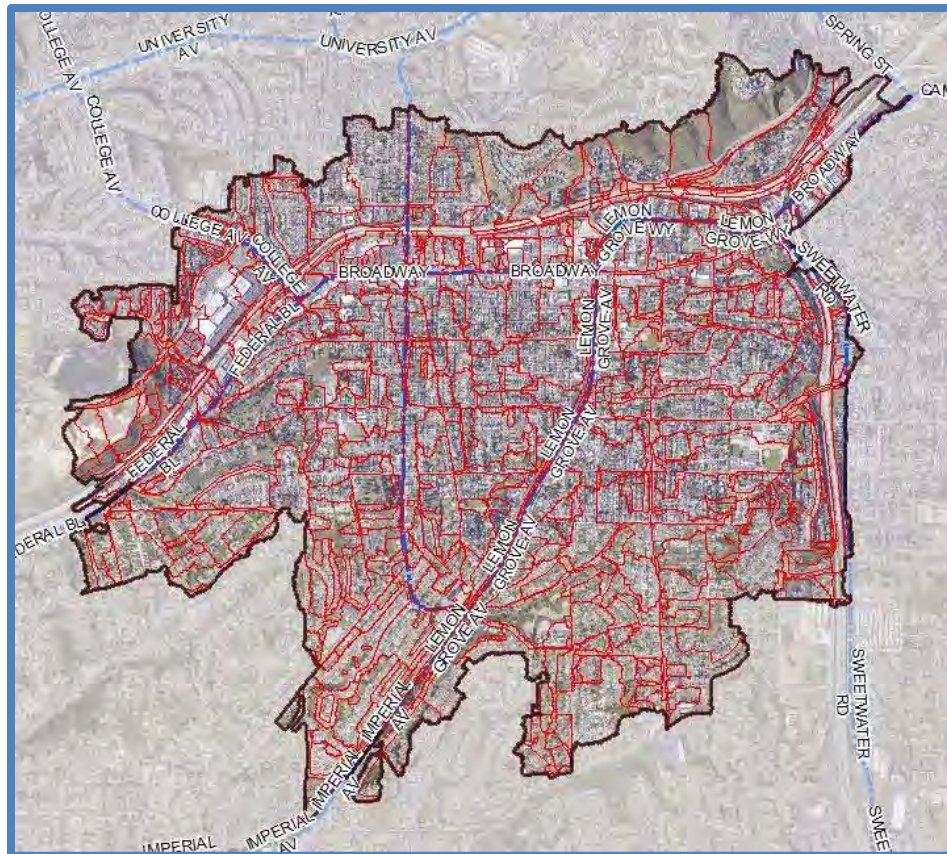
3.1 Drainage Patterns

The total drainage area in the study is approximately 3,508 acres and drains in a southwesterly direction. The topography of the city is characterized by relatively flat to mild slopes in developed areas, and steeper slopes on the edge of the city boundary and the valleys formed primarily around Lemon Grove Avenue and Federal Boulevard. The drainage infrastructure is a combination of pipes and culverts that are more prevalent along main and highly utilized streets such as Broadway and Lemon Grove Avenue, and open channels and ditches that are present more in the residential areas.

3.1.1 Subcatchment Delineations

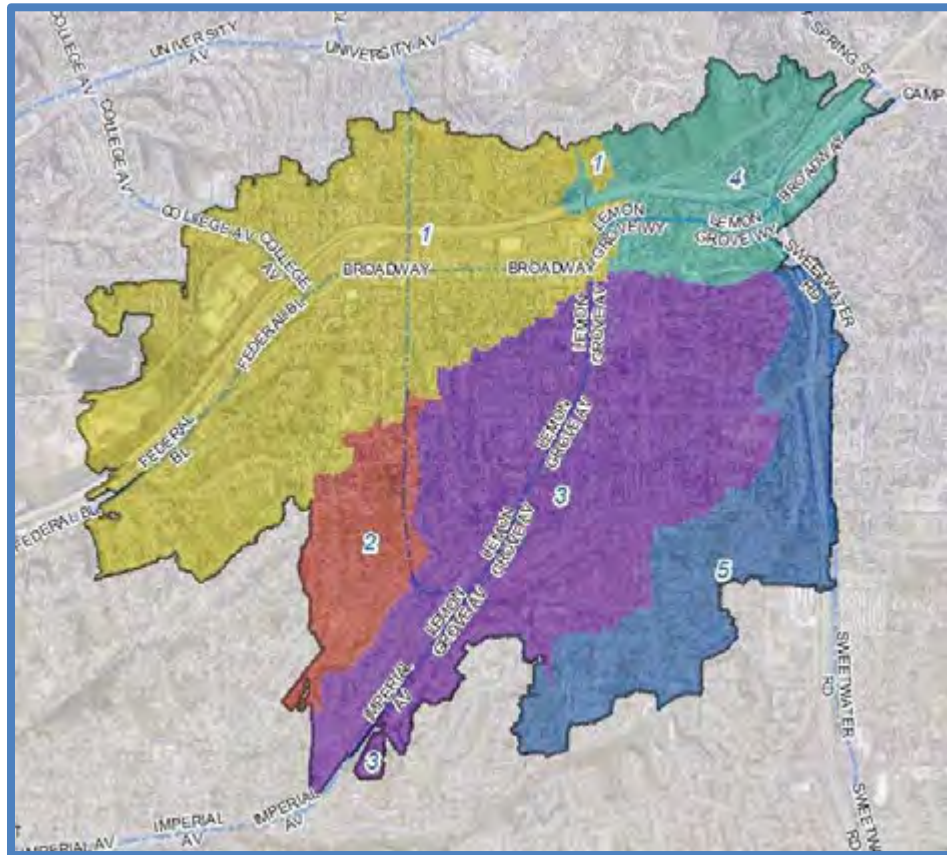
RICK utilized semi-automated delineation tools in GIS to create initial delineations of subcatchments and flow paths for each inlet. After the initial delineation, RICK modified the subcatchment areas during the QA/QC process and ended with 861 subcatchments, as seen in Figure 3-1. Due to the high resolution of the topographic data, the GIS delineation tools were able to identify flow paths along curbed roadways, through backyards, and across driveways, establishing an effective baseline for subcatchment delineations.

Figure 3-1: Drainage Areas of Existing Condition



These subcatchments were then combined to create five (5) overall subwatershed systems labeled 1-5 based on their location west to east. These systems, as seen in Figure 3-2, can be identified by their major road or drainage path. System 1 contains Broadway and Federal Boulevard, System 2 contains Massachusetts Avenue, System 3 contains Lemon Grove Avenue, System 4 contains part of Broadway and Sweetwater Road, and System 5 contains some of Sweetwater Road and consists of the rest of the drainage areas that do not drain to Systems 1-4. Systems 1-3 have their own unique drainage outlets; all of their respective subcatchments confluence to one (1) outfall. System 4 has two (2) outfalls. System 5 is made of a collection of drainage conveyance systems whose subcatchments do not share an outfall. System 5 consists of the remaining conveyance facilities not included in the other four (4) subwatershed drainage areas.

Figure 3-2: Major Subwatershed Drainage Areas



3.1.2 Surface Conveyance

An important component of the storm water conveyance system in the Lemon Grove study area is the multitude of channels and ditches connecting the conveyance behind and around buildings. There are a few open channels of note in the study area. These main channels run behind buildings, adjacent to railroad tracks, and are main portions of the backbone drainage system in their respective drainage area system. System 1 has large channels

behind the commercial buildings on Federal Boulevard. System 3 has large channels next to the railroad tracks on Lemon Grove Avenue. The 2-D mesh provided a way to visualize the surface conveyance.

Some of these open channels are smaller than the resolution of the 2-D mesh and proved to be a challenge to represent in a 2-D model. In order to properly analyze the geometry and conveyance of these open channels, they were modeled as 1-D conduits with a 2-D mesh overlay. Larger channels that could be defined solely by the DEM were modeled just with 2-D mesh.

Refer to the existing condition maps located in Appendix A for a visual overview of the surface conveyance conditions modeled.

3.2 Existing Condition

3.2.1 Existing Condition Model Methodology

The corrected GIS storm drain inventory discussed in section 2.0 was imported into PCSWMM and formed the basis of the 1-D conveyance portion of the study area model. Storm drain networks were visually inspected horizontally with reference to aerial imagery and vertically by viewing the storm drain profiles generated within the program to verify the suitability of the data.

The DEM was used to develop a 2-D model surface to represent storm water flows in streets, alleys, open channels, and open space areas. A directional 2-D mesh was applied in these areas to represent the preferential direction of flow. This surface was coupled to the 1-D storm drain inventory to match the rim elevations at points of connection to the storm drain conveyance system.

The computer modeling approach utilized has the capability to quantify the shallow surface attenuation (aka – detention) occurring in the right-of-way (ROW) and its effect to the peak flows entering the storm drain system (peak flow rates entering the system may be attenuated, which may reduce the size of required improvements).

Table 3-1 below shows a breakdown of the storm drain pipes analyzed in the existing condition model.

Table 3-1: Existing Conditions Storm Drain Pipe Diameters and Lengths Modeled

Diameter (in)	Length (ft)	Pipe and Culvert Count	%
4	614	2	0.5%
6	984	5	0.7%
8	667	4	0.5%
10	73	1	0.1%
11	62	1	0%
12	4,683	58	3.6%
15	2,147	21	1.6%
18	33,514	329	25.5%
20	425	2	0.3%
21	754	5	0.6%
24	30,791	246	23.5%
27	178	3	0.1%
30	17,432	95	13.3%
33	1,378	4	1.1%
36	15,748	82	12.0%
39	98	1	0.1%
42	5,117	22	3.9%
48	6,039	46	4.6%
54	757	5	0.6%
57	735	6	0.6%
60	2,835	12	2.2%
66	292	2	0.2%
72	4,447	20	3.4%
78	1,484	5	1.1%
Total	131,254	977	100%

See Appendix A for a summary of the hydrologic results of the single-storm model simulations at each storm drain outfall modeled within the study area.

3.2.2 Existing Condition Results

Modeling results highlighted deficiencies in the LOS of the conveyance system within the study area. This is most obvious in the storm drain networks located at Federal Boulevard, Broadway, Broadway and Sweetwater, Lemon Grove Avenue, and Madera Street, where a significant length of storm drain pipes identified in the inventory did not demonstrate capacity to convey the 100-year storm event. While reviewing the City’s as-builts, it was observed that much of the storm drain conveyance currently in place was designed in the 1960’s and 1970’s. It is believed that those areas were not designed for the LOS currently required within the City of San Diego drainage design standards.

Model results were obtained for the 24-hour storms at the 2-, 10-, and 100-year return period from the precipitation data obtained from NOAA Atlas 14 Precipitation Frequency Data Server (PFDS) as discussed in the memo located in Appendix A of this report. The 24-hour storm events were judged to be the most pertinent storm events due to the volume of runoff generated and the peak flows generated at the main outfall of each storm drain system.

Modeling results highlighted deficiencies in the level of service (LOS) of the conveyance system within the study area and full results can be found in Appendix F.

During the 100-year storm about 38% of the conveyance distance is below or at capacity. Table 3-2 provides an overview of the results observed in the 2-, 10-, and 100-year, 24-hour storm events compared to the surcharging conduits of the storm drain network.

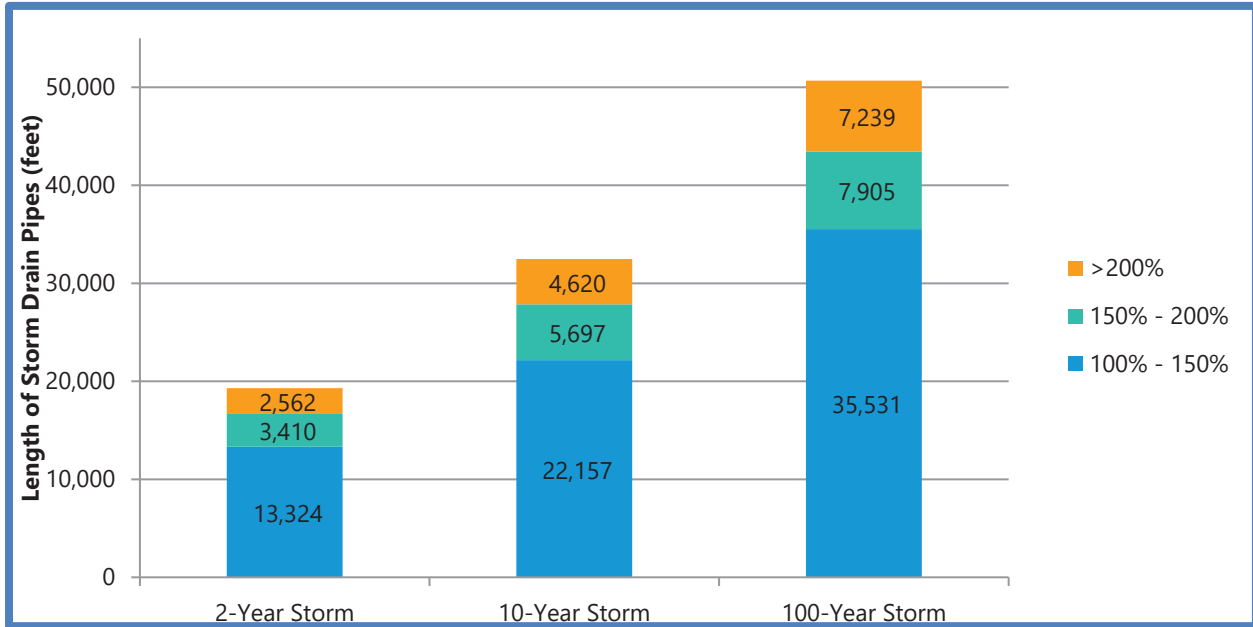
Figure 3-3 depicts the lengths and number of pipes in each conveyance capacity category over 100%.

Table 3-2: Existing Condition Storm Drain Conveyance Capacity Summary

Conveyance Capacity (%) ¹	2-Year Storm	10-Year Storm	100-Year Storm
	Pipe Length (feet)	Pipe Length (feet)	Pipe Length (feet)
< 100	111,813	98,635	80,580
100 - 150	13,324	22,157	35,385
150 - 200	3,410	5,697	7,905
> 200	2,562	4,620	7,239
Total	131,109	131,109	131,109

1. Conveyance capacity is the max full flow in the pipe compared to the maximum flow the pipe is designed to convey.

Figure 3-3: Existing Condition Storm Drain Conveyance Capacity



Undersized storm drain facilities caused a significant amount of storm water to pond on the street surfaces. In many locations water ponds in excess of one (1) foot on the surface at the low points. Table 3-3 provides a summary overview of the peak storm water stored on the 2-D surface and the overall corresponding ponding depth. The structures experiencing the various flood depths are counted alongside their respective depths.

Table 3-3: Existing Condition 2-D Cell Peak Storage Volume 24-HR Storm Events

Ponding Depth (inches)	2-Year Storm		10-Year Storm		100-Year Storm	
	Volume (Ac.-Ft.)	Structures (#)	Volume (Ac.-Ft.)	Structures (#)	Volume (Ac.-Ft.)	Structures (#)
0 - 6	11.42	293	43.85	409	21.99	499
6 - 12	9.83	59	13.44	89	22.34	181
> 12	34.85	61	29.84	94	105.34	139
Total	56.10	413	87.14	592	149.67	819

Refer to the existing condition maps located in Appendix C for a visual representation of the depths and limits of surface inundation within the study area. Table 3-4 presents a summary table of peak flow rate results at the storm drain outfall locations obtained from the modeling efforts.

Table 3-4: Existing Condition Storm Drain Outfall Summary

System ID	Drainage Area (ac.)	Peak Flow Rates (cfs)		
		2-YR	10-YR	100-YR
1	1317.2	563.2	967.2	1724.3
2	245.4	132.08	196.5	353.6
3	1120.3	523.5	912	1604
4	600.2	345.4	551	1021.6
5	457.6	357.9	614.6	987.8

3.3 Proposed Condition

3.3.1 Proposed Condition Model Methodology

Results from the existing condition models were evaluated in several aspects to determine an effective balanced approach to decrease the amount of surface ponding, and increase storm drain pipe capacities in the study area. The September 2014 *San Diego County Hydraulic Design Manual* states that storm drains in conjunction with surface drainage are to be designed to convey the 100-year storm. However, based on the severity of the deficiencies in the existing condition drainage infrastructure and subsequent conversations with City staff, it was decided that recommendations for the deficient infrastructure would target a 10-year level of service.

The objective of the recommended improvements aimed to reduce inundated structures during the 10-year storm event by improving storm drain pipes in the same drainage basin. The recommended pipe improvements were then bundled into CIP scale projects, providing drainage solutions for the area's most prone to drainage issues in the existing condition. The CIP projects provide city officials with the ability to streamline the drainage improvement process by providing a graphical representation of drainage needs throughout the City to be referenced during future projects of all types, thus allowing for the strategic bundling of multi-objective projects to reduce overall cost to the City and decrease the amount of time residents are impacted by construction

improvements that could be completed to collectively improve the surrounding area. The bundled projects provide city officials with a list of storm drain pipes that can be improved concurrently, decreasing the amount of time the street is impacted by construction.

Inundated structures were utilized as indicators of deficient drainage infrastructure and deficient facilities most likely resulting in the inundated structures were flagged for improvement. The combined peak flow from the surface and sub-surface conveyance model were used to size the deficient infrastructure. The improvements had to be recommended around several constraints; new alignments were not part of the process in this study, so the improvements had to stay within the existing alignments. Additionally, channels and ditches were not

recommended for improvements. With all these constraints the improvements for this study were recommended to the maximum extent practicable. Recommendations also included proposed improvements from other projects. These previous studies prepared by Rick Engineering included the August 17, 2014 "City of Lemon Grove Storm Drain Assessment of Existing Corrugated Metal Pipe (CMP) Facilities" and the July 6, 2018 "Flood Control Feasibility Analysis Report Along Federal Boulevard, Between Central Avenue and San Miguel Avenue in Lemon Grove, California."

In order to determine when additional barrels would be added in lieu of simply upsizing of the existing storm drain network, the following was considered during the evaluation process. If the proposed storm drain size was too large when proposed in conjunction with the existing invert elevations and resulted in an exposed storm pipe, additional barrels with smaller pipe diameters were recommended instead.

The proposed condition also considered the results of the CMP closed-circuit television (CCTV). Pipes that had a rating over zero (0) were replaced with RCP and any pipes upstream and downstream were also considered as candidates to be replaced. In some cases, the material of the pipe needed to be changed but the size did not in order to pass the 10-year flow.

3.3.2 Proposed Condition Results

The goal of this study was to compile and identify areas most frequently prone to flooding in order to alleviate the flooding of structures and major roadway corridors to the extent feasible through storm drain improvements. The method of improving drainage conditions throughout the City was to replace existing infrastructure, in place, with infrastructure that has the capacity to convey the selected LOS. In order to provide feasible improvements, the recommended infrastructure is to be replaced in the current alignment to reduce the probability of conflicts with other utilities during realignment. The alignments of the infrastructure can be adjusted during final design if necessary or desired. The recommended storm drain systems were sized accounting for the total flow getting to the pipe through both surface and subsurface conveyance. The decided upon Level of Service (LOS) for this study was for the storm drains to convey the 10-year event and for the combined storm drain and road way to convey larger events where feasible. The recommended improvements outlined in this study provide a significant LOS increase throughout the City and reduce the number of structures affected by stormwater inundation.

From these considerations, of the modeled 991 pipes, 277 were recommended to be upsized or replaced with RCP.

The 2-, 10-, and 100-year storm events were analyzed and Table 3-5 presents a summary overview of the impact that the replacement of storm drain infrastructure had on the entire storm drain pipe conveyance system

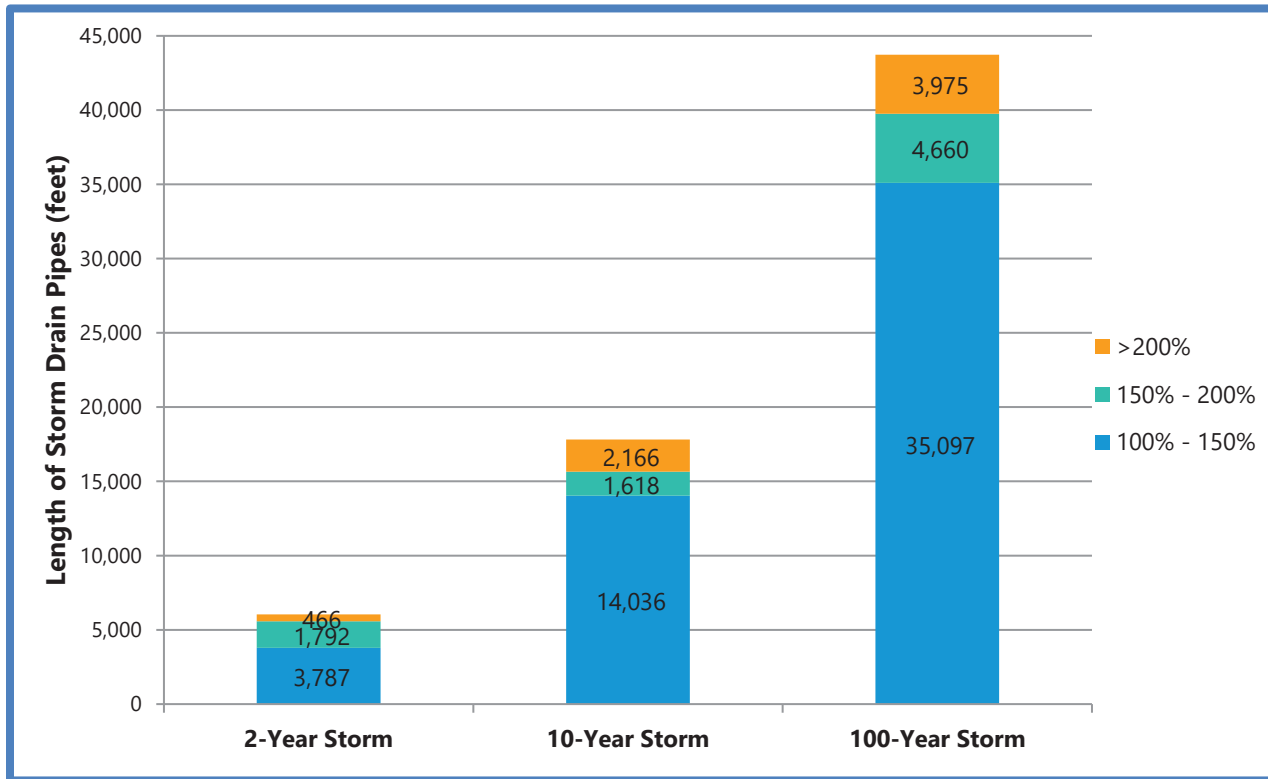
modeled in the proposed condition. Table 3-5 depicts the lengths and number of pipes in each conveyance capacity category over 100%.

Table 3-5: Proposed Condition Storm Drain Conveyance Capacity Summary

Conveyance Capacity (%) ¹	2-Year Storm	10-Year Storm	100-Year Storm
	Pipe Length (feet)	Pipe Length (feet)	Pipe Length (feet)
< 100	126,941	115,166	89,255
100 - 150	3,787	14,036	35,097
150 - 200	1,792	1,618	4,660
> 200	466	2,166	3,975
Total	132,986	132,986	132,986

1. Conveyance capacity is the max full flow in the pipe compared to the maximum flow the pipe is designed to convey.

Figure 3-4: Proposed Condition Storm Drain Conveyance Capacity



The storm drain facilities were upsized to reduce surface flooding and convey the 10-year storm event within the pipes and 100-year storm event within the street. Even though pipes are over 100% capacity, this does not mean

that there is flooding at each of these facilities. A pipe flowing over 100% could just indicate that that particular pipe is flowing under pressure. The results of the proposed infrastructure are more appropriately reflected in the number of flooded structures.

Table 3-6 provides a summary overview of the impact that the replacement of storm drain infrastructure had on the surface ponding conditions. The structures experiencing the various flood depths are counted alongside their respective depths.

Table 3-6: Proposed Condition 2-D Cell Peak Storage Volume 24-HR Storm Events

Ponding Depth (inches)	2-Year Storm		10-Year Storm		100-Year Storm	
	Volume (Ac.-Ft.)	Structures (#)	Volume (Ac.-Ft.)	Structures (#)	Volume (Ac.-Ft.)	Structures (#)
0 - 6	8.94	248	34.33	317	18.58	447
6 - 12	5.79	44	9.69	67	16.79	116
> 12	30.56	59	22.41	80	71.75	121
Total	45.29	351	66.43	464	107.11	684
Decrease from Existing Condition	56.10	62	20.71	128	42.56	135

There are local sumps throughout the city and some structures have ponding around their perimeter due to a local sump. Therefore, those structures might not have a project near them and will experience local ponding in both the existing and proposed conditions.

Refer to the existing condition maps located in Appendix C for a visual representation of the depths and limits of surface inundation within the study area. Table 3-7 presents a summary table of peak flow rate results at the storm drain outfall locations obtained from the modeling efforts under the proposed conditions.

Table 3-7: Proposed Condition Storm Drain Outfall Summary

System ID	Drainage Area (ac.)	Peak Flow Rates (cfs)		
		2-YR	10-YR	100-YR
1	1317.2	743	1,140	1,704
2	245.4	131	225	356
3	1120.3	633	1,068	1,637
4	600.2	401	645	925
5	457.6	353	621	1,037

4.0 Recommended Improvements

4.1 Interim Solution for CMP Assessment

Field surveying was prepared for the CMP portion of the five (5) identified systems. Refer to Appendix B for backup information from the field survey. Refer to Attachment C for exhibits showing each CMP section.

Based on the results of the field survey, the CMP systems were televised using closed-circuit television (CCTV) by Affordable Pipeline Services.

There are 149 segments that were surveyed, and a rating system was used by Affordable Pipeline. Grades were assigned and they are as follows:

- 5 – Most severe
- 4 – Severe
- 3 – Moderate
- 2 – Minor to Moderate
- 1 – Minor
- 0 – Minor or No Televising Available

According to results from the televised survey, CMP conditions range from “minor” to “most severe”. Many sections are classified as severe by way of debris accumulation and damage through corrosion where: the bottom half of the pipes are missing, large diameter holes are prevalent, or severe corrosion has made many small holes throughout a particular segment. Other segments are classified as severely damaged by way of deformation and deformation is characterized as severe if it restricts flow and/or the structural integrity of the pipe and prevents repair. Segments classified as moderate have light corrosion and/or debris accumulation and segments classified as minor are in good condition with no or minor corrosion and no or minor debris accumulation.

The repair techniques can be summarized into six (6) methods and they are as follows:

- Cured in Place Pipe (CIPP) Lining
- Cured in Place Pipe Sectional Repairs
- Top Hat (TH) in Lateral/Main Connection Sealing
- Pressurized Hydrophilic Grout and Urethane Sealant
- Hydro-Scouring
- Pipe Removal and Replacement

Refer to Appendix B for definitions of each of these repair techniques. The least costly repairs are those that are fully clogged with sediment and debris and they can be repaired by hydro-scour. The next least costly of the repairs are those with severe corrosion and multiple holes that are less than one (1)-foot diameter and these can be repaired with CIPP lining. The costliest set of repairs are those that are severely deformed or corroded with

sections of pipe missing or large diameter holes (greater than one (1)-foot diameter) and these will require pipe removal and replacement. Below is a summary of the CMP condition and the amount of each type of recommended repair.

Table 4-1: Summary of Pipe Segment Rating and Quantity

Grade/Rating	Number of Pipe Segments
5 – Most Severe	56
4 - Severe	14
3 - Moderate	56
2 – Minor to Moderate	5
0 – Minor or No Televising Available	18
Total	149

Table 4-2: Summary of Repair Technique, Quantity, and Length

Repair Technique	Segment Quantity	Segment Length (ft)
1 - Cured in Place Pipe (CIPP) Lining	20	1,860
2 - Cured in Place Pipe Sectional Repairs	1	430
3 - Top Hat (TH) in Lateral/Main Connection Sealing	1	--
4 - Pressurized Hydrophilic Grout and Urethane Sealant	4	895
5 - Hydro-Scouring	47	4,915
6 - Pipe Removal and Replacement	28	1,043
Total	101	9,143

About one third or 49 of the inspected CMP's require rehabilitation or replacement. Twenty-eight (28) pipes are either fully clogged with debris or have significant debris and need hydro-scouring. The remaining pipes have minor to moderated severity and do not require significant repair or maintenance.

Refer to Appendix B for backup information from the televised survey (CCTV), results, maps, and summary tables.

4.2 Regional Locations of Interest

Regional Improvement Opportunities that could provide detention or water quality benefits were identified through visual inspection. The size of the contributing drainage areas and land parcel ownership were the major contributing factors for identifying regional opportunities. A conscious effort was made to limit the identification of regional opportunities to parcels owned by the City; however, some locations on private parcels were identified as well in certain circumstances due to constraints in the public ROW, like lack of adequate space. The regional opportunities were also chosen based on their proximity to the outfall of the subwatershed system to maximize the impact of treatment.

In total ten (10) locations are currently identified as potentially viable regional improvement opportunities. The locations are listed below in Table 4-3 and refer to Appendix C for an exhibit of the locations.

Table 4-3: Regional Improvement Opportunities

Regional Improvement Opportunities			
ID	Contributing Area (ac)	Impervious Area (ac)	Parcel Ownership
1	57.8	45.3	Thaidigsman Family Trust
2	324.4	201.2	Lemon Grove Alano Club
3	33.2	20.4	Retail Portfolio 30-1 LLC
4	14.4	7.5	Lemon Grove School District
5	54.6	33.4	Erickson Linda R
6	62.2	34.4	Shra Crockett Inc
7	124.3	74.1	Caltrans
8	208.5	128.2	City of Lemon Grove
9	35.3	17.1	Union Pacific Railroad Co.
10	32.8	19.9	Senior Community Centers/Community Health Partnerships

4.3 Drainage Recommendations

The following sections present summaries of the various structures associated with the drainage infrastructure.

4.3.1 Storm Drain Recommendations

The recommendations for the storm drain pipe system consist of addressing deficient facilities that, based off the modeling results, caused or contributed to inundation of structures during the 10-year storm event. The 10-year storm event was targeted to improve the level of service during the more frequent storm events.

In addition to replacing storm drain pipes by their capacity, the material of the pipe was also considered. CMP rated above 0 are recommended for replacement. The CMP facilities recommended for replacement were

recommended for conversion to RCP pipe of the appropriate size to convey the 10-year flow at the location. Pipes upstream and downstream were assessed and if they were CMP, were also recommended for replacement. Table 4-4 compares the number of drainage facilities in the existing and proposed condition. For a visual representation of the proposed storm drain improvements, refer to the maps provided in Appendix E.

Junctions were edited in response to editing the pipes they were connected with but these changes were minor and the changes are not analyzed between the existing and proposed conditions.

Table 4-4: Storm Drain Recommendations Summary

Facility type	Existing Condition	Proposed Condition	
	Total	Replaced	% Replace
Storm Drain (LF) ¹	265,225	226,576	85

¹ Includes lengths from dual pipe systems.

4.3.2 Future Channel Restoration Opportunities

As previously stated, small channels were assigned dimensions and had an overlay of 2D mesh and larger channels were modeled with the 2D mesh. In the proposed condition, channels were not the focus of proposed improvements. However, as part of the effort in analyzing the proposed condition results, channels that are in flooded areas are flagged for potential improvements. Refer to Appendix E for locations of proposed channels.

4.4 Individual Improvement Costs

Appendix C has maps of results from the 2-, 10-, and 100-year storm event models. These maps visually highlight the deficiencies within the citywide drainage system encountered during the modeling efforts. A visual observation of the drainage infrastructure displayed on these maps led to the conclusion that the City’s drainage deficiencies are not concentrated within one central location, but rather they are distributed throughout various neighborhoods and watersheds. This data is crucial for determination of implementation strategies.

As a goal of this study, the results from the Citywide DMP have been leveraged to develop potential Capital Improvement Program (CIP) projects to address the drainage deficiencies where they occur. This was accomplished via a series of steps:

- Hydrologic and hydraulic analysis of the backbone storm drain infrastructure throughout the City.
- Recommending storm drain pipe size improvements for infrastructure which was determined to have deficient conveyance capacity.

- Determining individual priority for the recommended storm drain infrastructure improvements based on hydrologic and hydraulic analysis results and other applicable data.
- Grouping individual infrastructure improvements into CIP project bundles based on geographic location.

This process led to the development of bundled CIP projects which were then evaluated in more detail to determine potential benefits and/or consequences that may arise during the implementation process. After these projects were vetted, the recommended improvements were entered into a hydrologic and hydraulic model to determine the extent of the benefit yielded by the recommendations. The following sections provide further explanations of this process.

4.4.1 Selection Criteria

The method for selecting potential CIP projects involved the development of scoring criteria, as outlined in Figure 4-1. These criteria were developed to rate the efficiency of all existing storm drain segments and then assess the bundled projects by their effect on inundated buildings. The first set of criteria generates a simplified ranking system ranging from a score of 0 - 55 with 55 being the highest possible score to determine the importance of providing recommendations for the system. An extra 25 points are awarded to a pipe based on its CCTV rating, represented by the CMP Score. Summing the Raw Total with the Synergy Bonus Points, the highest possible rating for a pipe is 80 points.

Once all existing storm drains were scored, the criteria were further refined to prioritize based on bundled project; each bundled project was assessed based on its effect on reducing flooding to buildings. The projects were bundled based on their proximity and connection to one another. Analyzing the area upstream and downstream from a project allowed for each individual project to be assessed based on its effect on the buildings in the area. Each project area was visually inspected to confirm that buildings were not negatively affected by a project upstream or downstream. The individual scoring and bundled project assessment were combined in a final project prioritization step that assigned values based on a project's standing in flood reduction and number of priority assets. This resulted in projects with scores between 30 and 100.

Cost was factored in to the Flood Reduction Score by including normalized values from FEMA's Estimated Flood Loss Potential into the bundled projects' flood reduction score. FEMA has loss potential costs associated with depth of flooding. The costs used in this analysis are normalized averages of three ranges: 1-6 inches, 6-12 inches, and 12-48 inches. Refer to Appendix G for the FEMA data.

This dual assessment in the prioritization process allows for the proposed improvements to be used both on the individual scale and project scale. There are costs for each of the forty-two (42) bundled projects as well as costs for each individual pipe that is proposed for improvements.

Figure 4-1: CIP Selection Criteria

Rating Criteria (per asset)	Max. Score	Subcriteria Score
Public Safety	35	
<i>Land Use Impacts</i>		(0 to 20)
Adjacent to High-Priority Land Use		20
Adjacent to Developed Land Use		10
Adjacent to Vacant Land Use		0
<i>Within Major Roads</i>		(0 to 15)
<i>Conveyance Characteristics</i>		
Ease of Implementation	20	
Projects within Existing City Ownership, Right-of-Way, or Easement		20
Projects Located on Unimproved Property/Vacant		15
Raw Total	55	
Synergy Bonus Points	25	
<i>CMP Score</i>		(0 to 25)
Score 5		25
Score 4		20
Score 3		15
Score 2		10
Score 1		5
Synergy Total	25	
<i>Overall Project Score</i>	80	
Project Prioritization		
Flood Reduction Score	60	(0 to 60)
Highest Ranked 10% of Projects		60
Second Ranked 30% of Projects		40
Lowest Ranked 60% of Projects		20
Normalized Project Score Per Weighted Asset Score	40	(0 to 40)
Highest Ranked 10% of Projects		40
Second Ranked 30% of Projects		20
Lowest Ranked 60% of Projects		10

4.4.2 Results

From the extensive and detailed modeling came forty-two (42) potential CIP projects that encompass all the proposed conditions modeling. However, this DMP has provided more detailed information on the top five (5) feasible CIP projects with the most favorable flood control benefits. These five (5) CIP projects are viable drainage improvements which can be implemented to provide a better level of service for their respective areas with minimal adverse effect on the connecting systems. These projects have been selected to address known hotspots within the City and reduce existing deficiencies by upsizing existing infrastructure. The projects in this section are not based on priority.

The results of the top five (5) project bundles are displayed in Table 4-5. Refer to Appendix G for the summary table of improvements and costs for all forty-two (42) projects.

The total cost of CIP projects is \$78,183,649 and remove 121 structures from experiencing inundation. The top five (5) CIP projects range in price from \$78,856.37 to \$10,026,193.78 and include storm drain and culvert improvements. The top five (5) projects remove forty-two (42) structures from experiencing flooding. This spectrum of project sizes and types allows the City a broad array of projects from which to select. The potential for storm drain improvements made System 1 the most likely to have the most desirable projects.

Table 4-6 provides a comparison of results between the existing and proposed conditions for the top five (5) projects while Table 4-7 provides a comparison of results between the existing and proposed conditions for all forty-two (42) projects. Below, Table 4-8, provides a comparison of inundated structures for the top five (5) projects while Table 4-9 provides a comparison of inundated structures for all forty-two (42) projects. The number of structures experiencing ponded water decreases in the proposed condition due to the proposed improvements.

Table 4-5: Costs of the Top 5 Prioritized Projects

Project Bundle ID	Capital Cost	Soft Cost (32% P&D)	Total Project Cost
1_1	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93
1_3	\$ 53,281.33	\$ 25,575.04	\$ 78,856.37
1_11	\$ 1,623,433.18	\$ 779,247.92	\$ 2,402,681.10
1_2	\$ 6,774,455.26	\$ 3,251,738.52	\$ 10,026,193.78
1_9	\$ 821,359.05	\$ 394,252.35	\$ 1,215,611.40
SUM	\$10,445,635.52	\$5,013,905.05	\$15,459,540.58

Table 4-6: Comparison of Storm Drain Results of the Top 5 Prioritized Projects

Conduits: Subtotal of Deficiencies (LF)	2-Year Capacity				10-Year Capacity				100-Year Capacity			
	<100	100-150	150-200	>200	<100	100-150	150-200	>200	<100	100-150	150-200	>200
Existing Conditions	5,284	2,017	660	191	3,707	2,859	1,261	324	2,852	3,596	1,105	598
Proposed Conditions	4,528	4,119	260	613	6,539	2,320	564	97	4,528	4,119	260	613
Flood Reduction Benefit from Proposed Conditions	756	(2,102)	400	(422)	2,832	539	697	227	1,676	(523)	845	(15)
% Change	14%	-104%	61%	-221%	76%	19%	55%	70%	59%	-15%	76%	-3%

Table 4-7: Comparison of Storm Drain Results of All Projects

Conduits: Subtotal of Deficiencies (LF)	2-Year Capacity				10-Year Capacity				100-Year Capacity			
	<100	100-150	150-200	>200	<100	100-150	150-200	>200	<100	100-150	150-200	>200
Existing Conditions	27,614	9,569	2,847	2,190	18,524	15,833	4,378	3,485	13,753	19,081	4,653	4,732
Proposed Conditions	42,300	1,242	495	180	35,683	7,295	564	675	24,872	16,900	1,255	1,190
Flood Reduction Benefit from Proposed Conditions	14,686	8,327	2,352	2,010	17,159	8,538	3,814	2,810	11,119	2,181	3,398	3,542
% Change	53%	87%	83%	92%	93%	54%	87%	81%	81%	11%	73%	75%

Table 4-8: Comparison of Inundated Structures of the Top 5 Prioritized Projects

	Ponding Depth	2-Year Storm	10-Year Storm	100-Year Storm
	(inches)	Structures (#)	Structures (#)	Structures (#)
Existing	0 - 6	91	109	113
	6-12	21	28	49
	> 12	17	21	31
	Total	129	158	193
	Ponding Depth	2-Year Storm	10-Year Storm	100-Year Storm
	(Inches)	Structures (#)	Structures (#)	Structures (#)
Proposed	0 - 6	66	85	119
	6-12	16	10	31
	> 12	16	21	25
	Total	98	116	175
	Comparison	Difference	31	42

Table 4-9: Comparison of Inundated Structures of All Projects

	Ponding Depth	2-Year Storm	10-Year Storm	100-Year Storm
	(inches)	Structures (#)	Structures (#)	Structures (#)
Existing	0 - 6	278	384	472
	6-12	51	71	161
	> 12	45	73	112
	Total	374	528	745
	Ponding Depth	2-Year Storm	10-Year Storm	100-Year Storm
	(Inches)	Structures (#)	Structures (#)	Structures (#)
Proposed	0 - 6	236	304	426
	6-12	37	42	99
	> 12	44	61	96
	Total	317	407	621
Comparison	Difference	57	121	124

5.0 Conclusions

This DMP successfully utilized high-resolution data with an integrated PCSWMM modeling approach to determine existing deficiencies and identify recommended improvements for drainage infrastructure. The results from the project and subsequent prioritization provide the City of Lemon Grove with recommendations to be used in the City's planning and CIP. The results significantly advance the City's storm water management goals by not only assessing each individual pipe but by bundling recommendations into tangible projects. The value of the results of this project is that now the City has assessments for all of its storm drain pipes at its disposal with all of the results provided in a user-friendly web application tool.

The 1-D/2-D H&H model provides a visual representation of surface drainage in the City of Lemon Grove during different storm events. During the 2-, 10-, and 100-year, 24-hour storms, significant flooding occurs along Federal Boulevard and Lemon Grove Avenue. Additionally, during the 100-year, 24-hour storm a section of Broadway and the intersection of Broadway and Sweetwater Way experience significant flooding. The modeling also provides a list of deficient systems. In the 2-, 10-, and 100-year, 24-hour storm events there are 135, 227, and 347 deficient conduits, respectively.

This study provides ten (10) potential regional locations for future water quality BMPs. The delineations created for the entire watershed created the opportunity to calculate the contributing areas to each of these regional improvement opportunities. These locations were chosen based on the surrounding space and the contributing area. Additionally, channels were visually inspected and those that could be retrofitted in the future were flagged and included in the final package of these project's efforts.

Based on the results from the existing condition model, recommendations for the storm drain pipes were made and included upsizing and/or changing the material to RCP. Based on their surcharging junctions while conveying the 10-year storm event, pipes were upsized to be able to convey the flow without causing flooding. The goal was to improve the 10-year level of service, contain the flow within the street during the 100-year storm event, and decrease the amount of structures flooding in the 2-, 10-, and 100-year storm events. The drainage modeling and recommendations outlined in this report were able to reduce the total volume of surface ponding from approximately 87.14 acre-feet to 66.43 acre feet in the 10-year storm event. The drainage recommendations consist of storm drain replacement based on existing capacity and material. Based on location and system, recommendations were bundled into projects and resulted in forty-two (42) projects that vary in cost from \$25,343 to \$10,026,194. The combined cost for all the recommendations for these projects totals approximately \$78,183,649. These costs can be looked at on an individual pipe level or project level. In addition to this, each individual pipe is prioritized based on its location and CCTV rating. On a project scale, the project is prioritized based on its effect on the structures upstream and downstream of its location. The five top priority projects range

from \$78,856 to \$10,026,194 and remove forty-two (42) structures from experiencing flooding in the 10-year storm event and 121 structures in the 100-year storm event.

In summary, this study provides improvement costs for each individual pipe and bundles and prioritizes them into CIP-level projects. The City now has forty-two (42) bundled projects to support the City's CIP, paving the way for city staff to use each project to apply for grant money funding. Additionally, the City has a list of flagged channels recommended for future improvements in order to pursue water quality benefits that will be experienced by both the City of Lemon Grove and downstream receiving waters. Rather than reacting to problems when they arise, the City aims to take a proactive approach by moving forward with the information provided in the bundled projects. With the utilization of grant funding and local taxes, the City can use the list of bundled implementation ready projects this study produced to efficiently implement improvements. All the information collected and assessed during the study can be referenced within a user-friendly web-application for years to come.

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A. H&H Backup

1.0 Hydrologic Methodology and Modeling

PCSWMM uses EPA’s SWMM Version 5 (SWMM5) engine, which uses the nonlinear reservoir model methodology to estimate the rainfall-runoff relationship for a subarea. Nonlinear reservoir modeling uses a combination of mass conservation and the Manning Equation to determine the volumetric flow rate from a subcatchment. SWMM5 requires several parameters to calculate runoff from each subcatchment. The parameters include area (in acres), characteristic width of the subcatchment, slope, percent impervious, Manning’s “n” values for pervious and impervious overland surfaces, depression storage for pervious and impervious surfaces, percent of impervious area with no depression storage, and infiltration parameters.

1.1 Rainfall

Point precipitation data for the City of Lemon Grove study area was obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Frequency Data Server (PFDS) (NOAA 2011). This data was selected because it has a longer period of record than the data presented in the *County of San Diego Hydrology Manual* (2003) to best reflect the historical rainfall and flooding events specific to the study area. Point rainfall data (total rainfall depth) was obtained for two rain gages nearest to the study area: Chollas Reservoir and La Mesa to compare with precipitation data obtained at the centroid of the study area (See Table 1-1).

Table 1-1: San Diego County local 24-Hour NOAA precipitation depth (inches)

Gage	Lat.	Long.	2-YR, 24-HR Precip. (in.)	10-YR, 24-HR Precip. (in.)	100-YR, 24-HR Precip. (in.)
Chollas Reservoir	32.7333	-117.0667	1.85	2.95	4.55
La Mesa	32.7675	-117.0233	1.97	3.19	5.03
City of Lemon Grove Study Area	32.7333	-117.0344	1.89	2.97	4.11

Source: NOAA 2011.

Notes: in. = inches; Lat. = latitude; Long. = longitude.

Based on this comparison, the rainfall precipitation depth data obtained at the centroid of the City of Lemon Grove study area is within range of nearby rain gages for the 2-, 10-, and 100-year storm events.

1.1.1 Rainfall Pattern

Setting up a storm simulation in EPA’s Storm Water Management Model (SWMM) requires a hyetograph to distribute rainfall over time throughout the storm duration. Two options were considered:

- (2/3, 1/3) distribution as presented in the *County of San Diego Drainage Design Manual* (2003).

- Center distribution, (1/2, 1/2), based on USACE’s HEC TD-15 guidance, *Hydrologic Analysis of Ungaged Watersheds Using HEC-1* (USACE 1982).

The 24-hour storm duration was selected for the study. The center storm distribution was selected because it meets this study’s goals. The center storm distribution provides the peak intensities necessary to assess drainage infrastructure at the inlet scale (up to 5-minute rainfall intensities) while preserving the total volume of runoff generated from the storm duration. The two options generate the same precipitation volume however the (2/3, 1/3) storm distribution generates a greater volume leading up to the peak of the storm.

1.1.2 Rainfall Hyetograph Development

To develop the unit intensity duration relationship for the City of Lemon Grove study area, NOAA precipitation depth data from three rain gage stations within the study area were obtained for the 2-, 10-, and 100-year, 24-hour storm events. The point rainfall depth data obtained from the NOAA PFDS was used to generate intensity-duration pairs for the given durations. These intensity-duration pairs are incorporated into the rainfall intensity hyetographs. The 100-year precipitation depth data from these rain gages and the City of Lemon Grove study area are shown in Figure 1-1 (NOAA 2011).

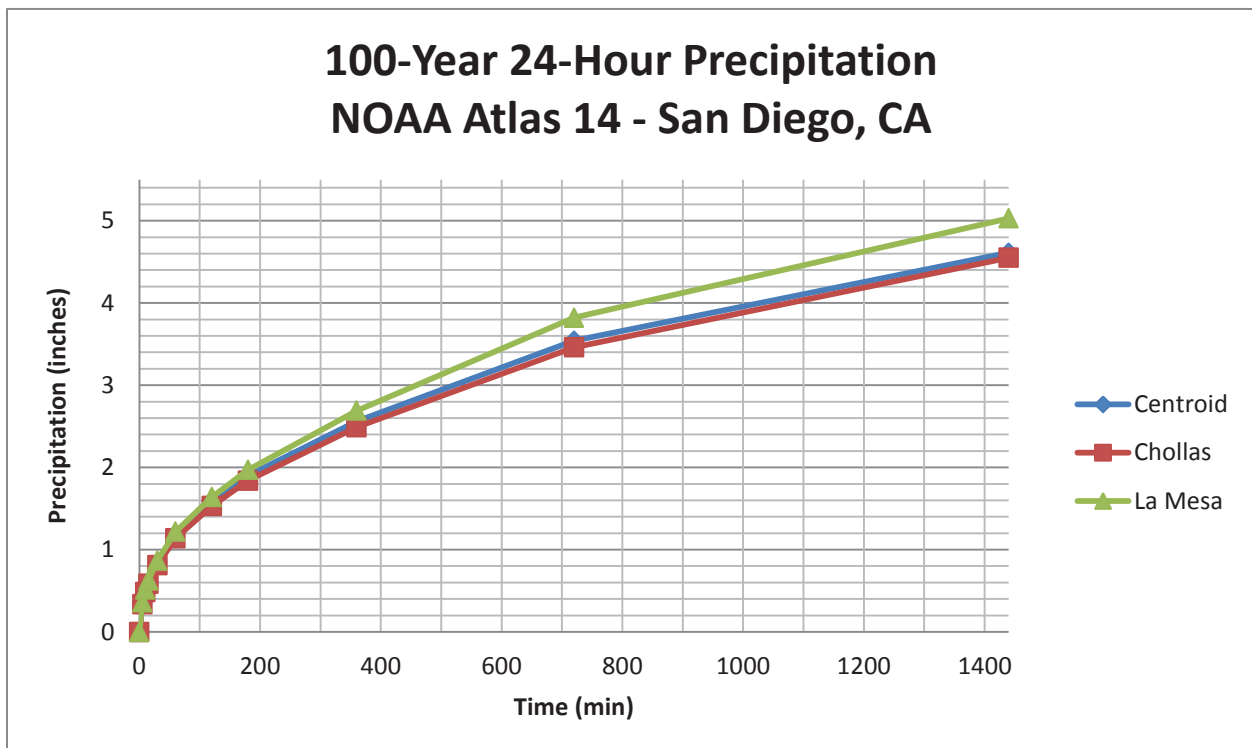


Figure 1-1: 100-year, 24-hour precipitation depth

The resulting rainfall intensity-duration data points generated from the NOAA precipitation depth data were reviewed and plotted for comparison (NOAA 2011). This was done to visually identify any discrepancy in the intensity-duration pairs when plotted. The intensity-duration pairs will appear linear on a log-log scale. The graphs showed that the rainfall intensity-duration relationship yielded a linear relationship for the rainfall data collected at the rain gages, and the precipitation data for the centroid of

the study area was within range of the 2 nearby rain gages (Figure 1-2). This comparison provides a check to verify that the rainfall data obtained directly at the centroid of the City of Lemon Grove study area from the NOAA PFDS correlates with the data at the nearest rain gages in the vicinity of the study area.

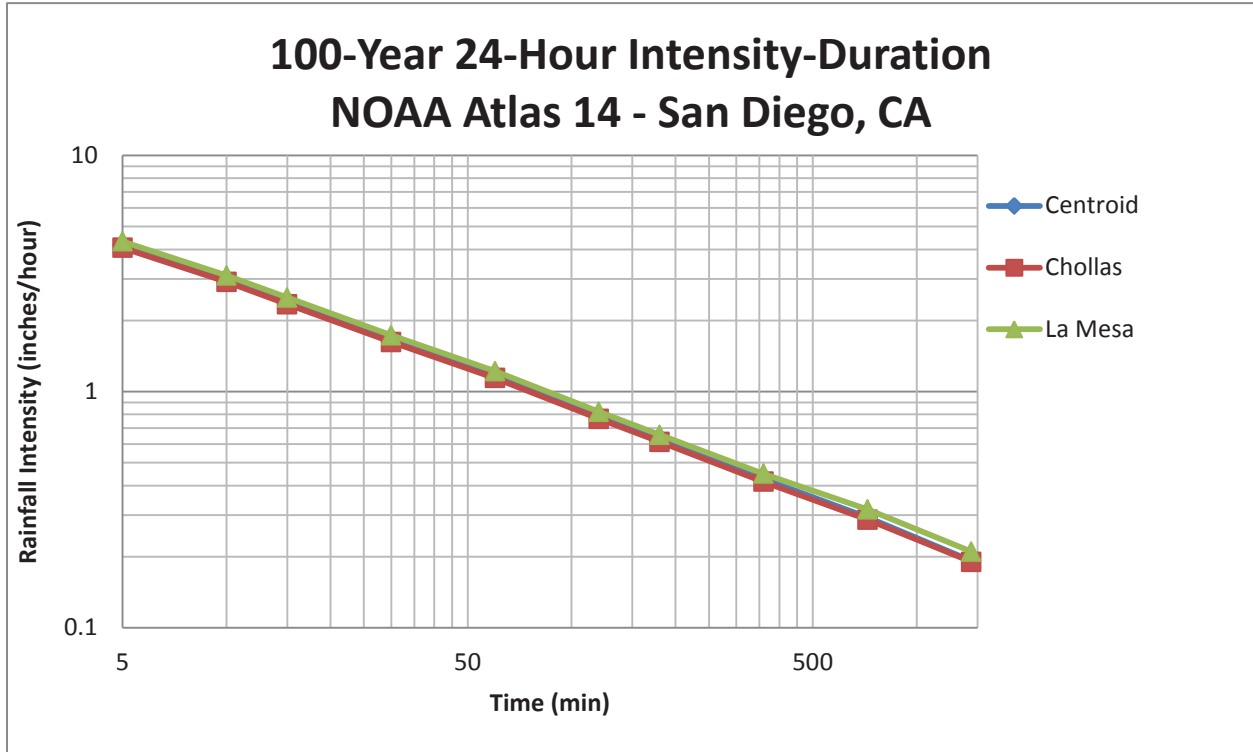


Figure 1-2: 100-year intensity-duration relationship

Since the intensities plotted showed similar patterns for the two gages and the data for the City of Lemon Grove area within range of the data obtained at the rain gages, it was determined that the rainfall data aggregated for the study area would be appropriate for modeling purposes. The precipitation was entered in 5-minute increments. Precipitation depths at certain durations were obtained directly from NOAA Atlas 14 as seen in the rainfall data shown in Appendix A (NOAA 2011). Precipitation depths bounded by the given values were determined by log-log interpolation at 5 minute increments.

The incremental precipitation data was then arranged into a center-distributed rainfall intensity hyetograph with the peak of the storm centered at 12 hours, as seen in Figure 1-3. A (2/3, 1/3) rainfall distribution with the storm peak occurring at 16 hours, as described in the 2003 *San Diego County Hydrology Manual* was considered and ultimately not selected for this study. This approach delivers a greater volume of rainfall prior to the peak of the storm, which has a significant impact on storage volumes on street surfaces and storm drain facilities, compared to the center-distributed balanced storm (1/2, 1/2 distribution). A storm distribution with the peak rainfall intensity arranged at 12 hours generates the necessary peak flows while delivering the full rainfall volume with a symmetric distribution during the 24-hour storm event.

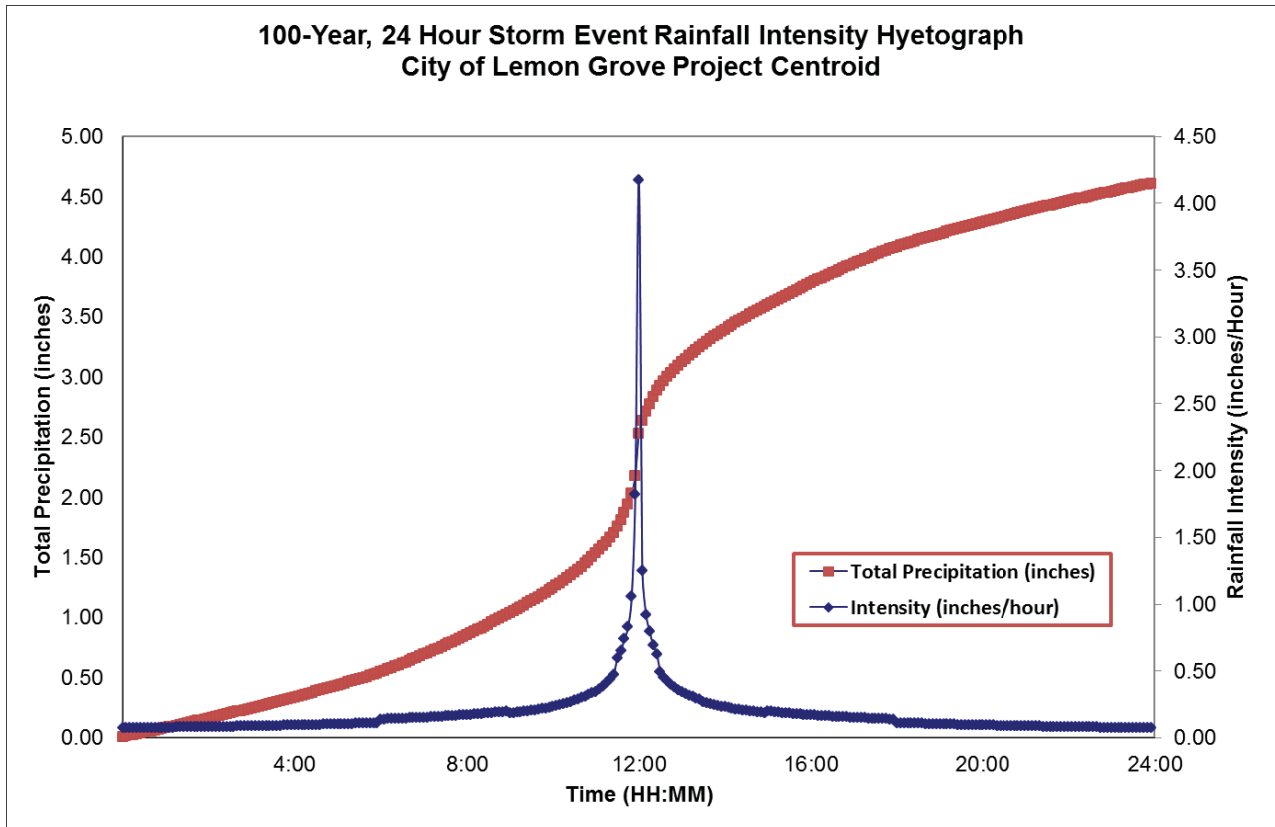


Figure 1-3: 100-year, 24-hour intensity hyetograph

1.1.3 Rainfall Losses

The Green-Ampt Method was used to estimate infiltration potential, which requires the following parameters: soil capillary suction head, soil saturated hydraulic conductivity, and initial moisture deficit (i.e., the difference between soil porosity and initial moisture content). This method is consistent with the guidance presented in the *County of San Diego BMP Design Manual (2019)* for hydromodification management SWMM modeling efforts in San Diego, and further documented in the *Storm Water Management Model User's Manual Version 5.1* (Rossman & Huber, 2015).

Soil parameters were obtained using the listed values in table G.1-4, from Appendix G of the 2019 *County of San Diego BMP Design Manual*. These Green-Ampt soil parameters listed in the table were established by the manual for use in the San Diego Region, and are within the acceptable ranges specified in Tables A.2 and A.3 of the SWMM User's Manual. The distribution of hydrologic soil groups within the City of Lemon Grove study area is based on SANDAG's ArcGIS feature class for National Resources Conservation Service hydrologic soil groups (refer to Appendix A-4 for an exhibit documenting the mapped NRCS hydrologic soil groups within the study area). Areas with an "unknown" soil classification were assumed to be type D soils for this analysis.

The land cover feature class was used to determine the percentage of impervious area for each subcatchment based on assigned impervious percentages to each land use. The land use shapes were intersected with the inlet drainage area delineations to perform an area-weighting analysis of the average impervious cover using GIS tools. Refer to Appendix C for a map which documents the land uses throughout the study area and the assigned impervious percentage for each land use.

To determine the overland Manning's "n" values and percent impervious parameters, the guidance in Appendix G of the 2019 *County of San Diego BMP Design Manual* was followed. The "n" values are: 0.012 for impervious cover, and 0.15 for pervious cover. These values were established by the BMP Design Manual for use in the San Diego region, and are within the acceptable ranges documented in Table 3-5 of the *Storm Water Management Model Reference Manual Volume I – Hydrology* (Rossman 2016).

1.2 Hydrologic Routing

Each subcatchment is connected via a conveyance node and link network (inlets and storm drain pipes), which routes runoff generated towards the storm drain system outfall. Refer to Section 2.0 for more information regarding the hydraulic analysis methodology and modeling procedures.

2.0 Hydraulic Methodology and Modeling

2.1 Flow Routing

The PCSWMM platform uses SWMM5 to perform hydraulic calculations and presents the same flow routing options as the EPA SWMM computer application. This ensures that the input parameters and results obtained are directly compatible between the proprietary PCSWMM program and the public domain EPA SWMM program. Flow routing is governed by the equations of continuity, mass, and momentum—also known as the St. Venant Flow equations—with flexibility offered to the modeler regarding the complexity of the terms considered in the equations. The program allows the modeler to select from the Steady Flow, Kinematic Wave, and Dynamic Wave routing options. The normal depth equation is used in all routing options to relate flow depth, flow rate, and surface friction.

Steady Flow routing was judged to be inappropriate for modeling this study area as it does not actually represent flow routing per a defined time step during the simulation. It is the simplest computation method that translates the inflow hydrographs directly downstream without any change in shape and simply uses the normal depth equations to relate flow rates, depths, and cross-sectional areas of the conveyance network. This method does not represent any backwater effects or pressurized flow, and does not take into account the user-defined computational time steps during the storm simulation.

Kinematic Wave routing was not selected for this study as it was incompatible with the 2-D analysis. It employs a simplified form of the momentum equation but does not take into account all of the equation's terms. This routing method does not account for any backwater effects or pressurized flow.

Dynamic Wave routing was the option selected for all analyses performed in this study. The purpose of this study was to produce a model that would most closely relate the actual conditions of the dynamic relationship between surface and subsurface conveyance, and potential flooding concerns. This routing option considers all terms of the St. Venant Flow equations and presents the most theoretically correct results accounting for backwater effects, pressurized flow, flow attenuation, and reversal of flow. The caveat in selecting this routing option, however, was maintaining numerical stability in the model by using extremely small computational time steps that resulted in significant simulation times for 2-D analyses.

2.2 Conveyance Material and Manning's Roughness Coefficients

The study area was mainly comprised of Reinforced Concrete Pipe (RCP) and cast-in-place concrete pipe (CIPCP) storm drain systems, although a few other storm drain materials (asbestos cement, corrugated metal, and polyvinyl chloride) were also present in the existing inventory. This was determined through examination of the GIS storm drain inventory provided by the City, which was reviewed and updated during the course of the data collection and compilation process described in Section 2 of the DMP.

In PCSWMM (and EPA SWMM), the Manning roughness values are associated with a conveyance material database. Each channel, pipe, and conduit in the 1-D portion of the model must have a material code assigned to it; in that way, the resistance to flow and energy losses along the conduit length can be calculated.

Table 2-1 lists all the material types present within the study area and the associated Manning’s “n” value assigned to each material code in the models.

Table 2-1: Conveyance material abbreviations and Manning’s roughness coefficients

Material Code	Material Description	Roughness Coefficient
ABS	Acrylonitrile butadiene styrene	0.013
ACP	Asbestos Cement Pipe	0.013
CIPCP	Cast-in-Place Concrete Pipe	0.019
CMP	Corrugated Metal Pipe	0.024
HDPE	High-density polyethylene	0.013
PVC	Polyvinyl Chloride	0.013
RCP/RCB	Reinforced Concrete Pipe/Box	0.013
SP	Steel Pipe	0.024
VCP	Vitrified clay pipe	0.014

The Manning’s conduit roughness values were assigned based on Chapter 3 of the *San Diego Hydraulic Design Manual* (2014).

2.3 Storm Water Inlet Modeling

The GIS storm water conveyance dataset which was revised and updated during the course of the data collection and compilation process includes 23 inlet or catch basin structures for the collection of surface runoff from streets, ditches, swales, and overland flow. Undersized storm water inlets can limit the efficiency of the existing conveyance infrastructure to collect and convey runoff during storm events. The flow interception capacity of each inlet type was estimated based on the inlet structure type, location, street slope, and structure dimensions, following the 2014 *County of San Diego Hydraulic Design Manual* guidance (CSDDPW 2014). Note that the 50-percent clogging reduction factor was not applied for grated catch basin inlets. Flow interception at each inlet was included in the PCSWMM model with inflow rating curves as a function of street flow depth. The portion of storm water flows exceeding the capacity of the inlet was bypassed to the street conveyance in the 2-D models.

2.4 Coupled 1-D/2-D Model

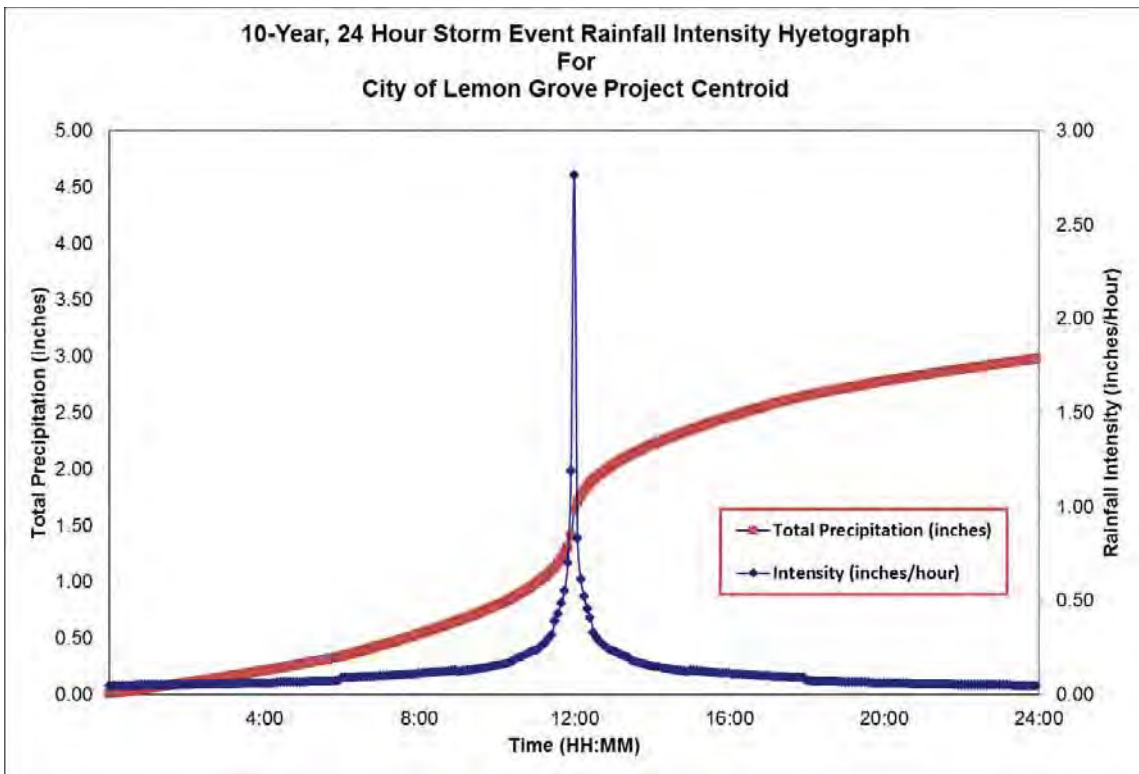
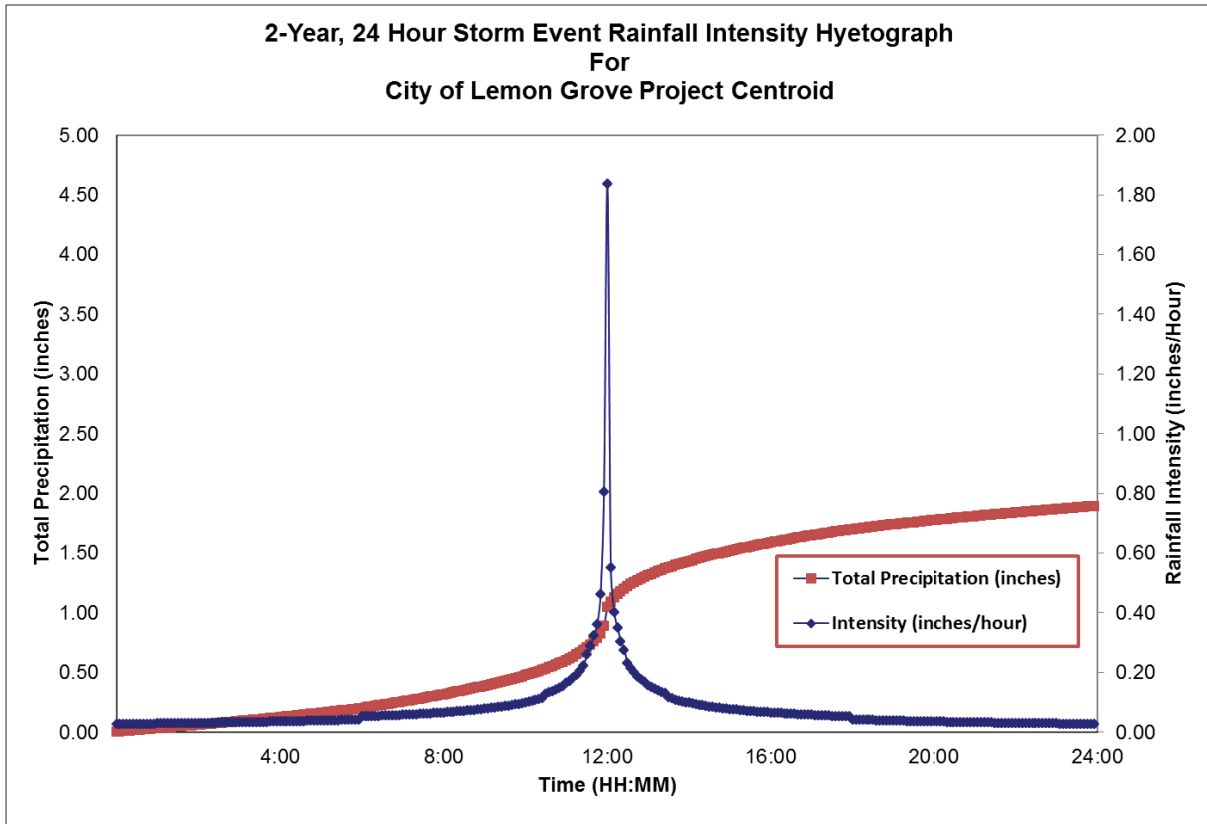
The development of the 1-D hydraulic model includes the pipe/open channel drainage network for all pipes 36 inches and larger. Pertinent pipes having less than 36-inch diameters also were included in the model if they were considered part of the primary backbone storm drain systems. Key hydraulic structures that control the flow entering or discharging from the primary system such as inlets, culverts, outfalls, and pipes also were included in the 1-D model.

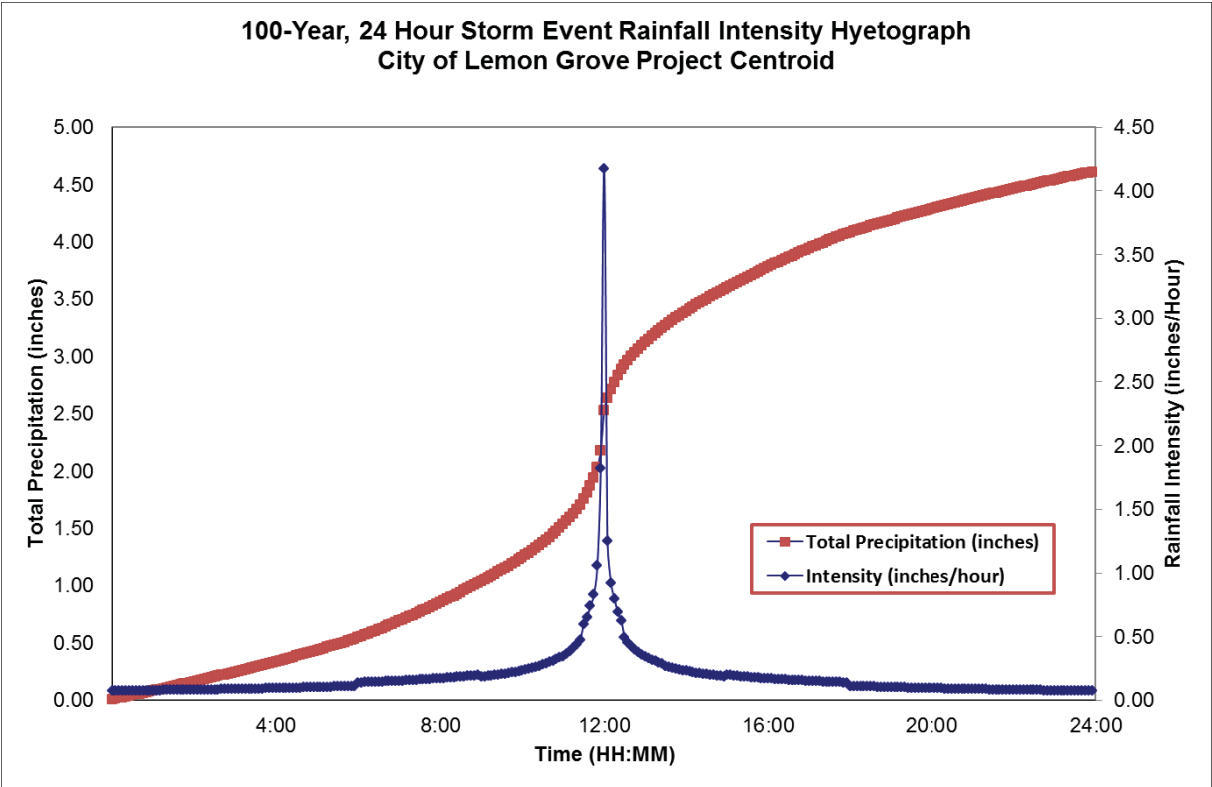
The surface storage and conveyance represented by the streets and other surfaces are accounted for in the 2-D hydraulic model of the City of Lemon Grove study area. The 2-D model was generated from an array of mesh (or grids) with a 10-ft. and 30 ft. resolutions to represent the surface conveyance. A 10-ft. resolution directional mesh was used to define the drainage patterns of streets and roads, and a 30-ft. resolution hexagonal mesh was applied globally to the remaining sections of the study area. The directional mesh generates 2-D surface cells which are forced along a defined preferential flow path, such as a street gutter flowline or alleyway centerline. This is useful for streets and channels. The hexagonal mesh generates 2-D surface cells which have six (6) defined flow directions in order to represent more possible flow directions across surfaces with less defined flow paths. This option is useful for flatter areas that do not have clearly defined flow paths.

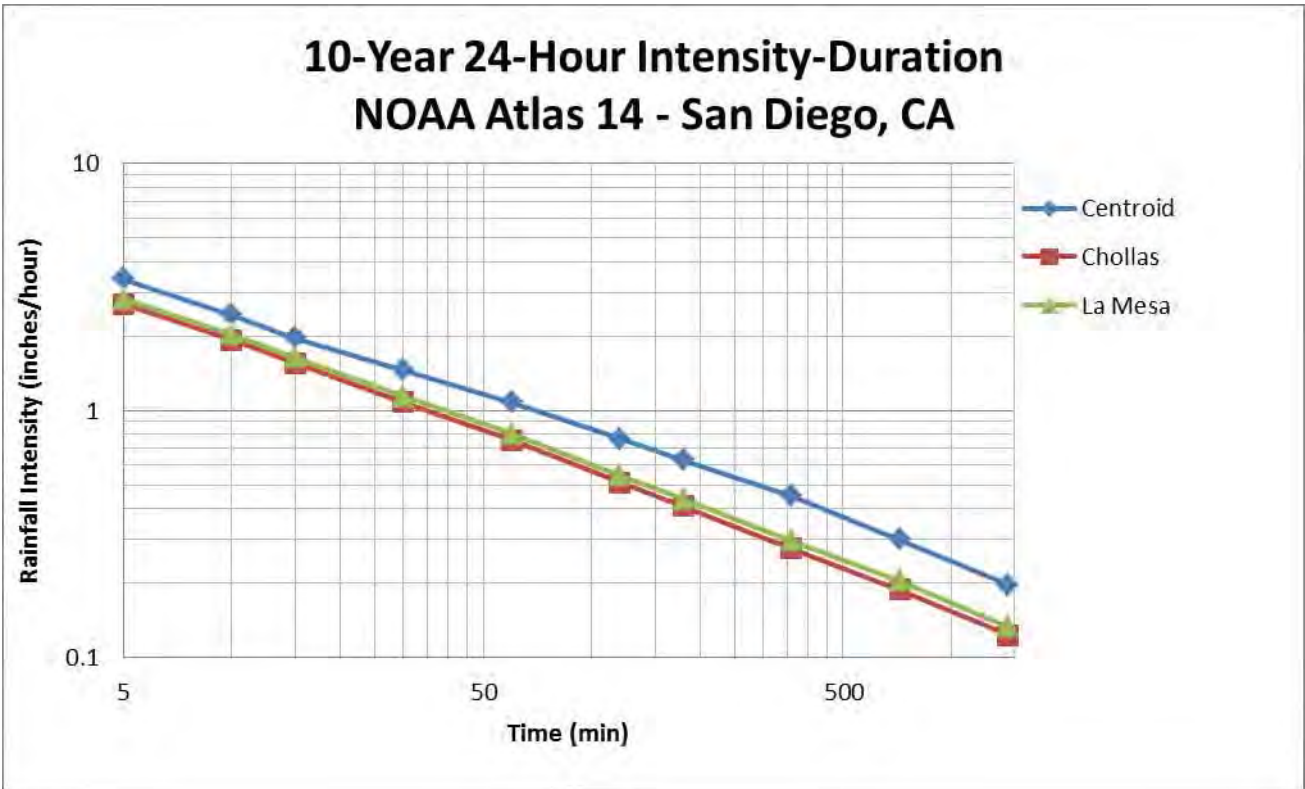
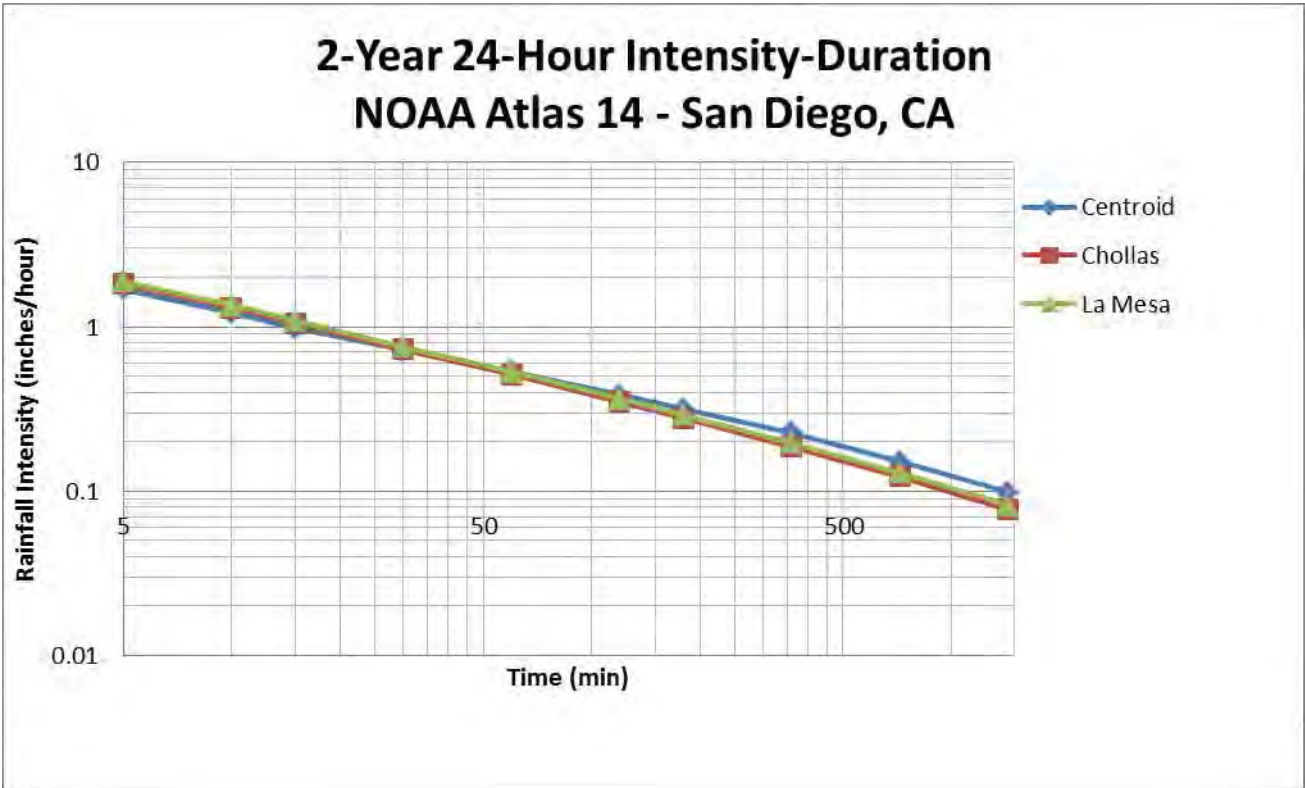
The overall 2-D mesh was developed from a high-resolution DEM data set by sampling elevation data at points with a 10-ft. or 30-ft. spatial resolution and was used to preserve the preferential flow paths and street conveyance that are part of the overall storm water conveyance system.

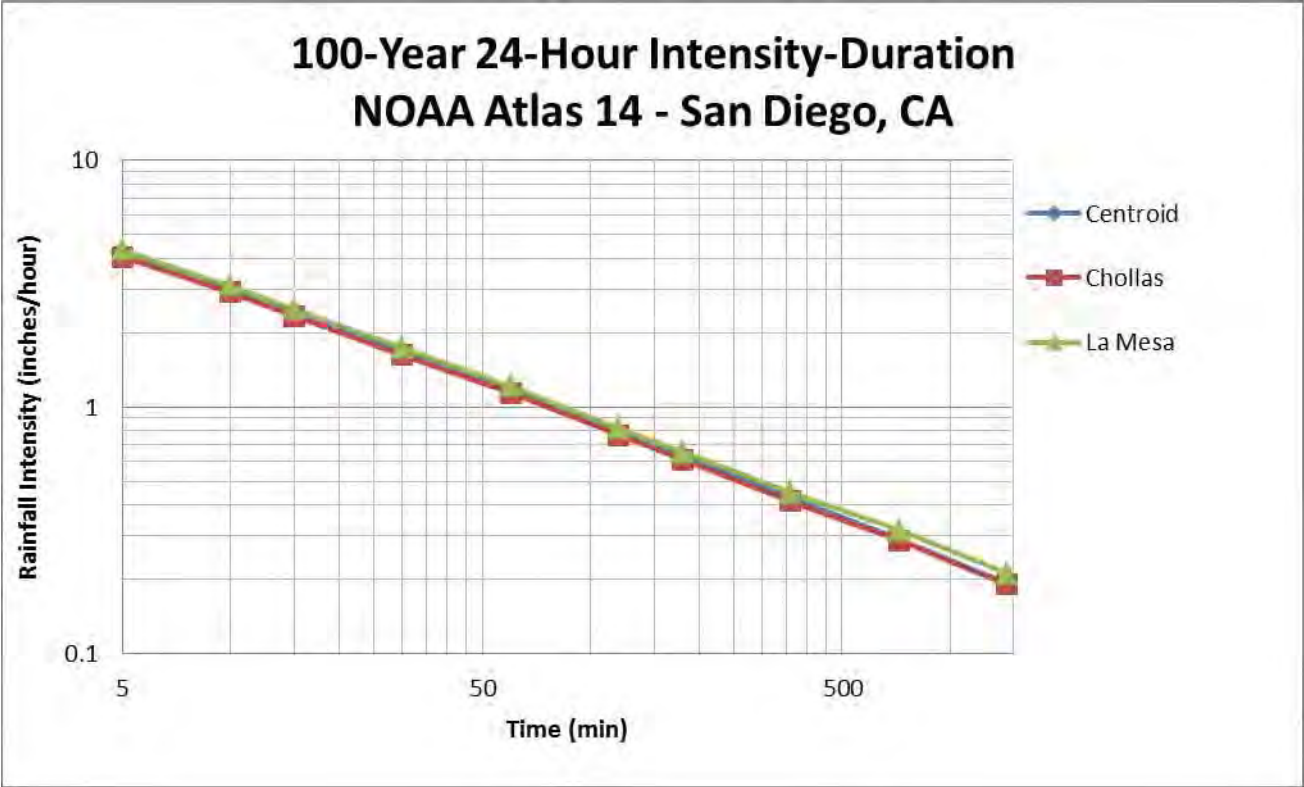
The two systems were coupled together at points where exchange of storm water between the surface conveyance system and the engineered storm water conveyance system could occur—typically at storm drain inlets, and outlet structures. The models were linked between nodes in the 1-D minor system (subsurface) and the 2-D major system (surface). The coupled models were then run and solved simultaneously, representing the storm water conveyance and storage on the street and in the storm water collection and conveyance system. The coupling of the 1-D and 2-D models allowed for bidirectional exchange of volume between the 2-D surface conveyance system and the engineered 1-D storm water system. By coupling the models together and solving the hydraulics simultaneously, the dynamic exchange of runoff between the surface flow and storm water conveyance system facilities is described.

The coupled 1-D/2-D model was executed using the runoff hydrographs resulting from NOAA rainfalls for the 2-, 10-, and 100-year storm events based on existing land uses to assess the current system's deficiencies.









Centroid Data



NOAA Atlas 14, Volume 6, Version 2
Location name: Lemon Grove, California, USA*
Latitude: 32.7333°, Longitude: -117.0344°
Elevation: 420.08 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

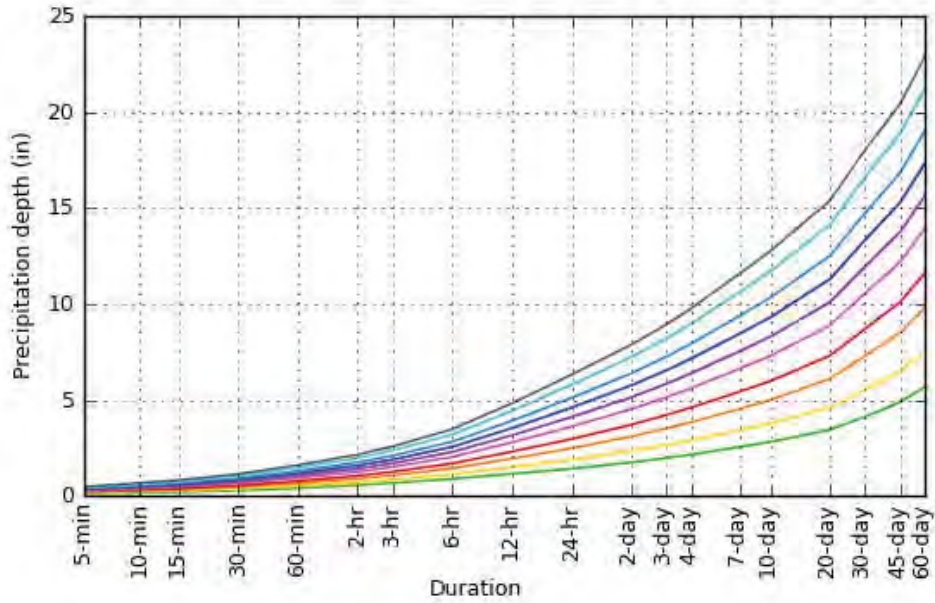
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.121 (0.101-0.146)	0.153 (0.128-0.185)	0.195 (0.163-0.236)	0.230 (0.190-0.280)	0.276 (0.221-0.349)	0.312 (0.244-0.403)	0.348 (0.266-0.462)	0.386 (0.286-0.527)	0.437 (0.309-0.622)	0.476 (0.326-0.703)
10-min	0.173 (0.145-0.209)	0.220 (0.184-0.265)	0.280 (0.234-0.339)	0.329 (0.273-0.402)	0.396 (0.317-0.501)	0.447 (0.350-0.578)	0.500 (0.381-0.662)	0.553 (0.409-0.755)	0.626 (0.444-0.892)	0.682 (0.467-1.01)
15-min	0.210 (0.176-0.253)	0.266 (0.222-0.320)	0.339 (0.283-0.410)	0.398 (0.330-0.486)	0.479 (0.383-0.605)	0.541 (0.423-0.699)	0.604 (0.460-0.801)	0.669 (0.495-0.913)	0.757 (0.536-1.08)	0.825 (0.564-1.22)
30-min	0.291 (0.244-0.350)	0.368 (0.308-0.445)	0.470 (0.392-0.569)	0.553 (0.457-0.674)	0.664 (0.531-0.840)	0.751 (0.587-0.970)	0.838 (0.639-1.11)	0.928 (0.687-1.27)	1.05 (0.744-1.50)	1.15 (0.783-1.69)
60-min	0.409 (0.343-0.493)	0.518 (0.434-0.625)	0.661 (0.552-0.800)	0.777 (0.643-0.949)	0.935 (0.747-1.18)	1.06 (0.825-1.36)	1.18 (0.898-1.56)	1.31 (0.966-1.78)	1.48 (1.05-2.11)	1.61 (1.10-2.38)
2-hr	0.565 (0.474-0.681)	0.710 (0.595-0.857)	0.900 (0.751-1.09)	1.05 (0.872-1.29)	1.26 (1.01-1.60)	1.42 (1.11-1.84)	1.59 (1.21-2.10)	1.75 (1.30-2.39)	1.98 (1.40-2.82)	2.16 (1.48-3.19)
3-hr	0.678 (0.568-0.816)	0.851 (0.713-1.03)	1.08 (0.900-1.31)	1.26 (1.05-1.54)	1.51 (1.21-1.91)	1.70 (1.33-2.20)	1.90 (1.45-2.52)	2.10 (1.55-2.87)	2.37 (1.68-3.38)	2.58 (1.76-3.81)
6-hr	0.894 (0.749-1.08)	1.13 (0.947-1.37)	1.44 (1.20-1.74)	1.69 (1.40-2.07)	2.03 (1.63-2.57)	2.29 (1.79-2.96)	2.56 (1.95-3.39)	2.83 (2.09-3.86)	3.20 (2.27-4.55)	3.48 (2.38-5.14)
12-hr	1.16 (0.971-1.40)	1.50 (1.26-1.81)	1.95 (1.63-2.36)	2.31 (1.91-2.82)	2.79 (2.23-3.53)	3.16 (2.47-4.09)	3.54 (2.69-4.69)	3.92 (2.90-5.35)	4.43 (3.14-6.32)	4.83 (3.30-7.14)
24-hr	1.42 (1.25-1.65)	1.89 (1.65-2.19)	2.49 (2.17-2.90)	2.97 (2.58-3.49)	3.62 (3.05-4.39)	4.11 (3.40-5.08)	4.61 (3.73-5.82)	5.12 (4.03-6.63)	5.80 (4.40-7.81)	6.33 (4.65-8.79)
2-day	1.75 (1.54-2.04)	2.34 (2.05-2.73)	3.10 (2.71-3.62)	3.71 (3.22-4.37)	4.53 (3.81-5.49)	5.15 (4.25-6.36)	5.77 (4.66-7.28)	6.40 (5.04-8.29)	7.24 (5.49-9.74)	7.89 (5.80-11.0)
3-day	1.98 (1.74-2.30)	2.66 (2.33-3.09)	3.52 (3.08-4.11)	4.22 (3.66-4.96)	5.15 (4.33-6.23)	5.85 (4.83-7.22)	6.55 (5.29-8.27)	7.26 (5.72-9.40)	8.21 (6.23-11.0)	8.94 (6.56-12.4)
4-day	2.16 (1.90-2.51)	2.90 (2.54-3.38)	3.85 (3.37-4.50)	4.61 (4.00-5.42)	5.63 (4.74-6.82)	6.39 (5.28-7.90)	7.16 (5.79-9.04)	7.94 (6.25-10.3)	8.98 (6.81-12.1)	9.77 (7.18-13.6)
7-day	2.55 (2.24-2.97)	3.42 (3.00-3.98)	4.54 (3.97-5.29)	5.43 (4.72-6.39)	6.63 (5.58-8.03)	7.54 (6.23-9.31)	8.45 (6.83-10.7)	9.38 (7.39-12.2)	10.6 (8.06-14.3)	11.6 (8.51-16.1)
10-day	2.82 (2.47-3.27)	3.77 (3.30-4.39)	5.00 (4.37-5.83)	5.98 (5.19-7.03)	7.30 (6.15-8.84)	8.30 (6.86-10.2)	9.31 (7.52-11.8)	10.3 (8.14-13.4)	11.7 (8.87-15.7)	12.8 (9.37-17.7)
20-day	3.45 (3.03-4.01)	4.62 (4.05-5.38)	6.12 (5.35-7.14)	7.31 (6.35-8.60)	8.90 (7.50-10.8)	10.1 (8.35-12.5)	11.3 (9.13-14.3)	12.5 (9.86-16.2)	14.1 (10.7-19.0)	15.4 (11.3-21.4)
30-day	4.14 (3.63-4.81)	5.53 (4.84-6.43)	7.29 (6.38-8.51)	8.70 (7.55-10.2)	10.6 (8.89-12.8)	11.9 (9.87-14.8)	13.3 (10.8-16.8)	14.7 (11.6-19.1)	16.6 (12.6-22.3)	18.0 (13.2-25.0)
45-day	4.88 (4.28-5.67)	6.48 (5.68-7.54)	8.50 (7.43-9.92)	10.1 (8.76-11.9)	12.2 (10.3-14.8)	13.7 (11.4-17.0)	15.3 (12.3-19.3)	16.8 (13.3-21.8)	18.9 (14.3-25.4)	20.4 (15.0-28.3)
60-day	5.69 (5.00-6.62)	7.52 (6.59-8.75)	9.80 (8.57-11.4)	11.6 (10.1-13.6)	13.9 (11.7-16.9)	15.6 (12.9-19.3)	17.3 (14.0-21.9)	19.0 (15.0-24.6)	21.2 (16.1-28.6)	22.9 (16.8-31.8)

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.

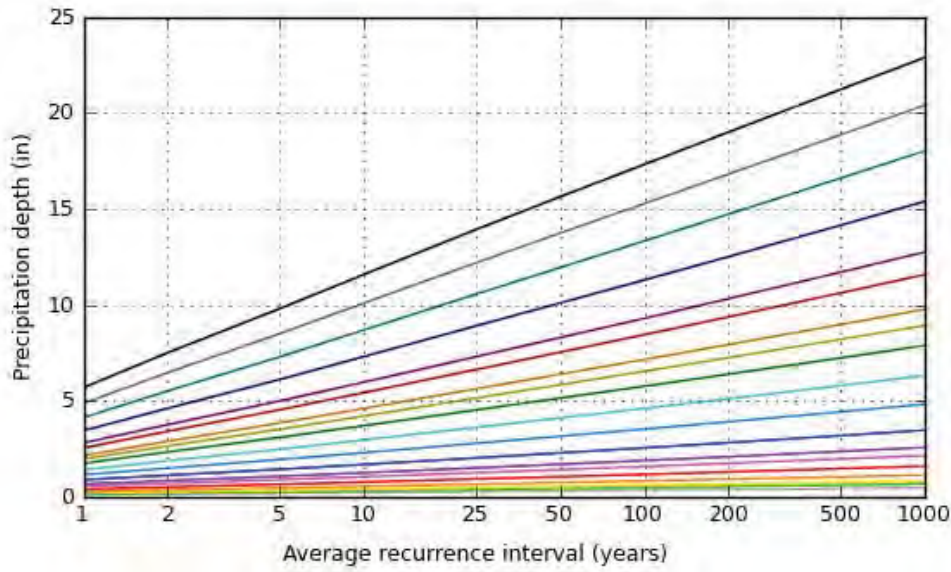
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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 32.7333°, Longitude: -117.0344°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 6, Version 2
Location name: Lemon Grove, California, USA*
Latitude: 32.7333°, Longitude: -117.0344°
Elevation: 420.08 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 & aeriels](#)

PF tabular

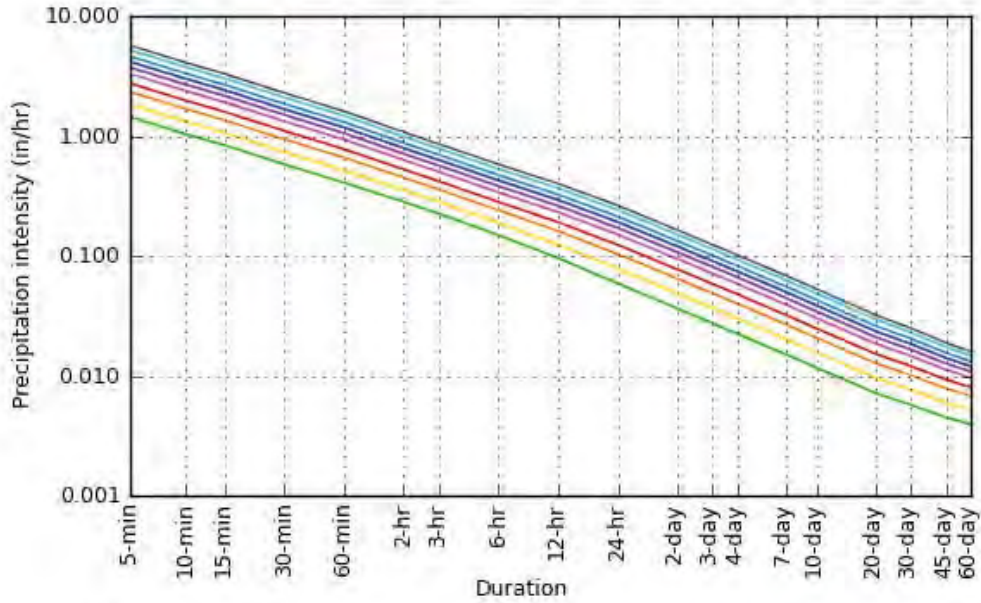
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.45 (1.21-1.75)	1.84 (1.54-2.22)	2.34 (1.96-2.83)	2.76 (2.28-3.36)	3.31 (2.65-4.19)	3.74 (2.93-4.84)	4.18 (3.19-5.54)	4.63 (3.43-6.32)	5.24 (3.71-7.46)	5.71 (3.91-8.44)
10-min	1.04 (0.870-1.25)	1.32 (1.10-1.59)	1.68 (1.40-2.03)	1.97 (1.64-2.41)	2.38 (1.90-3.01)	2.68 (2.10-3.47)	3.00 (2.29-3.97)	3.32 (2.45-4.53)	3.76 (2.66-5.35)	4.09 (2.80-6.05)
15-min	0.840 (0.704-1.01)	1.06 (0.888-1.28)	1.36 (1.13-1.64)	1.59 (1.32-1.94)	1.92 (1.53-2.42)	2.16 (1.69-2.80)	2.42 (1.84-3.20)	2.68 (1.98-3.65)	3.03 (2.14-4.32)	3.30 (2.26-4.88)
30-min	0.582 (0.488-0.700)	0.736 (0.616-0.890)	0.940 (0.784-1.14)	1.11 (0.914-1.35)	1.33 (1.06-1.68)	1.50 (1.17-1.94)	1.68 (1.28-2.22)	1.86 (1.37-2.53)	2.10 (1.49-2.99)	2.29 (1.57-3.38)
60-min	0.409 (0.343-0.493)	0.518 (0.434-0.625)	0.661 (0.552-0.800)	0.777 (0.643-0.949)	0.935 (0.747-1.18)	1.06 (0.825-1.36)	1.18 (0.898-1.56)	1.31 (0.966-1.78)	1.48 (1.05-2.11)	1.61 (1.10-2.38)
2-hr	0.282 (0.237-0.340)	0.355 (0.298-0.428)	0.450 (0.376-0.544)	0.527 (0.436-0.643)	0.632 (0.504-0.798)	0.712 (0.556-0.919)	0.793 (0.604-1.05)	0.877 (0.649-1.20)	0.990 (0.702-1.41)	1.08 (0.738-1.59)
3-hr	0.226 (0.189-0.272)	0.283 (0.237-0.342)	0.359 (0.300-0.435)	0.421 (0.348-0.513)	0.504 (0.403-0.637)	0.567 (0.444-0.733)	0.632 (0.482-0.838)	0.699 (0.517-0.954)	0.789 (0.559-1.13)	0.859 (0.587-1.27)
6-hr	0.149 (0.125-0.180)	0.189 (0.158-0.228)	0.241 (0.201-0.291)	0.283 (0.234-0.345)	0.340 (0.271-0.429)	0.383 (0.299-0.495)	0.427 (0.325-0.566)	0.472 (0.350-0.645)	0.534 (0.378-0.761)	0.581 (0.397-0.859)
12-hr	0.096 (0.081-0.116)	0.125 (0.104-0.150)	0.162 (0.135-0.196)	0.191 (0.159-0.234)	0.232 (0.185-0.293)	0.262 (0.205-0.339)	0.293 (0.224-0.389)	0.325 (0.241-0.444)	0.368 (0.261-0.524)	0.401 (0.274-0.592)
24-hr	0.059 (0.052-0.069)	0.079 (0.069-0.091)	0.104 (0.091-0.121)	0.124 (0.107-0.146)	0.151 (0.127-0.183)	0.171 (0.142-0.212)	0.192 (0.155-0.243)	0.213 (0.168-0.276)	0.242 (0.183-0.325)	0.264 (0.194-0.366)
2-day	0.036 (0.032-0.042)	0.049 (0.043-0.057)	0.065 (0.057-0.075)	0.077 (0.067-0.091)	0.094 (0.079-0.114)	0.107 (0.089-0.132)	0.120 (0.097-0.152)	0.133 (0.105-0.173)	0.151 (0.114-0.203)	0.164 (0.121-0.228)
3-day	0.028 (0.024-0.032)	0.037 (0.032-0.043)	0.049 (0.043-0.057)	0.059 (0.051-0.069)	0.071 (0.060-0.087)	0.081 (0.067-0.100)	0.091 (0.073-0.115)	0.101 (0.079-0.131)	0.114 (0.086-0.153)	0.124 (0.091-0.172)
4-day	0.023 (0.020-0.026)	0.030 (0.027-0.035)	0.040 (0.035-0.047)	0.048 (0.042-0.056)	0.059 (0.049-0.071)	0.067 (0.055-0.082)	0.075 (0.060-0.094)	0.083 (0.065-0.107)	0.094 (0.071-0.126)	0.102 (0.075-0.141)
7-day	0.015 (0.013-0.018)	0.020 (0.018-0.024)	0.027 (0.024-0.032)	0.032 (0.028-0.038)	0.039 (0.033-0.048)	0.045 (0.037-0.055)	0.050 (0.041-0.064)	0.056 (0.044-0.072)	0.063 (0.048-0.085)	0.069 (0.051-0.096)
10-day	0.012 (0.010-0.014)	0.016 (0.014-0.018)	0.021 (0.018-0.024)	0.025 (0.022-0.029)	0.030 (0.026-0.037)	0.035 (0.029-0.043)	0.039 (0.031-0.049)	0.043 (0.034-0.056)	0.049 (0.037-0.066)	0.053 (0.039-0.074)
20-day	0.007 (0.006-0.008)	0.010 (0.008-0.011)	0.013 (0.011-0.015)	0.015 (0.013-0.018)	0.019 (0.016-0.022)	0.021 (0.017-0.026)	0.024 (0.019-0.030)	0.026 (0.021-0.034)	0.029 (0.022-0.040)	0.032 (0.024-0.045)
30-day	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.010 (0.009-0.012)	0.012 (0.010-0.014)	0.015 (0.012-0.018)	0.017 (0.014-0.020)	0.019 (0.015-0.023)	0.020 (0.016-0.026)	0.023 (0.017-0.031)	0.025 (0.018-0.035)
45-day	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.011 (0.010-0.014)	0.013 (0.011-0.016)	0.014 (0.011-0.018)	0.016 (0.012-0.020)	0.017 (0.013-0.024)	0.019 (0.014-0.026)
60-day	0.004 (0.003-0.005)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.010 (0.008-0.012)	0.011 (0.009-0.013)	0.012 (0.010-0.015)	0.013 (0.010-0.017)	0.015 (0.011-0.020)	0.016 (0.012-0.022)

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.

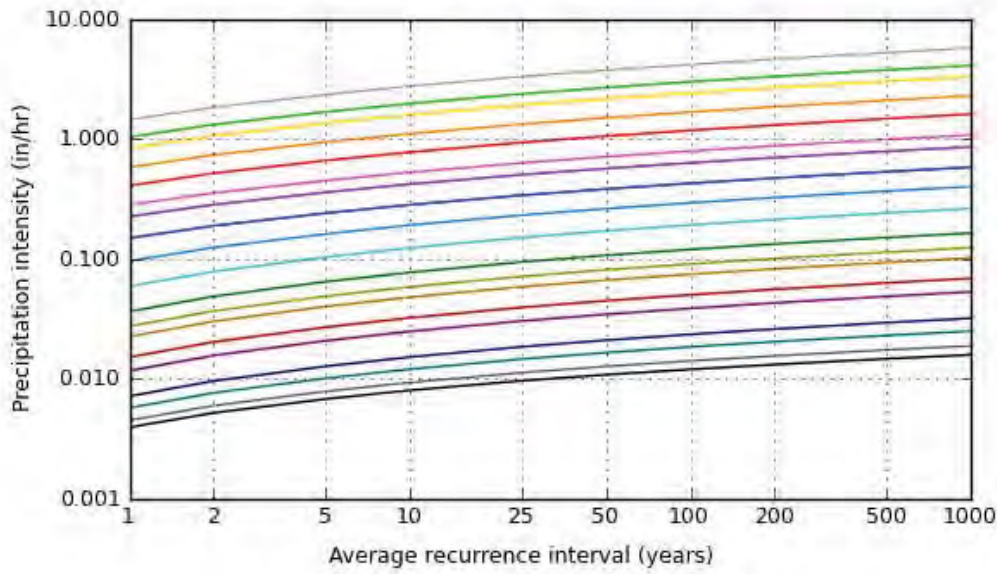
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PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 32.7333°, Longitude: -117.0344°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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Silver Spring, MD 20910
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Chollas Data

NOAA Atlas 14, Volume 6, Version 2 CHOLLAS RESERVOIR

Station ID: 92-0510

Location name: San Diego, California, USA*

Latitude: 32.7333°, Longitude: -117.0667°

Elevation:

Elevation (station metadata): 430 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

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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	0.120 (0.101-0.145)	0.152 (0.127-0.183)	0.192 (0.160-0.232)	0.225 (0.186-0.275)	0.269 (0.215-0.341)	0.304 (0.237-0.392)	0.338 (0.258-0.448)	0.374 (0.277-0.510)	0.422 (0.299-0.601)	0.459 (0.314-0.678)
10-min	0.173 (0.145-0.208)	0.217 (0.182-0.262)	0.275 (0.230-0.333)	0.322 (0.267-0.394)	0.386 (0.309-0.488)	0.435 (0.340-0.562)	0.485 (0.369-0.643)	0.536 (0.396-0.731)	0.604 (0.428-0.861)	0.657 (0.449-0.972)
15-min	0.209 (0.175-0.252)	0.263 (0.220-0.317)	0.333 (0.278-0.403)	0.390 (0.323-0.476)	0.467 (0.373-0.591)	0.526 (0.411-0.680)	0.586 (0.447-0.777)	0.648 (0.479-0.884)	0.731 (0.518-1.04)	0.795 (0.544-1.18)
30-min	0.289 (0.242-0.349)	0.364 (0.304-0.439)	0.461 (0.385-0.558)	0.540 (0.447-0.659)	0.647 (0.517-0.818)	0.729 (0.570-0.942)	0.812 (0.619-1.08)	0.897 (0.664-1.23)	1.01 (0.717-1.44)	1.10 (0.753-1.63)
60-min	0.407 (0.341-0.490)	0.511 (0.428-0.617)	0.648 (0.541-0.785)	0.759 (0.628-0.927)	0.910 (0.727-1.15)	1.02 (0.801-1.33)	1.14 (0.870-1.51)	1.26 (0.934-1.72)	1.42 (1.01-2.03)	1.55 (1.06-2.29)
2-hr	0.562 (0.471-0.677)	0.699 (0.585-0.843)	0.878 (0.733-1.06)	1.02 (0.847-1.25)	1.22 (0.977-1.55)	1.38 (1.08-1.78)	1.53 (1.17-2.03)	1.69 (1.25-2.31)	1.91 (1.36-2.73)	2.08 (1.42-3.08)
3-hr	0.673 (0.564-0.811)	0.837 (0.700-1.01)	1.05 (0.878-1.27)	1.23 (1.02-1.50)	1.47 (1.17-1.86)	1.65 (1.29-2.13)	1.84 (1.40-2.44)	2.03 (1.50-2.77)	2.29 (1.63-3.27)	2.50 (1.71-3.69)
6-hr	0.884 (0.741-1.07)	1.11 (0.931-1.34)	1.41 (1.18-1.71)	1.65 (1.37-2.02)	1.98 (1.58-2.50)	2.23 (1.74-2.88)	2.49 (1.90-3.30)	2.75 (2.04-3.75)	3.11 (2.20-4.43)	3.38 (2.31-5.00)
12-hr	1.13 (0.950-1.37)	1.48 (1.24-1.78)	1.92 (1.60-2.32)	2.27 (1.88-2.77)	2.74 (2.19-3.47)	3.10 (2.42-4.01)	3.46 (2.64-4.59)	3.82 (2.83-5.22)	4.31 (3.05-6.14)	4.68 (3.20-6.92)
24-hr	1.37 (1.20-1.60)	1.85 (1.63-2.16)	2.47 (2.16-2.88)	2.95 (2.56-3.47)	3.59 (3.03-4.36)	4.07 (3.37-5.03)	4.55 (3.67-5.74)	5.03 (3.96-6.51)	5.65 (4.29-7.61)	6.13 (4.50-8.52)
2-day	1.68 (1.47-1.95)	2.29 (2.00-2.66)	3.06 (2.67-3.57)	3.67 (3.18-4.32)	4.47 (3.77-5.42)	5.08 (4.19-6.27)	5.67 (4.58-7.16)	6.27 (4.93-8.12)	7.05 (5.35-9.49)	7.65 (5.62-10.6)
3-day	1.90 (1.67-2.21)	2.59 (2.27-3.02)	3.47 (3.03-4.04)	4.16 (3.61-4.89)	5.07 (4.27-6.15)	5.75 (4.75-7.11)	6.43 (5.19-8.12)	7.11 (5.60-9.21)	8.00 (6.06-10.8)	8.67 (6.37-12.0)
4-day	2.08 (1.82-2.42)	2.83 (2.48-3.30)	3.79 (3.31-4.42)	4.54 (3.94-5.34)	5.54 (4.67-6.72)	6.29 (5.20-7.77)	7.03 (5.68-8.88)	7.77 (6.12-10.1)	8.75 (6.64-11.8)	9.49 (6.97-13.2)
7-day	2.46 (2.16-2.86)	3.33 (2.92-3.88)	4.44 (3.88-5.19)	5.33 (4.62-6.27)	6.50 (5.48-7.88)	7.39 (6.10-9.12)	8.26 (6.68-10.4)	9.15 (7.21-11.9)	10.3 (7.83-13.9)	11.2 (8.24-15.6)
10-day	2.72 (2.38-3.16)	3.67 (3.21-4.27)	4.88 (4.26-5.69)	5.85 (5.07-6.87)	7.13 (6.00-8.64)	8.10 (6.69-10.00)	9.06 (7.32-11.4)	10.0 (7.90-13.0)	11.3 (8.59-15.2)	12.3 (9.04-17.1)
20-day	3.34 (2.93-3.89)	4.49 (3.93-5.23)	5.95 (5.20-6.94)	7.11 (6.17-8.36)	8.64 (7.27-10.5)	9.78 (8.08-12.1)	10.9 (8.82-13.8)	12.1 (9.51-15.6)	13.6 (10.3-18.3)	14.7 (10.8-20.5)
30-day	4.01 (3.52-4.66)	5.36 (4.70-6.24)	7.07 (6.18-8.25)	8.41 (7.30-9.89)	10.2 (8.57-12.3)	11.5 (9.50-14.2)	12.8 (10.3-16.2)	14.1 (11.1-18.3)	15.8 (12.0-21.3)	17.1 (12.6-23.8)
45-day	4.73 (4.15-5.50)	6.26 (5.49-7.29)	8.19 (7.16-9.56)	9.70 (8.42-11.4)	11.7 (9.83-14.1)	13.1 (10.8-16.2)	14.6 (11.8-18.4)	16.0 (12.6-20.7)	17.8 (13.5-24.0)	19.2 (14.1-26.7)
60-day	5.55 (4.87-6.45)	7.28 (6.38-8.48)	9.45 (8.26-11.0)	11.1 (9.66-13.1)	13.3 (11.2-16.1)	14.9 (12.3-18.4)	16.5 (13.3-20.8)	18.0 (14.2-23.3)	20.0 (15.2-26.9)	21.5 (15.8-29.9)

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

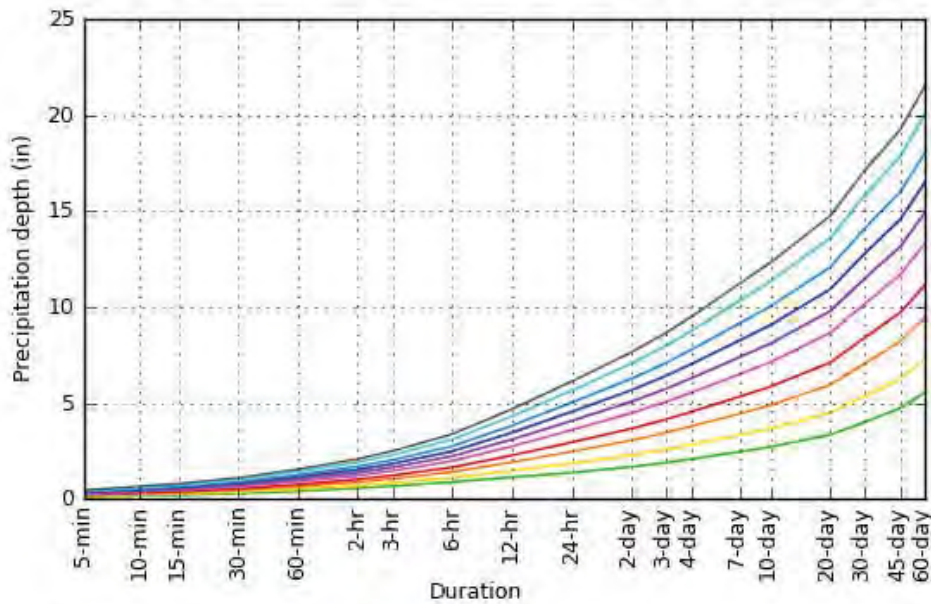
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper 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.

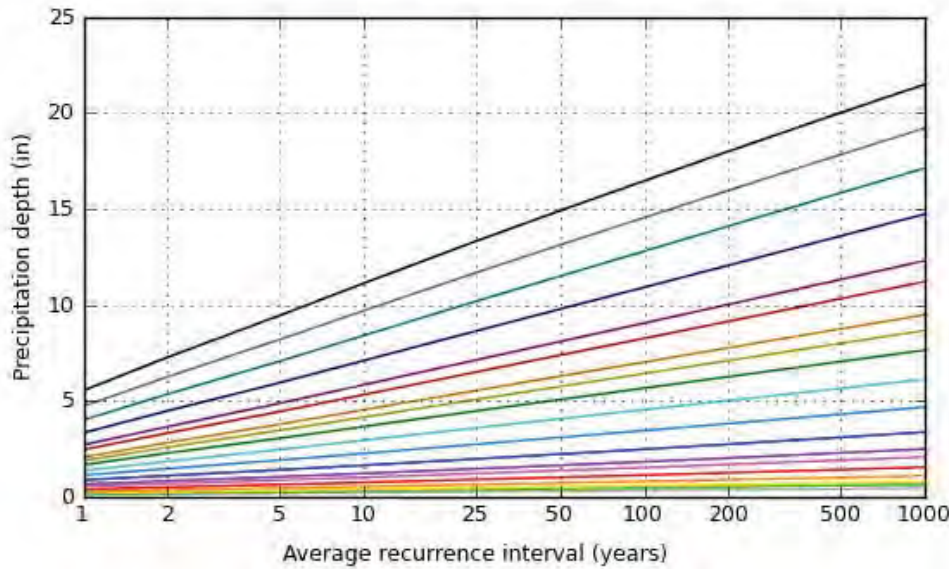
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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 32.7333°, Longitude: -117.0667°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

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Large scale terrain



Large scale map



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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 6, Version 2
Location name: San Diego, California, USA*
Latitude: 32.7333°, Longitude: -117.0667°
Elevation: 445.15 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 & aeriels](#)

PF tabular

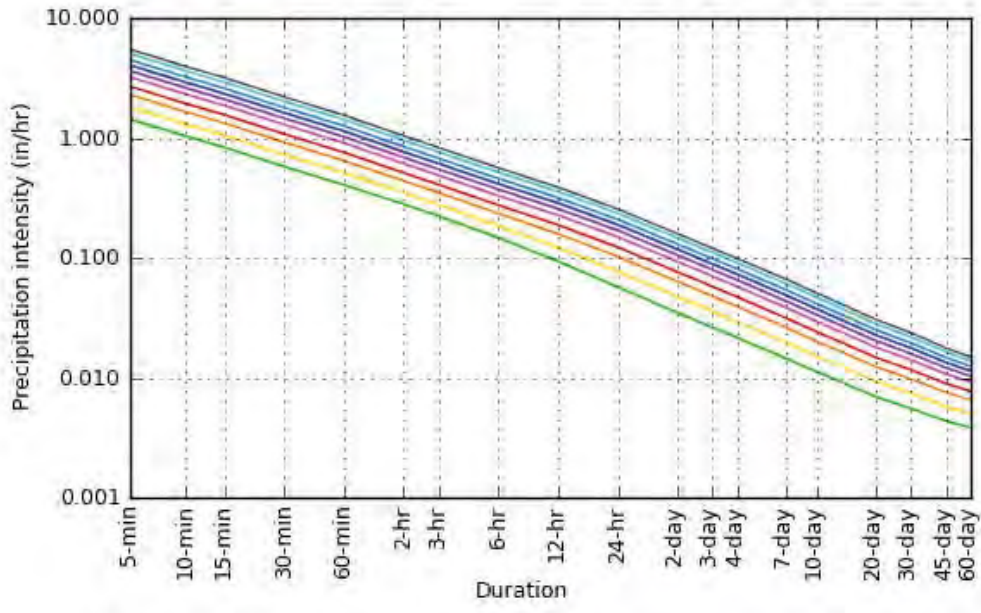
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.44 (1.21-1.74)	1.82 (1.52-2.20)	2.30 (1.92-2.78)	2.70 (2.23-3.30)	3.23 (2.58-4.09)	3.65 (2.84-4.70)	4.06 (3.10-5.38)	4.49 (3.32-6.12)	5.06 (3.59-7.21)	5.51 (3.77-8.14)
10-min	1.04 (0.870-1.25)	1.30 (1.09-1.57)	1.65 (1.38-2.00)	1.93 (1.60-2.36)	2.32 (1.85-2.93)	2.61 (2.04-3.37)	2.91 (2.21-3.86)	3.22 (2.38-4.39)	3.62 (2.57-5.17)	3.94 (2.69-5.83)
15-min	0.836 (0.700-1.01)	1.05 (0.880-1.27)	1.33 (1.11-1.61)	1.56 (1.29-1.90)	1.87 (1.49-2.36)	2.10 (1.64-2.72)	2.34 (1.79-3.11)	2.59 (1.92-3.54)	2.92 (2.07-4.17)	3.18 (2.18-4.70)
30-min	0.578 (0.484-0.698)	0.728 (0.608-0.878)	0.922 (0.770-1.12)	1.08 (0.894-1.32)	1.29 (1.03-1.64)	1.46 (1.14-1.88)	1.62 (1.24-2.15)	1.79 (1.33-2.45)	2.02 (1.43-2.89)	2.20 (1.51-3.25)
60-min	0.407 (0.341-0.490)	0.511 (0.428-0.617)	0.648 (0.541-0.785)	0.759 (0.628-0.927)	0.910 (0.727-1.15)	1.02 (0.801-1.33)	1.14 (0.870-1.51)	1.26 (0.934-1.72)	1.42 (1.01-2.03)	1.55 (1.06-2.29)
2-hr	0.281 (0.236-0.338)	0.350 (0.292-0.422)	0.439 (0.366-0.532)	0.512 (0.424-0.625)	0.612 (0.488-0.773)	0.688 (0.538-0.890)	0.766 (0.584-1.02)	0.847 (0.627-1.16)	0.956 (0.678-1.36)	1.04 (0.712-1.54)
3-hr	0.224 (0.188-0.270)	0.279 (0.233-0.336)	0.350 (0.292-0.424)	0.409 (0.338-0.499)	0.489 (0.390-0.618)	0.550 (0.430-0.710)	0.612 (0.466-0.812)	0.676 (0.500-0.923)	0.764 (0.541-1.09)	0.832 (0.569-1.23)
6-hr	0.148 (0.124-0.178)	0.186 (0.155-0.224)	0.235 (0.196-0.285)	0.276 (0.228-0.337)	0.331 (0.264-0.418)	0.373 (0.291-0.482)	0.415 (0.316-0.551)	0.459 (0.340-0.627)	0.519 (0.367-0.739)	0.565 (0.386-0.834)
12-hr	0.094 (0.079-0.113)	0.123 (0.103-0.148)	0.159 (0.133-0.193)	0.188 (0.156-0.230)	0.228 (0.182-0.288)	0.257 (0.201-0.333)	0.287 (0.219-0.381)	0.317 (0.235-0.433)	0.358 (0.253-0.510)	0.389 (0.266-0.574)
24-hr	0.057 (0.050-0.067)	0.077 (0.068-0.090)	0.103 (0.090-0.120)	0.123 (0.107-0.145)	0.150 (0.126-0.182)	0.170 (0.140-0.210)	0.190 (0.153-0.239)	0.209 (0.165-0.271)	0.236 (0.179-0.317)	0.255 (0.188-0.355)
2-day	0.035 (0.031-0.041)	0.048 (0.042-0.055)	0.064 (0.056-0.074)	0.076 (0.066-0.090)	0.093 (0.078-0.113)	0.106 (0.087-0.131)	0.118 (0.095-0.149)	0.131 (0.103-0.169)	0.147 (0.111-0.198)	0.159 (0.117-0.221)
3-day	0.026 (0.023-0.031)	0.036 (0.032-0.042)	0.048 (0.042-0.056)	0.058 (0.050-0.068)	0.070 (0.059-0.085)	0.080 (0.066-0.099)	0.089 (0.072-0.113)	0.099 (0.078-0.128)	0.111 (0.084-0.150)	0.120 (0.088-0.167)
4-day	0.022 (0.019-0.025)	0.029 (0.026-0.034)	0.039 (0.034-0.046)	0.047 (0.041-0.056)	0.058 (0.049-0.070)	0.066 (0.054-0.081)	0.073 (0.059-0.092)	0.081 (0.064-0.105)	0.091 (0.069-0.123)	0.099 (0.073-0.137)
7-day	0.015 (0.013-0.017)	0.020 (0.017-0.023)	0.026 (0.023-0.031)	0.032 (0.028-0.037)	0.039 (0.033-0.047)	0.044 (0.036-0.054)	0.049 (0.040-0.062)	0.054 (0.043-0.071)	0.061 (0.047-0.083)	0.067 (0.049-0.093)
10-day	0.011 (0.010-0.013)	0.015 (0.013-0.018)	0.020 (0.018-0.024)	0.024 (0.021-0.029)	0.030 (0.025-0.036)	0.034 (0.028-0.042)	0.038 (0.030-0.048)	0.042 (0.033-0.054)	0.047 (0.036-0.064)	0.051 (0.038-0.071)
20-day	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.012 (0.011-0.014)	0.015 (0.013-0.017)	0.018 (0.015-0.022)	0.020 (0.017-0.025)	0.023 (0.018-0.029)	0.025 (0.020-0.033)	0.028 (0.021-0.038)	0.031 (0.023-0.043)
30-day	0.006 (0.005-0.006)	0.007 (0.007-0.009)	0.010 (0.009-0.011)	0.012 (0.010-0.014)	0.014 (0.012-0.017)	0.016 (0.013-0.020)	0.018 (0.014-0.022)	0.020 (0.015-0.025)	0.022 (0.017-0.030)	0.024 (0.017-0.033)
45-day	0.004 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.015)	0.013 (0.011-0.017)	0.015 (0.012-0.019)	0.017 (0.013-0.022)	0.018 (0.013-0.025)
60-day	0.004 (0.003-0.004)	0.005 (0.004-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.010 (0.009-0.013)	0.011 (0.009-0.014)	0.013 (0.010-0.016)	0.014 (0.011-0.019)	0.015 (0.011-0.021)

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.

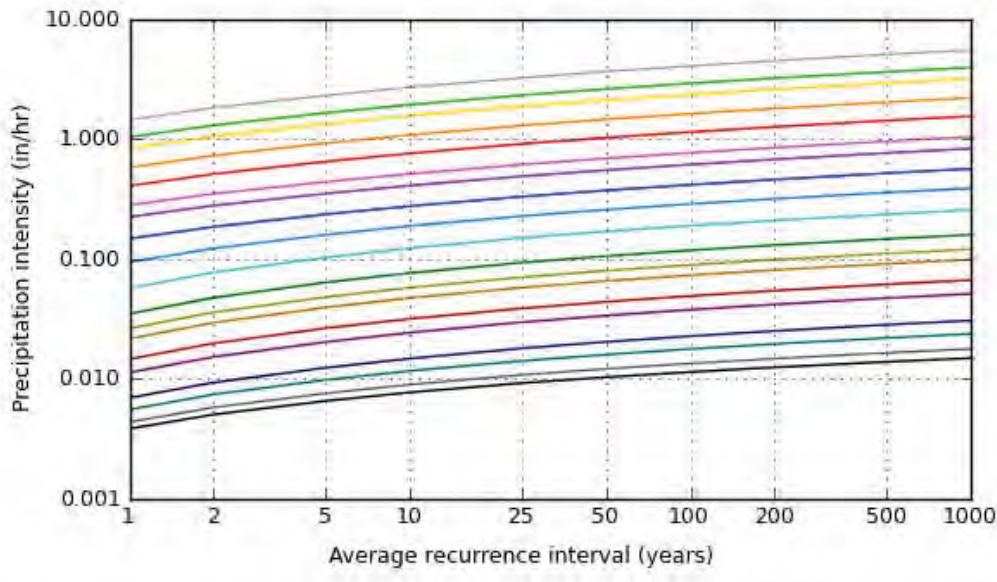
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PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 32.7333°, Longitude: -117.0667°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

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Large scale terrain



Large scale map



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La Mesa Data



NOAA Atlas 14, Volume 6, Version 2
Location name: La Mesa, California, USA*
Latitude: 32.7675°, Longitude: -117.0233°
Elevation: 533.01 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 & aeriels](#)

PF tabular

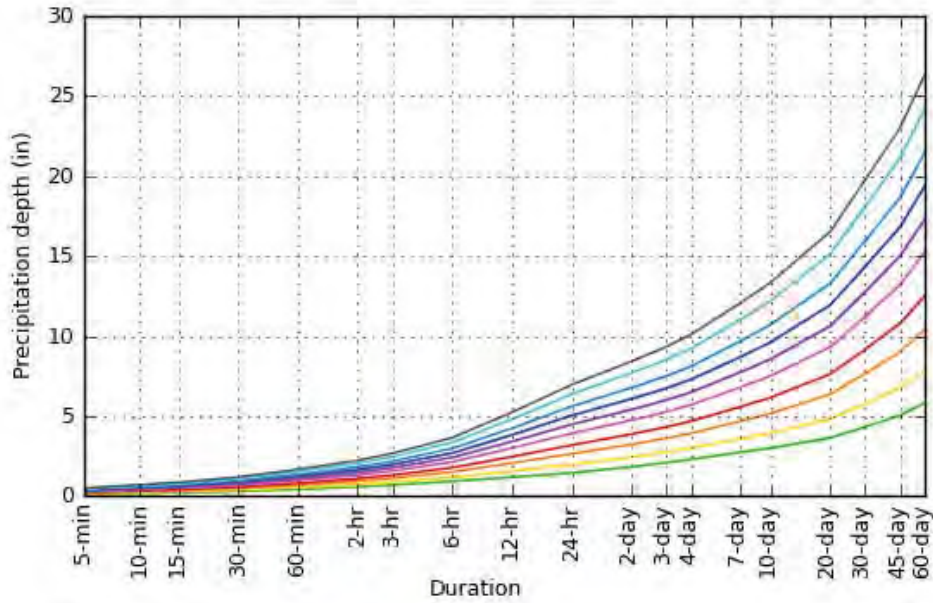
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.123 (0.103-0.148)	0.157 (0.132-0.189)	0.201 (0.168-0.243)	0.237 (0.196-0.289)	0.286 (0.229-0.361)	0.323 (0.253-0.417)	0.360 (0.275-0.478)	0.399 (0.295-0.544)	0.451 (0.320-0.643)	0.491 (0.336-0.725)
10-min	0.176 (0.148-0.212)	0.225 (0.189-0.271)	0.289 (0.241-0.349)	0.340 (0.282-0.415)	0.410 (0.328-0.517)	0.463 (0.362-0.598)	0.517 (0.394-0.685)	0.572 (0.423-0.780)	0.646 (0.458-0.921)	0.704 (0.481-1.04)
15-min	0.213 (0.179-0.257)	0.272 (0.228-0.328)	0.349 (0.292-0.422)	0.411 (0.341-0.502)	0.495 (0.396-0.626)	0.560 (0.438-0.723)	0.625 (0.476-0.828)	0.692 (0.512-0.944)	0.782 (0.554-1.11)	0.851 (0.582-1.26)
30-min	0.296 (0.248-0.356)	0.378 (0.316-0.455)	0.484 (0.404-0.585)	0.571 (0.473-0.696)	0.687 (0.550-0.868)	0.777 (0.608-1.00)	0.867 (0.661-1.15)	0.960 (0.710-1.31)	1.08 (0.769-1.55)	1.18 (0.807-1.75)
60-min	0.417 (0.350-0.502)	0.532 (0.446-0.642)	0.682 (0.570-0.825)	0.804 (0.666-0.981)	0.969 (0.775-1.22)	1.09 (0.856-1.41)	1.22 (0.931-1.62)	1.35 (1.00-1.85)	1.53 (1.08-2.18)	1.66 (1.14-2.46)
2-hr	0.577 (0.484-0.694)	0.730 (0.611-0.880)	0.929 (0.776-1.12)	1.09 (0.903-1.33)	1.31 (1.05-1.65)	1.47 (1.15-1.90)	1.64 (1.25-2.17)	1.81 (1.34-2.48)	2.05 (1.45-2.92)	2.22 (1.52-3.29)
3-hr	0.691 (0.580-0.833)	0.875 (0.733-1.06)	1.12 (0.931-1.35)	1.31 (1.08-1.60)	1.57 (1.25-1.98)	1.77 (1.38-2.28)	1.97 (1.50-2.61)	2.18 (1.61-2.97)	2.45 (1.74-3.50)	2.67 (1.82-3.94)
6-hr	0.916 (0.769-1.10)	1.17 (0.982-1.41)	1.50 (1.26-1.82)	1.77 (1.47-2.16)	2.13 (1.71-2.69)	2.41 (1.88-3.11)	2.69 (2.05-3.56)	2.97 (2.20-4.05)	3.35 (2.38-4.78)	3.65 (2.49-5.39)
12-hr	1.18 (0.989-1.42)	1.56 (1.31-1.89)	2.06 (1.72-2.49)	2.46 (2.04-3.00)	3.00 (2.40-3.79)	3.41 (2.66-4.40)	3.82 (2.91-5.06)	4.24 (3.14-5.78)	4.80 (3.40-6.84)	5.23 (3.58-7.73)
24-hr	1.44 (1.27-1.68)	1.97 (1.72-2.29)	2.64 (2.31-3.08)	3.19 (2.77-3.74)	3.92 (3.30-4.74)	4.47 (3.70-5.52)	5.03 (4.07-6.35)	5.60 (4.42-7.26)	6.37 (4.83-8.57)	6.96 (5.11-9.67)
2-day	1.82 (1.60-2.12)	2.43 (2.13-2.83)	3.22 (2.82-3.76)	3.87 (3.36-4.54)	4.74 (3.99-5.74)	5.40 (4.47-6.67)	6.07 (4.91-7.67)	6.76 (5.33-8.76)	7.69 (5.84-10.4)	8.41 (6.18-11.7)
3-day	2.09 (1.83-2.43)	2.75 (2.41-3.20)	3.61 (3.16-4.21)	4.32 (3.75-5.07)	5.27 (4.44-6.38)	6.00 (4.96-7.40)	6.74 (5.45-8.51)	7.50 (5.91-9.71)	8.53 (6.47-11.5)	9.33 (6.85-13.0)
4-day	2.29 (2.01-2.66)	3.00 (2.63-3.49)	3.93 (3.44-4.58)	4.68 (4.07-5.50)	5.71 (4.81-6.91)	6.49 (5.37-8.02)	7.29 (5.90-9.21)	8.12 (6.40-10.5)	9.24 (7.00-12.4)	10.1 (7.42-14.0)
7-day	2.72 (2.39-3.17)	3.56 (3.13-4.14)	4.66 (4.08-5.43)	5.56 (4.83-6.53)	6.78 (5.71-8.20)	7.71 (6.38-9.52)	8.67 (7.01-10.9)	9.65 (7.61-12.5)	11.0 (8.33-14.8)	12.0 (8.84-16.7)
10-day	2.99 (2.63-3.47)	3.92 (3.44-4.57)	5.15 (4.51-6.00)	6.15 (5.34-7.22)	7.50 (6.32-9.08)	8.54 (7.06-10.5)	9.60 (7.76-12.1)	10.7 (8.43-13.9)	12.2 (9.24-16.4)	13.3 (9.79-18.5)
20-day	3.63 (3.19-4.22)	4.82 (4.23-5.60)	6.36 (5.57-7.42)	7.62 (6.62-8.95)	9.32 (7.85-11.3)	10.6 (8.78-13.1)	11.9 (9.65-15.1)	13.3 (10.5-17.2)	15.1 (11.5-20.3)	16.5 (12.1-22.9)
30-day	4.31 (3.79-5.01)	5.76 (5.05-6.70)	7.64 (6.69-8.91)	9.16 (7.96-10.8)	11.2 (9.44-13.6)	12.8 (10.5-15.8)	14.3 (11.6-18.1)	15.9 (12.6-20.6)	18.1 (13.7-24.3)	19.7 (14.5-27.4)
45-day	5.04 (4.42-5.85)	6.77 (5.94-7.87)	9.00 (7.88-10.5)	10.8 (9.37-12.7)	13.2 (11.1-16.0)	15.0 (12.4-18.5)	16.8 (13.6-21.2)	18.6 (14.7-24.2)	21.1 (16.0-28.4)	23.0 (16.9-31.9)
60-day	5.83 (5.12-6.77)	7.85 (6.89-9.13)	10.4 (9.13-12.2)	12.5 (10.9-14.7)	15.3 (12.9-18.5)	17.3 (14.3-21.4)	19.4 (15.7-24.5)	21.5 (16.9-27.8)	24.2 (18.4-32.6)	26.3 (19.4-36.6)

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.

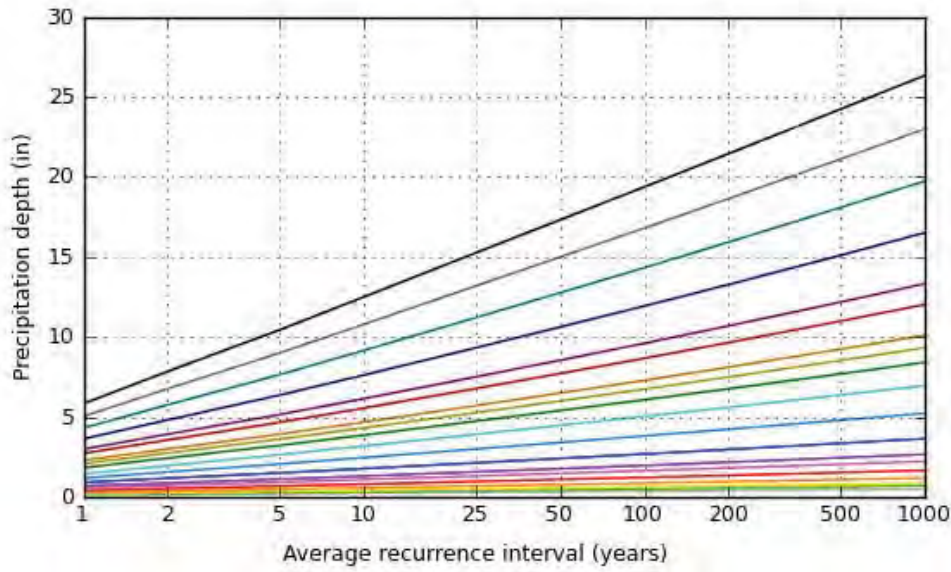
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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 32.7675°, Longitude: -117.0233°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

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Silver Spring, MD 20910
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NOAA Atlas 14, Volume 6, Version 2 LA MESA

Station ID: 04-4735

Location name: La Mesa, California, USA*

Latitude: 32.7675°, Longitude: -117.0233°

Elevation:

Elevation (station metadata): 530 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	1.48 (1.24-1.78)	1.88 (1.58-2.27)	2.41 (2.02-2.92)	2.84 (2.35-3.47)	3.43 (2.75-4.33)	3.88 (3.04-5.00)	4.32 (3.30-5.74)	4.79 (3.54-6.53)	5.41 (3.84-7.72)	5.89 (4.03-8.70)
10-min	1.06 (0.888-1.27)	1.35 (1.13-1.63)	1.73 (1.45-2.09)	2.04 (1.69-2.49)	2.46 (1.97-3.10)	2.78 (2.17-3.59)	3.10 (2.36-4.11)	3.43 (2.54-4.68)	3.88 (2.75-5.53)	4.22 (2.89-6.24)
15-min	0.852 (0.716-1.03)	1.09 (0.912-1.31)	1.40 (1.17-1.69)	1.64 (1.36-2.01)	1.98 (1.58-2.50)	2.24 (1.75-2.89)	2.50 (1.90-3.31)	2.77 (2.05-3.78)	3.13 (2.22-4.46)	3.40 (2.33-5.03)
30-min	0.592 (0.496-0.712)	0.756 (0.632-0.910)	0.968 (0.808-1.17)	1.14 (0.946-1.39)	1.37 (1.10-1.74)	1.55 (1.22-2.01)	1.73 (1.32-2.30)	1.92 (1.42-2.62)	2.17 (1.54-3.09)	2.36 (1.61-3.49)
60-min	0.417 (0.350-0.502)	0.532 (0.446-0.642)	0.682 (0.570-0.825)	0.804 (0.666-0.981)	0.969 (0.775-1.22)	1.09 (0.856-1.41)	1.22 (0.931-1.62)	1.35 (1.00-1.85)	1.53 (1.08-2.18)	1.66 (1.14-2.46)
2-hr	0.288 (0.242-0.347)	0.365 (0.306-0.440)	0.464 (0.388-0.562)	0.545 (0.452-0.664)	0.654 (0.523-0.826)	0.737 (0.576-0.952)	0.821 (0.626-1.09)	0.907 (0.672-1.24)	1.02 (0.725-1.46)	1.11 (0.760-1.64)
3-hr	0.230 (0.193-0.277)	0.291 (0.244-0.352)	0.371 (0.310-0.449)	0.436 (0.361-0.531)	0.523 (0.418-0.660)	0.589 (0.461-0.761)	0.656 (0.500-0.869)	0.725 (0.536-0.989)	0.817 (0.579-1.16)	0.888 (0.607-1.31)
6-hr	0.153 (0.128-0.184)	0.196 (0.164-0.236)	0.251 (0.210-0.304)	0.296 (0.245-0.361)	0.356 (0.285-0.450)	0.402 (0.315-0.519)	0.449 (0.342-0.594)	0.496 (0.367-0.677)	0.560 (0.397-0.798)	0.609 (0.416-0.900)
12-hr	0.098 (0.082-0.118)	0.130 (0.109-0.156)	0.171 (0.143-0.207)	0.204 (0.169-0.249)	0.249 (0.199-0.314)	0.283 (0.221-0.365)	0.317 (0.242-0.420)	0.352 (0.260-0.480)	0.398 (0.282-0.568)	0.434 (0.297-0.641)
24-hr	0.060 (0.053-0.070)	0.082 (0.072-0.095)	0.110 (0.096-0.128)	0.133 (0.115-0.156)	0.163 (0.138-0.198)	0.186 (0.154-0.230)	0.210 (0.170-0.265)	0.234 (0.184-0.302)	0.265 (0.201-0.357)	0.290 (0.213-0.403)
2-day	0.038 (0.033-0.044)	0.051 (0.044-0.059)	0.067 (0.059-0.078)	0.081 (0.070-0.095)	0.099 (0.083-0.119)	0.113 (0.093-0.139)	0.127 (0.102-0.160)	0.141 (0.111-0.182)	0.160 (0.122-0.216)	0.175 (0.129-0.243)
3-day	0.029 (0.025-0.034)	0.038 (0.034-0.044)	0.050 (0.044-0.059)	0.060 (0.052-0.070)	0.073 (0.062-0.089)	0.083 (0.069-0.103)	0.094 (0.076-0.118)	0.104 (0.082-0.135)	0.118 (0.090-0.159)	0.130 (0.095-0.180)
4-day	0.024 (0.021-0.028)	0.031 (0.027-0.036)	0.041 (0.036-0.048)	0.049 (0.042-0.057)	0.059 (0.050-0.072)	0.068 (0.056-0.083)	0.076 (0.061-0.096)	0.085 (0.067-0.110)	0.096 (0.073-0.129)	0.105 (0.077-0.146)
7-day	0.016 (0.014-0.019)	0.021 (0.019-0.025)	0.028 (0.024-0.032)	0.033 (0.029-0.039)	0.040 (0.034-0.049)	0.046 (0.038-0.057)	0.052 (0.042-0.065)	0.057 (0.045-0.074)	0.065 (0.050-0.088)	0.072 (0.053-0.099)
10-day	0.012 (0.011-0.014)	0.016 (0.014-0.019)	0.021 (0.019-0.025)	0.026 (0.022-0.030)	0.031 (0.026-0.038)	0.036 (0.029-0.044)	0.040 (0.032-0.051)	0.045 (0.035-0.058)	0.051 (0.038-0.068)	0.056 (0.041-0.077)
20-day	0.008 (0.007-0.009)	0.010 (0.009-0.012)	0.013 (0.012-0.015)	0.016 (0.014-0.019)	0.019 (0.016-0.024)	0.022 (0.018-0.027)	0.025 (0.020-0.031)	0.028 (0.022-0.036)	0.031 (0.024-0.042)	0.034 (0.025-0.048)
30-day	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.011 (0.009-0.012)	0.013 (0.011-0.015)	0.016 (0.013-0.019)	0.018 (0.015-0.022)	0.020 (0.016-0.025)	0.022 (0.017-0.029)	0.025 (0.019-0.034)	0.027 (0.020-0.038)
45-day	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.010)	0.010 (0.009-0.012)	0.012 (0.010-0.015)	0.014 (0.011-0.017)	0.016 (0.013-0.020)	0.017 (0.014-0.022)	0.020 (0.015-0.026)	0.021 (0.016-0.030)
60-day	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.013)	0.012 (0.010-0.015)	0.013 (0.011-0.017)	0.015 (0.012-0.019)	0.017 (0.013-0.023)	0.018 (0.013-0.025)

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

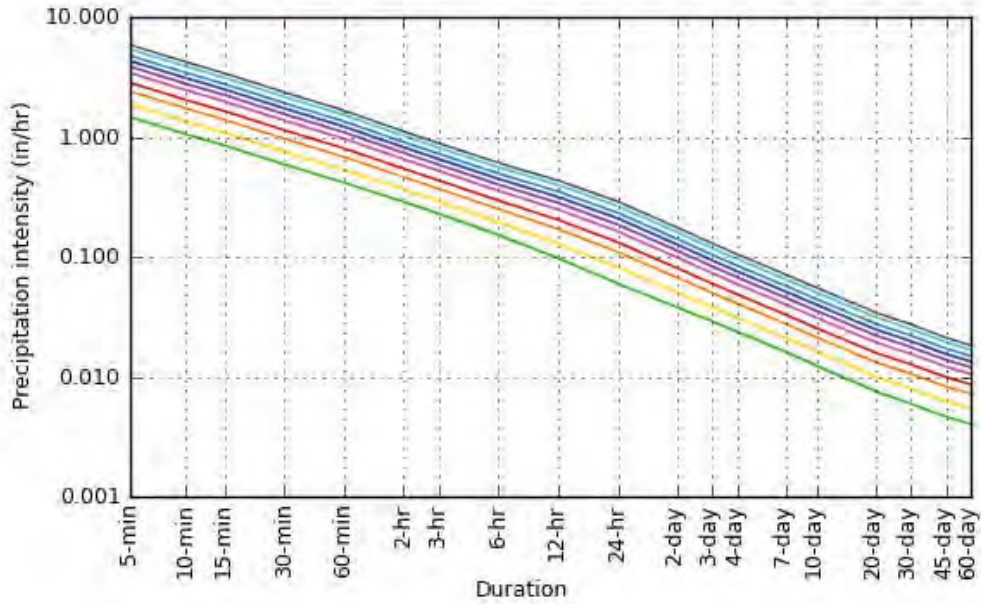
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper 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.

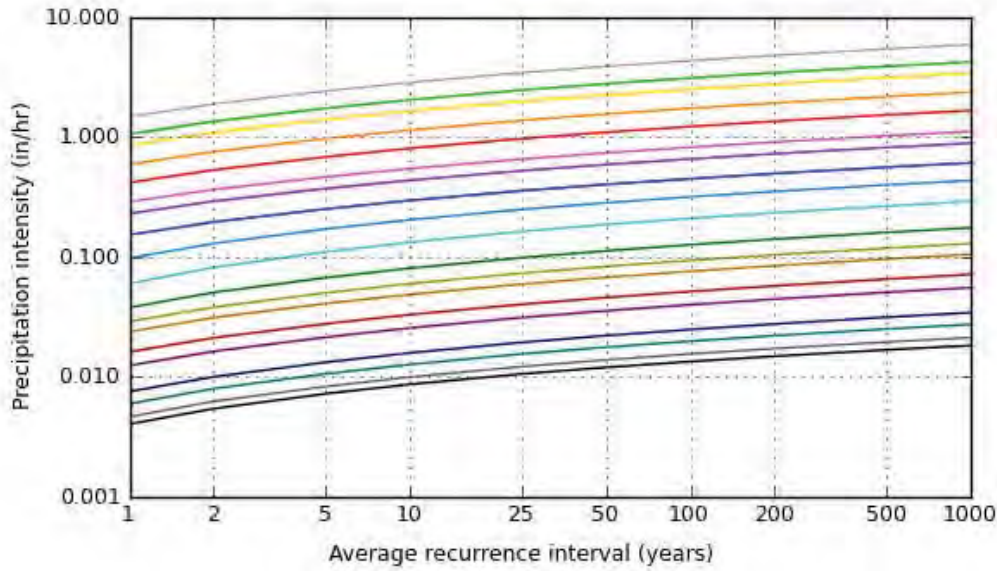
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PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 32.7675°, Longitude: -117.0233°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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B. CCTV Data



PACP© Condition Grading System

The Pipeline Assessment and Certification Program (PACP) developed by NASSCO provides a mechanism for creating reliable descriptions of pipe conditions. NASSCO has also developed a system based on the PACP codes to assign a condition rating to pipelines. Requirements of the grading system were as follows:

1. Like the PACP, the grading system should be direct and objective.
2. Provide the ability to qualitatively identify differences in pipe condition between one inspection and subsequent inspections, and to prioritize based on the significance of the defects different pipe segments.

Many other approaches to sewer pipe grading have been used in the United States as well as in other parts of the World. These approaches generally use some type of defect grading that is then used to calculate an overall pipe rating.

It is problematic to develop a single pipe segment rating that fully describes all of the important aspects of a pipe. Therefore the PACP Condition Grading System uses more than one method of rating pipe segment condition including a rating that considers the number of total defects within the pipe segment and a rating that considers the most severe defects within the pipe segment.

The PACP Condition Grading System only considers internal pipe conditions obtained from TV inspection. While other factors such as pipe material, depth, soils, and surface conditions also affect pipe survivability, those factors have not been included in the PACP Condition Grading System. The PACP Condition Grading System should be used only as a tool for screening pipe segment inspections, allowing the User to quickly determine which pipe segments have significant defects. It is expected that as the PACP further develops the PACP Condition Grading System will expand to include other factors.

The PACP Condition Grading System provides condition ratings for Structural Defects and Operation and Maintenance Defects.

Approach

Using the PACP Code Matrix, Each PACP defect code is assigned a condition grade of from 1 to 5. Grades are assigned based on the significance of the defect, extent of



damage, percentage of flow capacity restriction, or the amount of wall loss due to deterioration.

The PACP Condition Grading System alone is inadequate for determining if a pipe segment should be rehabilitated or replaced. Many other factors in addition to the internal condition of the segment should be considered. The fact that a segment has significant Grade 4 or Grade 5 defects does not necessarily mean the pipe segment should be immediately rehabilitated. Recent experience by PACP Users has shown that pipe segments with serious defects such as hinge failures may remain largely unchanged for many decades if no deterioration factors such as surcharging, roots, or groundwater are present.

What is needed is improved estimates of remaining life or mean time before failure that are based on close monitoring of pipe segments over time. Once we know how much change occurs in pipe segments we can better understand the relationship between defects, deterioration factors, and pipe segment life expectancy. PACP continues to be an excellent tool for benchmarking pipe condition between one inspection and subsequent inspections of the same pipe.

Grades are assigned for two categories, Structural, and O&M defects.

Grades are as follows;

5 - Most significant defect grade

4 – Significant

3 – Moderate defect grade

2 – Minor to Moderate

1 –Minor defect grade

The PACP Condition Grading System results are entirely dependent on the quality of the PACP defect coding. Errors in the coding will directly result in errors in the Grading. All utilities, engineers, and contractors should make sure the data they are using was coded by experienced technicians who have successfully demonstrated their competence through a formal or informal apprenticeship program. PACP data from inexperienced technicians should be checked and corrected as needed. Errors found in coding should be corrected and the errors brought to the attention of the technician.



Grading of Continuous Defects

The PACP continuous defect feature is used to denote where long portions of a sewer pipe are affected by the same defect, without the User having to repetitively enter point defects. However to develop a grade for the pipe segment, a mechanism is needed to translate a continuous defect into an equivalent number of point defects.

The equivalent number (quantity) of "uninterrupted" and "joint repeating" continuous defects is calculated by dividing the length of the continuous defect by 5. Example, a 6-meter long continuous defect, grade 3, should equate to four Grade 3 defects. Fractions are rounded to the nearest whole number.

Pipe Ratings

The pipe rating is based on the number of occurrences for each condition grade. Ratings are calculated separately for **Structural Defects** and **O&M Defects**. Several ways of expressing pipe segment condition are used by the PACP Condition Grading System as follows.

Segment Grade Scores - Each pipe segment will have a Segment Grade Score for each of the five grades. The number of occurrences of each pipe grade is multiplied by the pipe grade to calculate the segment grade score. Example, six Grade 5 defects would be 6 times 5 and equates to a Segment Grade 5 Score of 30. If a pipe segment had no defects of a particular grade, then the Segment Grade Score for that grade would be 0.

Overall Pipe Rating –The five Segment Grade Scores are added together to calculate the **Overall Pipe Rating**. **Structural Pipe Ratings** are calculated using only Structural Defect grades, while **O&M Pipe Ratings** are calculated using only O&M Defect grades.



PACP Quick Rating – The PACP Quick Rating is a shorthand way of expressing the number of occurrences for the two highest severity grades. The PACP Quick Rating is a four character score as follows:

1. The first character is the highest severity grade occurring along the pipe length.
2. The second character is the total number of occurrences of the highest severity grade. If the total number exceeds 9, then alphabetic characters are used as follows- 10 to 14 – A; 15 to 19 – B; 20 to 24 – C; etc.
3. The third character is the next highest severity grade occurring along the pipe length.
4. The fourth character is the total number of the second highest severity grade occurrences, derived as in item 2 above.

For Example

4B27

This immediately shows that no grade 5 defects or grade 3 defects, however 15 to 19 grade 4 defects and seven grade 2 defects were found.

Another Example

3224

Two grade 3 defects and four grade 2 defects, however no grade 5 or grade 4 defects were found.

If a pipe segment only has defects of one grade, the first two characters are the grade and the quantity of defects, and the last two characters are 00 (denoting no other defect grades). A pipe segment with no defects would have a Quick Score of 0000 (all zeros).

The PACP Quick Rating provides the ability to summarize the number and severity of defects found within a pipe segment. As with the Pipe Rating, Quick Structural Ratings



are calculated using only Structural Defect Grades, and Quick O&M Ratings are calculated using only O&M Defect Grades.

The Quick Rating is an excellent screening tool to determine which pipe segments require closer scrutiny. If a pipe has not defects greater than Grade 1 or 2, then the pipe segment probably does not need any further investigation.

Pipe Ratings Index – This is an indicator of the distribution of defect severity. The Pipe Ratings Index is calculated by dividing the Pipe Rating by the number of defects. For example, the Structural Pipe Ratings Index would be the Structural Pipe Rating divided by the number of structural defects. Pipe Ratings Indexes are calculated for Structural, O&M, and Overall. A pipe segment with a Pipe Rating of zero (0) would have a Pipe Rating Index of zero (0).

Summary

The following procedures are used to calculate pipe segment ratings using the PACP Condition Grading System:

1. Determine the number of occurrences for each condition grade within the pipe segment. Calculate separately for Structural Defect Grades and O&M Defect Grades.
2. Calculate the Segment Grade Score by multiplying the number of occurrences by the respective grade 1 through 5. Calculate the Structural Segment Grade Score and the O&M Segment Grade Score separately, and then add together for the Overall Segment Grade Score.
3. Calculate the Pipe Rating for the pipe segment by adding the Segment Grade Scores. Add all five Structural Segment Grade Scores for the Structural Pipe Rating, and add all five O&M Segment Grade Scores for the O&M Pipe Rating. Add all five Overall Segment Grade Scores for the Overall Pipe Rating.
4. Determine the PACP Quick Rating by calculating the number of occurrences of the two highest severity grades.



5. Calculate the Pipe Ratings Index by dividing the Pipe Rating by the number of defects. If the pipe has no defects, the Pipe Ratings Index is zero.
6. Verify the PACP defect data used is accurate. The grading is a direct calculation from the defect data, and coding errors will be reflected in grading errors.

NASSCO PACP Condition Grading System Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
Structural	Crack (C)	Circumferential (C)		CC	1	
		Longitudinal (L)		CL	2	
		Multiple (M)		CM	3	
		Hinge (CH2)		CH2	4	
		Hinge (CH3)		CH3	5	
		Hinge (CH4)		CH4	5	
		Spiral (S)		CS	2	
		Circumferential (C)		FC	2	
		Longitudinal (L)		FL	3	
		Multiple (M)		FM	4	
Structural	Fracture (F)	Hinge (H2)		FH2	4	
		Hinge (H3)		FH3	5	
		Hinge (H4)		FH4	5	
		Spiral (S)		FS	3	
		Broken (B)		B	1 clock pos - 3, 2 clock pos - 4, >=3 clock pos - 5	
		Broken (B)		BSV	5	
		Broken (B)		BVV	5	
		Hole (H)		H	1 clock pos - 3, 2 clock pos - 4, >= 3 clock pos - 5	
		Hole (H)		HSV	5	
		Hole (H)		HWV	5	
Structural	Collapse (X)	Pipe (P)		XP	5	
		Brick (B)		XB	5	
		(Pipe)		D	<=10% - 4, >10% - 5	
		(Brick)		DH	5	
		(Brick)		DV	5	
		Offset (displaced) (O)		JOM	1	
		Separated (open) (S)		JOL	2	
		Angular (A)		JSM	1	
		Roughness Increased (RI)		JSL	2	
		Surface Spalling (SS)		JAM	1	
Structural	Surface Damage Chemical (S)	Angular (A)		JAL	2	
		Surface Spalling (SS)		SRIC	1	
		Aggregate Visible (AV)		SSSC	2	
		Aggregate Projecting (AP)		SAVC	8	
		Aggregate Missing (AM)		SAPC	8	
				SAMC	4	

NASSCO PACP Condition Grading System Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
Structural	Surface Damage Mechanical (M)	Reinforcement Visible (RV)	C	SRVC	5	
		Reinforcement Projecting (RP)	C	SRPC	3	
		Reinforcement Corroded (RC)	C	SRCC	5	
		Missing Wall (MW)	C	SMWC	5	
		Other (Z)	C	SZC		
		Roughness Increased (RI)	M	SRIM	1	
		Surface Spalling (SS)	M	SSSM	2	
		Aggregate Visible (AV)	M	SAVM	3	
		Aggregate Projecting (AP)	M	SAPM	3	
		Aggregate Missing (AM)	M	SAMM	4	
Structural	Surface Damage Not Evident (Z)	Reinforcement Visible (RV)	M	SRVM	5	
		Reinforcement Projecting (RP)	M	SRPM	3	
		Reinforcement Corroded (RC)	M	SRCM	5	
		Missing Wall (MW)	M	SMWM	3	
		Other (Z)	M	SZM	N/A	
		Roughness Increased (RI)	Z	SRIZ	1	
		Surface Spalling (SS)	Z	SSSZ	2	
		Aggregate Visible (AV)	Z	SAVZ	3	
		Aggregate Projecting (AP)	Z	SAPZ	3	
		Aggregate Missing (AM)	Z	SAMZ	4	
Structural	Surface Damage (Metal Pipes) Lining Features (LF)	Reinforcement Visible (RV)	Z	SRVZ	5	
		Reinforcement Projecting (RP)	Z	SRPZ	3	
		Reinforcement Corroded (RC)	Z	SRCZ	5	
		Missing Wall (MW)	Z	SMWZ	5	
		Other (Z)	Z	SZZ	N/A	
		Corrosion (CP)	Z	SCP	3	
		Detached (D)	Z	LFD	3	
		Defective End (DE)	Z	LFDE	3	
		Blistered (B)	Z	LFB	3	
		Service Cut Shifted (CS)	Z	LFCS	3	
Structural	Weld Failure (WF)	Abandoned Connection (AC)		LFAC	3	
		Overcut Service (OC)		LFOC	3	
		Undercut Service (UC)		LFUC	3	
		Buckled (BK)		LFBK	3	
		Annular Space (AS)		LFAS	3	
		Bulges (BU)		LFBU	3	
		Discoloration (DC)		LFDC	3	
		Delamination (DL)		LFDL	3	
		Pinholes (PH)		LFPH	3	
		Resin Slug (RS)		LFRS	3	
Structural	Weld Failure (WF)	Wrinkled (W)		LFW	3	
		Other (Z)		LFZ	N/A	
		Circumferential (C)		WFC	2	
		Longitudinal (L)		WFL	2	

NASSCO PACP Condition Grading System Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
Structural	Point Repair (RP)	Multiple (M)		WFM	3	
		Spiral (S)		WFS	2	
		Localized Pipeliner (L)		RPL		
		Localized Pipeliner (L)		RPLD	4	
		Patch Repair (P)		RPP		
		Patch Repair (P)		RPPD	4	
		Pipe Replaced (R)		RPR		
		Pipe Replaced (R)		RPRD	4	
		Other (Z)		RPZ		
		Other (Z)		RPZD		
Structural	Brickwork (Silent)	Displaced (DB)		DB	3	
		Missing (MB)		MB	4	
		Dropped Invert (DI)		DI	5	
		Missing Mortar		MMS	2	
				MMM	3	
				MML	3	
O&M	Deposits (D)	Deposits Attached (DA)	Encrustation (E)	DAE		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Grease (G)	DAGS		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Ragging (R)	DAR		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Other (Z)	DAZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Hard/Compacted (C)	DSC		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Fine silt/sand (F)	DSF		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Gravel (G)	DSGV		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Other (Z)	DSZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Fine silt/sand (F)	DNF		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Gravel (GV)	DNGV		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Deposits Settled (DS)			
			Deposits Ingress (DN)			

NASSCO PACP Condition Grading System Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
			Other (Z)	DNZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
O&M	Roots (R)	Fine (F)	Barrel (B) Lateral (L) Connection (C)	RFB RFL RFC		2 1 1
	Roots (R) at a joint	Tap (T)	N/A Barrel (B) Lateral (L) Connection (C)	RFJ RTB RTL RTC	in software with a J	1 3 2 2
	Roots (R) at a joint	Medium (M)	N/A Barrel (B) Lateral (L) Connection (C)	RTJ RMB RML RMC		2 4 3 3
	Roots (R) at a joint	Ball (B)	N/A Barrel (B) Lateral (L) Connection (C)	RMJ RBB RBL RBC RBJ		3 5 4 4 4
O&M	Roots (R) at a joint Infiltration (I)	Weeper (W) Dripper (D) Runner (R) Gusher (G) Stain (S)	N/A	IW ID IR IG IS		2 2 3 4 5
O&M	Obstacles/Obstructions (OB)	Brick or Masonry (B)		OBB		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Pipe Material In Invert (M)		OBM		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Object Intruding Thru Wall (I)		OBI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Object Wedged in joint (J)		OBJ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Object Thru Connection (C)		OBC		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		External Pipe or Cable In Sewer (P)		OBP		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Built Into Structure (S)		OBS		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5

NASSCO PACP Condition Grading System Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade	
O&M		Construction Debris (N)		OBN		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5	
		Rocks (R)		OBR		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5	
		Other Objects (Z)		OBZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5	
		Rat (R)		VR		2	
		Cockroach (C)		VC		1	
		Other (Z)		VZ		1	
	O&M	Grout Test and Seal (G)	Grout Test Pass (GTP)	Joint (J) Lateral (L)	GTPJ GTPL		
			Grout Test Fail (GTF)	Joint (J) Lateral (L)	GTFJ GTFL		
			Grout Test Unable to Test (GTU)	Joint (J) Lateral (L)	GTUJ GTUL		
			Grout at a Location (not a joint) (GRT)		GRT		
Construction Features	Tap (T)	Factory Made (F)		TF			
			Capped (C)	TFC			
			Abandoned (B)	TFB			
			Defective (D)	TFD		2	
			Intruding (I)	TFI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5	
			Activity (A)	TFA			
	Break-In/Hammer (B)	Capped (C)	TBC		2		
		Abandoned (B)	TBB				
		Defective (D)	TBD		3		
		Intruding (I)	TBI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5		
	Saddle (S)	Activity (A)	TBA				
		Capped (C)	TSC				
		Abandoned (B)	TSB				

NASSCO PACP Condition Grading System Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
			Defective (D)	TSD		2
			Intruding (I)	TSI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Rehabilitated (R)	Activity (A)	TSA TR		
			Defective (D)	TRD		2
			Intruding (I)	TRI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
Construction Features	Intruding Seal Material (IS)			IS		
		Sealing Ring (SR)		ISSR		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Hanging (H)	ISSRH		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Broken (B)	ISSRB		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Loose, Poorly Fitting (SRL)		ISSRL		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Grout (GT)		ISGT		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Other (Z)		ISZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
Construction Features	Line (L)			LL		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Left (L)		LLU		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Left/Up (LU)		LLU		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Left/Down (LD)		LLD		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Right (R)		LR		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4

NASSCO PACP Condition Grading System Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
		Right/Up (RU)		LRU		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Right/Down (RD)		LRD		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Up (U)		LU		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Down (D)		LD		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
Construction	Access Points (A)	Cleanout (CO)		ACO		
			Mainline (M)	ACOM		
			Property (P)	ACOP		
			House (H)	ACOH		
		Discharge Point (DP)		ADP		
		Junction Box (JB)		AJB		
		Meter (M)		AM		
		Manhole (MH)		AMH		
		Other Special Chamber (OC)		AOC		
		Tee Connection (TC)		ATC		
		WW Access Device (WA)		AWA		
		Wet Well (WW)		AWW		
		Catch Basin (CB)		ACB		
		End of Pipe (EP)		AEP		
Other	Miscellaneous (M)	Camera Underwater (CU)		MCU		4
		Dimension/Diam/Shape Change (SC)		MSC		
		General Observation (GO)		MGO		
		General Photograph (GP)		MGP		
		Material Change (MC)		MLC		
		Lining Change (LC)		MJL		
		Pipe Joint Length Change (JL)		MSA		
		Survey Abandoned (SA)		MWL		
		Water Level (WL)	Sag (S)	MWLS	<=30% - 2, <=50% - 3, >50% - 4	>=50% 4, >=75% 5
		Water Mark (WM)		MWM		
		Dye Test (Y)	Visible (V)	MYV		5
			Not Visible (N)	MYN		3

REPAIR TECHNIQUES

1. Cured In Place Pipe (CIPP) Lining

The CIPP lining process involves inserting a resin-saturated flexible lining into the existing pipe. The lining looks like a very large sock or flexible tube. Air or water under pressure is forced into the tube, which turns the lining inside out and causes it to fit tightly to the existing pipe walls. Hot air or water is circulated throughout the tube to harden the resin, completing the curing process. When the curing process is completed, a new pipe has been created that is free of cracks and holes that allow rainwater and roots to enter the pipe and cause operational problems such as stoppages and overflows. The finished product has a 50-year design life, the same as that of a brand new pipe.

2. Cured In Place Pipe (CIPP) Sectional Repairs

Sectional CIPP repairs apply to facilities that do not require the entire pipe to be rehabilitated. If a particular pipe is damaged in isolated locations, then CIPP sectional repairs can typically be applied and the repairs range from three to thirty feet in length with diameters ranging from six inches to forty-eight inches. Unlike full-length liners, a sectional repair may be any distance from the manhole.

3. Top Hat (TH) In Lateral/Main Connection Sealing

This utilizes a specially shaped liner, which looks just like a Top Hat (TH) or inverted 'T'. The stem of the TH forms the section of liner that is placed into the lateral pipe while the TH crossbar sits against the inner wall of the main. Resin impregnation of the liner material allows it to be positioned using a specially designed remote control robotic installer and held in position for curing of the resin. Once cured, the robot and retention system are removed leaving the 'T'-shaped liner forming a seal across the lateral/main joint. The TH stem can be made to pass as deep into the lateral if necessary.

4. Pressurized Hydrophilic Chemical Grout and Urethane Sealant

Pressurized hydrophilic grout is primarily used for the repair of defects in water environments. The grout is typically injected under pressure, as a liquid into and/or around a leak. Once in contact with water, the grout reacts, filling voids and sealing defects. Hydrophilic grout requires water for the reaction to occur and creates flexible, resilient repairs. It can bond to wet surfaces, and has the ability to expand or contract within the voids.

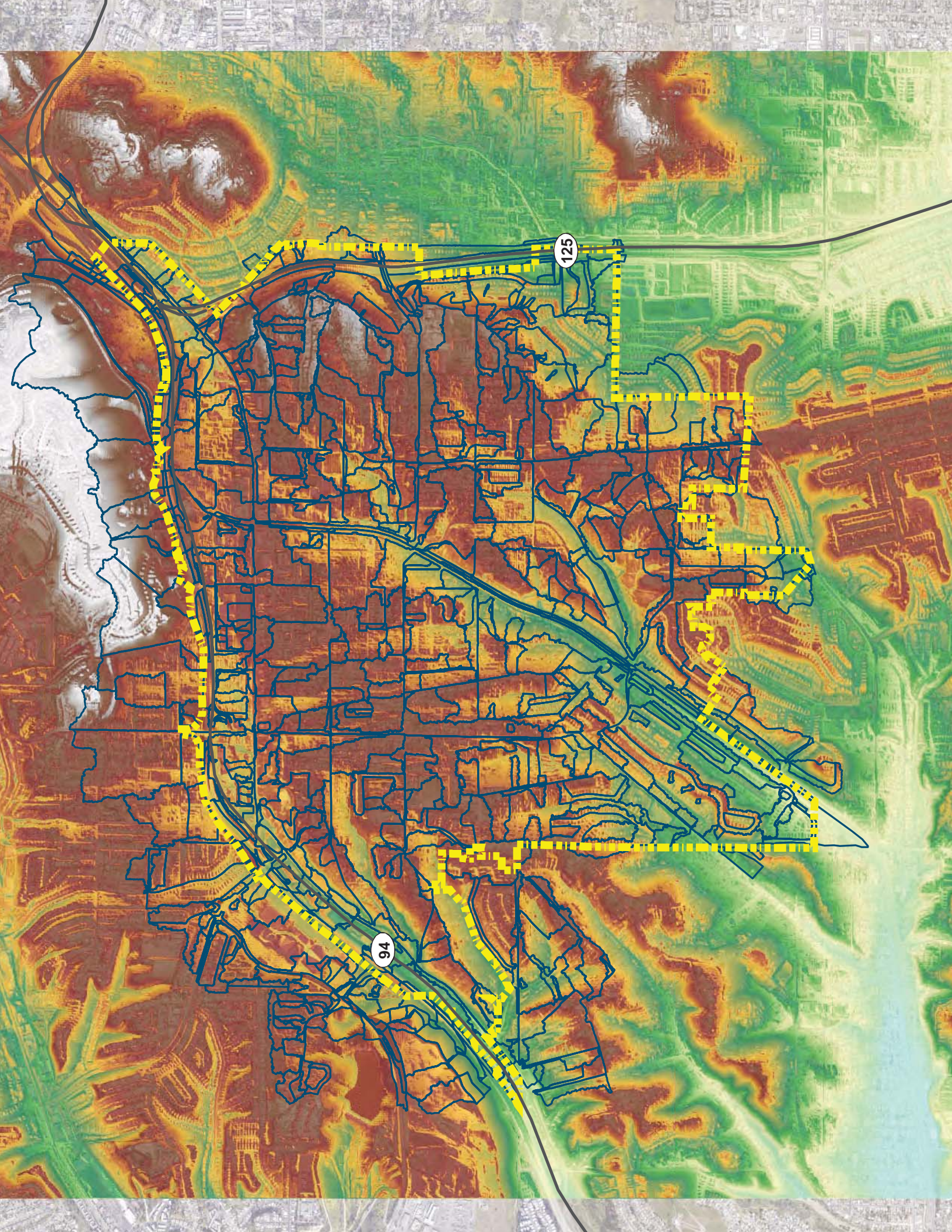
5. Hydro-Scouring

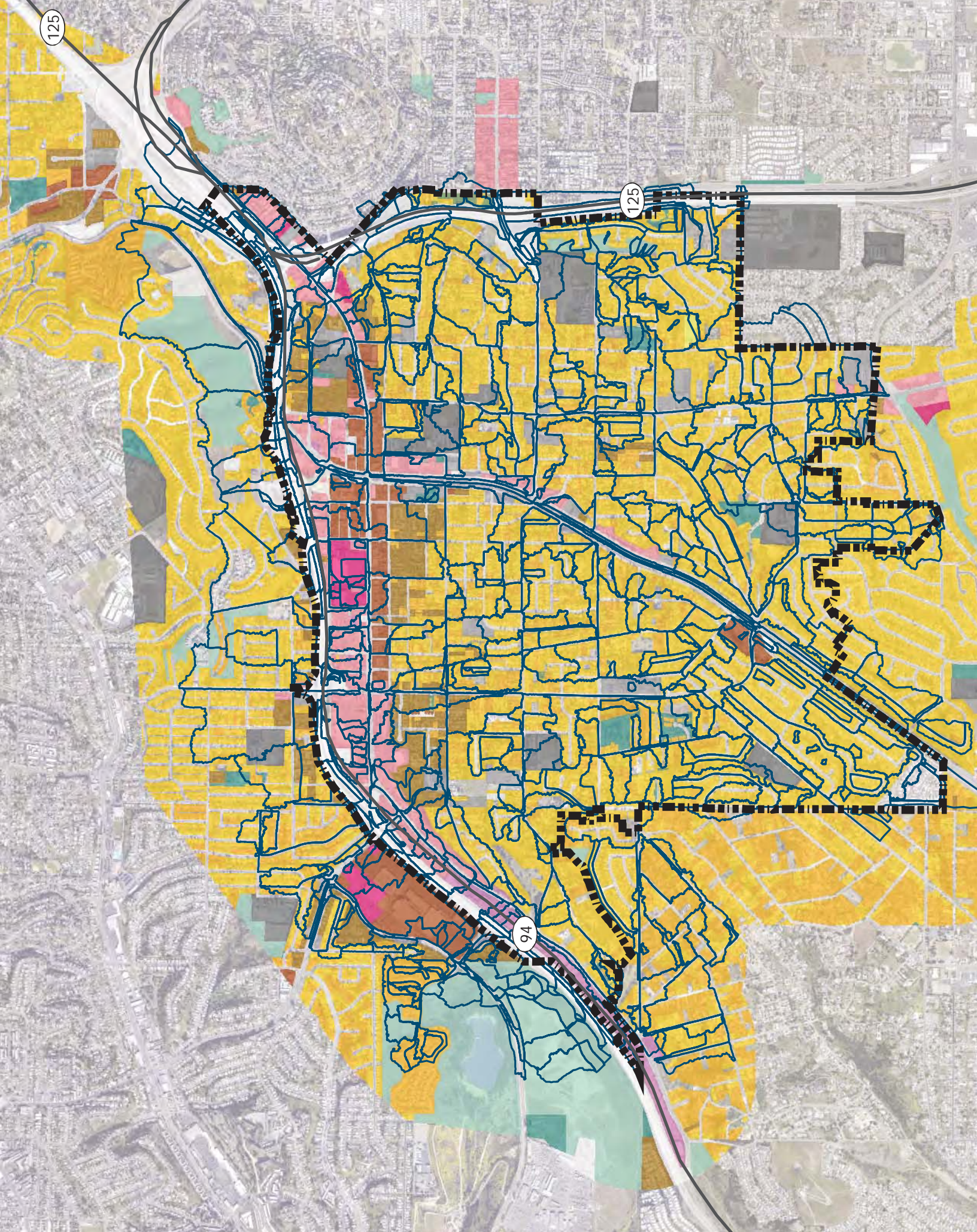
The hydro scouring method effectively removes grit and grease accumulation from sewer lines. High water pressure scours the inside of the sewer pipelines, restoring the hydraulic capacity.

6. Pipe Removal and Replacement

Removal and replacement is recommended if the pipe cannot be rehabilitated.

C. GIS Dataset Exhibits



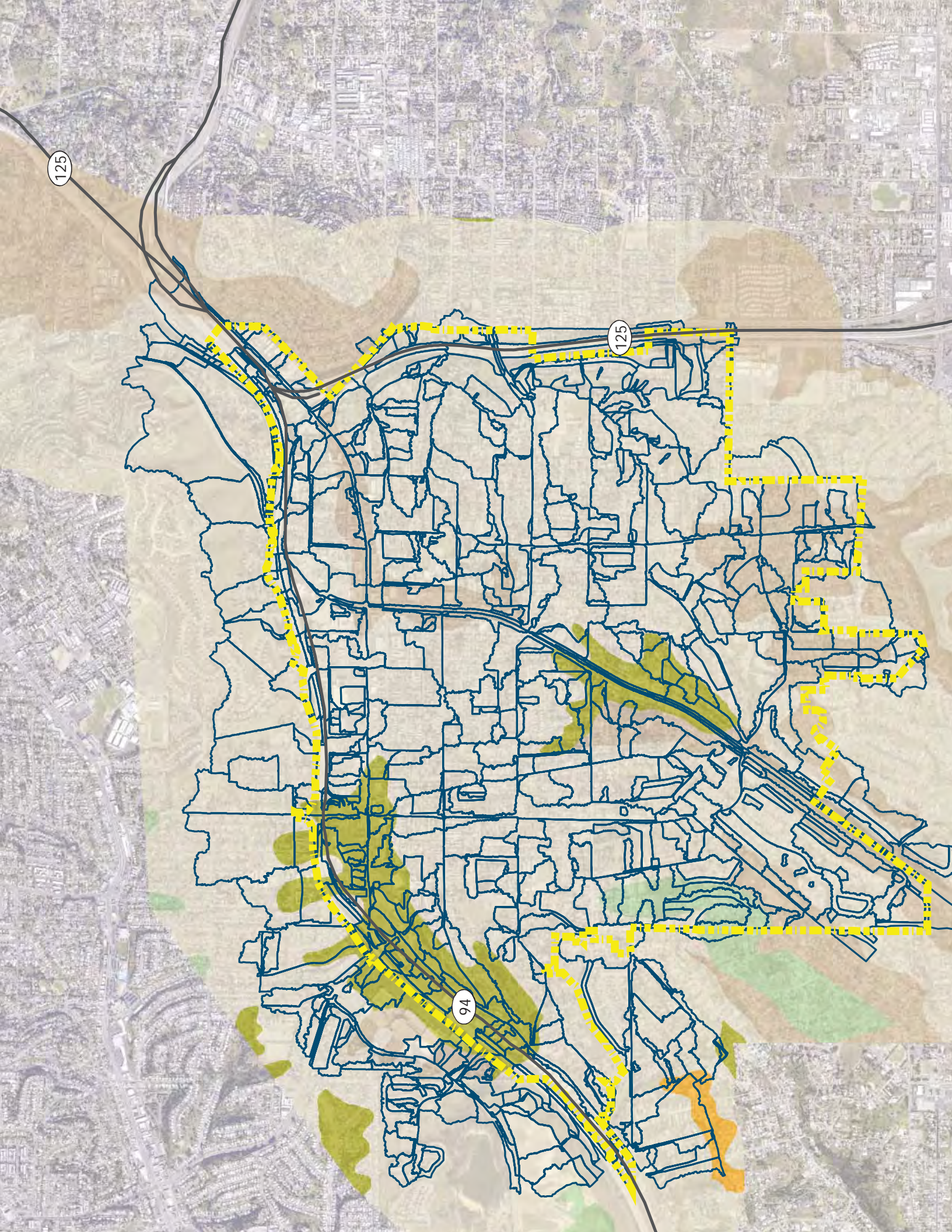


125

125

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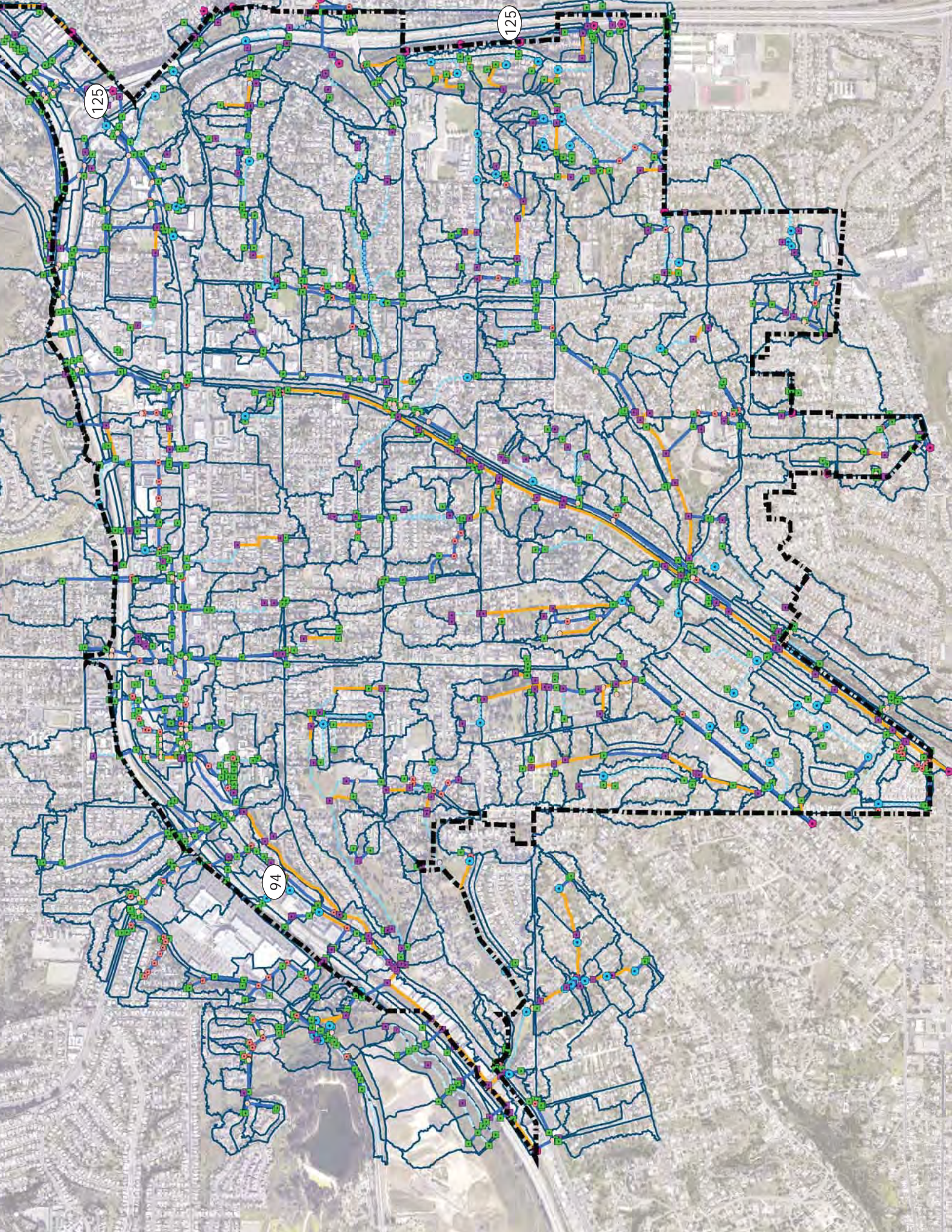
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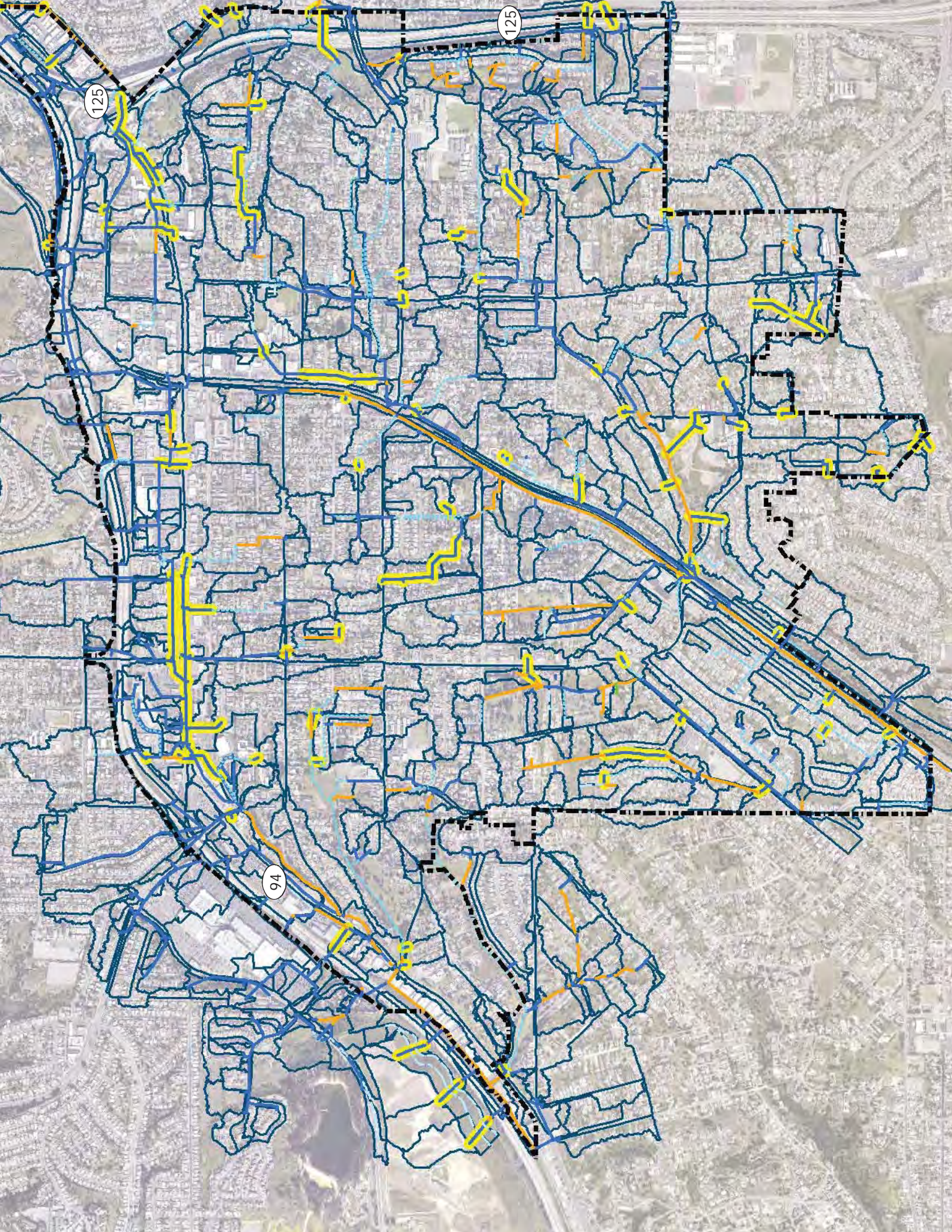


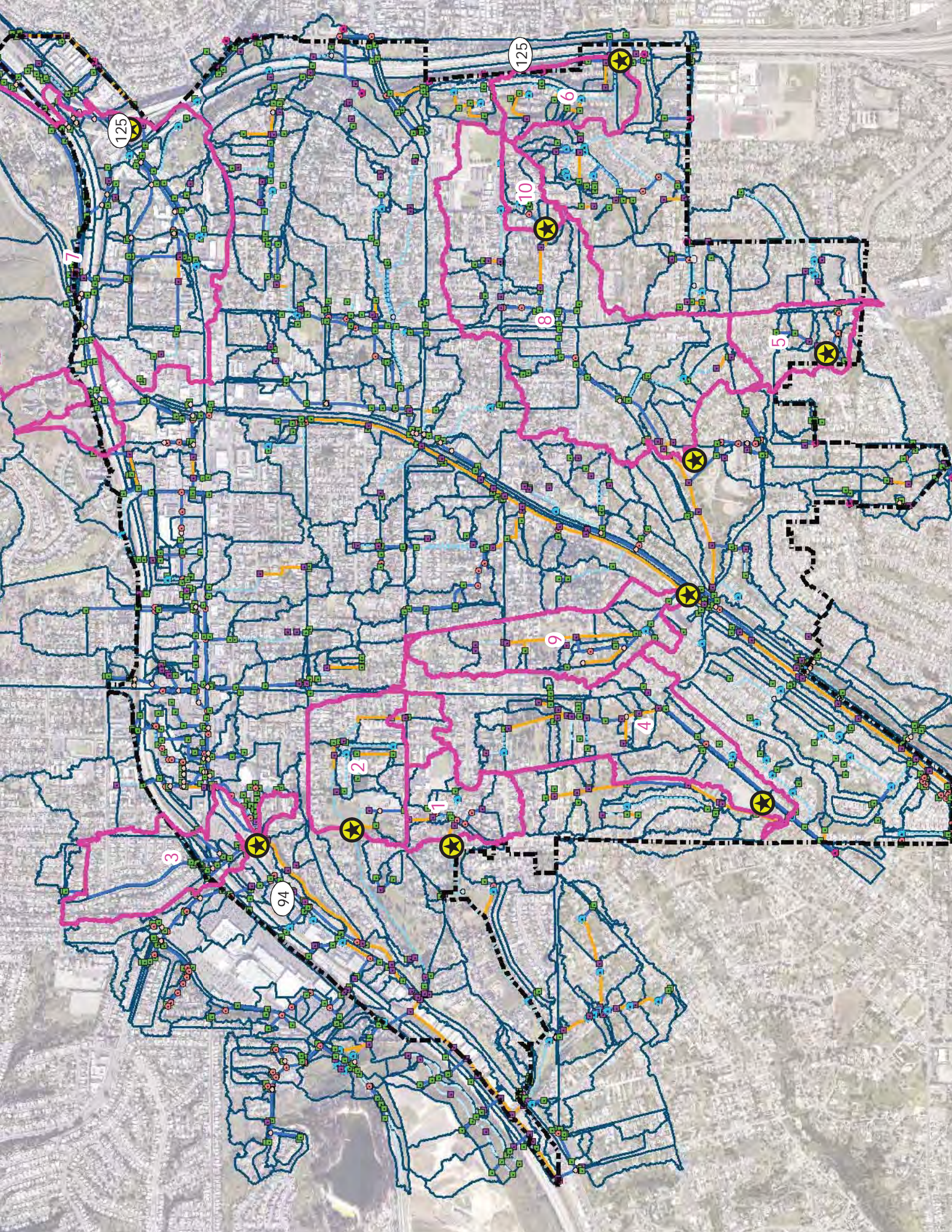
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125

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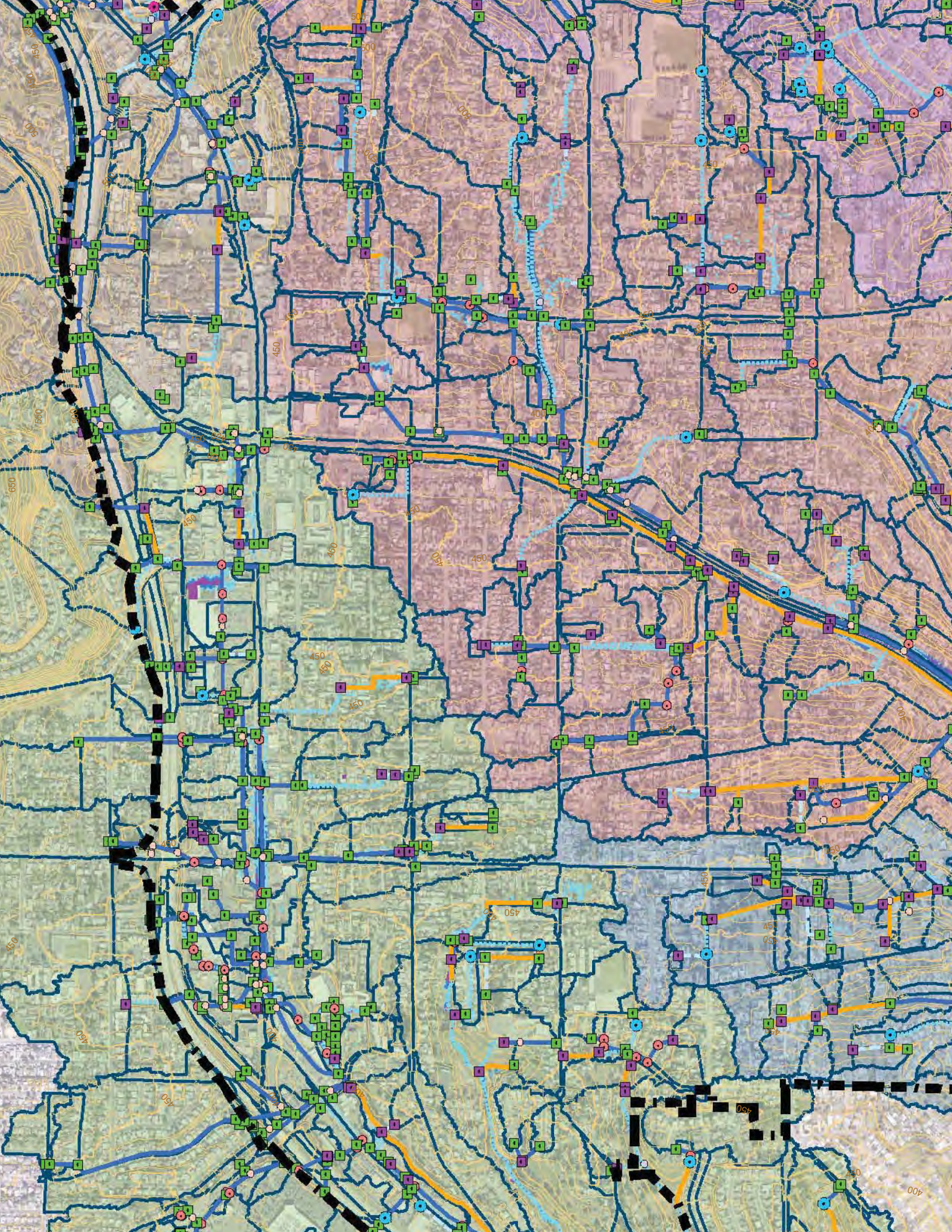
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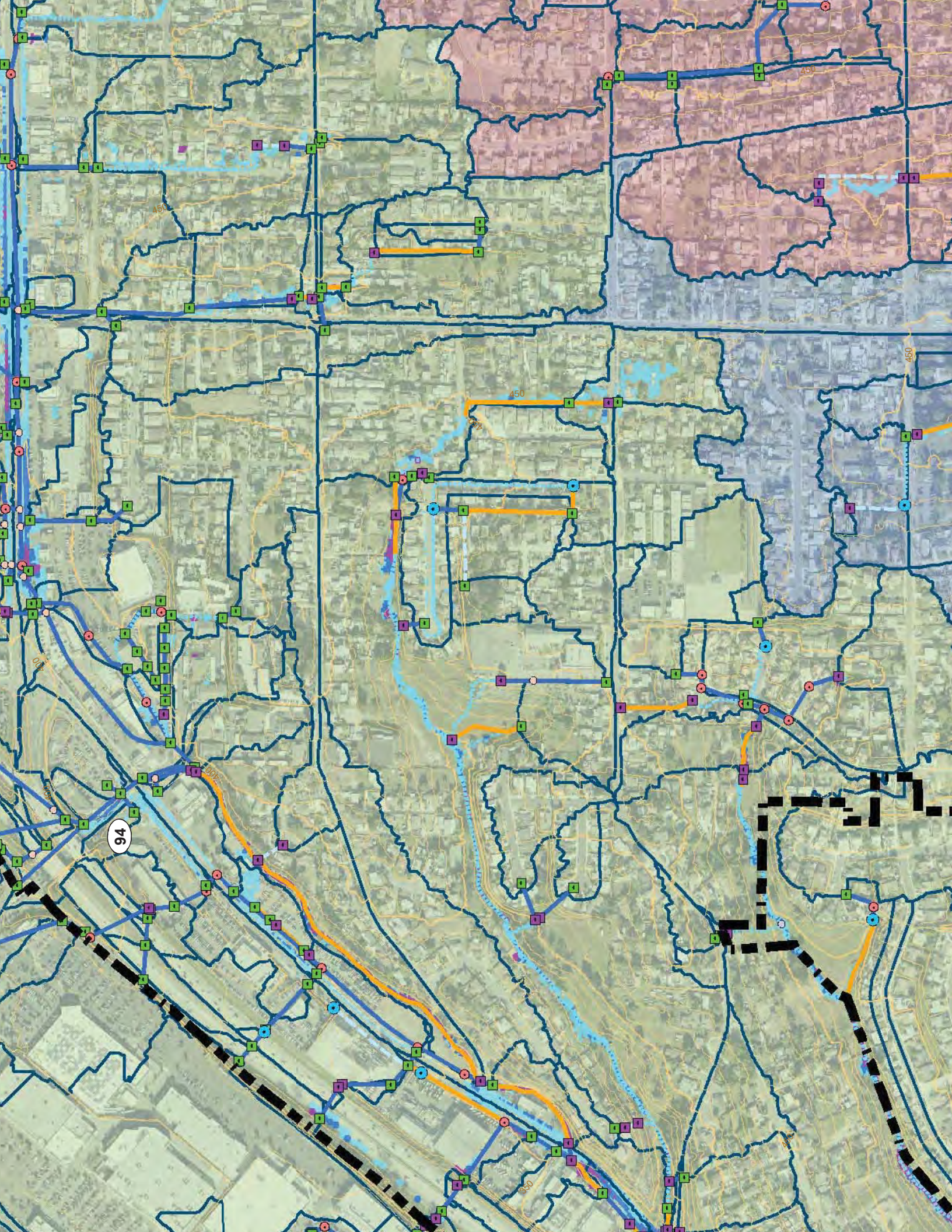
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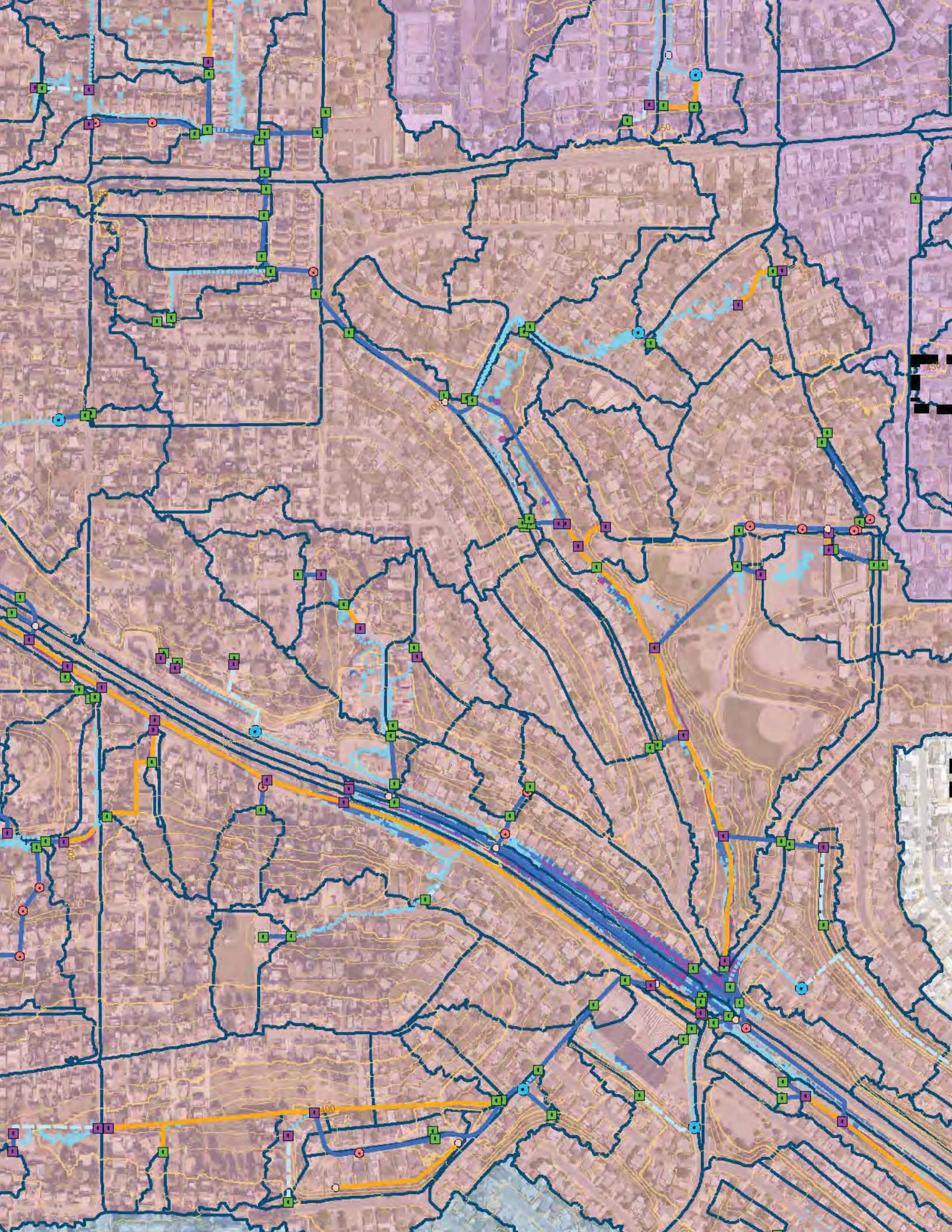
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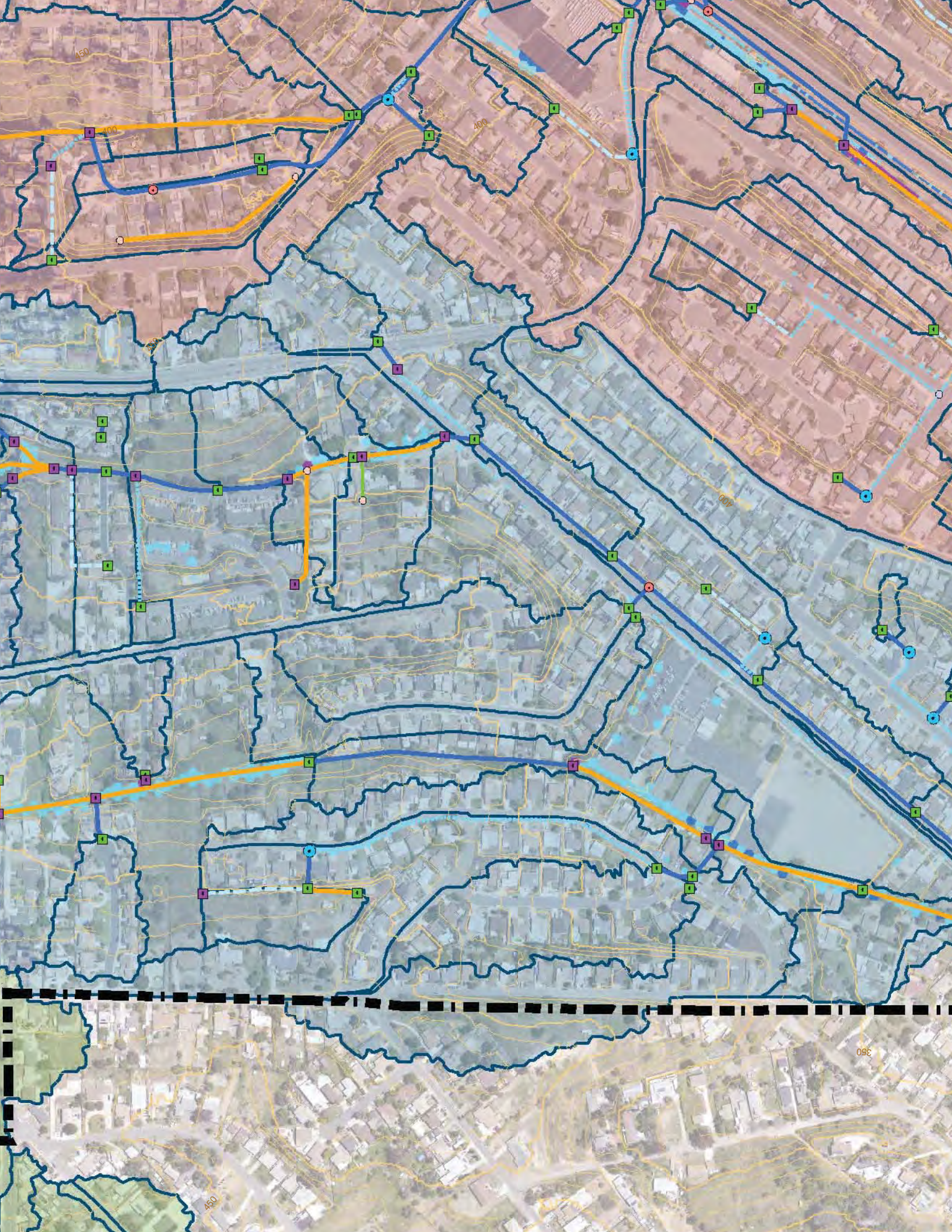
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D. Inundation Maps

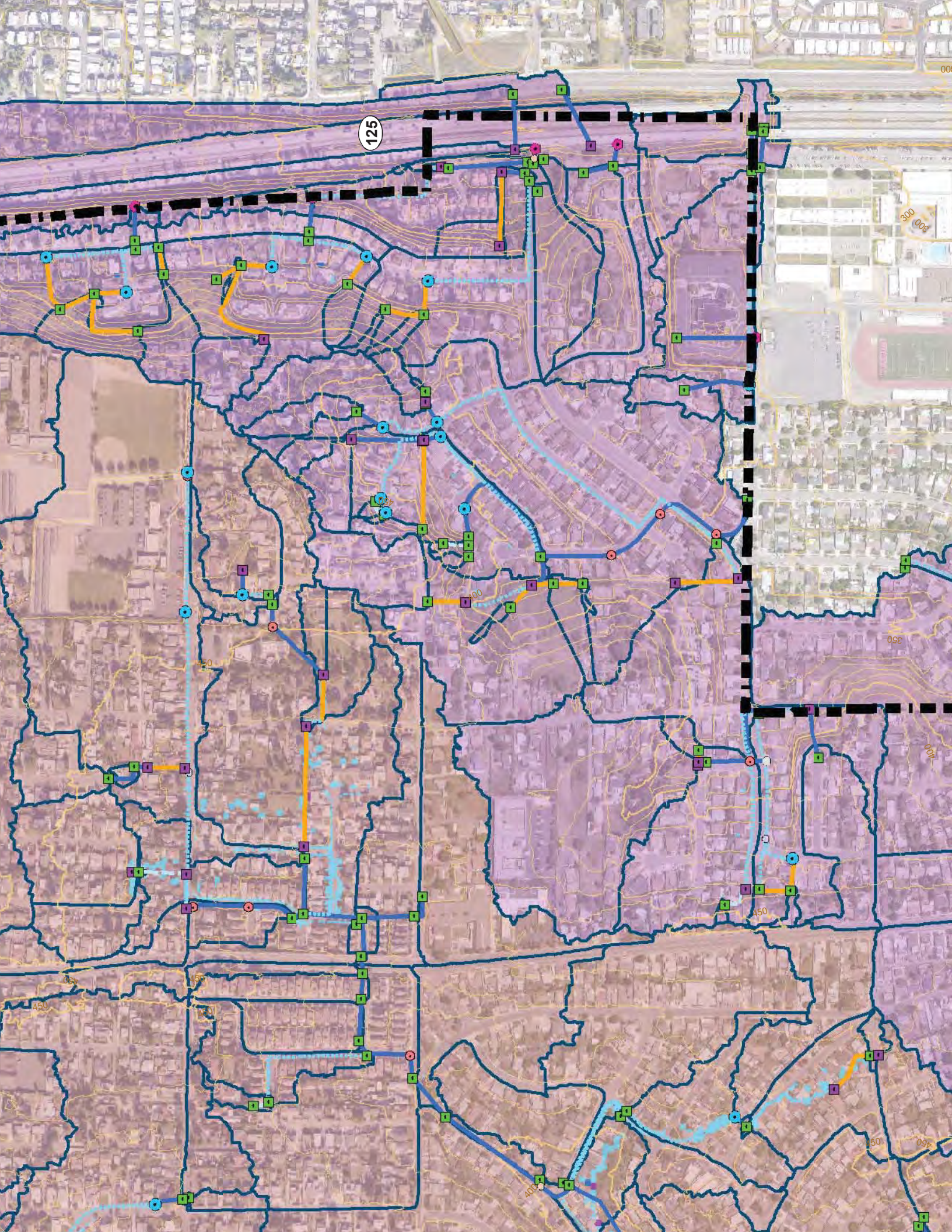












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300 008

350

400

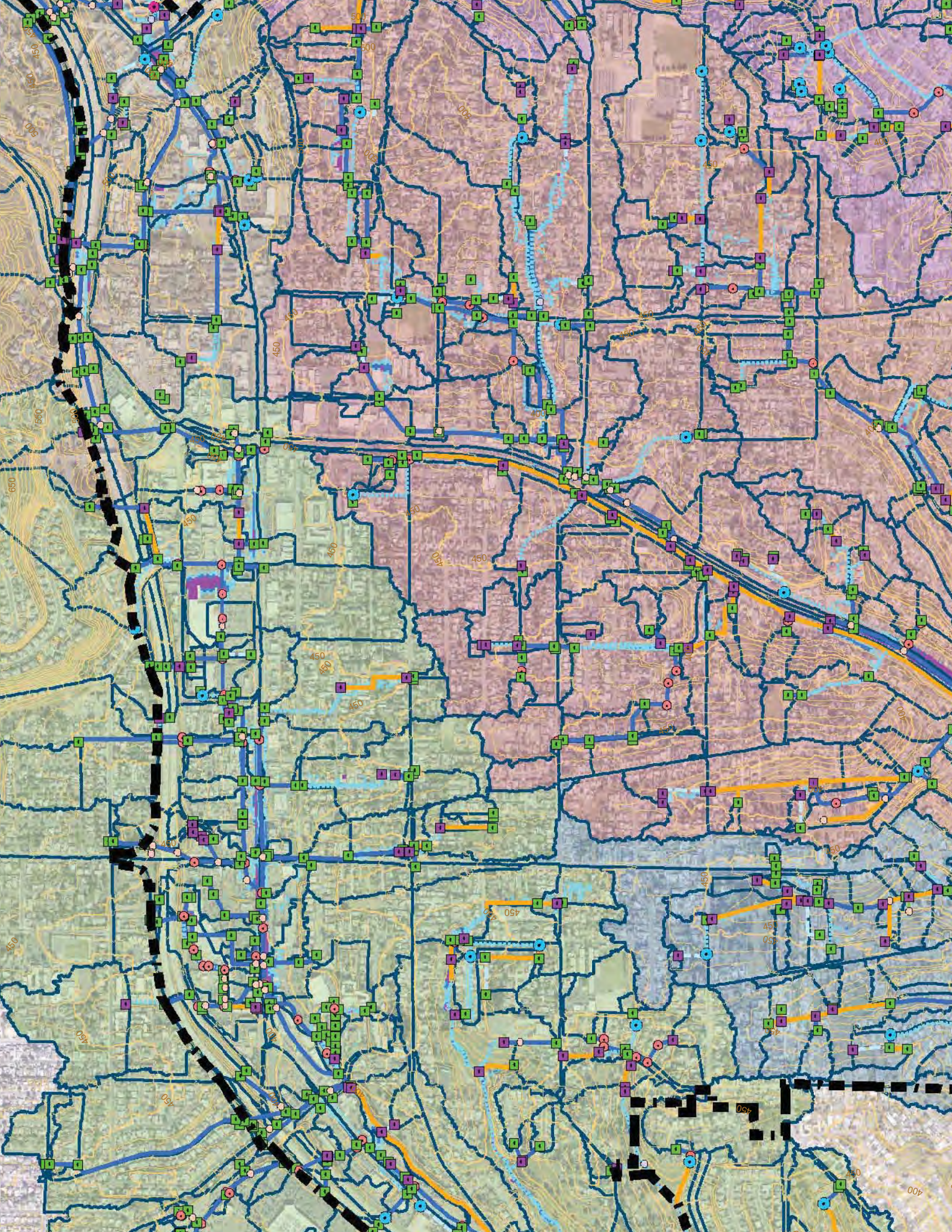
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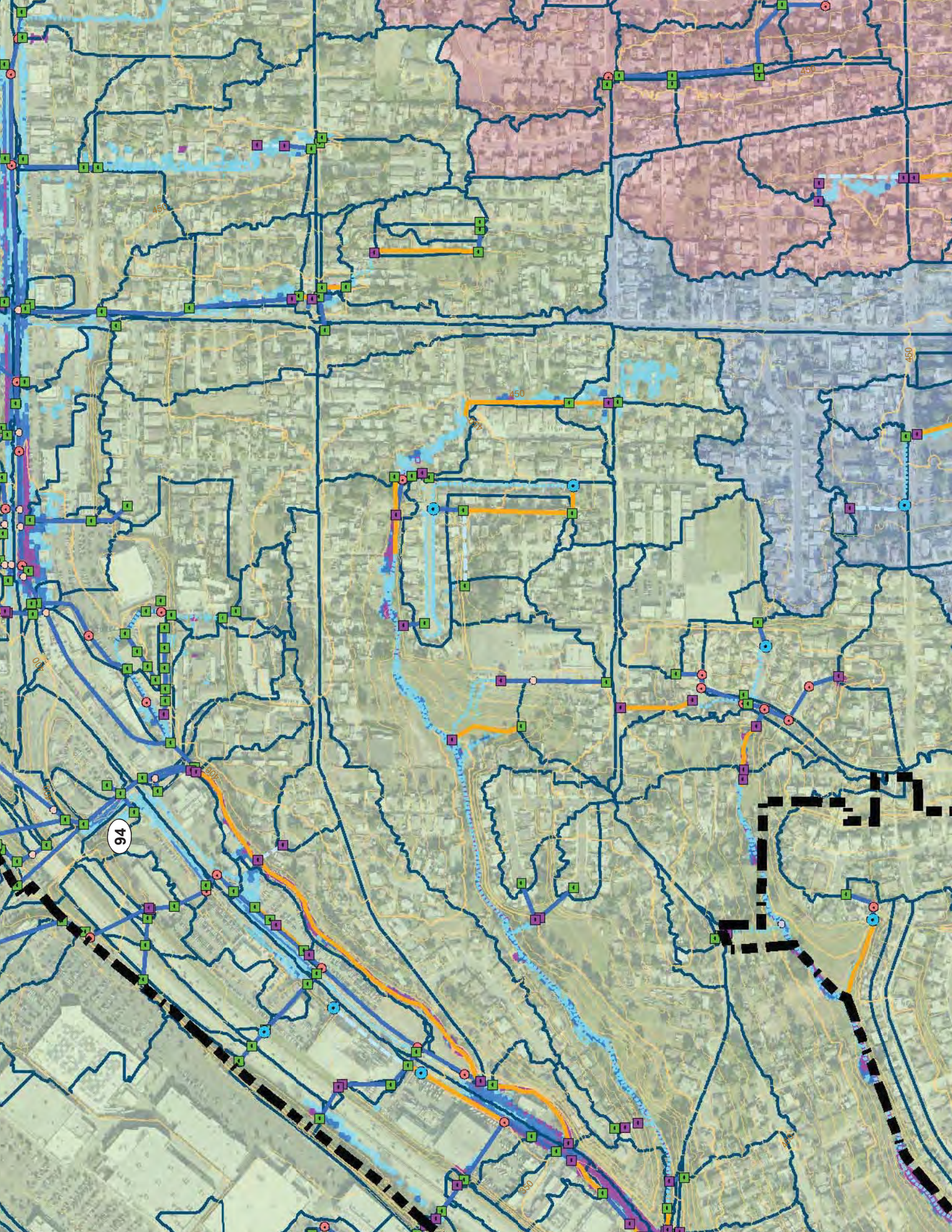
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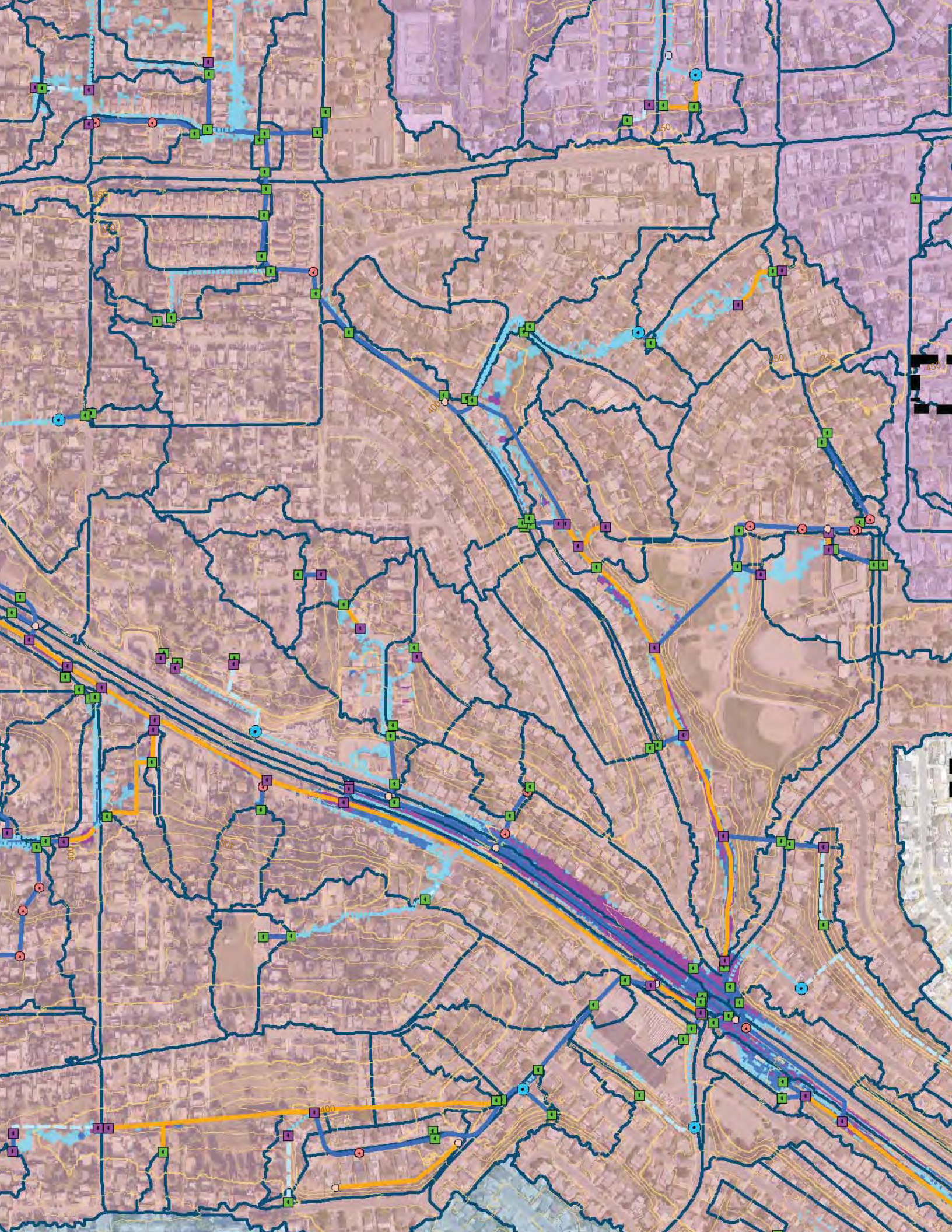
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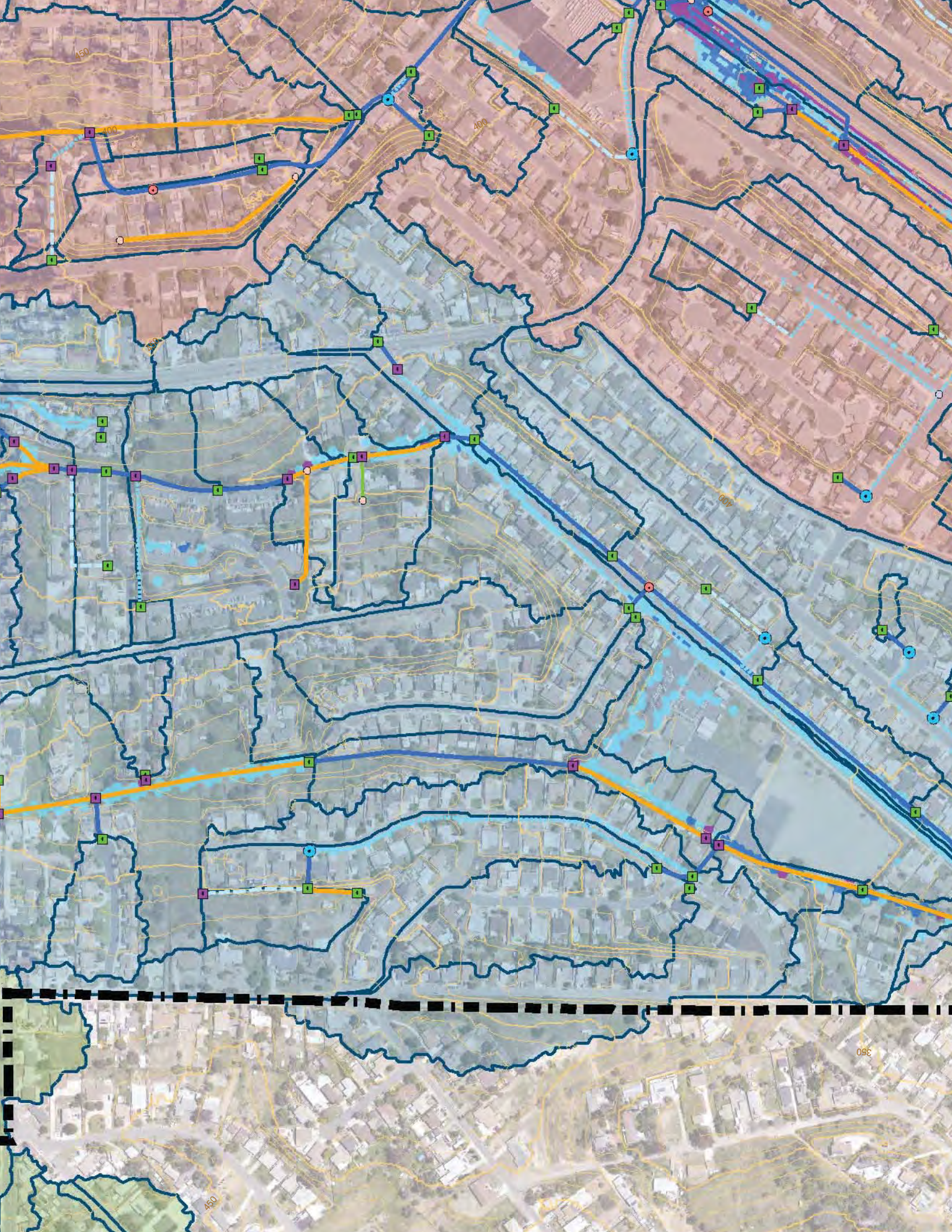
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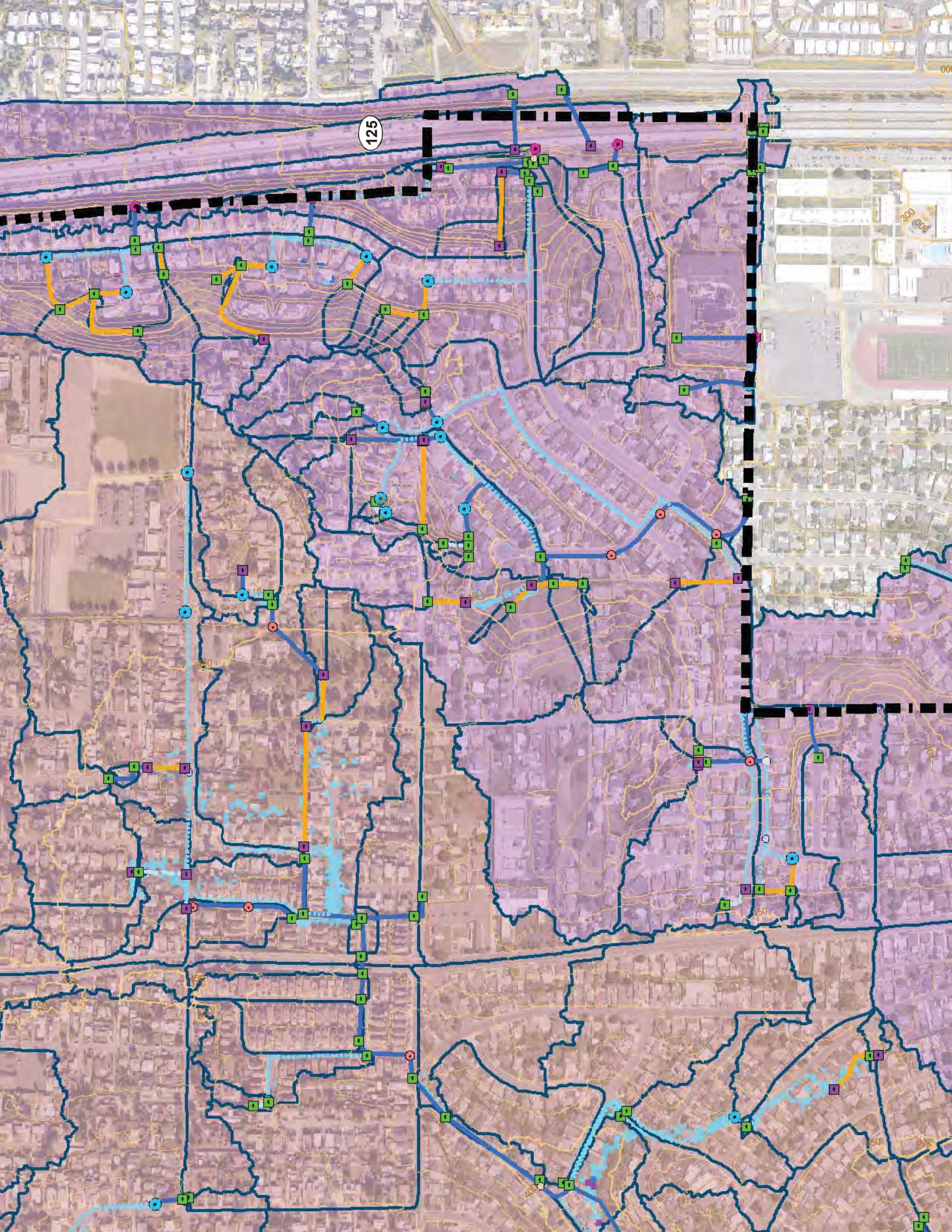


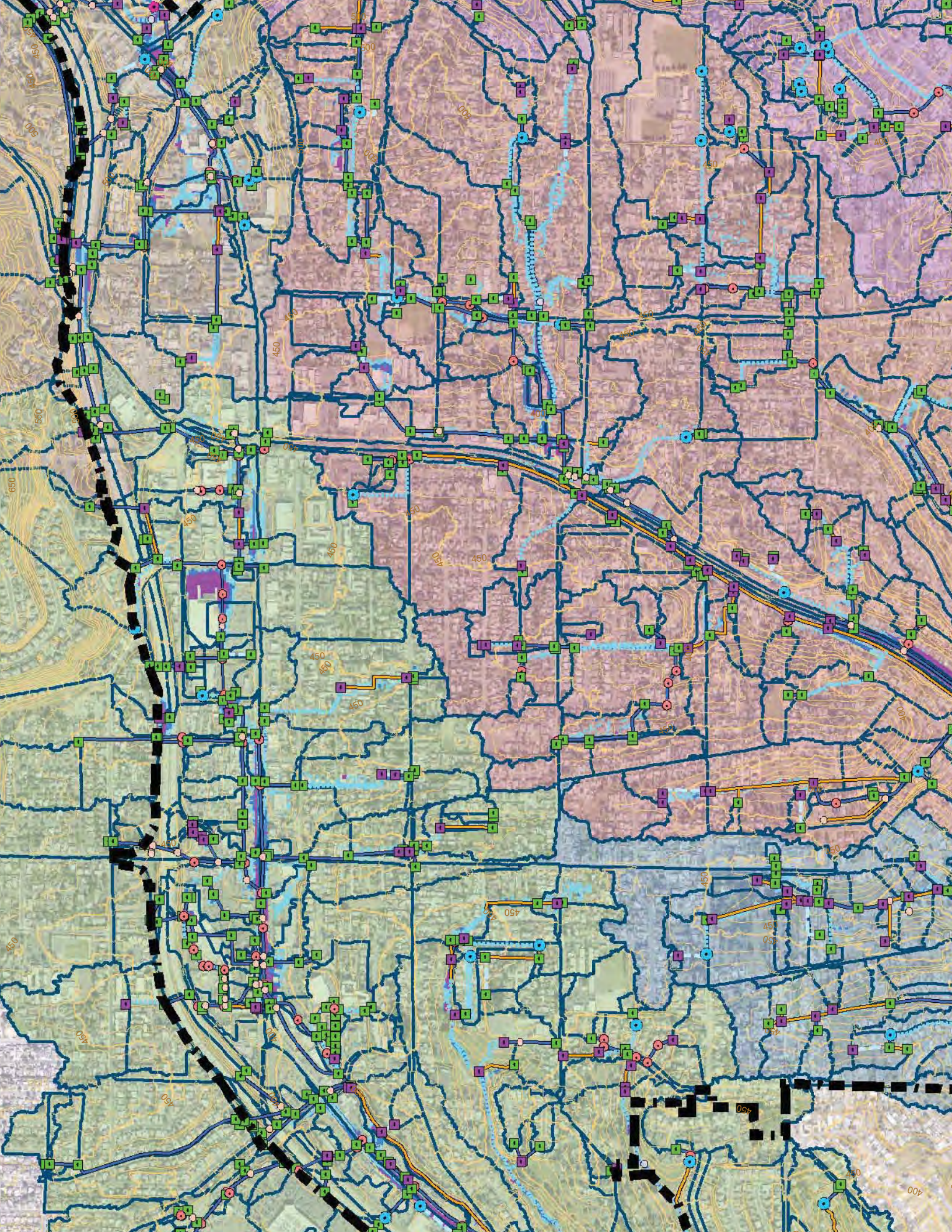


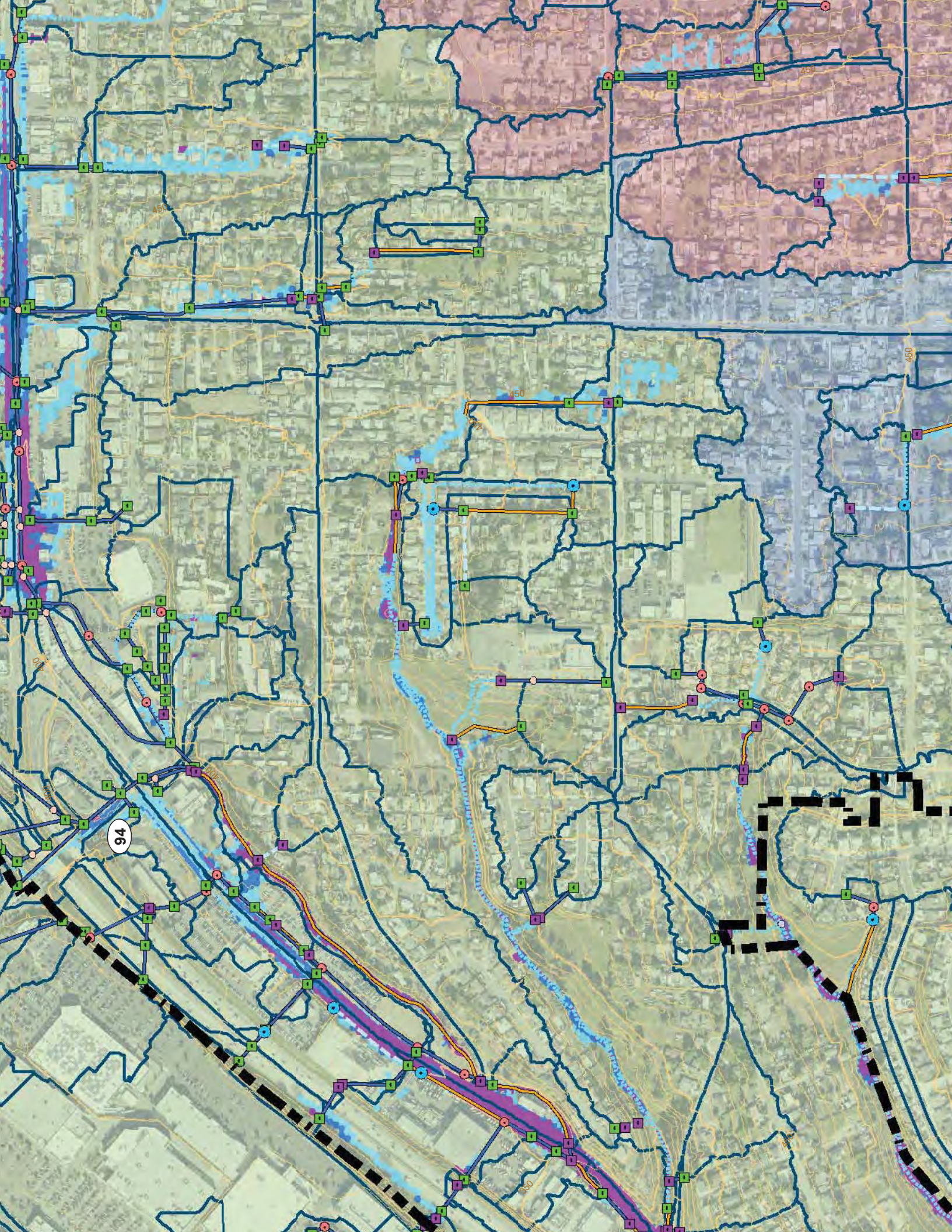


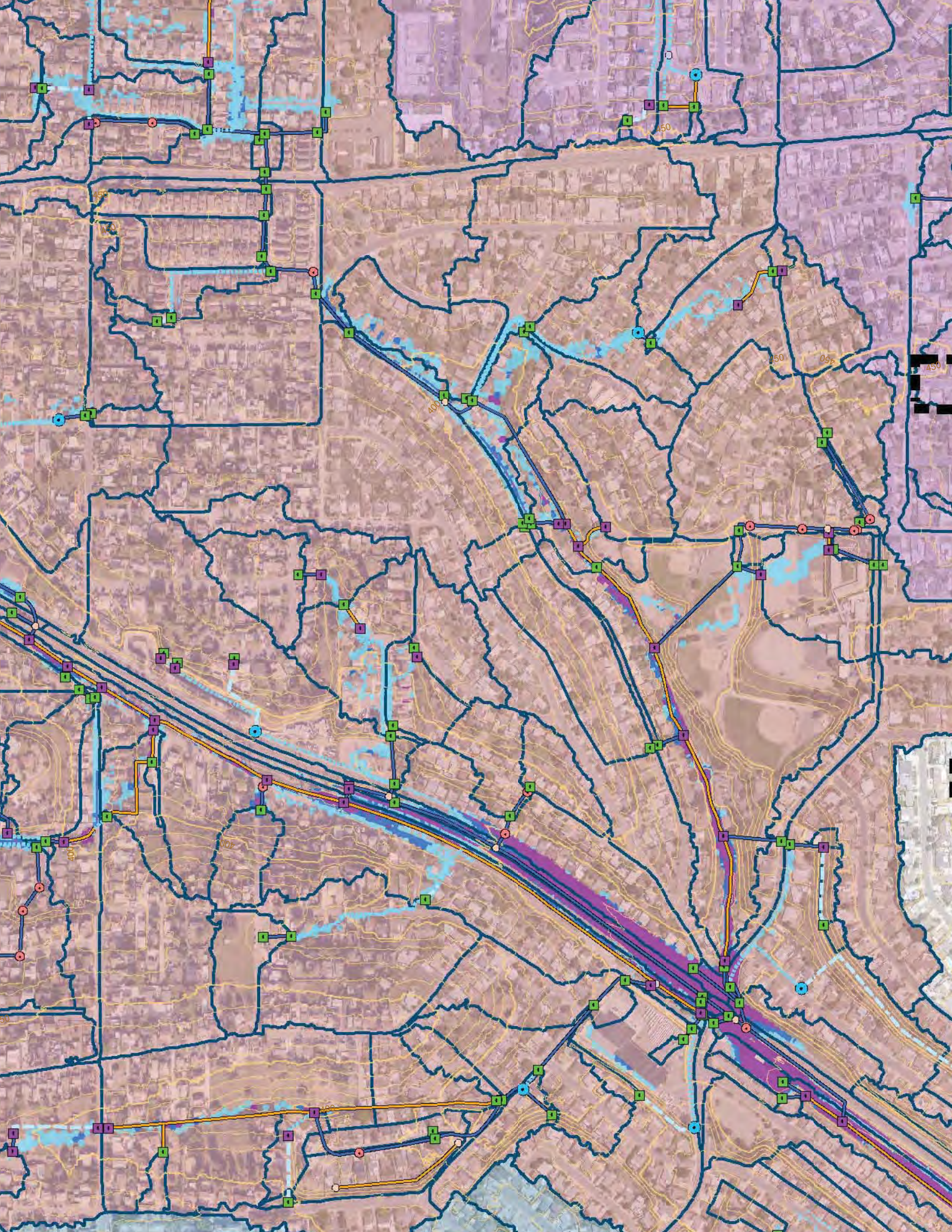


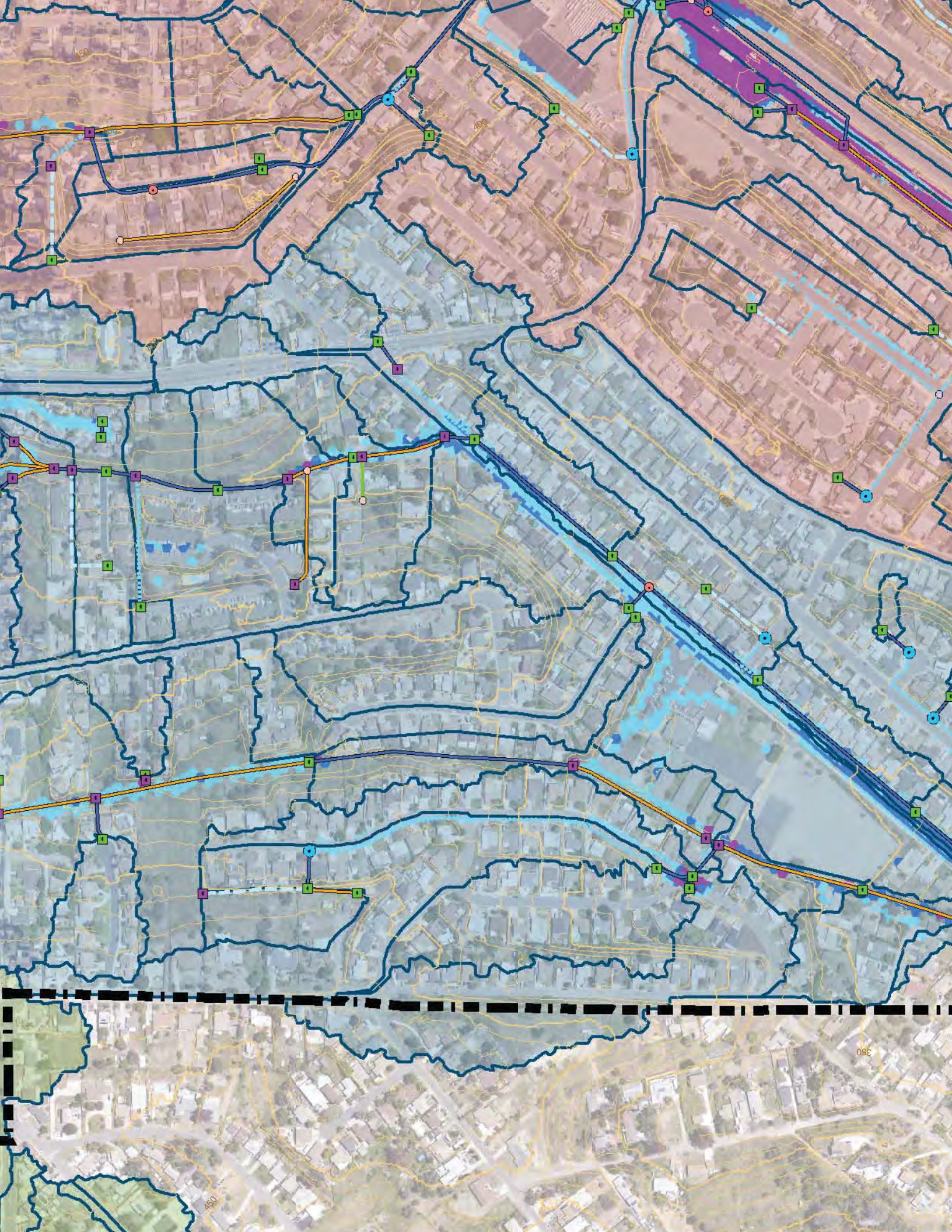




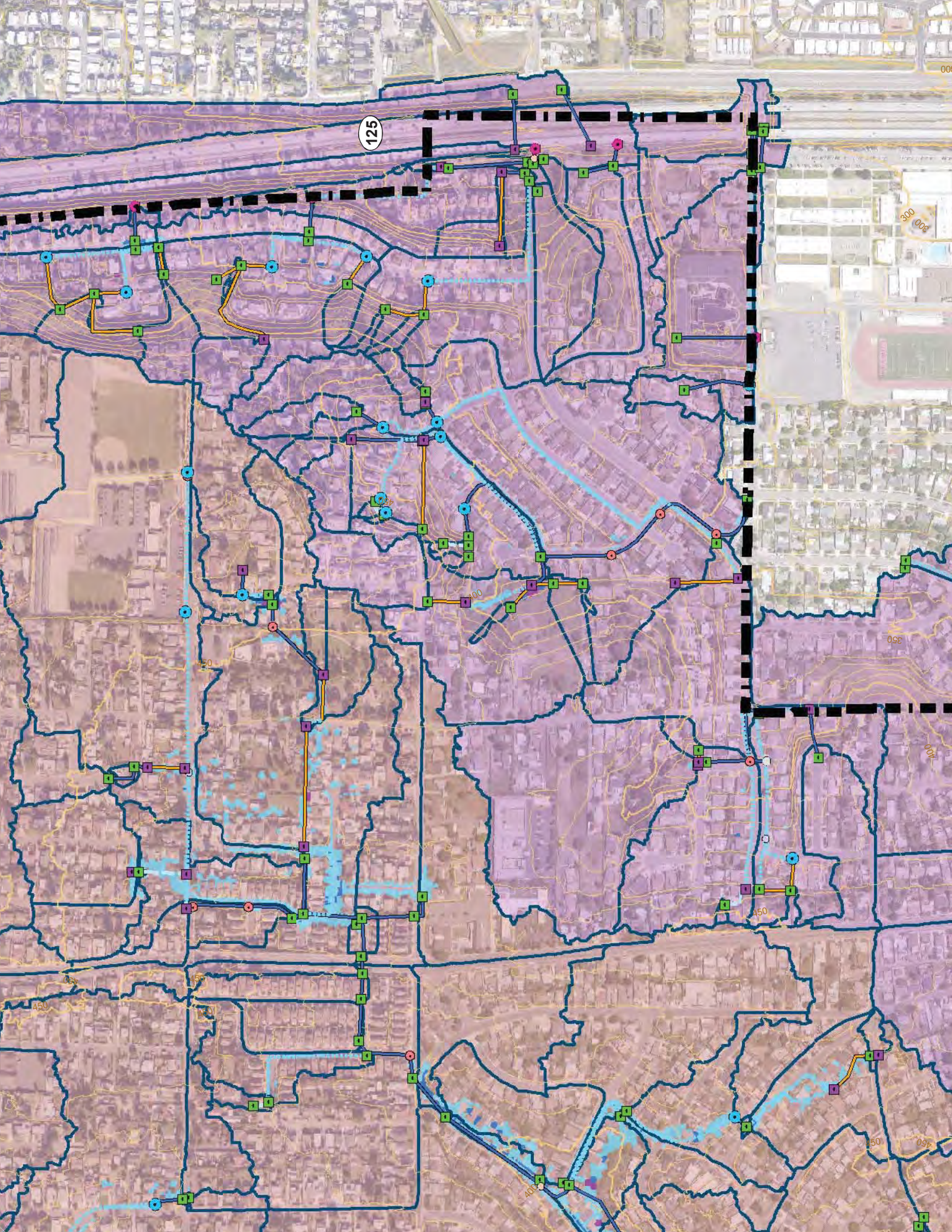


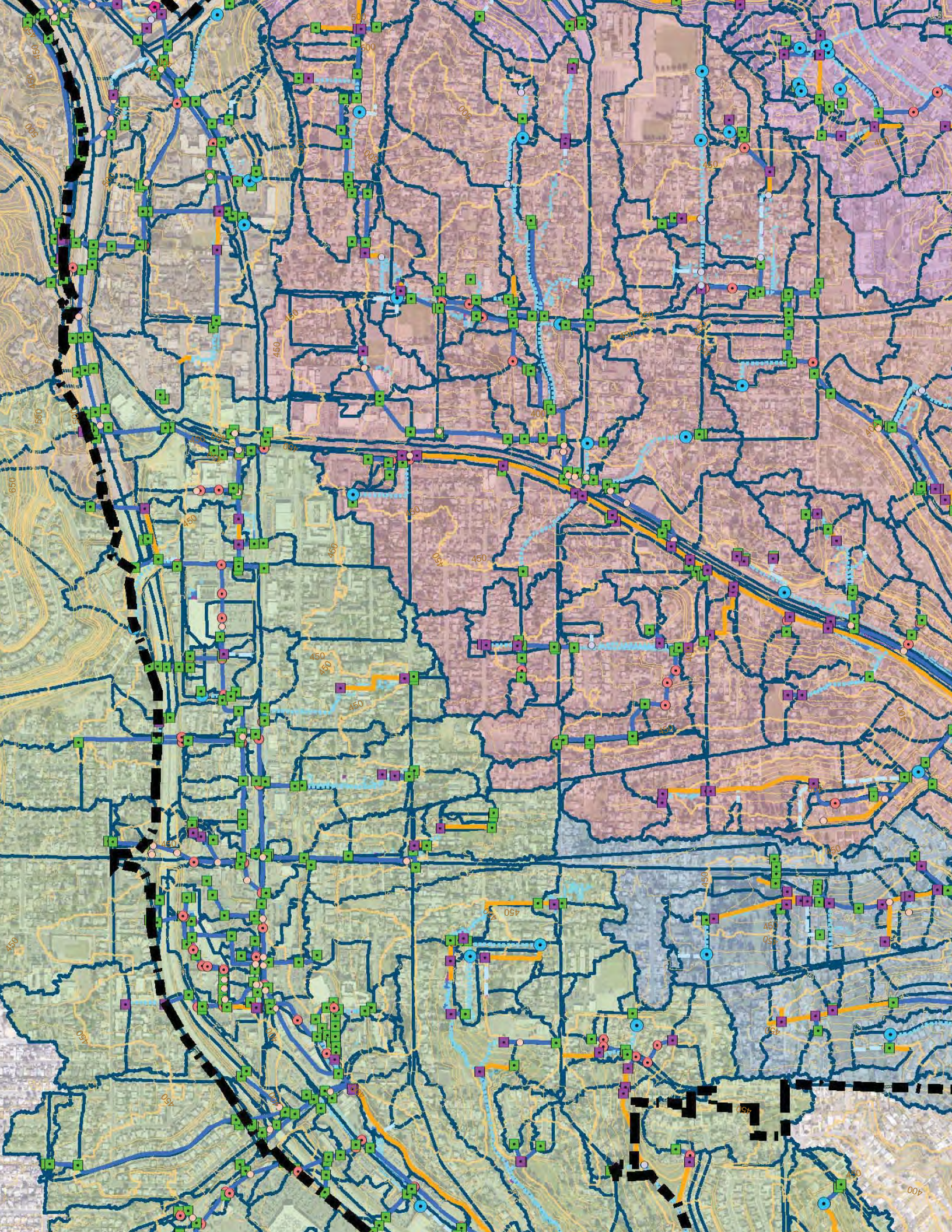


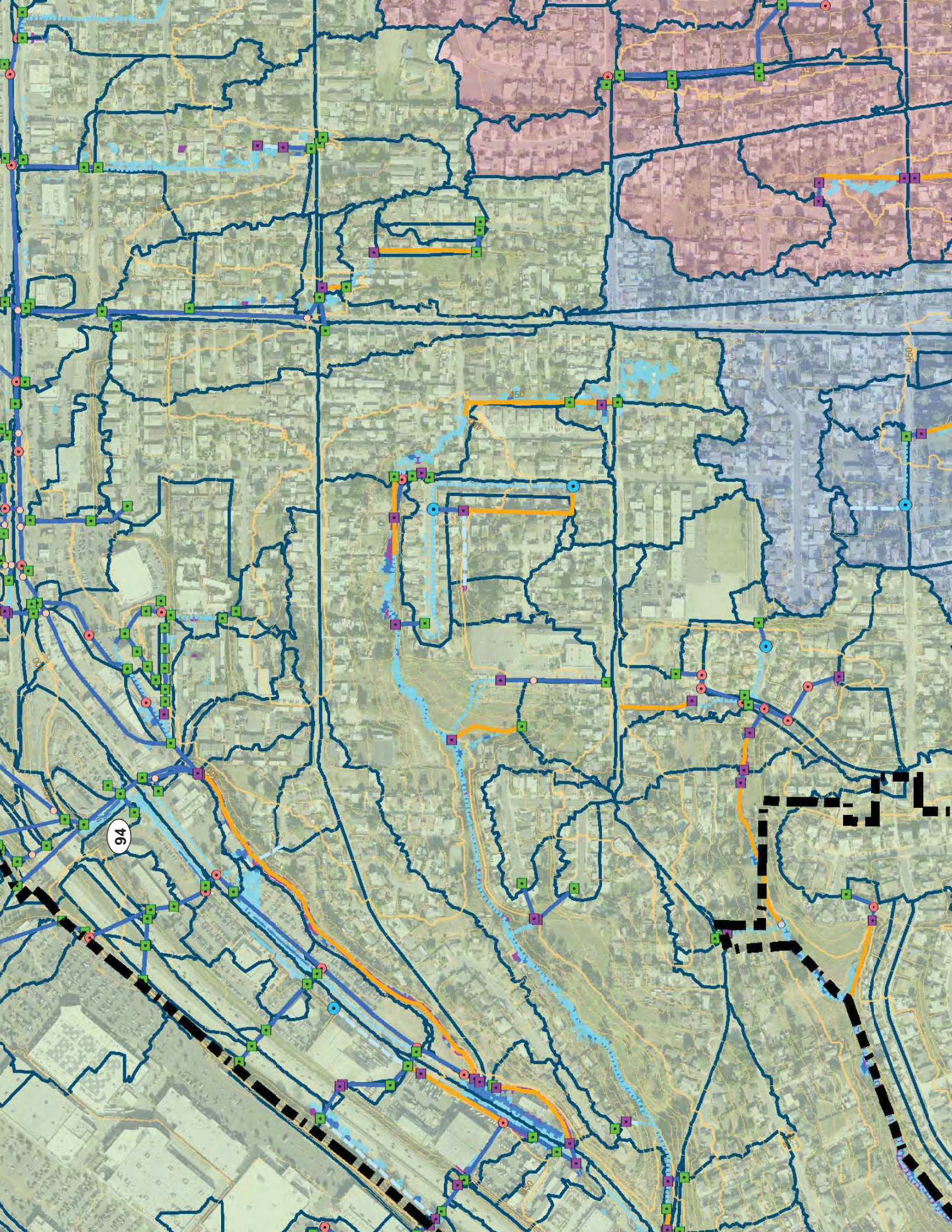


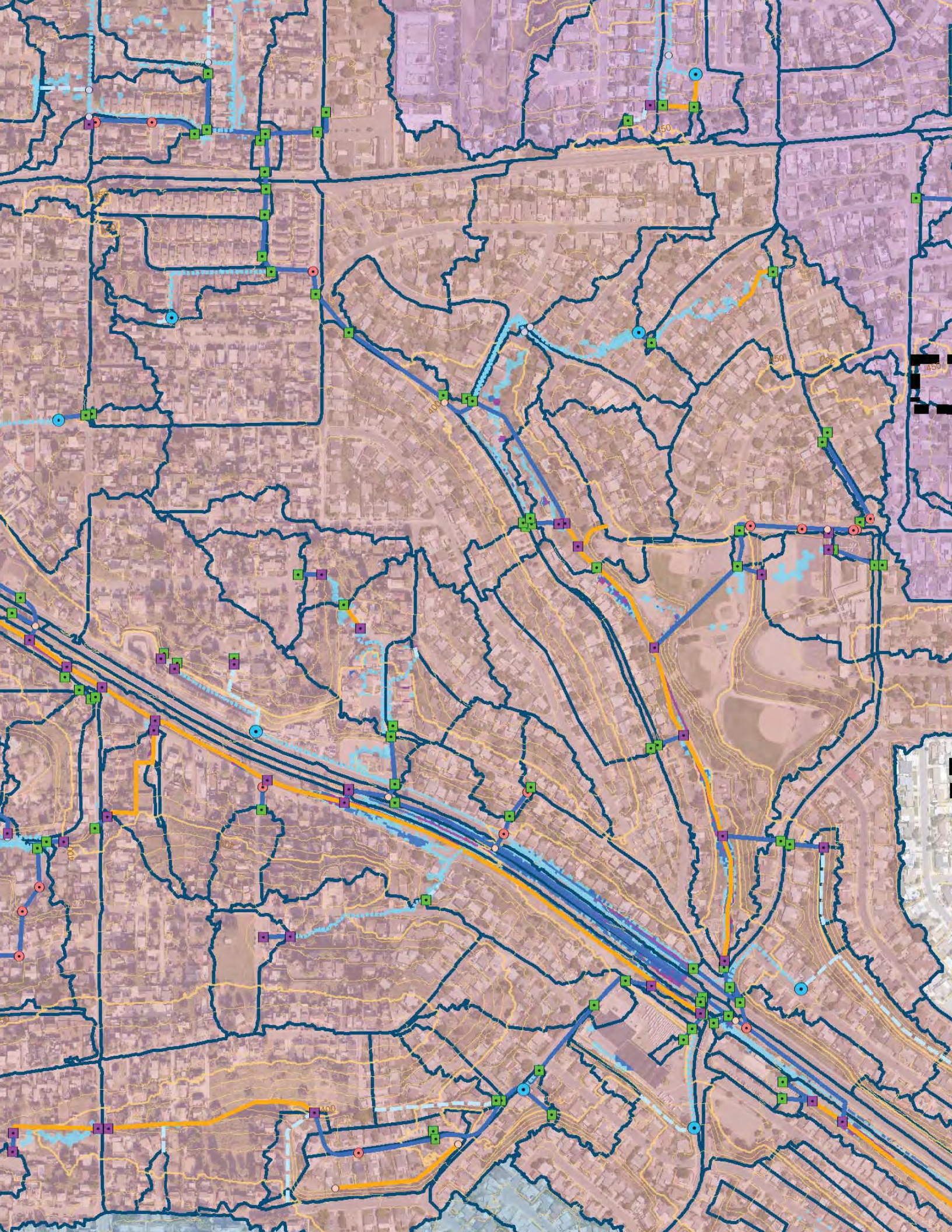


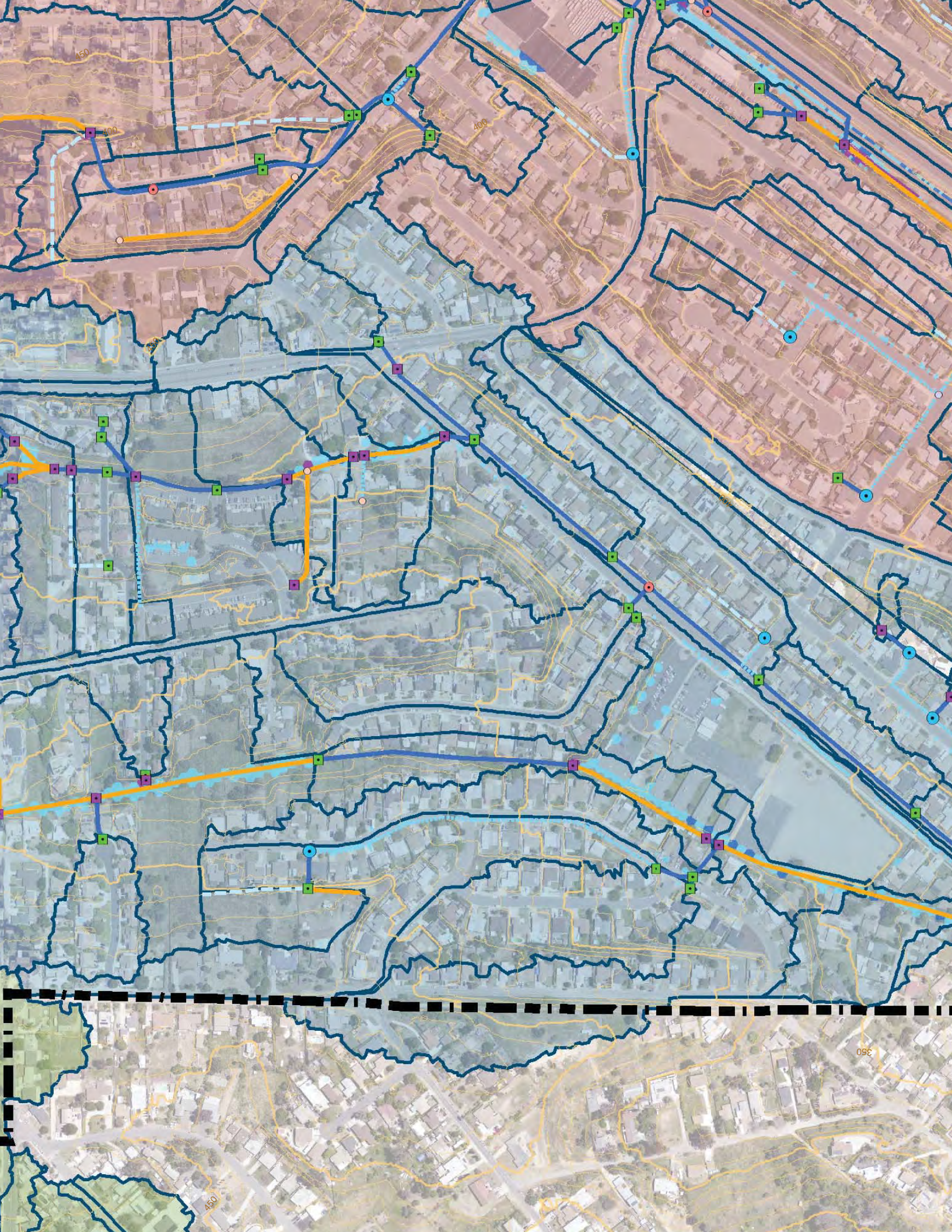




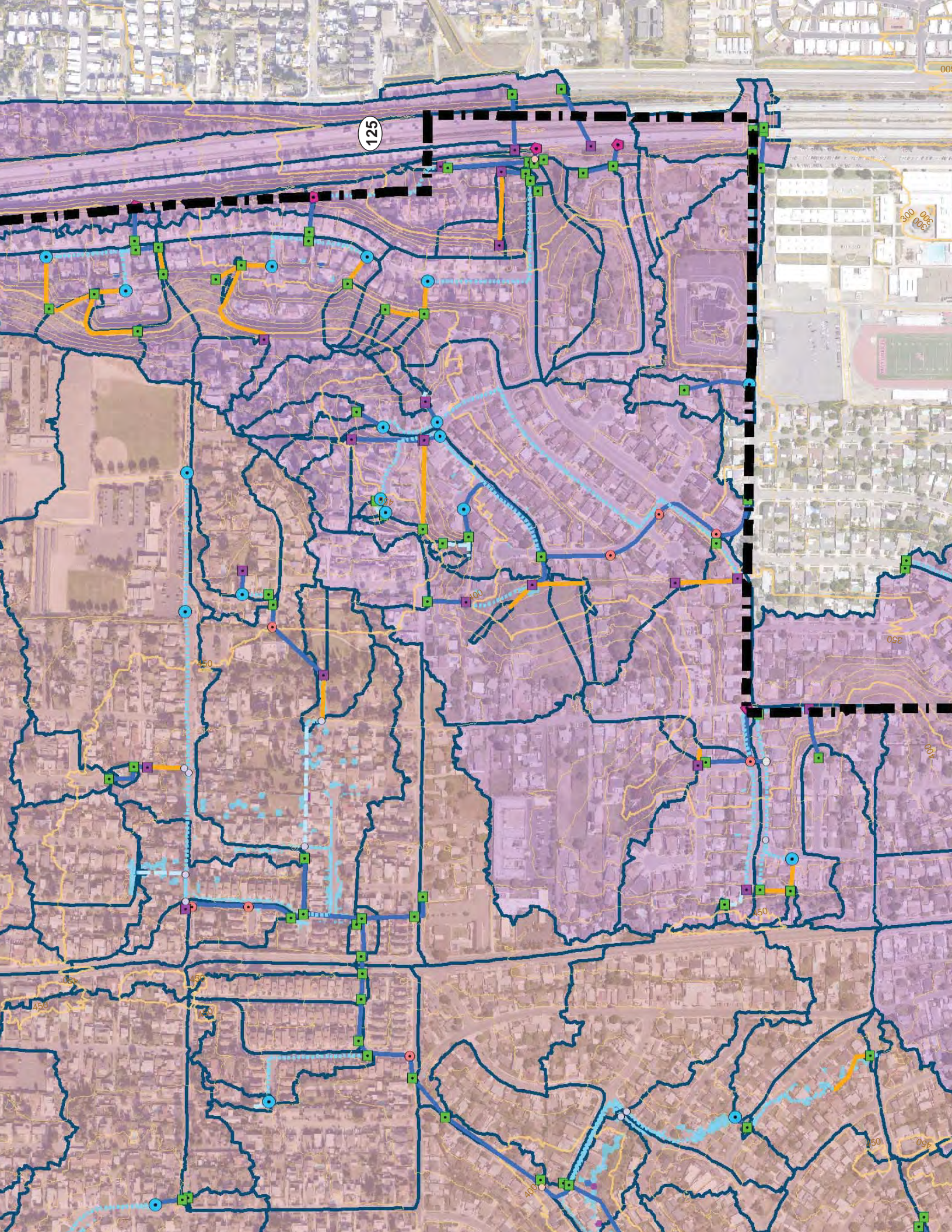


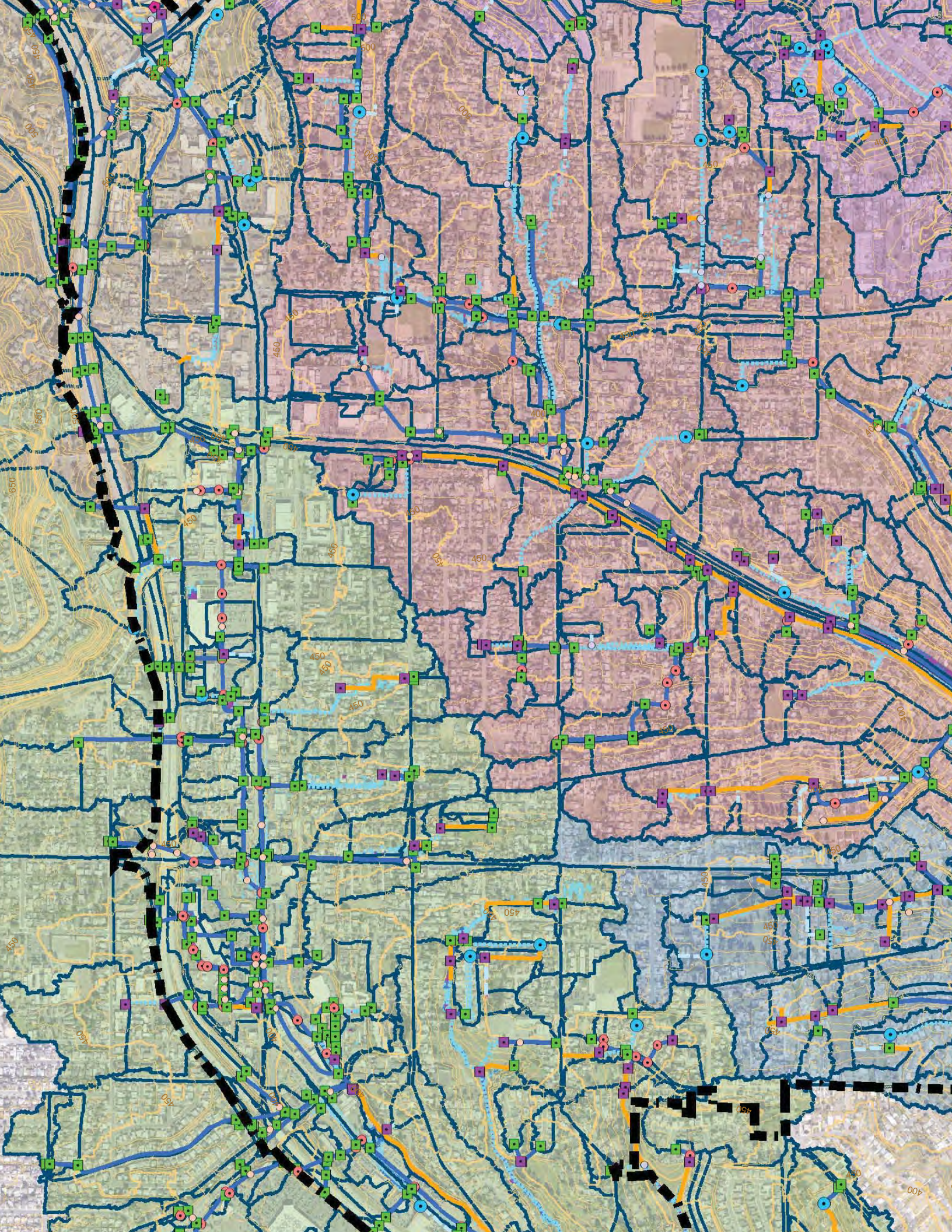


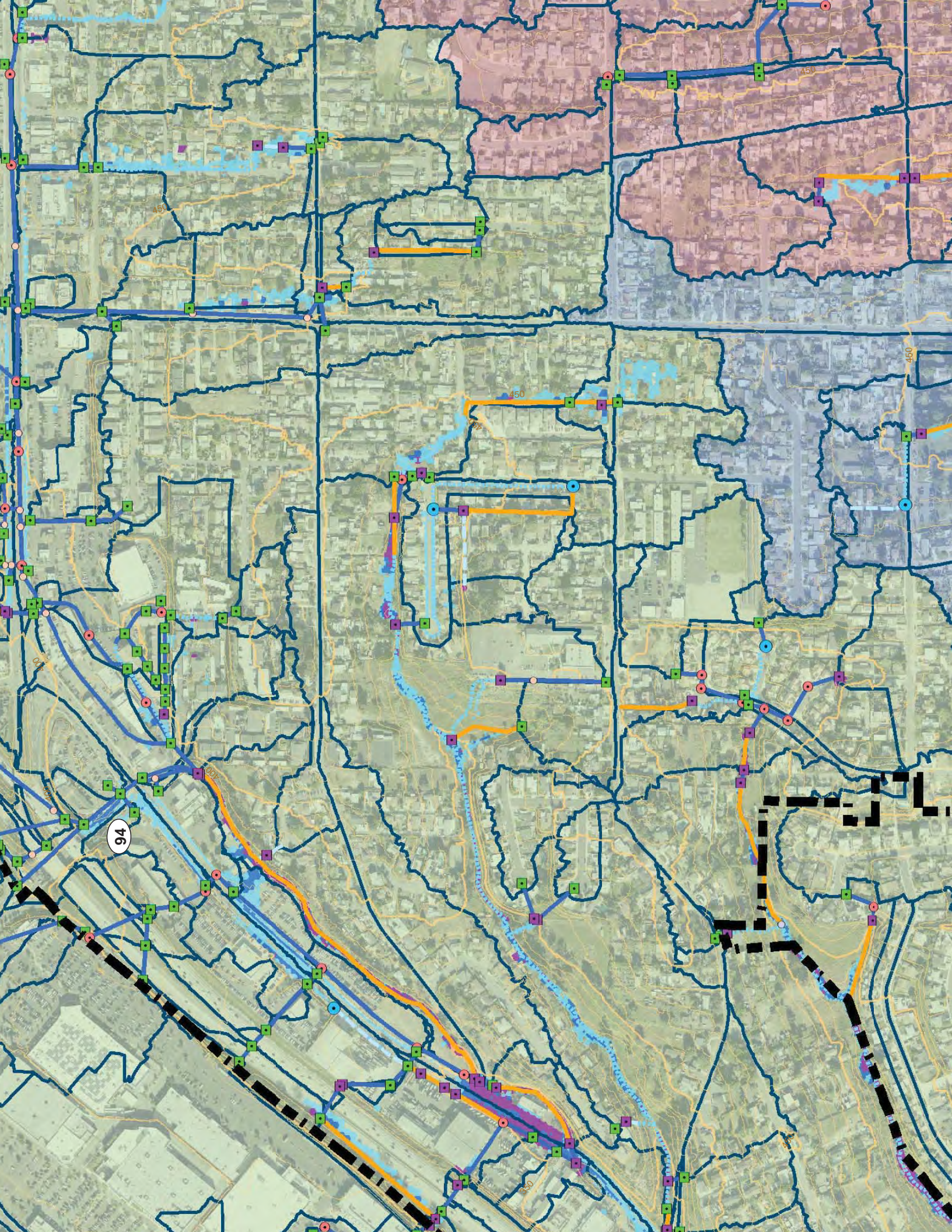


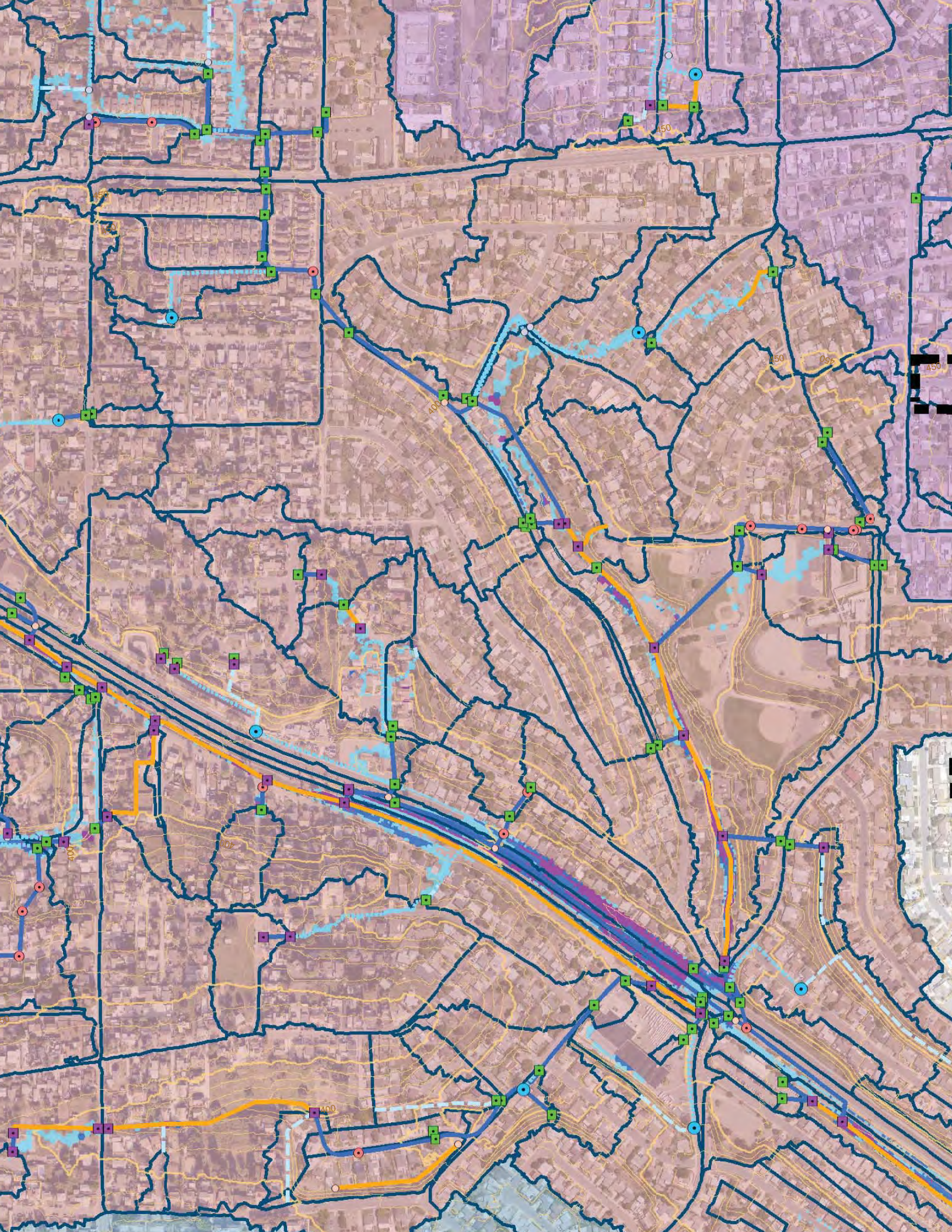


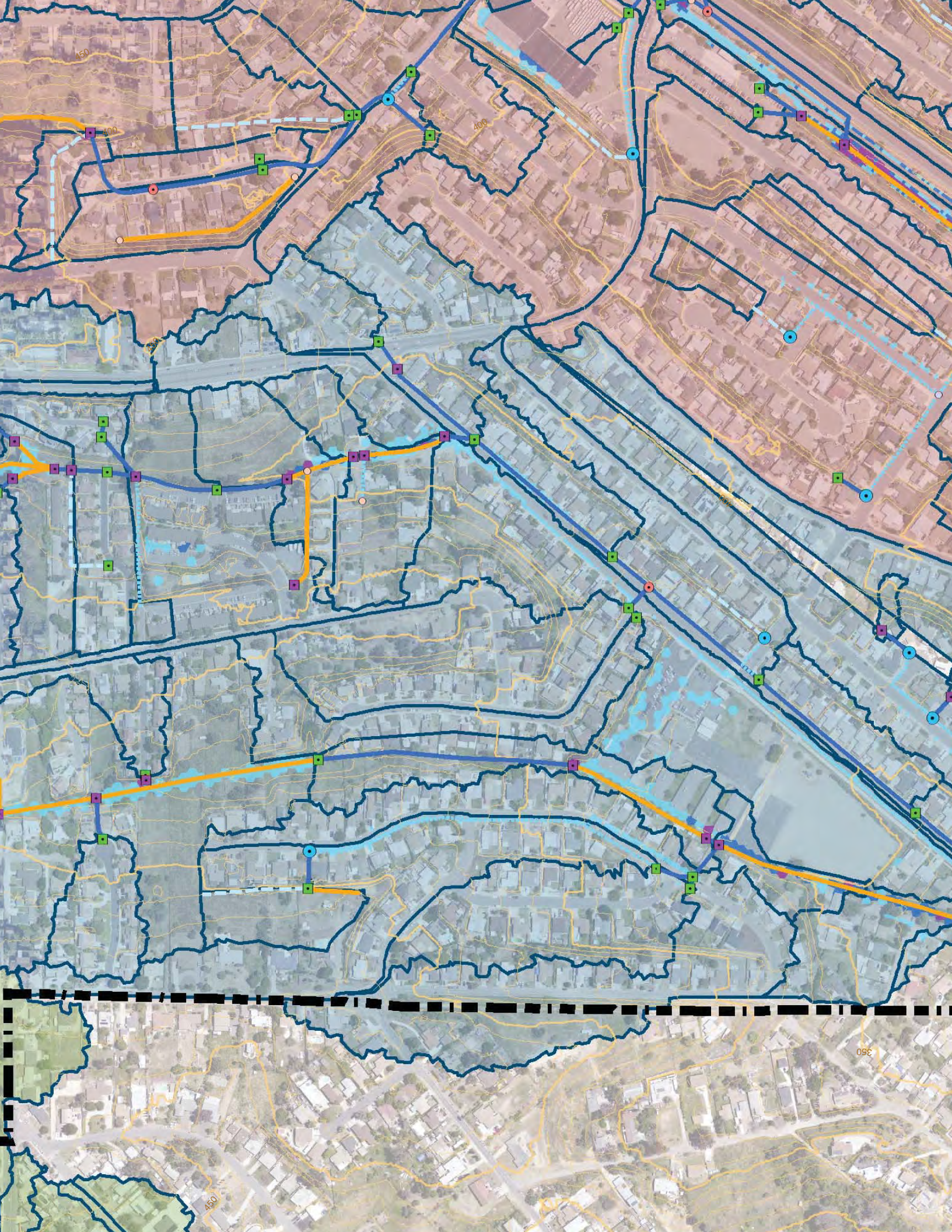




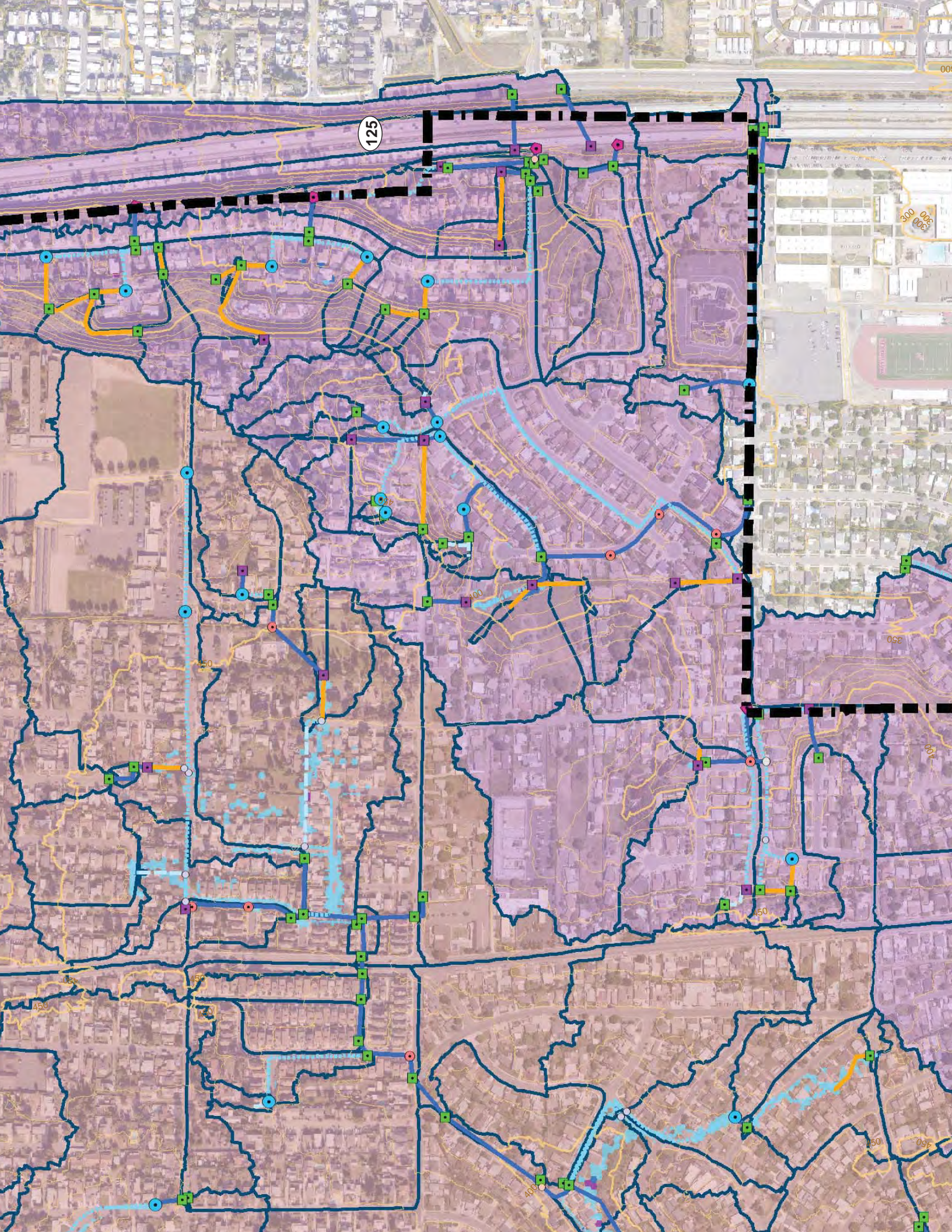


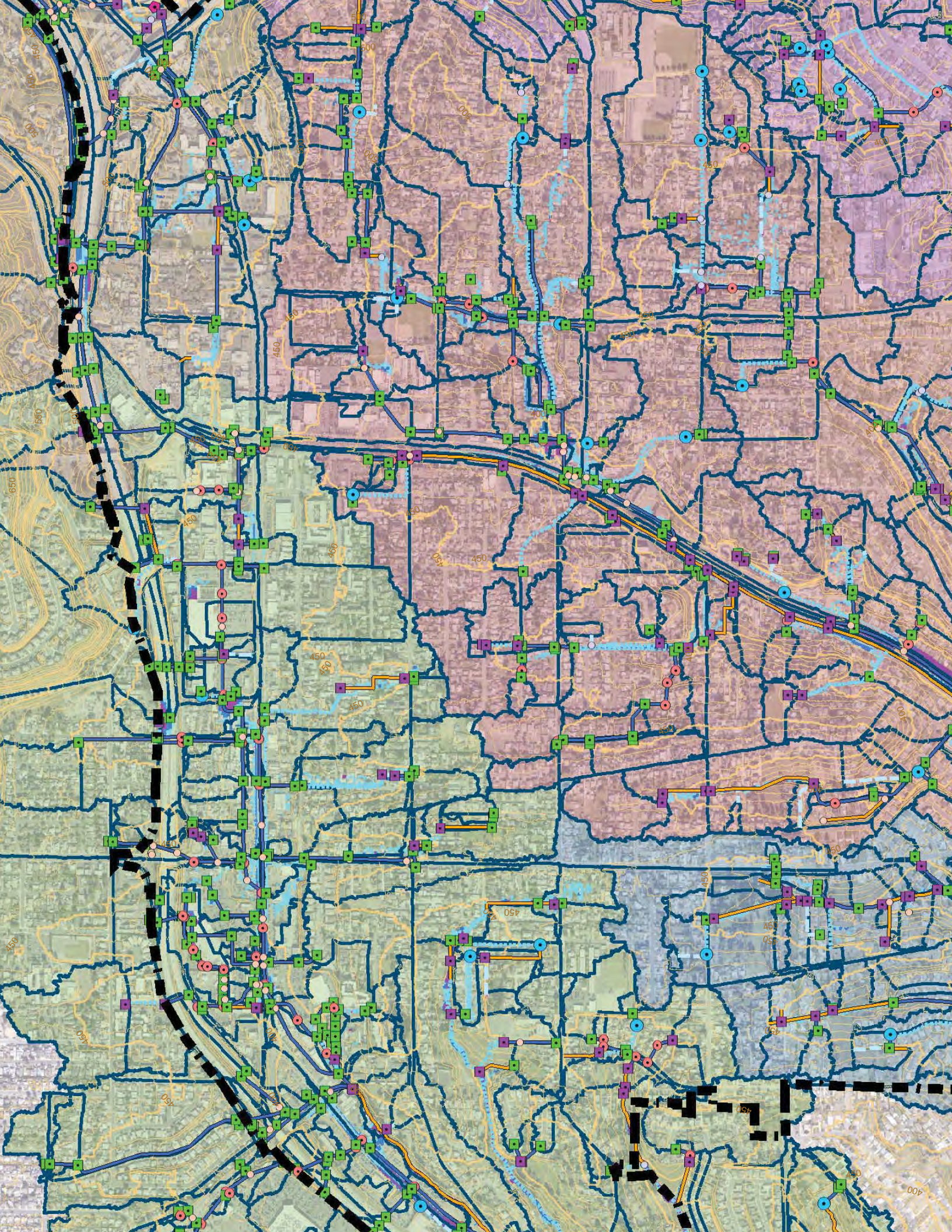


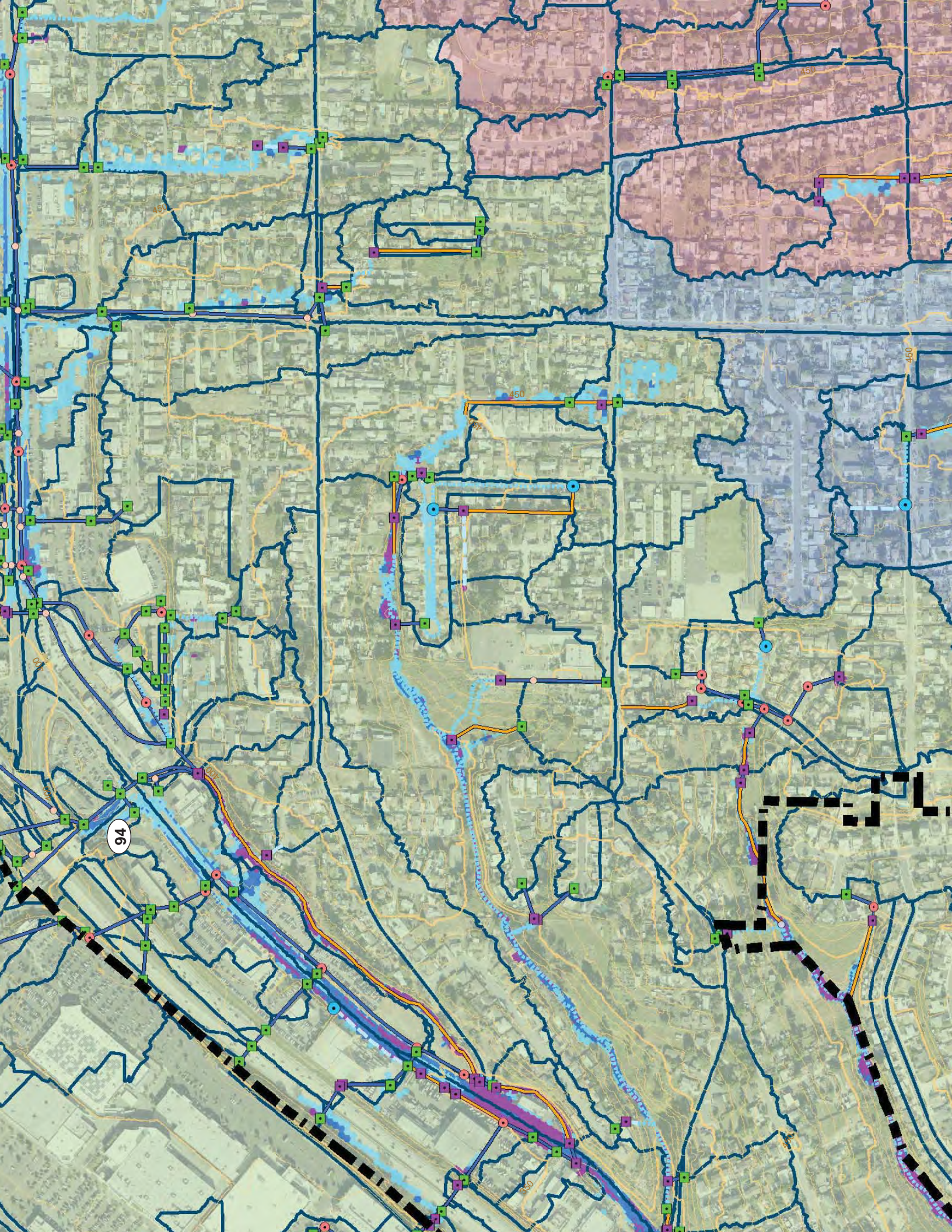


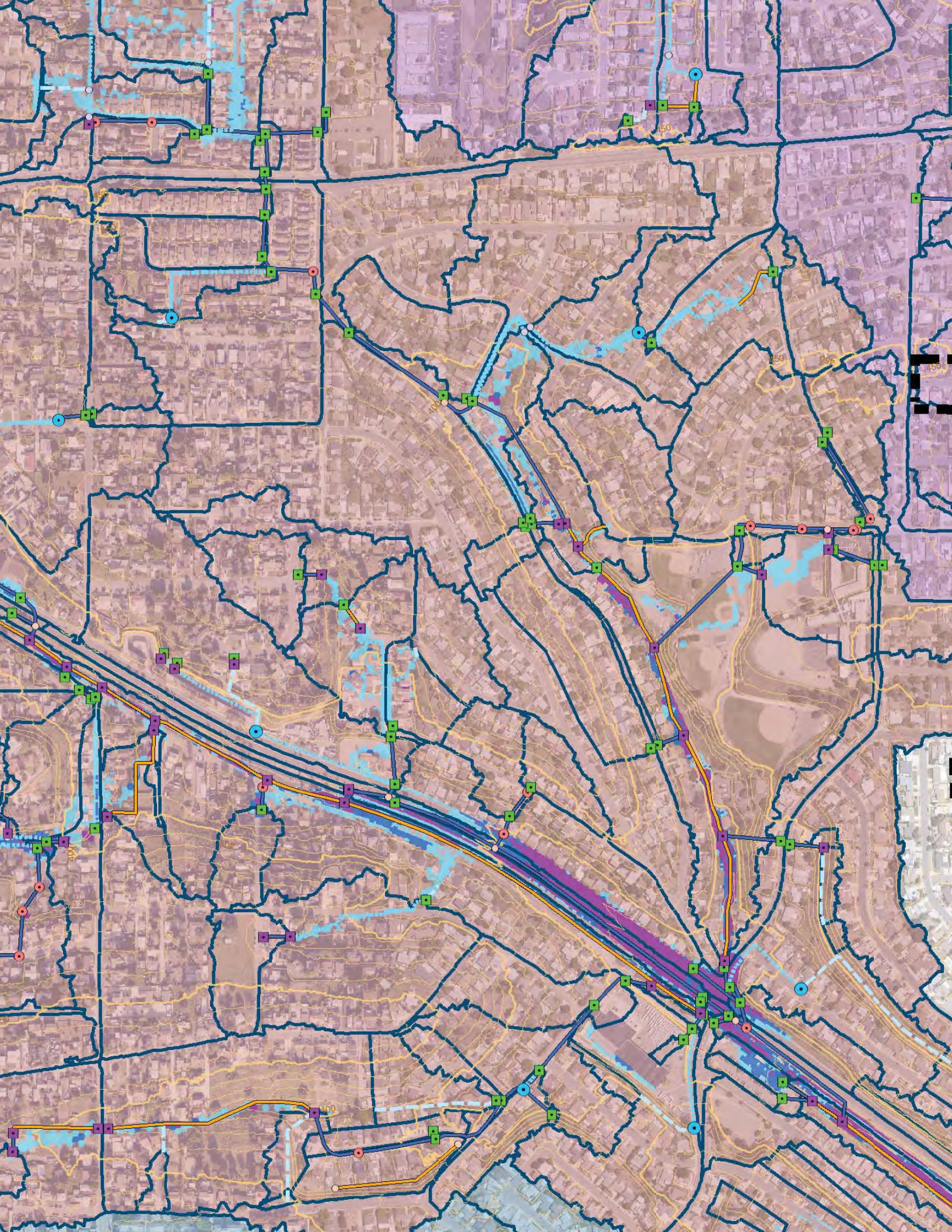


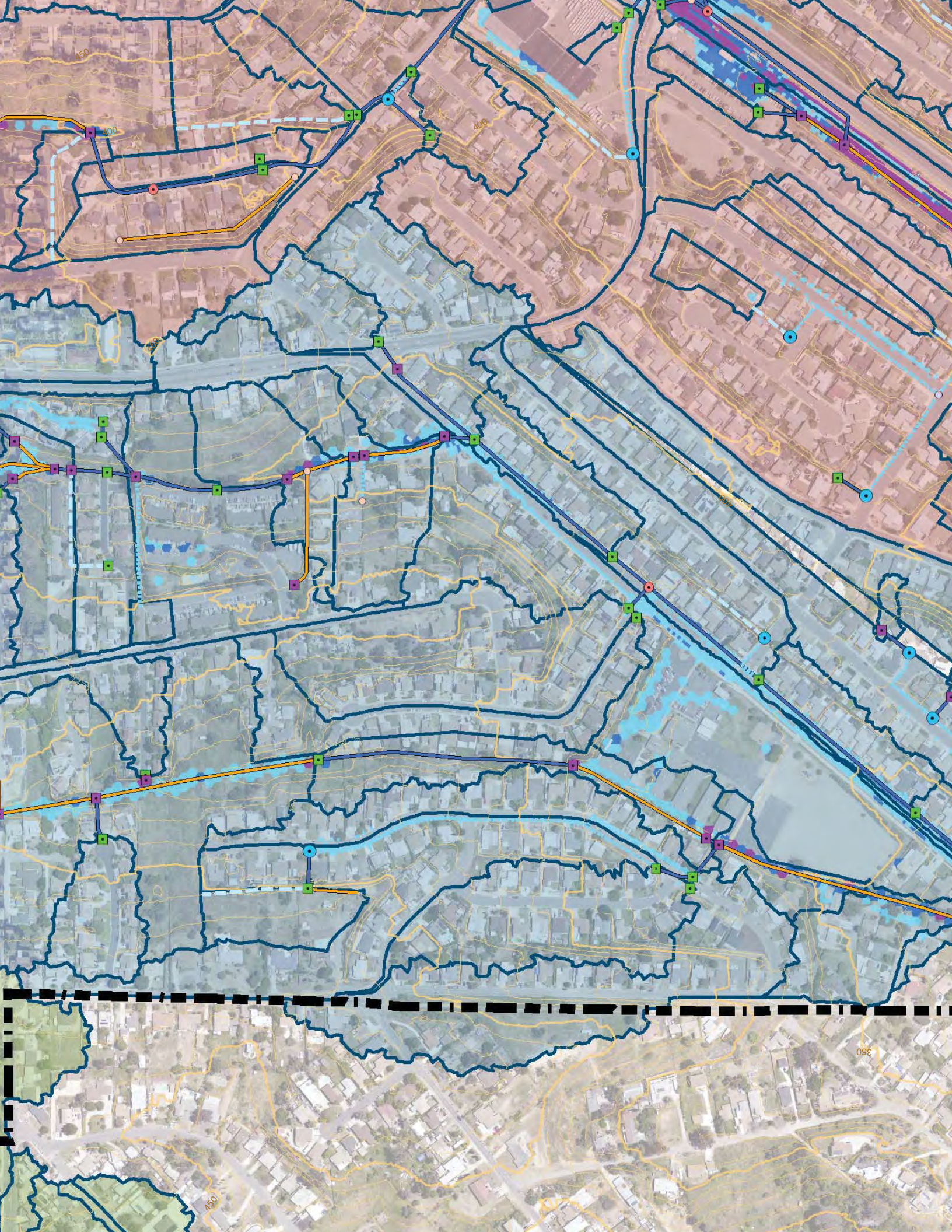




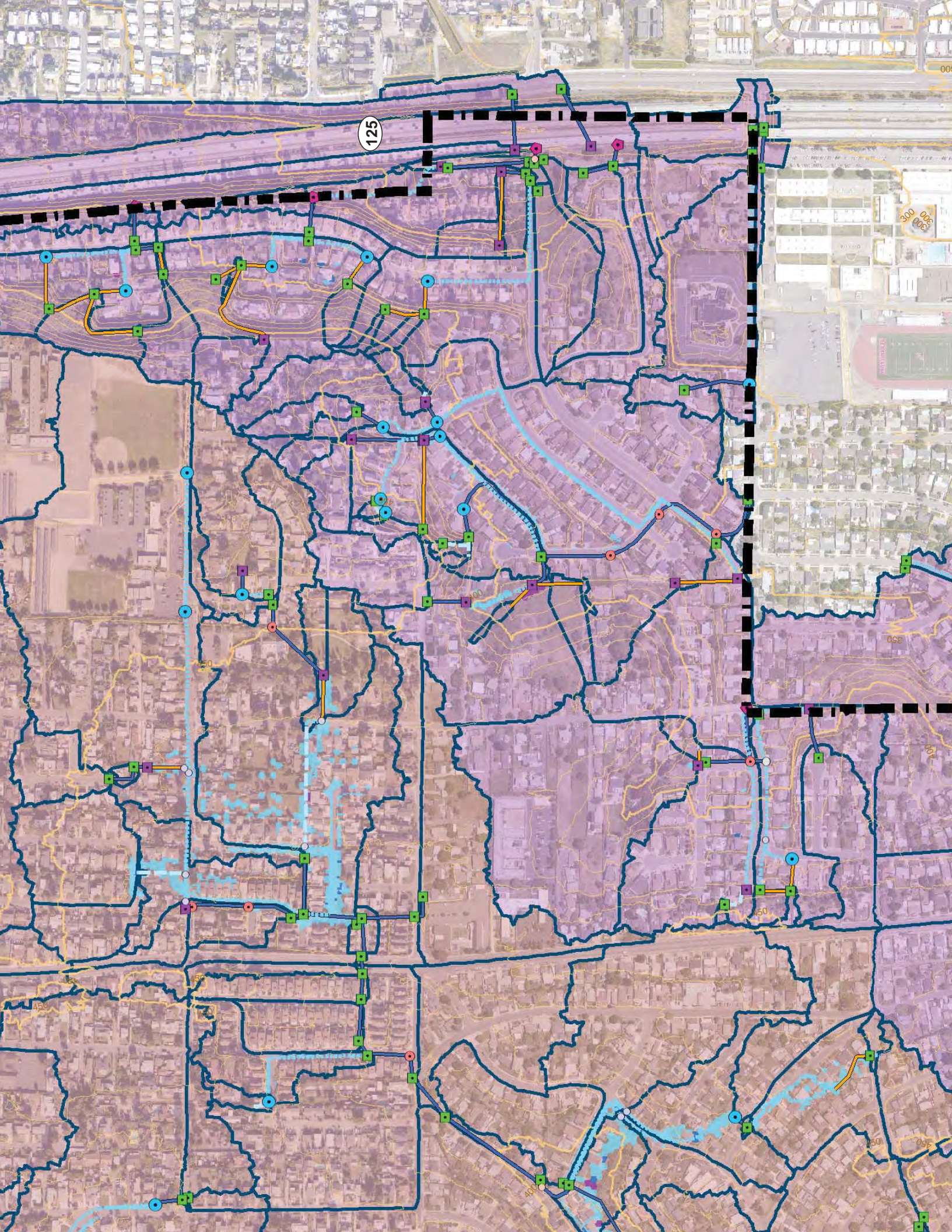




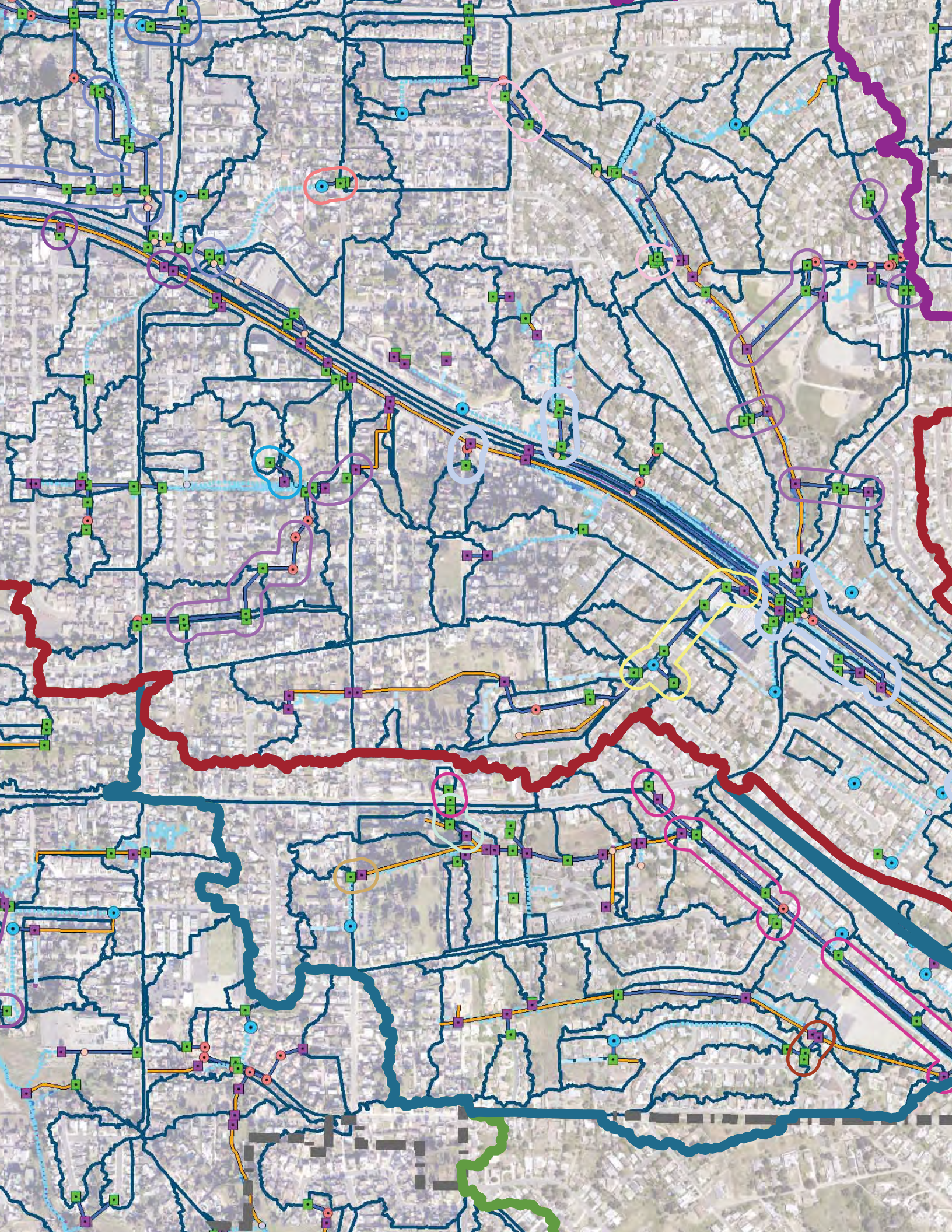


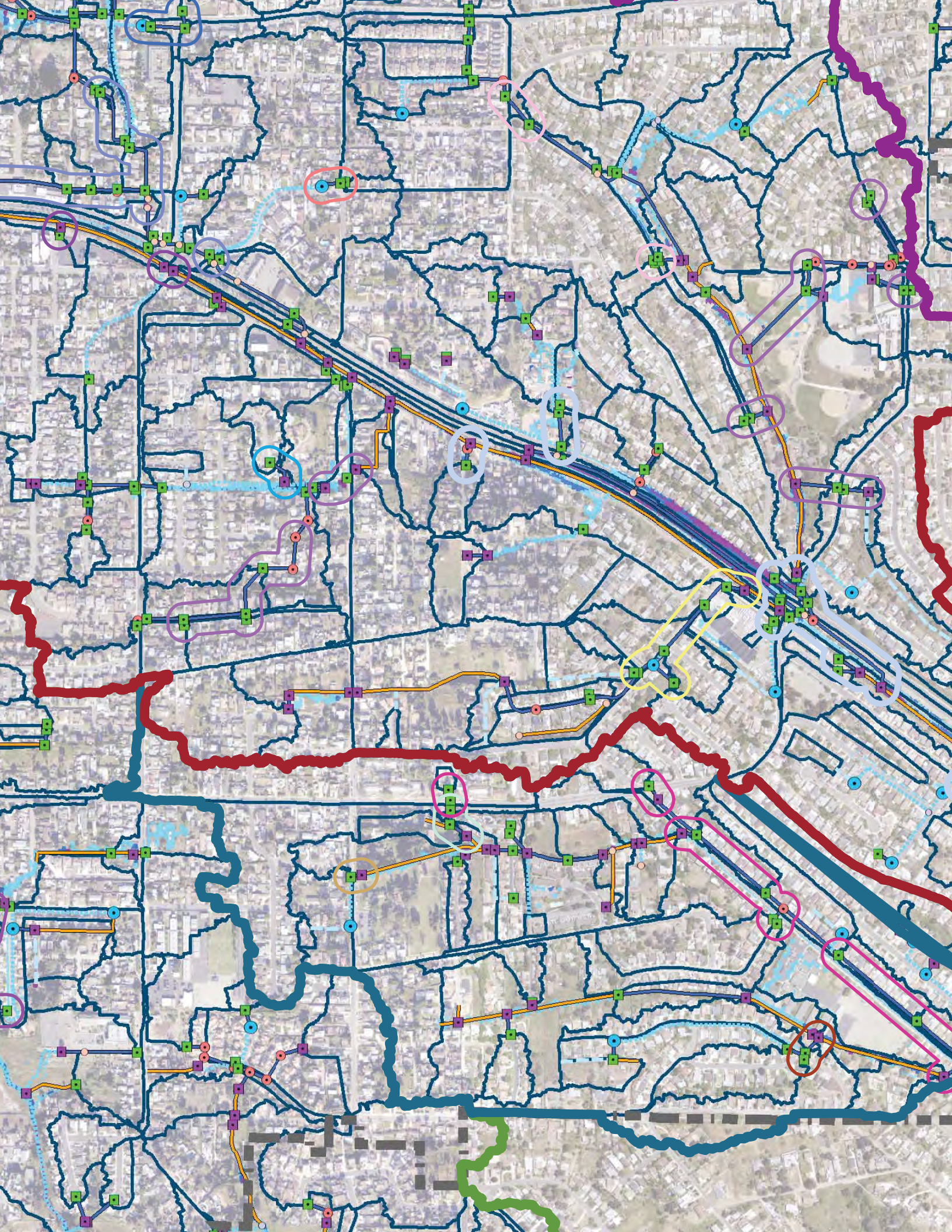


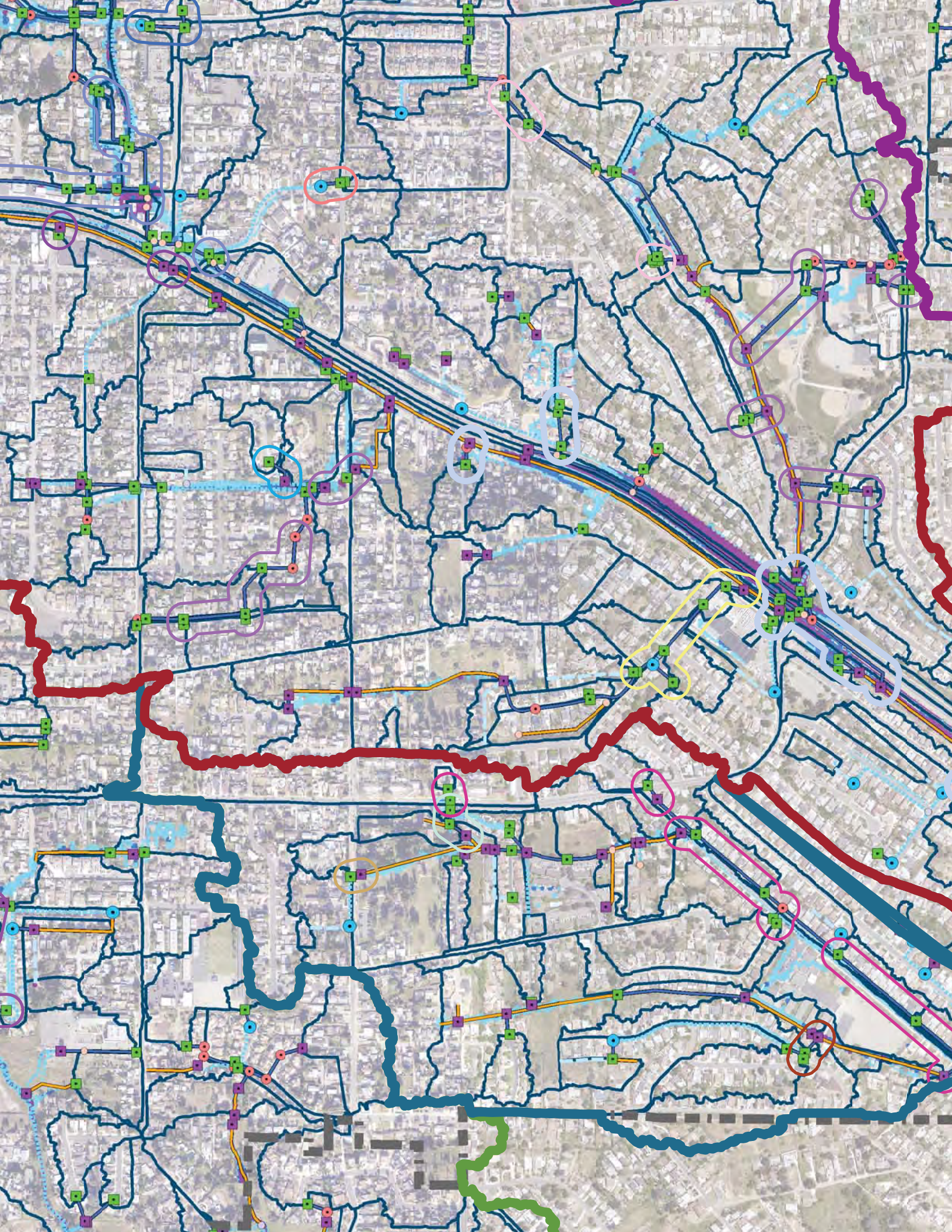


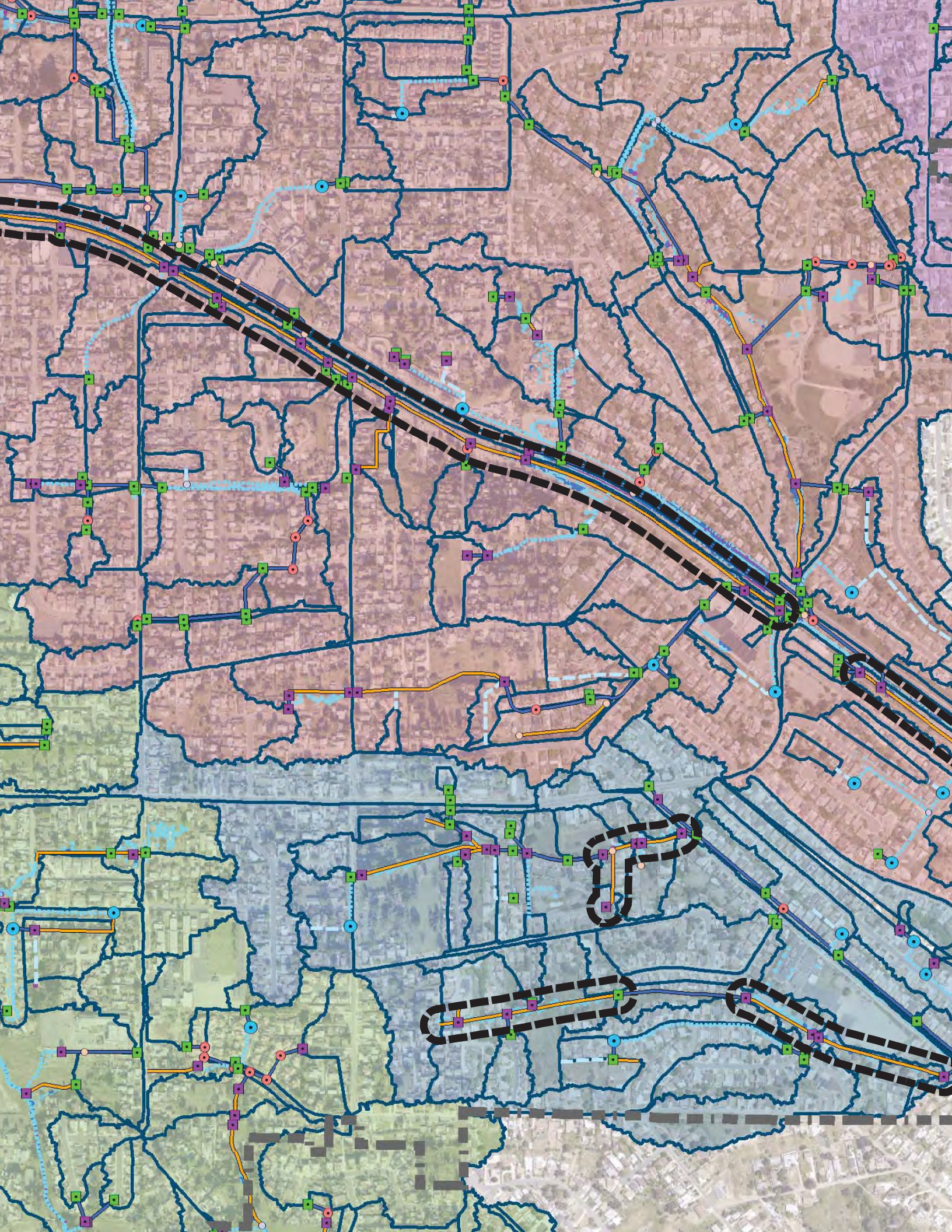


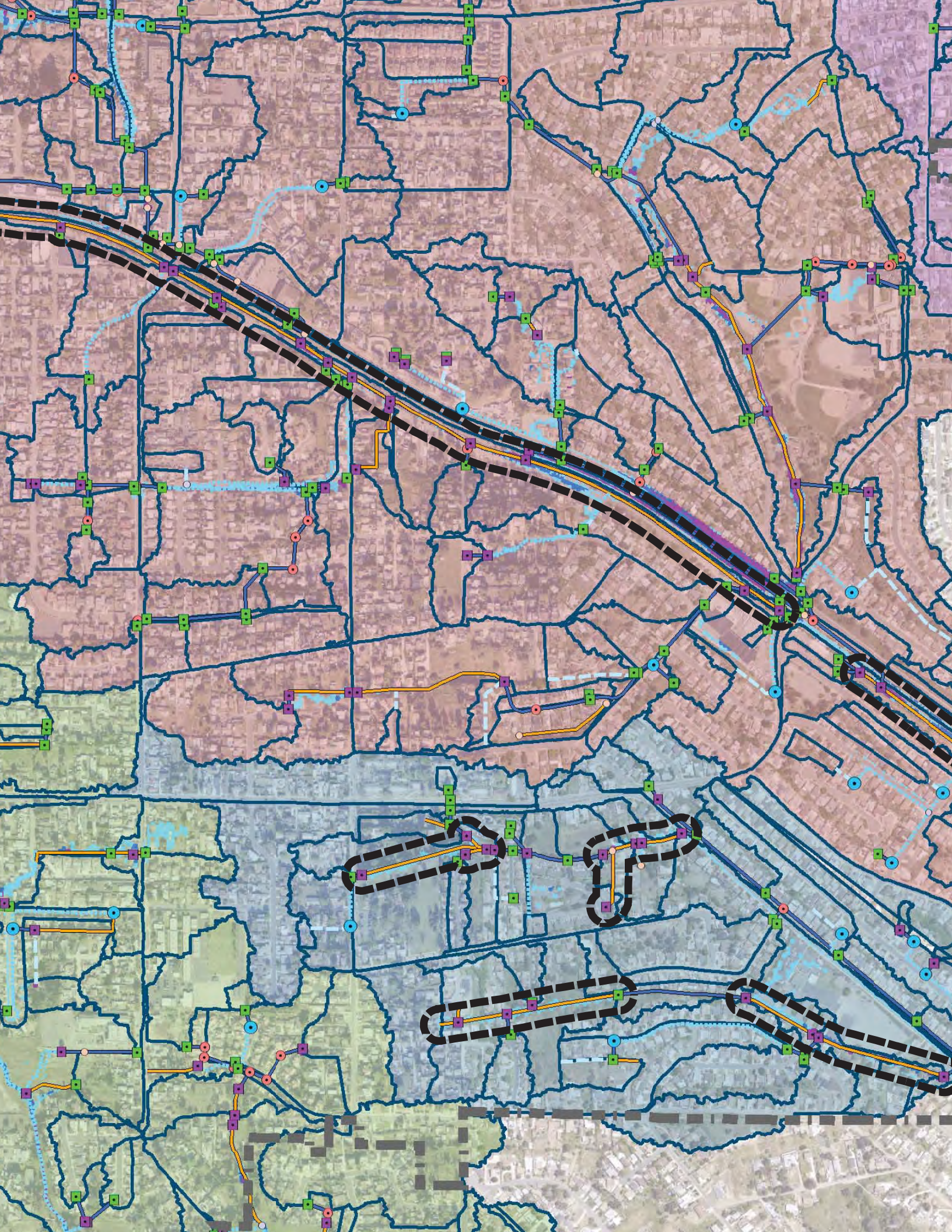
E. Proposed Conditions

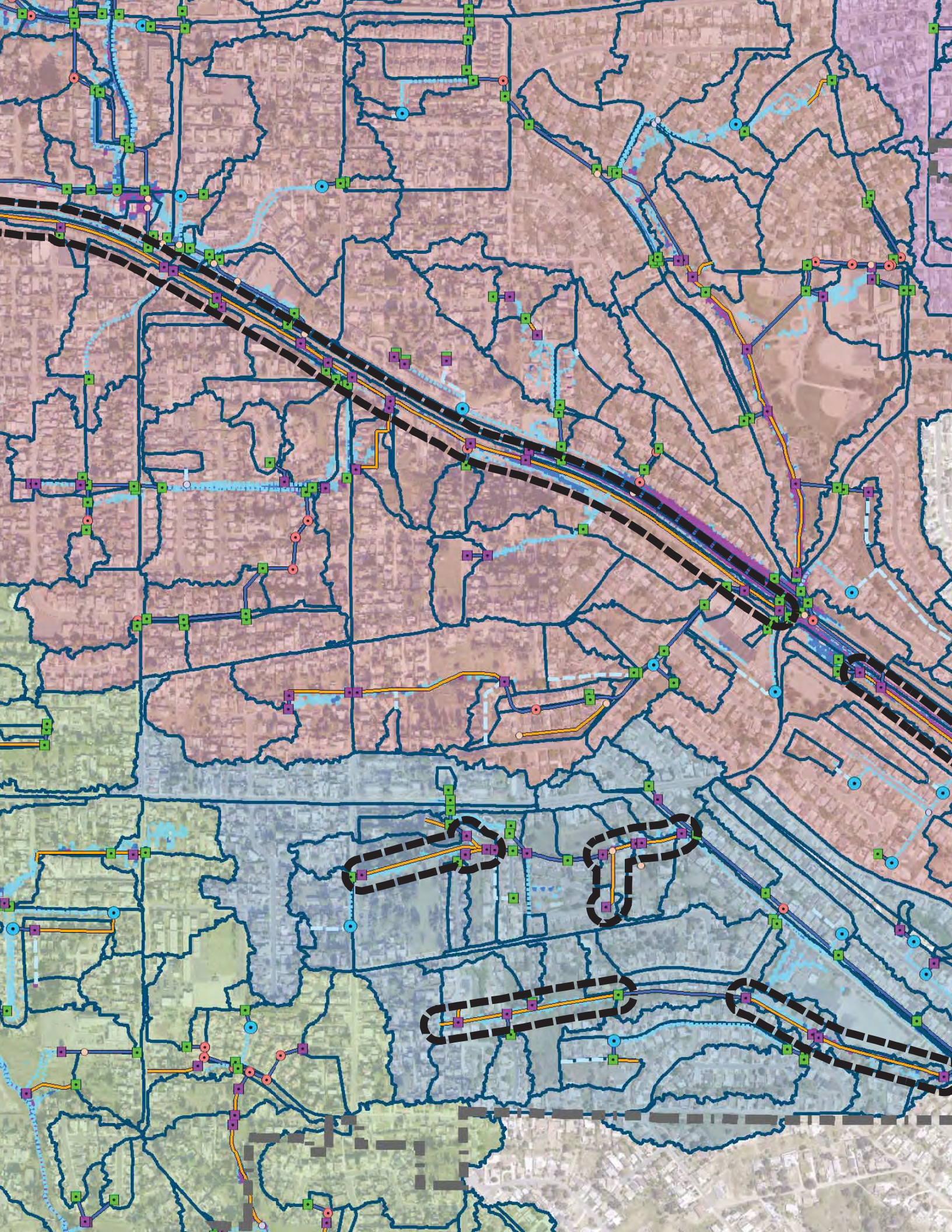












F. Summary Tables

				(cfs)	(cfs)		
20	1	RECT_OPEN	0.00662	Other	0	0	
0	1	CIRCULAR	0.13435	RCP	8.04	0.1	13.83
0	1	IRREGULAR	0.09333	Earthen	4.81	0	8.3
0	1	CIRCULAR	0.08121	RCP	0	0	6.02
3	1	PARABOLIC	0.27746	Other	1.78	0.02	2.96
8	1	RECT_OPEN	0.28107	Other	6.67	0.01	11.25
0	3	CIRCULAR	0.03785	Other	175.6	0.3	223.11
30	1	RECT_OPEN	0.00484	Other	10.27	0	30.98
8	1	RECT_CLOSED	0.01601	RCB	175.71	0.31	223.18
8	1	RECT_CLOSED	0.05066	RCB	175.73	0.18	223.19
30	1	RECT_OPEN	0.3131	Other	43.12	0	54.1
30	1	RECT_OPEN	0.76122	Other	2.01	0	3.34
30	1	RECT_OPEN	0.00041	Other	144.81	0.02	153.64
30	1	RECT_OPEN	0.0104	Other	63.78	0	127.38
0	1	CIRCULAR	0.01571	RCP	1.48	0.11	3.27
0	1	CIRCULAR	0.04786	HDPE	5.21	0.17	8.28
30	1	RECT_OPEN	0.04555	Other	0	0	0
20	1	TRAPEZOIDAL	0.01244	Other	25.02	0.13	41.06
7	1	CIRCULAR	0.00681	RCB	58.4	1.06	69.04
0	1	CIRCULAR	0.0273	CMP	14.44	0.71	21.46
0	1	CIRCULAR	0.0271	RCP	17.18	0.46	31.07
0	1	CIRCULAR	0.00832	RCP	54.73	0.9	64.54
0	1	CIRCULAR	0.08918	RCP	9.73	0.31	18.76
0	1	CIRCULAR	0.1136	Other	0	0	0
0	1	CIRCULAR	0.10304	Other	5.04	0.34	7.96
0	1	CIRCULAR	0.6801	Other	2.81	0.07	4.46
0	1	CIRCULAR	0.07777	CMP	8.39	0.25	14.6
0	1	CIRCULAR	0.06302	Concrete	0.71	0.02	1.26
3	1	PARABOLIC	0.01685	Other	0.69	0.03	1.24
0	1	CIRCULAR	0.01072	Concrete	11.25	0.7	19.88
0	1	CIRCULAR	0.00597	Concrete	15.39	1.29	27.04
3	1	PARABOLIC	0.13008	Other	15.92	0.23	27.85
0	1	CIRCULAR	0.0109	Other	15.86	0.67	26.9
0	1	CIRCULAR	0.00912	Concrete	0.67	0.02	1.21
3	1	PARABOLIC	0.03543	Other	0.67	0.02	1.2
0	1	CIRCULAR	0.00314	CMP	2.51	0.37	3.92
0	1	CIRCULAR	0.03297	CONC	0	0	0
0	1	CIRCULAR	0.05453	CONC	0	0	0
0	1	CIRCULAR	0.02442	CMP	12.46	0.65	19.77
0	1	CIRCULAR	0.01107	CONC	7.28	0.31	12.58
0	1	CIRCULAR	0.00682	CONC	2.66	0.14	4.4
0	1	CIRCULAR	0.00684	CONC	2.95	0.16	4.82

				(cfs)	(cfs)		
0	1	CIRCULAR	0.0778	CONC	13.08	0.21	24.47
0	1	CIRCULAR	0.3288	CONC	13.1	0.1	25.56
0	1	CIRCULAR	0.03638	CONC	13.1	0.3	25.56
0	1	CIRCULAR	0.01441	RCP	15.23	0.19	26.51
0	1	CIRCULAR	0.00683	CONC	55.24	0.47	80.96
0	1	CIRCULAR	0.00778	CONC	49.66	0.39	78.67
0	1	CIRCULAR	0.03688	CONC	35.92	0.46	50.59
0	1	CIRCULAR	0.49848	CONC	0	0	0
0	1	CIRCULAR	0.1602	RCP	12.51	0.14	21.86
0	1	CIRCULAR	0.11358	RCP	13.72	0.18	24.11
0	1	CIRCULAR	0.0126	RCP	22.51	0.89	22.81
0	1	CIRCULAR	0.00215	RCP	22.5	2.15	22.79
0	1	CIRCULAR	0.23773	CONC	1.63	0.01	2.79
0	1	CIRCULAR	0.26307	CONC	0.91	0.01	1.52
0	1	IRREGULAR	0.49541	Other	0	0	0
0	1	CIRCULAR	0.28416	CONC	1.07	0.01	1.83
0	1	CIRCULAR	0.01915	RCP	1.31	0.09	2.33
0	1	CIRCULAR	0.08175	RCP	2.56	0.09	4.48
0	1	CIRCULAR	0.0997	RCP	2.55	0.08	4.46
0	1	CIRCULAR	0.03039	RCP	2.51	0.14	4.4
0	1	CIRCULAR	0.01047	RCP	3.21	0.3	5.53
0	1	CIRCULAR	0.01185	RCP	3.46	0.3	5.91
0	1	CIRCULAR	0.02737	RCP	32.74	0.37	47.05
0	1	CIRCULAR	0.02159	RCP	6.4	0.41	11.01
0	1	CIRCULAR	0.12254	RCP	1.26	0.03	2.11
0	1	CIRCULAR	0.00459	RCP	5.43	0.76	8.78
0	1	CIRCULAR	0.05928	RCP	12.79	0.5	20.74
0	1	CIRCULAR	0.00862	RCP	11.88	1.22	15.24
0	1	CIRCULAR	0.02045	RCP	12.92	0.86	15.99
0	1	CIRCULAR	0.0199	RCP	12.93	0.87	14.86
0	1	CIRCULAR	0.00852	RCP	0.56	0.06	3.48
0	1	CIRCULAR	0.08713	RCP	1.12	0.04	2.99
0	1	CIRCULAR	0.01599	RCP	2.3	0.17	4.16
0	1	CIRCULAR	0.02105	RCP	82.27	1.38	82.53
0	1	CIRCULAR	0.01148	RCP	4.64	0.41	9.07
0	1	CIRCULAR	0.08919	RCP	18.4	0.59	22.31
0	1	CIRCULAR	0.02806	RCP	20.08	1.14	25.42
0	1	CIRCULAR	0.28995	RCP	20.99	0.17	27.07
3	1	PARABOLIC	0.14718	Concrete	1.65	0.03	2.26
0	1	CIRCULAR	0.0249	CONC	25.63	0.4	37.15
0	1	CIRCULAR	0.00374	CONC	1.61	0.25	2.69
0	1	CIRCULAR	0.25101	CONC	1.93	0.04	3.15

				(cfs)	(cfs)		
0	1	CIRCULAR	0.00813	CONC	0.32	0.02	0.5
0	1	CIRCULAR	0.28118	CONC	0.31	0	0.5
0	1	CIRCULAR	0.0076	CONC	1.77	0.09	5.7
0	1	CIRCULAR	0.03135	CONC	2.04	0.05	8.88
0	1	CIRCULAR	0.0303	CONC	2.6	0.07	7.94
0	1	CIRCULAR	0.00764	CONC	2.19	0.11	3.59
0	1	CIRCULAR	0.00547	CONC	6.39	0.38	10.54
0	1	CIRCULAR	0.04885	CONC	6.35	0.13	10.47
0	1	CIRCULAR	0.0155	RCP	11.79	0.9	12.9
0	1	CIRCULAR	0.05904	CONC	48.17	0.3	84.6
0	1	CIRCULAR	0.34511	CONC	10.53	0.08	17.56
0	1	CIRCULAR	0.00922	CONC	9.97	0.46	16.64
0	1	CIRCULAR	0.00574	CONC	8.3	0.48	14.05
0	1	CIRCULAR	0.11272	CONC	0.32	0.01	0.51
0	1	CIRCULAR	0.00499	CONC	1	0.14	1.66
0	1	CIRCULAR	0.00305	CONC	16.63	2.87	16.61
0	1	CIRCULAR	0.00596	RCP	75.27	0.97	83.99
0	1	IRREGULAR	0.26594	Other	0.04	0	0.06
3	1	PARABOLIC	0.17654	Other	0.1	0	0.19
3	1	PARABOLIC	0.03167	Other	1.05	0.04	1.67
0	1	CIRCULAR	0.01884	CONC	0.4	0.01	0.63
0	1	CIRCULAR	0.03439	CONC	1.49	0.04	2.36
0	1	CIRCULAR	0.01155	CONC	1.97	0.08	3.12
0	1	CIRCULAR	0.00646	CONC	0.28	0.02	0.43
0	1	CIRCULAR	0.05241	CONC	43.12	0.13	54.1
0	1	CIRCULAR	0.01477	CMP	12.12	0.81	11.54
0	1	CIRCULAR	0.06713	CONC	1.39	0.02	2.25
0	1	CIRCULAR	0.04016	CONC	43.13	0.15	54.1
0	1	CIRCULAR	0.27741	CONC	41.91	0.35	52.14
0	1	CIRCULAR	0.07911	CONC	1.14	0.02	1.75
0	1	CIRCULAR	0.02972	CONC	40.14	1.03	49.67
0	1	CIRCULAR	0.15393	CONC	0.48	0.01	0.75
0	1	CIRCULAR	0.08633	CONC	0.48	0.01	0.74
0	1	CIRCULAR	0.02973	CONC	40.18	1.03	49.67
0	1	CIRCULAR	0.01295	CONC	0.32	0.01	3.71
0	1	CIRCULAR	0.15413	CONC	3.41	0.04	5.79
0	1	CIRCULAR	0.03219	CONC	3.42	0.08	5.79
0	1	CIRCULAR	0.02973	CONC	36.22	0.93	45.48
0	1	CIRCULAR	0.02972	CONC	3.7	0.09	6.46
0	1	CIRCULAR	0.045	CONC	30.8	0.35	50.52
0	1	CIRCULAR	0.03859	CONC	1.66	0.02	2.8
0	1	CIRCULAR	0.00554	CONC	5.88	0.35	10.8

				(cfs)	(cfs)		
0	1	CIRCULAR	0.00118	CONC	8.25	0.59	10.27
0	1	CIRCULAR	0.00118	CONC	43.91	3.12	44.35
0	1	CIRCULAR	0.00117	CONC	44.51	5.75	45.29
0	1	CIRCULAR	0.01145	CONC	0.56	0.02	0.91
0	1	CIRCULAR	0.01325	CONC	0.66	0.03	1.08
0	1	CIRCULAR	0.16198	CONC	0.81	0.01	1.31
0	1	CIRCULAR	0.0143	CONC	0.48	0.02	0.77
0	1	CIRCULAR	0.00604	CONC	0.52	0.03	0.84
0	1	CIRCULAR	0.27246	RCP	0.05	0	0.1
0	1	CIRCULAR	0.08137	RCP	2.48	0.02	4.64
0	1	CIRCULAR	0.14974	CONC	16.74	0.11	30.41
0	1	CIRCULAR	0.0177	RCP	13.52	0.45	23.67
0	1	IRREGULAR	0.11937	Concrete	3.18	0	5.22
0	1	CIRCULAR	0.03075	CONC	0	0	5.66
0	1	CIRCULAR	0.04315	RCP	11.01	0.23	19.41
0	1	CIRCULAR	0.11215	ABS	19.46	0.9	21.19
0	1	CIRCULAR	0.00902	RCP	53.35	0.56	85.72
6	1	TRIANGULAR	0.00689	CONC	0.29	0.05	0.72
0	1	CIRCULAR	0.01009	RCP	60.46	0.42	101.98
3	1	PARABOLIC	0.07516	Concrete	0.5	0.02	0.61
0	1	CIRCULAR	0.01528	RCP	12.94	0.46	22.72
0	1	CIRCULAR	0.36589	RCP	12.95	0.09	22.74
0	1	CIRCULAR	0.31957	RCP	12.95	0.1	22.73
0	1	CIRCULAR	0.00616	RCP	12.89	0.73	25.27
0	1	CIRCULAR	0.00941	CONC	3.18	0.14	5.23
0	1	CIRCULAR	0.26871	RCP	12.89	0.11	24.49
0	1	CIRCULAR	0.00918	RCP	13.37	0.62	25.8
0	1	CIRCULAR	0.01035	CONC	24.74	0.36	41.75
0	1	CIRCULAR	0.03263	RCP	50.65	0.42	85.47
0	1	CIRCULAR	0.14147	RCP	50.7	0.33	85.5
0	1	CIRCULAR	0.04496	RCP	48.3	0.56	81.54
0	1	CIRCULAR	0.06107	RCP	0.62	0.02	0.98
0	1	CIRCULAR	0.02665	RCP	3.35	0.2	5.76
0	1	CIRCULAR	0.00693	RCP	1.58	0.08	2.66
0	1	CIRCULAR	0.00944	RCP	9.81	0.96	17.64
0	1	CIRCULAR	0.033	RCP	2.21	0.12	3.9
0	1	CIRCULAR	0.04284	RCP	3.1	0.14	5.45
0	1	CIRCULAR	0.06509	RCP	9.82	0.37	17.65
0	1	CIRCULAR	0.0756	RCP	0.62	0.02	0.98
0	1	CIRCULAR	0.01109	RCP	0.75	0.07	1.22
0	1	CIRCULAR	0.01744	RCP	5.06	0.36	8.73
0	1	CIRCULAR	0.0543	RCP	4.91	0.2	8.85

				(cfs)	(cfs)		
0	1	CIRCULAR	0.0869	RCP	4.98	0.16	8.82
0	1	CIRCULAR	0.01913	RCP	4.93	0.34	8.82
0	1	CIRCULAR	0.0049	RCP	2.75	0.37	4.94
0	1	CIRCULAR	0.04397	RCP	12.98	0.27	22.1
0	1	CIRCULAR	0.07376	RCP	4.18	0.15	7.14
0	1	CIRCULAR	0.02315	RCP	2.22	0.14	3.91
0	1	CIRCULAR	0.03348	RCP	2.21	0.11	3.9
0	1	CIRCULAR	0.05196	RCP	24.63	0.48	41.83
0	1	CIRCULAR	0.05642	RCP	11.45	0.21	19.59
0	1	CIRCULAR	0.47787	RCP	1.18	0.02	1.88
0	1	IRREGULAR	0.06202	Earthen	24.54	0	33.7
0	1	IRREGULAR	0.02075	Earthen	28.59	0	41.53
0	1	IRREGULAR	0.01689	Earthen	28.31	0	41.22
0	1	IRREGULAR	0.15145	Earthen	0.27	0	0.43
0	1	IRREGULAR	0.17542	Earthen	4.25	0	7.89
0	1	IRREGULAR	0.28537	Earthen	3.39	0	6.31
0	1	IRREGULAR	0.17845	Earthen	20.21	0	22
0	1	CIRCULAR	0.127	RCP	1.28	0.02	2.04
0	1	CIRCULAR	0.02463	RCP	30.52	0.47	47.28
0	1	CIRCULAR	0.00989	RCP	30.57	0.75	50.24
0	1	CIRCULAR	0.03491	RCP	30.24	0.39	46.68
0	1	CIRCULAR	0.01894	RCP	1.97	0.14	3.55
3	1	PARABOLIC	0.03062	Concrete	0	0	0
0	1	CIRCULAR	0.01969	RCP	2.42	0.16	4.26
0	1	CIRCULAR	0.24242	RCP	4.25	0.08	7.89
0	1	CIRCULAR	0.02704	RCP	4.07	0.24	7.61
0	1	CIRCULAR	0.0339	RCP	0.78	0.04	1.21
0	1	CIRCULAR	0.15238	RCP	3.4	0.08	6.32
0	1	CIRCULAR	0.01441	RCP	0.6	0.05	0.92
0	1	CIRCULAR	0.01153	RCP	19.33	1.71	19.77
0	1	CIRCULAR	0.06287	RCP	0.3	0.01	0.47
3	1	PARABOLIC	0.01316	Concrete	0.57	0.03	0.89
0	1	CIRCULAR	0.02156	RCP	19.7	1.28	20.02
0	1	CIRCULAR	0.00485	RCP	2.39	0.33	4.22
0	1	CIRCULAR	0.02279	RCP	2.28	0.14	4.03
0	1	CIRCULAR	0.16671	RCP	4.11	0.1	7.67
0	1	CIRCULAR	0.02839	RCP	2.15	0.12	3.83
0	1	CIRCULAR	0.01689	RCP	20.21	1.48	22
3	1	PARABOLIC	0.01841	Concrete	1.06	0.04	2.16
0	1	IRREGULAR	-0.17256	Earthen	0	0	0
0	1	CIRCULAR	0.0145	RCP	15.25	1.21	16.99
0	1	CIRCULAR	0.00792	RCP	1.29	0.06	2.65

				(cfs)			(cfs)	
0	1	CIRCULAR	0.00788	RCP		154.15	0.41	261.53
0	1	CIRCULAR	0.12586	RCP		0.64	0.05	1.06
0	1	CIRCULAR	0.01289	RCP		13.02	1.09	14.92
0	1	CIRCULAR	0.01166	RCP		11.85	1.04	13.91
0	1	CIRCULAR	0.04832	RCP		1.11	0.05	2.16
0	1	CIRCULAR	0.02709	RCP		3.29	0.19	6.1
0	1	CIRCULAR	0.08051	RCP		4.39	0.15	7.99
0	1	CIRCULAR	0.22803	RCP		0.56	0.01	0.95
0	1	CIRCULAR	0.00923	RCP		9.25	0.92	11.71
0	1	CIRCULAR	0.12857	RCP		0.99	0.03	1.82
0	1	CIRCULAR	0.07572	RCP		0.99	0.03	1.81
0	1	CIRCULAR	0.15911	RCP		1.37	0.03	2.28
0	1	CIRCULAR	0.11242	CONC		3.79	0.03	9.88
0	1	CIRCULAR	0.0122	RCP		12.41	1.07	14.31
0	1	CIRCULAR	0.16693	RCP		4.86	0.11	8
3	1	PARABOLIC	0.02936	Concrete		0	0	0
3	1	PARABOLIC	0.02817	Concrete		0	0	0
3	1	PARABOLIC	0.01189	Concrete		0	0	0
3	1	PARABOLIC	0.04384	Concrete		0	0	0
3	1	PARABOLIC	0.02529	Concrete		0	0	0
3	1	PARABOLIC	0.03361	Concrete		0	0	0
3	1	PARABOLIC	0.02587	Concrete		0	0	0
3	1	PARABOLIC	0.02739	Concrete		0	0	0
0	1	CIRCULAR	0.0872	CONC		6.84	0.06	13.16
3	1	PARABOLIC	0.31866	Concrete		0	0	0
3	1	PARABOLIC	0.09845	Concrete		0.57	0.01	0.89
3	1	PARABOLIC	0.10003	Concrete		1.05	0.02	2.15
3	1	PARABOLIC	0.01024	Concrete		1.05	0.06	2.15
3	1	PARABOLIC	0.00908	Concrete		0.05	0	0.08
3	1	PARABOLIC	0.11334	Concrete		0.05	0	0.08
5	1	TRIANGULAR	0.25461	Concrete		20.21	0.09	22
0	1	CIRCULAR	0.37845	RCP		0	0	0
0	1	CIRCULAR	0.16515	RCP		30.1	0.18	46.39
0	1	CIRCULAR	0.50056	RCP		0.16	0	0.24
0	1	CIRCULAR	0.05563	RCP		24.54	0.2	33.69
0	1	CIRCULAR	0.09183	RCP		0.8	0.01	2.29
0	1	IRREGULAR	0.07956	Earthen		1.32	0	4.03
0	1	IRREGULAR	0.16629	Earthen		2.01	0	6.18
0	1	IRREGULAR	0.15216	Earthen		2.81	0	9.67
3.5	1	TRIANGULAR	0.04742	Concrete		0	0	0
3.5	1	TRIANGULAR	0.03475	Concrete		0	0	0
3.5	1	TRIANGULAR	0.02011	Concrete		0	0	0

				(cfs)	(cfs)		
3.5	1	TRIANGULAR	0.03242	Concrete	0.57	0.06	2.4
3.5	1	TRIANGULAR	0.02978	Concrete	0	0	0
0	1	CIRCULAR	0.29986	CMP	1.51	0.02	5.21
0	1	CIRCULAR	0.03612	RCP	33.76	0.79	61.48
0	1	CIRCULAR	0.02814	RCP	22.18	0.58	39.8
0	1	CIRCULAR	0.02642	RCP	32.64	0.89	59.34
0	1	CIRCULAR	0.00984	RCP	3.47	0.33	6.21
0	1	CIRCULAR	0.04388	RCP	4.63	0.21	8.21
0	1	CIRCULAR	0.0059	RCP	53.3	0.69	82.4
0	1	CIRCULAR	0.02862	RCP	7.6	0.2	13.61
0	1	CIRCULAR	0.00466	RCP	39.3	0.86	70.3
0	1	CIRCULAR	0.02792	RCP	0	0	0
0	1	CIRCULAR	0.02613	RCP	3.07	0.18	5.38
0	1	CIRCULAR	0.23975	CONC	21.41	0.19	37.16
0	1	CIRCULAR	0.01058	CONC	3.84	0.17	6.1
0	1	CIRCULAR	0.01739	CONC	25.24	0.85	39.99
0	1	CIRCULAR	0.15624	CONC	8.83	0.1	15.14
0	1	CIRCULAR	0.0284	CONC	1.24	0.03	2.15
0	1	CIRCULAR	0.09169	RCP	8.94	0.13	15.46
0	1	CIRCULAR	0.01802	RCP	8.08	0.27	22.09
0	1	CIRCULAR	0.03052	RCP	35.25	0.89	40.25
0	1	CIRCULAR	0.00253	RCP	14.67	1.29	14.65
0	1	IRREGULAR	0.0394	Earthen	12.11	0	19.8
0	1	IRREGULAR	0.01044	Earthen	25.01	0	30.98
0	1	IRREGULAR	0.04285	Earthen	3.34	0	5.7
0	1	IRREGULAR	0.06107	Earthen	2.71	0	4.92
0	1	IRREGULAR	0.05729	Earthen	1.21	0	1.97
0	1	IRREGULAR	0.0977	Earthen	6.38	0	10.76
0	1	IRREGULAR	0.00107	Earthen	7.79	0.01	11.32
0	1	IRREGULAR	0.13612	Earthen	7.92	0	11.52
0	1	IRREGULAR	0.02861	Earthen	16.61	0	19.11
0	1	IRREGULAR	0.01535	Earthen	23.43	0	29.14
0	1	IRREGULAR	0.08393	Earthen	16.05	0	19.63
0	1	CIRCULAR	0.01602	CONC	16.6	1.25	19.15
0	1	CIRCULAR	0.04258	CONC	25.01	1.15	30.98
0	1	CIRCULAR	0.00445	CONC	16.05	2.29	19.83
0	1	CIRCULAR	0.05136	RCP	6.38	0.27	10.77
0	1	CIRCULAR	0.08958	RCP	41.94	0.34	60.75
0	1	CIRCULAR	0.04171	RCP	16.34	0.2	27.43
0	1	CIRCULAR	0.7111	RCP	22.14	0.25	35.66
0	1	CIRCULAR	0.02932	RCP	1.3	0.07	2.11
0	1	CIRCULAR	0.0089	RCP	0.6	0.06	0.96

				(cfs)	(cfs)		
0	1	CIRCULAR	0.16319	RCP	0.25	0.01	0.41
0	1	CIRCULAR	0.01622	RCP	2.42	0.08	3.83
0	1	CIRCULAR	0.0333	RCP	5.07	0.26	8.76
0	1	CIRCULAR	0.2531	HDPE	0	0	0
0	1	CIRCULAR	0.02991	RCP	1.3	0.02	2.39
0	1	CIRCULAR	0.03346	RCP	28.75	0.38	47.51
0	1	CIRCULAR	0.15358	RCP	0	0	0
0	1	CIRCULAR	0.07147	RCP	0	0	0
5.5	1	CIRCULAR	0.00541	CMP	53.5	2.01	53.36
5.5	1	CIRCULAR	0.00895	CMP	53.5	1.57	53.36
0	1	CIRCULAR	0.02458	RCP	0	0	0
0	1	CIRCULAR	0.05404	RCP	0.54	0.01	0.96
0	1	CIRCULAR	0.05318	RCP	0.53	0.01	0.95
0	1	CIRCULAR	0.00612	RCP	2.69	0.15	3.25
0	1	CIRCULAR	0.0664	RCP	0	0	0.98
0	1	CIRCULAR	0.02	RCP	0	0	0
0	1	CIRCULAR	0.0095	RCP	0	0	0
0	1	CIRCULAR	0.01855	RCP	0	0	0
0	1	CIRCULAR	0.00971	RCP	4.34	0.19	7.61
0	1	CIRCULAR	0.08472	SP	15.38	0.43	27.35
0	1	CIRCULAR	0.00958	RCP	4.33	0.2	7.61
0	1	CIRCULAR	0.02473	RCP	4.33	0.12	7.6
0	1	CIRCULAR	0.00383	RCP	7.84	0.56	13.88
0	1	CIRCULAR	0.03044	RCP	0	0	0
0	1	CIRCULAR	0.06465	RCP	0	0	0
0	1	CIRCULAR	0.04035	RCP	0	0	0
0	1	CIRCULAR	0.04249	RCP	0	0	0
0	1	CIRCULAR	0.00117	CMP	36.06	4.74	35.21
0	1	CIRCULAR	0.08941	RCP	10.82	0.05	20.64
0	1	CIRCULAR	0.0074	RCP	10.82	0.19	20.71
0	1	CIRCULAR	0.02767	RCP	37.23	0.16	56.88
0	1	CIRCULAR	0.02594	RCP	38.05	0.16	56.39
0	1	CIRCULAR	0.03249	RCP	7.39	0.39	22.16
0	1	CIRCULAR	0.2143	RCP	1.02	0	1.65
0	1	CIRCULAR	0.00377	CONC	15.43	0.61	27.51
0	1	CIRCULAR	0.00524	CONC	15.39	0.52	27.43
0	1	CIRCULAR	0.01283	RCP	344.91	1.17	354.05
0	1	CIRCULAR	0.00246	RCP	49.6	0.44	50.38
0	1	CIRCULAR	0.03745	ABS	0.77	0.11	1.26
0	1	CIRCULAR	0.06325	ABS	0.67	0.07	1.06
0	1	CIRCULAR	0.07322	RCP	3.47	0.36	4.5
0	1	CIRCULAR	0.04763	ABS	2.1	0.27	3.44

				(cfs)	(cfs)		
0	1	CIRCULAR	0.14235	RCP	1.79	0.05	3.15
0	1	CIRCULAR	0.02113	ABS	0.92	0.18	1.53
0	1	CIRCULAR	0.08454	CMP	1.83	0.33	3.3
0	1	CIRCULAR	0.02043	SP	0.26	0.03	0.46
0	1	CIRCULAR	0.07526	RCP	0	0	0
8	1	RECT_CLOSED	0.02261	RCB	214.3	0.32	241.33
0	1	CIRCULAR	0.19522	RCP	6.39	0.14	11.52
0	1	CIRCULAR	0.03309	ABS	7.57	1.17	7.57
0	1	CIRCULAR	0.03023	ABS	10.73	0.59	18.74
3	1	PARABOLIC	0.1641	RCP	3.52	0.06	6.18
0	1	CIRCULAR	0.01262	RCP	0.29	0.07	0.59
0	1	CIRCULAR	0.0057	RCP	0.06	0.02	0.14
0	1	CIRCULAR	0.13647	CMP	5.65	0.27	10.31
0	1	CIRCULAR	0.03992	RCP	33.42	0.17	36.03
0	1	CIRCULAR	0.0133	RCP	29.25	0.06	77.78
0	1	CIRCULAR	0.00365	RCP	58.65	0.68	76.04
0	1	CIRCULAR	0.00391	RCP	176.37	0.84	322.21
0	1	CIRCULAR	0.00341	RCP	174.16	0.89	299.2
0	1	CIRCULAR	0.01039	RCP	162.55	0.61	282.45
0	1	CIRCULAR	0.01571	RCP	108.45	0.33	195.21
0	1	CIRCULAR	0.02475	RCP	79.52	0.19	144.57
0	1	CIRCULAR	0.00709	RCP	79.32	0.36	147.69
0	1	CIRCULAR	0.0077	RCP	33.1	0.37	74.48
0	1	CIRCULAR	0.03572	RCP	57.73	0.3	119.93
0	1	CIRCULAR	0.01468	RCP	8.82	0.11	14.34
0	1	CIRCULAR	0.06052	RCP	11.52	0.07	20.89
0	1	CIRCULAR	0.0109	HDPE	0.65	0.1	1.06
0	1	CIRCULAR	0.00612	HDPE	2.86	0.57	4.77
0	1	CIRCULAR	0.0342	HDPE	2.85	0.24	4.77
0	1	CIRCULAR	0.04641	HDPE	1.06	0.08	1.8
0	1	CIRCULAR	0.01048	HDPE	1.85	0.28	3.08
0	1	CIRCULAR	0.03596	RCP	0.17	0	2.95
0	1	CIRCULAR	0.01075	RCP	429.37	0.98	558.01
0	1	CIRCULAR	0.1456	RCP	2.15	0.05	3.62
0	1	CIRCULAR	0.01633	RCP	2.51	0.19	4.26
0	1	CIRCULAR	0.0151	RCP	2.5	0.19	4.25
0	1	CIRCULAR	0.02257	HDPE	2.74	0.17	4.88
0	1	CIRCULAR	0.01518	RCP	33.15	1.19	35.22
0	1	IRREGULAR	0.19961	Earthen	0.13	0	0.21
0	1	CIRCULAR	0.00845	HDPE	3.14	0.53	5.52
0	1	CIRCULAR	0.01821	RCP	3.09	0.35	5.46
0	1	CIRCULAR	0.01598	RCP	14.74	1.11	24.15

				(cfs)	(cfs)		
0	1	CIRCULAR	0.01737	RCP	11.16	0.81	20.06
0	1	CIRCULAR	0.02144	RCP	16.44	0.27	29.45
0	1	CIRCULAR	0.06449	RCP	23.15	0.14	39.66
0	1	CIRCULAR	0.01678	RCP	2.18	0.02	6.51
0	1	CIRCULAR	0.16213	PVC	0.91	0.18	1.53
0	1	CIRCULAR	0.02387	RCP	20.29	0.32	32.68
0	1	CIRCULAR	0.0155	RCP	2.56	0.09	5.09
0	1	CIRCULAR	0.01653	RCP	2.56	0.09	5.07
0	1	CIRCULAR	0.07858	RCP	2.55	0.04	5.06
0	1	CIRCULAR	0.08978	PVC	2.21	0.21	3.82
0	1	CIRCULAR	0.08805	RCP	2.23	0.07	4
0	1	CIRCULAR	0.10047	CMP	2.14	0.12	3.73
0	1	CIRCULAR	0.00716	CMP	11.18	1.08	15.89
0	1	CIRCULAR	0.00716	RCP	5.12	0.58	8.57
0	1	CIRCULAR	0.11572	RCP	1.39	0.01	3.35
0	1	CIRCULAR	0.02669	RCP	7.33	0.43	12.74
0	1	CIRCULAR	0.02534	CMP	35.96	1.84	35.95
0	1	CIRCULAR	0.0369	RCP	120.63	0.62	182
0	1	CIRCULAR	0.0315	RCP	59.32	0.5	69.43
0	1	CIRCULAR	0.02168	RCP	98.66	1	114.46
0	1	CIRCULAR	0.02175	RCP	124.68	0.84	163.01
0	1	CIRCULAR	0.03355	RCP	57.88	0.47	65.47
0	1	CIRCULAR	0.02837	RCP	2.37	0.13	4.28
0	1	CIRCULAR	0.05008	CMP	13.97	1.1	14
0	1	CIRCULAR	0.03224	CMP	17.84	1.75	18.54
0	1	CIRCULAR	0.00332	RCP	3.99	0.31	4.25
0	1	CIRCULAR	0.0059	RCP	2.14	0.09	3.91
0	1	CIRCULAR	0.08432	ABS	6.93	0.37	18.1
0	1	CIRCULAR	0.00453	RCP	0.96	0.06	1.77
0	1	CIRCULAR	0.02619	RCP	0.18	0	0.27
0	1	CIRCULAR	0.06693	RCP	1.01	0.04	1.73
3	1	PARABOLIC	0.11591	CONC	0	0	0
3	1	PARABOLIC	0.00757	CONC	1.6	0.12	3
0	1	CIRCULAR	0.00305	RCP	0.2	0.1	0.44
3	1	PARABOLIC	0.01636	CONC	0	0	0
0	1	CIRCULAR	0.17878	CMP	0.85	0.1	1.5
16	1	RECT_CLOSED	0.00788	RCB	277.5	0.22	527.52
0	1	CIRCULAR	0.06169	RCP	0.03	0	0.05
3	1	PARABOLIC	0.04794	CONC	0	0	0
3	1	PARABOLIC	0.09823	CONC	0	0	0
3	1	PARABOLIC	0.07036	CONC	2.03	0.05	3.6
0	1	CIRCULAR	0.01774	CMP	5.03	0.66	8.11

				(cfs)	(cfs)		
0	1	CIRCULAR	0.02147	CMP	28.99	0.55	50.95
0	1	CIRCULAR	0.05043	RCP	0.9	0.04	1.43
0	1	CIRCULAR	0.01278	RCP	1.43	0.12	17.83
0	1	CIRCULAR	0.00966	RCP	2.16	0.21	3.64
3	1	PARABOLIC	0.17585	Concrete	2.83	0.07	4.77
0	1	CIRCULAR	0.02919	CMP	0.24	0.04	0.39
0	1	CIRCULAR	0.01504	HDPE	0.26	0.03	0.43
0	1	CIRCULAR	0.04105	CMP	0.26	0.04	0.43
0	1	CIRCULAR	0.06328	CMP	1.86	0.13	3.34
0	1	CIRCULAR	0.01859	RCP	9.04	0.63	15.26
0	1	CIRCULAR	0.06189	CMP	6.87	0.49	12.13
0	1	CIRCULAR	0.47947	CMP	3.18	0.04	5.8
0	1	CIRCULAR	0.01083	RCP	11.78	0.71	20.7
0	1	CIRCULAR	0.01081	CMP	20.82	0.9	36.56
0	1	CIRCULAR	0.02205	HDPE	3.46	0.65	4.75
0	1	CIRCULAR	0.15237	CMP	5.46	0.25	8.53
0	1	CIRCULAR	0.00506	CMP	6.31	1.56	9.76
0	1	CIRCULAR	0.01534	CMP	3.84	0.54	6.79
0	1	CIRCULAR	0.00263	RCP	80.68	0.37	219.18
0	1	CIRCULAR	0.01929	RCP	4.35	0.3	7.63
0	1	CIRCULAR	0.00704	CMP	3.83	0.8	6.58
0	1	CIRCULAR	0.0524	HDPE	4.01	0.08	6.88
0	1	CIRCULAR	0.27655	CMP	0	0	0
0	1	IRREGULAR	0.01478	EAR	0.6	0.2	0.96
0	1	CIRCULAR	0.19015	CMP	3.45	0.14	5.69
0	1	CIRCULAR	0.09578	CMP	18.93	0.28	29
0	1	CIRCULAR	0.03988	RCP	1.33	0.06	2.31
4	1	RECT_OPEN	0.02479	Concrete	0	0	0
0	1	CIRCULAR	0.00564	RCP	79.5	1.59	78.92
8	1	RECT_OPEN	0.00961	Concrete	5.17	0.1	8.53
5	1	RECT_OPEN	0.02826	Concrete	0.17	0	0.26
0	1	CIRCULAR	0.0106	CMP	5.23	0.89	7.91
0	1	CIRCULAR	0.04587	RCP	6.31	0.21	9.73
0	1	CIRCULAR	0.00784	RCP	7.9	0.64	12.69
0	1	CIRCULAR	0.87276	PVC	1.17	0.22	1.83
8	1	RECT_OPEN	0.00915	EAR	1.79	0.02	3.16
0	1	CIRCULAR	0.00576	HDPE	97.27	0.89	182.34
0	1	CIRCULAR	0.04554	CMP	0.94	0.08	1.56
0	1	CIRCULAR	0.01812	HDPE	97.83	0.51	182.97
0	1	CIRCULAR	0.00379	RCP	21.16	1.52	22.45
3	1	PARABOLIC	0.02196	Earthen	1.64	0.34	2.83
0	1	CIRCULAR	0.00517	CMP	1.3	0.15	2.12

				(cfs)		(cfs)	
3	1	PARABOLIC	0.04	Concrete	0.48	0.02	0.61
0	1	CIRCULAR	0.1509	CONC	5.11	0.06	8.05
0	1	CIRCULAR	0.01522	RCP	87.5	0.27	154.09
0	1	CIRCULAR	0.14643	CMP	2.81	0.13	4.47
0	1	CIRCULAR	0.00976	CMP	1.42	0.25	2.46
0	1	CIRCULAR	0.17017	CMP	0.51	0.02	0.88
0	1	CIRCULAR	0.04798	HDPE	1.87	0.04	3.43
0	1	CIRCULAR	0.46873	HDPE	2.39	0.02	4.33
0	1	CIRCULAR	0.03969	HDPE	7.52	0.36	11.99
0	1	CIRCULAR	0.00333	CMP	16.5	0.37	26.99
0	1	CIRCULAR	0.10334	Earthen	24.01	0.05	38.95
20	1	RECT_OPEN	0.10318	Earthen	24	0	38.95
0	1	CIRCULAR	0.04903	HDPE	0.86	0.04	1.38
0	1	CIRCULAR	0.03154	HDPE	0.89	0.05	1.43
0	1	CIRCULAR	0.03585	HDPE	6.74	0.34	10.76
0	1	CIRCULAR	0.02862	HDPE	7.55	0.42	12.04
0	1	CIRCULAR	0.02449	HDPE	0.51	0.03	0.79
0	1	CIRCULAR	0.01638	HDPE	0.41	0.03	0.63
0	1	CIRCULAR	0.02458	ABS	14.1	0.4	25.27
0	1	CIRCULAR	0.01862	HDPE	4.94	0.56	9.1
0	1	CIRCULAR	0.01962	HDPE	1.08	0.07	1.71
0	1	CIRCULAR	0.01614	HDPE	0.19	0.01	0.29
0	1	CIRCULAR	0.03746	HDPE	0.54	0.03	0.82
0	1	CIRCULAR	0.13082	HDPE	4.52	0.06	7.69
3	1	PARABOLIC	0.0177	CONC	0.83	0.02	1.91
0	1	CIRCULAR	0.01652	HDPE	1.57	0.12	2.56
0	1	CIRCULAR	0.03322	HDPE	2.05	0.11	3.3
0	1	CIRCULAR	0.01452	HDPE	1.03	0.08	1.59
0	1	CIRCULAR	0.02852	HDPE	1.28	0.07	2
0	1	CIRCULAR	0.04167	HDPE	4.25	0.2	6.74
0	1	CIRCULAR	0.08783	CMP	0.66	0.12	1.05
0	1	CIRCULAR	0.00621	HDPE	2.45	0.3	3.89
0	1	CIRCULAR	0.02495	HDPE	3.52	0.21	5.62
0	1	CIRCULAR	0.06935	HDPE	1.18	0.04	1.84
0	1	CIRCULAR	0.10685	HDPE	4.79	0.06	7.61
0	1	CIRCULAR	0.0196	RCP	7.02	0.48	12.36
0	1	CIRCULAR	0.00366	RCP	8.89	1.4	15.35
3	1	PARABOLIC	0.10962	Concrete	0	0	0
3	1	PARABOLIC	0.05945	Concrete	0	0	0
3	1	PARABOLIC	0.02626	Concrete	1.35	0.08	2.7
3	1	PARABOLIC	0.14246	Concrete	1.97	0.05	3.52
3	1	PARABOLIC	0.08587	Concrete	1.37	0.05	2.6

				(cfs)		(cfs)	
0	1	CIRCULAR	0.06224	RCP	1.15	0.04	2.11
0	1	CIRCULAR	0.01105	RCP	28.35	0.19	52.51
0	1	CIRCULAR	0.07414	RCP	0.64	0.02	1.14
0	1	CIRCULAR	0.03938	RCP	27.58	0.1	51.13
0	1	CIRCULAR	0.02111	CMP	16.86	0.52	28.34
0	1	CIRCULAR	0.05984	CMP	24.19	0.45	41.18
0	1	CIRCULAR	0.01887	CMP	5.24	0.67	9.5
0	1	CIRCULAR	0.04587	RCB	20.31	0.42	36.88
0	1	CIRCULAR	0.02502	CMP	12.5	1.39	18.7
0	1	CIRCULAR	0.02587	CMP	11.15	1.22	16.21
0	1	CIRCULAR	0.05871	CMP	37.3	0.43	66.52
0	1	CIRCULAR	0.02778	CMP	2.8	0.3	8.16
0	1	CIRCULAR	0.00906	HDPE	4.39	2.13	4.47
0	1	CIRCULAR	0.12358	ABS	4.19	0.11	8.48
0	1	CIRCULAR	0.0162	RCP	65.94	0.78	117.55
0	1	CIRCULAR	0.07062	CMP	0.76	0.02	1.32
0	1	CIRCULAR	0.01712	RCP	72.36	0.38	128.25
0	1	CIRCULAR	0.03356	RCP	56.16	0.21	104.15
0	1	CIRCULAR	0.00678	RCP	56.23	0.48	104.3
0	1	CIRCULAR	0.0181	RCP	54.24	0.28	99.92
0	1	CIRCULAR	0.05178	RCP	3.73	0.46	6.69
0	1	CIRCULAR	0.03747	RCP	25.2	0.2	44.52
0	1	CIRCULAR	0.0509	CMP	5.4	0.42	10.37
0	1	CIRCULAR	0.09784	CMP	10.57	0.09	19.17
0	1	CIRCULAR	0.03933	RCP	25.18	0.03	44.73
0	1	CIRCULAR	0.01682	ABS	2.78	0.2	4.75
0	1	CIRCULAR	0.2452	ABS	2.77	0.05	4.74
0	1	CIRCULAR	0.02226	ABS	5.64	0.36	9.75
0	1	CIRCULAR	0.06198	ABS	5.63	0.22	9.73
0	1	CIRCULAR	0.00607	ABS	4.86	0.59	9.31
0	1	CIRCULAR	0.01527	RCP	25.28	0.05	78.06
0	1	CIRCULAR	0.06046	RCP	19.37	0.12	34.35
0	1	CIRCULAR	0.0082	RCP	19.39	0.32	34.32
0	1	CIRCULAR	0.10425	RCP	11.44	0.05	20.74
0	1	CIRCULAR	0.00806	CMP	6.55	1.28	9.47
3	1	PARABOLIC	0.02293	Concrete	0.11	0.01	0.17
3	1	PARABOLIC	0.07433	Concrete	0.19	0.01	0.31
0	1	CIRCULAR	0.01033	CMP	10.59	0.85	15.9
3	1	PARABOLIC	0.07132	Concrete	0.16	0.01	0.24
0	1	CIRCULAR	0.02264	RCP	1.34	0.09	2.45
0	1	CIRCULAR	0.00901	RCP	9.61	0.45	17.25
0	1	CIRCULAR	0.03829	RCP	17.2	0.39	31.14

				(cfs)	(cfs)		
0	1	CIRCULAR	0.0967	RCP	1.36	0.04	2.55
0	1	CIRCULAR	0.04935	ABS	2.18	0.09	3.98
0	1	CIRCULAR	0.01085	CMP	19.28	0.51	22.16
3	1	PARABOLIC	0.10272	Concrete	0.7	0.02	1.21
0	1	CIRCULAR	0.0152	RCP	0.84	0.06	1.53
3	1	PARABOLIC	0.31425	Concrete	0.08	0	0.12
3	1	PARABOLIC	0.16378	Concrete	0.53	0.01	1.06
3	1	PARABOLIC	0.04039	Concrete	0.23	0.01	0.45
0	1	CIRCULAR	0.0219	CMP	4.46	0.53	7.87
0	1	CIRCULAR	0.01514	CMP	5.57	0.8	8.06
0	1	CIRCULAR	0.01978	CMP	4.31	0.88	5.24
0	1	CIRCULAR	0.00456	HDPE	4.05	0.57	6.91
0	1	CIRCULAR	0.03154	CONC	26.6	0.22	44.87
0	1	CIRCULAR	0.10703	RCP	2.92	0.08	6.28
0	1	CIRCULAR	0.00646	RCP	37.67	0.33	69.77
0	1	CIRCULAR	0.00902	RCP	50.3	0.37	92.66
0	1	CIRCULAR	0.0122	RCP	51.22	0.32	94.15
0	1	CIRCULAR	0.00327	RCP	18.78	0.23	32.39
0	1	CIRCULAR	0.0409	ABS	3.16	0.05	6.13
0	1	CIRCULAR	0.02557	ABS	1.34	0.04	2.32
0	1	CIRCULAR	0.01378	ABS	1.3	0.05	2.26
0	1	CIRCULAR	0.15746	CMP	1.36	0.06	2.37
0	1	CIRCULAR	0.06161	CMP	24.1	0.18	32.96
3	1	PARABOLIC	0.01145	CONC	2.34	0.15	3.35
0	1	CIRCULAR	0.00884	CMP	2.31	0.43	4.13
67	1	RECT_CLOSED	0.00802	RCB	2.54	0.21	4.58
0	1	CIRCULAR	0.00666	CMP	10.89	2.34	12.25
1.5	1	PARABOLIC	0.03101	CONC	10.99	1.04	12.15
0	1	CIRCULAR	0.07756	RCP	7.03	0.24	7.39
0	1	CIRCULAR	0.05399	SP	16.85	0.2	30.06
3	1	PARABOLIC	0.02734	CONC	0.55	0.02	0.99
0	1	CIRCULAR	0.13726	HDPE	0.7	1.02	0.67
0	1	CIRCULAR	0.00492	RCP	15.99	1.01	17.46
0	1	CIRCULAR	0.01641	RCP	28.47	0.33	43.75
0	1	CIRCULAR	0.00819	RCP	69.89	1.16	79.64
0	1	CIRCULAR	0.03748	RCP	67.87	0.53	79.49
0	1	CIRCULAR	0.00833	RCP	75.13	0.82	79.51
0	1	CIRCULAR	0.00403	RCP	19	1.32	20.81
0	1	CIRCULAR	0.02132	RCP	4.78	0.05	8.57
0	1	CIRCULAR	0.05786	RCP	18.07	0.11	32.36
0	1	CIRCULAR	0.09632	RCP	8.01	0.25	13.75
0	1	CIRCULAR	0.03919	RCP	17.99	0.14	32.23

				(cfs)	(cfs)		
0	1	CIRCULAR	0.04267	RCP	7	0.32	6.37
0	1	CIRCULAR	0.36144	RCP	2.4	0.04	3.72
0	1	IRREGULAR	0.01301	CONC	305.17	0.11	535.07
0	1	CIRCULAR	0.02067	RCP	7.37	0.49	10.71
0	1	CIRCULAR	0.01369	RCP	10.78	0.88	15.98
0	1	CIRCULAR	0.00701	CMP	10.63	1.04	15.22
0	1	CIRCULAR	0.0427	HDPE	2.14	0.1	2.9
0	1	CIRCULAR	0.02612	CMP	8.83	0.96	8.95
0	1	IRREGULAR	0.01988	EAR	7.24	0	11.9
3	1	PARABOLIC	0.02879	EAR	0	0	0
3	1	PARABOLIC	0.15859	Concrete	0.12	0	0.22
0	1	CIRCULAR	0.00199	RCP	36.41	0.81	53.07
5	1	HORIZ_ELLIPSE	0.00131	CMP	144.75	2.78	153.3
5	1	HORIZ_ELLIPSE	0.00422	CMP	143.58	3.31	151.95
5	1	HORIZ_ELLIPSE	0.13693	CMP	143.73	0.27	152.12
5	1	CIRCULAR	0.05677	CMP	92.93	1.08	92.05
0	1	CIRCULAR	0.00352	CMP	45.28	2.11	44.36
0	1	CIRCULAR	0.01661	CMP	41.04	0.88	40.85
0	1	CIRCULAR	0.02256	CMP	14.34	0.78	16.04
0	1	CIRCULAR	0.04862	PVC	6.38	0.13	11.31
0	1	CIRCULAR	0.00483	CMP	0.63	0.16	1.06
0	1	CIRCULAR	0.07683	RCP	3.12	0.11	5.2
0	1	CIRCULAR	0.00776	CMP	88.43	1.29	89.38
0	1	CIRCULAR	0.3513	RCP	3.41	0.05	5.67
0	1	CIRCULAR	0.01352	RCP	40.73	1.55	43.77
5	1	RECT_CLOSED	0.01171	CMP	79.27	0.82	79.24
6	1	RECT_CLOSED	0.02261	RCB	79.26	0.47	79.24
0	1	CIRCULAR	0.01132	PVC	1.54	2.59	1.51
0	1	CIRCULAR	0.02844	RCP	56.59	0.5	83.12
0	1	CIRCULAR	0.01439	CMP	0.04	0.01	3.31
0	1	CIRCULAR	0.04342	CMP	11.1	0.94	11.59
0	1	CIRCULAR	0.01865	RCP	45.27	0.63	55.51
0	1	CIRCULAR	0.10633	CMP	0	0	0
0	1	CIRCULAR	0.00575	RCP	60.82	0.56	80.17
0	1	CIRCULAR	0.01936	CMP	4.69	0.59	7.89
0	1	CIRCULAR	0.06851	CMP	6.4	0.43	10.68
0	1	CIRCULAR	0.03324	ABS	0	0	0
0	1	CIRCULAR	0.00743	RCP	14.67	0.75	26.9
0	1	CIRCULAR	-0.02002	RCP	0.17	0.01	2.66
0	1	CIRCULAR	0	SP	9.02	27.24	9.14
0	1	CIRCULAR	0.02058	RCP	7.9	0.13	14.48
0	1	CIRCULAR	0.00752	SP	10.51	1.41	10.97

				(cfs)	(cfs)		
0	1	CIRCULAR	0.0127	RCP	11.49	0.45	20.21
0	1	CIRCULAR	0.03828	RCP	9.98	0.23	17.98
0	1	CIRCULAR	0.0025	RCP	0.47	0.02	0.96
0	1	CIRCULAR	0.00103	CMP	8.92	0.51	10.12
0	1	CIRCULAR	0.03355	SP	8.91	1.39	10.09
0	1	CIRCULAR	0.01792	RCP	0	0	0.3
0	1	CIRCULAR	0.03195	RCP	17.43	0.93	17.65
0	1	CIRCULAR	0.03125	RCP	0	0	0
0	1	CIRCULAR	0.00867	RCP	17.52	0.46	16.99
0	1	CIRCULAR	0.11215	RCP	3.86	0.03	6.23
0	1	CIRCULAR	0.03885	CMP	7.75	0.69	7.77
0	1	CIRCULAR	0.00731	CMP	11.67	1.11	11.45
0	1	CIRCULAR	0.00581	RCP	28.55	1.66	29.83
0	1	CIRCULAR	0.01189	RCP	4.12	0.36	7.42
0	1	CIRCULAR	0.01529	RCP	5.71	1.3	5.67
0	1	CIRCULAR	0.02304	RCP	0.74	0.05	1.39
0	1	CIRCULAR	0.03061	PVC	0.2	0.03	0.45
0	1	CIRCULAR	0.01932	RCP	4.02	0.28	6.78
0	1	CIRCULAR	0.01945	PVC	8.89	1.79	10.14
0	1	CIRCULAR	0.00379	HDPE	0.87	0.13	1.56
0	1	CIRCULAR	0.00328	RCP	9.65	1.6	11.56
0	1	CIRCULAR	0.0285	RCB	16.97	0.44	29.82
0	1	CIRCULAR	0.02354	RCP	15.31	0.44	26
0	1	CIRCULAR	0.03063	RCP	17.21	0.43	29.43
0	1	CIRCULAR	0.01699	CMP	17	0.59	29.86
0	1	CIRCULAR	0.01088	ABS	21.8	1.99	22.04
0	1	CIRCULAR	0.01269	RCP	96.76	0.6	124.05
0	1	CIRCULAR	0.00444	CMP	2.04	0.54	3.55
0	1	CIRCULAR	0.05891	ABS	4.21	0.27	7.33
0	1	CIRCULAR	0.0115	ABS	5.05	0.73	8.96
0	1	CIRCULAR	0.00803	RCP	130.3	0.34	221.71
0	1	CIRCULAR	0.05139	RCP	1.51	0.06	2.9
0	1	CIRCULAR	0.05264	RCP	3.14	0.03	7.68
0	1	CIRCULAR	0.04159	RCP	2.81	0	4
0	1	CIRCULAR	0.05905	CONC	13.99	0.14	25.39
0	1	CIRCULAR	0.00317	CONC	14.54	0.63	27.79
0	1	CIRCULAR	0.00316	RCP	133.07	0.56	241.23
0	1	CIRCULAR	0.13892	RCP	8	0.2	14.2
0	1	CIRCULAR	0.00623	RCP	134.21	0.4	228.89
0	1	CIRCULAR	0.01699	RCP	138.99	0.54	235.29
0	1	CIRCULAR	0.00709	RCB	138.89	0.39	235.3
0	1	CIRCULAR	0.06048	CMP	15.34	0.28	31.92

				(cfs)	(cfs)		
3	1	PARABOLIC	0.02251	ASPHALT	5.6	0.3	9.3
0	1	CIRCULAR	0.02474	CMP	10.6	0.55	16.93
0	1	CIRCULAR	0.06675	ABS	4.08	0.44	7.26
0	1	CIRCULAR	0.01744	HDPE	14.38	0.48	24.16
0	1	CIRCULAR	0.01806	HDPE	1.41	0.1	2.52
0	1	CIRCULAR	0.03489	HDPE	1.4	0.07	2.5
0	1	CIRCULAR	0.00705	HDPE	9.18	0.48	15.57
0	1	CIRCULAR	0.1717	HDPE	1.22	0.08	2.12
0	1	CIRCULAR	0.02095	HDPE	6.02	1.17	6.07
0	1	CIRCULAR	0.09901	CMP	10.54	0.39	18.44
0	1	CIRCULAR	0.01308	RCP	5.75	0.48	11.13
0	1	CIRCULAR	0.05481	ABS	2.41	0.29	4.78
0	1	CIRCULAR	0.01369	RCP	3.22	0.26	5.66
0	1	CIRCULAR	0.01785	CMP	3.2	0.42	5.2
0	1	CIRCULAR	0.02373	CMP	9.56	0.51	15.07
0	1	CIRCULAR	0.02559	CMP	2.52	0.28	4.4
0	1	CIRCULAR	0.02648	CMP	20.41	0.56	32.34
0	1	CIRCULAR	0.03535	CMP	20.35	0.49	32.27
0	1	CIRCULAR	0.00714	RCP	20.3	0.59	32.17
0	1	CIRCULAR	0.00711	RCP	58.41	1.69	85.62
0	1	CIRCULAR	0.08274	RCP	63.3	0.33	104.1
0	1	CIRCULAR	0.00819	CMP	1.48	0.29	2.61
0	1	CIRCULAR	0.00287	CMP	2.13	0.7	3.78
3	1	RECT_CLOSED	-0.004	RCB	2.7	0.24	4.51
0	1	CIRCULAR	0.03087	HDPE	3.72	0.2	6.14
0	1	CIRCULAR	0.0312	CMP	0.06	0	0.09
0	1	CIRCULAR	0.03948	CMP	11.4	0.11	20.36
0	1	CIRCULAR	0.00689	CMP	29.56	0.99	29.63
0	1	CIRCULAR	0.03258	RCP	3.39	0.18	6.56
3	1	PARABOLIC	0.07889	Concrete	0.27	0.01	0.44
3	1	PARABOLIC	0.05771	Concrete	0.05	0	0.1
0	1	CIRCULAR	0.00581	ABS	0.58	0.21	0.86
0	1	CIRCULAR	0.00402	ABS	3.28	1.45	4.92
0	1	CIRCULAR	0.04015	ABS	5.02	0.7	4.75
0	1	CIRCULAR	0.00851	RCP	7.64	0.79	9.25
0	1	CIRCULAR	0.0111	HDPE	6.62	1.76	6.73
0	1	CIRCULAR	0.01417	RCP	2.35	0.19	3.83
0	1	CIRCULAR	0.05023	CMP	7.37	0.58	12.87
0	1	CIRCULAR	0.01876	CMP	10.28	1.32	15.68
0	1	CIRCULAR	0.01477	VCP	1.39	1.01	1.5
4	1	RECT_OPEN	0.00572	Earthen	1.89	0.13	4.18
0	1	CIRCULAR	0.01031	RCP	3.5	0.97	4.45

				(cfs)	(cfs)		
0	1	CIRCULAR	0.01982	RCP	33.82	0.17	51.53
0	1	CIRCULAR	0.10128	CONC	4.13	0.06	6.81
0	1	CIRCULAR	0.00692	RCP	15.28	0.28	27.54
0	1	CIRCULAR	0.0085	RCP	15.27	0.25	27.45
0	1	CIRCULAR	0.05279	RCP	1.59	0.07	2.84
0	1	CIRCULAR	0.05562	RCP	17.35	0.11	31.42
0	1	CIRCULAR	0.00673	RCP	21.26	0.63	39.23
0	1	CIRCULAR	0.03092	RCP	23.44	0.32	43.24
0	1	CIRCULAR	0.02696	RCP	23.36	0.14	41.44
0	1	CIRCULAR	0.08306	RCP	28.68	0.24	52.95
0	1	CIRCULAR	0.02342	RCP	33.05	0.53	60.31
0	1	CIRCULAR	0.16796	CMP	0.12	0.01	0.18
0	1	CIRCULAR	0.01787	RCP	9.33	0.66	16.34
0	1	CIRCULAR	0.3433	RCP	0.28	0.01	0.45
0	1	CIRCULAR	0.00529	RCP	116.94	0.38	138.67
0	2	CIRCULAR	0.02311	RCP	130.17	1.04	130.21
0	1	CIRCULAR	0.01451	CMP	14.32	2.09	14.31
0	1	CIRCULAR	0.00414	CMP	16.94	4.62	17.02
0	1	CIRCULAR	0.01415	RCP	53.23	1.09	81.36
0	1	CIRCULAR	0.0385	RCP	29.87	0.18	54.51
0	1	CIRCULAR	0.00408	RCP	115.61	0.43	311.67
3	1	PARABOLIC	0.09321	EAR	0	0	0
0	1	CIRCULAR	0.01089	RCP	54.18	1.27	55.97
0	1	CIRCULAR	0.01124	CMP	2.99	0.5	4.33
0	1	CIRCULAR	0.0107	CMP	8.72	0.69	10.35
0	1	CIRCULAR	0.07895	CMP	2.53	0.16	4.5
0	1	CIRCULAR	0.01978	RCP	37.4	0.19	59.39
0	1	CIRCULAR	0.01978	RCP	37.49	0.19	58.9
0	1	CIRCULAR	0.04044	HDPE	3.44	0.48	4.25
0	1	IRREGULAR	0.01187	Earthen	537.3	0.08	884
0	1	CIRCULAR	0.01978	RCP	41.89	0.21	67.42
0	1	CIRCULAR	0.01947	RCP	154.07	0.56	261.3
0	1	CIRCULAR	0.02089	RCP	153.96	0.54	261.18
0	1	CIRCULAR	0.03843	RCP	1.18	0.03	2.03
0	1	CIRCULAR	0.00764	RCP	157.42	0.43	267.78
0	1	CIRCULAR	0.04813	HDPE	7.19	0.31	15.25
0	1	CIRCULAR	0.01396	HDPE	10.63	0.4	25.84
0	1	IRREGULAR	0.01417	Earthen	551.4	0.37	911.75
0	1	IRREGULAR	0.01338	Earthen	537.86	0.37	896.82
0	1	IRREGULAR	-0.11433	Earthen	459.15	0.11	690.02
0	1	CIRCULAR	0.02166	CONC	3.29	0.63	5.16
0	1	CIRCULAR	0.19098	HDPE	13.71	0.14	13.96

				(cfs)	(cfs)		
0	1	CIRCULAR	0.01976	RCP	0.99	0.07	1.86
0	1	IRREGULAR	0.037	Earthen	542.83	0.05	909.66
0	1	IRREGULAR	0.01391	Earthen	543.45	0.04	917.34
0	1	CIRCULAR	0.08056	CONC	3.92	0.03	12.38
0	1	CIRCULAR	0.00486	RCP	30.89	1.08	47.21
0	1	CIRCULAR	0.04831	RCP	45.39	0.14	68.32
0	1	CIRCULAR	0.00818	RCP	29.64	0.23	44.16
0	1	CIRCULAR	0.00854	CMP	209.63	1.84	235.02
0	1	CIRCULAR	0.11696	CMP	24.36	1.25	24.47
0	1	CIRCULAR	0.29333	CMP	4.17	0.06	15.71
0	1	CIRCULAR	0.00849	RCP	175.39	0.36	320.5
0	1	CIRCULAR	0.01041	CMP	61.41	0.26	124.82
0	1	CIRCULAR	0.01564	CMP	61.18	0.21	124.47
0	1	CIRCULAR	0.00271	RCP	66.77	0.24	132.98
9	1	RECT_CLOSED	0.01748	RCB	133.53	0.3	244.76
0	1	CIRCULAR	0.00716	RCP	65.37	0.15	133.67
0	1	CIRCULAR	0.05349	CMP	0.42	0.01	0.56
0	1	CIRCULAR	0.16129	CMP	1.05	0.02	1.59
0	1	CIRCULAR	0.0284	RCP	175.48	0.2	320.25
0	1	CIRCULAR	0.03687	CMP	190.43	0.7	218.69
0	1	CIRCULAR	0.00343	RCP	31.98	0.82	33.2
0	1	CIRCULAR	0.00206	RCP	22.4	0.49	29.44
0	1	CIRCULAR	0.00338	RCP	18.67	0.48	20.78
0	1	CIRCULAR	0.013	HDPE	4.53	0.18	7.7
0	1	CIRCULAR	0.01304	HDPE	4.53	0.18	7.7
0	1	CIRCULAR	0.04507	HDPE	4.51	0.09	7.68
0	1	CIRCULAR	0.01265	RCP	240.96	0.41	454.16
0	1	CIRCULAR	-0.00651	RCP	35.47	1.94	29
0	1	CIRCULAR	0.0481	RCP	7.92	0.05	10.01
0	1	CIRCULAR	0.00868	CMP	1.31	0.25	1.27
0	1	CIRCULAR	-0.0007	RCP	22.18	0.84	28.87
0	1	CIRCULAR	0.01482	RCP	63.35	0.36	106.49
0	1	CIRCULAR	0.31215	RCP	63.34	0.08	106.49
0	1	CIRCULAR	0.03407	HDPE	3.46	0.08	5.66
0	1	CIRCULAR	0.05257	RCP	29.11	0.31	49.03
0	1	IRREGULAR	0.02049	Concrete	338.29	0.13	411.97
0	1	IRREGULAR	0.01427	Concrete	331.66	0.15	401.61
0	1	IRREGULAR	0.00495	Concrete	337.28	0.26	402.82
0	1	IRREGULAR	0.02722	Concrete	332.05	0.11	400.84
0	1	IRREGULAR	0.05109	Concrete	121.4	0.03	177.81
0	1	IRREGULAR	0.01883	Concrete	331.19	0.03	422.15
0	1	CIRCULAR	0.07351	RCP	38.66	0.21	65.03

				(cfs)	(cfs)		
0	1	CIRCULAR	0.01495	ABS	0.78	0.18	1.27
0	1	CIRCULAR	0.00877	CMP	157.31	1.37	156.07
0	1	CIRCULAR	0.01026	CMP	153.27	1.23	154.6
0	1	CIRCULAR	0.03387	CMP	112.34	0.43	111.85
0	1	CIRCULAR	0.0095	CMP	11.2	0.94	14.06
0	1	CIRCULAR	0.01692	RCP	6.37	0.47	11.15
0	1	CIRCULAR	0.05965	ABS	1.41	0.16	1.52
0	1	CIRCULAR	0.00988	RCP	20.9	0.93	20.8
0	1	CIRCULAR	0.04842	CMP	4.81	0.38	5.06
8	1	RECT_OPEN	0.02254	RCB	229.01	0.39	437.81
0	1	CIRCULAR	0.07663	CMP	12.7	0.81	12.53
4.6	1	CIRCULAR	0.00429	CMP	34.05	1.44	33.66
0	1	CIRCULAR	0.03133	CMP	18.79	0.87	18.68
0	1	CIRCULAR	0.02019	CMP	7.95	0.98	8.54
0	1	CIRCULAR	0.03182	CMP	11.98	0.3	21.77
0	1	CIRCULAR	0.02222	CMP	15.32	0.46	27.41
0	1	CIRCULAR	0.02762	CMP	11.97	1.27	11.68
0	1	CIRCULAR	0.02196	CMP	9.98	1.18	12.76
0	1	CIRCULAR	0.01657	CMP	4.51	0.62	7.59
0	1	CIRCULAR	0.01262	HDPE	10.46	2.61	9.84
0	1	CIRCULAR	0.08025	CMP	3.38	0.21	6.17
0	1	CIRCULAR	0.02419	RCP	67.86	0.65	90.92
0	1	CIRCULAR	0.05238	RCP	68.89	0.45	73.73
0	1	CIRCULAR	0.00207	CMP	61.47	1.74	62.72
0	1	CIRCULAR	0.10592	RCP	0.55	0.03	0.96
0	1	CIRCULAR	0.01039	CMP	61.37	0.77	62.63
0	1	CIRCULAR	0.00174	RCP	59.97	3.51	78.06
0	1	CIRCULAR	0.02646	RCP	59.95	0.9	78.09
0	1	CIRCULAR	0.03132	RCP	67.51	0.57	90.52
0	1	CIRCULAR	0.04937	RCP	8.13	0.05	13.49
0	1	CIRCULAR	0.07018	HDPE	0.96	0.1	1.52
0	1	CIRCULAR	0.00966	CMP	152.19	1.26	153.67
0	1	CIRCULAR	0.03732	HDPE	0.63	0.09	1.01
0	1	CIRCULAR	0.00527	RCP	9.46	0.2	15.92
0	1	CIRCULAR	0.01672	RCP	56.51	0.17	90.13
0	1	CIRCULAR	0.55138	RCP	0.79	0	1.31
0	1	CIRCULAR	0.02255	RCP	54.37	0.14	83.98
0	1	CIRCULAR	0.05594	RCP	3.9	0.04	6.48
0	1	CIRCULAR	0.07201	HDPE	3.66	0.06	6.11
0	1	CIRCULAR	0.00685	RCP	6.4	0.34	20.98
3	1	PARABOLIC	0.02976	Concrete	0	0	0
0	1	CIRCULAR	0.02432	CMP	15.27	0.34	29.44

				(cfs)	(cfs)		
0	1	CIRCULAR	0.04998	PVC	0.24	0.58	0.42
3	1	PARABOLIC	0.10043	Concrete	0	0	0
3	1	PARABOLIC	0.0915	Concrete	0	0	0
0	1	CIRCULAR	0.20008	RCP	2.66	0.01	4.41
0	1	CIRCULAR	0.07002	CONC	23.11	0.21	31.21
3	1	PARABOLIC	0.02878	Concrete	15.86	2.6	19.96
0	1	CIRCULAR	0.04492	CONC	21.64	0.25	28.73
0	1	CIRCULAR	0.02864	RCP	16.38	0.24	29.35
0	1	CIRCULAR	0.01469	HDPE	4.01	0.32	6.87
0	1	CIRCULAR	0.02426	Not modeled	24.29	0.7	38.22
3	1	PARABOLIC	0.04219	Other	0.29	0.04	0.52
0	1	CIRCULAR	0.10623	RCP	4.3	0.13	7.73
0	1	CIRCULAR	0.04233	CMP	24.09	0.53	37.77
0	1	CIRCULAR	0.08841	RCP	8.42	0.27	14.86
0	1	CIRCULAR	0.08949	RCP	10.95	0.35	19.23
0	1	CIRCULAR	0.07287	RCP	7.19	0.25	12.66
0	1	CIRCULAR	0.01118	RCP	16.56	1.49	23.84
0	1	CIRCULAR	0.00616	RCP	16.13	1.96	20.12
0	1	CIRCULAR	0.01387	RCP	12.7	1.03	12.16
0	1	CIRCULAR	0.01682	RCP	15.91	1.17	16.73
0	1	CIRCULAR	0.10761	RCP	18.99	0.55	31.13
0	1	CIRCULAR	0.01317	RCP	3.24	0.27	8.2
0	1	CIRCULAR	0.07204	CMP	15.78	0.26	23.62
0	1	CIRCULAR	0.04634	CMP	2.46	0.2	4.39
3	1	PARABOLIC	0.19867	CONC	0.21	0	0.34
0	1	CIRCULAR	0.03611	CMP	53.78	1.27	63.88
3	1	PARABOLIC	0.01341	CONC	12.51	0.72	2.31
0	1	IRREGULAR	0.04951	Other	1.05	0.01	2
3	1	PARABOLIC	0.17945	Other	1.48	0.02	2.77
0	1	CIRCULAR	0.00744	RCP	22.92	1.17	36.97
3	1	PARABOLIC	0.0674	Other	10.68	0.21	20.45
0	1	IRREGULAR	0.03539	Other	0	0	0
0	1	CIRCULAR	0.00777	RCP	52.46	0.41	96.51
0	1	CIRCULAR	0.00648	RCP	1.85	0.22	2.84
0	1	IRREGULAR	0.02576	CONC	0	0	0
0	1	CIRCULAR	0.33922	CMP	19.27	0.09	33.52
0	1	CIRCULAR	0.02456	RCP	71.68	0.32	127.18
0	1	CIRCULAR	0.10048	RCP	31.59	0.44	33.07
0	1	CIRCULAR	0.10367	CMP	5.25	0.29	8.95
0	1	IRREGULAR	0.08468	Other	3.44	0.01	6.06
0	1	CIRCULAR	0.07684	RCP	6.52	0.22	11.27
0	1	CIRCULAR	0.02637	RCP	6.77	0.4	11.67

Existing Condition Junctions Results Summary Table												
Dimensions			2-year				10-year				100-year	
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
3	341.403	0	344.21	0	220.37	YES	344.41	0	248.78	YES	344.7	0
1	346.771	0	346.77	0	0	YES	346.77	0	0.01	YES	347.93	0
5	347.275	0	347.27	0	0	YES	347.28	0	0	YES	349.03	0
5	329.825	0	332.46	0	338.29	NO	332.69	0	411.97	NO	333.3	0
2	328.592	0	330.6	0	337.28	NO	330.79	0	403.43	NO	331.5	0
9	326.449	0	328.25	0	331.66	NO	328.4	0	401.61	NO	329.36	0
4	322.374	0	323.28	0	332.05	NO	323.45	0	403.36	NO	324.14	0
11	303.901	0	306.01	0	336.28	NO	306.42	0	498.94	NO	307.76	0
9	442.149	0	442.3	0	0.67	YES	442.34	0	1.21	YES	442.4	0
7	398.27	3	395.5	0	24.01	YES	395.58	0	38.95	YES	395.62	0
3	407.059	0	406.66	0	0	YES	406.66	0	0	YES	406.66	0
8	379.738	0	379.89	0	4.81	YES	379.95	0	8.3	YES	380.03	0
4	398.929	11.529	388.88	0	175.6	YES	389.13	0	223.11	YES	389.9	0
6	389.575	5.975	384.59	0	175.71	YES	384.76	0	223.18	YES	385.28	0
11	352.201	6.5	346.14	0	2.5	YES	346.28	0	4.25	YES	346.46	0
2	414.412	0	414.41	0	0	YES	414.41	0	0	YES	414.41	0
5	314.067	10.567	304.68	0	28.2	NO	305.14	0	52.25	NO	305.75	0
8	373.335	0	374.17	0	103.49	YES	374.71	0	184.43	YES	375.6	0
9	393.919	7	388.64	0	72.29	YES	389.35	0	128.12	YES	390.18	0
2	360.282	0	360.32	0.04	0.04	YES	360.33	0.06	0.06	YES	360.35	0.09
1	355.651	0	360.69	1.44	13.7	YES	360.7	2.41	13.84	YES	360.7	4.06
6	354.446	0	360.08	0	135.93	YES	360.32	0	194.64	YES	360.58	0
3	357.963	9	349.68	0	25.23	YES	349.91	0	44.57	YES	350.42	0
5	348.925	9	340.92	0	30.74	NO	341.54	0	81.83	NO	342.58	0
4	373.974	0	374.44	11.45	11.45	YES	374.6	20.75	20.75	YES	374.82	37.12
1	374.021	0	374.17	0	3.52	YES	374.21	0	6.18	YES	374.25	0
7	376.548	0	377.49	7.43	10.11	YES	377.91	14.01	18.32	YES	378.8	24.42
7	408.997	0	409.14	0	1.49	YES	409.19	0	2.77	YES	409.25	0
9	407.59	0	407.9	0	2.22	YES	408.01	0	4.04	YES	408.16	0
9	443.09	0	443.22	0.69	4.85	YES	443.24	1.36	6.29	YES	443.26	2.35
6	461.226	0	462.81	7.06	7.06	YES	462.88	12.75	12.75	YES	462.92	22.63
8	457.858	0	458.37	0.26	7.29	YES	458.42	0.4	11.91	YES	458.51	0.6
7	498.613	0	499.92	5.17	17.36	YES	500.27	9.42	9.75	YES	500.65	16.51
2	480.579	0	480.9	2.96	13.04	YES	480.95	5.46	18.91	YES	481	9.4
4	490.694	8	484.47	0.18	10.94	YES	486.57	0.29	16.24	YES	486.78	0.46
3	437.465	4.465	433.51	2.02	2.68	YES	433.66	3.77	4.44	YES	433.85	6.52
7	375.557	0.557	374.05	0	0.05	YES	374.27	0	0.09	YES	374.56	0
0	442.835	12.835	431.54	0	77.28	YES	431.65	0	88.83	YES	431.88	0
1	418.952	7.952	416.48	0	53.8	YES	419.21	0	63.9	YES	421.11	0
3	419.743	0	420.91	0.98	32.81	YES	421.74	1.58	47.25	YES	424.42	2.52
9	449.159	6	445.44	0	9.43	YES	446.41	0	15.73	YES	447.58	0
5	411.025	6	415.27	0	11.41	YES	415.60	0	22.2	YES	415.92	0

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
6	394.716	7	390.32	0	138.92	YES	391.28	0	236.12	YES	395.74	0	395.74
9	392.309	0	394.87	1.67	125.73	YES	396.86	2.69	152	YES	398.62	4.31	398.62
8	417.208	5	417.48	0	26.71	YES	417.77	0	37.01	YES	417.89	0	417.89
4	430.764	0	431.8	0	0.16	YES	431.81	0	0.24	YES	431.81	0	431.81
8	391.018	0	395.32	0	63.3	YES	395.7	0	104.69	YES	395.89	0	395.89
9	442.475	0	443.93	7.4	7.59	YES	444.42	13.49	13.68	YES	444.46	23.31	444.46
6	416.806	7	410.91	11.02	33.8	YES	411.19	20.44	51.42	YES	411.48	36.44	411.48
6	332.691	0	334.21	19.28	19.28	NO	335.14	33.54	33.54	NO	335.94	60.2	335.94
3	330.193	0	334.65	18.07	155.71	NO	335.07	32.14	170.06	NO	335.59	57.6	335.59
5	333.38	9.13	329.23	0	131.49	NO	334.39	0	344.94	NO	335.17	0	335.17
3	382.41	4.08	380.09	5.29	48.02	YES	382.89	9.27	60.42	YES	383.08	14.85	383.08
3	391.513	7.5	386.44	0	153.96	YES	387.61	0	261.18	YES	391.62	0	391.62
5	386.892	10.392	379.35	0	157.38	YES	380.29	0	277.46	YES	382.34	0	382.34
7	375.504	0	377.4	2.39	37.15	YES	377.43	4.27	55.97	YES	377.47	7.09	377.47
9	412.189	5.5	407.75	0	31.83	YES	408.06	0	49.05	YES	408.32	0	408.32
8	407.418	7	401.49	8.02	37.31	YES	401.75	13.42	57.39	YES	402.03	22.55	402.03
2	396.922	7	392.69	0	45.44	YES	394.48	0	68.32	YES	396.05	0	396.05
11	397.701	7	392.7	0	38.16	YES	394.52	0	58.46	YES	396.11	0	396.11
3	395.741	12.741	385.71	0	175.93	YES	386.89	0	321.08	YES	390.23	0	390.23
3	395.864	10.034	391.78	0	209.63	YES	393.18	0	235.04	YES	394.65	0	394.65
7	397.87	0	398.19	2.83	2.83	YES	398.25	4.63	4.63	YES	398.32	7.55	398.32
6	405.75	0	404.85	0	2.97	YES	404.87	0	5.38	YES	404.9	0	404.9
3	380.26	5.96	376.86	0	22.6	YES	377.89	0	29.55	YES	378.84	0	378.84
5	397.45	8	394.85	0	165.65	YES	396.41	0	167.18	YES	397.5	0	397.5
4	397.974	7.75	396.02	0	153.26	YES	397.42	0	154.59	YES	398.38	0	398.38
9	401.729	4	397.95	0	0.78	YES	398.43	0	1.27	YES	400.29	0	400.29
4	401.214	7.75	401.33	0	157.39	YES	401.83	0	156.06	YES	402.01	0	402.01
6	416.359	6.759	416.64	0	61.49	YES	416.75	0	62.74	YES	416.86	0	416.86
7	425.117	0	425.59	4.06	8.15	YES	425.73	6.77	13.52	YES	425.9	11	425.9
3	333.493	0	337.27	0.11	46.77	NO	337.9	0.17	72.42	NO	338.25	0.28	338.25
9	398.951	16.661	383.65	0	50.7	YES	384.16	0	85.5	YES	389.63	0	389.63
3	441.73	9	433.36	0	5.12	YES	433.59	0	8.84	YES	521.31	0	521.31
1	459.585	8.675	451.29	0	2.23	YES	451.42	0	3.92	YES	529.36	0	529.36
8	455.652	8.272	447.73	0	2.22	YES	447.85	0	3.91	YES	529.99	0	529.99
4	442.716	6.476	436.6	0	3.1	YES	436.72	0	5.45	YES	524.35	0	524.35
2	442.08	7.26	435.28	0	4.93	YES	435.46	0	8.82	YES	505.64	0	505.64
2	447.818	10.898	437.49	0	9.12	YES	437.69	0	15.89	YES	513.44	0	513.44
2	448.262	8.442	440.16	0	2.21	YES	440.28	0	3.9	YES	527.32	0	527.32
1	462.786	9.686	453.45	0	2.24	YES	453.57	0	3.93	YES	534.18	0	534.18
4	449.186	6.146	443.39	0	2.21	YES	443.5	0	3.9	YES	526.65	0	526.65
0	421.927	11.927	410.16	0	0.62	YES	410.2	0	0.98	YES	461.18	0	461.18
5	432.927	6	432.927	0	2.5	YES	432.927	0	0	YES	432.927	0	432.927

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
3	454.343	0	454.44	0	2.11	YES	454.5	0	4.14	YES	454.54	0	0
2	350.392	0	350.39	0	0	YES	350.39	0	0	YES	350.39	0	0
7	445.997	0	446.37	0	6.22	YES	446.43	0	10.59	YES	446.51	0	0
2	285.768	0	290.63	0	358.12	NO	290.85	0	435.27	NO	292.2	0	0
2	431.602	0	432.09	0	15.97	YES	432.24	0	28.04	YES	432.43	0	0
5	276.635	0	280.01	0	557.07	NO	280.48	0	915.67	NO	281.11	0	0
3	285.233	0	287.73	0	543.82	NO	288.39	0	910.95	NO	289.76	0	0
3	319.993	0	311.89	0	0.91	NO	311.9	0	1.52	NO	311.95	0	0
5	429.407	0	429.51	0	1.98	YES	429.64	0	5.27	YES	429.83	0	0
1	316.031	0	317.95	0	356.04	NO	318.19	0	448.71	NO	319	0	0
3	425.583	0	425.64	0	4.1	YES	425.66	0	6.62	YES	425.69	0	0
1	431.881	0	434.27	0	45.74	YES	435.2	0	79.41	YES	436.85	0	0
1	425.701	0	425.75	0	1.97	YES	425.76	0	3.12	YES	425.78	0	0
9	392.829	0	393.01	0	43.12	YES	393.04	0	54.1	YES	393.06	0	0
8	437.943	4.535	433.56	0	44.51	YES	433.56	0	45.29	YES	433.56	0	0
9	307.49	0	311.5	0	53.66	NO	312	0	135.16	NO	313.26	0	0
6	429.226	0	429.56	0	8.68	YES	429.63	0	15.44	YES	429.73	0	0
4	409.934	5.18	405.92	0	37.49	YES	406.24	0	59.52	YES	406.9	0	0
7	434.825	0	434.92	0	2.54	YES	435	0	5.25	YES	435.06	0	0
7	414.937	5	410.03	0	0.17	YES	411.85	0	3.11	YES	412.3	0	0
2	422.682	7	415.75	0	0.17	YES	415.77	0	0.27	YES	415.79	0	0
2	290.419	3.219	292.45	0	18.3	NO	295.6	0	24.16	NO	295.98	0	0
7	292.517	4.5	293.19	0	18.99	NO	294.7	0	31.13	NO	295.41	0	0
5	392.025	1	392.84	0	25.66	YES	393.04	0	36.2	YES	393.22	0	0
0	441.073	1.073	440.65	0	2.54	YES	440.7	0	4.58	YES	440.75	0	0
6	316.506	5	311.98	0.26	10.93	NO	312.16	0.4	20.83	NO	312.34	0.61	0
8	351.459	0	351.28	0	0.02	YES	351.29	0	0.02	YES	351.29	0	0
5	304.935	3.5	303	0	3.21	NO	303.62	0	3.72	NO	306.13	0	0
4	354.566	0.566	354.01	0	0.04	YES	354.01	0	0.14	YES	354.02	0	0
5	414.192	0	414.07	0	0.71	YES	414.08	0	1.13	YES	414.1	0	0
7	438.347	0	438.37	0	0.32	YES	438.38	0	0.54	YES	438.39	0	0
4	448.444	0	448.62	0	0.71	YES	448.68	0	1.26	YES	448.74	0	0
5	443.335	0	443.56	0	0.69	YES	443.63	0	1.24	YES	443.71	0	0
1	400.331	0	401.55	0	15.92	YES	402.29	0	27.85	YES	411.94	0	0
3	414.259	1.259	415.03	0	17.01	YES	415.19	0	29.88	YES	415.44	0	0
9	413.877	0	414.08	0	18.26	YES	414.15	0	24.74	YES	414.26	0	0
6	439.246	11.5	429.09	0	15.39	YES	429.65	0	27.43	YES	435.42	0	0
7	437.077	6	431.08	0	0	YES	431.08	0	0	YES	434.87	0	0
6	436.676	5	431.68	0	0	YES	431.68	0	0	YES	434.83	0	0
5	437.805	0	437.85	0	0.58	YES	437.86	0	0.97	YES	437.88	0	0
3	433.275	0	432.53	0	10.99	YES	432.55	0	14.3	YES	432.58	0	0
3	476.017	6.017	460.05	0	5.1	YES	460.05	0	0.05	YES	470.04	0	0

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
2	495.586	9.674	486.34	0	13.1	YES	486.51	0	25.56	YES	486.76	0	0
5	283.037	5.537	282.57	0	22.51	NO	282.88	0	24.11	NO	283.67	0	0
2	282.045	4.845	282.33	0	22.51	NO	282.67	0	22.81	NO	283.43	0	0
9	306.849	0	308.97	0	333.62	NO	309.38	0	504.24	NO	310.61	0	0
6	459.937	0.751	459.22	0	1.93	YES	459.24	0	3.15	YES	459.25	0	0
8	494.57	55.462	439.36	0	2.27	YES	439.43	0	3.57	YES	439.51	0	0
9	480.009	1.009	479	0	0	YES	479	0	0	YES	479	0	0
1	433.105	7.084	426.62	0	4.12	YES	426.78	0	6.67	YES	427.01	0	0
5	483.482	34.287	449.47	0	2.28	YES	449.53	0	3.59	YES	449.62	0	0
3	421.533	6	415.61	0	0.32	YES	415.63	0	0.5	YES	415.65	0	0
8	406.28	13	393.76	0	6.39	YES	393.9	0	10.54	YES	394.08	0	0
5	348.925	0	349.55	0	28.29	YES	349.83	0	53.93	YES	350.17	0	0
6	449.407	13.141	437.97	0.59	40.32	YES	443.11	0.92	51.9	YES	442.95	1.42	0
2	450.582	5	445.85	0	3.42	YES	445.93	0	5.79	YES	446.03	0	0
6	443.867	11.001	434.56	0	40.18	YES	436.03	0	49.67	YES	436.63	0	0
7	447.07	5	442.19	0	0.48	YES	442.22	0	0.75	YES	442.25	0	0
4	479.047	0.547	478.34	0	0	YES	478.34	0	0	YES	478.34	0	0
7	420.957	7	415	0	43.18	YES	415.13	0	54.12	YES	415.21	0	0
3	411.53	7	405.7	0	43.13	YES	405.84	0	54.1	YES	405.92	0	0
7	439.197	4	443.51	0	5.88	YES	444.68	0	10.8	YES	447.01	0	0
5	336.409	0	337.91	0	17.55	NO	338.04	0	35.5	NO	338.74	0	0
7	492.567	0	492.74	0	0.5	YES	492.75	0	0.61	YES	492.78	0	0
4	363.998	9.998	354.42	0	12.94	YES	354.56	0	22.72	YES	354.74	0	0
5	331.945	5	327.37	0	12.95	NO	327.52	0	22.74	NO	327.7	0	0
6	324.546	5	319.99	0	12.89	NO	320.16	0	25.27	NO	320.33	0	0
3	313.033	5	311.65	0	12.89	NO	312.08	0	24.49	NO	313.83	0	0
2	490.419	0	490	0	0.55	YES	490.01	0	0.99	YES	490.03	0	0
5	324.955	5	321.22	0	12.95	NO	321.8	0	22.73	NO	322.93	0	0
6	406.116	0	406.17	0	1.32	YES	406.19	0	2.36	YES	406.23	0	0
6	375.226	0	375.69	0	2.81	YES	375.82	0	4.46	YES	375.99	0	0
2	436.773	7.153	430.28	0	9.81	YES	430.55	0	17.64	YES	430.71	0	0
2	416.522	14.322	403.65	0	46.61	YES	404.49	0	79.14	YES	441.78	0	0
8	437.233	15.433	422.76	0	24.63	YES	423.55	0	41.83	YES	502.57	0	0
6	438.126	8.5	430.38	0	12.93	YES	430.88	0	21.7	YES	435.79	0	0
1	447.831	4.5	443.71	0	2.55	YES	443.83	0	4.46	YES	443.99	0	0
5	469.885	7.5	462.67	0	2.56	YES	462.76	0	4.48	YES	462.87	0	0
4	423.764	4.5	421.69	0	12.79	YES	425.01	0	20.74	YES	425.77	0	0
8	450.138	3	449.97	0	19.03	YES	450.02	0	27.67	YES	450.07	0	0
8	422.621	6.821	416.91	0	12.92	YES	421.05	0	15.99	YES	423.2	0	0
6	419.876	16.5	408.43	0	22.18	YES	414.27	0	31.37	YES	418.97	0	0
3	411.533	4.5	408.6	0	1.86	YES	415.94	0	3.91	YES	421.22	0	0
4	433.057	8.5	415.63	0	25.8	YES	425.78	0	63.15	YES	457.15	0	0

Existing Condition Junctions Results Summary Table														
Dimensions			2-year				10-year				100-year			
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Inflow (100-year)
3	357.793	4.5	353.68	3.44	3.44	3.44	YES	353.82	6.16	6.16	YES	354.01	10.63	
7	329.427	3	326.71	0.71	0.71	0.71	NO	326.8	1.22	1.22	NO	326.9	1.95	
1	441.85	0	441.91	0.72	0.72	0.72	YES	441.92	1.23	1.23	YES	441.93	1.97	
9	451.819	0	451.83	0.5	0.5	0.5	YES	451.84	0.87	0.87	YES	451.84	1.4	
4	506.222	2.222	504	0	0	0	YES	504	0	0	YES	504	0	
3	418.869	0	419.03	0.18	0.18	0.18	YES	419.05	0.27	0.27	YES	419.09	0.42	
1	372.761	5.5	370.07	2.83	56.13	56.13	YES	372.81	4.64	97.95	YES	373.14	7.33	
1	426.441	7	419.44	0	0	0	YES	420.31	0	5.27	YES	426.71	0	
8	426.009	8.009	418	0	0	0	YES	418.34	0	6.06	YES	418.77	0	
5	314.085	3.5	311.06	3.39	3.39	3.39	NO	311.18	5.47	5.47	NO	311.33	8.64	
7	375.637	5.5	370.92	1.8	23.13	23.13	YES	371.05	2.98	31.21	YES	371.17	4.87	
1	374.524	0	372.63	1.69	1.69	1.69	YES	372.64	2.8	2.8	YES	372.65	4.58	
4	372.14	0	374.57	2.71	21.66	21.66	YES	375.16	4.26	28.82	YES	375.71	6.67	
1	304.811	4.5	301.11	0.9	19.04	19.04	NO	304.77	1.49	33.29	NO	306.98	2.39	
4	499.014	0	499.92	0	25.35	25.35	YES	500.27	0	4.87	YES	500.65	0	
8	313.858	4.5	309.89	8.43	8.43	8.43	NO	310.09	14.87	14.87	NO	313.55	25.49	
2	314.382	4.5	310.24	4.3	4.3	4.3	NO	310.37	7.74	7.74	NO	310.85	13.32	
7	310.817	4.5	306.93	2.55	10.97	10.97	NO	307.32	4.61	19.47	NO	311.66	8.09	
8	310.718	4.5	306.73	2.92	7.21	7.21	NO	307.01	5.07	12.8	NO	310.18	8.99	
7	291.386	4.686	290.55	0.46	16.76	16.76	NO	290.95	0.75	23.49	NO	292.45	1.24	
1	291.021	3.5	292.47	4.46	4.46	4.46	NO	294.41	7.35	7.35	NO	295.33	11.67	
4	290.104	3.5	290.36	1.99	26.76	26.76	NO	290.65	3.45	55.73	NO	292.47	5.79	
8	332.608	3	330.55	13.49	13.49	13.49	NO	330.95	23.62	23.62	NO	332.22	42.32	
2	306.682	3	304.16	7.68	8.5	8.5	NO	304.33	13.43	15.09	NO	304.58	23.19	
7	454.91	0	454.65	0	7.24	7.24	YES	454.67	0	11.93	YES	454.72	0	
7	305.727	5	301.38	0.45	6.78	6.78	NO	301.64	0.73	11.67	NO	305.51	1.17	
2	304.522	5	299.93	3.52	3.52	3.52	NO	300.04	5.72	5.72	NO	300.18	9.1	
3	301.453	5	297.1	4.08	7.57	7.57	NO	297.29	6.48	12.16	NO	297.55	10.26	
5	301.45	5	297.35	0.72	7.04	7.04	NO	297.7	1.1	12.13	NO	298.06	1.68	
6	435.306	2	434.62	8.92	11.29	11.29	YES	440.96	15.57	19.87	YES	450.82	26.3	
9	437.339	5	434.01	4.25	15.44	15.44	YES	440.09	7.17	27.04	YES	446.56	11.84	
8	450.438	5.5	445.57	0.7	15.24	15.24	YES	445.8	1.13	28.91	YES	446.13	1.79	
5	475.205	5	470.72	2.66	2.66	2.66	YES	470.89	4.41	4.41	YES	473.96	7.16	
9	441.503	12.503	429.57	0	4.54	4.54	YES	429.75	0	7.69	YES	429.95	0	
7	475.588	5.861	470.28	0.3	2.95	2.95	YES	470.73	0.47	4.86	YES	473.9	0.72	
7	475.747	5	471.51	7.27	7.27	7.27	YES	471.79	12.56	12.56	YES	474.86	20.75	
5	474.845	5	470.32	2.58	2.58	2.58	YES	470.73	4.29	4.29	YES	473.89	6.98	
5	474.763	6.428	469.46	0.4	14.38	14.38	YES	470.56	0.63	24.07	YES	473.38	1	
5	476.339	6.889	470.23	0.44	7.71	7.71	YES	470.72	0.67	13.23	YES	474.04	1.01	
7	472.037	3	469.52	0.97	0.97	0.97	YES	470.6	1.5	1.5	YES	472.58	2.32	
8	475.988	4.5	471.68	1.09	1.09	1.09	YES	471.73	1.7	1.7	YES	471.79	2.61	
8	473.22	6.103	467.83	2.5	12.02	12.02	YES	468.82	1.84	28.5	YES	471.79	2.61	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
2	479.884	0	460.42	0	0.12	YES	460.42	0	0.22	YES	460.43	0	0
5	473.745	5	468.97	1.73	1.73	YES	469.03	2.69	2.69	YES	469.79	4.17	4.17
5	468.95	5	464.89	1.35	1.35	YES	469.01	2.12	2.38	YES	469.83	3.29	3.29
3	474.533	4.5	471.11	28.88	28.88	YES	474.65	50.65	50.65	YES	474.75	81.08	81.08
4	467.932	8.358	463.75	2.14	61.85	YES	467.55	3.44	80.73	YES	468.16	5.46	5.46
1	493.671	5	489.48	0.32	13.1	YES	489.84	0.51	25.54	YES	494.12	0.79	0.79
4	466.564	9	463.57	1.98	54.3	YES	467.26	3.08	78.52	YES	467.89	4.76	4.76
5	290.795	5	286.3	8.97	12.51	NO	286.46	15.31	21.86	NO	286.76	25.27	25.27
1	293.637	0	293.19	4.78	4.78	NO	293.21	8.82	8.82	NO	293.24	15.13	15.13
4	285.844	5	282.6	0.07	13.61	NO	283.16	0.1	23.88	NO	284.52	0.15	0.15
8	391.386	1.506	391.49	0	144.75	YES	391.62	0	153.3	YES	392.07	0	0
9	323.429	5	318.6	1.63	1.63	NO	318.65	2.8	2.8	NO	318.71	4.72	4.72
5	356.075	5	351.2	0.92	0.92	YES	351.24	1.53	1.53	YES	351.28	2.49	2.49
1	367.871	5	363	1.08	1.08	YES	363.04	1.84	1.84	YES	363.09	3.08	3.08
9	469.69	4.5	465.5	1.31	1.31	YES	465.6	2.33	2.33	YES	465.73	3.96	3.96
6	470.056	5.5	464.86	1.25	2.56	YES	464.95	2.15	4.47	YES	465.07	3.56	3.56
6	442.666	4.5	438.73	0.82	3.3	YES	438.93	1.32	5.68	YES	440.6	2.13	2.13
3	440.483	6.5	434.66	0	6.49	YES	434.92	0	11.23	YES	438.94	0	0
9	439.379	4.5	435.45	3.45	3.45	YES	435.66	5.91	5.91	YES	439.27	9.86	9.86
3	465.003	4.5	460.69	1.27	1.27	YES	460.75	2.14	2.14	YES	460.81	3.41	3.41
2	435.032	4.5	431.49	5.47	5.47	YES	432.17	8.95	8.95	YES	437.93	14.31	14.31
3	421.073	0	421.4	0	26.08	YES	421.76	0	36.72	YES	424.42	0	0
1	423.222	6.122	418.18	1.3	12.91	YES	421.98	2.13	17.29	YES	423.8	3.42	3.42
1	411.971	4.5	408.57	0.51	0.64	YES	419.25	0.78	4.16	YES	421.2	1.21	1.21
4	412.14	4.5	408.59	1.12	1.12	YES	416.02	1.81	2.45	YES	421.2	2.89	2.89
9	408.959	3.5	415.2	3.48	5.06	YES	418.64	5.58	9.03	YES	421.07	8.83	8.83
7	411.119	14.119	397.66	1.6	20.99	YES	397.76	2.57	27.07	YES	397.95	4.04	4.04
4	419.794	0	420.91	10.21	26.07	YES	421.18	17.49	37.44	YES	421.45	29.29	29.29
2	474.952	4.5	470.93	1.52	1.52	YES	471.08	2.52	2.52	YES	471.27	4.09	4.09
2	474.812	4.5	470.51	0.41	2.02	YES	470.56	0.63	3.32	YES	470.63	0.97	0.97
3	502.883	5	498.5	12.83	12.83	YES	498.77	25.09	25.09	YES	499.2	47.69	47.69
4	474.674	5	469.84	0.78	0.78	YES	469.87	1.22	1.22	YES	469.92	1.9	1.9
7	422.797	0	422.9	0	6.4	YES	422.93	0	10.68	YES	424.42	0	0
8	475.718	9.918	466.05	0.6	2.05	YES	466.12	0.93	3.23	YES	466.19	1.44	1.44
5	481.55	5	476.71	0.17	0.7	YES	476.75	0.26	1.11	YES	476.79	0.4	0.4
5	485.055	5	480.2	0.53	0.53	YES	480.24	0.86	0.86	YES	480.29	1.36	1.36
9	488.29	5	483.35	0.27	0.27	YES	483.37	0.43	0.43	YES	483.38	0.66	0.66
6	431.976	5	427.37	1.96	1.96	YES	427.49	3.26	3.26	YES	427.65	5.22	5.22
4	465.884	7	463.67	2.24	57.39	YES	467.33	3.63	83.79	YES	467.97	5.78	5.78
6	442.476	5	438	2.52	2.77	YES	438.15	4.09	4.5	YES	438.35	6.55	6.55
9	446.629	5	441.73	0.26	0.26	YES	441.75	0.41	0.41	YES	441.78	0.64	0.64
5	431.11	5	416.33	0.33	0.33	YES	416.33	0.51	0.51	YES	416.33	0.64	0.64

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
4	406.784	12	395.09	0.28	2.04	YES	397.02	0.43	12.13	YES	402.09	0.66	
5	408.915	15	394.26	0.58	2.6	YES	397.15	0.94	11.93	YES	402.15	1.52	
3	402.713	7	396.62	4.38	6.54	YES	396.92	7.22	10.75	YES	397.4	11.71	
9	401.209	5	396.71	2.21	2.21	YES	396.98	3.62	3.62	YES	397.45	5.88	
9	404.999	15	391.24	2.93	48.17	YES	391.71	4.64	84.63	YES	392.23	7.31	
8	393.18	5	389.17	8.3	8.3	YES	389.55	14.06	14.06	YES	390.72	23.63	
2	395.214	9.014	386.58	0.58	10.53	YES	386.69	0.96	17.57	YES	386.84	1.57	
3	392.925	5.625	388.27	1.73	9.99	YES	388.61	2.82	16.81	YES	389.17	4.55	
9	448.019	4.5	443.62	0.33	0.33	YES	443.65	0.52	0.52	YES	443.68	0.82	
4	435.599	3.199	435.23	0.98	0.98	YES	435.36	1.64	1.64	YES	436.85	2.69	
3	454.465	0	452.71	0	0	YES	452.71	0	0	YES	452.71	0	
2	434.959	2.959	435.22	46.96	47.92	YES	435.34	84.26	85.9	YES	436.85	137.2	
3	430.903	5	426.29	0.49	1.98	YES	426.39	0.78	3.13	YES	426.51	1.24	
8	412.188	0	412.8	0.28	2.67	YES	413.04	0.43	4.2	YES	414.33	0.65	
3	415.883	3	413.06	0.29	0.29	YES	413.1	0.45	0.45	YES	414.36	0.69	
8	433.438	5	428.6	0.4	0.4	YES	428.64	0.64	0.64	YES	428.68	1	
6	413.316	0	413.53	0.41	1.07	YES	413.58	0.64	1.69	YES	414.33	0.99	
3	434.83	7	428.09	1.1	1.5	YES	428.15	1.73	2.37	YES	428.23	2.71	
7	501.677	0	502.25	10.24	10.24	YES	502.46	18.66	18.66	YES	502.75	32.25	
4	445.074	5	440.23	0.35	0.35	YES	441.61	0.54	4.23	YES	443	0.82	
3	439.433	5	434.65	1.42	1.42	YES	434.7	2.29	2.29	YES	434.77	3.65	
9	435.779	5	431.6	0.95	41.91	YES	431.7	1.49	52.14	YES	431.76	2.31	
3	435.855	2.855	433.19	0.67	1.15	YES	433.23	1.03	1.76	YES	433.28	1.56	
2	444.456	5.484	440.51	0.3	36.32	YES	445.19	0.49	59.06	YES	446.1	0.72	
7	451.577	5	446.98	3.41	3.41	YES	447.1	5.78	5.78	YES	447.25	9.6	
2	445.952	5	441.37	3.71	3.71	YES	445.22	6.3	6.3	YES	446.14	10.47	
2	453.432	5.5	448.18	1.69	1.69	YES	448.25	2.84	2.84	YES	448.34	4.68	
6	450.342	7.346	444.02	2.14	30.8	YES	446.16	3.56	50.52	YES	463.89	5.81	
9	450.989	5	446.09	0.48	0.48	YES	446.12	0.75	0.75	YES	446.15	1.15	
5	454.07	20.525	441.82	0.33	44.57	YES	442.11	0.53	45.38	YES	442.42	0.84	
9	441.456	7.837	442.53	105.11	111.28	YES	442.82	183.78	183.78	YES	443.15	315.85	
7	436.287	0	439.4	0	8.92	YES	439.4	0	10.12	YES	439.41	0	
5	442.226	8.441	442.55	2.24	20.89	YES	442.75	3.6	40.43	YES	443.07	5.72	
5	448.695	14.48	443.33	0.43	18.79	YES	444.79	0.67	30.91	YES	448.05	1.04	
7	453.455	19.158	443.47	0.17	18.35	YES	445.14	0.29	30.22	YES	448.94	0.46	
9	441.539	5	444.06	9.28	9.28	YES	446.62	15.66	15.66	YES	452.71	25.78	
9	442.218	7.579	443.95	0.41	9.69	YES	446.33	0.62	16.29	YES	451.93	0.94	
1	445.129	10.708	443.7	1.08	18.17	YES	445.75	1.76	29.94	YES	450.42	2.82	
4	446.578	12.084	443.82	1.29	17.08	YES	446.06	2.01	28.17	YES	451.28	3.12	
3	438.892	4.119	443.93	0.44	3.13	YES	446.26	0.67	6.47	YES	451.65	1.02	
1	437.841	2.931	443.9	0.48	3.59	YES	446.16	0.73	7.17	YES	451.38	1.12	
4	452.402	2	443.5	0.28	5.07	YES	444.25	0.5	10.7	YES	447.25	1.5	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
6	478.286	5.5	473.55	6.02	6.02	YES	473.83	10.71	10.71	YES	474.19	17.94	
7	457.047	5	452.28	0.11	0.67	YES	452.34	0.17	1.08	YES	452.41	0.27	
9	456.19	5	451.32	0.16	0.81	YES	451.36	0.26	1.32	YES	451.4	0.4	
8	458.152	5.352	453.01	0.05	0.57	YES	453.07	0.08	0.92	YES	453.13	0.15	
8	458.638	5	453.82	0.48	0.48	YES	453.87	0.77	0.77	YES	453.93	1.23	
3	458.183	5	453.42	0.05	0.52	YES	453.48	0.07	0.84	YES	453.56	0.11	
2	433.072	5.5	431.62	16.74	16.74	YES	435.26	30.38	30.38	YES	436.99	54.98	
1	495.501	0	495.65	0.53	0.82	YES	495.66	0.86	0.86	YES	495.68	1.33	
5	432.562	8.062	426.42	0	53.36	YES	433.7	0	97.2	YES	434.68	0	
4	450.604	0	450.74	0	3.15	YES	450.79	0	5.35	YES	450.86	0	
4	376.654	6	371.91	24.8	24.8	YES	372.36	41.87	41.87	YES	373.17	69.51	
6	402.97	11.37	392.98	1.86	48.28	YES	393.59	3.11	81.52	YES	407.25	5.11	
9	398.826	12.436	387.38	2.67	50.7	YES	387.72	4.45	85.5	YES	393.07	7.32	
6	378.941	6.341	374.41	0.12	60.57	YES	375.08	0.19	102.09	YES	376.39	0.28	
5	441.67	6.12	436.15	4.92	4.92	YES	436.39	8.83	8.83	YES	506.41	15.48	
7	449.524	8.254	441.68	4.98	4.98	YES	441.82	8.83	8.83	YES	514.46	15.15	
2	437.457	7.037	431.6	5.01	9.9	YES	434.15	8.89	17.64	YES	503.92	15.34	
5	441.867	8.317	433.81	0.76	0.76	YES	433.89	1.23	1.23	YES	521.91	1.98	
7	454.616	7.616	447.63	2.75	2.75	YES	447.86	4.77	4.77	YES	515.62	7.92	
4	452.229	7.289	445.33	0.85	4.19	YES	445.45	1.4	7.15	YES	514.82	2.31	
7	431.233	4.233	428.6	0	9.65	YES	428.87	0	11.56	YES	429.21	0	
8	443.849	8.169	435.81	1.18	1.18	YES	435.85	1.88	1.88	YES	505.52	2.96	
7	440.735	14.665	426.7	0.78	11.47	YES	426.91	1.22	19.62	YES	504.78	1.89	
6	437.154	11.694	426.17	8.23	13.01	YES	426.42	13.85	22.14	YES	505.42	23.72	
8	470.709	15.909	455.07	2.24	2.24	YES	455.16	3.93	3.93	YES	535.01	6.58	
9	421.039	8.139	413.05	0.62	0.62	YES	413.09	0.98	0.98	YES	461.23	1.53	
1	447.819	8.609	439.6	0.97	3.1	YES	439.73	1.67	5.45	YES	527.08	2.7	
8	442.532	12.552	430.24	0.27	1.64	YES	430.31	0.42	2.61	YES	504.96	0.67	
5	414.63	8.13	406.89	1.59	1.59	YES	407.02	2.66	2.66	YES	442.5	4.23	
8	454.93	8.13	447.26	0.61	3.36	YES	447.41	1	5.93	YES	515.39	1.64	
6	437.253	15.093	423.13	0.24	24.64	YES	423.78	0.37	42.03	YES	503.27	0.56	
1	414.451	1	415.08	0	17	YES	415.32	0	29.86	YES	415.72	0	
1	448.741	8.131	440.8	1.41	1.41	YES	440.85	2.38	2.38	YES	521.94	3.77	
9	434.028	8.128	426.35	2.54	12.3	YES	426.51	4.19	21.76	YES	491.86	6.77	
2	443.875	11.255	432.85	0.2	1.38	YES	432.91	0.32	2.2	YES	505.47	0.5	
9	414.128	8.138	406.53	8.15	9.71	YES	406.69	13.78	16.4	YES	442.47	22.67	
3	391.797	18.797	373.18	1.29	1.29	YES	373.22	2.05	2.05	YES	373.27	3.26	
6	390.013	23.553	367.67	0.54	30.52	YES	368.05	0.84	47.29	YES	372.11	1.29	
8	387.892	19.892	369.1	0.24	30.23	YES	369.43	0.38	46.68	YES	372.5	0.6	
7	405.627	0	405.79	0	20.21	YES	405.79	0	22	YES	405.83	0	
8	386.848	0	386.85	0	0	YES	386.85	0	0	YES	386.85	0	
1	421.21	1.21	421.21	0	22.2	YES	421.21	0	22.2	YES	421.21	0	

Existing Condition Junctions Results Summary Table														
Dimensions			2-year				10-year				100-year			
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Inflow (100-year)	
3	429.198	2.068	427.45	1.07	1.07	1.07	YES	427.59	2.18	2.18	YES	427.74	3.96	3.96
8	429.337	9.957	419.97	0	2.42	2.42	YES	420.19	0	4.26	YES	420.56	0	0
3	432.756	9.456	423.71	0.18	2.44	2.44	YES	423.85	0.28	4.29	YES	424.05	0.43	0.43
5	434.69	9.24	425.83	0.14	2.28	2.28	YES	425.97	0.22	4.04	YES	426.15	0.34	0.34
6	436.554	8.994	427.91	0.2	2.17	1.97	YES	428.03	0.31	3.86	YES	428.2	0.49	0.49
0	438.444	8.444	430.38	1.97	1.97	1.97	YES	430.51	3.55	3.55	YES	430.7	6.21	6.21
8	425.215	9.435	416.1	0.05	4.11	4.11	YES	416.22	0.08	7.67	YES	416.36	0.12	0.12
6	425.185	8.125	417.27	0.17	0.78	0.78	YES	417.31	0.26	1.22	YES	417.38	0.39	0.39
6	437.086	0	439.12	3.96	9.53	9.53	YES	439.66	6.75	16.01	YES	439.7	11.66	11.66
3	423.837	8.307	415.85	2.64	3.4	3.4	YES	415.97	5.14	6.32	YES	416.12	9.02	9.02
7	404.327	0	404.49	0	3.4	3.4	YES	404.53	0	6.32	YES	404.58	0	0
4	381.44	0	381.73	0	4.25	4.25	YES	381.81	0	7.89	YES	381.89	0	0
2	425.75	2.13	423.72	0.05	0.05	0.05	YES	423.74	0.08	0.08	YES	423.77	0.13	0.13
7	425.202	2.132	423.12	0	0.05	0.05	YES	423.13	0	0.08	YES	423.15	0	0
4	425.933	2.093	424.12	0.58	0.58	0.58	YES	424.18	0.9	0.9	YES	424.25	1.39	1.39
7	435.598	8.128	435.9	0.89	21.93	21.93	YES	436.6	1.41	25.16	YES	437.05	2.19	2.19
6	435.532	8.472	434.38	0.6	0.6	0.6	YES	434.98	0.91	0.91	YES	435.66	1.4	1.4
6	422.786	0	424.03	0	20.21	20.21	YES	424.07	0	22	YES	424.43	0	0
2	419.982	0	419.99	0	0.3	0.3	YES	420	0	0.47	YES	420	0	0
8	448.668	0	448.4	0	0	0	YES	448.4	0	0	YES	448.4	0	0
7	425.264	8.264	417.05	0.16	0.16	0.16	YES	417.06	0.24	0.24	YES	417.08	0.38	0.38
8	378.818	0	378.82	0	0	0	YES	378.82	0	0	YES	378.82	0	0
1	461.531	7.121	454.58	0.99	0.99	0.99	YES	459.77	1.71	1.71	YES	461.98	2.81	2.81
2	465.839	6.119	460.13	2.6	2.6	2.6	YES	482.1	4.43	4.63	YES	478.13	7.24	7.24
7	465.476	6.589	459.58	1.92	4.51	4.51	YES	480.93	3.32	8.99	YES	477.25	5.52	5.52
2	469.35	7.15	462.63	3.07	3.07	3.07	YES	468.42	5.32	5.32	YES	470.33	8.82	8.82
5	469.366	8.116	461.72	1.74	4.81	4.81	YES	467.89	3.01	8.31	YES	470.06	4.97	4.97
3	461.807	7.507	457.83	0.22	0.88	0.88	YES	463.31	0.39	2.67	YES	465.26	0.63	0.63
4	461.576	7.576	457.77	3.92	11.64	11.64	YES	463.24	6.95	19.43	YES	465.2	11.71	11.71
5	466.09	10.805	458.22	0	9.1	9.1	YES	465.03	0	16.98	YES	467.75	0	0
7	451.007	0	451.01	0	0	0	YES	451.01	0	0	YES	451.01	0	0
3	462.804	7.504	455.74	3.29	3.29	3.29	YES	461.91	5.92	5.92	YES	464.79	10.5	10.5
0	462.577	12.577	454.57	0	12.59	12.59	YES	461.69	0	15.33	YES	463.65	0	0
4	462.656	10.116	454.87	0.57	0.57	0.57	YES	461.84	0.92	0.92	YES	463.76	1.45	1.45
8	462.897	6.117	457	1.11	1.11	1.11	YES	461.89	1.92	1.92	YES	464.67	3.2	3.2
7	463.403	7.133	456.52	1.11	1.11	1.11	YES	457.13	1.89	1.89	YES	468.11	3.1	3.1
4	462.968	7.128	456.15	1.73	1.73	1.73	YES	457.16	2.98	2.98	YES	468	4.91	4.91
3	459.761	8.131	451.75	0.53	0.53	0.53	YES	457.05	0.87	1.98	YES	460.87	1.38	1.38
9	454.724	8.134	446.92	2.24	2.85	2.85	YES	451.15	3.77	4.74	YES	456.45	6.07	6.07
2	455.647	8.127	447.72	0.62	0.62	0.62	YES	451.11	1.05	1.37	YES	456.47	1.69	1.69
5	454.279	9.129	445.3	0.7	0.7	0.7	YES	451.07	1.5	1.5	YES	456.18	2.96	2.96
5	426.000	0	426.000	0	0	0	YES	426.000	0	0	YES	426.000	0	0

Existing Condition Junctions Results Summary Table														
Dimensions			2-year				10-year				100-year			
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)			Surcharging (10-year)	Max. HGL (100-year) (feet)
2	461.323	10.123	452.92	1.37	1.37	1.37	YES	460.11	2.26	2.26	YES	462.25	3.57	0
5	461.115	12.97	452.53	0	13.25	13.25	YES	459.72	0	14.9	YES	461.9	0	0
5	454.852	12.557	445.15	0	22.66	22.66	YES	451.03	0	27.31	YES	456.12	0	0
8	434.608	8.128	434.38	0	20.24	20.24	YES	434.94	0	20.47	YES	435.62	0	0
3	463.009	12.626	454.87	0	10.57	10.57	YES	461.84	0	11.4	YES	463.72	0	0
9	461.411	8.121	453.48	0	0.99	0.99	YES	459.8	0	1.95	YES	462	0	0
9	461.429	12.95	452.92	0	12.99	12.99	YES	460.1	0	14.93	YES	462.19	0	0
5	459.331	13.386	449.94	0	15.69	15.69	YES	456.93	0	19.25	YES	460.3	0	0
1	407.716	0	407.19	0	1.83	1.83	YES	407.21	0	3.3	YES	407.22	0	0
6	455.389	8.129	447.6	4.87	4.87	4.87	YES	451.13	8.26	8.26	YES	456.58	13.45	0
4	458.048	3.134	454.91	0	0	0	YES	454.91	0	0	YES	454.91	0	0
5	455.67	3.62	452.05	0	0	0	YES	452.05	0	0	YES	452.05	0	0
7	452.906	2.036	450.87	0	0	0	YES	450.87	0	0	YES	450.87	0	0
2	449.962	3.62	446.34	0	0	0	YES	446.34	0	0	YES	446.34	0	0
4	447.574	3.62	443.95	0	0	0	YES	443.95	0	0	YES	443.95	0	0
8	444.118	3.62	440.5	0	0	0	YES	440.5	0	0	YES	440.5	0	0
1	441.43	3.62	437.81	0	0	0	YES	437.81	0	0	YES	437.81	0	0
1	438.311	3.62	434.69	0	0	0	YES	434.69	0	0	YES	434.69	0	0
9	437.01	3.62	433.39	0	0	0	YES	433.39	0	0	YES	433.39	0	0
3	455.323	0	457.47	0	2.7	2.7	YES	457.48	0	4.51	YES	457.5	0	0
5	427.015	2.13	425.1	0	1.05	1.05	YES	425.19	0	2.15	YES	425.29	0	0
5	427.657	2.142	425.9	0	1.06	1.06	YES	426.05	0	2.16	YES	426.21	0	0
9	460.179	11.28	449.96	0	3.32	3.32	YES	457.07	0	6.14	YES	460.9	0	0
5	405.165	5.63	399.83	0	4.25	4.25	YES	399.94	0	7.89	YES	400.08	0	0
5	430.339	6.589	423.89	0.3	0.3	0.3	YES	423.92	0.48	0.48	YES	423.96	0.76	0
5	427.792	4.292	425.66	1.53	20.21	20.21	YES	425.99	2.54	22	YES	431.39	3.84	0
1	460.241	2.12	458.12	0	0	0	YES	458.12	0	0	YES	458.12	0	0
4	425.134	2.13	423.17	0	0.57	0.57	YES	423.2	0	0.89	YES	423.25	0	0
5	372.025	0	372.74	2.17	30.1	30.1	YES	372.93	5.77	46.4	YES	373.47	10.68	0
9	392.179	0	393.05	1.78	24.58	24.58	YES	393.22	5.84	33.99	YES	393.57	12.3	0
2	433.735	11.215	424.8	0	53.35	53.35	YES	432.26	0	85.72	YES	434.47	0	0
7	378.247	0	378.86	0	24.54	24.54	YES	378.93	0	33.69	YES	379.08	0	0
2	373.582	0	374.5	0	28.85	28.85	YES	374.61	0	41.96	YES	374.78	0	0
9	376.559	0	377.02	0	28.6	28.6	YES	377.09	0	41.54	YES	377.17	0	0
9	456.759	0	457.78	0.7	0.7	0.7	YES	463.3	2.27	2.27	YES	465.29	5.35	0
7	430.887	2.12	428.92	0.72	0.72	0.72	YES	429.04	2.44	2.44	YES	429.19	6.14	0
1	381.626	2.116	379.71	0.78	1.36	1.36	YES	379.86	2.41	4.44	YES	380.04	4.71	0
5	347.674	2.124	345.87	0.9	2.8	2.8	YES	346.13	2.88	9.62	YES	346.48	6.32	0
4	322.304	0	322.39	0.09	2.81	2.81	NO	322.46	0.15	9.67	NO	322.55	0.25	0
2	427.612	2.12	425.65	0.7	0.7	0.7	YES	425.78	2.37	2.37	YES	425.94	5.99	0
3	392.453	2.123	390.54	0.82	1.51	1.51	YES	390.71	2.84	5.21	YES	390.93	7.35	0
3	426.126	2.123	423.43	0.6	2.75	2.75	YES	423.51	0.6	5.21	YES	423.65	7.35	0

Existing Condition Junctions Results Summary Table												
Dimensions			2-year				10-year				100-year	
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
2	404.423	2.303	402.26	0.42	0.65	YES	402.37	1.34	2.11	YES	402.49	2.94
2	381.752	2.132	379.81	0.3	1.29	YES	379.95	0.96	4.14	YES	380.09	2.06
5	340.225	0	340.38	0.35	1.32	NO	340.46	0.76	4.03	NO	340.54	1.28
11	369.935	2.125	368.08	0.93	2.53	YES	368.27	3.02	8.44	YES	368.5	6.73
2	390.532	0	390.53	0	0	YES	390.53	0	0	YES	390.53	0
2	351.842	0	351.84	0	0	YES	351.84	0	0	YES	351.84	0
9	395.139	0	395.14	0	0	YES	395.14	0	0	YES	395.14	0
8	411.318	0	411.32	0	0	YES	411.32	0	0	YES	411.32	0
6	426.066	0	427.02	0	15.3	YES	427.17	0	27.49	YES	427.33	0
4	420.914	0	421.02	0.07	0.07	YES	421.07	0.19	0.19	YES	421.11	0.33
5	426.15	0	426.33	0.34	0.34	YES	426.44	1.08	1.08	YES	426.53	2.34
0	447.678	7.678	440.6	3.57	8.16	YES	440.82	6.29	14.44	YES	441.27	10.54
2	402.84	10.32	394.22	1.34	33.74	YES	402.75	2.11	61.45	YES	406.99	3.3
9	459.716	8.126	452.19	3.48	3.48	YES	452.42	6.22	6.22	YES	452.83	10.53
9	401.935	8.346	395.13	11.11	32.63	YES	411.62	19.66	59.32	YES	415.19	34.64
5	402.436	10.686	393.81	3.23	39.17	YES	401.27	5.49	70.3	YES	402.43	9.09
6	459.386	8.126	451.73	1.2	4.67	YES	451.89	2.07	8.28	YES	452.12	3.46
4	402.376	7.236	396.28	15.38	22.52	YES	426.51	26.91	39.8	YES	420.02	47.22
4	401.754	5.63	396.12	0	0	YES	396.12	0	0	YES	396.12	0
2	465.982	0	466.94	0	0.97	YES	466.95	0	1.61	YES	466.96	0
2	420.582	9.5	412.01	6.71	18.55	YES	417.58	11.15	25.06	YES	421.66	18.33
5	378.15	0	378.33	0	20.99	YES	378.36	0	27.07	YES	378.42	0
9	440.799	0	440.8	0	0	YES	440.8	0	0	YES	440.8	0
6	378.836	0	378.84	0	0	YES	378.84	0	0	YES	378.84	0
3	447.833	0	449.4	0	3.28	YES	449.44	0	4.92	YES	449.45	0
11	343.503	0	342.94	0	0	YES	342.94	0	0	YES	342.94	0
7	298.545	5.778	293.88	3.81	3.81	NO	298.94	6.57	6.57	NO	299.05	10.75
7	303.535	5.788	298.34	21.41	21.41	NO	299.53	37.09	37.09	NO	301.18	62.26
7	305.53	5.783	299.99	1.25	1.25	NO	300.07	2.16	2.16	NO	300.15	3.48
7	300.365	5.778	295.07	0.12	8.94	NO	296.6	0.19	15.33	NO	297.59	0.29
7	304.387	5.78	299.03	7.6	8.84	NO	299.16	13	15.15	NO	299.36	22.31
7	295.249	2.782	293.24	1.64	7.72	NO	295.95	2.78	24.31	NO	296.2	4.43
7	297.656	6.719	292.55	0	35.78	NO	296.4	0	55.22	NO	297.06	0
6	281.806	4	282.67	3.63	38.66	NO	282.83	5.82	47.34	NO	282.96	9.2
7	298.19	5.783	293.85	0.07	25.21	NO	299.01	0.11	40.28	NO	299.43	0.18
9	443.669	0	444.22	0	7.82	YES	444.29	0	14.15	YES	444.37	0
2	439.226	7.406	432.21	0.94	3.57	YES	432.33	1.52	6.01	YES	432.47	2.43
8	357.698	21.618	337.23	0	41.94	NO	337.5	0	60.75	NO	337.86	0
2	355.955	7.335	349.13	2.53	22.14	YES	349.28	4.46	35.66	YES	349.48	7.53
2	420.404	8.184	412.47	0.6	0.6	YES	412.55	0.96	0.96	YES	412.65	1.53
8	407.928	0	407.98	0	3.55	YES	408	0	5.98	YES	408.02	0
8	213.212	0	213.21	0	25.21	YES	213.21	0	21.21	YES	213.21	0

Existing Condition Junctions Results Summary Table														
Dimensions			2-year				10-year				100-year			
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)			Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
2	440.412	7.592	433.16	2.64	2.64	2.64	YES	433.27	4.51	4.51	YES	433.39	7.27	
5	387.525	0	388.15	7.59	8.67	8.67	YES	388.36	12.99	14.8	YES	388.71	22.98	
2	418.789	6.869	412.26	0.72	1.32	1.32	YES	412.35	1.18	2.13	YES	412.46	1.92	
5	383.685	0	383.79	0	6.38	6.38	YES	383.81	0	10.77	YES	383.83	0	
7	373.477	0	373.66	0	12.15	12.15	YES	373.69	0	19.8	YES	373.71	0	
1	355.51	0	355.78	0	7.93	7.93	YES	355.82	0	11.52	YES	356.56	0	
9	406.459	0	406.49	0	1.3	1.3	YES	406.49	0	2.11	YES	406.51	0	
2	357.484	20.364	338.14	0	41.87	41.87	NO	338.4	0	60.67	NO	338.73	0	
5	356.52	6.07	351.54	19.6	19.6	19.6	YES	353.45	31.33	31.33	YES	356.78	49.25	
5	345.995	0	346.6	0	25.01	25.01	YES	346.66	0	30.98	YES	346.69	0	
7	365.027	0	366.81	8.94	13.26	13.26	YES	367.64	14.4	22.04	YES	369.06	22.49	
8	360.448	0	361.01	0	7.84	7.84	YES	361.16	0	11.35	YES	361.29	0	
7	443.867	0	444	0.88	10.98	10.98	YES	444.09	1.48	24.78	YES	444.18	2.38	
5	354.155	0	355.96	15.53	24.96	24.96	YES	357.15	26.72	42.69	YES	359.23	43.28	
4	353.954	0	354.54	0	16.05	16.05	YES	355.87	0	19.83	YES	358.02	0	
9	350.949	0	352.95	1.48	16.4	16.4	YES	355.87	2.25	20.4	YES	358.02	3.43	
5	350.105	0	351.78	0	16.6	16.6	YES	354.39	0	19.15	YES	356.56	0	
1	348.91	0	351.77	7.81	25.09	25.09	YES	354.38	12.58	31.08	YES	356.56	19.61	
4	390.234	2.13	388.29	0	3.34	3.34	YES	388.34	0	5.7	YES	388.39	0	
4	349.134	0	351.77	0	23.96	23.96	YES	354.38	0	29.82	YES	356.56	0	
7	348.967	0	349.52	0	39.48	39.48	YES	350.46	0	94.64	YES	351.99	0	
4	378.539	6.399	372.92	2.32	16.24	16.24	YES	373.28	4.14	29.25	YES	379.38	7.25	
1	378.66	5.05	374.48	13.9	13.9	13.9	YES	375.36	25.13	25.13	YES	379.58	44.43	
9	441.059	0	441.48	0	1.39	1.39	YES	441.5	0	1.5	YES	441.52	0	
9	426.462	14.272	413.05	0	13.85	13.85	YES	413.4	0	24.86	YES	417.32	0	
5	421.106	6.606	415.54	13.82	13.82	13.82	YES	416.04	24.86	24.86	YES	422.78	43.81	
1	408.751	0	408.81	0	13.85	13.85	YES	408.83	0	24.83	YES	408.86	0	
2	341.742	5.722	336.12	0.25	0.25	0.25	NO	336.15	0.42	0.42	NO	336.18	0.66	
1	309.391	0	309.4	0	0.25	0.25	NO	309.4	0	0.41	NO	309.4	0	
2	329.402	0	329.92	0	42.02	42.02	NO	330.03	0	60.84	NO	331.01	0	
5	303.185	0	311.46	0	500.05	500.05	NO	311.95	0	695.54	NO	313.28	0	
4	442.524	0.524	442.31	0	8.6	8.6	YES	442.39	0	16.81	YES	442.48	0	
6	332.436	0	336.61	0	354.22	354.22	NO	336.68	0	534.06	NO	338.17	0	
1	333.181	0	336.85	4.32	321.94	321.94	NO	337	6.8	484.8	NO	338.64	10.65	
4	405.421	6.381	405.31	0	53.5	53.5	YES	405.99	0	53.36	YES	406.22	0	
2	288.98	0	288.88	3.81	3.81	3.81	NO	288.9	6.55	6.55	NO	288.93	11.03	
2	287.162	0	284.72	0	0	0	NO	284.72	0	0	NO	284.72	0	
1	290.3	0	290.05	1.69	1.69	1.69	NO	290.06	2.99	2.99	NO	290.07	4.99	
3	289.023	5	284.02	0	0	0	NO	284.02	0	0	NO	284.57	0	
9	291.259	5	286.26	0	0	0	NO	286.26	0	0	NO	286.26	0	
6	390.636	0	390.64	0	0	0	YES	390.64	0	0	YES	390.64	0	
5	356.05	0	356.05	0	4.5	4.5	YES	356.05	0	4.6	YES	356.05	0	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
2	439.133	7.133	432	0	0	YES	432	0	0	YES	432	0	0
5	438.767	11.267	428.1	0	4.53	YES	428.28	0	7.7	YES	428.47	0	0
6	450.096	5.5	445.67	28.54	29.61	YES	446.69	51.89	53.88	YES	475.46	91.28	0
6	284.406	5	279.41	0	0	NO	279.41	0	0	NO	279.41	0	0
11	289.841	11	278.84	0	0	NO	278.84	0	0	NO	278.84	0	0
7	288.337	11	277.34	0	0	NO	277.34	0	0	NO	277.34	0	0
9	281.159	5	276.3	0	0.54	NO	276.35	0	0.96	NO	276.57	0	0
8	396.068	0	397.83	15.9	20.75	YES	398.6	29.15	37.26	YES	399.78	49.76	0
9	277.269	5	273.74	0	2.33	NO	274.27	0	3.01	NO	277.43	0	0
5	284.665	5	279.81	0	0.54	NO	279.85	0	0.96	NO	279.91	0	0
7	287.607	5	282.61	0	0	NO	282.61	0	0	NO	282.61	0	0
9	278.309	4.5	273.81	0	0	NO	274.23	0	0.97	NO	280.41	0	0
5	287	2	285.6	0	4.34	NO	285.81	0	7.61	NO	286.09	0	0
5	288.1	3.6	285.1	0	4.34	NO	285.31	0	7.61	NO	285.6	0	0
6	288.96	5	284.43	0	4.33	NO	284.59	0	7.61	NO	285.05	0	0
5	288.17	5.67	283.54	3.78	7.94	NO	283.97	6.8	14.12	NO	284.84	12.37	0
7	429.307	0	429.37	0	0.21	YES	429.39	0	0.35	YES	429.41	0	0
6	335.956	0	335.96	0	0	NO	335.96	0	0	NO	335.96	0	0
11	307.481	4.5	302.98	0	0	NO	302.98	0	0	NO	302.98	0	0
2	309.632	9.5	300.13	0	0	NO	300.13	0	0	NO	300.13	0	0
3	302.613	5	297.61	0	0	NO	297.61	0	0	NO	297.61	0	0
3	294.103	5	289.1	0	0	NO	289.1	0	0	NO	289.1	0	0
6	307.392	0	307.27	0	0	NO	307.27	0	0	NO	307.27	0	0
2	283.742	0	283.74	0	0	NO	283.74	0	0	NO	286.83	0	0
6	282.113	0	279.94	0	75.13	NO	280.09	0	89.12	NO	283.52	0	0
7	314.57	6	309.5	0	10.82	NO	309.87	0	20.64	NO	310.27	0	0
11	443.961	0	444.09	0	4.86	YES	444.14	0	9.32	YES	444.2	0	0
9	423.859	0	423.89	0	1.58	YES	423.9	0	2.82	YES	423.92	0	0
8	422.08	0	422.35	0	20.87	YES	422.39	0	25.85	YES	422.39	0	0
3	417.122	8.409	409.82	0	33.82	YES	410.1	0	51.53	YES	410.4	0	0
4	330.639	0	334.67	0	156.9	NO	335.08	0	202.5	NO	335.64	0	0
8	340.918	2.918	339.46	0	33.05	NO	339.71	0	60.31	NO	339.88	0	0
11	396.011	4.5	391.97	0	2.53	YES	392.13	0	4.5	YES	392.34	0	0
4	399.374	0	399.37	0	0	YES	399.37	0	0	YES	399.37	0	0
7	399.187	4	395.78	0	41.89	YES	396	0	67.42	YES	396.38	0	0
3	385.863	3	387.27	0	44.5	YES	387.42	0	72.62	YES	387.67	0	0
4	402.294	0	402.33	0	0.64	YES	402.34	0	1.06	YES	402.35	0	0
6	378.889	2.889	378.92	0	165.68	YES	379.62	0	278.63	YES	380.69	0	0
4	375.214	1	376.18	0	3.29	YES	377.18	0	40.45	YES	378.11	0	0
8	370.892	0	374.31	0	189	YES	375.31	0	327.8	YES	376.26	0	0
6	367.076	0	370.79	0	242.43	YES	371.92	0	420.91	YES	372.79	0	0
6	263.83	0	263.83	0	273.07	YES	263.83	0	402.75	YES	263.83	0	0

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
6	432.66	4	428.66	0	0	YES	428.66	0	0	YES	428.66	0	0
6	431.296	0	431.33	0	1.11	YES	431.34	0	1.93	YES	431.37	0	0
7	419.927	0	420.77	0	21.19	YES	421.04	0	41.53	YES	421.3	0	0
9	373.89	0	376.71	0	82.95	YES	377.84	0	180.17	YES	378.75	0	0
11	373.41	0	376.72	0	18.67	YES	377.85	0	20.78	YES	378.76	0	0
4	343.804	0	348.94	9.05	251.68	YES	349.46	15.4	421.62	YES	350.06	27.07	0
7	364.917	0	365.24	0	3.18	YES	365.31	0	5.23	YES	365.39	0	0
7	335.187	0	340.79	0	403.75	NO	341.54	0	700.95	NO	343.08	0	0
3	335.843	0	340.82	3.88	281.68	NO	341.79	6.52	604.5	NO	343.46	10.72	0
3	333.403	0	337.1	0	321.88	NO	337.41	0	453.49	NO	338.97	0	0
2	314.352	0	314.83	0	15.76	NO	315.04	0	27.85	NO	315.68	0	0
7	433.577	11.5	424.45	0	53.3	YES	431.77	0	82.4	YES	434.15	0	0
1	451.752	7.652	444.61	0	3.14	YES	444.82	0	5.52	YES	445.08	0	0
5	378.238	0	377.91	0	0.92	YES	377.91	0	1.53	YES	377.92	0	0
8	388.008	4.25	383.91	0	0.26	YES	383.96	0	0.43	YES	384	0	0
8	407.88	6	413.67	0	76.42	YES	414.67	0	86.08	YES	417.08	0	0
2	400.698	4.498	401.1	0	79.26	YES	401.98	0	79.24	YES	402.37	0	0
1	441.031	4.5	439.46	0	8.91	YES	439.48	0	10.09	YES	439.5	0	0
9	446.989	5.5	441.49	0	0	YES	441.49	0	0	YES	441.49	0	0
4	397.864	5.5	393.66	13.23	16.9	YES	394.19	21.96	28.45	YES	398.2	35.22	0
9	356.449	9	348.35	0.35	25.52	YES	349.06	0.55	93.15	YES	350.1	0.86	0
2	334.52	5	336.45	7.24	338.26	NO	336.9	12.63	438.18	NO	337.75	21.71	0
7	386.127	4.5	383.48	1.37	12.52	YES	385.48	2.48	18.68	YES	386.74	4.05	0
6	385.896	5	381.93	0.18	20.31	YES	382.38	0.28	37.13	YES	386.47	0.44	0
6	280.66	0	282.75	0	551.4	NO	283.4	0	922.3	NO	285.38	0	0
11	459.236	7.226	457.68	0	83.88	YES	459.58	0	114.86	YES	460.05	0	0
5	428.38	3.88	425.61	7.02	7.02	YES	426.95	12.47	12.47	YES	428.95	21.85	0
4	455.264	4.5	452.14	1.18	5.64	YES	456.32	2.09	9.94	YES	457.11	3.52	0
5	456.355	4.5	452.63	4.48	4.48	YES	456.45	8.14	8.14	YES	457.11	14.2	0
7	403.977	5.5	399.77	0	24.18	YES	400.21	0	37.9	YES	403.61	0	0
8	394.008	5.5	390.05	0.25	24.32	YES	390.77	0.59	38.32	YES	392.36	1.02	0
7	373.007	4.5	369.38	6.52	7.56	YES	369.96	12.48	14.84	YES	373.35	21.83	0
6	347.96	5.5	343.78	0	24.9	YES	344.48	0	45.03	YES	347.56	0	0
8	312.148	6	306.92	4.89	17	NO	307.19	8.33	30.59	NO	307.6	14.99	0
8	423.258	4.5	418.94	0.41	0.41	YES	418.98	0.64	0.64	YES	419.34	0.99	0
4	331.454	0	333.52	0	329.81	NO	333.79	0	407.19	NO	334.73	0	0
8	437.028	4.5	433.36	4.71	4.71	YES	433.73	7.95	7.95	YES	437.12	13.51	0
2	435.402	4.5	431.61	1.4	6.07	YES	431.89	2.32	10.17	YES	434.42	3.86	0
5	437.335	6.5	433.87	1.17	12.87	YES	434.06	1.97	12.96	YES	434.18	3.27	0
9	373.019	4.5	369.05	0.53	5.77	YES	369.26	0.87	10.37	YES	369.58	1.43	0
9	430.99	4.5	431.26	1.54	2.88	YES	431.34	2.56	4.85	YES	431.43	4.27	0
4	425.703	4.5	422.70	0.98	0.57	YES	423.5	1.04	10.1	YES	425.97	0.8	0

Existing Condition Junctions Results Summary Table												
Dimensions			2-year				10-year				100-year	
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
5	367.455	0	367.46	0	0.13	YES	367.46	0	0.21	YES	367.46	0
2	421.182	0	421.39	4.16	14.4	YES	421.44	6.78	21.3	YES	421.49	11
8	441.439	0	440.82	0	3.09	YES	440.91	0	5.46	YES	441.01	0
6	404.026	7	397.14	1.03	1.03	YES	397.17	1.65	1.65	YES	397.21	2.62
6	402.346	4	398.64	0.78	0.78	YES	398.72	1.27	1.27	YES	400.38	2.05
7	405.57	4	401.93	2.12	2.12	YES	402.04	3.46	3.46	YES	403	5.56
8	332.018	0	335.95	0	576.18	NO	336.48	0	627.99	NO	337.76	0
7	407.07	4	403.25	0.67	0.67	YES	403.3	1.07	1.07	YES	403.36	1.69
4	337.274	3.5	336.93	0.26	16.15	NO	336.98	0.41	29.35	NO	337.55	0.65
4	430.004	0	490.34	15.86	15.86	YES	530.5	27.96	27.96	YES	530.5	48.94
8	426.838	6	421.54	8.65	8.97	YES	421.75	14.39	14.9	YES	422.03	23.91
1	401.538	0	400.16	0	2.6	YES	400.17	0	4.6	YES	400.2	0
6	450.56	5.5	446.36	13.37	13.37	YES	446.94	24.26	24.26	YES	454.07	44.12
6	448.526	5.5	443.64	8.29	8.29	YES	443.87	15.07	15.07	YES	444.18	26.44
7	442.916	5.916	437.33	1.42	4.14	YES	437.42	2.4	6.82	YES	437.53	3.98
7	325.387	4.25	322.11	4.6	19.46	NO	325.68	7.96	22.57	NO	326.02	13.46
2	431.382	4.5	427.43	2.56	5.26	YES	427.62	4.45	8.96	YES	427.83	7.38
7	411.017	3.67	407.35	0	0	YES	407.35	0	0	YES	407.35	0
7	415.597	3.67	411.93	0	0	YES	411.93	0	0	YES	411.93	0
6	399.296	0	401.05	0	3.43	YES	401.08	0	6.12	YES	401.1	0
7	433.397	3	430.63	1.06	1.06	YES	430.7	1.8	1.8	YES	432.07	3
3	434.554	3.254	431.56	0.65	0.65	YES	431.63	1.06	1.06	YES	432.59	1.73
2	434.594	3.874	431.17	1.23	1.87	YES	431.32	2.07	3.12	YES	432.56	3.42
2	383.112	4	379.45	0.92	0.92	YES	379.55	1.54	1.54	YES	379.68	2.52
1	337.71	0	339.29	26.34	45.64	NO	339.93	46.63	84	NO	340.8	85.42
7	451.107	4.25	447.53	3.18	3.18	YES	447.84	5.62	5.62	YES	450.87	9.54
3	388.343	28	361.28	11.14	38.67	YES	361.59	19.17	67.09	YES	361.92	31.12
6	414.286	4.5	410.16	3.45	3.45	YES	410.29	6.16	6.16	YES	410.45	10.45
2	436.912	4.5	432.63	1.81	1.81	YES	432.7	3.19	3.19	YES	432.78	5.21
7	398.477	0	398.79	0	11.97	YES	399.01	0	24.92	YES	399.26	0
5	413.045	3	413	3.48	3.48	YES	413.05	6.47	6.47	YES	413.11	10.83
8	444.898	4.5	440.75	2.16	2.16	YES	440.85	3.6	3.6	YES	440.98	5.78
8	436.958	3	437.41	0.57	2.72	YES	437.45	0.9	4.48	YES	437.49	1.41
2	387.672	0	387.82	4.84	4.84	YES	387.85	8.33	8.33	YES	387.88	13.83
3	449.983	0	449.98	0	0	YES	449.98	0	0	YES	449.98	0
3	301.993	4.5	303.94	2.87	109.15	NO	304.4	4.94	151.23	NO	304.79	8.44
1	302.901	5	304.42	11.37	128.93	NO	304.92	20.47	211.33	NO	305.23	36.12
5	302.863	3.363	303.69	1.3	57.77	NO	304.1	2.19	92.28	NO	304.52	3.53
9	325.489	4.5	321.31	1.57	1.57	NO	321.42	2.86	2.86	NO	321.54	4.8
4	324.764	4.5	320.51	0.84	2.41	NO	320.6	1.49	4.34	NO	320.69	2.49
7	369.494	0.424	371.99	0	137.38	YES	372.47	0	246.05	YES	372.83	0
2	343.827	0	343.82	0	0	NO	343.82	0	0	NO	343.82	0

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
4	311.124	0	311.44	2.01	3.95	NO	311.67	3.67	12.41	NO	311.97	6.18	
9	283.829	0	285.96	14.5	553.29	NO	286.49	24.95	928.24	NO	288.32	42.32	
4	438.124	5	433.8	5.41	5.41	YES	434.03	9.55	9.55	YES	434.39	16.6	
3	430.8	4.5	427.32	10.62	11.18	YES	428.18	19	20.05	YES	430.57	31.03	
2	444.322	0	444.34	0	0.91	YES	444.35	0	1.53	YES	444.36	0	
7	465.857	3.67	462.43	0.91	0.91	YES	462.51	1.54	1.54	YES	462.61	2.45	
1	430.431	5.5	425.83	0	16.38	YES	426.17	0	29.35	YES	426.65	0	
6	458.916	0	458.92	0	0	YES	458.92	0	0	YES	458.92	0	
5	470.135	0	470.13	0	0	YES	470.13	0	0	YES	470.13	0	
9	437.849	0	437.92	0	2.14	YES	437.95	0	3.73	YES	438	0	
8	453.968	4.5	449.89	2.16	2.16	YES	450.02	3.76	3.76	YES	450.19	6.18	
7	450.537	0	450.54	0	0	YES	450.54	0	0	YES	450.54	0	
3	449.513	0	449.82	5.82	5.82	YES	449.89	10.29	10.29	YES	449.98	17.46	
1	400.521	4	397.84	12.83	15.66	YES	398.49	22.82	29.66	YES	402.9	40.11	
4	442.114	4.5	437.91	2.23	2.23	YES	438	4	4	YES	438.11	6.85	
5	414.841	5.991	414.27	0	55.63	YES	415.69	0	83.13	YES	416.04	0	
8	297.608	0	299.55	0	238.7	NO	301.18	0	467.22	NO	301.93	0	
5	430.435	3	427.8	2.21	2.21	YES	427.92	3.82	3.82	YES	428.07	6.21	
2	366.442	4.5	362.63	7.36	7.36	YES	365.31	12.97	12.98	YES	366.68	22.6	
7	363.777	5	360.49	9.59	22.45	YES	363.62	16.68	38.08	YES	365.09	29.53	
1	363.551	4.5	360.59	5.1	5.1	YES	363.81	8.96	8.96	YES	365.09	15.75	
1	351.671	0	351.71	0	0.34	YES	351.72	0	0.56	YES	351.73	0	
2	355.442	3	352.56	0.17	0.17	YES	352.62	0.28	0.28	YES	352.67	0.43	
7	356.717	0	356.74	0	0.3	YES	356.75	0	0.62	YES	356.76	0	
8	359.838	2	358.06	0.45	0.45	YES	358.14	0.79	0.79	YES	358.24	1.29	
2	341.492	6	336.99	2.5	59.39	NO	337.14	4.35	69.64	NO	338	7.16	
2	293.532	0	296.75	0	540.95	NO	297.56	0	931.88	NO	298.93	0	
1	363.021	6	358.47	6.39	57.97	YES	358.58	10.68	65.73	YES	358.91	17.04	
8	329.518	5	329.92	13.88	48.91	NO	330.28	24.04	85.69	NO	330.65	39.91	
5	329.25	6	325.74	1.9	98.65	NO	329.69	3.21	124.04	NO	330.33	5.16	
5	314.235	6.5	310.19	7.84	124.61	NO	315.21	13.2	186.67	NO	316.37	22.18	
5	324.405	6.5	319.91	14.16	120.64	NO	324.27	24.21	194.13	NO	325.65	44.06	
2	343.742	0	344.13	2.03	36	YES	344.27	3.42	65.17	YES	344.38	5.51	
8	392.678	4.5	388.55	2.37	2.37	YES	388.68	4.28	4.28	YES	388.85	7.29	
1	391.581	4.5	387.53	4.06	6.42	YES	387.69	7.29	11.57	YES	387.91	12.94	
4	323.814	0	323.92	0	6.39	NO	323.97	0	11.52	NO	324.02	0	
3	311.843	0	313.52	0	334.23	NO	313.88	0	532.04	NO	315.04	0	
1	290.991	4.5	291.13	4.17	19.41	NO	291.51	7.31	32.54	NO	292.47	12.23	
4	293.94	4.5	294.05	12.69	17.12	NO	294.18	22.11	30.01	NO	294.37	40.13	
1	276.601	4.25	273.68	1.6	1.69	NO	274.33	2.69	2.92	NO	274.85	4.42	
9	283.147	0.247	282.91	0	0.02	NO	282.91	0	0.02	NO	282.91	0	
2	265.5	2.7	263.5	0.5	1.2	NO	263.8	0.29	0.29	NO	263.8	0.5	

Existing Condition Junctions Results Summary Table														
Dimensions			2-year				10-year				100-year			
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)			Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
3	292.293	4.5	287.99	1.01	1.01	NO	NO	288.05	1.73	1.73	NO	288.12	2.81	
3	381.253	0	381.25	0	0	YES	YES	381.25	0	0	YES	381.25	0	
9	342.789	0	343.21	1.61	1.61	YES	YES	343.34	3.02	3.02	YES	343.48	5.09	
1	299.021	0	301.74	0	338.19	NO	NO	302.11	0	505.61	NO	303.33	0	
2	341.772	0	341.82	0	1.63	NO	NO	341.84	0	3.07	NO	341.86	0	
6	364.496	0	364.58	0	0.2	YES	YES	364.6	0	0.44	YES	364.62	0	
2	367.832	3	365.06	0.36	0.36	YES	YES	365.16	0.65	0.65	YES	365.26	1.04	
1	390.481	0	390.48	0	0	YES	YES	390.48	0	0	YES	390.48	0	
6	368.517	0	366.54	0.98	0.98	YES	YES	366.55	1.82	1.82	YES	366.56	2.98	
4	370.964	0	370.96	0	0	YES	YES	370.96	0	0	YES	370.96	0	
9	381.949	3	378.95	0	0	YES	YES	378.95	0	0	YES	378.95	0	
3	339.343	0	339.34	0	0	NO	NO	339.34	0	0	NO	339.34	0	
6	289.196	0	291.69	0	540.88	NO	NO	292.35	0	897.76	NO	293.38	0	
6	359.086	4	355.3	0.89	0.89	YES	YES	355.38	1.56	1.56	YES	355.46	2.56	
3	330.918	0	330.7	0	0.85	NO	NO	330.71	0	1.5	NO	330.73	0	
2	361.332	0	361.33	0	0	YES	YES	361.33	0	0	YES	361.33	0	
4	370.069	0	369.97	0	0	YES	YES	369.97	0	0	YES	369.97	0	
9	325.299	0	325.35	0	2.03	NO	NO	325.37	0	3.6	NO	325.39	0	
4	335.384	0	335.67	2.04	2.04	NO	NO	335.76	3.61	3.61	NO	335.86	5.9	
3	311.633	4.5	308	3.74	4.95	NO	NO	309.69	6.3	8.11	NO	311.79	10.67	
5	310.685	4.25	306.96	1.93	7.02	NO	NO	309.37	3.38	22.78	NO	311.55	5.73	
5	313.645	3.5	310.34	0.73	2.4	NO	NO	310.39	1.19	3.72	NO	310.45	1.95	
1	326.631	4.25	324.37	13.8	14.69	NO	NO	326.87	24.55	26.36	NO	327.01	43.8	
2	344.652	0	344.66	1.21	1.21	YES	YES	344.67	2	2	YES	344.67	3.29	
9	339.368	0	338.44	0.19	0.19	NO	NO	338.45	0.31	0.31	NO	338.45	0.48	
7	325.417	0	325.42	0	0	NO	NO	325.42	0	0	NO	325.42	0	
5	360.875	0	360.88	0	0	YES	YES	360.88	0	0	YES	360.88	0	
5	361.564	6.564	355.96	1.91	12.92	YES	YES	356.37	3.4	22.79	YES	357.36	5.69	
3	361.523	5	357.18	11.02	11.02	YES	YES	357.44	19.37	19.37	YES	358.09	33.06	
1	414.837	0	414.17	0	0	YES	YES	414.17	0	0	YES	414.17	0	
7	355.797	0	355.65	0	0	YES	YES	355.65	0	0	YES	355.65	0	
9	389.259	3.5	386.85	10.08	10.78	YES	YES	387.78	17.65	19.03	YES	389.4	28.84	
6	389.726	4.5	386.02	1.78	12.39	YES	YES	386.42	3.09	21.82	YES	388.31	5.16	
3	417.701	0	418.06	0	23.15	YES	YES	418.26	0	39.66	YES	418.49	0	
2	409.422	0	409.62	0.31	0.31	YES	YES	409.68	0.54	0.54	YES	409.74	0.86	
6	328.439	2.439	326.35	1.46	1.46	NO	NO	330.03	2.36	64.6	NO	331.07	3.78	
9	335.339	4.5	331.04	0.92	0.92	NO	NO	331.09	1.45	1.45	NO	331.15	2.3	
4	351.184	4.5	347.13	0.37	2.52	YES	YES	347.28	0.65	4.26	YES	347.46	1.03	
2	373.862	4.5	369.6	0	2.16	YES	YES	369.67	0	3.64	YES	369.75	0	
9	374.179	4.5	370.14	2.17	2.17	YES	YES	370.29	3.64	3.64	YES	370.48	5.78	
2	432.923	0.923	432.33	1.35	1.35	YES	YES	432.44	2.3	2.3	YES	432.58	3.76	
2	432.923	0.923	432.33	1.35	1.35	YES	YES	432.44	2.3	2.3	YES	432.58	3.76	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
3	389.31	6.31	383.37	1.64	1.89	YES	383.49	2.96	3.38	YES	383.65	4.89	
6	377.153	0	376.64	0.56	2.41	YES	376.65	0.9	4.22	YES	376.67	1.4	
5	347.115	4.5	343.35	5.96	6.94	YES	343.72	10.39	12.33	YES	347.52	17.56	
9	335.339	5.5	331.65	0.99	20.95	NO	333.67	1.57	37.24	NO	335.69	2.47	
4	335.024	4.75	331.83	8.63	11.81	NO	334.29	15.11	20.92	NO	335.79	26.21	
1	334.501	0	334.77	3.17	3.18	NO	334.86	5.78	5.8	NO	335.8	9.57	
1	337.061	5	337.13	0	0	NO	337.13	0	0.01	NO	337.13	0	
1	442.01	4	439.94	1	4.44	YES	443.92	1.69	6.31	YES	443.97	2.72	
5	444.645	4	441.26	3.53	3.53	YES	445.38	6.1	6.1	YES	445.48	9.97	
8	410.18	4.5	405.71	4.58	4.58	YES	405.73	8.06	8.06	YES	405.74	13.79	
1	398.41	4.5	394.17	1.33	1.38	YES	394.25	2.28	2.38	YES	394.36	4.02	
3	399.433	3	396.43	0	0	YES	396.43	0	0	YES	396.55	0	
1	425.421	0	425.93	5.46	5.46	YES	426.24	9.68	9.68	YES	426.31	16.7	
2	442.322	4.5	438.59	3.83	3.83	YES	438.89	6.79	6.79	YES	440.1	11.79	
8	441.738	4.5	437.8	0.53	4.37	YES	438.02	0.85	7.64	YES	438.37	1.36	
8	436.98	3.5	434.05	0.76	5.08	YES	434.22	1.19	8.77	YES	434.47	1.85	
4	437.214	4.5	433.55	0.35	4.18	YES	433.91	0.57	7.15	YES	437.21	0.91	
2	437.552	4.5	434.01	3.84	3.84	YES	434.48	6.6	6.6	YES	437.55	10.83	
1	441.881	4.5	437.5	0.62	0.62	YES	437.53	0.96	0.96	YES	437.56	1.47	
7	441.747	12	430.12	0	4.01	YES	430.25	0	6.87	YES	430.39	0	
8	394.398	5.5	390.07	0.95	24.38	YES	390.53	1.52	41.48	YES	394.42	2.38	
1	438.013	0	438.09	0.61	0.61	YES	438.11	0.98	0.98	YES	438.13	1.55	
8	438.048	0	438.66	3	3	YES	438.69	5.25	5.25	YES	438.72	8.89	
8	433.178	5	429.24	9.51	9.51	YES	431.12	16.66	16.66	YES	433.67	28.3	
2	428.422	5	424.97	1.58	10.89	YES	427.72	2.74	17.79	YES	428.61	4.45	
5	411.205	4.5	407.08	3.46	3.46	YES	407.19	5.7	5.7	YES	407.34	9.16	
5	433.695	4.25	430.15	0	2.9	YES	430.43	0	4.87	YES	432.04	0	
7	432.02	4.25	428.19	0	2.86	YES	428.33	0	4.77	YES	428.47	0	
5	399.965	0	399.83	0	0	YES	399.84	0	0	YES	399.84	0	
3	439.853	0	439.97	0	5.6	YES	440.02	0	10	YES	440.09	0	
8	401.708	0	402.49	0	0.17	YES	402.5	0	0.26	YES	402.5	0	
1	395.871	0	396.35	0	5.17	YES	396.37	0	8.53	YES	396.4	0	
6	396.816	0	397.05	5.23	5.23	YES	397.13	8.61	8.61	YES	397.24	14.04	
7	404.367	0	404.4	0.18	0.18	YES	404.4	0.27	0.27	YES	404.41	0.4	
7	401.923	0	400.71	2.23	2.23	YES	400.73	3.85	3.85	YES	400.75	6.26	
1	408.291	4.5	404.83	3.8	5.26	YES	405.5	6.06	8.19	YES	407.92	9.55	
5	407.695	4.67	403.55	1.16	6.38	YES	403.68	1.93	9.78	YES	403.87	3.13	
9	392.439	4.67	388.74	1.8	8.07	YES	389.11	2.96	12.56	YES	390.18	4.73	
3	435.733	3	432.89	1.17	1.17	YES	432.94	1.83	1.83	YES	433	2.85	
7	411.909	7.209	406.71	0.6	97.84	YES	407.8	0.98	183.69	YES	409.17	1.59	
6	380.221	3.135	377.38	0	15.27	YES	377.51	0	29.44	YES	377.59	0	
1	414.45	4.5	407.45	0.04	0.04	YES	407.05	4.57	4.57	YES	410.09	2.64	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)			Surcharging (10-year)
9	387.39	0	387.75	0	1.22	YES	388.02	0	2.13	YES	388.35	0	0
9	447.55	8.55	446.64	7.24	9.95	YES	446.8	12.56	17.75	YES	446.9	21.11	0
0	448.482	8.482	446.64	2.35	4.56	YES	446.84	3.95	4.5	YES	446.99	6.34	0
7	466.873	9.873	463.5	3.85	88.17	YES	467.04	6.42	120.48	YES	467.27	10.49	0
5	403.105	4.5	399.05	2.02	2.02	YES	399.18	3.35	3.35	YES	399.35	5.55	0
9	426.099	0	426.31	0	7.03	YES	426.4	0	12.92	YES	426.52	0	0
2	415.325	0	415.04	1.9	2.27	YES	415.05	2.93	3.57	YES	415.06	4.5	0
-1	495.641	5	490.85	0.25	0.27	YES	490.9	0.41	0.6	YES	490.99	0.65	0
2	502.992	5	498.27	1.33	1.33	YES	498.36	2.37	2.37	YES	498.48	4.18	0
4	501.463	4.5	497.1	0.32	0.32	YES	497.15	0.56	0.56	YES	497.19	0.9	0
1	492.591	5.5	487.33	1.19	1.54	YES	487.41	2	2.73	YES	487.5	3.21	0
9	506.89	3	503.89	0	0	YES	503.89	0	0	YES	503.89	0	0
3	395.33	3	392.73	0	5.11	YES	392.85	0	8.05	YES	393.03	0	0
7	410.832	3.832	407.33	5.12	5.12	YES	407.41	8.07	8.07	YES	407.51	12.61	0
3	409.773	0	409.77	0	0	YES	409.77	0	0	YES	409.77	0	0
6	410.656	3	407.66	0	0	YES	407.66	0	0	YES	407.66	0	0
5	429.025	3	426.05	0	2.21	YES	426.06	0	3.82	YES	426.08	0	0
9	411.179	3	408.18	0	0	YES	408.18	0	0	YES	408.18	0	0
1	426.291	4.5	422.31	0.93	1.44	YES	422.49	1.6	2.48	YES	422.71	2.58	0
7	433.117	4.5	428.77	0.51	0.51	YES	428.82	0.88	0.88	YES	428.87	1.41	0
6	407.316	3	404.5	0	2.81	YES	404.55	0	4.47	YES	404.61	0	0
2	495.692	3	492.8	0.72	0.72	YES	492.84	1.28	1.28	YES	492.88	2.11	0
5	456.575	5	451.75	0.53	2.39	YES	451.8	0.91	4.34	YES	451.87	1.46	0
6	461.446	5	456.73	1.87	1.87	YES	456.83	3.44	3.44	YES	456.94	5.78	0
9	400.5	1.5	400.33	0	15.86	YES	400.69	0	26.9	YES	400.81	0	0
-1	424.141	4.5	419.82	0.51	0.51	YES	419.87	0.8	0.8	YES	419.92	1.24	0
7	357.827	0	358.14	0	24.55	YES	358.26	0	41.31	YES	358.37	0	0
5	431.625	3.5	428.32	0.86	0.86	YES	428.37	1.38	1.38	YES	428.44	2.2	0
7	431.677	3.5	428.4	0.9	0.9	YES	428.46	1.44	1.44	YES	428.53	2.27	0
7	482.094	5.094	477.17	0.35	0.54	YES	477.21	0.54	0.83	YES	477.25	0.82	0
3	482.027	4.5	477.65	0.19	0.19	YES	477.68	0.29	0.29	YES	477.71	0.45	0
7	467.093	3.5	463.88	1.03	1.03	YES	463.95	1.6	1.6	YES	464.05	2.47	0
1	466.871	3.5	463.64	1.28	1.28	YES	463.72	2	2	YES	463.83	3.1	0
-1	478.041	3.5	474.89	1.57	1.57	YES	474.98	2.56	2.56	YES	475.1	4.05	0
7	445.347	4.5	441.06	1.18	1.18	YES	441.11	1.85	1.85	YES	441.17	2.88	0
3	440.393	5	435.74	0.1	4.79	YES	435.83	0.16	7.61	YES	435.94	0.24	0
9	284.96	0	286.93	0	460.04	NO	286.99	0	527.84	NO	288.89	0	0
4	440.704	4.5	436.68	0.41	3.52	YES	436.81	0.67	5.61	YES	436.98	1.06	0
2	441.662	4	437.89	0.66	0.66	YES	437.95	1.05	1.05	YES	438.03	1.66	0
4	440.934	4.5	436.99	2.46	2.46	YES	437.16	3.91	3.91	YES	437.39	6.14	0
7	401.57	3.5	399.13	4.91	7.18	YES	401.88	9.23	12.71	YES	402.57	16.01	0
4	401.70	3.5	399.05	4.91	7.18	YES	401.88	9.23	12.71	YES	402.57	16.01	0

Existing Condition Junctions Results Summary Table															
Dimensions			2-year				10-year				100-year				
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Inflow (100-year)		
1	1	400.271	3	394.67	0.41	0.41	0.41	YES	394.68	1.09	1.09	YES	394.68	1.96	1.96
2	6	402.676	3	400.02	0.15	1.51	1.51	YES	401.94	0.24	2.84	YES	402.63	0.38	0.38
3	4	414.415	0	414.21	0	1.35	1.35	YES	414.23	0	2.7	YES	414.25	0	0
4	9	274.05	2.15	273.55	0	16.82	16.82	NO	274.14	0	110.59	NO	275.68	0	0
5	5	419.451	0	419.3	0	0	0	YES	419.3	0	0	YES	419.3	0	0
6	9	448.039	3	445.04	0	0	0	YES	445.04	0	0	YES	445.04	0	0
7	1	461.001	0	461.24	2.03	2.03	2.03	YES	461.32	3.61	3.61	YES	461.4	5.91	5.91
8	2	413.162	3	410.39	1.38	1.38	1.38	YES	410.47	2.62	2.62	YES	410.56	4.53	4.53
9	9	417.249	3	414.25	0	0	0	YES	414.25	0	0	YES	414.25	0	0
10	2	396.072	3	393.63	0.07	2.04	2.04	YES	393.8	0.16	3.68	YES	393.98	0.28	0.28
11	6	444.926	3	441.93	0	0	0	YES	441.93	0	0	YES	441.93	0	0
12	4	421.14	3	418.44	1.49	1.49	1.49	YES	418.56	2.9	2.9	YES	418.68	4.9	4.9
13	2	392.392	0	392.44	0	1.81	1.81	YES	392.46	0	3.38	YES	392.49	0	0
14	2	322.492	4.5	318.57	3.23	3.23	3.23	NO	318.81	5.83	5.83	NO	319.23	10.38	10.38
15	2	271.852	0	273.55	0	394.73	0	NO	274.05	0	729	NO	275.54	0	0
16	5	324.715	8	317.33	2.3	5.5	5.5	NO	317.53	4.06	9.84	NO	317.82	7.08	7.08
17	6	317.366	5	312.71	3.89	3.89	3.89	NO	312.83	7.17	7.17	NO	312.97	11.92	11.92
18	3	313.963	5.5	309.02	7.09	10.96	10.96	NO	309.22	12.9	20.04	NO	309.47	22.1	22.1
19	8	311.908	6	306.43	0.71	11.44	11.44	NO	306.62	1.14	21.72	NO	306.9	1.8	1.8
20	3	311.323	7	305.21	0.26	27.57	27.57	NO	305.6	0.4	50.96	NO	306.15	0.61	0.61
21	8	311.098	4.5	306.75	0.65	0.65	0.65	NO	306.8	1.15	1.15	NO	306.86	1.88	1.88
22	9	312.789	0	313	1.18	1.18	1.18	NO	313.08	2.16	2.16	NO	313.16	3.66	3.66
23	1	311.501	5	307.44	2.65	2.65	2.65	NO	307.68	4.1	4.1	NO	308.01	6.33	6.33
24	9	373.699	4.5	370.08	5.18	5.18	5.18	YES	370.47	9.51	9.51	YES	372.85	16.43	16.43
25	5	393.765	0	393.94	4.51	4.51	4.51	YES	394	8.05	8.05	YES	394.07	14.04	14.04
26	5	386.65	4.5	384.25	11.18	11.18	11.18	YES	386.73	20.03	20.03	YES	386.87	36.37	36.37
27	5	386.095	4.5	382.17	2.8	2.8	2.8	YES	382.86	5.1	8.09	YES	386.68	8.79	8.79
28	2	424.458	2.458	425.15	5.31	5.31	5.31	YES	425.25	9.28	9.28	YES	425.33	15.6	15.6
29	4	403.34	3	403.37	2.79	3.1	3.1	YES	403.42	4.81	5.47	YES	403.46	8.15	8.15
30	2	403.582	0	403.82	5.91	5.91	5.91	YES	403.88	9.79	9.79	YES	403.95	15.64	15.64
31	9	392.199	4.5	388.04	4.19	4.19	4.19	YES	388.19	7.66	8.48	YES	388.55	13.28	13.28
32	7	392.087	8	385.87	9.42	87.68	87.68	YES	386.53	16.22	154.03	YES	387.21	27.11	27.11
33	4	394.034	5	389.25	0.77	0.77	0.77	YES	389.35	1.32	1.32	YES	394.24	2.17	2.17
34	6	406.916	7	401.47	6.67	71.79	71.79	YES	402.07	11.92	127.24	YES	402.27	20.65	20.65
35	1	366.056	0	365.9	0	0	0	YES	365.9	0	0	YES	365.9	0	0
36	1	409.591	6	405.6	11.91	65.86	65.86	YES	409.78	21.11	120.61	YES	410.25	35.91	35.91
37	5	419.155	7	413.6	2.66	54.25	54.25	YES	414.2	4.8	99.93	YES	415.29	8.13	8.13
38	1	417.751	7	412.01	2.7	56.17	56.17	YES	412.78	4.91	104.05	YES	414.2	8.52	8.52
39	7	432.97	4	429.45	3.75	3.75	3.75	YES	429.66	6.72	6.72	YES	433	11.25	11.25
40	7	416.937	0	418.75	3.73	3.73	3.73	YES	418.77	6.52	6.52	YES	418.79	10.97	10.97
41	2	378.202	6	372.82	5.71	10.61	10.61	YES	373.04	9.78	19.22	YES	373.35	16.82	16.82
42	1	370.12	4.5	375.67	2.6	5.1	5.1	YES	375.67	4.5	18.27	YES	378.71	7.67	7.67

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
7	417.747	5	413.68	0	15.38	YES	415.09	0	27.35	YES	418.3	0	0
8	294.138	0	298.66	0	437.03	NO	298.83	0	530.03	NO	300.71	0	0
3	351.043	4.5	347.18	2.9	5.65	YES	347.42	5.04	9.76	YES	347.84	8.7	
5	414.045	4	410.33	3.54	3.54	YES	410.41	6.2	6.2	YES	410.52	10.4	
6	359.006	4.5	355.86	6.56	9.84	YES	356.85	11.38	17.26	YES	358.69	19.84	
9	375.959	6	371.15	7.94	19.38	YES	371.58	13.9	34.63	YES	372.42	24.13	
7	376.7	1	375.7	0	0	YES	375.7	0	0	YES	375.7	0	0
2	435.412	3	432.51	0.32	0.32	YES	432.53	0.51	0.51	YES	432.56	0.8	
6	421.653	0	421.34	0	0.19	YES	421.35	0	0.31	YES	421.36	0	0
7	432.207	3	431.68	0.88	0.99	YES	431.69	1.38	1.55	YES	431.7	2.14	
3	444.13	3	441.22	0.16	0.16	YES	441.24	0.25	0.25	YES	441.26	0.38	
5	298.695	0	303.2	0	374.13	NO	303.5	0	482.9	NO	305.01	0	0
4	362.104	4.5	357.95	1.38	1.38	YES	358.07	2.5	2.5	YES	358.21	4.09	
9	350.929	0	351.04	0	1.34	YES	351.07	0	2.45	YES	351.1	0	0
3	347.593	5	343.87	8.52	8.83	YES	344.65	15.37	16.2	YES	348.01	26.14	
4	385.14	10	376.01	7.35	17.2	YES	376.39	13.33	31.15	YES	377.46	22.85	
8	386.778	3	385.93	0.22	0.26	YES	385.93	0.41	0.47	YES	385.94	0.66	
2	382.692	3	379.79	0.11	0.11	YES	379.82	0.2	0.2	YES	379.85	0.33	
1	380.031	3	377.63	0.75	0.86	YES	378.08	1.6	1.79	YES	379.15	2.83	
1	403.981	0	404.16	0	0.26	YES	404.26	0	0.46	YES	404.89	0	0
3	411.063	4.5	406.75	0.27	0.27	YES	406.8	0.47	0.47	YES	406.87	0.76	
6	306.138	0	312.62	0	515.98	NO	313.84	0	792.24	NO	314.95	0	0
6	445.346	3	442.62	3	3	YES	442.72	5.43	5.43	YES	442.83	9.28	
4	420.134	3	417.24	0.18	0.18	YES	417.28	0.31	0.31	YES	417.31	0.5	
4	439.584	3	436.64	0.1	0.1	YES	436.65	0.16	0.16	YES	436.67	0.24	
7	418.498	3	411.92	0	0.27	YES	411.93	0	0.46	YES	411.93	0	0
5	429.465	5.5	424.79	3.79	10.79	YES	425.38	6.8	19.14	YES	428.27	12.25	
7	458.054	1.054	457.07	0.1	0.1	YES	457.09	0.16	0.16	YES	457.11	0.25	
8	457.699	3.5	453.79	0.21	0.28	YES	453.8	0.35	0.46	YES	453.8	0.54	
2	452.592	0	452.61	0	0.27	YES	452.61	0	0.45	YES	452.62	0	0
2	456.732	0	456.98	0	0.02	YES	456.98	0	0.04	YES	456.98	0	0
8	425.798	4.5	421.56	1.29	1.29	YES	421.65	2.34	2.34	YES	421.75	3.87	
1	337.321	0	337.56	0.35	0.35	NO	337.63	0.55	0.55	NO	337.71	0.85	
1	416.855	0	416.86	0	1.27	YES	416.89	0	2.31	YES	416.92	0	0
9	403.919	0	404.3	0	2.37	YES	404.32	0	4.32	YES	404.35	0	0
5	439.355	0	439.58	1.38	1.38	YES	439.66	2.58	2.58	YES	439.75	4.35	
2	451.232	3	448.39	0.72	0.72	YES	448.44	1.25	1.25	YES	448.49	2.01	
6	408.023	2.023	406.28	0.78	0.85	YES	406.38	1.43	1.55	YES	406.49	2.34	
9	404.499	0	404.63	0	0.84	YES	404.65	0	1.53	YES	404.66	0	0
3	424.723	3	421.77	0.08	0.08	YES	421.78	0.12	0.12	YES	421.79	0.18	
7	401.157	0	401.31	0.31	0.54	YES	401.37	0.63	1.08	YES	401.42	1.06	
5	400.25	0	400.25	0	0.24	YES	400.25	0	0.24	YES	400.25	0	0

Existing Condition Junctions Results Summary Table												
Dimensions			2-year				10-year				100-year	
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
3	487.003	0	487	0	0	YES	487	0	YES	487	0	487
5	459.715	0	459.71	0	0	YES	459.71	0	YES	459.71	0	459.71
9	458.407	0	458.21	0	0	YES	458.21	0	YES	458.21	0	458.21
7	466.298	0	465.84	0	0	YES	465.84	0	YES	465.84	0	465.84
7	425.177	4.5	420.97	0.27	2.92	YES	421.11	0.46	YES	421.82	6.28	421.82
11	424.881	8	418.47	0.45	37.68	YES	419.18	0.78	YES	421.12	69.88	421.12
11	427.701	12	417.38	15.01	50.32	YES	418.12	26.91	YES	419.83	92.67	419.83
5	427.361	12.361	416.59	1.21	51.2	YES	417.33	2.03	YES	418.96	94.13	417.7
6	420.6	7	415.39	1.83	52.48	YES	416.21	3.31	YES	417.7	96.53	417.7
8	429.948	4	430.1	17.63	17.63	YES	430.19	31.21	YES	430.3	31.21	430.3
8	317.128	0	322.32	0	429.37	NO	322.9	0	NO	324.13	606.05	0
4	425.324	5.25	420.42	1.73	3.16	YES	420.55	3.08	YES	421.58	6.13	421.58
8	424.728	7	419.07	3.99	18.75	YES	419.64	7.26	YES	421.49	32.39	421.49
7	438.867	0	439.11	0.93	0.93	YES	439.23	2.06	YES	439.37	2.06	439.37
4	434.522	0.522	434.45	1.36	1.36	YES	434.66	2.36	YES	434.99	2.36	434.99
11	434.401	0	434.81	0	0.03	YES	434.83	0	YES	434.85	0.05	434.85
8	437.458	0	437.63	4.97	4.97	YES	437.66	8.95	YES	437.7	9.64	437.7
4	437.244	0	437.64	2.35	2.4	YES	437.71	4.16	YES	437.83	4.16	437.83
5	443.025	2.525	440.76	0.26	2.56	YES	440.91	0.45	YES	441.06	4.57	441.06
2	446.412	4.5	442.65	2.35	2.35	YES	442.93	4.2	YES	443.99	4.2	443.99
6	439.596	3	437.85	0.5	11.36	YES	438.64	0.76	YES	439.6	12.73	439.6
3	406.01	0	404.18	0	0	YES	404.18	0	YES	404.18	0	404.18
5	440.495	3.5	440.02	10.89	10.89	YES	440.75	19.29	YES	440.85	19.29	440.85
8	482.128	2.67	479.46	0	0	YES	479.46	0	YES	479.46	0	479.46
5	482.195	4	478.74	3.4	3.71	YES	479.02	6.11	YES	482.27	6.82	482.27
9	468.79	0	468.96	0	3.7	YES	469.01	0	YES	469.04	6.79	469.04
7	491.857	0	492.02	0.56	0.56	YES	492.07	1	YES	492.13	1	492.13
11	433.881	3.5	434.02	0	5.59	YES	434.07	0	YES	434.14	10.2	434.14
1	438.641	3.33	438.71	0	4.05	YES	438.75	0	YES	438.81	7.7	438.81
5	448.005	0	448.1	0.98	11.77	YES	448.13	1.71	YES	448.16	18.03	448.16
4	449.927	0	449.86	15.42	15.51	YES	449.95	27.77	YES	450.07	27.77	450.07
2	424.212	0	424.21	0	0	YES	424.21	0	YES	424.21	0	424.21
6	408.446	0	408.45	0	0	YES	408.45	0	YES	408.45	0	408.45
2	411.032	4	410.74	13.93	16.77	YES	411.45	25.01	YES	411.64	25.92	411.64
5	411.09	4.59	410.21	3.53	19.31	YES	411.33	6.41	YES	411.51	21.87	411.51
8	411.162	5.362	409.01	2.7	21.6	YES	411.58	4.72	YES	412.24	24.31	412.24
5	411.55	6	408.46	1.14	70.57	YES	411.52	2.02	YES	412.18	81.73	412.18
7	413.387	6	409.67	3.07	30.01	YES	413.84	5.36	YES	414.16	52.69	414.16
6	403.656	6.5	404.09	4.62	76.22	YES	404.64	8.07	YES	404.96	95.72	404.96
3	403.863	7	403.91	0.26	81.03	YES	404.56	0.43	YES	404.93	87.85	404.93
7	420.217	6	424.9	0.22	18.13	YES	425.13	0.35	YES	425.46	32.45	425.46
4	430.21	5	425.41	0.77	4.71	YES	425.5	0.5	YES	425.81	0.5	425.81

Existing Condition Junctions Results Summary Table													
Dimensions			2-year					10-year				100-year	
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
2	424.362	6	419.91	7.64	24.53	YES	420.51	13.14	41.43	YES	421.44	21.72	
2	424.22	6	419.16	0.9	25.33	YES	419.46	1.59	44.1	YES	420.27	2.67	
6	436.026	6	430.86	9.17	13.78	YES	431.11	16.37	22.74	YES	431.47	29.03	
2	434.032	5.5	429.28	2.19	16.42	YES	429.52	3.68	27.6	YES	429.94	6.04	
7	438.277	6	432.83	13.15	13.15	YES	433.02	23.59	23.59	YES	433.27	42.02	
4	443.024	3	442.17	0.29	0.29	YES	442.18	0.44	0.44	YES	442.18	0.67	
3	439.703	0	439.82	0.22	0.22	YES	439.84	0.35	0.35	YES	439.87	0.54	
7	437.637	0	437.68	0	0.24	YES	437.69	0	0.36	YES	437.71	0	
1	470.031	9.5	461.33	0.16	9.49	YES	461.33	0.27	9.65	YES	461.34	0.42	
9	452.357	3.5	452.37	1.62	16.68	YES	452.51	3	23.51	YES	452.59	5.21	
9	387.235	0	385.58	0	2.83	YES	385.59	0	4.77	YES	385.61	0	
3	453.3	4	454.04	5.86	11.92	YES	454.23	10.5	27.97	YES	454.38	17.78	
6	469.336	4.5	469.15	0.18	12.35	YES	469.4	0.27	15.25	YES	469.48	0.42	
1	465.521	4.5	465.75	0.21	12.41	YES	465.76	0.32	13.04	YES	465.77	0.5	
7	470.307	4.5	471.67	11.21	19.32	YES	471.72	20.09	28.87	YES	471.8	35.2	
3	508.673	3	505.67	0	0	YES	505.67	0	0	YES	505.67	0	
5	508.709	3.709	505	0	0	YES	505	0	0	YES	505	0	
8	510.098	0	510.1	0	0	YES	510.1	0	0	YES	510.1	0	
3	486.593	0	486.59	0	0	YES	486.59	0	0	YES	486.7	0	
7	506.347	4.5	502.39	2.17	2.17	YES	502.59	3.88	3.88	YES	502.9	6.55	
8	373.308	0	373.69	0	1.95	YES	373.7	0	3.25	YES	373.72	0	
1	498.311	4.5	494.5	1.59	6.2	YES	494.68	2.9	8.85	YES	498.74	5.02	
3	493.173	4.5	489.41	1.73	7.41	YES	491.16	3.12	11.7	YES	493.32	5.33	
1	488.751	4.5	485.49	3.73	10.99	YES	488.94	6.75	16.95	YES	489.2	11.81	
5	478.345	4.5	479.05	2.5	13.33	YES	479.31	4.1	12.19	YES	479.45	6.42	
7	436.677	2	434.68	0	0	YES	434.68	0	0	YES	434.68	0	
1	512.211	3	509.28	0.13	0.13	YES	509.3	0.23	0.23	YES	509.32	0.36	
5	420.315	5	415.8	6.23	6.42	YES	415.96	11.03	11.37	YES	416.19	18.39	
2	410.37	2.75	408.8	1.46	12.83	YES	411.94	2.23	23.57	YES	412.31	3.39	
2	414.29	3.09	411.94	4.8	4.94	YES	413.58	8.12	12.77	YES	415.78	13.94	
9	401.88	2.49	403.78	8.67	72.81	YES	403.99	14.35	105.63	YES	404.36	23.53	
3	404.24	2.61	405.13	2.49	15.03	YES	405.56	4.18	24.08	YES	405.89	6.92	
5	400.05	3.6	401.79	8.72	48.24	YES	402.05	15.35	59.67	YES	402.44	26.67	
2	399.884	4.264	401.04	0.41	106.68	YES	401.98	0.65	107.04	YES	402.36	1.02	
6	398.691	5.631	401.02	3.02	149.96	YES	401.98	4.73	153.34	YES	402.35	7.38	
4	402.342	9.802	395.17	0.51	143.72	YES	395.61	0.81	152.11	YES	395.83	1.29	
4	402.531	12.291	395.01	3.55	144.75	YES	395.45	5.69	153.3	YES	395.67	9.05	
1	447.011	4.5	442.86	2.5	3.12	YES	442.96	4.14	5.19	YES	443.08	6.56	
8	447.108	4.5	443	0.63	0.63	YES	443.11	1.06	1.06	YES	443.23	1.67	
6	445.346	4.5	441.08	0.28	3.41	YES	441.15	0.48	5.67	YES	441.23	0.76	
3	438.023	6.5	434.24	5	85.61	YES	434.4	8.31	91.68	YES	434.55	13.21	
5	401.12	1.5	401.12	1.5	85.2	YES	401.26	7.74	85.2	YES	402.35	13.21	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
5	418.136	7.636	415.71	4.06	56.74	YES	419.07	6.66	83.13	YES	421.07	10.81	
6	425.726	4.5	422.04	0	0.04	YES	425.81	0	3.31	YES	425.88	0	
6	431.476	4.5	427.8	0.36	6.4	YES	428.11	0.56	10.69	YES	430.47	0.86	
4	440.164	0	440.16	0	0	YES	440.16	0	0	YES	440.16	0	
5	438.335	0	438.33	0	0	YES	438.33	0	0	YES	438.33	0	
5	443.493	3.67	434.92	0.81	0.81	YES	434.92	1.29	1.29	YES	434.93	2.01	
2	450.532	0	450.53	0	0	YES	450.53	0	0	YES	450.53	0	
4	444.214	5	440.51	11.91	14.7	YES	441.09	20.02	25.58	YES	443.08	33	
2	444.692	6	439.58	0.77	15.43	YES	439.88	1.27	28.16	YES	440.3	2.08	
3	469.653	0	469.65	0	0	YES	469.65	0	0	YES	469.65	0	
3	419.159	0	415.79	6.06	6.86	YES	415.8	9.93	11.57	YES	415.82	16.07	
9	469.329	4.5	465.59	15.77	15.77	YES	465.96	28.34	28.34	YES	469.45	49.29	
4	441.954	4.5	437.96	9.69	9.99	YES	438.13	16.95	17.58	YES	438.39	28.51	
1	448.171	4.5	445.6	8.68	8.68	YES	446.97	14.49	14.49	YES	448.79	23.6	
2	444.602	5	445.27	0.59	16.22	YES	445.4	0.92	27.49	YES	445.47	1.43	
3	448.673	4	445.45	0.74	0.74	YES	446.41	1.2	1.2	YES	447.61	1.93	
4	449.117	5.117	445.45	0.35	2.85	YES	446.34	0.56	4.92	YES	447.78	0.88	
1	448.771	4.5	445.48	2.69	2.69	YES	446.47	4.44	4.44	YES	448.11	7.23	
7	446.617	4.5	445.36	0.05	2.74	YES	445.87	0.07	4.9	YES	446.6	0.11	
9	449.677	4	446.3	0.65	0.65	YES	448.72	1.1	1.1	YES	449.23	1.78	
5	450.69	5	446.98	1.05	17.97	YES	450.2	1.68	30.87	YES	450.82	2.62	
7	434.447	0	434.52	0	1.36	YES	434.54	0	2.33	YES	434.58	0	
9	459.769	5	455.8	7.37	17.1	YES	456.48	12.62	30.11	YES	460	20.99	
3	461.383	5	457.03	0.13	10.13	YES	457.32	0.19	18.48	YES	460.68	0.29	
6	440.906	4.5	440.36	0.17	0.17	YES	440.68	0.26	2.59	YES	441.03	0.4	
7	440.918	3.918	441.08	9.86	25.32	YES	441.19	16.61	39.35	YES	441.27	27.5	
6	434.706	5.5	435.4	0.72	13.45	YES	435.61	1.14	27.2	YES	435.8	1.76	
1	439.021	4.5	439.69	11.06	11.06	YES	439.8	19.54	19.54	YES	439.91	34.68	
7	434.373	8.503	435.43	8.36	37.95	YES	435.64	14.47	47.99	YES	435.84	24.29	
5	434.527	9.027	435.4	7.48	29.85	YES	435.62	12.71	49.46	YES	435.81	21	
4	437.344	4	438.07	11.84	11.84	YES	438.22	20.35	20.35	YES	438.37	35.98	
9	387.809	0.76	387.86	0	7.9	YES	388.09	0	12.69	YES	388.37	0	
7	436.747	4	437.69	4.47	31.86	YES	438.14	7.58	46.75	YES	438.35	13.09	
2	450.062	1.83	448.23	0	0	YES	448.23	0	0	YES	448.23	0	
8	447.818	0	447.82	0	0	YES	447.82	0	0	YES	447.82	0	
3	500.373	6	494.54	1.02	1.02	YES	494.58	1.67	1.67	YES	494.64	2.67	
6	452.96	1	453.02	6.14	6.14	YES	453.1	10.77	10.77	YES	453.19	18.47	
6	434.796	4.5	430.83	0.54	0.73	YES	432.26	0.98	1.42	YES	434.01	1.57	
1	438.091	4.5	434.13	4.07	4.07	YES	434.31	6.85	6.85	YES	436.02	11.21	
9	431.569	3	431.72	7.52	7.52	YES	431.85	13	13	YES	431.97	22.67	
9	404.179	0	405.02	0	99.76	YES	405.4	0	184.94	YES	405.88	0	
1	437.71	1	432.01	0	0	YES	432.01	0	0	YES	432.01	0	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
4	418.454	4	415.66	16.95	16.95	YES	416.22	29.79	29.79	YES	418.46	53.71	
3	400.203	2.5	401.93	2.91	23.14	YES	402.1	4.92	31.91	YES	402.17	8.06	
7	401.557	7	398.16	2.37	97.11	YES	401.04	4	124.97	YES	402.51	6.74	
1	401.391	7.5	397.95	5.71	101.32	YES	400.65	9.61	135.31	YES	402.05	16.65	
3	441.633	4.5	437.92	2.06	2.06	YES	438.2	3.58	3.58	YES	438.73	5.87	
4	440.904	4.25	437.1	2.23	4.23	YES	437.25	3.88	7.36	YES	437.47	6.37	
2	423.32	0	423.42	0	5.05	YES	423.47	0	8.96	YES	423.51	0	
9	391.539	0	391.88	0	1.97	YES	392.04	0	3.42	YES	392.14	0	
1	428.181	4.25	424.72	0.91	5.09	YES	425.1	1.48	8.77	YES	427.47	2.35	
2	398.992	9	394.68	1.82	1.82	YES	392.83	2.93	2.93	YES	396.95	4.72	
7	390.367	0	394.86	0	130.58	YES	396.86	0	223.65	YES	398.62	0	
8	398.958	5.5	393.77	3.06	3.14	YES	393.94	5.31	7.8	YES	397.74	9.11	
4	395.194	4.5	391.01	1.31	1.51	YES	392.03	2.1	2.89	YES	395.67	3.35	
6	394.646	4.5	390.63	7.96	8	YES	391.36	14.11	14.18	YES	395.65	24.13	
1	394.71	7.5	389.57	0.41	138.99	YES	390.64	0.64	235.42	YES	395.23	0.98	
5	390.957	6.457	386.9	0.74	153.91	YES	388.05	1.2	261.09	YES	392.3	1.94	
3	391.603	4.5	390.2	15.86	17.01	YES	392.18	28.28	28.31	YES	392.53	50.83	
4	397.54	4.5	395.34	0	119.98	YES	396.99	0	146.48	YES	398.67	0	
4	396.967	2.967	397.39	4.31	21.1	YES	399.05	7.23	21.4	YES	399.1	12	
5	396.915	3.415	397.08	3.04	120.13	YES	399.07	5.15	148.01	YES	399.37	8.8	
6	403.776	5	403.02	9.52	27.11	YES	404.21	15.58	50.2	YES	404.28	25.07	
6	399.816	4	400.9	1.95	28.64	YES	400.93	3.17	35.79	YES	400.95	5.13	
6	417.26	5	417.47	4.47	8.69	YES	417.6	7.14	23.19	YES	417.68	11.38	
5	440.437	0	441	5.66	5.66	YES	441.27	9.77	9.77	YES	441.31	16.61	
2	441.482	0	441.96	5.06	5.06	YES	441.98	9.01	9.01	YES	442.02	15.3	
8	436.618	5.5	432.46	0.59	15.9	YES	433.1	0.97	32.55	YES	437.09	1.6	
8	436.498	6	431.44	1.37	17.18	YES	432.2	2.26	33.54	YES	436.84	3.7	
3	436.253	4.5	432.79	6.6	15.34	YES	433.41	11.53	31.29	YES	437.09	19.59	
7	465.525	0	465.04	0	0	YES	465.04	0	0	YES	465.04	0	
1	424.201	5	420.63	7.17	24.11	YES	424.6	12.35	42.28	YES	425.53	20.98	
2	451.132	0	451.13	0	0	YES	451.13	0	0	YES	451.13	0	
6	448.836	7	442.92	0.22	14.61	YES	444.79	0.37	24.94	YES	445.61	0.58	
3	449.493	4	445.96	4.09	4.09	YES	446.72	7.32	7.32	YES	449.89	12.51	
8	452.118	4.5	447.95	1.42	1.42	YES	448.06	2.52	2.52	YES	448.18	4.14	
1	445.611	3	443.61	7.83	9.2	YES	445.3	14.04	16.5	YES	445.95	25.05	
2	448.672	0	449.21	1.23	1.23	YES	449.54	2.13	2.13	YES	449.7	3.41	
9	440.299	3.5	440.93	2.91	9.54	YES	441.01	5.23	17.21	YES	441.1	8.89	
2	440.292	3	440.94	3.92	6.13	YES	441.02	7.07	11.34	YES	441.11	12.15	
8	395.898	0	395.92	0	2.01	YES	395.93	0	3.34	YES	395.94	0	
2	426.292	4	422.69	1.87	1.87	YES	422.84	3.36	3.36	YES	423.1	5.66	
3	403.53	5.5	400.53	17.33	51.47	YES	401.72	30.67	87.55	YES	404.16	54.43	
5	482.81	5	480.81	19.99	59.81	YES	482.01	49.79	132.05	YES	484.24	98.24	

Existing Condition Junctions Results Summary Table												
Dimensions			2-year				10-year				100-year	
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)
2	441.72	5	437.77	0.76	17.28	YES	438.13	1.25	26.7	YES	439.68	2.04
6	444.896	4.5	441.58	2.6	2.6	YES	444.78	4.57	4.57	YES	445.18	7.44
5	444.5	5	441.53	0.21	12.21	YES	444.65	0.33	19.78	YES	444.89	0.51
4	450.064	5	446.07	6.53	9.68	YES	448.17	11.72	16.85	YES	450.23	20.09
5	450.799	4.299	447.05	3.21	3.21	YES	448.66	5.78	5.78	YES	451.24	10.04
8	401.528	0	401.64	8.44	8.44	YES	401.98	14.12	14.12	YES	402.36	22.9
6	458.286	3.5	455.81	0.73	2.21	YES	456.52	1.27	3.87	YES	457.89	2.08
1	458.571	3.5	455.84	1.51	1.51	YES	456.58	2.66	2.66	YES	458.07	4.44
5	459.083	4.583	455.71	0.92	3.02	YES	456.21	1.66	5.39	YES	456.99	2.73
2	457.025	2	457.48	5.64	5.64	YES	457.53	9.97	9.97	YES	457.59	17.08
3	454.253	3	454.33	4.02	6.62	YES	454.39	7.23	13	YES	454.45	12.57
4	439.824	2.5	439.48	3.71	3.71	YES	439.58	6.73	6.73	YES	439.64	11.67
5	440.895	6.5	434.46	0.06	0.06	YES	434.48	0.09	0.09	YES	434.5	0.15
5	442.035	0	443.03	4.32	4.36	YES	443.57	7.91	8.01	YES	444.41	13.08
1	437.61	0	437.91	0	3.48	YES	437.96	0	6.71	YES	438.02	0
1	495.41	0	495.63	0	0.32	YES	495.7	0	0.56	YES	495.78	0
1	464.611	0	464.72	0.28	0.28	YES	464.75	0.46	0.46	YES	464.78	0.72
1	454.901	0	455.1	0	0.27	YES	455.11	0	0.44	YES	455.12	0
9	461.249	0	461.3	1.52	1.52	YES	461.32	2.86	2.86	YES	461.35	4.73
5	451.022	2.872	450.07	2.72	3.28	YES	450.94	4.83	4.95	YES	451.06	8.12
3	450.801	2.501	450.08	0.58	0.58	YES	450.93	0.99	0.99	YES	450.98	1.61
8	448.928	3.5	449.6	3.71	7.82	YES	449.73	6.55	9.99	YES	449.81	11
7	449.507	3	449.77	7.09	7.09	YES	449.83	12.54	12.54	YES	449.9	21.33
3	449.043	4	449.36	0.38	7.91	YES	449.38	0.63	9.82	YES	449.39	0.99
5	448.323	3.823	445.86	1.67	10.29	YES	448.4	2.91	17.19	YES	448.66	4.94
4	447.601	0	448.43	0.94	7.44	YES	448.57	1.67	13.96	YES	448.68	2.75
1	491.421	0	491.57	0	1.78	YES	491.61	0	2.96	YES	491.66	0
8	450.128	3.5	447.07	2.37	2.37	YES	448.56	4.09	4.09	YES	450.05	6.83
3	441.83	0	442.9	0	1.69	YES	442.99	0	2	YES	443.09	0
6	447.356	0	448.46	0	2.09	YES	448.64	0	4.12	YES	448.83	0
6	435.906	3.5	432.41	0	0	YES	432.41	0	0	YES	432.41	0
3	419.473	3	416.59	2.85	2.85	YES	416.63	4.81	4.81	YES	416.68	7.73
6	457.826	0	459.84	5.95	5.95	YES	459.87	10.74	10.74	YES	459.9	19.15
7	450.207	0	450.3	0.22	0.22	YES	450.32	0.36	0.36	YES	450.34	0.57
2	464.582	0	464.62	0.4	0.4	YES	464.63	0.74	0.74	YES	464.65	1.2
6	460.446	0	460.52	0	0.01	YES	460.52	0	0.02	YES	460.52	0
7	447.867	3.5	445.2	4.89	4.89	YES	445.57	8.78	8.79	YES	446.31	14.51
4	468.354	5.5	464.5	2.42	36.19	YES	468.51	3.88	65.06	YES	468.7	6.15
6	449.976	4.25	445.87	0.49	0.49	YES	445.91	0.82	0.82	YES	445.96	1.29
5	434.445	5	430.82	8.25	18.58	YES	435.11	14.7	30.25	YES	435.29	26.53
3	434.883	5	431.09	9.86	10.34	YES	435.45	17.56	18.37	YES	435.73	31.53
2	432.37	5	432.37	4.5	4.5	YES	432.37	2.3	2.3	YES	432.37	4.5

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
6	413.699	7.139	407.73	3.99	37.47	YES	408.04	7.21	58.8	YES	408.41	12.07	
7	433.517	0	433.52	0	0	YES	433.52	0	0	YES	433.52	0	
6	378.526	8.5	371.47	4	21.31	YES	372.19	7.18	39.25	YES	376.35	12.52	
5	397.215	4.5	392.98	1.59	1.59	YES	393.06	2.84	2.84	YES	393.17	4.77	
5	393.886	0	391.67	0.61	0.61	YES	391.67	0.92	0.92	YES	391.67	1.4	
8	396.88	6	391.55	3.38	17.35	YES	391.79	6.16	31.43	YES	392.08	10.24	
1	345.191	4.5	341.98	4.79	33.06	NO	342.66	8.01	60.35	YES	345.31	13.44	
5	362.275	5.5	357.61	6.25	28.7	YES	357.95	11.29	52.97	YES	358.29	18.66	
6	374.036	5.5	369.55	2.72	23.46	YES	369.98	4.87	43.27	YES	370.59	8.06	
4	408.524	4	404.62	0.12	0.12	YES	404.64	0.19	0.19	YES	404.67	0.29	
2	376.142	0	376.18	0	0	YES	376.18	0	0	YES	376.19	0	
6	354.206	4	350.29	0.28	0.28	YES	350.31	0.45	0.45	YES	350.33	0.71	
5	333.775	9	329.01	1.33	175.91	NO	334.71	2.25	321	NO	336.32	3.79	
5	335.345	6	330.93	0.45	29.02	NO	335.08	0.72	50.41	NO	335.77	1.14	
4	335.274	4.5	331.75	9.06	9.34	NO	335.64	16.01	16.46	NO	335.98	27.99	
1	334.261	6.25	329.12	0.89	29.88	NO	334.4	1.45	52.4	NO	335.5	2.35	
3	333.393	9	329.17	0.31	121.03	NO	334.65	0.48	363.82	NO	335.46	0.75	
5	333.895	9	330.73	1.86	75.84	NO	335.19	3.26	117.4	NO	336.04	5.86	
3	332.109	1.809	334.76	9.41	40.38	NO	335.13	16.21	64.47	NO	335.7	27.79	
5	331.475	4.5	334.76	10.28	112.23	NO	335.2	17.29	192.17	NO	335.92	29.67	
6	333.466	8	331.06	3.07	352.62	NO	334.89	5.19	370.97	NO	335.54	8.36	
9	399	0	399	0	0	YES	399	0	0	YES	399	0	
2	370.882	0	370.88	0	0	YES	370.88	0	0	YES	370.88	0	
9	366.899	4	367.89	6.24	9.22	YES	368.12	11.14	13.72	YES	368.27	19.35	
6	367.816	4.5	367.9	3.1	3.1	YES	368.08	5.51	5.51	YES	368.2	9.5	
6	418.836	0	419.24	2.83	2.83	YES	419.35	4.49	4.49	YES	419.5	7.04	
3	381.8	5.5	378.49	4.89	54.27	YES	382.49	8.79	68.57	YES	382.83	15.06	
1	404.231	4.5	400.13	2.55	2.55	YES	400.28	4.52	4.52	YES	400.45	7.5	
8	386.948	3	387.51	3.44	44.38	YES	387.8	6.56	72.5	YES	388.18	10.93	
3	404.68	5.087	400.93	4.89	41.86	YES	401.29	9.05	67.28	YES	401.99	16.26	
8	423.768	3	420.95	0.65	0.65	YES	421	1.07	1.07	YES	421.07	1.71	
8	392.348	3.5	388.85	0	0	YES	388.85	0	0	YES	389.14	0	
1	386.131	9	380.4	6.57	156.87	YES	381.7	10.97	265.11	YES	383.86	17.8	
3	386.03	5	381.25	1.19	1.19	YES	381.32	2.04	2.04	YES	382.33	3.39	
5	378.625	4.5	374.55	2.75	2.75	YES	376.46	4.86	4.86	YES	378.05	8.27	
2	454.234	0	454.42	0	0.72	YES	454.48	0	1.27	YES	454.55	0	
4	377.234	2	376.24	3.29	3.29	YES	377.37	5.5	5.5	YES	378.11	9.05	
8	377.128	4.5	374.43	4.41	7.14	YES	376.33	7.81	15.88	YES	377.64	13.15	
8	376.628	5	374.39	3.43	10.58	YES	375.98	5.99	25.39	YES	377.16	10.47	
7	361.277	2	361.62	2.88	2.88	YES	362.61	4.72	4.72	YES	363.65	7.66	
3	395.169	1.869	393.99	1.28	1.28	YES	394.29	2.26	2.26	YES	395.57	3.7	
5	395.07	5	393.57	1.28	0.05	YES	393.29	2.26	5.45	YES	395.24	5.1	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
2	432.672	2.83	429.84	0	0	YES	429.84	0	0	YES	429.84	0	0
4	429.564	3	429.62	0.67	0.67	YES	429.64	1.15	1.15	YES	429.67	1.86	1.86
5	430.595	3	429.62	0	0.16	YES	429.64	0	0.02	YES	429.67	0	0
3	430.233	2.933	428.48	0.66	0.66	YES	430.21	1.18	1.18	YES	430.29	1.96	1.96
3	430.093	3	428.47	2.59	3.21	YES	430.17	4.61	5.78	YES	430.24	7.94	7.94
1	427.304	0.594	426.81	0	3.07	YES	426.83	0	4.52	YES	426.84	0	0
6	438.316	0	438.7	1.11	1.11	YES	438.78	1.94	1.94	YES	438.87	3.14	3.14
2	434.372	4.5	430.54	3.62	6.57	YES	430.91	6.48	13.01	YES	435.62	11.48	11.48
7	411.97	4.5	407.77	1.01	1.01	YES	408.09	1.59	1.59	YES	408.44	2.51	2.51
9	419.429	5.5	414.87	3.31	28.86	YES	415.1	5.54	42.56	YES	415.33	9.22	9.22
0	402.104	2.104	401.79	1.14	1.14	YES	401.8	1.84	1.84	YES	401.81	2.93	2.93
3	396.693	4.5	392.84	5.47	7.39	YES	397.18	9.14	24.48	YES	397.59	15.34	15.34
5	394.415	4.5	396.81	8.42	25.41	YES	397.22	14.05	57.76	YES	397.59	23.24	23.24
9	394.502	9.812	386.79	0.45	236.79	YES	387.8	0.71	444.63	YES	390.31	1.11	1.11
1	396.401	5	391.74	0.16	4.17	YES	392.06	0.25	15.71	YES	392.76	0.39	0.39
4	396.814	5	392.02	0.64	1.05	YES	392.06	1.05	1.6	YES	392.14	1.7	1.7
6	385.206	9.5	378.67	2.35	240.91	YES	380.04	3.83	453.76	YES	383.38	6.13	6.13
7	395.716	18.016	379.83	9.64	65.27	YES	380.9	16.3	133	YES	384.39	27.58	27.58
2	390.852	6	385.33	0.4	48.51	YES	385.38	0.63	85.11	YES	385.44	0.97	0.97
8	379.668	5	377.09	3.88	51.03	YES	377.99	6.4	49.99	YES	378.89	10.45	10.45
1	378.011	4	378.73	1.27	36.54	YES	379	1.99	32.93	YES	379.34	3.1	3.1
8	377.808	3	376.88	0.53	1.36	YES	377.9	0.87	1.33	YES	378.57	1.4	1.4
8	379.258	5	376.82	10.42	41.01	YES	377.91	17.1	49.56	YES	378.81	27.92	27.92
7	373.41	0	376.72	3.56	242.17	YES	377.86	6.03	470.59	YES	378.76	9.96	9.96
7	380.507	9	373.22	3.36	63.29	YES	373.76	5.37	106.53	YES	374.83	8.52	8.52
5	367.496	8.746	360.73	2.93	109.85	YES	361.83	4.89	200.16	YES	369.27	8.09	8.09
7	369.887	8	363.97	5.6	81.39	YES	364.89	9.33	152.78	YES	370.58	15.43	15.43
5	363.095	0	363.78	0	3.18	YES	364.1	0	5.22	YES	364.53	0	0
7	421.707	5	417.96	0	15.11	YES	419.64	0	27.05	YES	429.08	0	0
8	356.038	5	351.43	0.4	3.48	YES	351.61	0.64	6.01	YES	352.58	1.01	1.01
3	352.053	6	349.62	2.96	11.68	YES	351.54	4.87	21.22	YES	352.81	7.95	7.95
5	352.115	5	349.63	5.88	9.08	YES	351.53	9.58	14.9	YES	353.2	15.5	15.5
4	348.189	4.189	344.42	8.04	8.04	YES	344.7	13.82	13.83	YES	348.13	24.79	24.79
6	372.266	5.5	367.72	2.69	29.26	YES	368.05	4.47	49.27	YES	369.1	7.33	7.33
6	359.345	7.185	353.81	4.38	33.39	YES	358.72	7.11	75.8	YES	360.52	11.42	11.42
7	359.394	7.724	353.64	2.41	58.46	YES	358.7	3.98	129.04	YES	360.65	6.5	6.5
5	375.755	6	370.73	1.77	26.5	YES	371.04	2.95	44.68	YES	371.5	4.85	4.85
5	371.112	4.612	367.04	3.2	3.2	YES	367.2	5.25	5.25	YES	367.4	8.51	8.51
6	364.556	6.5	359.06	0.22	24.16	YES	359.23	0.33	32.97	YES	359.39	0.49	0.49
4	425.284	4	421.16	14.18	14.18	YES	421.56	25.52	25.52	YES	431.22	43.31	43.31
3	341.436	5.136	342.37	1.91	136.11	NO	343.19	3.03	230.79	YES	344.99	4.8	4.8
3	342.0	5.136	342.37	1.91	136.11	NO	343.19	3.03	230.79	YES	344.99	4.8	4.8

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
6	351.106	0	351.11	0	0	YES	351.11	0	0	YES	351.42	0	0
2	443.952	24	420.55	0.24	9.19	YES	420.72	0.37	15.14	YES	420.95	0.57	0.57
9	417.319	3	417.96	0.24	9.3	YES	417.99	0.36	15.37	YES	418.03	0.55	0.55
5	404.285	5	400.34	0.23	10.76	YES	402.55	0.35	18.79	YES	403.86	0.54	0.54
6	451.91	0	451.22	0	4.94	YES	451.24	0	9.1	YES	451.27	0	0
7	422.42	4.75	418.43	10.59	10.59	YES	418.73	18.53	18.53	YES	424.26	31.83	31.83
5	397.005	4.5	397.32	3.26	39.2	YES	397.88	5.39	113.68	YES	398.31	8.77	8.77
1	401.341	7.75	401.4	7.79	46.63	YES	401.79	13.15	50.43	YES	401.98	22.08	22.08
8	402.658	7.95	402.31	0.3	113.4	YES	402.99	0.49	136.63	YES	403.24	0.79	0.79
5	403.472	5	403.03	2.31	11.14	YES	403.87	3.85	16.49	YES	404.15	6.36	6.36
3	416.593	4.5	416.88	3.55	19.31	YES	417.16	6.18	36.61	YES	417.31	10.31	10.31
4	418.154	4.5	417.03	6.59	6.59	YES	418.18	11.43	11.45	YES	418.36	19.08	19.08
5	406.25	4	406.63	0.94	1.79	YES	406.79	1.5	1.5	YES	407.01	2.38	2.38
7	405.607	5	406.6	8.43	25.33	YES	406.76	14.25	42.14	YES	406.94	24.18	24.18
1	405.821	5	406.66	5.84	34.87	YES	406.85	9.69	50.68	YES	407.04	15.98	15.98
9	407.859	4.5	408.61	22.64	22.64	YES	408.68	39.86	39.86	YES	408.77	72.26	72.26
9	407.709	4.5	407.67	7.58	7.7	YES	407.86	12.81	17.68	YES	407.99	21.69	21.69
8	420.478	5.5	415.92	9.24	12	YES	416.84	16.62	21.97	YES	420.65	28.85	28.85
7	418.457	5.5	414.15	2.99	15.51	YES	416.34	5.38	28.15	YES	418.64	9.43	9.43
2	411.412	5	411.71	5.5	20.95	YES	411.86	9.26	37.2	YES	411.94	15.44	15.44
5	409.905	4.5	410.68	1.47	30.64	YES	411.06	2.4	65.98	YES	411.34	3.88	3.88
2	414.582	4.5	413.17	1.33	10.05	YES	414.88	2.21	17.74	YES	415.19	3.57	3.57
4	419.934	4.5	417.79	4.58	4.59	YES	419.93	7.89	7.93	YES	420.15	13.15	13.15
2	417.722	4	417.81	14.86	15.12	YES	417.95	26.35	26.84	YES	418.08	46.63	46.63
8	409.214	4.034	409.77	3.34	35.11	YES	409.83	5.58	37.17	YES	409.88	9.13	9.13
8	410.315	5.535	409.33	0.95	34.12	YES	409.53	1.54	33.81	YES	409.63	2.46	2.46
2	411.683	4.863	412.06	4.15	91.95	YES	412.08	7.02	95.93	YES	412.1	11.52	11.52
0	415.479	5.479	416.62	0.78	61.04	YES	416.74	1.25	84.48	YES	416.87	1.96	1.96
7	416.867	6	416.8	1.23	68.88	YES	416.92	2.04	92.45	YES	416.96	3.31	3.31
2	416.282	4.25	416.58	0.57	0.57	YES	416.69	0.94	0.94	YES	416.8	1.53	1.53
1	430.651	5.5	431.6	3.42	67.18	YES	435.2	5.59	112.44	YES	436.85	8.76	8.76
6	427.968	0.34	423.85	0.34	67.79	YES	424.5	0.55	90.91	YES	426.62	0.87	0.87
1	426.201	4	422.41	0.63	0.63	YES	422.46	1.01	1.01	YES	422.53	1.59	1.59
9	433.529	5.5	428.37	3.93	3.93	YES	428.47	6.53	6.53	YES	429.37	10.51	10.51
5	355.168	0	354.87	1.04	10.75	YES	355.04	1.82	20.55	YES	355.21	2.91	2.91
3	417.693	6.463	416.98	8.79	60.81	YES	417.39	14.81	80.14	YES	417.81	24.34	24.34
2	416.672	4.672	417.25	1.31	58.64	YES	417.94	2.14	76.03	YES	418.37	3.44	3.44
2	424.569	6.249	419.62	1.06	54.36	YES	419.97	1.76	83.99	YES	421.43	2.83	2.83
2	430.872	0	431.14	0.91	0.91	YES	431.21	1.47	1.47	YES	431.58	2.31	2.31
5	424.895	4	421.11	0.96	0.96	YES	421.17	1.52	1.52	YES	421.31	2.37	2.37
7	422.027	0	422.03	0	0	YES	422.03	0	0	YES	422.03	0	0
5	432.0	5	417.0	3.0	3.0	YES	417.0	5.0	5.0	YES	418.0	0.7	0.7

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)			Surcharging (10-year)
9	433.809	4.5	429.85	4.14	6.19	YES	430.08	7.33	11.48	YES	432.46	12.33	
9	433.639	5.5	429.45	1.59	15.55	YES	430.04	2.56	27.91	YES	435.36	4.05	
9	434.879	8	427.8	0	15.43	YES	428.19	0	27.51	YES	444.45	0	
9	327.049	4.5	323.25	1.54	3	NO	323.47	2.45	4.87	NO	323.71	3.88	
6	326.836	4.5	322.68	2.85	6.08	NO	322.78	4.9	10.25	NO	322.9	8.18	
6	302.837	3.237	303.79	0	26.77	NO	304.11	0	25.88	NO	304.38	0	
6	317.596	5	313	0	5.24	NO	313.13	0	9.35	NO	313.3	0	
2	438.002	6	432.54	0	5.42	YES	432.72	0	9.57	YES	432.97	0	
6	435.556	5	431.08	0	5.43	YES	431.26	0	9.57	YES	431.51	0	
7	430.727	5	426.56	0	16.34	YES	426.89	0	29.3	YES	427.34	0	
5	431.35	8	424.1	4.23	23.14	YES	424.34	7.51	39.65	YES	424.71	12.75	
4	437.444	5	432.72	0	2.56	YES	432.83	0	5.07	YES	433.05	0	
8	440.348	5	435.77	0	2.56	YES	435.94	0	5.09	YES	436.32	0	
2	278.442	6.442	273.67	0	3.02	NO	274.25	0	4.22	NO	277.59	0	
4	333.876	9.876	328.93	0	462.21	NO	333.79	0	598.36	NO	334.52	0	
6	442.36	11.5	431.45	0	4.05	YES	431.65	0	6.91	YES	431.89	0	
6	432.852	6.852	426.32	0	4.53	YES	426.41	0	7.7	YES	426.51	0	
9	330.07	0	330.75	8.44	8.44	NO	330.98	14.67	14.67	NO	331.35	25.17	
9	400.839	5	396.25	0	4.52	YES	396.38	0	7.69	YES	398.34	0	
8	448.002	10.002	446.62	0	84.31	YES	446.81	0	86.01	YES	446.92	0	
2	495.982	5.5	490.68	0	0.57	YES	490.77	0	0.98	YES	490.87	0	
1	401.481	3	399.17	0	24.01	YES	399.35	0	38.95	YES	399.44	0	
9	422.519	4.5	418.71	0	7.55	YES	418.93	0	12.04	YES	419.34	0	
7	431.73	5.03	427.3	0	6.84	YES	427.49	0	10.91	YES	427.76	0	
4	420.114	4.5	416.24	0	7.55	YES	416.43	0	12.04	YES	416.76	0	
3	455.693	4.5	451.62	0	5.28	YES	451.73	0	8.38	YES	451.88	0	
8	467.28	4.5	463.24	0	4.32	YES	463.37	0	6.86	YES	463.54	0	
4	478.951	4.951	474.33	0	2.11	YES	474.42	0	3.39	YES	474.53	0	
9	411.289	7	406.25	0	56.16	YES	410.33	0	104.15	YES	411.7	0	
3	382.933	4.5	378.67	0	2.78	YES	378.74	0	4.75	YES	378.83	0	
4	349.224	4.5	345.2	0	5.64	YES	345.36	0	9.75	YES	345.58	0	
8	379.338	11	369.04	0	19.39	YES	369.27	0	34.32	YES	369.6	0	
8	368.218	5	364.06	0	17.2	YES	364.41	0	31.14	YES	366.87	0	
7	355.907	5	351.86	0	17.19	YES	352.3	0	31.11	YES	356.59	0	
9	455.579	6.25	451.66	0	5.57	YES	455.51	0	8.06	YES	456.25	0	
8	434.398	5	429.66	0	1.36	YES	429.74	0	2.37	YES	429.84	0	
9	427.949	5	423.25	0	1.34	YES	423.34	0	2.32	YES	423.46	0	
6	351.864	0	352.1	0	9.61	YES	352.75	0	39.4	YES	353.17	0	
6	413.516	7	409.59	0	46.04	YES	413.7	0	67.57	YES	414.18	0	
5	408.785	6	405.36	0	69.89	YES	406.75	0	79.64	YES	407.16	0	
9	424.779	6	419.53	0	18.07	YES	419.79	0	32.36	YES	420.25	0	
6	415.26	6	413.2	0	17.0	YES	413.2	0	32.2	YES	413.2	0	

Existing Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
			Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
3	425.383	4.5	422.04	11.29	11.29	YES	425.9	19.11	19.11	YES	426.38	31.95	
5	442.035	6.5	436.42	0	23.48	YES	436.73	0	41.67	YES	437.2	0	
11	435.788	10.778	427.02	0	36.37	YES	433.83	0	54.07	YES	435.06	0	
3	444.362	5.062	445.56	0	17.92	YES	446.18	0	30.52	YES	446.27	0	
1	357.905	0	360.11	0	142.72	YES	361.06	0	244.27	YES	361.74	0	
6	448.216	4.5	445.43	0	2.77	YES	446.22	0	4.81	YES	447.45	0	
3	449.423	5	446.3	0	18.17	YES	448.71	0	30.52	YES	449.19	0	
7	441.109	4.109	440.36	0	9.07	YES	440.64	0	10.44	YES	440.96	0	
4	442.924	5.5	440.36	0	0.35	YES	440.64	0	0.61	YES	440.97	0	
7	445.887	5.5	440.39	0	0	YES	440.66	0	0.3	YES	440.99	0	
3	433.943	4.5	430.82	0	4.6	YES	432.25	0	7.94	YES	433.98	0	
3	431.63	4	430.61	0	8.91	YES	431.49	0	10.19	YES	431.93	0	
4	418.996	4.996	415.48	0	16.97	YES	415.98	0	29.82	YES	417.57	0	
5	398.179	3.679	398.46	0	17.09	YES	399.42	0	17.15	YES	399.44	0	
5	448.756	2.256	446.77	0	1.41	YES	446.86	0	2.52	YES	446.97	0	
9	440.479	4	441.01	0	14.38	YES	441.28	0	24.16	YES	441.43	0	
6	407.686	5.5	403.16	0	20.3	YES	403.56	0	32.17	YES	405.64	0	
4	423.704	13.5	411.44	0	20.41	YES	411.85	0	32.34	YES	413.08	0	
9	408.619	5.5	404.49	0	20.35	YES	405.02	0	32.27	YES	406.89	0	
6	450.986	4.986	446.68	0	3.22	YES	448.58	0	5.66	YES	451.06	0	
1	441.491	8.5	433.76	11.47	11.52	YES	434.02	20.46	20.55	YES	434.38	35.18	
3	405.833	12	394.89	0	15.28	YES	395.28	0	27.54	YES	395.79	0	
7	367.437	5.5	367.76	0	57.55	YES	368.32	0	71.77	YES	368.48	0	
4	363.664	5	362.03	0	2.95	YES	362.97	0	2.97	YES	363.86	0	
3	412.513	5.5	408.92	0	28.81	YES	409.4	0	42.52	YES	409.81	0	
2	375.242	0	375.56	0	21.61	YES	375.73	0	42.72	YES	376.09	0	
3	407.53	7	401.83	0	29.83	YES	402.14	0	45.01	YES	402.44	0	
9	395.809	8	392.68	0	190.93	YES	394.39	0	218.89	YES	395.77	0	
6	396.953	15.493	383.34	0	61.41	YES	384.24	0	124.82	YES	386.97	0	
1	388.741	11.5	379.16	0	66.77	YES	380.44	0	132.98	YES	383.95	0	
9	376.19	7	369.95	0	63.35	YES	370.17	0	106.49	YES	371.25	0	
2	370.412	9	362.93	0	79.32	YES	363.6	0	147.69	YES	369.99	0	
6	353.326	8.5	349.62	0	172.77	YES	351.52	0	295.03	YES	352.67	0	
4	351.647	7.647	349.06	0	174.16	YES	350	0	299.2	YES	351.13	0	
5	361.585	11	353.41	0	163.27	YES	358	0	292.58	YES	360.42	0	
9	343.9	5	344.04	0	50.23	YES	344.33	0	32.96	YES	350.28	0	
3	421.342	0	421.14	4.4	9.63	YES	421.19	7.79	18.79	YES	421.26	13.44	
2	399.022	4	396.09	0	3.54	YES	398.38	0	5.76	YES	400	0	
4	400.524	7.75	400.07	0	157.31	YES	400.75	0	156.07	YES	401.07	0	
1	403.861	5.751	402.7	0	114.09	YES	403.43	0	114.72	YES	403.65	0	
8	407.482	7.002	407.65	0	53.94	YES	408.29	0	57.31	YES	408.52	0	
5	410.05	6	410.05	0	25.6	YES	410.05	0	25.6	YES	410.05	0	

Existing Condition Junctions Results Summary Table												
Dimensions			2-year				10-year				100-year	
			Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)
5	415.863	6.363	416.52	0	95.24	YES	416.62	0	97.57	YES	416.7	0
8	431.528	8	425.19	0	67.62	YES	425.66	0	91.11	YES	427.65	0
8	430.278	5.5	426.63	0	59.97	YES	427.42	0	78.06	YES	429.28	0
6	423.639	0	422.29	0	3.73	YES	422.31	0	6.69	YES	422.33	0
6	423.23	10.87	417.59	0	58.46	YES	418.49	0	90.13	YES	420.07	0
9	425.391	7.601	419.18	0	56.53	YES	419.56	0	90.21	YES	421.28	0
2	425.322	6	420.22	0	9.7	YES	420.51	0	15.98	YES	421.3	0
5	389.345	9	383.07	0	154.07	YES	384.22	0	261.3	YES	386.14	0
5	413.305	0	414.18	1.54	15.8	YES	414.4	2.5	23.64	YES	414.61	3.92
4	406.134	6	406.71	0	53.7	YES	406.89	0	52.8	YES	407.08	0
6	435.976	4	435.58	1.81	33.42	YES	435.84	3.03	36.17	YES	436.07	4.88
9	338.727	1.198	337.99	3.45	3.45	NO	338.19	6.34	6.34	NO	338.64	10.74
6	299.416	0	302.9	26.22	313.07	NO	303.76	47.33	386.5	NO	304.92	86.57
3	437.593	0	438.23	5.72	5.72	YES	438.7	9.95	9.95	YES	439.56	17.71
6	412.966	0	413.63	4.93	27.13	YES	413.84	9.04	47.39	YES	414.15	14.79
2	366.82	4	362.99	3.86	4.12	YES	363.07	6.76	7.42	YES	363.16	11.91
7	335.897	5	332.3	3.48	37.31	NO	333.45	6.03	66.66	NO	333.76	9.79
8	408.368	0	408.71	0.66	0.91	YES	408.85	1.2	1.66	YES	409.05	1.95
9	407.959	5.5	403.36	0	18.94	YES	403.59	0	29.02	YES	404.55	0
2	495.702	0	495.78	0.28	0.28	YES	495.8	0.46	0.46	YES	495.83	0.74
8	488.148	0	488.86	31.91	33.89	YES	489.13	57.94	61.37	YES	489.54	107.15
7	398.897	0	400.32	1.01	16.52	YES	400.68	1.9	28.67	YES	400.78	3.17
3	452.563	0	453.23	4.94	4.94	YES	453.69	9.1	9.1	YES	455.26	15.82

ID	Material	Dimensions					2-year		10-year	
		D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Qcon	Qcon	Qcon	Qcon
							(2-year) (cfs)	(10-year) (cfs)	vs Qcap3	vs Qcap32
1		1	CIRCULAR	0	0.51503	GMP	0	0	0	0
68		5	1 RECT_CLOSED	16	0.00155	RCB	617.05	1.12	923.17	1.67
69		5	1 RECT_CLOSED	16	0.0104	GMP	623.55	0.44	844.35	0.59
187		2	1 CIRCULAR	0	0.13435	RCP	8.05	0.1	47.38	0.57
		5.5	1 CIRCULAR	0	0.01427	RCP	144.83	0.36	232.19	0.58
		4	1 CIRCULAR	0	0.08121	RCP	0	0	0	0
3.5		0	3 CIRCULAR	0	0.03785	GMP	289.03	0.49	408.32	0.7
		4	1 RECT_CLOSED	8	0.01601	RCB	295.61	0.53	408	0.73
4		8	1 RECT_CLOSED	8	0.05066	RCB	296.94	0.3	408.32	0.41
		1.5	1 CIRCULAR	0	0.01571	RCP	1.48	0.11	2.8	0.21
3		0	1 CIRCULAR	0	0.2311	RCP	5.2	0.02	8.27	0.03
3.5		0	1 CIRCULAR	0	0.02399	RCP	9.17	0.06	16.17	0.1
5		0	1 CIRCULAR	0	0.00681	RCB	117.73	0.55	205.8	0.96
2		0	1 CIRCULAR	0	0.0273	GMP	14.86	0.4	27.16	0.73
		2	1 CIRCULAR	0	0.0271	RCP	14.63	0.39	25.99	0.7
		4	1 CIRCULAR	0	0.00832	RCP	45.24	0.35	77.51	0.59
1.5		0	1 CIRCULAR	0	0.08918	RCP	9.73	0.31	18.75	0.6
		1	1 CIRCULAR	0	0.10366	Other	0.01	0	0.01	0
1		0	1 CIRCULAR	0	0.10304	Other	5.01	0.34	7.89	0.53
1		0	1 CIRCULAR	0	0.6801	Other	2.81	0.07	4.46	0.12
2		0	1 CIRCULAR	0	0.07777	GMP	8.24	0.24	14.56	0.43
2		0	1 CIRCULAR	0	0.06256	CONC	0.71	0.02	1.26	0.03
3		0	1 CIRCULAR	0	0.01072	CONC	11.34	0.16	19.95	0.29
3		0	1 CIRCULAR	0	0.00597	CONC	15.43	0.3	26.86	0.52
2		0	1 CIRCULAR	0	0.0109	Other	15.62	0.66	26.7	1.13
2		0	1 CIRCULAR	0	0.00912	CONC	0.59	0.02	1.47	0.05
2		0	1 CIRCULAR	0	0.00314	GMP	2.51	0.37	3.92	0.57
2		0	1 CIRCULAR	0	0.03297	CONC	0	0	0	0
2		0	1 CIRCULAR	0	0.05453	CONC	0	0	0	0
3.5		0	1 CIRCULAR	0	0.02442	RCP	12.78	0.08	22.17	0.14
2		0	1 CIRCULAR	0	0.01107	CONC	7.28	0.31	12.58	0.53
2		0	1 CIRCULAR	0	0.00682	CONC	2.66	0.14	4.4	0.24
2		0	1 CIRCULAR	0	0.00684	CONC	2.95	0.16	4.82	0.26
2		0	1 CIRCULAR	0	0.00871	CONC	2.58	0.12	4.28	0.2
2		0	1 CIRCULAR	0	0.00682	CONC	5.47	0.29	8.96	0.48
2		0	1 CIRCULAR	0	0.01281	CONC	13.2	0.3	13.2	0.52
1		0	1 CIRCULAR	0	0.00788	CONC	0.93	0.29	1.47	0.46
2.5		0	1 CIRCULAR	0	0.00683	CONC	14.19	0.42	23.93	0.71
1.5		0	1 CIRCULAR	0	0.08322	CONC	1.09	0.04	1.69	0.06
2.5		0	3 CIRCULAR	0	0.01994	RCP	45.23	0.26	77.41	0.45
1.5		0	1 CIRCULAR	0	0.00648	CONC	1.61	0.19	2.59	0.31
2.5		0	1 CIRCULAR	0	0.00759	CONC	18.71	0.52	30.4	0.85
2		0	1 CIRCULAR	0	0.07643	CONC	1.72	0.03	2.68	0.04
2		0	1 CIRCULAR	0	0.00619	CONC	1.21	0.07	1.87	0.1
2		0	1 CIRCULAR	0	0.09982	CONC	28.83	0.4	50.59	0.71
3.5		0	1 CIRCULAR	0	0.00565	CONC	22.15	0.29	34.27	0.45
3		0	1 CIRCULAR	0	0.00683	CONC	47.66	0.57	73.4	0.88
2		0	1 CIRCULAR	0	0.0778	CONC	13.08	0.21	25.15	0.4
2		0	1 CIRCULAR	0	0.3288	CONC	13.1	0.1	25.55	0.2
2		0	1 CIRCULAR	0	0.03638	CONC	13.1	0.3	25.56	0.59
3		0	1 CIRCULAR	0	0.01441	RCP	15.28	0.19	26.69	0.33
4		0	1 CIRCULAR	0	0.00683	CONC	61.62	0.52	88.24	0.74
4		0	1 CIRCULAR	0	0.00778	CONC	65.78	0.52	87.78	0.69
2.5		0	1 CIRCULAR	0	0.03688	CONC	36.12	0.46	71.61	0.91
1.5		0	1 CIRCULAR	0	0.49848	CONC	0	0	0	0
2		0	1 CIRCULAR	0	0.1602	RCP	12.51	0.14	21.86	0.24
2		0	1 CIRCULAR	0	0.11358	RCP	13.6	0.18	23.96	0.31
4		0	1 CIRCULAR	0	0.0126	RCP	52.51	0.33	92.91	0.58
5		0	1 CIRCULAR	0	0.00215	RCP	54.06	0.45	94.77	0.79
2		0	1 CIRCULAR	0	0.23773	CONC	1.63	0.01	2.79	0.03
2		0	1 CIRCULAR	0	0.26307	CONC	0.91	0.01	1.52	0.01
1.5		0	1 CIRCULAR	0	0.28416	CONC	1.07	0.01	1.83	0.02
2		0	1 CIRCULAR	0	0.01915	RCP	1.31	0.09	2.33	0.16
1.5		0	1 CIRCULAR	0	0.08175	RCP	2.56	0.09	4.48	0.15
1.5		0	1 CIRCULAR	0	0.0997	RCP	2.55	0.08	4.46	0.13
1.5		0	1 CIRCULAR	0	0.03039	RCP	2.51	0.14	4.4	0.24

Pipe ID	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Qcon vs Qcap3	Q _{con} (10-year) (cfs)	Qcon vs Qcap32	
							Qcon vs Qcap3		Qcon vs Qcap32		
1	1.5	0	1	CIRCULAR	0.12254	RCP	1.26	0.03	2.11	0.06	
2	1.5	0	1	CIRCULAR	0.00459	RCP	5.43	0.76	8.78	1.23	
3	1.5	0	1	CIRCULAR	0.05928	RCP	12.79	0.5	20.74	0.81	
4	1.5	0	1	CIRCULAR	0.00862	RCP	11.88	1.22	15.24	1.56	
5	1.5	0	1	CIRCULAR	0.02045	RCP	12.92	0.86	15.99	1.06	
6	1.5	0	1	CIRCULAR	0.0199	RCP	12.93	0.87	14.86	1	
7	1.5	0	1	CIRCULAR	0.00852	RCP	0.55	3.5	0.06	0.36	
8	1.5	0	1	CIRCULAR	0.08713	RCP	1.12	0.04	2.99	0.1	
9	1.5	0	1	CIRCULAR	0.01599	RCP	2.3	0.17	4.16	0.31	
10	3.5	0	1	CIRCULAR	0.02105	RCP	112.84	0.77	157.28	1.08	
11	1.5	0	1	CIRCULAR	0.01148	RCP	4.64	0.41	9.08	0.81	
12	1.5	0	1	CIRCULAR	0.08919	RCP	18.4	0.59	22.31	0.71	
13	1.5	0	1	CIRCULAR	0.02806	RCP	20.09	1.14	25.42	1.44	
14	2	0	1	CIRCULAR	0.28995	RCP	20.99	0.17	27.07	0.22	
15	2.5	0	1	CIRCULAR	0.0249	CONC	23.94	0.37	35.02	0.54	
16	1.5	0	1	CIRCULAR	0.00374	CONC	1.61	0.25	2.69	0.42	
17	1.5	0	1	CIRCULAR	0.25101	CONC	1.93	0.04	3.15	0.06	
18	2	0	1	CIRCULAR	0.07585	CONC	12.79	0.21	25.03	0.4	
19	2	0	1	CIRCULAR	0.01	RCP	1.94	0.09	3.25	0.14	
20	2	0	1	CIRCULAR	0.00913	RCP	4.1	0.19	6.62	0.31	
21	2	0	1	CIRCULAR	0.08003	RCP	2.26	0.04	3.56	0.06	
22	2	0	1	CIRCULAR	0.06722	RCP	2.27	0.04	3.57	0.06	
23	2	0	1	CIRCULAR	0.50682	RCP	0.27	0	0.42	0	
24	2	0	1	CIRCULAR	0.06722	RCP	2.02	0.03	3.18	0.05	
25	2	0	1	CIRCULAR	0.06722	RCP	0.78	0.01	1.22	0.02	
26	2	0	1	CIRCULAR	0.04271	RCP	0.53	0.01	0.85	0.02	
27	2	0	1	CIRCULAR	0.05805	RCP	0.69	0.01	1.1	0.02	
28	3	0	1	CIRCULAR	0.01895	RCP	4.9	0.05	8.36	0.09	
29	4	0	1	CIRCULAR	0.0126	CONC	63.83	0.4	86.94	0.54	
30	2	0	1	CIRCULAR	0.05673	CONC	0.26	0	0.41	0.01	
31	2	0	1	CIRCULAR	0.0063	CONC	2.73	0.15	4.44	0.25	
32	2	0	1	CIRCULAR	0.00813	CONC	0.32	0.02	0.5	0.02	
33	2	0	1	CIRCULAR	0.28118	CONC	0.31	0	0.5	0	
34	2	0	1	CIRCULAR	0.0076	CONC	1.77	0.09	2.87	0.15	
35	2	0	1	CIRCULAR	0.03135	CONC	2.04	0.05	3.29	0.08	
36	2	0	1	CIRCULAR	0.0303	CONC	2.6	0.07	4.19	0.11	
37	2	0	1	CIRCULAR	0.00764	CONC	2.19	0.11	3.59	0.18	
38	2	0	1	CIRCULAR	0.00547	CONC	6.39	0.38	10.54	0.63	
39	2	0	1	CIRCULAR	0.04885	CONC	6.35	0.13	10.47	0.21	
40	2	0	1	CIRCULAR	0.0155	RCP	1.12	0.04	1.87	0.07	
41	4	0	1	CIRCULAR	0.05904	CONC	48	0.14	85.82	0.25	
42	2	0	1	CIRCULAR	0.34511	CONC	10.53	0.08	17.56	0.13	
43	2	0	1	CIRCULAR	0.00922	CONC	9.97	0.46	16.64	0.77	
44	2	0	1	CIRCULAR	0.00574	CONC	8.3	0.48	14.05	0.82	
45	1.5	0	1	CIRCULAR	0.11272	CONC	0.32	0.01	0.51	0.01	
46	1.5	0	1	CIRCULAR	0.00499	CONC	1	0.14	1.66	0.22	
47	1.5	0	1	CIRCULAR	0.00305	CONC	16.63	2.87	16.61	2.86	
48	4	0	1	CIRCULAR	0.00596	RCP	120.63	1.09	162.1	1.46	
49	2	0	1	CIRCULAR	0.01884	CONC	0.4	0.01	0.63	0.02	
50	2	0	1	CIRCULAR	0.03439	CONC	1.49	0.04	2.36	0.06	
51	2	0	1	CIRCULAR	0.01155	CONC	1.97	0.08	3.12	0.13	
52	2	0	1	CIRCULAR	0.00646	CONC	0.28	0.02	0.43	0.02	
53	4	0	1	CIRCULAR	0.05241	CONC	43.09	0.13	54.1	0.16	
54	2	0	1	CIRCULAR	0.06713	CONC	1.39	0.02	2.25	0.04	
55	4	0	1	CIRCULAR	0.04016	CONC	43.11	0.15	54.1	0.19	
56	2	0	1	CIRCULAR	0.27741	CONC	41.88	0.35	52.14	0.44	
57	2	0	1	CIRCULAR	0.07911	CONC	1.14	0.02	1.75	0.03	
58	2	0	1	CIRCULAR	0.02972	CONC	40.11	1.03	49.68	1.27	
59	2	0	1	CIRCULAR	0.15393	CONC	0.48	0.01	0.75	0.01	
60	2	0	1	CIRCULAR	0.08633	CONC	0.48	0.01	0.74	0.01	
61	2	0	1	CIRCULAR	0.02973	CONC	40.15	1.03	49.68	1.27	
62	2	0	1	CIRCULAR	0.01295	CONC	0.32	0.01	3.72	0.14	
63	2	0	1	CIRCULAR	0.15413	CONC	3.41	0.04	5.79	0.07	
64	2	0	1	CIRCULAR	0.03219	CONC	3.42	0.08	5.79	0.14	
65	2	0	1	CIRCULAR	0.02973	CONC	36.19	0.99	45.47	1.17	
66	2	0	1	CIRCULAR	0.02972	CONC	3.7	0.09	6.51	0.17	

Pipe ID	Dimensions										2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)		Qcon vs Qcap3		Qcon (10-year) (cfs)		Qcon vs Qcap32	
							Qcon	Qcap3	Qcon	Qcap32				
1	1	0	1	CIRCULAR	0.00272	CONC	4.03	2.17	6.57	3.53				
1	1	0	1	CIRCULAR	0.02845	HDPE	1.34	0.22	2.3	0.38				
2	2	0	1	CIRCULAR	0.00117	CONC	4.31	0.56	6.73	0.87				
2	2	0	1	CIRCULAR	0.00117	CONC	4.56	0.59	6.87	0.89				
2	2	0	1	CIRCULAR	0.0333	CONC	9.28	0.22	15.67	0.38				
2	2	0	1	CIRCULAR	0.00117	CONC	12.77	1.65	15.07	1.94				
2.5	2.5	0	1	CIRCULAR	0.00117	CONC	21.43	1.53	31.33	2.23				
2.5	2.5	0	1	CIRCULAR	0.22562	CONC	8.79	0.05	15.65	0.08				
2.5	2.5	0	1	CIRCULAR	0.00514	CONC	6	0.2	10.68	0.36				
2.5	2.5	0	1	CIRCULAR	0.00118	CONC	22.33	1.59	33.1	2.35				
2.5	2.5	0	1	CIRCULAR	0.00118	CONC	22.48	1.6	33.39	2.37				
2.5	2.5	0	1	CIRCULAR	0.00117	CONC	23.37	1.67	32.77	2.33				
1.5	1.5	0	1	CIRCULAR	0.03128	RCP	4.5	0.24	7.4	0.4				
2.5	2.5	0	1	CIRCULAR	0.00118	CONC	27.31	1.94	37.22	2.65				
4.5	4.5	0	1	CIRCULAR	0.00118	CONC	155.04	2.3	226.08	3.35				
4.5	4.5	0	1	CIRCULAR	0.00117	CONC	178.42	2.65	243.4	3.62				
2	2	0	1	CIRCULAR	0.01145	CONC	0.56	0.02	0.91	0.04				
2	2	0	1	CIRCULAR	0.01325	CONC	0.66	0.03	1.08	0.04				
2	2	0	1	CIRCULAR	0.16198	CONC	0.81	0.01	1.31	0.01				
2	2	0	1	CIRCULAR	0.0143	CONC	0.48	0.02	0.77	0.03				
2	2	0	1	CIRCULAR	0.00604	CONC	0.52	0.03	0.84	0.05				
1.5	1.5	0	1	CIRCULAR	0.27246	RCP	0.05	0	0.1	0				
2.5	2.5	0	1	CIRCULAR	0.08137	RCP	2.48	0.02	4.64	0.04				
2.5	2.5	0	1	CIRCULAR	0.14974	CONC	16.74	0.11	30.43	0.19				
2	2	0	1	CIRCULAR	0.0177	RCP	13.52	0.45	23.67	0.79				
4	4	0	1	CIRCULAR	0.03075	CONC	0	0	0	0				
2	2	0	1	CIRCULAR	0.04315	RCP	11.01	0.23	19.41	0.41				
2	2	0	1	CIRCULAR	0.11215	RCP	19.48	0.26	34.82	0.46				
6	6	0	1	CIRCULAR	0.00902	RCP	103.69	0.26	203.71	0.51				
4	4	0	1	CIRCULAR	0.01009	RCP	60.46	0.42	101.98	0.71				
2	2	0	1	CIRCULAR	0.01528	RCP	12.94	0.46	22.72	0.81				
2	2	0	1	CIRCULAR	0.36589	RCP	12.95	0.09	22.74	0.17				
2	2	0	1	CIRCULAR	0.31957	RCP	12.95	0.1	22.73	0.18				
3	3	0	1	CIRCULAR	0.00616	RCP	12.91	0.25	22.68	0.43				
2	2	0	1	CIRCULAR	0.00941	CONC	3.18	0.14	5.23	0.24				
3	3	0	1	CIRCULAR	0.26871	RCP	12.9	0.04	22.67	0.07				
3	3	0	1	CIRCULAR	0.00918	RCP	20.06	0.31	36.47	0.57				
3	3	0	1	CIRCULAR	0.01035	CONC	24.74	0.36	41.75	0.62				
3	3	0	1	CIRCULAR	0.03263	RCP	50.65	0.42	85.47	0.71				
2.5	2.5	0	1	CIRCULAR	0.14147	RCP	50.7	0.33	85.5	0.55				
2.5	2.5	0	1	CIRCULAR	0.04496	RCP	48.3	0.56	81.54	0.94				
1.5	1.5	0	1	CIRCULAR	0.06107	RCP	0.62	0.02	0.98	0.04				
1.5	1.5	0	1	CIRCULAR	0.02665	RCP	3.35	0.2	5.76	0.34				
2	2	0	1	CIRCULAR	0.00693	RCP	1.58	0.08	2.66	0.14				
1.5	1.5	0	1	CIRCULAR	0.00944	RCP	9.81	0.96	17.64	1.73				
1.5	1.5	0	1	CIRCULAR	0.033	RCP	2.21	0.12	3.9	0.2				
1.5	1.5	0	1	CIRCULAR	0.04284	RCP	3.1	0.14	5.45	0.25				
1.5	1.5	0	1	CIRCULAR	0.06509	RCP	9.82	0.37	17.65	0.66				
1.5	1.5	0	1	CIRCULAR	0.0756	RCP	0.62	0.02	0.98	0.03				
1.5	1.5	0	1	CIRCULAR	0.01109	RCP	0.75	0.07	1.22	0.11				
1.5	1.5	0	1	CIRCULAR	0.01744	RCP	5.06	0.36	8.73	0.63				
1.5	1.5	0	1	CIRCULAR	0.0543	RCP	4.91	0.2	8.85	0.36				
1.5	1.5	0	1	CIRCULAR	0.05521	RCP	1.63	0.07	2.6	0.11				
2	2	0	1	CIRCULAR	0.05533	RCP	24.63	0.46	42.06	0.79				
1.5	1.5	0	1	CIRCULAR	0.03164	RCP	2.23	0.12	3.92	0.21				
2	2	0	1	CIRCULAR	0.07428	RCP	9.69	0.16	16.36	0.27				
2.5	2.5	0	1	CIRCULAR	0.03291	RCP	46.6	0.63	78.76	1.06				
1.5	1.5	0	1	CIRCULAR	0.06934	RCP	1.37	0.05	2.19	0.08				
1.5	1.5	0	1	CIRCULAR	0.16109	RCP	1.4	0.03	2.38	0.06				
1.5	1.5	0	1	CIRCULAR	0.08181	RCP	9.1	0.3	15.85	0.53				
1.5	1.5	0	1	CIRCULAR	0.34974	RCP	12.29	0.2	21.76	0.35				
1.5	1.5	0	1	CIRCULAR	0.05659	RCP	3.1	0.12	5.45	0.22				
1.5	1.5	0	1	CIRCULAR	0.08591	RCP	2.24	0.07	3.93	0.13				
1.5	1.5	0	1	CIRCULAR	0.03075	RCP	2.21	0.12	3.9	0.21				
2.5	2.5	0	1	CIRCULAR	0.01501	RCP	37.03	0.74	63.15	1.26				
2.5	2.5	0	1	CIRCULAR	0.02163	RCP	37.58	0.62	63.89	1.06				

	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap32	
1.5	0	1	CIRCULAR	0.07376	RCP	4.18	0.15	7.14	0.25		
1.5	0	1	CIRCULAR	0.02315	RCP	2.22	0.14	2.22	0.14		
1.5	0	1	CIRCULAR	0.03948	RCP	2.21	0.11	3.9	0.2		
2	0	1	CIRCULAR	0.05196	RCP	24.63	0.48	41.83	0.81		
2	0	1	CIRCULAR	0.05642	RCP	11.45	0.21	19.59	0.36		
1.5	0	1	CIRCULAR	0.47787	RCP	1.18	0.02	1.88	0.03		
2	0	1	CIRCULAR	0.127	RCP	1.28	0.02	2.04	0.03		
2.5	0	1	CIRCULAR	0.02463	RCP	25.76	0.4	34.08	0.53		
2.5	0	1	CIRCULAR	0.00989	RCP	25.79	0.63	34.12	0.84		
2.5	0	1	CIRCULAR	0.03491	RCP	25.66	0.33	33.95	0.44		
1.5	0	1	CIRCULAR	0.01894	RCP	1.97	0.14	3.55	0.25		
1.5	0	1	CIRCULAR	0.01969	RCP	2.42	0.16	4.26	0.29		
1.5	0	1	CIRCULAR	0.24242	RCP	4.25	0.08	7.89	0.15		
1.5	0	1	CIRCULAR	0.02704	RCP	4.07	0.24	7.61	0.44		
1.5	0	1	CIRCULAR	0.0339	RCP	0.78	0.04	1.21	0.06		
1.5	0	1	CIRCULAR	0.15238	RCP	3.4	0.08	6.32	0.15		
1.5	0	1	CIRCULAR	0.01441	RCP	0.6	0.05	0.92	0.07		
1.5	0	1	CIRCULAR	0.01153	RCP	19.33	1.71	19.77	1.75		
1.5	0	1	CIRCULAR	0.06287	RCP	0.3	0.01	0.47	0.02		
1.5	0	1	CIRCULAR	0.02156	RCP	19.7	1.28	20.02	1.3		
1.5	0	1	CIRCULAR	0.00485	RCP	2.39	0.33	4.22	0.58		
1.5	0	1	CIRCULAR	0.02279	RCP	2.28	0.14	4.03	0.25		
1.5	0	1	CIRCULAR	0.16671	RCP	4.11	0.1	7.67	0.18		
1.5	0	1	CIRCULAR	0.02839	RCP	2.15	0.12	3.83	0.22		
1.5	0	1	CIRCULAR	0.01689	RCP	20.21	1.48	22	1.61		
1.5	0	1	CIRCULAR	0.0145	RCP	15.25	1.21	16.99	1.34		
2	0	1	CIRCULAR	0.00792	RCP	1.3	0.06	2.65	0.13		
1.5	0	1	CIRCULAR	0.00825	RCP	7.66	0.8	11.51	1.21		
1.5	0	1	CIRCULAR	0.0085	RCP	10.05	1.04	11.29	1.17		
1.5	0	1	CIRCULAR	0.023	RCP	2.6	0.16	5.65	0.35		
1.5	0	1	CIRCULAR	0.00889	RCP	4.36	0.44	9.3	0.94		
1.5	0	1	CIRCULAR	0.04459	RCP	4.78	0.22	8.19	0.37		
1.5	0	1	CIRCULAR	0.0321	RCP	1.73	0.09	2.98	0.16		
1.5	0	1	CIRCULAR	0.03202	RCP	1.1	0.06	1.89	0.1		
1.5	0	1	CIRCULAR	0.02974	RCP	2.8	0.15	4.81	0.27		
1.5	0	1	CIRCULAR	0.13965	RCP	0.53	0.01	1.99	0.05		
1.5	0	1	CIRCULAR	0.02338	RCP	0.62	0.04	1.09	0.07		
1.5	0	1	CIRCULAR	0.06495	RCP	2.84	0.11	4.54	0.17		
1.5	0	1	CIRCULAR	0.11492	RCP	0.7	0.02	1.51	0.04		
1.5	0	1	CIRCULAR	0.05558	RCP	21.09	0.85	24.41	0.99		
1.5	0	1	CIRCULAR	0.03617	RCP	3.29	0.16	6.34	0.32		
6	0	1	CIRCULAR	0.00788	RCP	180.98	0.48	312.42	0.83		
1	0	1	CIRCULAR	0.12586	RCP	0.64	0.05	1.06	0.08		
1.5	0	1	CIRCULAR	0.01289	RCP	13.02	1.09	14.92	1.25		
1.5	0	1	CIRCULAR	0.01166	RCP	11.85	1.04	13.91	1.23		
1.5	0	1	CIRCULAR	0.04832	RCP	1.11	0.05	2.16	0.09		
1.5	0	1	CIRCULAR	0.02709	RCP	3.29	0.19	6.1	0.35		
1.5	0	1	CIRCULAR	0.08051	RCP	4.39	0.15	7.99	0.27		
1.5	0	1	CIRCULAR	0.22803	RCP	0.56	0.01	0.95	0.02		
1.5	0	1	CIRCULAR	0.00923	RCP	9.24	0.92	11.71	1.16		
1.5	0	1	CIRCULAR	0.12857	RCP	0.99	0.03	1.83	0.05		
1.5	0	1	CIRCULAR	0.07572	RCP	0.99	0.03	1.81	0.06		
1.5	0	1	CIRCULAR	0.15911	RCP	1.37	0.03	2.27	0.05		
2.5	0	1	CIRCULAR	0.11242	CONC	3.79	0.03	9.88	0.07		
1.5	0	1	CIRCULAR	0.01122	RCP	12.41	1.07	14.31	1.23		
1.5	0	1	CIRCULAR	0.16693	RCP	4.86	0.11	8	0.19		
2.5	0	1	CIRCULAR	0.0872	CONC	6.84	0.06	13.16	0.11		
1.5	0	1	CIRCULAR	0.37845	RCP	0	0	0	0		
2.5	0	1	CIRCULAR	0.16515	RCP	25.61	0.15	33.88	0.2		
1.5	0	1	CIRCULAR	0.50056	RCP	0	0	0	0		
2.75	0	1	CIRCULAR	0.05563	RCP	23.12	0.19	30.17	0.24		
2	0	1	CIRCULAR	0.09183	RCP	0.8	0.01	2.29	0.03		
2	0	1	CIRCULAR	0.25686	CMP	0.72	0.01	2.44	0.04		
2	0	1	CIRCULAR	0.30285	CMP	1.36	0.02	4.44	0.07		
2	0	1	CIRCULAR	0.19298	CMP	1.96	0.03	2.37	0.04		
2	0	1	CIRCULAR	0.36985	CMP	6.03	0.03	6.04	0.08		

	Dimensions										2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)		Qcon vs Qcap3		Qcon (10-year) (cfs)		Qcon vs Qcap32	
	6	0	1	CIRCULAR	0.00414	RCP	184.62	0.58	339.04	1.24				
	2	0	1	CIRCULAR	0.29986	CMP	1.51	0.02	5.21	0.08				
	2	0	1	CIRCULAR	0.03612	RCP	33.78	0.79	61.45	1.43				
	2	0	1	CIRCULAR	0.02814	RCP	22.18	0.58	39.8	1.05				
	2	0	1	CIRCULAR	0.02642	RCP	32.67	0.89	59.32	0.89				
	1.5	0	1	CIRCULAR	0.00984	RCP	3.47	0.33	6.21	0.6				
	1.5	0	1	CIRCULAR	0.04388	RCP	4.63	0.21	8.21	0.37				
	6	0	1	CIRCULAR	0.0059	RCP	103.3	0.32	201.71	0.62				
	2	0	1	CIRCULAR	0.02862	RCP	7.6	0.2	13.61	0.36				
	4	0	1	CIRCULAR	0.00466	RCP	39.15	0.4	70.89	0.72				
	1.5	0	1	CIRCULAR	0.02792	RCP	0	0	0	0				
	1.5	0	1	CIRCULAR	0.02613	RCP	3.07	0.18	5.38	0.32				
	2	0	1	CIRCULAR	0.23975	CONC	21.4	0.19	37.08	0.33				
	2	0	1	CIRCULAR	0.01058	CONC	3.84	0.16	6.61	0.28				
	2.5	0	1	CIRCULAR	0.01739	CONC	25.34	0.47	43.83	0.81				
	2	0	1	CIRCULAR	0.15624	CONC	8.83	0.1	15.14	0.17				
	2	0	1	CIRCULAR	0.0284	CONC	1.24	0.03	2.15	0.06				
	2	0	1	CIRCULAR	0.09169	RCP	8.94	0.13	15.32	0.22				
	2	0	1	CIRCULAR	0.01802	RCP	1.67	0.06	2.89	0.1				
	2.5	0	1	CIRCULAR	0.03052	RCP	35.41	0.49	61.2	0.85				
	4	0	1	CIRCULAR	0.00253	RCP	38.75	0.54	67.13	0.93				
	1.5	0	1	CIRCULAR	0.01602	CONC	13.07	0.98	16.33	1.23				
	1.5	0	1	CIRCULAR	0.04258	CONC	17.16	0.79	23.12	1.07				
	1.5	0	1	CIRCULAR	0.00445	CONC	10.89	1.55	21.26	3.03				
	1.5	0	1	CIRCULAR	0.05136	RCP	4.01	0.17	6.46	0.27				
	2.5	0	1	CIRCULAR	0.08958	RCP	31.24	0.25	49.1	0.4				
	2.5	0	1	CIRCULAR	0.04171	RCP	19.12	0.23	35.68	0.43				
	1.5	0	1	CIRCULAR	0.7111	RCP	22.14	0.25	35.66	0.4				
	1.5	0	1	CIRCULAR	0.02932	RCP	1.3	0.07	2.11	0.12				
	1.5	0	1	CIRCULAR	0.0089	RCP	0.6	0.06	0.96	0.1				
	1.5	0	1	CIRCULAR	0.11704	RCP	3.55	0.1	5.98	0.17				
	1.5	0	1	CIRCULAR	0.0505	RCP	19.62	0.83	31.22	1.32				
	1.5	0	1	CIRCULAR	0.03914	RCP	6.25	0.3	21.95	1.06				
	2.5	0	1	CIRCULAR	0.03719	RCP	17.08	0.22	22.92	0.29				
	2.5	0	1	CIRCULAR	0.07908	RCP	31.3	0.27	49.18	0.43				
	1.75	0	1	CIRCULAR	0.01023	RCP	10.03	0.63	15.48	0.37				
	1.75	0	1	CIRCULAR	0.04099	RCP	5.85	0.18	11.91	0.37				
	4.5	0	1	CIRCULAR	0.01555	RCP	224.32	0.91	261.46	1.07				
	2.5	0	1	CIRCULAR	0.01245	RCP	22.08	0.48	40.18	0.88				
	2.5	0	1	CIRCULAR	0.02797	CONC	2.63	0.05	4.5	0.09				
	1.5	0	1	CIRCULAR	0.04374	RCP	13.92	0.63	25.14	1.14				
	1.5	0	1	CIRCULAR	0.15811	RCP	16.94	0.41	29.29	0.7				
	2	0	1	CIRCULAR	0.02608	RCP	13.85	0.38	24.83	0.68				
	2	0	1	CIRCULAR	0.0138	RCP	13.85	0.52	24.86	0.94				
	1.5	0	1	CIRCULAR	0.16319	RCP	0.25	0.01	0.41	0.01				
	2	0	1	CIRCULAR	0.01622	RCP	2.42	0.08	3.82	0.13				
	1.5	0	1	CIRCULAR	0.0333	RCP	5.07	0.26	8.77	0.46				
	2	0	1	CIRCULAR	0.2531	HDPE	0	0	0	0				
	2.5	0	1	CIRCULAR	0.02991	RCP	1.25	0.02	2.32	0.03				
	2.5	0	1	CIRCULAR	0.03346	RCP	28.72	0.38	47.47	0.63				
	2	0	1	CIRCULAR	0.15358	RCP	0	0	0	0				
	2	0	1	CIRCULAR	0.07147	RCP	0	0	0	0				
	3.5	5.5	1	CIRCULAR	0.00541	RCP	92.62	1.25	110.25	1.49				
	3.5	5.5	1	CIRCULAR	0.00895	RCP	92.62	0.97	110.25	1.16				
	2	0	1	CIRCULAR	0.02458	RCP	0	0	0	0				
	2	0	1	CIRCULAR	0.05404	RCP	0.54	0.01	0.96	0.02				
	2	0	1	CIRCULAR	0.05318	RCP	0.53	0.01	0.95	0.02				
	2	0	1	CIRCULAR	0.00612	RCP	5.93	0.33	5.25	0.3				
	1.5	0	1	CIRCULAR	0.0664	RCP	0.76	0.03	2.05	0.08				
	2	0	1	CIRCULAR	0.02	RCP	0	0	0	0				
	2	0	1	CIRCULAR	0.0095	RCP	0	0	0	0				
	2	0	1	CIRCULAR	0.01855	RCP	0	0	0	0				
	2	0	1	CIRCULAR	0.00971	RCP	4.34	0.19	7.61	0.34				
	2	0	1	CIRCULAR	0.08472	SP	15.35	0.43	27.4	0.77				
	2	0	1	CIRCULAR	0.00958	RCP	4.33	0.12	7.61	0.34				
	2	0	1	CIRCULAR	0.02473	RCP	0	0	0	0				

Pipe Size (D x H)	Dimensions						2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon (10-year) (cfs)	Qcon vs Qcap3	Qcon vs Qcap32
							(cfs)	(cfs)		
1.5	0	1	CIRCULAR	0.04249	RCP	0	0	0	0	
6	0	1	CIRCULAR	0.00279	RCP	22.51	106.97	0.1	0.48	
3	0	1	CIRCULAR	0.08941	RCP	10.29	19.78	0.05	0.1	
3	0	1	CIRCULAR	0.0074	RCP	10.33	19.25	0.18	0.34	
4	0	1	CIRCULAR	0.02767	RCP	35.44	54.6	0.15	0.23	
4	0	1	CIRCULAR	0.02594	RCP	36.23	53.77	0.16	0.23	
1.5	0	1	CIRCULAR	0.03249	RCP	7.39	12.25	0.39	0.65	
4	0	1	CIRCULAR	0.2143	RCP	1.02	1.65	0	0	
2.5	0	1	CIRCULAR	0.00377	CONC	15.43	27.5	0.61	1.09	
2.5	0	1	CIRCULAR	0.00524	CONC	15.39	27.42	0.52	0.92	
7	0	1	CIRCULAR	0.01283	RCP	412.83	650.54	0.57	0.9	
4.75	0	1	CIRCULAR	0.00246	RCP	7.24	30.81	0.06	0.27	
1	0	1	CIRCULAR	0.03745	ABS	0.77	1.26	0.11	0.18	
1	0	1	CIRCULAR	0.06325	ABS	0.67	1.06	0.07	0.12	
1	0	1	CIRCULAR	0.07322	RCP	3.43	5.36	0.36	0.56	
1	0	1	CIRCULAR	0.04763	ABS	2.1	3.44	0.27	0.44	
1.5	0	1	CIRCULAR	0.0246	RCP	5.91	10.62	0.36	0.64	
1	0	1	CIRCULAR	0.0277	ABS	5.66	6.3	0.95	1.06	
2	0	1	CIRCULAR	0.05628	HDPE	3.1	5.39	0.06	0.1	
6.5	0	1	CIRCULAR	0.00964	RCP	330.59	510.01	0.64	0.99	
5.5	4.7	1	CIRCULAR	0.00554	RCP	191.53	293.9	0.77	1.18	
3	5.5	1	CIRCULAR	0.01271	RCP	50.82	60.82	0.68	0.81	
5.5	0	1	CIRCULAR	0.00637	RCP	216.48	350.81	0.81	1.31	
3	0	1	CIRCULAR	0.02425	CONC	9.08	15.03	0.09	0.14	
2	0	1	CIRCULAR	0.2784	RCP	0.72	1.27	0.01	0.01	
1.5	0	1	CIRCULAR	0.03165	RCP	2.15	3.85	0.12	0.21	
1.5	0	1	CIRCULAR	0.14235	RCP	1.79	3.15	0.05	0.08	
1	0	1	CIRCULAR	0.02113	ABS	0.92	1.53	0.18	0.3	
1	0	1	CIRCULAR	0.08778	RCP	1.86	3.35	0.18	0.32	
1.5	0	1	CIRCULAR	0.02043	SP	0.26	0.46	0.03	0.06	
6	0	1	CIRCULAR	0.07526	RCP	0	0	0	0	
4	8	1	RECT_CLOSED	0.02111	RCB	237.43	270.27	0.37	0.42	
1.5	0	1	CIRCULAR	0.19522	RCP	6.39	11.52	0.14	0.25	
1.5	0	1	CIRCULAR	0.03309	ABS	17.58	21.51	0.92	1.13	
2	0	1	CIRCULAR	0.08023	ABS	10.7	19.16	0.27	0.49	
1	0	1	CIRCULAR	0.01262	RCP	0.32	0.57	0.08	0.14	
1	0	1	CIRCULAR	0.0057	RCP	0.05	0.11	0.02	0.04	
1.5	0	1	CIRCULAR	0.13779	RCP	5.7	10.34	0.15	0.27	
3.5	0	1	CIRCULAR	0.03992	RCP	53.15	152.01	0.26	0.76	
6	0	1	CIRCULAR	0.0133	RCP	122.04	246.7	0.25	0.51	
5	0	1	CIRCULAR	0.00365	RCP	118.66	174.51	0.75	1.11	
8	0	1	CIRCULAR	0.00391	RCP	259.47	462.42	0.45	0.81	
8	0	1	CIRCULAR	0.00341	RCP	248.43	441.89	0.47	0.83	
6	0	1	CIRCULAR	0.01039	RCP	237.93	416.48	0.55	0.96	
5	0	1	CIRCULAR	0.01571	RCP	152.91	270.13	0.47	0.83	
5	0	1	CIRCULAR	0.02475	RCP	98.43	147.12	0.24	0.36	
5	0	1	CIRCULAR	0.00709	RCP	101.98	150.58	0.47	0.69	
3.5	0	1	CIRCULAR	0.0077	RCP	53.29	111.02	0.6	1.26	
3.5	0	1	CIRCULAR	0.03572	RCP	96.18	162.26	0.51	0.85	
3	0	1	CIRCULAR	0.01468	RCP	9.3	15.26	0.12	0.19	
3	0	1	CIRCULAR	0.06052	RCP	12.71	23.28	0.08	0.14	
1.25	0	1	CIRCULAR	0.0109	HDPE	0.65	1.06	0.1	0.16	
1.25	0	1	CIRCULAR	0.00612	HDPE	2.86	4.77	0.57	0.94	
1.25	0	1	CIRCULAR	0.0342	HDPE	2.85	4.77	0.24	0.4	
1.25	0	1	CIRCULAR	0.04641	HDPE	1.85	3.08	1.06	1.8	
1.25	0	1	CIRCULAR	0.01048	HDPE	1.85	3.08	0.28	0.47	
2	0	1	CIRCULAR	0.03596	RCP	0.17	0.26	0	0.01	
8	0	1	CIRCULAR	0.01075	RCP	528.97	926.5	0.56	0.98	
1.5	0	1	CIRCULAR	0.1456	RCP	2.15	3.62	0.05	0.09	
1.5	0	1	CIRCULAR	0.01633	RCP	2.51	4.26	0.19	0.32	
1.5	0	1	CIRCULAR	0.0151	RCP	2.5	4.25	0.19	0.33	
1.5	0	1	CIRCULAR	0.02257	HDPE	2.74	4.82	0.17	0.31	
3.5	0	1	CIRCULAR	-0.00089	RCP	51.58	81.98	1.72	2.74	
1.25	0	1	CIRCULAR	0.00845	HDPE	3.14	5.52	0.53	0.93	
1.25	0	1	CIRCULAR	0.01821	RCP	3.09	5.46	0.35	0.63	
3.5	0	1	CIRCULAR	0.01598	RCP	3.86	15.64	0.03	0.12	

Pipe Size (D' or H' or diameter)	Dimensions						2-year		10-year	
	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon		Qcon vs Qcap		
						(2-year) (cfs)	Qcon vs Qcap3	(10-year) (cfs)	Qcon vs Qcap32	
6	0	1	CIRCULAR	0.00147	RCP	22.87	0.14	53.02	0.33	
2	0	1	CIRCULAR	0.00369	RCP	11.7	0.85	38.88	2.83	
2	0	1	CIRCULAR	0.07171	RCP	5.21	0.09	9.3	0.15	
1.5	0	1	CIRCULAR	0.14905	RCP	2.41	0.06	4.34	0.11	
1.5	0	1	CIRCULAR	0.02518	RCP	1.57	0.09	2.86	0.17	
1.5	0	1	CIRCULAR	0.21636	RCP	2.85	0.06	5.02	0.1	
3	0	1	CIRCULAR	0.00345	RCP	54.43	1.39	84.43	2.16	
2	0	1	CIRCULAR	0.01003	RCP	5.42	0.24	9.57	0.42	
2	0	1	CIRCULAR	0.02382	RCP	5.43	0.16	9.57	0.27	
2	0	1	CIRCULAR	0.0245	RCP	5.39	0.15	9.5	0.27	
2	0	1	CIRCULAR	0.01737	RCP	11.2	0.38	20.02	0.67	
2.5	0	1	CIRCULAR	0.02144	RCP	16.45	0.27	29.39	0.49	
3	0	1	CIRCULAR	0.06449	RCP	23.16	0.14	39.62	0.23	
3.5	0	1	CIRCULAR	0.01678	RCP	2.19	0.02	6.51	0.05	
0.67	0	1	CIRCULAR	0.16213	PVC	0.91	0.18	1.53	0.31	
2.5	0	1	CIRCULAR	0.02387	RCP	21.28	0.34	37.91	0.6	
2	0	1	CIRCULAR	0.0155	RCP	2.56	0.09	5.09	0.18	
2	0	1	CIRCULAR	0.01653	RCP	2.56	0.09	5.07	0.17	
2	0	1	CIRCULAR	0.07858	RCP	2.55	0.04	5.06	0.08	
1	0	1	CIRCULAR	0.08978	PVC	2.21	0.21	3.82	0.36	
1.5	0	1	CIRCULAR	0.08805	RCP	2.23	0.07	4	0.13	
1.5	0	1	CIRCULAR	0.10047	CMP	2.14	0.12	3.73	0.21	
2.5	0	1	CIRCULAR	0.00716	RCP	12.17	0.35	21.84	0.63	
2	0	1	CIRCULAR	0.00716	RCP	5.09	0.27	8.94	0.47	
3	0	1	CIRCULAR	0.11572	RCP	0.34	0	0.82	0	
1.5	0	1	CIRCULAR	0.02669	RCP	7.33	0.43	12.97	0.76	
3.5	0	1	CIRCULAR	0.02534	RCP	47.37	0.3	79.8	0.5	
4	0	1	CIRCULAR	0.0969	RCP	124.13	0.45	212.83	0.77	
3.5	0	1	CIRCULAR	0.0915	RCP	64.62	0.36	111.99	0.63	
4	0	1	CIRCULAR	0.02168	RCP	112.8	0.53	193.81	0.92	
4.5	0	1	CIRCULAR	0.02175	RCP	128.08	0.44	219.94	0.76	
3.5	0	1	CIRCULAR	0.03555	RCP	63.27	0.34	109.57	0.59	
1.5	0	1	CIRCULAR	0.02837	RCP	2.37	0.13	4.28	0.24	
2	0	1	CIRCULAR	0.05008	RCP	17.13	0.34	30.17	0.6	
2	0	1	CIRCULAR	0.03224	RCP	21.35	0.53	38.22	0.94	
2	0	1	CIRCULAR	0.00332	RCP	8.98	0.69	8.01	0.61	
2.25	0	1	CIRCULAR	0.0059	RCP	5.01	0.21	5.45	0.23	
1.25	0	1	CIRCULAR	0.08432	RCP	6.91	0.37	11.71	0.62	
2	0	1	CIRCULAR	0.00453	RCP	0.96	0.06	1.77	0.12	
2	0	1	CIRCULAR	0.02619	RCP	0.18	0	0.27	0.01	
1.5	0	1	CIRCULAR	0.06693	RCP	1.01	0.04	1.73	0.06	
1	0	1	CIRCULAR	0.00305	RCP	0.24	0.12	0.47	0.24	
1	0	1	CIRCULAR	0.17878	CMP	0.83	0.1	1.53	0.19	
5	10	1	RECT CLOSED	0.01659	RCB	308.85	0.3	353.06	0.34	
6	0	1	CIRCULAR	0.01879	RCP	98.33	0.17	209.46	0.36	
1.5	0	1	CIRCULAR	0.01774	RCP	4.94	0.35	8.1	0.58	
2	0	1	CIRCULAR	0.0304	RCP	14.72	0.37	26.42	0.67	
1.5	0	1	CIRCULAR	0.00323	RCP	3.18	0.53	5.4	0.91	
1.5	0	1	CIRCULAR	0.27678	RCP	5.98	0.11	10.21	0.18	
1	0	1	CIRCULAR	0.85398	CMP	0.34	0.02	0.54	0.03	
4	0	1	CIRCULAR	0.02993	RCP	98.33	0.4	242.5	0.98	
1.5	0	1	CIRCULAR	0.14772	RCP	0.83	0.02	1.51	0.04	
2	0	1	CIRCULAR	0.01324	RCP	10.69	0.41	18.93	0.73	
2	0	1	CIRCULAR	0.15634	RCP	12.41	0.14	21.96	0.25	
8	0	1	CIRCULAR	0.00422	RCP	189.62	0.32	352.85	0.6	
1.5	0	1	CIRCULAR	0.06712	RCP	17.17	0.63	30.67	1.13	
3	0	1	CIRCULAR	0.02147	CMP	29	0.55	50.87	0.96	
1.5	0	1	CIRCULAR	0.06116	RCP	0.88	0.03	1.44	0.06	
2	0	1	CIRCULAR	0.02205	RCP	1.42	0.04	2.36	0.07	
1.5	0	1	CIRCULAR	0.00966	RCP	2.16	0.35	3.64	0.21	
1.25	0	1	CIRCULAR	0.02919	RCP	0.24	0.02	0.39	0.04	
1.25	0	1	CIRCULAR	0.01504	HDPE	0.26	0.03	0.43	0.05	
1.25	0	1	CIRCULAR	0.04105	CMP	0.26	0.04	0.43	0.06	
1.5	0	1	CIRCULAR	0.06929	RCP	1.88	0.07	3.37	0.12	
2	0	1	CIRCULAR	0.00783	RCP	13.17	0.66	21.47	0.77	
1.5	0	1	CIRCULAR	0.06189	RCP	6.92	0.26	12.29	0.47	

Pipe Size (D x H)	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Qcon vs Qcap3	Q _{con} (10-year) (cfs)	Qcon vs Qcap32	
							Qcon vs Qcap3		Qcon vs Qcap32		
1.5	0	1	CIRCULAR	0.15237	RCP	3.37	0.08	3.4	0.08		
1.5	0	1	CIRCULAR	0.00506	RCP	5.83	0.78	9.07	1.21		
1.5	0	1	CIRCULAR	0.01534	RCP	3.84	0.3	6.81	0.52		
7	0	1	CIRCULAR	0.00263	RCP	167.14	0.51	313.52	0.96		
1.5	0	1	CIRCULAR	0.01929	RCP	4.35	0.3	7.63	0.52		
1.5	0	1	CIRCULAR	0.00704	RCP	3.84	0.44	6.59	0.75		
2	0	1	CIRCULAR	0.0524	HDPE	4.01	0.08	6.87	0.13		
1.5	0	1	CIRCULAR	0.27655	CMP	0	0	0	0		
1.5	0	1	CIRCULAR	0.19015	CMP	3.46	0.08	5.7	0.12		
2.5	0	1	CIRCULAR	0.09578	RCP	19.06	0.15	31.75	0.25		
1.5	0	1	CIRCULAR	0.03988	RCP	1.33	0.06	2.31	0.11		
4.5	0	1	CIRCULAR	0.00564	RCP	98.16	0.66	178.79	1.21		
1.5	0	1	CIRCULAR	0.0106	CMP	5.31	0.49	8.72	0.81		
1.5	0	1	CIRCULAR	0.04587	RCP	6.39	0.28	10.53	0.47		
2	0	1	CIRCULAR	0.00784	RCP	8.04	0.4	13.26	0.66		
0.5	0	1	CIRCULAR	0.87276	PVC	1.17	0.22	1.83	0.35		
1.5	0	1	CIRCULAR	0.00576	RCP	50.55	0.26	60.13	0.3		
5	0	1	CIRCULAR	0.01812	RCP	51.36	0.15	62.85	0.18		
3	0	1	CIRCULAR	0.00379	RCP	25.56	0.62	55.89	1.36		
2	0	1	CIRCULAR	0.00517	RCP	1.31	0.08	2.12	0.13		
3	0	1	CIRCULAR	0.03181	RCP	104.34	0.88	155.15	1.3		
3	0	1	CIRCULAR	0.0469	RCP	104.24	0.72	146.31	1.01		
1.5	0	1	CIRCULAR	0.04287	RCP	2.35	0.11	3.83	0.18		
1.5	0	1	CIRCULAR	0.05768	RCP	9.54	0.38	16.19	0.64		
1.5	0	1	CIRCULAR	0.02149	HDPE	2.01	0.13	3.34	0.22		
2.5	0	1	CIRCULAR	0.00601	RCP	0.37	0.01	0.82	0.03		
2	0	1	CIRCULAR	0.00605	RCP	0.33	0.02	0.62	0.03		
2.5	0	1	CIRCULAR	0.09391	RCP	0.19	0	0.33	0		
1.5	0	1	CIRCULAR	0.02797	RCP	0.32	0.02	0.56	0.03		
2	0	1	CIRCULAR	0.09948	CMP	1.33	0.03	2.36	0.06		
2.5	0	1	CIRCULAR	0.21096	RCP	33.89	0.18	116.32	0.62		
2	0	1	CIRCULAR	0.1509	CONC	5.05	0.06	7.95	0.09		
5	0	1	CIRCULAR	0.01522	RCP	94.4	0.29	161.61	0.5		
1.5	0	1	CIRCULAR	0.14643	CMP	2.81	0.13	4.47	0.21		
1.5	0	1	CIRCULAR	0.00976	RCP	1.43	0.14	2.48	0.24		
1.5	0	1	CIRCULAR	0.17017	RCP	0.51	0.01	0.88	0.02		
2	0	1	CIRCULAR	0.04798	HDPE	1.87	0.04	3.43	0.07		
2	0	1	CIRCULAR	0.46873	HDPE	2.39	0.02	4.33	0.03		
1.5	0	1	CIRCULAR	0.03969	HDPE	2.56	0.12	4.09	0.2		
4	0	1	CIRCULAR	0.00333	RCP	16.7	0.2	22.54	0.27		
4	0	1	CIRCULAR	0.10334	CONC	18.95	0.04	25.64	0.06		
1.5	0	1	CIRCULAR	0.04903	HDPE	0.86	0.04	1.38	0.06		
1.5	0	1	CIRCULAR	0.03154	HDPE	0.89	0.05	1.43	0.08		
1.5	0	1	CIRCULAR	0.03585	HDPE	1.72	0.09	2.77	0.14		
1.5	0	1	CIRCULAR	0.02862	HDPE	2.6	0.15	4.15	0.23		
1.5	0	1	CIRCULAR	0.02449	HDPE	0.51	0.03	0.79	0.05		
1.5	0	1	CIRCULAR	0.01638	HDPE	0.41	0.03	0.63	0.05		
2	0	1	CIRCULAR	0.02458	RCP	14.2	0.4	25.56	0.72		
1.5	0	1	CIRCULAR	0.04004	RCP	4.91	0.23	9.06	0.43		
1.5	0	1	CIRCULAR	0.02909	HDPE	4.21	0.23	6.68	0.37		
1.5	0	1	CIRCULAR	0.01614	HDPE	0.19	0.01	0.29	0.02		
1.5	0	1	CIRCULAR	0.03746	HDPE	0.54	0.03	0.82	0.04		
2	0	1	CIRCULAR	0.13082	HDPE	4.53	0.06	7.69	0.09		
1.5	0	1	CIRCULAR	0.01652	HDPE	1.57	0.12	2.56	0.19		
1.5	0	1	CIRCULAR	0.03322	HDPE	2.05	0.11	3.3	0.17		
1.5	0	1	CIRCULAR	0.01452	HDPE	1.03	0.08	1.59	0.13		
1.5	0	1	CIRCULAR	0.02852	HDPE	1.28	0.07	2	0.11		
1.5	0	1	CIRCULAR	0.04167	HDPE	4.22	0.2	6.7	0.31		
1	0	1	CIRCULAR	0.08783	RCP	0.66	0.06	1.05	0.1		
1.5	0	1	CIRCULAR	0.00621	RCP	2.45	0.3	3.89	0.47		
1.5	0	1	CIRCULAR	0.02495	RCP	3.52	0.21	5.62	0.34		
1.5	0	1	CIRCULAR	0.06935	RCP	0.04	1.18	1.84	0.07		
2	0	1	CIRCULAR	0.10685	RCP	4.79	0.06	7.61	0.1		
1.5	0	1	CIRCULAR	0.0196	RCP	7.19	0.49	13.89	0.71		
2.5	0	1	CIRCULAR	0.00366	RCP	9.19	0.37	17.51	0.94		

Pipe ID	Dimensions						2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap32
							(cfs)	(cfs)	(cfs)	(cfs)
1	1.5	0	1	CIRCULAR	0.00934	RCP	3.22	0.32	5.82	0.57
2	3	0	1	CIRCULAR	0.00838	RCP	5.51	0.09	9.88	0.16
3	2	0	1	CIRCULAR	0.06925	RCP	3.88	0.07	7.16	0.12
4	2.5	0	1	CIRCULAR	0.05923	RCP	10.94	0.11	20.02	0.2
5	3	0	1	CIRCULAR	0.03148	RCP	16.84	0.14	30.29	0.26
6	3	0	1	CIRCULAR	0.06807	RCP	10.88	0.06	20.15	0.12
7	1.5	0	1	CIRCULAR	0.06224	RCP	1.07	0.04	1.91	0.07
8	4	0	1	CIRCULAR	0.01105	RCP	26.68	0.18	50.95	0.34
9	1.5	0	1	CIRCULAR	0.07414	RCP	0.64	0.02	1.14	0.04
10	4	0	1	CIRCULAR	0.03938	RCP	26.1	0.09	49.85	0.17
11	2.5	0	1	CIRCULAR	0.02111	RCP	16.97	0.28	28.57	0.48
12	2.5	0	1	CIRCULAR	0.06037	RCP	24.28	0.24	41.34	0.41
13	1.5	0	1	CIRCULAR	0.01887	RCP	5.17	0.36	9.49	0.66
14	2	0	1	CIRCULAR	0.04587	RCP	21.01	0.43	37.3	0.77
15	2	0	1	CIRCULAR	0.02502	RCP	12.6	0.35	22.59	0.63
16	2	0	1	CIRCULAR	0.02587	RCP	11.2	0.31	20.07	0.55
17	3	0	1	CIRCULAR	0.04382	RCP	36.19	0.26	55.54	0.4
18	1.5	0	1	CIRCULAR	0.02778	CMP	3.17	0.33	8.36	0.88
19	2	0	1	CIRCULAR	0.01345	HDPE	6.31	0.24	11.37	0.43
20	1.5	0	1	CIRCULAR	0.12358	ABS	4.19	0.11	8.5	0.23
21	4	0	1	CIRCULAR	0.0162	RCP	72.19	0.39	120.89	0.66
22	2	0	1	CIRCULAR	0.07062	CMP	0.76	0.02	1.32	0.04
23	4	0	1	CIRCULAR	0.01712	RCP	78.79	0.42	132.95	0.71
24	4	0	1	CIRCULAR	0.03356	RCP	61.5	0.23	101.77	0.39
25	4	0	1	CIRCULAR	0.00678	RCP	61.41	0.52	101.66	0.86
26	4	0	1	CIRCULAR	0.0181	RCP	59.12	0.31	97.52	0.5
27	1	0	1	CIRCULAR	0.05178	RCP	3.73	0.46	6.69	0.83
28	3	0	1	CIRCULAR	0.03747	RCP	25.11	0.19	44.74	0.35
29	1.5	0	1	CIRCULAR	0.0509	CMP	5.4	0.23	10.37	0.44
30	3	0	1	CIRCULAR	0.09784	CMP	10.59	0.05	19.2	0.09
31	6	0	1	CIRCULAR	0.03933	RCP	118.12	0.14	245.92	0.29
32	1.5	0	1	CIRCULAR	0.01682	ABS	2.78	0.2	4.75	0.35
33	1.5	0	1	CIRCULAR	0.2452	ABS	2.77	0.05	4.74	0.09
34	1.5	0	1	CIRCULAR	0.02226	ABS	5.64	0.36	9.75	0.62
35	1.5	0	1	CIRCULAR	0.06198	ABS	5.63	0.22	9.73	0.37
36	2	0	1	CIRCULAR	0.00607	RCP	4.87	0.28	8.74	0.5
37	6	0	1	CIRCULAR	0.01527	RCP	119.29	0.23	270.63	0.52
38	3	0	1	CIRCULAR	0.06046	RCP	19.37	0.12	34.42	0.21
39	3	0	1	CIRCULAR	0.0082	RCP	19.38	0.32	34.44	0.57
40	3	0	1	CIRCULAR	0.10425	RCP	11.41	0.05	20.68	0.1
41	1.5	0	1	CIRCULAR	0.00806	CMP	6.55	1.28	9.47	1.85
42	2	0	1	CIRCULAR	0.01033	RCP	10.85	0.47	19.02	0.83
43	1.5	0	1	CIRCULAR	0.02264	RCP	1.34	0.09	2.45	0.16
44	2	0	1	CIRCULAR	0.00787	RCP	7.67	0.38	13.39	0.67
45	2	0	1	CIRCULAR	0.03829	RCP	14.65	0.33	26.03	0.59
46	2	0	1	CIRCULAR	0.04249	RCP	14.64	0.31	26.01	0.56
47	2	0	1	CIRCULAR	0.00322	RCP	8.83	0.69	16.18	1.26
48	2	0	1	CIRCULAR	0.01891	RCP	9.41	0.3	16.5	0.53
49	2	0	1	CIRCULAR	0.22315	CONC	2.98	0.04	5.41	0.07
50	2	0	1	CIRCULAR	0.00435	ABS	7.11	0.48	12.66	0.85
51	0.5	0	1	CIRCULAR	0.04295	ABS	0	0	0	0
52	0.5	0	1	CIRCULAR	0.01097	ABS	0.03	0.05	0.05	0.08
53	1.5	0	1	CIRCULAR	0.0334	RCP	1.28	0.07	2.32	0.12
54	1.5	0	1	CIRCULAR	0.0967	RCP	1.31	0.04	2.51	0.08
55	1.5	0	1	CIRCULAR	0.04935	ABS	2.05	0.09	3.55	0.15
56	3	0	1	CIRCULAR	0.01085	CMP	20.55	0.55	36.32	0.97
57	1.5	0	1	CIRCULAR	0.0152	RCP	0.83	0.06	1.51	0.12
58	1.5	0	1	CIRCULAR	0.0219	RCP	4.47	0.29	8.15	0.52
59	1.5	0	1	CIRCULAR	0.01514	RCP	5.65	0.44	10.24	0.79
60	1.5	0	1	CIRCULAR	0.01978	RCP	5.55	0.38	10.07	0.68
61	1.5	0	1	CIRCULAR	0.00456	HDPE	4.05	0.57	6.9	0.97
62	3	0	1	CIRCULAR	0.03154	CONC	26.6	0.22	44.87	0.38
63	1.5	0	1	CIRCULAR	0.10703	RCP	1.18	0.03	4.02	0.12
64	4	0	1	CIRCULAR	0.00646	RCP	39.62	0.34	69.67	0.6
65	4	0	1	CIRCULAR	0.00902	RCP	54.04	0.4	91.18	0.67
66	4	0	1	CIRCULAR	0.0122	RCP	55.26	0.35	92.49	0.58

Pipe Size (D x H)	Dimensions						2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap32
							(10-year)	(10-year)	(10-year)	(10-year)
1.5	0	1	CIRCULAR	0.15746	CMP	1.36	0.06	2.37	0.1	
3.5	0	1	CIRCULAR	0.06161	CMP	24.11	0.18	33.45	0.25	
1.5	0	1	CIRCULAR	0.00884	RCP	2.34	0.24	4.18	0.42	
0.92	2.67	1	RECT_CLOSED	0.00802	RCB	2.57	0.21	4.63	0.38	
2	0	1	CIRCULAR	0.00666	RCP	10.88	0.59	19.37	1.05	
1.5	0	1	CIRCULAR	0.07756	RCP	7.03	0.24	7.39	0.25	
3	0	1	CIRCULAR	0.05399	SP	16.85	0.2	30.06	0.36	
0.33	0	1	CIRCULAR	0.13726	HDPE	0.87	1.26	0.87	1.26	
3	0	1	CIRCULAR	0.00492	RCP	20.26	0.43	31.75	0.68	
3	0	1	CIRCULAR	0.01641	RCP	40.31	0.47	60.2	0.7	
4	0	1	CIRCULAR	0.00819	RCP	85.12	0.65	154.37	1.19	
4	0	1	CIRCULAR	0.03748	RCP	85.06	0.31	153.25	0.55	
4	0	1	CIRCULAR	0.00833	RCP	93.23	0.71	167.44	1.28	
3	0	1	CIRCULAR	0.00403	RCP	23.31	0.55	37.41	0.88	
3	0	1	CIRCULAR	0.02132	RCP	4.78	0.05	8.57	0.09	
3	0	1	CIRCULAR	0.05786	RCP	18.07	0.11	32.36	0.2	
1.5	0	1	CIRCULAR	0.09632	RCP	8.01	0.25	13.75	0.42	
3	0	1	CIRCULAR	0.03919	RCP	17.98	0.14	32.23	0.24	
3	0	1	CIRCULAR	0.01655	RCP	17.86	0.21	29.43	0.34	
3	0	1	CIRCULAR	0.03188	RCP	27.84	0.23	51.02	0.43	
3	0	1	CIRCULAR	0.01531	RCP	13.86	0.17	22.87	0.28	
3	0	1	CIRCULAR	0.07015	RCP	13.13	0.07	23.55	0.13	
2.5	0	1	CIRCULAR	0.01333	RCP	28.05	0.59	49.39	1.04	
2.5	0	1	CIRCULAR	0.05245	CMP	28.19	0.3	49.61	0.53	
3	0	1	CIRCULAR	0.02697	RCP	28.65	0.26	50.53	0.46	
3	0	1	CIRCULAR	0.01712	RCP	35.09	0.4	62.05	0.71	
3	0	1	CIRCULAR	0.00358	RCP	5.66	0.14	10.23	0.26	
3	0	1	CIRCULAR	0.00366	CMP	29.91	0.74	53.97	1.34	
1.5	0	1	CIRCULAR	0.01859	RCP	6.59	0.46	11.35	0.79	
1.5	0	1	CIRCULAR	0.01746	RCP	8	0.58	13.82	1	
1.5	0	1	CIRCULAR	0.04267	RCP	4.65	0.21	6.18	0.28	
1.5	0	1	CIRCULAR	0.36144	RCP	2.41	0.04	3.73	0.06	
1.5	0	1	CIRCULAR	0.02067	RCP	9.54	0.63	16.24	1.08	
2	0	1	CIRCULAR	0.01369	RCP	13.01	0.49	22.48	0.85	
2.5	0	1	CIRCULAR	0.01937	RCP	13.15	0.23	22.7	0.4	
2.5	0	1	CIRCULAR	0.01908	HDPE	15.7	0.28	27.54	0.49	
2.5	0	1	CIRCULAR	0.02612	RCP	17.68	0.27	30.86	0.47	
6	0	1	CIRCULAR	0.00199	RCP	110.08	0.58	212.93	1.13	
6	0	1	CIRCULAR	0.00114	RCP	274.05	1.91	375.58	2.62	
6	0	1	CIRCULAR	0.00155	RCP	254.72	1.53	337.99	2.03	
6	0	1	CIRCULAR	0.0177	RCP	270.2	0.48	359.91	0.64	
6	0	1	CIRCULAR	0.02642	RCP	255.97	0.37	336.33	0.49	
4.5	0	1	CIRCULAR	0.013	RCP	75.28	0.34	131.89	0.59	
3	0	2	CIRCULAR	0.01661	RCP	58.65	0.34	100.17	0.58	
2	0	1	CIRCULAR	0.02256	CMP	6.14	0.18	10.46	0.31	
2	0	1	CIRCULAR	0.04862	PVC	6.38	0.13	11.31	0.23	
1.5	0	1	CIRCULAR	0.00483	RCP	0.63	0.09	1.07	0.15	
1.5	0	1	CIRCULAR	0.07683	RCP	3.12	0.11	5.2	0.18	
5	0	1	CIRCULAR	0.00776	CMP	189.11	0.82	275.46	1.2	
1.5	0	1	CIRCULAR	0.3513	RCP	3.41	0.05	5.67	0.09	
4	0	1	CIRCULAR	0.01352	RCP	119.1	0.71	165.17	0.99	
3.5	0	2	CIRCULAR	0.05692	RCP	150.22	0.31	204.88	0.43	
3.5	0	2	CIRCULAR	0.02261	RCB	142.84	0.47	201.6	0.67	
1.5	0	1	CIRCULAR	0.01132	RCP	5.7	0.51	9.58	0.86	
3	0	1	CIRCULAR	0.02844	RCP	45.25	0.4	77.65	0.69	
1.5	0	1	CIRCULAR	0.01439	RCP	0.02	0	0.03	0	
1.5	0	1	CIRCULAR	0.04342	RCP	11.19	0.51	18.94	0.87	
2.75	0	1	CIRCULAR	0.01865	RCP	33.79	0.47	56.54	0.78	
1.5	0	1	CIRCULAR	0.10633	RCP	0	0	0	0	
5	0	0	RCP	0.00575	RCP	125.48	0.64	182.86	0.93	
1.5	0	1	CIRCULAR	0.01936	RCP	4.71	0.32	7.96	0.54	
1.5	0	1	CIRCULAR	0.06851	CMP	6.44	0.43	10.77	0.72	
0.67	0	1	CIRCULAR	0.03324	ABS	0	0	0	0	
2.5	0	1	CIRCULAR	0.00743	RCP	14.67	0.41	25.56	0.72	
1.5	0	1	CIRCULAR	-0.01328	RCP	0.16	0.01	0.25	0.02	

Pipe	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap32	
							Qcon (2-year) (cfs)		Qcon (10-year) (cfs)		
2.5	0	1	CIRCULAR		0.01465 HDPE	16.89	0.34	32.12	0.65		
1	0	1	CIRCULAR		0.07241 HDPE	0.65	0.07	1.1	0.11		
2	0	1	CIRCULAR		0.02005 RCP	16.03	0.49	30.72	0.95		
2	0	1	CIRCULAR		0.02143 RCP	9.33	0.28	15.56	0.47		
2	0	1	CIRCULAR		0.01468 RCP	12.58	0.46	22.22	0.81		
1	0	1	CIRCULAR		0.0449 ABS	0.74	0.1	1.19	0.16		
2	0	1	CIRCULAR		0.01632 RCP	8.67	0.3	14.47	0.5		
1.5	0	1	CIRCULAR		0.00337 RCP	2.69	0.44	4.43	0.73		
1.5	0	1	CIRCULAR		0.19239 HDPE	0.62	0.01	0.96	0.02		
2	0	1	CIRCULAR		0.01358 RCP	9.35	0.35	15.71	0.6		
1.5	0	1	CIRCULAR		0.00462 RCP	3.08	0.43	5.16	0.72		
1.5	0	1	CIRCULAR		0.00992 RCP	3.01	0.29	4.96	0.47		
1.5	0	1	CIRCULAR		0.01926 RCP	3.02	0.21	5.01	0.34		
2	0	1	CIRCULAR		0.0127 RCP	12.08	0.47	20.89	0.82		
2	0	1	CIRCULAR		0.03828 RCP	9.27	0.21	18.38	0.42		
2.5	0	1	CIRCULAR		0.00368 RCP	0.31	0.01	0.7	0.03		
6	0	1	CIRCULAR		0.00103 RCP	39.88	0.29	71.65	0.53		
3	0	1	CIRCULAR		0.01924 RCP	39.37	0.43	70.52	0.76		
2.5	0	1	CIRCULAR		0.01792 RCP	0	0	0	0		
2	0	1	CIRCULAR		0.03195 RCP	22.98	0.57	37.52	0.93		
2.5	0	1	CIRCULAR		0.03125 RCP	0	0	0	0		
4	0	1	CIRCULAR		0.00867 RCP	62.19	0.46	187.67	1.4		
2.5	0	1	CIRCULAR		0.11215 RCP	0.72	0.01	16.42	0.12		
1.5	0	1	CIRCULAR		0.03885 RCP	11.03	0.53	19.39	0.94		
2.5	0	1	CIRCULAR		0.00731 RCP	11.72	0.33	24.6	0.7		
3.5	0	1	CIRCULAR		0.00581 RCP	36.26	0.47	87.42	1.14		
1.5	0	1	CIRCULAR		0.01189 RCP	4.66	0.41	8.04	0.7		
2	0	1	CIRCULAR		0.01529 RCP	7.54	0.27	13.03	0.47		
1.5	0	1	CIRCULAR		0.02304 RCP	0.73	0.05	1.42	0.09		
1	0	1	CIRCULAR		0.03061 PVC	0.2	0.03	0.45	0.07		
1.5	0	1	CIRCULAR		0.01932 RCP	4.02	0.28	6.77	0.46		
2	0	1	CIRCULAR		0.01945 RCP	12.14	0.38	21.02	0.67		
1.5	0	1	CIRCULAR		0.00379 HDPE	0.9	0.14	1.57	0.24		
2.5	0	1	CIRCULAR		0.00328 RCP	13.07	0.56	22.67	0.97		
2	0	1	CIRCULAR		0.0285 RCB	16.98	0.44	29.83	0.78		
2	0	1	CIRCULAR		0.02354 RCP	15.39	0.44	27.29	0.79		
2	0	1	CIRCULAR		0.03063 RCP	17.63	0.45	29.94	0.76		
2.5	0	1	CIRCULAR		0.01699 RCP	17.03	0.32	29.91	0.56		
3	0	1	CIRCULAR		0.01088 RCP	0.4	0.2808	42.34	0.61		
4.5	0	1	CIRCULAR		0.01769 RCP	113.56	0.51	206.22	0.93		
1.5	0	1	CIRCULAR		0.00444 RCP	2.05	0.29	3.58	0.51		
1.5	0	1	CIRCULAR		0.05891 RCP	4.23	0.17	7.36	0.29		
1.5	0	1	CIRCULAR		0.0115 RCP	5.1	0.45	8.72	0.77		
6	0	1	CIRCULAR		0.00425 RCP	152.69	0.55	267.56	0.97		
1.5	0	1	CIRCULAR		0.05139 RCP	1.51	0.06	4.76	0.2		
2.5	0	1	CIRCULAR		0.05264 RCP	3.2	0.03	8.68	0.09		
6	0	1	CIRCULAR		0.04159 RCP	2.14	0	16.75	0.02		
2.5	0	1	CIRCULAR		0.05905 CONC	13.99	0.14	25.4	0.25		
2.5	0	1	CIRCULAR		0.00317 CONC	14.55	0.63	27.81	1.2		
6	0	1	CIRCULAR		0.00316 RCP	158.45	0.67	275.5	1.16		
1.5	0	1	CIRCULAR		0.13892 RCP	8	0.2	14.17	0.36		
6	0	1	CIRCULAR		0.00623 RCP	157.37	0.47	277.39	0.83		
4.5	0	1	CIRCULAR		0.01699 RCP	162.83	0.64	285.96	1.12		
6	0	1	CIRCULAR		0.00709 RCB	162.69	0.46	286.18	0.8		
2.5	0	1	CIRCULAR		0.06048 RCP	19.31	0.19	31.55	0.31		
2.5	0	1	CIRCULAR		0.01602 RCP	19.84	0.38	32.38	0.62		
2	0	1	CIRCULAR		0.02815 RCP	21.08	0.56	34.3	0.9		
2.5	0	1	CIRCULAR		0.02162 RCP	31.7	0.53	52.04	0.86		
2.5	0	1	CIRCULAR		0.01984 RCP	40.15	0.7	63.58	1.1		
4	0	1	CIRCULAR		0.00573 RCP	45.24	0.42	77.57	0.71		
3	0	1	CIRCULAR		0.00814 RCP	41.75	0.69	65.69	1.09		
3	0	1	CIRCULAR		0.03267 RCP	41.76	0.35	65.02	0.54		
4	0	1	CIRCULAR		0.0209 RCP	45.55	0.22	70.06	0.34		
6	0	1	CIRCULAR		0.0082 RCP	152.02	0.4	266.75	0.7		
6	0	1	CIRCULAR		0.00644 RCP	152.71	0.45	267.66	0.79		
6	0	1	CIRCULAR		0.00995 RCP	118	0.28	213.08	0.5		

Pipe	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap32	
							Qcon (2-year) (cfs)		Qcon (10-year) (cfs)		
2	0	1	CIRCULAR	0.02474	RCP	10.68	0.3	18.64	0.52		
1	0	1	CIRCULAR	0.06675	ABS	4.08	0.44	7.26	0.79		
2	0	1	CIRCULAR	0.01744	HDPE	14.38	0.48	24.16	0.81		
1.5	0	1	CIRCULAR	0.01806	HDPE	1.41	0.1	2.52	0.18		
1.5	0	1	CIRCULAR	0.03489	HDPE	1.4	0.07	2.5	0.13		
2	0	1	CIRCULAR	0.00705	HDPE	9.18	0.48	15.57	0.82		
1	0	1	CIRCULAR	0.1717	HDPE	1.22	0.08	2.12	0.14		
1	0	1	CIRCULAR	0.02095	HDPE	6.02	1.17	6.07	1.18		
1.75	0	1	CIRCULAR	0.09901	RCP	10.56	0.21	18.47	0.37		
1.5	0	1	CIRCULAR	0.01308	RCP	5.75	0.48	11.13	0.93		
1	0	1	CIRCULAR	0.05481	ABS	2.41	0.29	4.78	0.57		
1.5	0	1	CIRCULAR	0.01369	RCP	3.22	0.26	5.78	0.47		
1.5	0	1	CIRCULAR	0.01785	CMP	3.2	0.42	3.2	0.75		
2	0	1	CIRCULAR	0.02373	CMP	9.56	0.51	17.21	0.91		
1.5	0	1	CIRCULAR	0.02559	RCP	2.6	0.15	4.56	0.27		
2.5	0	1	CIRCULAR	0.02648	RCP	21.75	0.33	38.8	0.58		
2.5	0	1	CIRCULAR	0.03535	RCP	21.72	0.28	38.52	0.5		
2.5	0	1	CIRCULAR	0.00714	RCP	21.64	0.62	37.99	1.1		
2.5	0	1	CIRCULAR	0.00711	RCP	45.53	1.32	43.79	1.27		
3	0	1	CIRCULAR	0.02089	RCP	46.51	0.48	46.49	0.48		
1.5	0	1	CIRCULAR	0.00819	CMP	1.48	0.29	2.61	0.51		
1.5	0	1	CIRCULAR	0.00287	CMP	2.13	0.7	3.78	1.24		
1	3	1	RECT_CLOSED	-0.004	RCB	2.7	0.24	4.51	0.4		
1.5	0	1	CIRCULAR	0.03087	HDPE	3.72	0.2	6.14	0.33		
3.5	0	1	CIRCULAR	0.0312	CMP	0.06	0	0.09	0		
3.5	0	1	CIRCULAR	0.03948	RCP	11.45	0.06	20.43	0.1		
5.5	0	1	CIRCULAR	0.00689	RCP	42.05	0.15	68.41	0.25		
5.5	0	1	CIRCULAR	0.00689	RCP	184.26	0.66	295.24	1.06		
1.5	0	1	CIRCULAR	0.03258	RCP	3.39	0.18	6.56	0.35		
1	0	1	CIRCULAR	0.00581	ABS	0.58	0.21	0.86	0.32		
1	0	1	CIRCULAR	0.00402	ABS	3.28	1.45	4.92	2.18		
1	0	1	CIRCULAR	0.04015	ABS	5.02	0.7	4.75	0.67		
1.5	0	1	CIRCULAR	0.00851	RCP	7.64	0.79	9.25	0.95		
1.5	0	1	CIRCULAR	0.0111	HDPE	6.62	1.76	6.73	1.79		
1.5	0	1	CIRCULAR	0.01417	RCP	2.35	0.19	4.08	0.33		
1.5	0	1	CIRCULAR	0.05023	CMP	7.37	0.31	8.33	0.35		
2.5	0	1	CIRCULAR	0.01482	RCP	10.29	0.21	24.28	0.49		
1	0	1	CIRCULAR	0.01031	RCP	3.5	0.97	4.45	1.23		
1	0	1	CIRCULAR	0.01128	HDPE	4.58	1.21	4.62	1.22		
3	0	1	CIRCULAR	0.0586	RCP	0.97	0.01	1.61	0.01		
1.5	0	1	CIRCULAR	0.08646	RCP	15.7	0.51	28.2	0.91		
2	0	1	CIRCULAR	0.00692	RCP	10.31	0.55	18.69	0.99		
2	0	1	CIRCULAR	0.03404	RCP	18.53	0.44	33.11	0.79		
1	0	1	CIRCULAR	0.03487	RCP	21	0.5	37.26	0.88		
1.25	0	1	CIRCULAR	0.07551	ABS	1.58	0.16	2.82	0.29		
4	0	1	CIRCULAR	0.23812	CMP	0.48	0.02	0.81	0.03		
4	0	1	CIRCULAR	0.01979	RCP	33.52	0.17	61.6	0.3		
4	0	1	CIRCULAR	0.01982	RCP	33.6	0.17	61.71	0.31		
2	0	1	CIRCULAR	0.0128	CONC	4.13	0.06	6.81	0.09		
3	0	1	CIRCULAR	0.00692	RCP	15.28	0.28	27.54	0.5		
3	0	1	CIRCULAR	0.0085	RCP	15.27	0.25	27.46	0.45		
1.5	0	1	CIRCULAR	0.05279	RCP	1.59	0.07	2.84	0.12		
3	0	1	CIRCULAR	0.05562	RCP	17.35	0.11	31.42	0.2		
3	0	1	CIRCULAR	0.00673	RCP	21.28	0.39	39.21	0.72		
3	0	1	CIRCULAR	0.03092	RCP	23.53	0.2	43.24	0.37		
3.5	0	1	CIRCULAR	0.02696	RCP	23.36	0.14	41.45	0.25		
3	0	1	CIRCULAR	0.02342	RCP	28.93	0.15	52.93	0.28		
1	0	1	CIRCULAR	0.16796	RCP	0.12	0.01	0.18	0.01		
2	0	1	CIRCULAR	0.01787	RCP	9.36	0.31	16.47	0.54		
1	0	1	CIRCULAR	0.3433	RCP	0.28	0.01	0.45	0.02		
6	0	1	CIRCULAR	0.00529	RCP	20.64	0.07	56.36	0.18		
3.5	0	2	CIRCULAR	0.01888	RCP	187.16	0.68	254.56	0.92		
3.5	0	2	CIRCULAR	0.01451	RCP	116.96	0.48	183.26	0.76		
2.5	0	2	CIRCULAR	0.03771	RCP	18.94	0.12	29.07	0.18		
6	0	1	CIRCULAR	0.01415	RCP	103.63	0.21	207.96	0.41		

Pipe ID	Dimensions						2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap32
							(cfs)	(cfs)	(cfs)	(cfs)
1	2	0	1 CIRCULAR	0.0107	CMP	9.26	0.4	16.31	0.7	
2	1.5	0	1 CIRCULAR	0.07895	RCP	2.54	0.09	2.54	0.15	
3	4	0	1 CIRCULAR	0.01978	RCP	36.31	0.18	67.88	0.34	
4	4	0	1 CIRCULAR	0.01978	RCP	37.09	0.18	68.29	0.34	
5	1	0	1 CIRCULAR	0.04044	HDPE	3.39	0.47	4.41	0.62	
6	4	0	1 CIRCULAR	0.01978	RCP	40.47	0.2	76.13	0.38	
7	4.5	0	1 CIRCULAR	0.01947	RCP	180.58	0.66	311.15	1.13	
8	4.5	0	1 CIRCULAR	0.02089	RCP	180.48	0.63	311.21	1.09	
9	2	0	1 CIRCULAR	0.03843	RCP	1.18	0.03	2.03	0.05	
10	6	0	1 CIRCULAR	0.00764	RCP	185.65	0.5	325.33	0.88	
11	1.5	0	1 CIRCULAR	0.04813	HDPE	6.98	0.3	12.52	0.54	
12	2	0	1 CIRCULAR	0.01396	HDPE	10.27	0.38	18.42	0.69	
13	1	0	1 CIRCULAR	0.02166	CONC	3.27	0.62	4.63	0.88	
14	2	0	1 CIRCULAR	0.19098	HDPE	13.91	0.14	14.34	0.15	
15	1.5	0	1 CIRCULAR	0.00587	RCP	3.41	0.42	7.51	0.93	
16	1.5	0	1 CIRCULAR	0.0167	ABS	7.28	0.54	9.86	0.73	
17	1	0	1 CIRCULAR	0.00621	HDPE	1.27	0.45	2.24	0.8	
18	1	0	1 CIRCULAR	0.03881	HDPE	3.05	0.43	5.44	0.77	
19	3	0	1 CIRCULAR	0.06375	RCP	44.03	1.21	44.66	1.22	
20	1	0	1 CIRCULAR	0.0075	RCP	0.66	0.21	1.18	0.38	
21	2	0	1 CIRCULAR	0.0304	RCP	3.24	0.26	5.78	0.46	
22	1.5	0	1 CIRCULAR	0.07777	RCP	6.57	0.22	13.01	0.44	
23	2.5	0	1 CIRCULAR	0.05451	RCP	27.04	0.28	40.1	0.42	
24	2.5	0	1 CIRCULAR	0.03714	RCP	28.19	0.36	43.61	0.55	
25	1.5	0	1 CIRCULAR	0.01976	RCP	1	0.07	1.93	0.13	
26	2.5	0	1 CIRCULAR	0.08056	CONC	3.92	0.03	12.38	0.11	
27	2.5	0	1 CIRCULAR	0.00486	RCP	28.36	0.99	45.99	1.61	
28	4	0	1 CIRCULAR	0.04831	RCP	43.54	0.14	65.08	0.21	
29	4	0	1 CIRCULAR	0.00818	RCP	28.08	0.33	42.89	0.33	
30	6.5	0	1 CIRCULAR	0.00854	RCP	375.28	0.77	617.42	1.27	
31	1.5	0	1 CIRCULAR	0.11696	RCP	9.02	0.25	15.57	0.43	
32	2	0	1 CIRCULAR	0.29333	CMP	0.16	0	0.25	0	
33	6.5	0	1 CIRCULAR	0.00849	RCP	219.74	0.45	329.47	0.68	
34	6.5	0	1 CIRCULAR	0.01041	RCP	156.46	0.29	256.18	0.48	
35	6.5	0	1 CIRCULAR	0.01564	RCP	156.67	0.24	254.35	0.39	
36	6.5	0	1 CIRCULAR	0.00271	RCP	170.86	0.63	265.03	0.97	
37	3	9	1 RECT_CLOSED	0.03795	RCB	11.94	0.17	254.14	0.39	
38	3	9	1 RECT_CLOSED	0.00141	RCB	80.01	0.64	155.56	1.24	
39	6.5	0	1 CIRCULAR	0.00716	RCP	166.08	0.37	264.69	0.6	
40	2	0	1 CIRCULAR	0.05349	RCP	0.42	0.01	0.56	0.01	
41	2	0	1 CIRCULAR	0.16129	RCP	1.05	0.01	1.6	0.02	
42	6.5	0	1 CIRCULAR	0.0284	RCP	219.13	0.25	329.4	0.37	
43	6.5	0	1 CIRCULAR	0.03687	RCP	368.14	0.37	574.87	0.57	
44	4.5	0	1 CIRCULAR	0.00167	RCP	10.36	0.13	38.32	0.48	
45	4.5	0	1 CIRCULAR	0.00205	RCP	11.57	0.13	40.28	0.45	
46	3	0	1 CIRCULAR	0.00355	RCP	7.74	0.19	14.97	0.38	
47	2	0	1 CIRCULAR	0.013	HDPE	4.53	0.18	7.7	0.3	
48	2	0	1 CIRCULAR	0.01304	HDPE	4.53	0.18	7.69	0.3	
49	6.5	0	1 CIRCULAR	0.04507	HDPE	4.52	0.09	7.67	0.16	
50	6.5	0	1 CIRCULAR	0.01265	RCP	386.15	0.65	589.57	1	
51	2	0	1 CIRCULAR	0.00496	RCP	3.14	0.2	8.7	0.55	
52	4	0	1 CIRCULAR	0.0489	RCP	9.34	0.03	11.97	0.04	
53	1.5	0	1 CIRCULAR	0.01039	RCP	0.56	0.05	2.02	0.19	
54	4.5	0	1 CIRCULAR	0.00166	RCP	13.38	0.17	38.97	0.49	
55	4	0	1 CIRCULAR	0.01482	RCP	63.35	0.36	106.49	0.61	
56	4	0	1 CIRCULAR	0.31215	RCP	63.34	0.08	106.49	0.13	
57	2	0	1 CIRCULAR	0.03407	HDPE	3.46	0.08	5.66	0.14	
58	2.5	0	1 CIRCULAR	0.05257	RCP	29.11	0.31	49.03	0.52	
59	3	0	1 CIRCULAR	0.07351	RCP	32.15	0.18	47.56	0.26	
60	5	0	2 CIRCULAR	0.01172	RCP	24.04	0.04	49.96	0.09	
61	5	0	2 CIRCULAR	0.0071	RCP	199.05	0.45	352.08	0.8	
62	5	0	2 CIRCULAR	0.01882	RCP	263.28	0.37	496.96	0.7	
63	6	0	1 CIRCULAR	0.00941	RCP	310.9	0.76	462.45	1.13	
64	1.5	0	1 CIRCULAR	0.05896	RCP	13.35	0.52	22.38	0.88	
65	1	0	1 CIRCULAR	0.01495	ABS	0.78	0.18	1.27	0.29	
66	6	0	1 CIRCULAR	0.00877	RCP	316.91	0.8	495.78	1.25	

Pipe Size (D x H)	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap32	
							Qcon (2-year) (cfs)		Qcon (10-year) (cfs)		
1.5 x 2.5	1	0	1 CIRCULAR	0.05965	ABS	0.93	0.11	1.48	0.17		
1.5 x 2.5	1	0	1 CIRCULAR	0.00988	RCP	5.71	0.14	11.9	0.29		
1.5 x 2.5	1	0	1 CIRCULAR	0.04842	CMP	7.52	0.6	12.25	0.98		
1.5 x 3	1	0	1 CIRCULAR	0.07663	CMP	21.89	1.39	22.38	1.42		
1.5 x 3	4.6	0	1 CIRCULAR	0.00429	RCP	53.7	1.23	60.37	1.38		
2.5 x 2.5	0	0	1 CIRCULAR	0.03133	RCP	20.85	0.29	36.26	0.5		
2.5 x 2.5	0	0	1 CIRCULAR	0.02019	CMP	1.44	0.1	2.33	0.16		
2.5 x 2.5	0	0	1 CIRCULAR	0.03182	RCP	11.99	0.16	21.96	0.3		
2.5 x 2.5	0	0	1 CIRCULAR	0.02222	RCP	15.4	0.25	28.46	0.47		
2.5 x 2	0	0	1 CIRCULAR	0.02762	RCP	19.59	0.52	34.69	0.92		
2.5 x 2.5	0	0	1 CIRCULAR	0.02196	RCP	1.28	0.02	2.09	0.03		
1.5 x 2.5	0	0	1 CIRCULAR	0.01657	RCP	4.56	0.34	7.89	0.58		
2 x 2.5	0	0	1 CIRCULAR	0.01262	RCP	15.11	0.59	26.86	1.06		
1.5 x 2.5	0	0	1 CIRCULAR	0.08025	CMP	3.38	0.21	6.24	0.39		
3 x 3	0	0	1 CIRCULAR	0.02419	RCP	67.79	0.65	91.09	0.88		
3 x 3	0	0	1 CIRCULAR	0.05238	RCP	68.2	0.45	92.86	0.61		
3 x 5	0	0	1 CIRCULAR	0.00207	RCP	127.1	1.07	183.98	1.55		
1.25 x 2.5	0	0	1 CIRCULAR	0.10592	RCP	1.08	0.05	0.88	0.04		
5 x 5	0	0	1 CIRCULAR	0.01039	CMP	126.26	0.48	183.44	0.69		
2.5 x 2.5	0	0	1 CIRCULAR	0.00174	RCP	59.96	3.51	78.23	4.58		
2.5 x 3	0	0	1 CIRCULAR	0.02646	RCP	59.95	0.9	78.57	1.18		
3 x 3	0	0	1 CIRCULAR	0.03132	RCP	67.57	0.57	90.69	0.77		
3 x 3	0	0	1 CIRCULAR	0.04937	RCP	8.13	0.05	13.49	0.09		
1 x 1	0	0	1 CIRCULAR	0.07018	HDPE	0.96	0.1	1.52	0.16		
6.5 x 6.5	0	0	1 CIRCULAR	0.00966	RCP	317.33	0.62	486.52	0.94		
1 x 3	0	0	1 CIRCULAR	0.03732	HDPE	0.63	0.09	1.01	0.15		
3 x 3	0	0	1 CIRCULAR	0.00527	RCP	9.46	0.2	17.8	0.37		
5 x 5	0	0	1 CIRCULAR	0.01672	RCP	112.98	0.34	216.95	0.64		
3.5 x 3.5	0	0	1 CIRCULAR	0.55138	RCP	0.79	0	1.31	0		
6 x 6	0	0	1 CIRCULAR	0.02255	RCP	107.16	0.17	207.85	0.33		
2.5 x 2.5	0	0	1 CIRCULAR	0.05594	RCP	3.9	0.04	6.48	0.07		
2 x 2	0	0	1 CIRCULAR	0.07201	HDPE	3.65	0.06	6.06	0.1		
2.5 x 2.5	0	0	1 CIRCULAR	0.00685	RCP	6.78	0.2	14.89	0.44		
2.75 x 2.75	0	0	1 CIRCULAR	0.02432	CMP	15.27	0.34	29.44	0.66		
1.5 x 2.5	0	0	1 CIRCULAR	0.04093	RCP	10.27	0.48	22.81	1.07		
1.5 x 3	0	0	1 CIRCULAR	0.16428	CMP	3.43	0.15	6.14	0.27		
5 x 5	0	0	1 CIRCULAR	0.00306	RCP	79.78	0.55	174.84	1.21		
1.5 x 2.5	0	0	1 CIRCULAR	0.05426	RCP	6.09	0.25	10.25	0.42		
1.5 x 2.5	0	0	1 CIRCULAR	0.05762	CMP	2.8	0.2	4.45	0.33		
1 x 1	0	0	1 CIRCULAR	0.0673	CONC	0.7	0.11	1.2	0.19		
2.5 x 2.5	0	0	1 CIRCULAR	0.03594	CONC	10.28	0.14	23.28	0.31		
4 x 4	0	0	1 CIRCULAR	0.03621	RCP	119.53	0.44	165.45	0.61		
2 x 2	0	0	1 CIRCULAR	0.06139	RCP	9.23	0.16	18.73	0.33		
2 x 2	0	0	1 CIRCULAR	0.1068	RCP	0.17	0	0.27	0		
3 x 3	0	0	1 CIRCULAR	0.01235	CONC	8.96	0.12	14.77	0.2		
1.5 x 2.5	0	0	1 CIRCULAR	0.04998	RCP	0.24	0.01	0.43	0.02		
3 x 3	0	0	1 CIRCULAR	0.20008	RCP	2.67	0.01	4.42	0.01		
2.5 x 2.5	0	0	1 CIRCULAR	0.07002	CONC	23.12	0.21	31.21	0.29		
2.5 x 2.5	0	0	1 CIRCULAR	0.04492	CONC	21.65	0.25	28.73	0.33		
2.5 x 2.5	0	0	1 CIRCULAR	0.02864	RCP	16.38	0.24	29.29	0.42		
1.5 x 2.5	0	0	1 CIRCULAR	0.01469	HDPE	4.01	0.32	6.87	0.54		
2.5 x 2.5	0	0	1 CIRCULAR	0.02426	RCP	24.53	0.38	41.21	0.65		
1.5 x 2.5	0	0	1 CIRCULAR	0.10623	RCP	4.3	0.13	7.73	0.23		
2.5 x 2.5	0	0	1 CIRCULAR	0.04233	RCP	24.28	0.29	40.64	0.48		
1.5 x 2.5	0	0	1 CIRCULAR	0.08841	RCP	8.48	0.27	14.99	0.48		
1.5 x 2.5	0	0	1 CIRCULAR	0.08949	RCP	11.01	0.35	19.56	0.62		
1.5 x 2.5	0	0	1 CIRCULAR	0.07287	RCP	7.19	0.25	12.77	0.45		
3 x 3	0	0	1 CIRCULAR	0.01118	RCP	24.09	0.34	40.91	0.58		
3 x 3	0	0	1 CIRCULAR	0.00616	RCP	23.5	0.45	40.21	0.77		
3 x 3	0	0	1 CIRCULAR	0.01387	RCP	31.04	0.4	44.05	0.56		
2.5 x 2.5	0	0	1 CIRCULAR	0.01682	RCP	19.18	0.36	33.81	0.64		
1.5 x 2.5	0	0	1 CIRCULAR	0.10761	RCP	19.02	0.55	33.66	0.98		
1.5 x 3	0	0	1 CIRCULAR	0.01317	RCP	4.47	0.37	7.35	0.61		
2.5 x 2.5	0	0	1 CIRCULAR	0.07204	RCP	16.04	0.15	26.78	0.24		
1.5 x 3	0	0	1 CIRCULAR	0.04634	CMP	2.46	0.2	4.39	0.36		
3 x 3	0	0	1 CIRCULAR	0.03611	RCP	42.13	0.33	71.86	0.57		

Dimensions										2-year		10-year	
D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Qcon vs Qcap3	Q _{con} (10-year) (cfs)	Qcon vs Qcap32				
3	0	1	CIRCULAR	0.33922	CMP	19.27	0.09	33.52	0.16				
4	0	1	CIRCULAR	0.02456	RCP	78.07	0.35	131.69	0.59				
3	0	1	CIRCULAR	0.04727	RCP	44.03	0.3	84.98	0.59				
1.5	0	1	CIRCULAR	0.10367	RCP	5.26	0.16	8.96	0.26				
1.5	0	1	CIRCULAR	0.07684	RCP	6.52	0.22	11.27	0.39				
1.5	0	1	CIRCULAR	0.02637	RCP	6.77	0.4	11.67	0.68				
2	0	1	CIRCULAR	0.02899	RCP	3.5	0.09	5.69	0.15				
2	0	1	CIRCULAR	0.00558	RCP	7.04	0.42	12.13	0.72				
2	0	1	CIRCULAR	0.02137	RCP	7.53	0.23	12.1	0.37				
1	0	1	CIRCULAR	0.05591	AC	3.7	0.44	6.79	0.81				

ID	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Qcon vs Qcap3	Q _{con} (10-year) (cfs)	Qcon vs Qcap3 (10-year)	
1	1	0	1	CIRCULAR	0.51503	CMP	0	0	0	0	
1	30	20	1	RECT_OPEN	0.00662		0	0	0	0	
68	5	16	1	RECT_CLOSED	0.00155	RCB	617.05	1.12	923.17	1.67	
69	5	16	1	RECT_CLOSED	0.0104		623.55	0.44	844.35	0.59	
187	2	0	1	CIRCULAR	0.13435	RCP	8.05	0.1	47.38	0.57	
	5.5	0	1	CIRCULAR	0.01427	RCP	144.83	0.36	232.19	0.58	
	0	0	1	IRREGULAR	0.09333	Earthen	4.81	0	8.3	0	
	4	0	1	CIRCULAR	0.08121	RCP	0	0	0	0	
1	1	3	1	PARABOLIC	0.27746		1.78	0.02	54.93	0.53	
3	8	1	RECT_OPEN	0.28107		6.94	0.02	11.87	0.03		
3.5	0	3	CIRCULAR	0.03785		289.03	0.49	408.32	0.7		
30	30	0	1	RECT_OPEN	0.00484		0	0	0	0	
4	8	1	RECT_CLOSED	0.01601	RCB	295.61	0.53	408	0.73		
4	8	1	RECT_CLOSED	0.05066	RCB	296.94	0.3	408.32	0.41		
30	30	1	RECT_OPEN	0.3131		43.09	0	54.1	0		
30	30	1	RECT_OPEN	0.76122		2.01	0	3.34	0		
30	30	1	RECT_OPEN	0.01627		260.03	0.01	349.84	0.01		
30	30	1	RECT_OPEN	0.0104		0	0	0	0		
1.5	0	1	CIRCULAR	0.01571	RCP	1.48	0.11	2.8	0.21		
3	0	1	CIRCULAR	0.2311	RCP	5.2	0.02	8.27	0.03		
2	20	1	TRAPEZOIDAL	0.01244		25.02	0.13	41.06	0.21		
3.5	0	1	CIRCULAR	0.02399	RCP	9.17	0.06	16.17	0.1		
5	0	1	CIRCULAR	0.00681	RCB	117.73	0.55	205.8	0.96		
2	0	1	CIRCULAR	0.0273	CMP	14.86	0.4	27.16	0.73		
2	0	1	CIRCULAR	0.0271	RCP	14.63	0.39	25.99	0.7		
4	0	1	CIRCULAR	0.00832	RCP	45.24	0.35	77.51	0.59		
1.5	0	1	CIRCULAR	0.08918	RCP	9.73	0.31	18.75	0.6		
1	0	1	CIRCULAR	0.10366	Other	0.01	0	0.01	0		
1	0	1	CIRCULAR	0.10304	Other	5.01	0.34	7.89	0.53		
1	0	1	CIRCULAR	0.6801	Other	2.81	0.07	4.46	0.12		
2	0	1	CIRCULAR	0.07777	CMP	8.24	0.24	14.56	0.43		
2	0	1	CIRCULAR	0.06256	Concrete	0.71	0.02	1.26	0.03		
1	3	1	PARABOLIC	0.01685	Other	0.69	0.03	1.23	0.05		
3	0	1	CIRCULAR	0.01072	Concrete	11.34	0.16	19.95	0.29		
3	0	1	CIRCULAR	0.00597	Concrete	15.43	0.3	26.86	0.52		
1	3	1	PARABOLIC	0.13008	Other	15.79	0.22	27.82	0.39		
2	0	1	CIRCULAR	0.0109	Other	15.62	0.66	26.7	1.13		
2	0	1	CIRCULAR	0.00912	Concrete	0.59	0.02	1.47	0.05		
1	3	1	PARABOLIC	0.03543	Other	0.59	0.02	1.21	0.03		
2	0	1	CIRCULAR	0.00314	CMP	2.51	0.37	3.92	0.57		
2	0	1	CIRCULAR	0.03297	CONC	0	0	0	0		
2	0	1	CIRCULAR	0.05453	CONC	0	0	0	0		
3.5	0	1	CIRCULAR	0.02442	RCP	12.78	0.08	22.17	0.14		
2	0	1	CIRCULAR	0.01107	CONC	7.28	0.31	12.58	0.53		
2	0	1	CIRCULAR	0.00682	CONC	2.66	0.14	4.4	0.24		
2	0	1	CIRCULAR	0.00684	CONC	2.95	0.16	4.82	0.26		
2	0	1	CIRCULAR	0.00871	CONC	2.58	0.12	4.28	0.2		
2	0	1	CIRCULAR	0.00682	CONC	5.47	0.29	8.96	0.48		
2	0	1	CIRCULAR	0.01281	CONC	7.69	0.3	13.2	0.52		
1	0	1	CIRCULAR	0.00788	CONC	0.93	0.29	1.47	0.46		
2.5	0	1	CIRCULAR	0.00683	CONC	14.19	0.42	23.93	0.71		
1.5	0	1	CIRCULAR	0.08322	CONC	1.09	0.04	1.69	0.06		
2.5	0	3	CIRCULAR	0.01994	RCP	45.23	0.26	77.41	0.45		
1.5	0	1	CIRCULAR	0.00648	CONC	1.61	0.19	2.59	0.31		
2.5	0	1	CIRCULAR	0.00759	CONC	18.71	0.52	30.4	0.85		
2	0	1	CIRCULAR	0.07643	CONC	1.72	0.03	2.68	0.04		
2	0	1	CIRCULAR	0.00619	CONC	1.21	0.07	1.87	0.1		
2	0	1	CIRCULAR	0.09982	CONC	28.83	0.4	50.59	0.71		
3.5	0	1	CIRCULAR	0.00565	CONC	22.15	0.29	34.27	0.45		
3.5	0	1	CIRCULAR	0.00683	CONC	47.66	0.57	73.4	0.88		
2	0	1	CIRCULAR	0.0778	CONC	13.08	0.21	25.15	0.4		
2	0	1	CIRCULAR	0.3288	CONC	13.1	0.1	25.55	0.2		
2	0	1	CIRCULAR	0.00683	CONC	13.1	0.1	25.55	0.2		

Pipe	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3	
e	2.5	0	1	CIRCULAR	0.03688	CONC	36.12	0.46	71.61	0.91	
	1.5	0	1	CIRCULAR	0.49848	CONC	0	0	0	0	
e	2	0	1	CIRCULAR	0.1602	RCP	12.51	0.14	21.86	0.24	
	2	0	1	CIRCULAR	0.11358	RCP	13.6	0.18	23.96	0.31	
e	4	0	1	CIRCULAR	0.0126	RCP	52.51	0.33	92.91	0.58	
	5	0	1	CIRCULAR	0.00215	RCP	54.06	0.45	94.77	0.79	
e	2	0	1	CIRCULAR	0.23773	CONC	1.63	0.01	2.79	0.03	
	2	0	1	CIRCULAR	0.26307	CONC	0.91	0.01	1.52	0.01	
e	0	0	1	IRREGULAR	0.49541	Other	0	0	0	0	
	2	0	1	CIRCULAR	0.28416	CONC	1.07	0.01	1.83	0.02	
e	1.5	0	1	CIRCULAR	0.01915	RCP	1.31	0.09	2.33	0.16	
	1.5	0	1	CIRCULAR	0.08175	RCP	2.56	0.09	4.48	0.15	
e	1.5	0	1	CIRCULAR	0.0997	RCP	2.55	0.08	4.46	0.13	
	1.5	0	1	CIRCULAR	0.03039	RCP	2.51	0.14	4.4	0.24	
e	1.5	0	1	CIRCULAR	0.01047	RCP	3.21	0.3	5.53	0.51	
	1.5	0	1	CIRCULAR	0.01185	RCP	3.46	0.3	5.91	0.52	
e	2.75	0	1	CIRCULAR	0.02737	RCP	20.59	0.24	34.04	0.39	
	1.5	0	1	CIRCULAR	0.02159	RCP	6.4	0.41	11.01	0.71	
e	1.5	0	1	CIRCULAR	0.12254	RCP	1.26	0.03	2.11	0.06	
	1.5	0	1	CIRCULAR	0.00459	RCP	5.43	0.76	8.78	1.23	
e	1.5	0	1	CIRCULAR	0.05928	RCP	12.79	0.5	20.74	0.81	
	1.5	0	1	CIRCULAR	0.00862	RCP	11.88	1.22	15.24	1.56	
e	1.5	0	1	CIRCULAR	0.02045	RCP	12.92	0.86	15.99	1.06	
	1.5	0	1	CIRCULAR	0.0199	RCP	12.93	0.87	14.86	1	
e	1.5	0	1	CIRCULAR	0.00852	RCP	0.55	0.06	3.5	0.36	
	1.5	0	1	CIRCULAR	0.08713	RCP	1.12	0.04	2.99	0.1	
e	1.5	0	1	CIRCULAR	0.01599	RCP	2.3	0.17	4.16	0.31	
	3.5	0	1	CIRCULAR	0.02105	RCP	112.84	0.77	157.28	1.08	
e	1.5	0	1	CIRCULAR	0.01148	RCP	4.64	0.41	9.08	0.81	
	1.5	0	1	CIRCULAR	0.08919	RCP	18.4	0.59	22.31	0.71	
e	1.5	0	1	CIRCULAR	0.02806	RCP	20.09	1.14	25.42	1.44	
	2	0	1	CIRCULAR	0.28995	RCP	20.99	0.17	27.07	0.22	
e	1	3	1	PARABOLIC	0.14718	Concrete	1.65	0.03	2.26	0.04	
	2.5	0	1	CIRCULAR	0.0249	CONC	23.94	0.37	35.02	0.54	
e	1.5	0	1	CIRCULAR	0.00374	CONC	1.61	0.25	2.69	0.42	
	1.5	0	1	CIRCULAR	0.25101	CONC	1.93	0.04	3.15	0.06	
e	2	0	1	CIRCULAR	0.07585	CONC	12.79	0.21	25.03	0.4	
	2	0	1	CIRCULAR	0.01	RCP	1.94	0.09	3.25	0.14	
e	2	0	1	CIRCULAR	0.00913	RCP	4.1	0.19	6.62	0.31	
	2	0	1	CIRCULAR	0.08003	RCP	2.26	0.04	3.56	0.06	
e	2	0	1	CIRCULAR	0.06722	RCP	2.27	0.04	3.57	0.06	
	2	0	1	CIRCULAR	0.50682	RCP	0	0	0.42	0	
e	2	0	1	CIRCULAR	0.06722	RCP	2.02	0.03	3.18	0.05	
	2	0	1	CIRCULAR	0.06722	RCP	0.78	0.01	1.22	0.02	
e	2	0	1	CIRCULAR	0.04271	RCP	0.53	0.01	0.85	0.02	
	2	0	1	CIRCULAR	0.05805	RCP	0.69	0.01	1.1	0.02	
e	3	0	1	CIRCULAR	0.01895	RCP	4.9	0.05	8.36	0.09	
	4	0	1	CIRCULAR	0.0126	CONC	63.83	0.4	86.94	0.54	
e	2	0	1	CIRCULAR	0.05673	CONC	0.26	0	0.41	0.01	
	2	0	1	CIRCULAR	0.0063	CONC	2.73	0.15	4.44	0.25	
e	2	0	1	CIRCULAR	0.00813	CONC	0.32	0.02	0.5	0.02	
	2	0	1	CIRCULAR	0.28118	CONC	0.31	0	0.5	0	
e	2	0	1	CIRCULAR	0.0076	CONC	1.77	0.09	2.87	0.15	
	2	0	1	CIRCULAR	0.03135	CONC	2.04	0.05	3.29	0.08	
e	2	0	1	CIRCULAR	0.0303	CONC	2.6	0.07	4.19	0.11	
	2	0	1	CIRCULAR	0.00764	CONC	2.19	0.11	3.59	0.18	
e	2	0	1	CIRCULAR	0.00547	CONC	6.39	0.38	10.54	0.63	
	2	0	1	CIRCULAR	0.04885	CONC	6.35	0.13	10.47	0.21	
e	2	0	1	CIRCULAR	0.0155	RCP	1.12	0.04	1.87	0.07	
	4	0	1	CIRCULAR	0.05904	CONC	48	0.14	85.82	0.25	
e	2	0	1	CIRCULAR	0.34511	CONC	10.53	0.08	17.56	0.13	
	2	0	1	CIRCULAR	0.00922	CONC	9.97	0.46	16.64	0.77	
e	0	0	0	Other	0.00000	Other	0	0	0	0	
	0	0	0	Other	0.00000	Other	0	0	0	0	

Pipe	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3	
1	4	0	1	CIRCULAR	0.00596	RCP	120.63	1.09	162.1	1.46	
	0	0	1	IRREGULAR	0.26594	Other	0.04	0	0.06	0	
	1	3	1	PARABOLIC	0.17654	Other	0.1	0	0.19	0	
	1	3	1	PARABOLIC	0.03167	Other	1.05	0.04	1.67	0.06	
2	0	0	1	CIRCULAR	0.01884	CONC	0.4	0.01	0.63	0.02	
	2	0	1	CIRCULAR	0.03439	CONC	1.49	0.04	2.36	0.06	
	2	0	1	CIRCULAR	0.01155	CONC	1.97	0.08	3.12	0.13	
	2	0	1	CIRCULAR	0.00646	CONC	0.28	0.02	0.43	0.02	
3	4	0	1	CIRCULAR	0.05241	CONC	43.09	0.13	54.1	0.16	
	2	0	1	CIRCULAR	0.06713	CONC	1.39	0.02	2.25	0.04	
	4	0	1	CIRCULAR	0.04016	CONC	43.11	0.15	54.1	0.19	
	2	0	1	CIRCULAR	0.27741	CONC	41.88	0.35	52.14	0.44	
4	2	0	1	CIRCULAR	0.07911	CONC	1.14	0.02	1.75	0.03	
	2	0	1	CIRCULAR	0.02972	CONC	40.11	1.03	49.68	1.27	
	2	0	1	CIRCULAR	0.15393	CONC	0.48	0.01	0.75	0.01	
	2	0	1	CIRCULAR	0.08633	CONC	0.48	0.01	0.74	0.01	
5	2	0	1	CIRCULAR	0.02973	CONC	40.15	1.03	49.68	1.27	
	2	0	1	CIRCULAR	0.01295	CONC	0.32	0.01	3.72	0.14	
	2	0	1	CIRCULAR	0.15413	CONC	3.41	0.04	5.79	0.07	
	2	0	1	CIRCULAR	0.03219	CONC	3.42	0.08	5.79	0.14	
6	2	0	1	CIRCULAR	0.02973	CONC	36.19	0.93	45.47	1.17	
	2	0	1	CIRCULAR	0.02972	CONC	3.7	0.09	6.51	0.17	
	2.5	0	1	CIRCULAR	0.045	CONC	30.77	0.35	50.48	0.58	
	2.5	0	1	CIRCULAR	0.03859	CONC	1.66	0.02	2.8	0.03	
7	2	0	1	CIRCULAR	0.00554	CONC	3.91	0.23	7.66	0.45	
	2	0	1	CIRCULAR	0.00355	CONC	3.9	0.29	7.65	0.57	
	1	0	1	CIRCULAR	0.00272	CONC	4.03	2.17	6.57	3.53	
	1	0	1	CIRCULAR	0.02845	HDPE	1.34	0.22	2.3	0.38	
8	2	0	1	CIRCULAR	0.00117	CONC	4.31	0.56	6.73	0.87	
	2	0	1	CIRCULAR	0.00117	CONC	4.56	0.59	6.87	0.89	
	2	0	1	CIRCULAR	0.0333	CONC	9.28	0.22	15.67	0.38	
	2	0	1	CIRCULAR	0.00117	CONC	12.77	1.65	15.07	1.94	
9	2.5	0	1	CIRCULAR	0.00117	CONC	21.43	1.53	31.33	2.23	
	2.5	0	1	CIRCULAR	0.22562	CONC	8.79	0.05	15.65	0.08	
	2.5	0	1	CIRCULAR	0.00514	CONC	6	0.2	10.68	0.36	
	2.5	0	1	CIRCULAR	0.00118	CONC	22.33	1.59	33.1	2.35	
10	2.5	0	1	CIRCULAR	0.00118	CONC	22.48	1.6	33.39	2.37	
	1	0	1	CIRCULAR	0.00117	CONC	23.37	1.67	32.77	2.33	
	1.5	0	1	CIRCULAR	0.03128	RCP	4.5	0.24	7.4	0.4	
	2.5	0	1	CIRCULAR	0.00118	CONC	27.31	1.94	37.22	2.65	
11	4.5	0	1	CIRCULAR	0.00118	CONC	155.04	2.3	226.08	3.35	
	4.5	0	1	CIRCULAR	0.00117	CONC	178.42	2.65	243.4	3.62	
	2	0	1	CIRCULAR	0.01145	CONC	0.56	0.02	0.91	0.04	
	2	0	1	CIRCULAR	0.01325	CONC	0.66	0.03	1.08	0.04	
12	2	0	1	CIRCULAR	0.16198	CONC	0.81	0.01	1.31	0.01	
	2	0	1	CIRCULAR	0.0143	CONC	0.48	0.02	0.77	0.03	
	2	0	1	CIRCULAR	0.00604	CONC	0.52	0.03	0.84	0.05	
	1.5	0	1	CIRCULAR	0.27246	RCP	0.05	0	0.1	0	
13	2.5	0	1	CIRCULAR	0.08137	RCP	2.48	0.02	4.64	0.04	
	2.5	0	1	CIRCULAR	0.14974	CONC	16.74	0.11	30.43	0.19	
	2	0	1	CIRCULAR	0.0177	RCP	13.52	0.45	23.67	0.79	
	0	0	1	IRREGULAR	0.11937	Concrete	3.18	0	5.22	0	
14	4	0	1	CIRCULAR	0.03075	CONC	0	0	0	0	
	2	0	1	CIRCULAR	0.04315	RCP	11.01	0.23	19.41	0.41	
	2	0	1	CIRCULAR	0.11215	RCP	19.48	0.26	34.82	0.46	
	6	0	1	CIRCULAR	0.00902	RCP	103.69	0.26	203.71	0.51	
15	0.5	6	1	TRIANGULAR	0.00689	CONC	0.29	0.05	0.72	0.13	
	4	0	1	CIRCULAR	0.01009	RCP	60.46	0.42	101.98	0.71	
	1	3	1	PARABOLIC	0.07516	Concrete	0.5	0.02	0.62	0.02	
	2	0	1	CIRCULAR	0.01528	RCP	12.94	0.46	22.72	0.81	
16	2	0	1	CIRCULAR	0.36589	RCP	12.95	0.09	22.74	0.17	
	2	0	1	CIRCULAR	0.31957	RCP	12.95	0.1	22.73	0.18	
	0	0	1	CIRCULAR	0.00000	CONC	0	0	0	0	
	0	0	1	CIRCULAR	0.00000	CONC	0	0	0	0	

Pipe Size	Dimensions						2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3
3	3	0	1 CIRCULAR	0.01035	CONC	24.74	0.36	41.75	0.62	
3	3	0	1 CIRCULAR	0.03263	RCP	50.65	0.42	85.47	0.71	
2.5	0	0	1 CIRCULAR	0.14147	RCP	50.7	0.33	85.5	0.55	
2.5	0	0	1 CIRCULAR	0.04496	RCP	48.3	0.56	81.54	0.94	
1.5	0	0	1 CIRCULAR	0.06107	RCP	0.62	0.02	0.98	0.04	
1.5	0	0	1 CIRCULAR	0.02665	RCP	3.35	0.2	5.76	0.34	
2	0	0	1 CIRCULAR	0.00693	RCP	1.58	0.08	2.66	0.14	
1.5	0	0	1 CIRCULAR	0.00944	RCP	9.81	0.96	17.64	1.73	
1.5	0	0	1 CIRCULAR	0.033	RCP	2.21	0.12	3.9	0.2	
1.5	0	0	1 CIRCULAR	0.04284	RCP	3.1	0.14	5.45	0.25	
1.5	0	0	1 CIRCULAR	0.06509	RCP	9.82	0.37	17.65	0.66	
1.5	0	0	1 CIRCULAR	0.0756	RCP	0.62	0.02	0.98	0.03	
1.5	0	0	1 CIRCULAR	0.01109	RCP	0.75	0.07	1.22	0.11	
1.5	0	0	1 CIRCULAR	0.01744	RCP	5.06	0.36	8.73	0.63	
1.5	0	0	1 CIRCULAR	0.0543	RCP	4.91	0.2	8.85	0.36	
1.5	0	0	1 CIRCULAR	0.05521	RCP	1.63	0.07	2.6	0.11	
2	0	0	1 CIRCULAR	0.05533	RCP	24.63	0.46	42.06	0.79	
1.5	0	0	1 CIRCULAR	0.03164	RCP	2.23	0.12	3.92	0.21	
2	0	0	1 CIRCULAR	0.07428	RCP	9.69	0.16	16.36	0.27	
2.5	0	0	1 CIRCULAR	0.03291	RCP	46.6	0.63	78.76	1.06	
1.5	0	0	1 CIRCULAR	0.06934	RCP	1.37	0.05	2.19	0.08	
1.5	0	0	1 CIRCULAR	0.16109	RCP	1.4	0.03	2.38	0.06	
1.5	0	0	1 CIRCULAR	0.08181	RCP	9.1	0.3	15.85	0.53	
1.5	0	0	1 CIRCULAR	0.34974	RCP	12.29	0.2	21.76	0.35	
1.5	0	0	1 CIRCULAR	0.05659	RCP	3.1	0.12	5.45	0.22	
1.5	0	0	1 CIRCULAR	0.08591	RCP	2.24	0.07	3.93	0.13	
1.5	0	0	1 CIRCULAR	0.03075	RCP	2.21	0.12	3.9	0.21	
2.5	0	0	1 CIRCULAR	0.01501	RCP	37.03	0.74	63.15	1.26	
2.5	0	0	1 CIRCULAR	0.02163	RCP	37.58	0.62	63.89	1.06	
1.5	0	0	1 CIRCULAR	0.0869	RCP	4.98	0.16	8.82	0.28	
1.5	0	0	1 CIRCULAR	0.01913	RCP	4.93	0.34	8.82	0.61	
1.5	0	0	1 CIRCULAR	0.0049	RCP	2.75	0.37	4.94	0.67	
2	0	0	1 CIRCULAR	0.04397	RCP	12.98	0.27	22.1	0.47	
1.5	0	0	1 CIRCULAR	0.07376	RCP	4.18	0.15	7.14	0.25	
1.5	0	0	1 CIRCULAR	0.02315	RCP	2.22	0.14	3.91	0.24	
1.5	0	0	1 CIRCULAR	0.03348	RCP	2.21	0.11	3.9	0.2	
2	0	0	1 CIRCULAR	0.05196	RCP	24.63	0.48	41.83	0.81	
2	0	0	1 CIRCULAR	0.05642	RCP	11.45	0.21	19.59	0.36	
1.5	0	0	1 CIRCULAR	0.47787	RCP	1.18	0.02	1.88	0.03	
0	0	0	1 IRREGULAR	0.06202	Earthen	23.12	0	30.17	0	
0	0	0	1 IRREGULAR	0.02075	Earthen	25.75	0	36.79	0	
0	0	0	1 IRREGULAR	0.01689	Earthen	24.28	0	31.47	0	
0	0	0	1 IRREGULAR	0.15145	Earthen	0.27	0	0.43	0	
0	0	0	1 IRREGULAR	0.17542	Earthen	4.25	0	7.89	0	
0	0	0	1 IRREGULAR	0.28537	Earthen	3.39	0	6.3	0	
0	0	0	1 IRREGULAR	0.17845	Earthen	20.21	0	22	0	
2	0	0	1 CIRCULAR	0.127	RCP	1.28	0.02	2.04	0.03	
2.5	0	0	1 CIRCULAR	0.02463	RCP	25.76	0.4	34.08	0.53	
2.5	0	0	1 CIRCULAR	0.00989	RCP	25.79	0.63	34.12	0.84	
2.5	0	0	1 CIRCULAR	0.03491	RCP	25.66	0.33	33.95	0.44	
1.5	0	0	1 CIRCULAR	0.01894	RCP	1.97	0.14	3.55	0.25	
1.5	3	0	1 PARABOLIC	0.03062	Concrete	0	0	0	0	
1.5	0	0	1 CIRCULAR	0.01969	RCP	2.42	0.16	4.26	0.29	
1.5	0	0	1 CIRCULAR	0.24242	RCP	4.25	0.08	7.89	0.15	
1.5	0	0	1 CIRCULAR	0.02704	RCP	4.07	0.24	7.61	0.44	
1.5	0	0	1 CIRCULAR	0.0339	RCP	3.4	0.04	1.21	0.06	
1.5	0	0	1 CIRCULAR	0.15238	RCP	0.78	0.08	6.32	0.15	
1.5	0	0	1 CIRCULAR	0.01441	RCP	0.6	0.05	0.92	0.07	
1.5	0	0	1 CIRCULAR	0.01153	RCP	19.33	1.71	19.77	1.75	
1.5	0	0	1 CIRCULAR	0.06287	RCP	0.3	0.01	0.47	0.02	
1.5	3	0	1 PARABOLIC	0.01316	Concrete	0.57	0.03	0.89	0.04	
1.5	0	0	1 CIRCULAR	0.02156	RCP	19.7	1.28	20.02	1.3	
1.5	0	0	1 CIRCULAR	0.02156	RCP	19.7	1.28	20.02	1.3	

Pipe	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3	
1	1.5	0	1	CIRCULAR	0.01689	RCP	20.21	1.48	22	1.61	
	1.5	3	1	PARABOLIC	0.01841	Concrete	1.06	0.04	2.16	0.09	
2	2	0	1	IRREGULAR	-0.17256	Earthen	0	0	0	0	
	1.5	0	1	CIRCULAR	0.0145	RCP	15.25	1.21	16.99	1.34	
2	2	0	1	CIRCULAR	0.00792	RCP	1.3	0.06	2.65	0.13	
	1.5	0	1	CIRCULAR	0.00825	RCP	7.66	0.8	11.51	1.21	
1.5	1.5	0	1	CIRCULAR	0.0085	RCP	10.05	1.04	11.29	1.17	
	1.5	0	1	CIRCULAR	0.023	RCP	2.6	0.16	5.65	0.35	
1.5	1.5	0	1	CIRCULAR	0.00889	RCP	4.36	0.44	9.3	0.94	
	1.5	0	1	CIRCULAR	0.04459	RCP	4.78	0.22	8.19	0.37	
1.5	1.5	0	1	CIRCULAR	0.0321	RCP	1.73	0.09	2.98	0.16	
	1.5	0	1	CIRCULAR	0.03202	RCP	1.1	0.06	1.89	0.1	
1.5	1.5	0	1	CIRCULAR	0.02974	RCP	2.8	0.15	4.81	0.27	
	1.5	0	1	CIRCULAR	0.13965	RCP	0.53	0.01	1.99	0.05	
1.5	1.5	0	1	CIRCULAR	0.02338	RCP	0.62	0.04	1.09	0.07	
	1.5	0	1	CIRCULAR	0.06495	RCP	2.84	0.11	4.54	0.17	
1.5	1.5	0	1	CIRCULAR	0.11492	RCP	0.7	0.02	1.51	0.04	
	1.5	0	1	CIRCULAR	0.05558	RCP	21.09	0.85	24.41	0.99	
1.5	1.5	0	1	CIRCULAR	0.03617	RCP	3.29	0.16	6.34	0.32	
	6	0	1	CIRCULAR	0.00788	RCP	180.98	0.48	312.42	0.83	
1	1	0	1	CIRCULAR	0.12586	RCP	0.64	0.05	1.06	0.08	
	1.5	0	1	CIRCULAR	0.01289	RCP	13.02	1.09	14.92	1.25	
1.5	1.5	0	1	CIRCULAR	0.01166	RCP	11.85	1.04	13.91	1.23	
	1.5	0	1	CIRCULAR	0.04832	RCP	1.11	0.05	2.16	0.09	
1.5	1.5	0	1	CIRCULAR	0.02709	RCP	3.29	0.19	6.1	0.35	
	1.5	0	1	CIRCULAR	0.08051	RCP	4.39	0.15	7.99	0.27	
1.5	1.5	0	1	CIRCULAR	0.22803	RCP	0.56	0.01	0.95	0.02	
	1.5	0	1	CIRCULAR	0.00923	RCP	9.24	0.92	11.71	1.16	
1.5	1.5	0	1	CIRCULAR	0.12857	RCP	0.99	0.03	1.83	0.05	
	1.5	0	1	CIRCULAR	0.07572	RCP	0.99	0.03	1.81	0.06	
1.5	1.5	0	1	CIRCULAR	0.15911	RCP	1.37	0.03	2.27	0.05	
	2.5	0	1	CIRCULAR	0.11242	CONC	3.79	0.03	9.88	0.07	
1.5	1.5	0	1	CIRCULAR	0.0122	RCP	12.41	1.07	14.31	1.23	
	1.5	0	1	CIRCULAR	0.16693	RCP	4.86	0.11	8	0.19	
1.5	3	1	PARABOLIC	0.02936	Concrete	0	0	0	0		
	1.5	3	1	PARABOLIC	0.02817	Concrete	0	0	0	0	
1.5	1.5	3	1	PARABOLIC	0.01189	Concrete	0	0	0	0	
	1.5	3	1	PARABOLIC	0.04384	Concrete	0	0	0	0	
1.5	1.5	3	1	PARABOLIC	0.02529	Concrete	0	0	0	0	
	1.5	3	1	PARABOLIC	0.03361	Concrete	0	0	0	0	
1.5	1.5	3	1	PARABOLIC	0.02587	Concrete	0	0	0	0	
	1.5	3	1	PARABOLIC	0.02739	Concrete	0	0	0	0	
2.5	2.5	0	1	CIRCULAR	0.0872	CONC	6.84	0.06	13.16	0.11	
	1.5	3	1	PARABOLIC	0.31866	Concrete	0	0	0	0	
1.5	1.5	3	1	PARABOLIC	0.09845	Concrete	0.57	0.01	0.89	0.02	
	1.5	3	1	PARABOLIC	0.10003	Concrete	1.05	0.02	2.15	0.04	
1.5	1.5	3	1	PARABOLIC	0.01024	Concrete	1.05	0.06	2.15	0.12	
	1.5	3	1	PARABOLIC	0.00908	Concrete	0.05	0	0.08	0	
1.5	1.5	3	1	PARABOLIC	0.11334	Concrete	0.05	0	0.08	0	
	2.5	5	1	TRIANGULAR	0.25461	Concrete	20.21	0.09	22	0.1	
1.5	1.5	0	1	CIRCULAR	0.37845	RCP	0	0	0	0	
	2.5	0	1	CIRCULAR	0.16515	RCP	25.61	0.15	33.88	0.2	
1.5	1.5	0	1	CIRCULAR	0.50056	RCP	0.16	0	0.24	0	
	2.75	0	1	CIRCULAR	0.05563	RCP	23.12	0.19	30.17	0.24	
2	2	0	1	CIRCULAR	0.09183	RCP	0.8	0.01	2.29	0.03	
	0	0	1	IRREGULAR	0.07956	Earthen	1.32	0	4.03	0	
0	0	0	1	IRREGULAR	0.16629	Earthen	2.01	0	6.18	0	
	0	0	1	IRREGULAR	0.15216	Earthen	2.81	0	9.67	0	
0.75	0.75	3.5	1	TRIANGULAR	0.04742	Concrete	0	0	0	0	
	0.75	3.5	1	TRIANGULAR	0.03475	Concrete	0	0	0	0	
0.75	0.75	3.5	1	TRIANGULAR	0.02011	Concrete	0	0	0	0	
	0.75	3.5	1	TRIANGULAR	0.04443	Concrete	0	0	0	0	

Pipe Size	Dimensions						2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3 (10-year)
24"	2	0	1	CIRCULAR	0.30285 CMP	CMP	1.36	0.02	4.44	0.07
30"	2	0	1	CIRCULAR	0.19298 CMP	CMP	0.7	0.01	2.37	0.04
36"	2	0	1	CIRCULAR	0.36985 CMP	CMP	1.96	0.03	6.04	0.08
42"	2	0	1	CIRCULAR	0.19881 CMP	CMP	0.19	0	0.63	0.01
48"	2	0	1	CIRCULAR	0.26796 CMP	CMP	0.65	0.01	2.11	0.03
54"	2	0	1	CIRCULAR	0.35953 CMP	CMP	2.8	0.04	9.61	0.13
60"	2	0	1	CIRCULAR	0.30978 CMP	CMP	1.13	0.02	3.46	0.05
66"	6	0	1	CIRCULAR	0.00414 RCP	RCP	184.62	0.68	339.04	1.24
72"	0.75	3.5	1	TRIANGULAR	0.01467 Concrete	Concrete	0.15	0.03	0.67	0.11
78"	0.75	3.5	1	TRIANGULAR	0.03242 Concrete	Concrete	0.57	0.06	2.4	0.26
84"	0.75	3.5	1	TRIANGULAR	0.02978 Concrete	Concrete	0	0	0	0
90"	2	0	1	CIRCULAR	0.29986 CMP	CMP	1.51	0.02	5.21	0.08
96"	2	0	1	CIRCULAR	0.03612 RCP	RCP	33.78	0.79	61.45	1.43
102"	2	0	1	CIRCULAR	0.02814 RCP	RCP	22.18	0.58	39.8	1.05
108"	2	0	1	CIRCULAR	0.02642 RCP	RCP	32.67	0.89	59.32	1.61
114"	1.5	0	1	CIRCULAR	0.00984 RCP	RCP	3.47	0.33	6.21	0.6
120"	1.5	0	1	CIRCULAR	0.04388 RCP	RCP	4.63	0.21	8.21	0.37
126"	6	0	1	CIRCULAR	0.0059 RCP	RCP	103.3	0.32	201.71	0.62
132"	2	0	1	CIRCULAR	0.02862 RCP	RCP	7.6	0.2	13.61	0.36
138"	4	0	1	CIRCULAR	0.00466 RCP	RCP	39.15	0.4	70.89	0.72
144"	1.5	0	1	CIRCULAR	0.02792 RCP	RCP	0	0	0	0
150"	1.5	0	1	CIRCULAR	0.02613 RCP	RCP	3.07	0.18	5.38	0.32
156"	2	0	1	CIRCULAR	0.23975 CONC	CONC	21.4	0.19	37.08	0.33
162"	2	0	1	CIRCULAR	0.01058 CONC	CONC	3.84	0.16	6.61	0.28
168"	2.5	0	1	CIRCULAR	0.01739 CONC	CONC	25.34	0.47	43.83	0.81
174"	2	0	1	CIRCULAR	0.15624 CONC	CONC	8.83	0.1	15.14	0.17
180"	2	0	1	CIRCULAR	0.0284 CONC	CONC	1.24	0.03	2.15	0.06
186"	2	0	1	CIRCULAR	0.09169 RCP	RCP	8.94	0.13	15.32	0.22
192"	2	0	1	CIRCULAR	0.01802 RCP	RCP	1.67	0.06	2.89	0.1
198"	2.5	0	1	CIRCULAR	0.03052 RCP	RCP	35.41	0.49	61.2	0.85
204"	4	0	1	CIRCULAR	0.00253 RCP	RCP	38.75	0.54	67.13	0.93
210"	0	0	1	IRREGULAR	0.0394 Earthen	Earthen	10	0	15.47	0
216"	0	0	1	IRREGULAR	0.01044 Earthen	Earthen	17.15	0	23.12	0
222"	0	0	1	IRREGULAR	0.04285 Earthen	Earthen	3.34	0	5.7	0
228"	0	0	1	IRREGULAR	0.06107 Earthen	Earthen	2.68	0	4.87	0
234"	0	0	1	IRREGULAR	0.05729 Earthen	Earthen	1.19	0	1.96	0
240"	0	0	1	IRREGULAR	0.0977 Earthen	Earthen	4.01	0	6.46	0
246"	0	0	1	IRREGULAR	0.00107 Earthen	Earthen	6.1	0.01	21.2	0.03
252"	0	0	1	IRREGULAR	0.13612 Earthen	Earthen	5.85	0	11.85	0
258"	0	0	1	IRREGULAR	0.02861 Earthen	Earthen	14.92	0	46.11	0
264"	0	0	1	IRREGULAR	0.01535 Earthen	Earthen	16.27	0	22.35	0
270"	0	0	1	IRREGULAR	0.08393 Earthen	Earthen	10.89	0	20.99	0
276"	1.5	0	1	CIRCULAR	0.01602 CONC	CONC	13.07	0.98	16.33	1.23
282"	1.5	0	1	CIRCULAR	0.04258 CONC	CONC	17.16	0.79	23.12	1.07
288"	1.5	0	1	CIRCULAR	0.00445 CONC	CONC	10.89	1.55	21.26	3.03
294"	1.5	0	1	CIRCULAR	0.05136 RCP	RCP	4.01	0.17	6.46	0.27
300"	2.5	0	1	CIRCULAR	0.08958 RCP	RCP	31.24	0.25	49.1	0.4
306"	2.5	0	1	CIRCULAR	0.04171 RCP	RCP	19.12	0.23	35.68	0.43
312"	1.5	0	1	CIRCULAR	0.7111 RCP	RCP	22.14	0.25	35.66	0.4
318"	1.5	0	1	CIRCULAR	0.02932 RCP	RCP	1.3	0.07	2.11	0.12
324"	1.5	0	1	CIRCULAR	0.0089 RCP	RCP	0.6	0.06	0.96	0.1
330"	1.5	0	1	CIRCULAR	0.11704 RCP	RCP	3.55	0.1	5.98	0.17
336"	1.5	0	1	CIRCULAR	0.0505 RCP	RCP	19.62	0.83	31.22	1.32
342"	1.5	0	1	CIRCULAR	0.03914 RCP	RCP	6.25	0.3	21.95	1.06
348"	2.5	0	1	CIRCULAR	0.03719 RCP	RCP	17.08	0.22	22.92	0.29
354"	2.5	0	1	CIRCULAR	0.07908 RCP	RCP	31.3	0.27	49.18	0.43
360"	1.75	0	1	CIRCULAR	0.01023 RCP	RCP	10.03	0.63	15.48	0.97
366"	1.75	0	1	CIRCULAR	0.04099 RCP	RCP	5.85	0.18	11.91	0.37
372"	4.5	0	1	CIRCULAR	0.01555 RCP	RCP	224.32	0.91	261.46	1.07
378"	2.5	0	1	CIRCULAR	0.01245 RCP	RCP	22.08	0.48	40.18	0.88
384"	2.25	0	1	CIRCULAR	0.02797 CONC	CONC	2.63	0.05	4.5	0.09
390"	1.5	0	1	CIRCULAR	0.04374 RCP	RCP	13.92	0.63	25.14	1.14
396"	0	0	1	CIRCULAR	0.00000 RCP	RCP	0	0	0	0

Pipe Size	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Qcon vs Qcap3	Q _{con} (10-year) (cfs)	Qcon vs Qcap3 (10-year)	
24"	2	0	1	CIRCULAR	0.01622	RCP	2.42	0.08	3.82	0.13	
30"	1.5	0	1	CIRCULAR	0.0333	RCP	5.07	0.26	8.77	0.46	
36"	2	0	1	CIRCULAR	0.2531	HDPE	0	0	0	0	
42"	2.5	0	1	CIRCULAR	0.02991	RCP	1.25	0.02	2.32	0.03	
48"	2.5	0	1	CIRCULAR	0.03346	RCP	28.72	0.38	47.47	0.63	
54"	2	0	1	CIRCULAR	0.15358	RCP	0	0	0	0	
60"	2	0	1	CIRCULAR	0.07147	RCP	0	0	0	0	
66"	3.5	5.5	1	CIRCULAR	0.00541	RCP	92.62	1.25	110.25	1.49	
72"	3.5	5.5	1	CIRCULAR	0.00895	RCP	92.62	0.97	110.25	1.16	
78"	2	0	1	CIRCULAR	0.02458	RCP	0	0	0	0	
84"	2	0	1	CIRCULAR	0.05404	RCP	0.54	0.01	0.96	0.02	
90"	2	0	1	CIRCULAR	0.05318	RCP	0.53	0.01	0.95	0.02	
96"	2	0	1	CIRCULAR	0.00612	RCP	5.93	0.33	5.25	0.3	
102"	1.5	0	1	CIRCULAR	0.0664	RCP	0.76	0.03	2.05	0.08	
108"	2	0	1	CIRCULAR	0.02	RCP	0	0	0	0	
114"	2	0	1	CIRCULAR	0.0095	RCP	0	0	0	0	
120"	2	0	1	CIRCULAR	0.01855	RCP	0	0	0	0	
126"	2	0	1	CIRCULAR	0.00971	RCP	4.34	0.19	7.61	0.34	
132"	2	0	1	CIRCULAR	0.08472	SP	15.35	0.43	27.4	0.77	
138"	2	0	1	CIRCULAR	0.00958	RCP	4.33	0.2	7.61	0.34	
144"	2	0	1	CIRCULAR	0.02473	RCP	4.33	0.12	7.6	0.21	
150"	2	0	1	CIRCULAR	0.00383	RCP	7.84	0.56	13.88	0.99	
156"	2	0	1	CIRCULAR	0.03044	RCP	0	0	0	0	
162"	2	0	1	CIRCULAR	0.06465	RCP	0	0	0	0	
168"	1.5	0	1	CIRCULAR	0.04035	RCP	0	0	0	0	
174"	1.5	0	1	CIRCULAR	0.04249	RCP	0	0	0	0	
180"	6	0	1	CIRCULAR	0.00279	RCP	22.51	0.1	106.97	0.48	
186"	3	0	1	CIRCULAR	0.08941	RCP	10.29	0.05	19.78	0.1	
192"	3	0	1	CIRCULAR	0.0074	RCP	10.33	0.18	19.25	0.34	
198"	4	0	1	CIRCULAR	0.02767	RCP	35.44	0.15	54.6	0.23	
204"	4	0	1	CIRCULAR	0.02594	RCP	36.23	0.16	53.77	0.23	
210"	1.5	0	1	CIRCULAR	0.03249	RCP	7.39	0.39	12.25	0.65	
216"	4	0	1	CIRCULAR	0.2143	RCP	1.02	0	1.65	0	
222"	2.5	0	1	CIRCULAR	0.00377	CONC	15.43	0.61	27.5	1.09	
228"	2.5	0	1	CIRCULAR	0.00524	CONC	15.39	0.52	27.42	0.92	
234"	7	0	1	CIRCULAR	0.01283	RCP	412.83	0.57	650.54	0.9	
240"	4.75	0	1	CIRCULAR	0.00246	RCP	7.24	0.06	30.81	0.27	
246"	1	0	1	CIRCULAR	0.03745	ABS	0.77	0.11	1.26	0.18	
252"	1	0	1	CIRCULAR	0.06325	ABS	0.67	0.07	1.06	0.12	
258"	1	0	1	CIRCULAR	0.07322	RCP	3.43	0.36	5.36	0.56	
264"	1	0	1	CIRCULAR	0.04763	ABS	2.1	0.27	3.44	0.44	
270"	1.5	0	1	CIRCULAR	0.0246	RCP	5.91	0.36	10.62	0.64	
276"	1	0	1	CIRCULAR	0.0277	ABS	5.66	0.95	6.3	1.06	
282"	0	0	1	IRREGULAR	0.02089	Earthen	670.77	0.07	909.6	0.09	
288"	0	0	1	IRREGULAR	0.01811	Earthen	669.07	0.11	891.94	0.14	
294"	0	0	1	IRREGULAR	0.01811	Earthen	674.18	0.11	901.24	0.14	
300"	0	0	1	IRREGULAR	0.01793	Earthen	665.81	0.2	886.86	0.27	
306"	2	0	1	CIRCULAR	0.05628	HDPE	3.1	0.06	5.39	0.1	
312"	6.5	0	1	CIRCULAR	0.00964	RCP	330.59	0.64	510.01	0.99	
318"	5.5	4.7	1	CIRCULAR	0.00554	RCP	191.53	0.77	293.9	1.18	
324"	3	5.5	1	CIRCULAR	0.01271	RCP	50.82	0.68	60.82	0.81	
330"	5.5	0	1	CIRCULAR	0.00637	RCP	216.48	0.81	350.81	1.31	
336"	3	0	1	CIRCULAR	0.02425	CONC	9.08	0.09	15.03	0.14	
342"	2	0	1	CIRCULAR	0.2784	RCP	0.72	0.01	1.27	0.01	
348"	1.5	0	1	CIRCULAR	0.03165	RCP	2.15	0.12	3.85	0.21	
354"	1.5	0	1	CIRCULAR	0.14235	RCP	1.79	0.05	3.15	0.08	
360"	1	0	1	CIRCULAR	0.02113	ABS	0.92	0.18	1.53	0.3	
366"	1	0	1	CIRCULAR	0.08778	RCP	1.86	0.18	3.35	0.32	
372"	1.5	0	1	CIRCULAR	0.02043	SP	0.26	0.03	0.46	0.06	
378"	6	0	1	CIRCULAR	0.07526	RCP	0	0	0	0	
384"	4	8	1	RECT_CLOSED	0.02111	RCP	237.43	0.37	270.27	0.42	
390"	1.5	0	1	CIRCULAR	0.19522	RCP	6.39	0.14	11.52	0.25	
396"	0	0	1	CIRCULAR	0.00000	RCP	0	0	0	0	

ID	Material	Dimensions				2-year		10-year		
		D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)
1	1	1	0	1	CIRCULAR	0.0057 RCP	0.05	0.02	0.11	0.04
1.5	0	1	0	1	CIRCULAR	0.13779 RCP	5.7	0.15	10.34	0.27
3.5	0	1	0	1	CIRCULAR	0.03992 RCP	53.15	0.26	152.01	0.76
6	0	1	0	1	CIRCULAR	0.0133 RCP	122.04	0.25	246.7	0.51
5	0	1	0	1	CIRCULAR	0.00965 RCP	118.66	0.75	174.51	1.11
8	0	1	0	1	CIRCULAR	0.00391 RCP	259.47	0.45	462.42	0.81
8	0	1	0	1	CIRCULAR	0.00341 RCP	248.43	0.47	441.89	0.83
6	0	1	0	1	CIRCULAR	0.01039 RCP	237.93	0.55	416.48	0.96
5	0	1	0	1	CIRCULAR	0.01571 RCP	152.91	0.47	270.13	0.83
5	0	1	0	1	CIRCULAR	0.02475 RCP	98.43	0.24	147.12	0.36
5	0	1	0	1	CIRCULAR	0.00709 RCP	101.98	0.47	150.58	0.69
3.5	0	1	0	1	CIRCULAR	0.0077 RCP	53.29	0.6	111.02	1.26
3.5	0	1	0	1	CIRCULAR	0.03572 RCP	96.18	0.51	162.26	0.85
3	0	1	0	1	CIRCULAR	0.01468 RCP	9.3	0.12	15.26	0.19
3	0	1	0	1	CIRCULAR	0.06052 RCP	12.71	0.08	23.28	0.14
1.25	0	1	0	1	CIRCULAR	0.0109 HDPE	0.65	0.1	1.06	0.16
1.25	0	1	0	1	CIRCULAR	0.00612 HDPE	2.86	0.57	4.77	0.94
1.25	0	1	0	1	CIRCULAR	0.0342 HDPE	2.85	0.24	4.77	0.4
1.25	0	1	0	1	CIRCULAR	0.04641 HDPE	1.06	0.08	1.8	0.13
1.25	0	1	0	1	CIRCULAR	0.01048 HDPE	1.85	0.28	3.08	0.47
2	0	1	0	1	CIRCULAR	0.03596 RCP	0.17	0	0.26	0.01
8	0	1	0	1	CIRCULAR	0.01075 RCP	528.97	0.56	926.5	0.98
1.5	0	1	0	1	CIRCULAR	0.1456 RCP	2.15	0.05	3.62	0.09
1.5	0	1	0	1	CIRCULAR	0.01633 RCP	2.51	0.19	4.26	0.32
1.5	0	1	0	1	CIRCULAR	0.0151 RCP	2.5	0.19	4.25	0.33
1.5	0	1	0	1	CIRCULAR	0.02257 HDPE	2.74	0.17	4.82	0.31
3.5	0	1	0	1	CIRCULAR	-0.00089 RCP	51.58	1.72	81.98	2.74
0	0	1	0	1	IRREGULAR	0.19961 Earthen	0.13	0	0.21	0
1.25	0	1	0	1	CIRCULAR	0.00845 HDPE	3.14	0.53	5.52	0.93
1.25	0	1	0	1	CIRCULAR	0.01821 RCP	3.09	0.35	5.46	0.63
3.5	0	1	0	1	CIRCULAR	0.01598 RCP	3.86	0.03	15.64	0.12
1.5	0	1	0	1	CIRCULAR	0.05941 RCP	3.43	0.13	6.12	0.24
2	0	1	0	1	CIRCULAR	0.06565 RCP	18.35	0.32	32.84	0.57
1.5	0	1	0	1	CIRCULAR	0.09864 RCP	2.15	0.07	3.59	0.11
6	0	1	0	1	CIRCULAR	0.00169 RCP	2.84	0.02	32.91	0.19
6	0	1	0	1	CIRCULAR	0.00147 RCP	22.87	0.14	53.02	0.33
2	0	1	0	1	CIRCULAR	0.00369 RCP	11.7	0.85	38.88	2.83
2	0	1	0	1	CIRCULAR	0.07171 RCP	5.21	0.09	9.3	0.15
1.5	0	1	0	1	CIRCULAR	0.14905 RCP	2.41	0.06	4.34	0.11
1.5	0	1	0	1	CIRCULAR	0.02518 RCP	1.57	0.09	2.86	0.17
1.5	0	1	0	1	CIRCULAR	0.21636 RCP	2.85	0.06	5.02	0.1
3	0	1	0	1	CIRCULAR	0.00345 RCP	54.43	1.39	84.43	2.16
2	0	1	0	1	CIRCULAR	0.01003 RCP	5.42	0.24	9.57	0.42
2	0	1	0	1	CIRCULAR	0.02382 RCP	5.43	0.16	9.57	0.27
2	0	1	0	1	CIRCULAR	0.0245 RCP	5.39	0.15	9.5	0.27
2	0	1	0	1	CIRCULAR	0.01737 RCP	11.2	0.38	20.02	0.67
2.5	0	1	0	1	CIRCULAR	0.02144 RCP	16.45	0.27	29.39	0.49
3	0	1	0	1	CIRCULAR	0.06449 RCP	23.16	0.14	39.62	0.23
3.5	0	1	0	1	CIRCULAR	0.01678 RCP	2.19	0.02	6.51	0.05
0.67	0	1	0	1	CIRCULAR	0.16213 PVC	0.91	0.18	1.53	0.31
2.5	0	1	0	1	CIRCULAR	0.02387 RCP	21.28	0.34	37.91	0.6
2	0	1	0	1	CIRCULAR	0.0155 RCP	2.56	0.09	5.09	0.18
2	0	1	0	1	CIRCULAR	0.01653 RCP	2.56	0.09	5.07	0.17
2	0	1	0	1	CIRCULAR	0.07858 RCP	2.55	0.04	5.06	0.08
1	0	1	0	1	CIRCULAR	0.08978 PVC	2.21	0.21	3.82	0.36
1.5	0	1	0	1	CIRCULAR	0.08805 RCP	2.23	0.07	4	0.13
1.5	0	1	0	1	CIRCULAR	0.10047 CMP	2.14	0.12	3.73	0.21
2.5	0	1	0	1	CIRCULAR	0.00716 RCP	12.17	0.35	21.84	0.63
2	0	1	0	1	CIRCULAR	0.00716 RCP	5.09	0.27	8.94	0.47
3	0	1	0	1	CIRCULAR	0.11572 RCP	0.34	0	0.82	0
1.5	0	1	0	1	CIRCULAR	0.02669 RCP	7.33	0.43	12.97	0.76
3.5	0	1	0	1	CIRCULAR	0.02534 RCP	47.37	0.3	79.8	0.5
3	0	1	0	1	CIRCULAR	0.02534 RCP	47.37	0.3	79.8	0.5

ID	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3	
1	3.5	0	1	CIRCULAR	0.03355	RCP	63.27	0.34	109.57	0.59	
2	1.5	0	1	CIRCULAR	0.02837	RCP	2.37	0.13	4.28	0.24	
3	2	0	1	CIRCULAR	0.05008	RCP	17.13	0.34	30.17	0.6	
4	2	0	1	CIRCULAR	0.03224	RCP	21.35	0.53	38.22	0.94	
5	2	0	1	CIRCULAR	0.00332	RCP	8.98	0.69	8.01	0.61	
6	2.25	0	1	CIRCULAR	0.0059	RCP	5.01	0.21	5.45	0.23	
7	1.25	0	1	CIRCULAR	0.08432	RCP	6.91	0.37	11.71	0.62	
8	2	0	1	CIRCULAR	0.00453	RCP	0.96	0.06	1.77	0.12	
9	2	0	1	CIRCULAR	0.02619	RCP	0.18	0	0.27	0.01	
10	1.5	0	1	CIRCULAR	0.06693	RCP	1.01	0.04	1.73	0.06	
11	1	3	1	PARABOLIC	0	CONC	0	0	0	0	
12	1	3	1	PARABOLIC	0.00757	CONC	1.6	0.12	3	0.23	
13	1	0	1	CIRCULAR	0.00305	RCP	0.24	0.12	0.47	0.24	
14	1	3	1	PARABOLIC	0.01636	CONC	0	0	0	0	
15	1	0	1	CIRCULAR	0.17878	CMP	0.83	0.1	1.53	0.19	
16	5	10	1	RECT_CLOSED	0.01659	RCB	308.85	0.3	353.06	0.34	
17	6	0	1	CIRCULAR	0.01879	RCP	98.33	0.17	209.46	0.36	
18	1	3	1	PARABOLIC	0.04794	CONC	0	0	0	0	
19	1	3	1	PARABOLIC	0.09823	CONC	0	0	0	0	
20	1	3	1	PARABOLIC	0.07036	CONC	2.03	0.05	3.6	0.09	
21	1.5	0	1	CIRCULAR	0.01774	RCP	4.94	0.35	8.1	0.58	
22	2	0	1	CIRCULAR	0.0304	RCP	14.72	0.37	26.42	0.67	
23	1.5	0	1	CIRCULAR	0.00323	RCP	3.18	0.53	5.4	0.91	
24	1.5	0	1	CIRCULAR	0.27678	RCP	5.98	0.11	10.21	0.18	
25	1	0	1	CIRCULAR	0.85398	CMP	0.34	0.02	0.54	0.03	
26	4	0	1	CIRCULAR	0.02993	RCP	98.33	0.4	242.5	0.98	
27	1	3	1	PARABOLIC	0.56037	CONC	0	0	0	0	
28	1	3	1	PARABOLIC	0.24209	CONC	0	0	0	0	
29	1	3	1	PARABOLIC	0.0148	CONC	0	0	0	0	
30	1.5	0	1	CIRCULAR	0.14772	RCP	0.83	0.02	1.51	0.04	
31	2	0	1	CIRCULAR	0.01324	RCP	10.69	0.41	18.93	0.73	
32	2	0	1	CIRCULAR	0.15634	RCP	12.41	0.14	21.96	0.25	
33	1	3	1	PARABOLIC	0.00303	CONC	0.27	0.03	0.49	0.06	
34	8	0	1	CIRCULAR	0.00422	RCP	189.62	0.32	352.85	0.6	
35	1.5	0	1	CIRCULAR	0.06712	RCP	17.17	0.63	30.67	1.13	
36	3	0	1	CIRCULAR	0.02147	CMP	29	0.55	50.87	0.96	
37	1.5	0	1	CIRCULAR	0.06116	RCP	0.88	0.03	1.44	0.06	
38	2	0	1	CIRCULAR	0.02205	RCP	1.42	0.04	2.36	0.07	
39	1.5	0	1	CIRCULAR	0.00966	RCP	2.16	0.21	3.64	0.35	
40	1	3	1	PARABOLIC	0.18289	Concrete	2.85	0.06	4.81	0.11	
41	1.25	0	1	CIRCULAR	0.02919	RCP	0.24	0.02	0.39	0.04	
42	1.25	0	1	CIRCULAR	0.01504	HDPE	0.26	0.03	0.43	0.05	
43	1.25	0	1	CIRCULAR	0.04105	CMP	0.26	0.04	0.43	0.06	
44	1.5	0	1	CIRCULAR	0.06929	RCP	1.88	0.07	3.37	0.12	
45	2	0	1	CIRCULAR	0.00783	RCP	13.17	0.66	21.47	1.07	
46	1.5	0	1	CIRCULAR	0.06189	RCP	6.92	0.26	12.29	0.47	
47	2	0	1	CIRCULAR	0.47947	RCP	3.18	0.02	5.8	0.04	
48	2.5	0	1	CIRCULAR	0.01083	RCP	11.83	0.28	20.95	0.49	
49	3	0	1	CIRCULAR	0.01081	RCP	21.17	0.31	37.99	0.55	
50	1	0	1	CIRCULAR	0.02205	HDPE	3.52	0.67	5.79	1.09	
51	1.5	0	1	CIRCULAR	0.15237	RCP	3.37	0.08	3.4	0.08	
52	1.5	0	1	CIRCULAR	0.00506	RCP	5.83	0.78	9.07	1.21	
53	1.5	0	1	CIRCULAR	0.01534	RCP	3.84	0.3	6.81	0.52	
54	7	0	1	CIRCULAR	0.00263	RCP	167.14	0.51	313.52	0.96	
55	1.5	0	1	CIRCULAR	0.01929	RCP	4.35	0.3	7.63	0.52	
56	1.5	0	1	CIRCULAR	0.00704	RCP	3.84	0.44	6.59	0.75	
57	2	0	1	CIRCULAR	0.0524	HDPE	4.01	0.08	6.87	0.13	
58	1.5	0	1	CIRCULAR	0.27655	CMP	0	0	0	0	
59	0	0	1	IRREGULAR	0.01478	EAR	0.6	0.2	0.96	0.32	
60	1.5	0	1	CIRCULAR	0.19015	CMP	3.46	0.08	5.7	0.12	
61	2.5	0	1	CIRCULAR	0.09578	RCP	19.06	0.15	31.75	0.25	
62	1.5	0	1	CIRCULAR	0.03988	RCP	1.33	0.06	2.31	0.11	
63	1.5	0	1	CIRCULAR	0.02233	RCP	0.23	0.01	0.4	0.01	

ID	Dimensions										2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Q _{con} vs Q _{cap3}	Q _{con} (10-year) (cfs)	Q _{con} vs Q _{cap3}				
1	1.5	0	1	CIRCULAR	0.0106	CMP	5.31	0.49	8.72	0.81				
2	1.5	0	1	CIRCULAR	0.04587	RCP	6.39	0.28	10.53	0.47				
3	2	0	1	CIRCULAR	0.00784	RCP	8.04	0.4	13.26	0.66				
4	0.5	0	1	CIRCULAR	0.87276	PVC	1.17	0.22	1.83	0.35				
5	3	8	1	RECT_OPEN	0.00915	EAR	1.7	0.02	2.77	0.03				
6	5	0	1	CIRCULAR	0.00576	RCP	50.55	0.26	60.13	0.3				
7	1.5	0	1	CIRCULAR	0.04554	RCP	0.94	0.04	1.56	0.07				
8	5	0	1	CIRCULAR	0.01812	RCP	51.36	0.15	62.85	0.18				
9	3	0	1	CIRCULAR	0.00379	RCP	25.56	0.62	55.89	1.36				
10	1	3	1	PARABOLIC	0.02196	Earthen	0.89	0.18	1.33	0.27				
11	2	0	1	CIRCULAR	0.00517	RCP	1.31	0.08	2.12	0.13				
12	3	8	1	RECT_OPEN	0.00056	CONC	1.24	0.06	2.29	0.11				
13	3	8	1	RECT_OPEN	0.00217	CONC	5.31	0.13	9.18	0.23				
14	3	0	1	CIRCULAR	0.03181	RCP	104.34	0.88	155.15	1.3				
15	3	0	1	CIRCULAR	0.0469	RCP	104.24	0.72	146.31	1.01				
16	1.5	0	1	CIRCULAR	0.04287	RCP	2.35	0.11	3.83	0.18				
17	1.5	0	1	CIRCULAR	0.05768	RCP	9.54	0.38	16.19	0.64				
18	1.5	0	1	CIRCULAR	0.02149	HDPE	2.01	0.13	3.34	0.22				
19	2.5	0	1	CIRCULAR	0.00601	RCP	0.37	0.01	0.82	0.03				
20	2	0	1	CIRCULAR	0.00605	RCP	0.33	0.02	0.62	0.03				
21	2.5	0	1	CIRCULAR	0.09391	RCP	0.19	0	0.33	0				
22	1.5	0	1	CIRCULAR	0.02797	RCP	0.32	0.02	0.56	0.03				
23	2	0	1	CIRCULAR	0.09948	CMP	1.33	0.03	2.36	0.06				
24	2.5	0	1	CIRCULAR	0.21096	RCP	33.89	0.18	116.32	0.62				
25	1	3	1	PARABOLIC	0.09316	Concrete	0	0	0	0				
26	1	3	1	PARABOLIC	0.04	Concrete	0.48	0.02	12.2	0.59				
27	2	0	1	CIRCULAR	0.1509	CONC	5.05	0.06	7.95	0.09				
28	5	0	1	CIRCULAR	0.01522	RCP	94.4	0.29	161.61	0.5				
29	1.5	0	1	CIRCULAR	0.14643	CMP	2.81	0.13	4.47	0.21				
30	1.5	0	1	CIRCULAR	0.00976	RCP	1.43	0.14	2.48	0.24				
31	1.5	0	1	CIRCULAR	0.17017	RCP	0.51	0.01	0.88	0.02				
32	2	0	1	CIRCULAR	0.04798	HDPE	1.87	0.04	3.43	0.07				
33	2	0	1	CIRCULAR	0.46873	HDPE	2.39	0.02	4.33	0.03				
34	1.5	0	1	CIRCULAR	0.03969	HDPE	2.56	0.12	4.09	0.2				
35	4	0	1	CIRCULAR	0.00333	RCP	16.7	0.2	22.54	0.27				
36	4	0	1	CIRCULAR	0.10334	Earthen	18.95	0.04	25.64	0.06				
37	30	20	1	RECT_OPEN	0.10318	Earthen	18.85	0	25.4	0				
38	1.5	0	1	CIRCULAR	0.04903	HDPE	0.86	0.04	1.38	0.06				
39	1.5	0	1	CIRCULAR	0.03154	HDPE	0.89	0.05	1.43	0.08				
40	1.5	0	1	CIRCULAR	0.03585	HDPE	1.72	0.09	2.77	0.14				
41	1.5	0	1	CIRCULAR	0.02862	HDPE	2.6	0.15	4.15	0.23				
42	1.5	0	1	CIRCULAR	0.02449	HDPE	0.51	0.03	0.79	0.05				
43	1.5	0	1	CIRCULAR	0.01638	HDPE	0.41	0.03	0.63	0.05				
44	2	0	1	CIRCULAR	0.02458	RCP	14.2	0.4	25.56	0.72				
45	1.5	0	1	CIRCULAR	0.04004	RCP	4.91	0.23	9.06	0.43				
46	1.5	0	1	CIRCULAR	0.02909	HDPE	4.21	0.23	6.68	0.37				
47	1.5	0	1	CIRCULAR	0.01614	HDPE	0.19	0.01	0.29	0.02				
48	1.5	0	1	CIRCULAR	0.03746	HDPE	0.54	0.03	0.82	0.04				
49	2	0	1	CIRCULAR	0.13082	HDPE	4.53	0.06	7.69	0.09				
50	1.5	3	1	PARABOLIC	0.0177	CONC	0.83	0.02	1.91	0.05				
51	1.5	0	1	CIRCULAR	0.01652	HDPE	1.57	0.12	2.56	0.19				
52	1.5	0	1	CIRCULAR	0.03322	HDPE	2.05	0.11	3.3	0.17				
53	1.5	0	1	CIRCULAR	0.01452	HDPE	1.03	0.08	1.59	0.13				
54	1.5	0	1	CIRCULAR	0.02852	HDPE	1.28	0.07	2	0.11				
55	1.5	0	1	CIRCULAR	0.04167	HDPE	4.22	0.2	6.7	0.31				
56	1	0	1	CIRCULAR	0.08783	RCP	0.66	0.06	1.05	0.1				
57	1.5	0	1	CIRCULAR	0.00621	RCP	2.45	0.3	3.89	0.47				
58	1.5	0	1	CIRCULAR	0.02495	RCP	3.52	0.21	5.62	0.34				
59	1.5	0	1	CIRCULAR	0.06935	RCP	1.18	0.04	1.84	0.07				
60	2	0	1	CIRCULAR	0.10685	RCP	4.79	0.06	7.61	0.1				
61	1.5	0	1	CIRCULAR	0.0196	RCP	7.19	0.49	13.89	0.94				
62	2.5	0	1	CIRCULAR	0.00366	RCP	9.19	0.37	17.51	0.71				

Pipe Size (in)	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Q _{con} vs Q _{cap3}	Q _{con} (10-year) (cfs)	Q _{con} vs Q _{cap3} (10-year)	
18	1	3	1 PARABOLIC		0.08587	Concrete	1.37	0.05	2.6	0.09	
18	1	3	1 PARABOLIC		0.16413	Concrete	0	0	0	0	
18	1	3	1 PARABOLIC		0.12316	Concrete	0	0	0	0	
24	1.5	0	1 CIRCULAR		0.01258	RCP	7.55	0.64	15.36	1.3	
24	3.5	0	1 CIRCULAR		0.01599	RCP	51.03	0.4	87.87	0.69	
24	3.5	0	1 CIRCULAR		0.03635	RCP	52.61	0.27	90.67	0.47	
24	3.5	0	1 CIRCULAR		0.02199	RCP	45.61	0.31	69.8	0.47	
30	1	3	1 PARABOLIC		0.08133	Concrete	0	0	0	0	
30	1.5	0	1 PARABOLIC		0.00505	Concrete	1.81	0.25	3.38	0.46	
30	1.5	0	1 CIRCULAR		0.00934	RCP	3.22	0.32	5.82	0.57	
30	3	0	1 CIRCULAR		0.00838	RCP	5.51	0.09	9.88	0.16	
30	2	0	1 CIRCULAR		0.06925	RCP	3.88	0.07	7.16	0.12	
30	2.5	0	1 CIRCULAR		0.05923	RCP	10.94	0.11	20.02	0.2	
30	3	0	1 CIRCULAR		0.03148	RCP	16.84	0.14	30.29	0.26	
30	3	0	1 CIRCULAR		0.06807	RCP	10.88	0.06	20.15	0.12	
30	1.5	0	1 CIRCULAR		0.06224	RCP	1.07	0.04	1.91	0.07	
36	4	0	1 CIRCULAR		0.01105	RCP	26.68	0.18	50.95	0.34	
36	1.5	0	1 CIRCULAR		0.07414	RCP	0.64	0.02	1.14	0.04	
36	4	0	1 CIRCULAR		0.03938	RCP	26.1	0.09	49.85	0.17	
36	2.5	0	1 CIRCULAR		0.02111	RCP	16.97	0.28	28.57	0.48	
36	2.5	0	1 CIRCULAR		0.06037	RCP	24.28	0.24	41.34	0.41	
36	1.5	0	1 CIRCULAR		0.01887	RCP	5.17	0.36	9.49	0.66	
36	2	0	1 CIRCULAR		0.04587	RCP	21.01	0.43	37.3	0.77	
36	2	0	1 CIRCULAR		0.02502	RCP	12.6	0.35	22.59	0.63	
36	2	0	1 CIRCULAR		0.02587	RCP	11.2	0.31	20.07	0.55	
36	3	0	1 CIRCULAR		0.04382	RCP	36.19	0.26	55.54	0.4	
36	1.5	0	1 CIRCULAR		0.02778	CMP	3.17	0.33	8.36	0.88	
36	2	0	1 CIRCULAR		0.01345	HDPE	6.31	0.24	11.37	0.43	
36	1.5	0	1 CIRCULAR		0.12358	ABS	4.19	0.11	8.5	0.23	
36	4	0	1 CIRCULAR		0.0162	RCP	72.19	0.39	120.89	0.66	
36	2	0	1 CIRCULAR		0.07062	CMP	0.76	0.02	1.32	0.04	
36	4	0	1 CIRCULAR		0.01712	RCP	78.79	0.42	132.95	0.71	
36	4	0	1 CIRCULAR		0.03356	RCP	61.5	0.23	101.77	0.39	
36	4	0	1 CIRCULAR		0.00678	RCP	61.41	0.52	101.66	0.86	
36	4	0	1 CIRCULAR		0.0181	RCP	59.12	0.31	97.52	0.5	
36	1	0	1 CIRCULAR		0.05178	RCP	3.73	0.46	6.69	0.83	
36	3	0	1 CIRCULAR		0.03747	RCP	25.11	0.19	44.74	0.35	
36	1.5	0	1 CIRCULAR		0.0509	CMP	5.4	0.23	10.37	0.44	
36	3	0	1 CIRCULAR		0.09784	CMP	10.59	0.05	19.2	0.09	
36	6	0	1 CIRCULAR		0.03933	RCP	118.12	0.14	245.92	0.29	
36	1.5	0	1 CIRCULAR		0.01682	ABS	2.78	0.2	4.75	0.35	
36	1.5	0	1 CIRCULAR		0.2452	ABS	2.77	0.05	4.74	0.09	
36	1.5	0	1 CIRCULAR		0.02226	ABS	5.64	0.36	9.75	0.62	
36	1.5	0	1 CIRCULAR		0.06198	ABS	5.63	0.22	9.73	0.37	
36	2	0	1 CIRCULAR		0.00607	RCP	4.87	0.28	8.74	0.5	
36	6	0	1 CIRCULAR		0.01527	RCP	119.29	0.23	270.63	0.52	
36	3	0	1 CIRCULAR		0.06046	RCP	19.37	0.12	34.42	0.21	
36	3	0	1 CIRCULAR		0.0082	RCP	19.38	0.32	34.44	0.57	
36	3	0	1 CIRCULAR		0.10425	RCP	11.41	0.05	20.68	0.1	
36	1.5	0	1 CIRCULAR		0.00806	CMP	6.55	1.28	9.47	1.85	
36	1	3	1 PARABOLIC		0.02293	Concrete	0.14	0.01	0.22	0.01	
36	1	3	1 PARABOLIC		0.0766	Concrete	0.17	0.01	0.27	0.01	
36	2	0	1 CIRCULAR		0.01033	RCP	10.85	0.47	19.02	0.83	
36	1	3	1 PARABOLIC		0.07132	Concrete	0.16	0.01	0.24	0.01	
36	1.5	0	1 CIRCULAR		0.02264	RCP	1.34	0.09	2.45	0.16	
36	2	0	1 CIRCULAR		0.00787	RCP	7.67	0.38	13.39	0.67	
36	2	0	1 CIRCULAR		0.03829	RCP	14.65	0.33	26.03	0.59	
36	2	0	1 CIRCULAR		0.04249	RCP	14.64	0.31	26.01	0.56	
36	2	0	1 CIRCULAR		0.00322	RCP	8.83	0.69	16.18	1.26	
36	1	3	1 PARABOLIC		0.02076	Concrete	0.11	0.01	0.2	0.01	
36	1	3	1 PARABOLIC		0.00678	Earthen	0.53	0.2	1.15	0.43	
36	1	3	1 PARABOLIC		0.22115	Concrete	0.09	0	0.15	0	
36	1	3	1 PARABOLIC		0.00000	Concrete	0	0	0	0	

Pipe Size	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q_con (2-year) (cfs)	Qcon vs Qcap3	Q_con (10-year) (cfs)	Qcon vs Qcap3 (10-year)	
24" (D)	2	0	1	CIRCULAR	0.00435	ABS	7.11	0.48	12.66	0.85	
30" (D)	0.5	0	1	CIRCULAR	0.04295	ABS	0	0	0	0	
36" (D)	0.5	0	1	CIRCULAR	0.01097	ABS	0.03	0.05	0.05	0.08	
42" (D)	1	3	1	PARABOLIC	0.0406	Concrete	0.06	0	0.11	0.01	
48" (D)	1.5	0	1	CIRCULAR	0.0334	RCP	1.28	0.07	2.32	0.12	
54" (D)	1.5	0	1	CIRCULAR	0.0967	RCP	1.31	0.04	2.51	0.08	
60" (D)	1.5	0	1	CIRCULAR	0.04935	ABS	2.05	0.09	3.55	0.15	
66" (D)	3	0	1	CIRCULAR	0.01085	CMP	20.55	0.55	36.32	0.97	
72" (D)	1	3	1	PARABOLIC	0.10272	Concrete	0.69	0.02	1.2	0.04	
78" (D)	1.5	0	1	CIRCULAR	0.0152	RCP	0.83	0.06	1.51	0.12	
84" (D)	1	3	1	PARABOLIC	0.31425	Concrete	0.08	0	0.12	0	
90" (D)	1	3	1	PARABOLIC	0.16378	Concrete	0.53	0.01	1.06	0.03	
96" (D)	1	3	1	PARABOLIC	0.04039	Concrete	0.23	0.01	0.45	0.02	
102" (D)	1.5	0	1	CIRCULAR	0.0219	RCP	4.47	0.29	8.15	0.52	
108" (D)	1.5	0	1	CIRCULAR	0.01514	RCP	5.65	0.44	10.24	0.79	
114" (D)	1.5	0	1	CIRCULAR	0.01978	RCP	5.55	0.38	10.07	0.68	
120" (D)	1.5	0	1	CIRCULAR	0.00456	HDPE	4.05	0.57	6.9	0.97	
126" (D)	3	0	1	CIRCULAR	0.03154	CONC	26.6	0.22	44.87	0.38	
132" (D)	1.5	0	1	CIRCULAR	0.10703	RCP	1.18	0.03	4.02	0.12	
138" (D)	4	0	1	CIRCULAR	0.00646	RCP	39.62	0.34	69.67	0.16	
144" (D)	4	0	1	CIRCULAR	0.00902	RCP	54.04	0.4	91.18	0.67	
150" (D)	4	0	1	CIRCULAR	0.0122	RCP	55.26	0.35	92.49	0.58	
156" (D)	4	0	1	CIRCULAR	0.00327	RCP	27.15	0.33	41.96	0.51	
162" (D)	2.25	0	1	CIRCULAR	0.0409	ABS	3.15	0.05	6.02	0.1	
168" (D)	2	0	1	CIRCULAR	0.02557	ABS	1.34	0.04	2.32	0.06	
174" (D)	2	0	1	CIRCULAR	0.01378	ABS	1.3	0.05	2.26	0.09	
180" (D)	1.5	0	1	CIRCULAR	0.15746	CMP	1.36	0.06	2.37	0.1	
186" (D)	3.5	0	1	CIRCULAR	0.06161	CMP	24.11	0.18	33.45	0.25	
192" (D)	1	3	1	PARABOLIC	0.01145	CONC	2.34	0.15	3.35	0.21	
198" (D)	1.5	0	1	CIRCULAR	0.00884	RCP	2.34	0.15	3.35	0.21	
204" (D)	0.92	2.67	1	RECT_CLOSED	0.00802	RCB	2.57	0.21	4.63	0.38	
210" (D)	2	0	1	CIRCULAR	0.00666	RCP	10.88	0.59	19.37	1.05	
216" (D)	1	1.5	1	PARABOLIC	0.03101	CONC	10.95	1.03	13.54	1.28	
222" (D)	1.5	0	1	CIRCULAR	0.07756	RCP	7.03	0.24	7.39	0.25	
228" (D)	3	0	1	CIRCULAR	0.05399	SP	16.85	0.2	30.06	0.36	
234" (D)	1	3	1	PARABOLIC	0.02734	CONC	0.55	0.02	0.99	0.04	
240" (D)	0.33	0	1	CIRCULAR	0.13726	HDPE	0.87	1.26	0.87	1.26	
246" (D)	3	0	1	CIRCULAR	0.00492	RCP	20.26	0.43	31.75	0.68	
252" (D)	3	0	1	CIRCULAR	0.01641	RCP	40.31	0.47	60.2	0.7	
258" (D)	4	0	1	CIRCULAR	0.00819	RCP	85.12	0.65	154.37	1.19	
264" (D)	4	0	1	CIRCULAR	0.03748	RCP	85.06	0.31	153.25	0.55	
270" (D)	3	0	1	CIRCULAR	0.00833	RCP	93.23	0.71	167.44	1.28	
276" (D)	3	0	1	CIRCULAR	0.00403	RCP	23.31	0.55	37.41	0.88	
282" (D)	3	0	1	CIRCULAR	0.02132	RCP	4.78	0.05	8.57	0.09	
288" (D)	3	0	1	CIRCULAR	0.05786	RCP	18.07	0.11	32.36	0.2	
294" (D)	1.5	0	1	CIRCULAR	0.09632	RCP	8.01	0.25	13.75	0.42	
300" (D)	3	0	1	CIRCULAR	0.03919	RCP	17.98	0.14	32.23	0.24	
306" (D)	3	0	1	CIRCULAR	0.01655	RCP	17.86	0.21	29.43	0.34	
312" (D)	3	0	1	CIRCULAR	0.03188	RCP	27.84	0.23	51.02	0.43	
318" (D)	3	0	1	CIRCULAR	0.00483	RCP	27.01	0.58	54.02	1.17	
324" (D)	3	0	1	CIRCULAR	0.01531	RCP	13.86	0.17	22.87	0.28	
330" (D)	3	0	1	CIRCULAR	0.07015	RCP	13.13	0.07	23.55	0.13	
336" (D)	1	5.5	1	PARABOLIC	0.01489	ASPHALT	0.21	0.01	0.34	0.01	
342" (D)	2.5	0	1	CIRCULAR	0.01333	RCP	28.05	0.59	49.39	1.04	
348" (D)	2.5	0	1	CIRCULAR	0.05245	CMP	28.19	0.3	49.61	0.53	
354" (D)	3	0	1	CIRCULAR	0.02697	RCP	28.65	0.26	50.53	0.46	
360" (D)	3	0	1	CIRCULAR	0.01712	RCP	35.09	0.4	62.05	0.71	
366" (D)	3	0	1	CIRCULAR	0.00358	RCP	5.66	0.14	10.23	0.26	
372" (D)	3	0	1	CIRCULAR	0.00366	CMP	29.91	0.74	53.97	1.34	
378" (D)	1.5	0	1	CIRCULAR	0.01859	RCP	6.59	0.46	11.35	0.79	
384" (D)	1.5	0	1	CIRCULAR	0.01746	RCP	8	0.58	13.82	1	
390" (D)	1.5	0	1	CIRCULAR	0.04267	RCP	4.65	0.21	6.18	0.28	
396" (D)	0	0	1	CIRCULAR	0	Concrete	0	0	0	0	

Pipe	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3	
2.5	0	1	CIRCULAR	0.01937	RCP	13.15	0.23	22.7	0.4		
2.5	0	1	CIRCULAR	0.01908	HDPE	15.7	0.28	27.54	0.49		
2.5	0	1	CIRCULAR	0.02612	RCP	17.68	0.27	30.86	0.47		
0	0	1	IRREGULAR	0.01988	EAR	7.24	0	11.9	0		
1	3	1	PARABOLIC	0.02879	EAR	0	0	0	0		
1	3	1	PARABOLIC	0.27003	Concrete	0.13	0	0.22	0		
6	0	1	CIRCULAR	0.00199	RCP	110.08	0.58	212.93	1.13		
6	0	1	CIRCULAR	0.00114	RCP	274.05	1.91	375.58	2.62		
6	0	1	CIRCULAR	0.00155	RCP	254.72	1.53	337.99	2.03		
6	0	1	CIRCULAR	0.0177	RCP	270.2	0.48	359.91	0.64		
6	0	1	CIRCULAR	0.02642	RCP	255.97	0.37	336.33	0.49		
4.5	0	1	CIRCULAR	0.013	RCP	75.28	0.34	131.89	0.59		
3	0	2	CIRCULAR	0.01661	RCP	58.65	0.34	100.17	0.58		
2	0	1	CIRCULAR	0.02256	CMP	6.14	0.18	10.46	0.31		
2	0	1	CIRCULAR	0.04862	PVC	6.38	0.13	11.31	0.23		
1.5	0	1	CIRCULAR	0.00483	RCP	0.63	0.09	1.07	0.15		
1.5	0	1	CIRCULAR	0.07683	RCP	3.12	0.11	5.2	0.18		
5	0	1	CIRCULAR	0.00776	CMP	189.11	0.82	275.46	1.2		
1.5	0	1	CIRCULAR	0.3513	RCP	3.41	0.05	5.67	0.09		
4	0	1	CIRCULAR	0.01352	RCP	119.1	0.71	165.17	0.99		
3.5	0	2	CIRCULAR	0.05692	RCP	150.22	0.31	204.88	0.43		
3.5	0	2	CIRCULAR	0.02261	RCB	142.84	0.47	201.6	0.67		
1.5	0	1	CIRCULAR	0.01132	RCP	5.7	0.51	9.58	0.86		
3	0	1	CIRCULAR	0.02844	RCP	45.25	0.4	77.65	0.69		
1.5	0	1	CIRCULAR	0.01439	RCP	0.02	0	0.03	0		
1.5	0	1	CIRCULAR	0.04342	RCP	11.19	0.51	18.94	0.87		
2.75	0	1	CIRCULAR	0.01865	RCP	33.79	0.47	56.54	0.78		
1.5	0	1	CIRCULAR	0.10633	RCP	0	0	0	0		
5	0	1	CIRCULAR	0.00575	RCP	125.48	0.64	182.86	0.93		
1.5	0	1	CIRCULAR	0.01936	RCP	4.71	0.32	7.96	0.54		
1.5	0	1	CIRCULAR	0.06851	CMP	6.44	0.43	10.77	0.72		
0.67	0	1	CIRCULAR	0.03324	ABS	0	0	0	0		
2.5	0	1	CIRCULAR	0.00743	RCP	14.67	0.41	25.56	0.72		
1.5	0	1	CIRCULAR	-0.01328	RCP	0.16	0.01	0.25	0.02		
3	0	1	CIRCULAR	0.01791	RCP	38.86	0.44	69.79	0.78		
2.5	0	1	CIRCULAR	0.02058	RCP	7.9	0.13	14.48	0.25		
3	0	1	CIRCULAR	0.00752	RCP	29.49	0.51	54.3	0.94		
2.5	0	1	CIRCULAR	0.0369	RCP	17.46	0.22	33.11	0.42		
2.5	0	1	CIRCULAR	0.01465	HDPE	16.89	0.34	32.12	0.65		
1	0	1	CIRCULAR	0.07241	HDPE	0.65	0.07	1.1	0.11		
2	0	1	CIRCULAR	0.0205	RCP	16.03	0.49	30.72	0.95		
2	0	1	CIRCULAR	0.02143	RCP	9.33	0.28	15.56	0.47		
2	0	1	CIRCULAR	0.01468	RCP	12.58	0.46	22.22	0.81		
1	0	1	CIRCULAR	0.0449	ABS	0.74	0.1	1.19	0.16		
2	0	1	CIRCULAR	0.01632	RCP	8.67	0.3	14.47	0.5		
1.5	0	1	CIRCULAR	0.00337	RCP	2.69	0.44	4.43	0.73		
1.5	0	1	CIRCULAR	0.19239	HDPE	0.62	0.01	0.96	0.02		
2	0	1	CIRCULAR	0.01358	RCP	9.35	0.35	15.71	0.6		
1.5	0	1	CIRCULAR	0.00462	RCP	3.08	0.43	5.16	0.72		
1.5	0	1	CIRCULAR	0.00932	RCP	3.01	0.29	4.96	0.47		
1.5	0	1	CIRCULAR	0.01926	RCP	3.02	0.21	5.01	0.34		
2	0	1	CIRCULAR	0.0127	RCP	12.08	0.47	20.89	0.82		
2	0	1	CIRCULAR	0.03828	RCP	9.27	0.21	18.38	0.42		
2.5	0	1	CIRCULAR	0.00368	RCP	0.31	0.01	0.7	0.03		
6	0	1	CIRCULAR	0.00103	RCP	39.88	0.29	71.65	0.53		
3	0	1	CIRCULAR	0.01924	RCP	39.37	0.43	70.52	0.76		
2.5	0	1	CIRCULAR	0.01792	RCP	0	0	0	0		
2	0	1	CIRCULAR	0.03195	RCP	22.98	0.57	37.52	0.93		
2.5	0	1	CIRCULAR	0.03125	RCP	0	0	0	0		
4	0	1	CIRCULAR	0.00867	RCP	62.19	0.46	187.67	1.4		
2.5	0	1	CIRCULAR	0.11215	RCP	0.72	0.01	16.42	0.12		
1.5	0	1	CIRCULAR	0.03885	RCP	11.03	0.53	19.39	0.94		
1.5	0	1	CIRCULAR	0.00000	RCP	0	0	0	0		

Pipe Size	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Q _{con} vs Q _{cap3}	Q _{con} (10-year) (cfs)	Q _{con} vs Q _{cap3} (10-year)	
1.5	0	1	CIRCULAR	0.02304	RCP	0.73	0.05	1.42	0.09		
1	0	1	CIRCULAR	0.03061	PVC	0.2	0.03	0.45	0.07		
1.5	0	1	CIRCULAR	0.01932	RCP	4.02	0.28	6.77	0.46		
2	0	1	CIRCULAR	0.01945	RCP	12.14	0.38	21.02	0.67		
1.5	0	1	CIRCULAR	0.00379	HDPE	0.9	0.14	1.57	0.24		
2.5	0	1	CIRCULAR	0.00328	RCP	13.07	0.56	22.67	0.97		
2	0	1	CIRCULAR	0.0285	RCB	16.98	0.44	29.83	0.78		
2	0	1	CIRCULAR	0.02354	RCP	15.39	0.44	27.29	0.79		
2	0	1	CIRCULAR	0.03063	RCP	17.63	0.45	29.94	0.76		
2.5	0	1	CIRCULAR	0.01699	RCP	17.03	0.32	29.91	0.56		
3	0	1	CIRCULAR	0.01088	RCP	28.08	0.4	42.34	0.61		
4.5	0	1	CIRCULAR	0.01269	RCP	113.56	0.51	206.22	0.93		
1.5	0	1	CIRCULAR	0.00444	RCP	2.05	0.29	3.58	0.51		
1.5	0	1	CIRCULAR	0.05891	RCP	4.23	0.17	7.36	0.29		
1.5	0	1	CIRCULAR	0.0115	RCP	5.1	0.45	8.72	0.77		
6	0	1	CIRCULAR	0.00425	RCP	152.69	0.55	267.56	0.97		
1.5	0	1	CIRCULAR	0.05139	RCP	1.51	0.06	4.76	0.2		
2.5	0	1	CIRCULAR	0.05264	RCP	3.2	0.03	8.68	0.09		
6	0	1	CIRCULAR	0.04159	RCP	2.14	0	16.75	0.02		
2.5	0	1	CIRCULAR	0.05905	CONC	13.99	0.14	25.4	0.25		
2.5	0	1	CIRCULAR	0.00317	CONC	14.55	0.63	27.81	1.2		
6	0	1	CIRCULAR	0.00316	RCP	158.45	0.67	275.5	1.16		
1.5	0	1	CIRCULAR	0.13892	RCP	8	0.2	14.17	0.36		
6	0	1	CIRCULAR	0.00623	RCP	157.37	0.47	277.39	0.83		
4.5	0	1	CIRCULAR	0.01699	RCP	162.83	0.64	285.96	1.12		
6	0	1	CIRCULAR	0.00709	RCB	162.69	0.46	286.18	0.8		
2.5	0	1	CIRCULAR	0.06048	RCP	19.31	0.19	31.55	0.31		
2.5	0	1	CIRCULAR	0.01602	RCP	19.84	0.38	32.38	0.62		
2	0	1	CIRCULAR	0.02815	RCP	21.08	0.56	34.3	0.9		
2.5	0	1	CIRCULAR	0.02162	RCP	31.7	0.53	52.04	0.86		
2.5	0	1	CIRCULAR	0.01984	RCP	40.15	0.7	63.58	1.1		
4	0	1	CIRCULAR	0.00573	RCP	45.24	0.42	77.57	0.71		
3	0	1	CIRCULAR	0.00814	RCP	41.75	0.69	65.69	1.09		
3	0	1	CIRCULAR	0.03267	RCP	41.76	0.35	65.02	0.54		
4	0	1	CIRCULAR	0.0209	RCP	45.55	0.22	70.06	0.34		
6	0	1	CIRCULAR	0.0082	RCP	152.02	0.4	266.75	0.7		
6	0	1	CIRCULAR	0.00644	RCP	152.71	0.45	267.66	0.79		
6	0	1	CIRCULAR	0.00995	RCP	118	0.28	213.08	0.5		
6	0	1	CIRCULAR	0.00569	RCP	152.02	0.48	266.37	0.83		
2	0	1	CIRCULAR	0.00637	CMP	4.46	0.46	7.13	0.73		
2.5	0	1	CIRCULAR	0.02738	RCP	27.93	0.41	45.87	0.68		
2	0	1	CIRCULAR	0.04327	RCP	5.63	0.12	9.73	0.21		
2	0	1	CIRCULAR	0.02474	RCP	10.68	0.3	18.64	0.52		
1	0	1	CIRCULAR	0.06675	ABS	4.08	0.44	7.26	0.79		
2	0	1	CIRCULAR	0.01744	HDPE	14.38	0.48	24.16	0.81		
1.5	0	1	CIRCULAR	0.01806	HDPE	1.41	0.1	2.52	0.18		
1.5	0	1	CIRCULAR	0.03489	HDPE	1.4	0.07	2.5	0.13		
2	0	1	CIRCULAR	0.00705	HDPE	9.18	0.48	15.57	0.82		
1	0	1	CIRCULAR	0.1717	HDPE	1.22	0.08	2.12	0.14		
1	0	1	CIRCULAR	0.02095	HDPE	6.02	1.17	6.07	1.18		
1.75	0	1	CIRCULAR	0.09901	RCP	10.56	0.21	18.47	0.37		
1.5	0	1	CIRCULAR	0.01308	RCP	5.75	0.48	11.13	0.93		
1	0	1	CIRCULAR	0.05481	ABS	2.41	0.29	4.78	0.57		
1.5	0	1	CIRCULAR	0.01369	RCP	3.22	0.26	5.78	0.47		
1.5	0	1	CIRCULAR	0.01785	CMP	3.2	0.42	5.72	0.75		
2	0	1	CIRCULAR	0.02373	CMP	9.56	0.51	17.21	0.91		
1.5	0	1	CIRCULAR	0.02559	RCP	2.6	0.15	4.56	0.27		
2.5	0	1	CIRCULAR	0.02648	RCP	21.75	0.33	38.8	0.58		
2.5	0	1	CIRCULAR	0.03535	RCP	21.72	0.28	38.52	0.5		
2.5	0	1	CIRCULAR	0.00714	RCP	21.64	0.62	37.99	1.1		
2.5	0	1	CIRCULAR	0.00711	RCP	45.53	1.32	43.79	1.27		
3	0	1	CIRCULAR	0.02089	RCP	46.51	0.48	46.49	0.48		
3	0	1	CIRCULAR	0.02089	RCP	46.51	0.48	46.49	0.48		

ID	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Q _{con} vs Q _{cap3}	Q _{con} (10-year) (cfs)	Q _{con} vs Q _{cap3} (10-year)	
1	1.5	0	1	CIRCULAR	0.04813	HDPE	6.98	0.3	12.52	0.54	
2	2	0	1	CIRCULAR	0.01396	HDPE	10.27	0.38	18.42	0.69	
3	3	0	1	IRREGULAR	0.01417	Earthen	719.72	0.48	1067.45	0.71	
4	4	0	1	IRREGULAR	0.01338	Earthen	728.42	0.5	1099.99	0.75	
5	5	0	1	IRREGULAR	0.04713	Earthen	757.26	0.28	1141.84	0.42	
6	6	0	1	CIRCULAR	0.02166	CONC	3.27	0.62	4.63	0.88	
7	7	0	1	CIRCULAR	0.19098	HDPE	13.91	0.14	14.34	0.15	
8	1.5	0	1	CIRCULAR	0.00587	RCP	3.41	0.42	7.51	0.93	
9	1.5	0	1	CIRCULAR	0.0167	ABS	7.28	0.54	9.86	0.73	
10	1	0	1	CIRCULAR	0.00621	HDPE	1.27	0.45	2.24	0.8	
11	1	0	1	CIRCULAR	0.03881	HDPE	3.05	0.43	5.44	0.77	
12	0	0	1	IRREGULAR	0.00702	CONC	50.27	0	94.32	0	
13	0	0	1	IRREGULAR	0.01345	EAR	49.89	0	94.07	0.01	
14	3	0	1	CIRCULAR	0.06375	RCP	44.03	1.21	44.66	1.22	
15	1	3	1	PARABOLIC	0.01421	CONC	0.66	0.01	0.02	0	
16	1	0	1	CIRCULAR	0.0075	RCP	0.66	0.21	1.18	0.38	
17	2	0	1	CIRCULAR	0.00304	RCP	3.24	0.26	5.78	0.46	
18	2	6	1	TRIANGULAR	0.07367	CONC	1.11	0.01	1.93	0.01	
19	1.5	0	1	CIRCULAR	0.07777	RCP	6.57	0.22	13.01	0.44	
20	2.5	0	1	CIRCULAR	0.05451	RCP	27.04	0.28	40.1	0.42	
21	2.5	0	1	CIRCULAR	0.03714	RCP	28.19	0.36	43.61	0.55	
22	1.5	0	1	CIRCULAR	0.01976	RCP	1	0.07	1.93	0.13	
23	0	0	1	IRREGULAR	0.037	Earthen	729.88	0.06	1080.18	0.1	
24	0	0	1	IRREGULAR	0.01391	Earthen	730.34	0.05	1081.21	0.08	
25	2.5	0	1	CIRCULAR	0.08056	CONC	3.92	0.03	12.38	0.11	
26	2.5	0	1	CIRCULAR	0.00486	RCP	28.36	0.99	45.99	1.61	
27	4	0	1	CIRCULAR	0.04831	RCP	43.54	0.14	65.08	0.21	
28	4	0	1	CIRCULAR	0.00818	RCP	28.08	0.22	42.89	0.33	
29	6.5	0	1	CIRCULAR	0.00854	RCP	375.28	0.77	617.42	1.27	
30	1.5	0	1	CIRCULAR	0.11696	RCP	9.02	0.25	15.57	0.43	
31	2	0	1	CIRCULAR	0.29333	CMP	0.16	0	0.25	0	
32	6.5	0	1	CIRCULAR	0.00849	RCP	219.74	0.45	329.47	0.68	
33	6.5	0	1	CIRCULAR	0.01041	RCP	156.46	0.29	256.18	0.48	
34	6.5	0	1	CIRCULAR	0.01564	RCP	156.67	0.24	254.35	0.39	
35	6.5	0	1	CIRCULAR	0.00271	RCP	170.86	0.63	265.03	0.97	
36	3	9	1	RECT_CLOSED	0.03795	RCB	111.94	0.17	254.14	0.39	
37	3	9	1	RECT_CLOSED	0.00141	RCB	80.01	0.64	155.56	1.24	
38	6.5	0	1	CIRCULAR	0.00716	RCP	166.08	0.37	264.69	0.6	
39	2	0	1	CIRCULAR	0.05349	RCP	0.42	0.01	0.56	0.01	
40	2	0	1	CIRCULAR	0.16129	RCP	1.05	0.01	1.6	0.02	
41	6.5	0	1	CIRCULAR	0.0284	RCP	219.13	0.25	329.4	0.37	
42	6.5	0	1	CIRCULAR	0.03687	RCP	368.14	0.37	574.87	0.57	
43	4.5	0	1	CIRCULAR	0.00167	RCP	10.36	0.13	38.32	0.48	
44	4.5	0	1	CIRCULAR	0.00205	RCP	11.57	0.13	40.28	0.45	
45	3	0	1	CIRCULAR	0.00355	RCP	7.74	0.19	14.97	0.38	
46	2	0	1	CIRCULAR	0.013	HDPE	4.53	0.18	7.7	0.3	
47	2	0	1	CIRCULAR	0.01304	HDPE	4.53	0.18	7.69	0.3	
48	2	0	1	CIRCULAR	0.04507	HDPE	4.52	0.09	7.67	0.16	
49	6.5	0	1	CIRCULAR	0.01265	RCP	386.15	0.65	589.57	1	
50	2	0	1	CIRCULAR	0.00496	RCP	3.14	0.2	8.7	0.55	
51	4	0	1	CIRCULAR	0.0489	RCP	9.34	0.03	11.97	0.04	
52	1.5	0	1	CIRCULAR	0.01039	RCP	0.56	0.05	2.02	0.19	
53	4.5	0	1	CIRCULAR	0.00166	RCP	13.38	0.17	38.97	0.49	
54	4	0	1	CIRCULAR	0.01482	RCP	63.35	0.36	106.49	0.61	
55	4	0	1	CIRCULAR	0.31215	RCP	63.34	0.08	106.49	0.13	
56	2	0	1	CIRCULAR	0.03407	HDPE	3.46	0.08	5.66	0.14	
57	2.5	0	1	CIRCULAR	0.05257	RCP	29.11	0.31	49.03	0.52	
58	0	0	1	IRREGULAR	0.02049	Concrete	671.56	0.26	895.63	0.34	
59	0	0	1	IRREGULAR	0.01427	Concrete	657.97	0.3	875.9	0.4	
60	0	0	1	IRREGULAR	0.00495	Concrete	642.8	0.5	819.83	0.64	
61	0	0	1	IRREGULAR	0.02722	Concrete	661.4	0.22	879.17	0.29	
62	0	0	1	IRREGULAR	0.05109	Concrete	362.41	0.09	530.32	0.13	
63	0	0	1	IRREGULAR	0.02222	Concrete	661.4	0.22	879.17	0.29	

ID	Dimensions							2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Qcon (2-year) (cfs)	Qcon vs Qcap3	Qcon (10-year) (cfs)	Qcon vs Qcap3 (10-year)	
1	5	0	2	CIRCULAR	0.01882	RCP	263.28	0.37	496.96	0.7	
2	4	8	1	RECT_OPEN	0.03105	Earthen	0	0	0	0	
3	4	8	1	RECT_OPEN	0.03038	Earthen	0	0	0	0	
4	4	6	1	RECT_CLOSED	0.01022	Earthen	0	0	0	0	
5	6	0	1	CIRCULAR	0.00941	RCP	310.9	0.76	462.45	1.13	
6	1.5	0	1	CIRCULAR	0.05896	RCP	13.35	0.52	22.38	0.88	
7	1	0	1	CIRCULAR	0.01495	ABS	0.78	0.18	1.27	0.29	
8	6	0	1	CIRCULAR	0.00877	RCP	316.91	0.8	495.78	1.25	
9	6	0	1	CIRCULAR	0.01026	RCP	319.4	0.74	498.37	1.16	
10	6	0	1	CIRCULAR	0.03387	RCP	310.57	0.4	462.82	0.59	
11	2	0	1	CIRCULAR	0.0095	CMP	2.27	0.19	3.8	0.32	
12	1.5	0	1	CIRCULAR	0.01692	RCP	6.59	0.48	11.43	0.84	
13	1	0	1	CIRCULAR	0.05965	ABS	0.93	0.11	1.48	0.17	
14	2.5	0	1	CIRCULAR	0.00988	RCP	5.71	0.14	11.9	0.29	
15	1.5	0	1	CIRCULAR	0.04842	CMP	7.52	0.6	12.25	0.98	
16	3	8	1	RECT_OPEN	0.02633	RCB	77.83	0.12	201.13	0.32	
17	1.5	0	1	CIRCULAR	0.07663	CMP	21.89	1.39	22.38	1.42	
18	3	4.6	1	CIRCULAR	0.00429	RCP	53.7	0.29	60.37	1.38	
19	2.5	0	1	CIRCULAR	0.03133	RCP	20.85	0.23	36.26	0.5	
20	1.5	0	1	CIRCULAR	0.02019	CMP	1.44	0.1	2.33	0.16	
21	2.5	0	1	CIRCULAR	0.03182	RCP	11.99	0.16	21.96	0.3	
22	2.5	0	1	CIRCULAR	0.02222	RCP	15.4	0.25	28.46	0.47	
23	2	0	1	CIRCULAR	0.02762	RCP	19.59	0.52	34.69	0.92	
24	2.5	0	1	CIRCULAR	0.02196	RCP	1.28	0.02	2.09	0.03	
25	1.5	0	1	CIRCULAR	0.01657	RCP	4.56	0.34	7.89	0.58	
26	2	0	1	CIRCULAR	0.01262	RCP	15.11	0.59	26.86	1.06	
27	1.5	0	1	CIRCULAR	0.08025	CMP	3.38	0.21	6.24	0.39	
28	3	0	1	CIRCULAR	0.02419	RCP	67.79	0.65	91.09	0.88	
29	3	0	1	CIRCULAR	0.05238	RCP	68.2	0.45	92.86	0.61	
30	5	0	1	CIRCULAR	0.00207	RCP	127.1	1.07	183.98	1.55	
31	1.25	0	1	CIRCULAR	0.10592	RCP	1.08	0.05	0.88	0.04	
32	5	0	1	CIRCULAR	0.01039	CMP	126.26	0.48	183.44	0.69	
33	2.5	0	1	CIRCULAR	0.00174	RCP	59.96	3.51	78.23	4.58	
34	2.5	0	1	CIRCULAR	0.02646	RCP	59.95	0.9	78.57	1.18	
35	3	0	1	CIRCULAR	0.03132	RCP	67.57	0.57	90.69	0.77	
36	3	0	1	CIRCULAR	0.04937	RCP	8.13	0.05	13.49	0.09	
37	1	0	1	CIRCULAR	0.07018	HDPE	0.96	0.1	1.52	0.16	
38	6.5	0	1	CIRCULAR	0.00966	RCP	317.33	0.62	486.52	0.94	
39	1	0	1	CIRCULAR	0.03732	HDPE	0.63	0.09	1.01	0.15	
40	3	0	1	CIRCULAR	0.00527	RCP	9.46	0.2	17.8	0.37	
41	5	0	1	CIRCULAR	0.01672	RCP	112.98	0.34	216.95	0.64	
42	3.5	0	1	CIRCULAR	0.55138	RCP	0.79	0	1.31	0	
43	6	0	1	CIRCULAR	0.02255	RCP	107.16	0.17	207.85	0.33	
44	2.5	0	1	CIRCULAR	0.05594	RCP	3.9	0.04	6.48	0.07	
45	2	0	1	CIRCULAR	0.07201	HDPE	3.65	0.06	6.06	0.1	
46	2.5	0	1	CIRCULAR	0.00685	RCP	6.78	0.2	14.89	0.44	
47	1	3	1	PARABOLIC	0.02976	Concrete	0	0	0	0	
48	2.75	0	1	CIRCULAR	0.02432	CMP	15.27	0.34	29.44	0.66	
49	1.5	0	1	CIRCULAR	0.04093	RCP	10.27	0.48	22.81	1.07	
50	1.5	0	1	CIRCULAR	0.16428	CMP	3.43	0.15	6.14	0.27	
51	5	0	1	CIRCULAR	0.00306	RCP	79.78	0.55	174.84	1.21	
52	1.5	0	1	CIRCULAR	0.05426	RCP	6.09	0.25	10.25	0.42	
53	1.5	0	1	CIRCULAR	0.05762	CMP	2.8	0.2	4.45	0.33	
54	1	0	1	CIRCULAR	0.0673	Concrete	0.7	0.11	1.2	0.19	
55	2.5	0	1	CIRCULAR	0.03394	CONC	10.28	0.14	23.28	0.31	
56	4	0	1	CIRCULAR	0.03621	RCP	119.53	0.44	165.45	0.61	
57	2	4	1	RECT_OPEN	0.00034	Earthen	2.11	0.58	4.14	1.14	
58	1	3	1	PARABOLIC	0.10057	CONC	0.12	0	0.16	0	
59	2	0	1	CIRCULAR	0.06139	RCP	9.23	0.16	18.73	0.33	
60	0.5	3	1	TRIANGULAR	0.02359	CONC	0.17	0.03	0.27	0.05	
61	2	0	1	CIRCULAR	0.1068	RCP	0.17	0	0.27	0	
62	3	0	1	CIRCULAR	0.01235	CONC	8.96	0.12	14.77	0.2	
63	3	0	1	CIRCULAR	0.01235	CONC	8.96	0.12	14.77	0.2	

e	DIMENSIONS										2-year		10-year	
	D' or H' (diameter) or (height)	B' (width)	Barrels	Shape	Slope (ft/ft)	Material	Q _{con} (2-year) (cfs)	Qcon vs Qcap3	Q _{con} (10-year) (cfs)	Qcon vs Qcap3				
	2.5	0	1	CIRCULAR	0.07002	CONC	23.12	0.21	31.21	0.29				
	0.5	3	1	PARABOLIC	0.02878	Concrete	15.86	2.6	19.82	3.25				
	2.5	0	1	CIRCULAR	0.04492	CONC	21.65	0.25	28.73	0.33				
	2.5	0	1	CIRCULAR	0.02864	RCP	16.38	0.24	29.29	0.42				
	1.5	0	1	CIRCULAR	0.01469	HDPE	4.01	0.32	6.87	0.54				
	2.5	0	1	CIRCULAR	0.02426	RCP	24.53	0.38	41.21	0.65				
	1	3	1	PARABOLIC	0.04219	Other	0.29	0.04	0.54	0.08				
	1.5	0	1	CIRCULAR	0.10623	RCP	4.3	0.13	7.73	0.23				
	2.5	0	1	CIRCULAR	0.04233	RCP	24.28	0.29	40.64	0.48				
	1.5	0	1	CIRCULAR	0.08841	RCP	8.48	0.27	14.99	0.48				
	1.5	0	1	CIRCULAR	0.08949	RCP	11.01	0.35	19.56	0.62				
	1.5	0	1	CIRCULAR	0.07287	RCP	7.19	0.25	12.77	0.45				
	3	0	1	CIRCULAR	0.01118	RCP	24.09	0.34	40.91	0.58				
	3	0	1	CIRCULAR	0.00616	RCP	23.5	0.45	40.21	0.77				
	3	0	1	CIRCULAR	0.01387	RCP	31.04	0.4	44.05	0.56				
	2.5	0	1	CIRCULAR	0.01682	RCP	19.18	0.36	33.81	0.64				
	1.5	0	1	CIRCULAR	0.10761	RCP	19.02	0.55	33.66	0.98				
	1.5	0	1	CIRCULAR	0.01317	RCP	4.47	0.37	7.35	0.61				
	2.5	0	1	CIRCULAR	0.07204	RCP	16.04	0.15	26.78	0.24				
	1.5	0	1	CIRCULAR	0.04634	CMP	2.46	0.2	4.39	0.36				
	1	3	1	PARABOLIC	0.19867	CONC	0.21	0	0.34	0.01				
	3	0	1	CIRCULAR	0.03611	RCP	42.13	0.33	71.86	0.57				
	1.5	0	1	CIRCULAR	0.03346	RCP	2.18	0.11	3.91	0.2				
	0	0	1	IRREGULAR	0.04951	Other	1.05	0.01	2	0.01				
	1	3	1	PARABOLIC	0.17945	Other	1.44	0.02	2.74	0.03				
	3	0	1	CIRCULAR	0.00744	RCP	22.29	0.39	39.45	0.69				
	1	3	1	PARABOLIC	0.0674	Other	10.58	0.21	20.29	0.4				
	0	0	1	IRREGULAR	0.03539	Other	0	0	0	0				
	4	0	1	CIRCULAR	0.00777	RCP	56.8	0.45	94.47	0.75				
	1.5	0	1	CIRCULAR	0.00648	RCP	1.85	0.22	2.85	0.34				
	0	0	1	IRREGULAR	0.02576	CONC	0	0	0	0				
	3	0	1	CIRCULAR	0.33922	CMP	19.27	0.09	33.52	0.16				
	4	0	1	CIRCULAR	0.02456	RCP	78.07	0.35	131.69	0.59				
	3	0	1	CIRCULAR	0.04727	RCP	44.03	0.3	84.98	0.59				
	1.5	0	1	CIRCULAR	0.10367	RCP	5.26	0.16	8.96	0.26				
	0	0	1	IRREGULAR	0.08468	Other	3.44	0.01	6.06	0.02				
	1.5	0	1	CIRCULAR	0.07684	RCP	6.52	0.22	11.27	0.39				
	1.5	0	1	CIRCULAR	0.02637	RCP	6.77	0.4	11.67	0.68				
	2	0	1	CIRCULAR	0.02899	RCP	3.5	0.09	5.69	0.15				
	2	0	1	CIRCULAR	0.00558	RCP	7.04	0.42	12.13	0.72				
	2	0	1	CIRCULAR	0.02137	RCP	7.53	0.23	12.1	0.37				
	1	0	1	CIRCULAR	0.05591	AC	3.7	0.44	6.79	0.81				
	2	4	1	RECT_OPEN	0.02756	Other	2.09	0.01	4.12	0.02				

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Inflow (100-year)
341.403	341.403	0	344.82	0	243.07	Yes	345.2	0	286.28	YES	347.76	0	347.76
346.771	346.771	0	346.77	0	0	No	346.77	0	0	NO	346.99	0	346.99
347.275	347.275	0	347.27	0	0	No	347.28	0	0	YES	347.84	0	347.84
329.825	329.825	0	333.52	0	671.56	Yes	333.98	0	895.63	YES	334.2	0	334.2
328.592	328.592	0	331.4	0	657.23	Yes	331.88	0	876.56	YES	332.2	0	332.2
326.449	326.449	0	328.91	0	657.97	Yes	329.28	0	875.9	YES	329.5	0	329.5
322.374	322.374	0	444.62	0	10.29	No	324.2	0	879.17	YES	324.44	0	324.44
303.901	303.901	0	429.18	0	10.28	No	307.17	0	891.94	YES	307.49	0	307.49
444	479.382	35.382	323.89	0	662.04	Yes	444.97	0	24.28	NO	445.15	0	445.15
428.443	433.443	5	306.79	0	669.07	Yes	430.99	0	27.36	NO	433.52	0	433.52
453.153	453.89	0	454.89	0	0	Yes	454.89	0	0	YES	454.89	0	454.89
402.105	408.105	6	405.52	0	184.14	No	407.36	0	296.33	NO	408.11	0	408.11
298.4	332.835	34.435	300.87	0	130.94	No	302.3	0	299.03	NO	304.38	0	304.38
343.645	343.645	0	349.23	0	326.79	Yes	349.9	0	506.86	YES	349.98	0	349.98
442.149	442.149	0	442.29	0	0.59	Yes	442.35	0	1.47	YES	442.39	0	442.39
383	383.487	<Null>	384.16	0	223.19	Yes	384.16	0	223.19	YES	384.16	0	384.16
395.27	398.27	3	395.47	0	18.95	No	395.51	0	25.64	NO	395.54	0	395.54
406.663	407.059	0	406.66	0	0	No	406.66	0	0	NO	406.66	0	406.66
379.738	379.738	0	379.89	0	4.81	Yes	379.95	0	8.3	YES	380.03	0	380.03
387.4	398.929	11.529	389.54	0	289.03	No	390	0	408.32	NO	390.54	0	390.54
383.6	389.575	5.975	385.01	0	295.61	No	385.34	0	408	NO	385.69	0	385.69
386.822	386.822	0	387.02	0	7	Yes	387.1	0	11.94	YES	387.22	0	387.22
354	360.317	<Null>	354.99	0	6.55	No	354.99	0	6.55	NO	354.99	0	354.99
295.358	301.358	<Null>	296.01	0	7.53	No	296.01	0	7.53	NO	296.01	0	296.01
368.044	371.044	<Null>	368.04	0	0	No	368.04	0	0	NO	368.04	0	368.04
345.701	352.201	6.5	346.14	0	2.5	No	346.28	0	4.25	NO	346.46	0	346.46
0	0	0	283.24	0	726.1	Yes	0	0	0	NO	0	0	0
414.412	414.412	0	0	0	0	No	414.41	0	0	NO	414.41	0	414.41
303.5	314.067	10.567	414.41	0	0	No	305.11	0	50.94	NO	305.71	0	305.71
372.88	373.335	0	304.64	0	26.66	No	374.76	0	191.57	YES	375.73	0	375.73
386.919	393.919	7	374.22	0	110.24	Yes	389.41	0	132.86	NO	391.88	0	391.88
352.416	352.556	0	388.73	0	78.72	No	358.57	2.22	240.67	YES	358.89	0.163	358.89
355.651	355.651	0	356.19	1.29	99.54	Yes	360.7	4.06	12.07	YES	360.7	0.183	360.7
354.446	354.446	0	360.7	4.06	12.07	Yes	360.58	0	271	YES	360.58	0	360.58
348.963	357.963	9	360.58	0	271	Yes	351.5	0	237.68	NO	351.92	0	351.92
339.925	348.925	9	350.53	0	118.12	No	342.94	0	274.27	NO	344.02	0	344.02
373.974	373.974	0	341.97	0	122.31	No	375.95	20.75	20.75	YES	376.91	1.55	376.91
0	0	0	375.22	11.45	11.45	Yes	0	0	0	NO	0	0	0
374.021	374.021	0	0	0	0	No	374.21	0	6.18	YES	374.25	0	374.25
376.37	376.548	0	374.17	0	3.52	Yes	378.43	14.01	16.13	YES	379.51	0.859	379.51
408.997	408.997	0	377.8	7.43	9.63	Yes	409.19	0	2.74	YES	409.24	0	409.24
407.59	407.59	0	409.14	0	1.44	Yes	408.59	0	4	YES	408.67	0	408.67
443.09	443.09	0	408.25	0	2.17	Yes	443.3	1.36	11.37	YES	443.34	0.077	443.34
460.336	461.226	0	443.24	0.69	6.21	Yes	462.88	12.75	12.75	YES	462.92	0.97	462.92

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
482.694	490.694	8	477.76	2.96	15.8	No	483.79	0.29	22.72	NO	484	0.011	
433	437.465	4.465	483.51	0.18	13.16	No	433.66	3.77	4.45	NO	433.88	0.227	
373.7	375.557	0.557	433.51	2.02	2.69	No	374.28	0	0.09	NO	374.56	0	
430	442.835	12.835	374.05	0	0.05	No	432.25	0	165.49	NO	432.41	0	
411	418.952	7.952	431.85	0	123.45	No	413.01	0	71.84	NO	416.06	0	
419.743	419.743	0	412.35	0	42.11	No	422.88	1.58	34.89	YES	423.18	0.076	
443.159	449.159	6	421.93	0.98	20.97	Yes	444.12	0	15.67	NO	446.6	0	
439.995	444.995	5	443.89	0	9.41	No	442.46	0	20.29	NO	445	0	
388.527	398.827	10.3	441.11	0	12.18	No	394.18	0	271.76	NO	396.84	0	
388.355	397.355	9	391.96	0	153.52	No	393.98	0	287.96	NO	396.45	0	
387.716	394.716	7	391.25	0	162.23	No	393.57	0	286.45	NO	393.73	0	
390	397.709	7.709	390.56	0	162.79	No	397.41	2.69	267.74	NO	398.99	0.14	
412.208	417.208	5	394.6	1.67	152.74	No	414	0	52.31	NO	417.47	0	
430.764	430.764	0	413.5	0	31.88	No	431.81	0	0.24	YES	431.81	0	
396	433.734	37.734	431.8	0	0.16	Yes	404.72	0	46.49	NO	405.07	0	
442.39	442.475	0	404.13	0	46.51	No	444.42	13.49	13.68	YES	444.46	0.849	
409.806	416.806	7	443.93	7.4	7.59	Yes	413.4	20.44	62.56	NO	413.89	1.44	
332.276	332.691	0	412.23	11.02	34.03	No	335.11	33.54	33.54	YES	336.26	3.55	
329.327	329.327	0	334.21	19.28	19.28	Yes	333.59	32.14	275	YES	335.16	2.46	
324.25	333.38	9.13	333.3	18.07	164.27	Yes	330.77	0	345.44	NO	334.57	0	
378.33	382.41	4.08	328.65	0	179.71	No	382.75	9.27	69.85	YES	382.94	0.413	
384.013	391.513	7.5	381.49	5.29	45.79	No	389.31	0	311.21	NO	391.65	0	
376.5	386.892	10.392	386.7	0	180.48	No	380.86	0	340.12	NO	382.32	0	
374.327	375.504	0	379.57	0	185.48	No	377.48	4.27	96.59	YES	377.51	0.218	
406.689	412.189	5.5	377.42	2.39	51.69	Yes	408.03	0	47.74	NO	408.28	0	
400.418	407.418	7	407.72	0	29.22	No	401.72	13.42	55.3	NO	401.99	0.869	
389.922	396.922	7	401.46	8.02	35.59	No	392.82	0	65.91	NO	393.15	0	
390.701	397.701	7	391.17	0	43.61	No	392.87	0	56.01	NO	393.28	0	
383	395.741	12.741	391.79	0	36.33	No	386.99	0	330.54	NO	387.65	0	
385.83	395.864	10.034	386.08	0	219.89	No	392.16	0	585.88	NO	394.7	0	
397.87	397.87	0	390.13	0	375.3	No	398.25	4.63	4.63	YES	398.32	0.246	
0	0	0	398.19	2.83	2.83	Yes	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
404.786	405.75	0	0	0	0	No	404.87	0	5.41	NO	404.9	0	
0	0	0	404.85	0	2.98	No	0	0	0	NO	0	0	
374.2	380.26	6.06	0	0	0	No	378.56	0	39.57	NO	378.94	0	
389.45	397.45	8	377.51	0	13.67	No	394.72	0	517.42	NO	395.38	0	
390.224	397.974	7.75	393.24	0	330.64	No	395.93	0	489.97	NO	396.52	0	
397.729	401.729	4	394.08	0	319.53	No	398.02	0	1.27	NO	399.78	0	
393.464	401.214	7.75	397.95	0	0.78	No	399.31	0	488.67	NO	400.04	0	
409.6	416.359	6.759	397.52	0	316.96	No	415.41	0	183.98	NO	416.55	0	
425.117	425.117	0	413.16	0	126.64	No	425.73	6.77	13.52	YES	425.9	0.372	
333.493	333.493	0	425.59	4.06	8.15	Yes	336.95	0.17	85.44	YES	337.31	0.005	

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
450.91	459.585	8.675	433.36	0	5.12	No	451.42	0	3.92	NO	529.36	0	0
447.38	455.652	8.272	451.29	0	2.23	No	447.85	0	3.91	NO	529.99	0	0
436.24	442.716	6.476	447.73	0	2.22	No	436.72	0	5.45	NO	524.35	0	0
434.82	442.08	7.26	436.6	0	3.1	No	435.46	0	8.82	NO	505.65	0	0
436.92	447.818	10.898	435.28	0	4.93	No	437.69	0	15.89	NO	513.45	0	0
439.82	448.262	8.442	437.49	0	9.12	No	440.28	0	3.9	NO	527.32	0	0
453.1	462.786	9.686	440.16	0	2.21	No	453.57	0	3.93	NO	534.18	0	0
443.04	449.186	6.146	453.45	0	2.24	No	443.5	0	3.9	NO	526.65	0	0
410	421.927	11.927	443.39	0	2.21	No	410.2	0	0.98	NO	461.2	0	0
439.709	439.896	0	410.16	0	0.62	No	440.06	0	5.95	YES	440.1	0	0
341.396	341.396	0	440.01	0	3.41	Yes	342.98	0	56.3	YES	343.7	0	0
316.022	316.022	0	342.48	0	29.43	Yes	316.04	0	1.2	YES	316.05	0	0
454.343	454.343	0	316.04	0	0.7	Yes	454.5	0	4.14	YES	454.54	0	0
350.392	350.392	0	454.44	0	2.11	Yes	350.39	0	0	NO	350.39	0	0
445.997	445.997	0	350.39	0	0	No	446.49	0	15.03	YES	446.57	0	0
285.632	285.768	0	446.42	0	9.5	Yes	290.98	0	482.4	YES	291.43	0	0
431.602	431.602	0	290.66	0	380.57	Yes	432.24	0	27.93	YES	432.42	0	0
276.635	276.635	0	432.09	0	15.86	Yes	278.95	0	1139.67	YES	279.27	0	0
285.233	285.233	0	278.38	0	754.79	Yes	288.63	0	1081.62	YES	289.56	0	0
303	319.993	0	288.07	0	731.01	Yes	311.9	0	1.52	NO	311.91	0	0
429.345	429.407	0	311.89	0	0.91	No	429.6	0	4.12	YES	429.78	0	0
316.031	316.031	0	429.51	0	1.94	Yes	319.01	0	894.89	YES	319.26	0	0
425.583	425.583	0	318.67	0	680.38	Yes	425.66	0	6.62	YES	425.69	0	0
431.881	431.881	0	425.64	0	4.1	Yes	435.2	0	79.41	YES	436.83	0	0
425.701	425.701	0	434.27	0	45.74	Yes	425.76	0	3.12	YES	425.78	0	0
392.829	392.829	0	425.75	0	1.97	Yes	393.04	0	54.1	YES	393.06	0	0
433.408	437.943	4.535	393.01	0	43.09	Yes	433.83	0	243.4	NO	433.93	0	0
307.49	307.49	0	433.76	0	178.42	No	312.2	0	157.22	YES	313.01	0	0
429.226	429.226	0	311.56	0	89.79	Yes	429.63	0	15.44	YES	429.73	0	0
404.754	409.934	5.18	429.56	0	8.68	Yes	408.51	0	68.29	NO	410.03	0	0
434.677	434.825	0	407.29	0	37.09	No	435	0	5.25	YES	435.06	0	0
0	0	0	434.92	0	2.54	Yes	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
409.937	414.937	5	0	0	0	No	410.05	0	0.27	NO	411.99	0	0
415.682	422.682	7	410.03	0	0.17	No	415.77	0	0.27	NO	415.79	0	0
0	0	0	415.75	0	0.17	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
287.2	290.419	3.219	0	0	0	No	290.82	0	40.99	YES	291.58	0	0
288.017	292.517	4.5	290.57	0	23.56	Yes	290.95	0	33.66	NO	291.85	0	0
391.025	392.025	1	290.74	0	19.02	No	393.22	0	46.99	YES	393.42	0	0
0	0	0	392.92	0	29.8	Yes	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
440	441.073	1.073	0	0	0	No	440.7	0	4.63	NO	440.76	0	0
311.506	316.506	5	440.65	0	2.57	No	313.41	0.4	20.67	NO	313.26	0.016	0

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
354	354.566	0.566	303.21	0	2.95	No	354.01	0	0.14	NO	354.02	0	0
414.035	414.192	0	354.01	0	0.04	No	414.08	0	1.14	NO	414.1	0	0
0	0	0	414.07	0	0.72	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
395.666	395.666	0	0	0	0	No	396.09	0	86.86	YES	396.09	0	0
438.347	438.347	0	396.09	0	86.86	Yes	438.38	0	0.55	YES	438.39	0	0
448.444	448.444	0	438.37	0	0.32	Yes	448.68	0	1.26	YES	448.74	0	0
443.335	443.335	0	448.62	0	0.71	Yes	443.83	0	1.23	YES	443.89	0	0
400.331	400.331	0	443.75	0	0.69	Yes	402.42	0	27.82	YES	415.22	0	0
413	414.259	1.259	401.54	0	15.79	Yes	415.21	0	29.92	YES	415.46	0	0
427.746	439.246	11.5	415.03	0	17.04	Yes	429.65	0	27.42	NO	435.1	0	0
431.077	437.077	6	429.09	0	15.39	No	431.08	0	0	NO	434.73	0	0
431.676	436.676	5	431.08	0	0	No	431.68	0	0	NO	434.69	0	0
437.805	437.805	0	431.68	0	0	No	437.86	0	0.97	YES	437.88	0	0
0	0	0	437.85	0	0.58	Yes	0	0	0	NO	0	0	0
432.413	433.275	0	0	0	0	No	432.56	0	15.51	NO	432.57	0	0
469.206	476.123	6.917	432.53	0	10.95	No	470.28	0	9.06	NO	473.91	0	0
462.42	469.992	7.572	469.96	0	5.49	No	473.46	0	80.11	YES	478.54	0	0
465.861	470.861	5	464.33	0	47.07	No	467.08	0	25.55	NO	471.11	0	0
485.912	495.586	9.674	466.48	0	13.1	No	486.51	0	25.56	NO	486.76	0	0
277.5	283.037	5.537	486.34	0	13.1	No	280.17	0	90.33	NO	280.85	0	0
277.2	282.045	4.845	279.44	0	51.7	No	280.05	0	92.91	NO	280.62	0	0
306.849	306.849	0	279.34	0	52.51	No	310.11	0	887.3	YES	310.45	0	0
459.186	459.937	0.751	309.73	0	666.03	Yes	459.24	0	3.15	NO	459.25	0	0
439.108	494.57	55.462	459.22	0	1.93	No	439.43	0	3.57	NO	439.51	0	0
479	480.009	1.009	439.36	0	2.27	No	479	0	0	NO	479	0	0
426.021	433.105	7.084	479	0	0	No	426.78	0	6.67	NO	427.01	0	0
449.195	483.482	34.287	426.62	0	4.12	No	449.53	0	3.59	NO	449.62	0	0
415.533	421.533	6	449.47	0	2.28	No	415.63	0	0.5	NO	415.65	0	0
393.28	406.28	13	415.61	0	0.32	No	393.9	0	10.54	NO	394.08	0	0
348.925	348.925	0	393.76	0	6.39	No	349.83	0	53.76	YES	350.24	0	0
436.266	449.407	13.141	349.55	0	27.99	Yes	444.49	0.92	51.9	NO	442.99	0.041	0
445.582	450.582	5	437.97	0.59	40.3	No	445.93	0	5.79	NO	446.03	0	0
432.866	443.867	11.001	445.85	0	3.42	No	436.09	0	49.68	NO	436.68	0	0
442.07	447.07	5	434.56	0	40.15	No	442.22	0	0.75	NO	442.25	0	0
478.344	479.047	0.547	442.19	0	0.48	No	478.34	0	0	NO	478.34	0	0
413.957	420.957	7	478.34	0	0	No	415.13	0	54.12	NO	415.21	0	0
404.53	411.53	7	415	0	43.16	No	405.84	0	54.1	NO	405.92	0	0
0	0	0	405.7	0	43.11	No	0	0	0	NO	0	0	0
435.197	439.197	4	0	0	0	No	443.49	0	7.65	YES	446.83	0	0
336.145	336.409	0	449.38	0	4.27	Yes	338.03	0	35.52	YES	338.38	0	0
492.567	492.567	0	337.89	0	17.68	Yes	498.06	0	4.32	YES	496.31	0	0
354	363.998	9.998	492.74	0	0.5	Yes	354.56	0	22.72	NO	354.74	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
489.972	490.419	0	311.58	0	12.9	No	490.01	0	0.99	NO	490.03	0	0
319.955	324.955	5	490	0	0.55	No	321.34	0	22.73	NO	321.87	0	0
406.116	406.116	0	320.97	0	12.95	No	406.19	0	2.39	YES	406.23	0	0
375.226	375.226	0	406.17	0	1.34	Yes	375.82	0	4.46	YES	375.99	0	0
429.62	436.773	7.153	375.69	0	2.81	Yes	430.55	0	17.64	NO	496.73	0	0
402.2	416.522	14.322	430.28	0	9.81	No	404.49	0	79.14	NO	441.75	0	0
421.8	437.233	15.433	403.65	0	46.61	No	423.55	0	41.83	NO	502.57	0	0
429.626	438.126	8.5	422.76	0	24.63	No	430.88	0	21.7	NO	435.79	0	0
443.331	447.831	4.5	430.38	0	12.93	No	443.83	0	4.46	NO	443.99	0	0
462.385	469.885	7.5	443.71	0	2.55	No	462.76	0	4.48	NO	462.87	0	0
419.264	423.764	4.5	462.67	0	2.56	No	425.01	0	20.74	YES	425.77	0	0
447.138	450.138	3	421.69	0	12.79	No	450.15	0	62.05	YES	450.27	0	0
415.8	422.621	6.821	450.04	0	35.09	No	421.05	0	15.99	NO	423.2	0	0
403.376	419.876	16.5	416.91	0	12.92	No	414.27	0	31.38	NO	418.97	0	0
407.033	411.533	4.5	408.43	0	22.17	No	415.95	0	3.92	YES	421.24	0	0
413.4	433.957	20.557	408.59	0	1.86	No	425.63	0	63.15	NO	487.16	0	0
407.93	422.158	14.228	415.02	0	36.89	No	410.16	0	64.08	NO	461.16	0	0
371.911	377.411	5.5	409.36	0	37.6	No	372.25	4.73	4.73	NO	372.77	0.274	0
353.293	357.793	4.5	372.16	2.54	2.54	No	353.82	6.16	6.16	NO	354.01	0.386	0
326.427	329.427	3	353.68	3.44	3.44	No	326.8	1.22	1.22	NO	326.9	0.047	0
440.891	441.85	0	326.71	0.71	0.71	No	441.92	1.23	1.23	YES	441.93	0.057	0
451.819	451.819	0	441.91	0.72	0.72	Yes	451.84	0.87	0.87	YES	451.84	0.037	0
504	506.222	2.222	451.83	0.5	0.5	Yes	504	0	0	NO	504	0	0
418.673	418.869	0	504	0	0	No	419.05	0.27	0.27	YES	419.09	0.012	0
367.261	372.761	5.5	419.03	0.18	0.18	Yes	368.95	4.64	90.82	NO	371.81	0.2	0
419.441	426.441	7	368.51	2.83	52.76	No	419.44	0	0	NO	420.13	0	0
418	426.009	8.009	419.44	0	0	No	418	0	0	NO	418.4	0	0
310.585	314.085	3.5	418	0	0	No	311.18	5.48	5.48	NO	311.33	0.233	0
370.137	375.637	5.5	311.06	3.39	3.39	No	371.05	2.98	31.21	NO	371.17	0.169	0
372.601	374.524	0	370.92	1.8	23.13	No	372.64	2.8	2.8	NO	372.65	0.159	0
372.14	372.14	0	372.63	1.69	1.69	No	375.16	4.26	28.82	YES	375.71	0.194	0
300.311	304.811	4.5	374.57	2.71	21.66	Yes	301.57	1.49	33.82	NO	306.56	0.074	0
497	499.014	2.014	301.11	0.88	19.08	No	498.67	0	3.91	NO	500.32	0	0
309.358	313.858	4.5	409.57	0	2.18	No	310.09	14.99	14.99	NO	313.41	0.989	0
309.882	314.382	4.5	309.89	8.48	8.48	No	310.37	7.74	7.74	NO	310.72	0.478	0
306.317	310.817	4.5	310.24	4.3	4.3	No	307.17	4.61	19.59	NO	311.5	0.326	0
306.218	310.718	4.5	306.93	2.55	11.02	No	306.92	5.07	12.8	NO	309.71	0.334	0
286.7	291.386	4.686	306.73	2.92	7.21	No	290.9	0.75	40.94	NO	291.7	0.046	0
287.521	291.021	3.5	290.35	0.46	23.95	No	290.91	7.35	7.35	NO	291.63	0.341	0
286.604	290.104	3.5	290.77	4.46	4.46	No	290.85	3.45	73.7	YES	291.63	0.216	0
329.608	332.608	3	290.33	1.99	30.49	Yes	330.95	23.62	23.62	NO	332.22	1.7	0
0	0	0	330.55	13.49	13.49	No	304.33	0	0	NO	0	0	0
303.682	306.682	3	0	0	0	No	304.33	13.43	15.09	NO	304.58	0.904	0
454.567	454.91	0	304.16	7.68	8.5	No	454.67	0	11.93	NO	454.72	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
0	0	0	297.1	4.08	7.57	No	0	0	0	NO	0	0	0
296.45	301.45	5	0	0	0	No	297.7	1.1	12.13	NO	298.06	0.047	0.047
433.306	435.306	2	297.35	0.72	7.04	No	434.5	15.57	19.87	NO	435.01	1.04	1.04
432.339	437.339	5	434.16	8.92	11.29	No	433.88	7.17	27.02	NO	434.51	0.45	0.45
444.938	450.438	5.5	433.46	4.25	15.53	No	445.8	1.13	28.93	NO	446.13	0.056	0.056
470.205	475.205	5	445.57	0.7	15.24	No	470.89	4.41	4.41	NO	474	0.247	0.247
429	441.503	12.503	470.72	2.66	2.66	No	429.75	0	7.69	NO	429.99	0	0
0	0	0	429.57	0	4.54	No	0	0	0	NO	0	0	0
469.727	475.588	5.861	0	0	0	No	470.5	0.47	4.86	NO	473.89	0.021	0.021
470.747	475.747	5	470.28	0.3	2.95	No	471.79	12.56	12.56	NO	474.79	0.721	0.721
469.845	474.845	5	471.51	7.27	7.27	No	470.5	4.29	4.29	NO	473.95	0.243	0.243
468.335	474.763	6.428	470.32	2.58	2.58	No	469.9	0.63	24.04	NO	473.37	0.031	0.031
469.45	476.339	6.889	469.46	0.4	14.38	No	470.56	0.67	13.23	NO	473.98	0.028	0.028
469.037	472.037	3	470.23	0.44	7.71	No	470.02	1.5	1.5	NO	472.56	0.067	0.067
471.488	475.988	4.5	469.52	0.97	0.97	No	471.73	1.7	1.7	NO	471.79	0.073	0.073
465.742	472.234	6.492	471.68	1.09	1.09	No	468.65	4.01	31.47	NO	471.49	0.193	0.193
466.243	470.243	4	467.03	2.45	18.88	No	468.67	2.68	2.68	NO	470.92	0.13	0.13
463.5	470.898	7.398	467.05	1.67	1.67	No	467.63	1	35.08	NO	470.23	0.045	0.045
460.402	479.884	0	464.89	0.65	21.86	No	460.42	0	0.22	NO	460.43	0	0
468.745	473.745	5	460.42	0	0.13	No	469.03	2.69	2.69	NO	470.29	0.121	0.121
463.95	468.95	5	468.97	1.73	1.73	No	467.67	2.12	2.12	NO	470.02	0.095	0.095
470.033	474.533	4.5	464.89	1.35	1.35	No	471.29	50.65	50.65	NO	474.67	1.63	1.63
459.574	467.932	8.358	470.92	28.88	28.88	No	466.1	3.44	101.95	NO	468.09	0.17	0.17
488.671	493.671	5	461.62	2.14	62.02	No	489.84	0.51	25.54	NO	495.46	0.02	0.02
457.564	466.564	9	489.48	0.32	13.1	No	465.47	3.08	89.88	NO	467.7	0.138	0.138
285.795	290.795	5	459.69	1.98	65.53	No	286.46	15.31	21.86	NO	286.68	0.907	0.907
293.131	293.637	0	286.3	8.97	12.51	No	293.21	8.82	8.82	NO	293.24	0.52	0.52
280.844	285.844	5	293.19	4.78	4.78	No	281.64	0.1	23.88	NO	282.12	0.004	0.004
391.386	391.386	0	281.42	0.07	13.61	No	393.06	0	375.58	YES	393.4	0	0
318.429	323.429	5	392.75	0	274.05	Yes	318.65	2.8	2.8	NO	318.71	0.207	0.207
351.075	356.075	5	318.6	1.63	1.63	No	351.24	1.53	1.53	NO	351.28	0.087	0.087
362.871	367.871	5	351.2	0.92	0.92	No	363.04	1.84	1.84	NO	363.09	0.126	0.126
465.19	469.69	4.5	363	1.08	1.08	No	465.6	2.33	2.33	NO	465.73	0.144	0.144
464.556	470.056	5.5	465.5	1.31	1.31	No	464.95	2.15	4.47	NO	465.07	0.132	0.132
438.166	442.666	4.5	464.86	1.25	2.56	No	438.93	1.32	5.68	NO	440.6	0.072	0.072
433.983	440.483	6.5	438.73	0.82	3.3	No	434.92	0	11.23	NO	438.94	0	0
434.879	439.379	4.5	434.66	0	6.49	No	435.66	5.91	5.91	NO	439.27	0.305	0.305
460.503	465.003	4.5	435.45	3.45	3.45	No	460.75	2.14	2.14	NO	460.81	0.097	0.097
430.532	435.032	4.5	460.69	1.27	1.27	No	432.17	8.95	8.95	NO	437.93	0.434	0.434
421.073	421.073	0	431.49	5.47	5.47	No	422.88	0	25.73	YES	423.18	0	0
417.1	423.222	6.122	421.93	0	15.3	Yes	421.98	2.13	17.29	NO	423.8	0.107	0.107
407.64	411.971	4.5	418.18	1.3	12.91	No	419.31	0.78	4.18	YES	421.21	0.036	0.036
405.459	412.14	4.5	408.57	0.51	0.63	No	416.03	1.81	2.41	YES	421.21	0.089	0.089
405.459	408.959	3.5	408.6	1.12	1.12	No	418.64	5.58	9.03	YES	421.08	0.258	0.258

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
470.312	474.812	4.5	470.93	1.52	1.52	No	470.56	0.63	3.32	NO	470.63	0.028	
497.883	502.883	5	470.51	0.41	2.02	No	498.77	25.09	25.09	NO	499.2	2.18	
469.674	474.674	5	498.5	12.83	12.83	No	469.87	1.22	1.22	NO	469.92	0.055	
422.797	422.797	0	469.84	0.78	0.78	No	422.93	0	10.77	YES	423.2	0	
465.8	475.718	9.918	422.9	0	6.44	Yes	466.12	0.93	3.23	NO	466.19	0.041	
476.55	481.55	5	466.05	0.6	2.05	No	476.75	0.26	1.11	NO	476.79	0.012	
480.055	485.055	5	476.71	0.17	0.7	No	480.24	0.86	0.86	NO	480.29	0.043	
483.29	488.29	5	480.2	0.53	0.53	No	483.37	0.43	0.43	NO	483.38	0.019	
426.976	431.976	5	483.35	0.27	0.27	No	427.49	3.26	3.26	NO	427.65	0.162	
458.884	465.884	7	427.37	1.96	1.96	No	465.8	3.63	91.7	NO	467.79	0.181	
437.476	442.476	5	460.72	2.24	63.63	No	438.15	4.09	4.5	NO	438.35	0.21	
441.629	446.629	5	438	2.52	2.77	No	441.75	0.41	0.41	NO	441.78	0.017	
416.141	421.141	5	441.73	0.26	0.26	No	416.38	0.51	0.51	NO	416.43	0.024	
395.467	400.467	5	416.33	0.32	0.32	No	395.99	2.4	2.89	NO	396.12	0.122	
429.617	429.617	0	395.88	1.48	1.79	No	429.87	0	26.69	YES	429.97	0	
394.784	406.784	12	429.8	0	15.28	Yes	395.17	0.43	3.29	NO	395.39	0.019	
393.915	408.915	15	395.09	0.28	2.04	No	394.36	0.94	4.2	NO	395.3	0.05	
395.713	402.713	7	394.26	0.58	2.6	No	396.92	7.22	10.75	NO	397.4	0.396	
396.209	401.209	5	396.62	4.38	6.54	No	396.98	3.62	3.62	NO	397.45	0.199	
389.999	404.999	15	396.71	2.21	2.21	No	391.49	4.64	85.49	NO	391.98	0.217	
388.18	393.18	5	391.1	2.93	48.01	No	389.55	14.06	14.06	NO	390.72	0.835	
386.2	395.214	9.014	389.17	8.3	8.3	No	386.69	0.96	17.57	NO	386.84	0.054	
387.3	392.925	5.625	386.58	0.58	10.53	No	388.61	2.82	16.81	NO	389.17	0.148	
443.519	448.019	4.5	388.27	1.73	9.99	No	443.65	0.52	0.52	NO	443.68	0.025	
432.4	435.599	3.199	443.62	0.33	0.33	No	435.36	1.64	1.64	NO	436.83	0.096	
452.713	454.465	0	435.23	0.98	0.98	No	452.71	0	0	NO	452.71	0	
432	434.959	2.959	452.71	0	0	No	435.34	84.26	85.9	YES	436.83	4.02	
425.903	430.903	5	435.22	46.96	47.92	Yes	426.39	0.78	3.13	NO	426.51	0.037	
412.188	412.188	0	426.29	0.49	1.98	No	413.04	0.43	4.2	YES	413.58	0.018	
412.883	415.883	3	412.81	0.28	2.67	Yes	413.1	0.45	0.45	NO	413.6	0.02	
428.438	433.438	5	413.06	0.29	0.29	No	428.64	0.64	0.64	NO	428.68	0.03	
413.316	413.316	0	428.6	0.4	0.4	No	413.58	0.64	1.69	YES	413.64	0.028	
427.83	434.83	7	413.53	0.41	1.07	Yes	428.15	1.73	2.37	NO	428.23	0.08	
501.677	501.677	0	428.09	1.1	1.5	No	504.41	18.66	18.66	YES	506.26	1.18	
440.074	445.074	5	503.24	10.24	10.24	Yes	441.61	0.54	4.24	NO	443	0.024	
434.433	439.433	5	440.23	0.35	0.35	No	434.7	2.29	2.29	NO	434.77	0.115	
0	0	0	434.65	1.42	1.42	No	0	0	0	NO	0	0	
430.779	435.779	5	0	0	0	No	431.7	1.49	52.15	NO	431.76	0.067	
433	435.855	2.855	431.6	0.95	41.88	No	433.23	1.03	1.76	NO	433.28	0.044	
438.972	444.456	5.484	433.19	0.67	1.15	No	445.19	0.49	59.03	YES	446.1	0.021	
446.577	451.577	5	440.5	0.3	36.29	No	447.1	5.78	5.78	NO	447.25	0.378	
440.952	445.952	5	446.98	3.41	3.41	No	445.22	6.3	6.3	NO	446.14	0.415	
447.932	453.432	5.5	441.37	3.71	3.71	No	448.25	2.84	2.84	NO	448.34	0.177	
442.996	450.342	7.346	448.18	1.69	1.69	No	446.21	3.56	50.48	NO	464.93	0.204	

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
436.287	436.287	0	438.8	105.11	131.77	No	439.57	0	71.65	YES	439.63	0	0
433.785	442.226	8.441	439.5	0	39.88	Yes	439.77	3.6	36.05	NO	442.59	0.178	0.178
434.215	448.695	14.48	438.52	2.24	25.05	No	442.11	0.67	34.06	NO	447.67	0.03	0.03
434.297	453.455	19.158	439.49	0.43	22.81	No	442.58	0.29	33.39	NO	448.61	0.016	0.016
436.539	441.539	5	439.69	0.17	22.48	No	444.33	15.66	15.66	YES	452.24	0.943	0.943
434.639	442.218	7.579	442.59	9.28	9.28	Yes	444.05	0.62	16.29	YES	451.49	0.027	0.027
434.421	445.129	10.708	440.87	0.41	12.77	No	443.21	1.76	33.09	NO	449.98	0.09	0.09
434.494	446.578	12.084	439.99	1.08	22.33	No	443.55	2.01	31.32	NO	450.76	0.091	0.091
434.773	438.892	4.119	440.16	1.29	21.43	No	444.03	0.67	6.87	YES	451.24	0.029	0.029
434.91	437.841	2.931	443.52	0.44	4.56	Yes	444	0.73	6.73	YES	450.94	0.032	0.032
434.999	437.499	2.5	446.96	0.48	4.31	Yes	443.58	3.66	7.64	YES	447.23	0.179	0.179
0	0	0	449.2	2.28	4.03	Yes	0	0	0	NO	0	0	0
437.985	441.985	4	0	0	0	No	443.21	2.31	9.95	YES	444.03	0.109	0.109
472.587	478.087	5.5	441.22	1.45	5.36	No	473.07	5.01	15.68	NO	473.21	0.346	0.346
472.786	478.286	5.5	472.95	2.81	8.81	No	473.83	10.71	10.71	NO	474.19	0.61	0.61
452.047	457.047	5	473.55	6.02	6.02	No	452.34	0.17	1.08	NO	452.41	0.008	0.008
451.19	456.19	5	452.28	0.11	0.67	No	451.36	0.26	1.32	NO	451.4	0.012	0.012
452.8	458.152	5.352	451.32	0.16	0.81	No	453.07	0.08	0.92	NO	453.13	0.009	0.009
453.638	458.638	5	453.01	0.05	0.57	No	453.87	0.77	0.77	NO	453.93	0.039	0.039
453.183	458.183	5	453.82	0.48	0.48	No	453.48	0.07	0.84	NO	453.56	0.003	0.003
427.572	433.072	5.5	453.42	0.05	0.52	No	435.25	30.38	30.38	YES	436.97	2.56	2.56
495.501	495.501	0	431.62	16.74	16.74	No	495.66	0.86	0.94	YES	495.78	0.032	0.032
424.5	432.562	8.062	495.65	0.53	0.82	Yes	427.76	0	212.93	NO	428.32	0	0
450.604	450.604	0	426.64	0	110.08	No	450.79	0	5.35	YES	450.86	0	0
370.654	376.654	6	450.74	0	3.15	Yes	372.36	41.87	41.87	NO	373.17	2.9	2.9
391.6	402.97	11.37	371.91	24.8	24.8	No	393.59	3.11	81.52	NO	407.25	0.165	0.165
386.39	398.826	12.436	392.98	1.86	48.28	No	387.72	4.45	85.5	NO	393.07	0.248	0.248
372.6	378.941	6.341	387.38	2.67	50.7	No	375.08	0.19	102.09	NO	376.39	0.008	0.008
435.55	441.67	6.12	374.41	0.12	60.57	No	436.39	8.83	8.83	NO	506.42	0.65	0.65
441.27	449.524	8.254	436.15	4.92	4.92	No	441.82	8.83	8.83	NO	514.47	0.615	0.615
430.42	437.457	7.037	441.68	4.98	4.98	No	434.2	8.89	17.64	NO	503.92	0.634	0.634
433.55	441.867	8.317	431.6	5.01	9.9	No	433.89	1.23	1.23	NO	521.91	0.069	0.069
444.94	454.616	7.616	433.81	0.76	0.76	No	447.86	4.77	4.77	NO	515.63	0.28	0.28
444.94	452.229	7.289	447.63	2.75	2.75	No	445.45	1.4	7.15	NO	514.83	0.088	0.088
427	431.233	4.233	445.33	0.85	4.19	No	428.73	0	22.55	NO	429.14	0	0
435.68	443.849	8.169	428.4	0	13.01	No	435.85	1.88	1.88	NO	505.52	0.088	0.088
426.07	440.735	14.665	435.81	1.18	1.18	No	426.91	1.22	19.62	NO	504.76	0.056	0.056
425.46	437.154	11.694	426.7	0.78	11.47	No	426.42	13.85	22.14	NO	505.42	0.881	0.881
454.8	470.709	15.909	426.17	8.23	13.01	No	455.16	3.93	3.93	NO	535.01	0.232	0.232
412.9	421.039	8.139	455.07	2.24	2.24	No	413.09	0.98	0.98	NO	461.18	0.044	0.044
439.21	447.819	8.609	413.05	0.62	0.62	No	439.73	1.67	5.45	NO	527.08	0.083	0.083
429.98	442.532	12.552	439.6	0.97	3.1	No	430.31	0.42	2.61	NO	504.97	0.021	0.021
406.5	414.63	8.13	430.24	0.27	1.64	No	407.02	2.66	2.66	NO	442.47	0.12	0.12
446.8	454.93	8.13	406.89	1.59	1.59	No	447.41	1	5.93	NO	515.4	0.06	0.06

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
425.9	434.028	8.128	440.8	1.41	1.41	No	426.51	4.19	21.76	NO	491.87	0.227	
432.62	443.875	11.255	426.35	2.54	12.3	No	432.91	0.32	2.2	NO	505.47	0.016	
405.99	414.128	8.138	432.85	0.2	1.38	No	406.69	13.78	16.4	NO	442.45	0.796	
373	391.797	18.797	406.53	8.15	9.71	No	373.22	2.05	2.05	NO	373.27	0.098	
366.46	390.013	23.553	373.18	1.29	1.29	No	367.75	0.84	34.08	NO	368.11	0.034	
368	387.892	19.892	367.56	0.54	25.76	No	369.17	0.38	33.95	NO	369.49	0.013	
405.627	405.627	0	369	0.24	25.66	No	405.79	0	22	YES	405.83	0	
386.848	386.848	0	405.79	0	20.21	Yes	386.85	0	0	YES	386.85	0	
397	401.214	4.214	386.85	0	0	Yes	399.42	0	42.34	NO	399.55	0	
361.25	388.128	26.878	399.22	0	28.08	No	363	0.23	34.12	NO	363.65	0.009	
418.4	426.734	8.334	362.69	0.15	25.79	No	419.14	1.46	7.62	NO	419.43	0.07	
427.13	429.198	2.068	418.93	0.77	4.08	No	427.59	2.18	2.18	NO	427.74	0.142	
419.38	429.337	9.957	427.45	1.07	1.07	No	420.19	0	4.26	NO	420.56	0	
423.3	432.756	9.456	419.97	0	2.42	No	423.85	0.28	4.29	NO	424.05	0.013	
425.45	434.69	9.24	423.71	0.18	2.44	No	425.97	0.22	4.04	NO	426.15	0.01	
427.56	436.554	8.994	425.83	0.14	2.28	No	428.03	0.31	3.86	NO	428.2	0.015	
430	438.444	8.444	427.91	0.2	2.17	No	430.51	3.55	3.55	NO	430.7	0.251	
415.78	425.215	9.435	430.38	1.97	1.97	No	416.22	0.08	7.67	NO	416.36	0.003	
417.06	425.185	8.125	416.1	0.05	4.11	No	417.31	0.26	1.22	NO	417.38	0.012	
434	437.086	3.086	417.27	0.17	0.78	No	437.19	6.75	23.37	YES	439.49	0.428	
415.53	423.837	8.307	436.03	3.96	13.24	No	415.97	5.14	6.32	NO	416.12	0.313	
404.327	404.327	0	415.85	2.64	3.4	No	404.53	0	6.32	YES	404.58	0	
381.44	381.44	0	404.49	0	3.4	Yes	381.81	0	7.89	YES	381.89	0	
423.62	425.75	2.13	381.73	0	4.25	Yes	423.74	0.08	0.08	NO	423.77	0.004	
423.07	425.202	2.132	423.72	0.05	0.05	No	423.13	0	0.08	NO	423.15	0	
423.84	425.933	2.093	423.12	0	0.05	No	424.18	0.9	0.9	NO	424.25	0.04	
427.47	435.598	8.128	424.12	0.58	0.58	No	436.6	1.41	25.16	YES	437.05	0.063	
427.06	435.532	8.472	435.9	0.89	21.93	Yes	434.95	0.91	0.91	NO	435.66	0.04	
422.786	422.786	0	434.38	0.6	0.6	No	424.07	0	22	YES	424.43	0	
419.982	419.982	0	424.03	0	20.21	Yes	420	0	0.47	YES	420	0	
448.398	448.668	0	419.99	0	0.3	Yes	448.4	0	0	NO	448.4	0	
417	425.264	8.264	448.4	0	0	No	417.06	0.24	0.24	NO	417.08	0.012	
378.818	378.818	0	417.05	0.16	0.16	No	378.82	0	0	YES	378.82	0	
454.41	461.531	7.121	378.82	0.99	0.99	Yes	459.77	1.71	1.71	NO	461.98	0.097	
459.72	465.839	6.119	454.58	0.99	0.99	No	482.02	4.43	4.65	YES	477.01	0.241	
458.887	465.476	6.589	460.13	2.6	2.6	No	480.85	3.32	8.93	YES	475.82	0.201	
462.2	469.35	7.15	459.58	1.92	4.51	No	468.41	5.32	5.32	NO	470.3	0.311	
461.25	469.366	8.116	462.63	3.07	3.07	No	467.89	3.01	8.31	NO	470.09	0.176	
454.3	461.807	7.507	461.72	1.74	4.81	No	463.32	0.39	2.66	YES	465.26	0.018	
454	461.576	7.576	457.83	0.22	0.89	No	463.24	6.95	19.43	YES	465.2	0.413	
455.285	466.09	10.805	457.78	3.92	11.63	No	465.03	0	16.96	NO	467.75	0	
451.007	451.007	0	458.23	0	9.1	No	451.01	0	0	YES	451.01	0	
455.3	462.804	7.504	451.01	0	0	Yes	461.91	5.92	5.92	NO	464.82	0.462	
450	462.577	12.577	455.74	3.29	3.29	No	461.69	0	15.33	NO	463.65	0	

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
455.84	462.968	7.128	456.52	1.11	1.11	No	457.15	2.98	2.98	NO	468.01	0.167	
451.63	459.761	8.131	456.15	1.73	1.73	No	457.05	0.87	1.98	NO	460.87	0.04	
446.59	454.724	8.134	451.75	0.53	0.53	No	451.14	3.77	4.74	NO	456.49	0.19	
447.52	455.647	8.127	446.92	2.24	2.85	No	451.12	1.05	1.37	NO	456.44	0.054	
445.15	454.279	9.129	447.72	0.62	0.62	No	451.04	1.5	1.5	NO	456.18	0.134	
433.086	436.086	3	445.3	0.7	0.7	No	436.58	3.37	38.29	YES	436.76	0.209	
455.02	463.149	8.129	436.44	1.89	22.33	Yes	457.17	0	4.87	NO	467.72	0	
454.84	462.956	8.116	455.42	0	2.83	No	461.92	0	8	NO	464.65	0	
451.2	461.323	10.123	455.23	0	4.4	No	460.11	2.26	2.26	NO	462.25	0.106	
448.145	461.115	12.97	452.92	1.37	1.37	No	459.72	0	14.9	NO	461.9	0	
442.295	454.852	12.557	452.54	0	13.25	No	451.03	0	27.31	NO	456.12	0	
426.48	434.608	8.128	445.15	0	22.65	No	434.94	0	20.46	YES	435.62	0	
450.383	463.009	12.626	434.38	0	20.24	No	461.84	0	11.4	NO	463.72	0	
453.29	461.411	8.121	454.87	0	10.57	No	459.8	0	1.95	NO	462.01	0	
448.479	461.429	12.95	453.48	0	0.99	No	460.1	0	14.93	NO	462.19	0	
445.945	459.331	13.386	452.92	0	12.99	No	456.93	0	19.42	NO	460.3	0	
407.161	407.716	0	449.94	0	15.69	No	407.21	0	3.35	NO	407.23	0	
447.26	455.389	8.129	407.19	0	1.86	No	451.11	8.26	8.26	NO	456.58	0.44	
454.914	458.048	3.134	447.6	4.87	4.87	No	454.91	0	0	NO	454.91	0	
452.05	455.67	3.62	454.91	0	0	No	452.05	0	0	NO	452.05	0	
450.87	452.906	2.036	452.05	0	0	No	450.87	0	0	NO	450.87	0	
446.342	449.962	3.62	450.87	0	0	No	446.34	0	0	NO	446.34	0	
443.954	447.574	3.62	446.34	0	0	No	443.95	0	0	NO	443.95	0	
440.498	444.118	3.62	443.95	0	0	No	440.5	0	0	NO	440.5	0	
437.81	441.43	3.62	440.5	0	0	No	437.81	0	0	NO	437.81	0	
434.691	438.311	3.62	437.81	0	0	No	434.69	0	0	NO	434.69	0	
433.39	437.01	3.62	434.69	0	0	No	433.39	0	0	NO	433.39	0	
455.323	455.323	0	433.39	0	0	No	457.48	0	4.51	YES	457.5	0	
424.885	427.015	2.13	457.47	0	2.7	Yes	425.19	0	2.15	NO	425.29	0	
425.515	427.657	2.142	425.1	0	1.05	No	426.05	0	2.16	NO	426.21	0	
448.899	460.179	11.28	425.9	0	1.06	No	457.08	0	6.34	NO	460.9	0	
399.535	405.165	5.63	449.96	0	3.32	No	399.94	0	7.89	NO	400.08	0	
423.75	430.339	6.589	399.83	0	4.25	No	423.92	0.48	0.48	NO	423.96	0.024	
423.5	427.792	4.292	423.89	0.3	0.3	No	425.99	2.54	22	NO	431.39	0.108	
458.121	460.241	2.12	425.66	1.53	20.21	No	458.12	0	0	NO	458.12	0	
423.004	425.134	2.13	458.12	0	0	No	423.2	0	0.89	NO	423.25	0	
372.025	372.025	0	423.17	0	0.57	No	375.39	5.77	33.91	YES	377.56	0.326	
392.179	392.179	0	374.64	2.17	25.61	Yes	395.03	5.84	33.98	YES	397.07	0.485	
422.52	433.735	11.215	394.49	1.78	24.59	Yes	425.94	0	203.71	NO	426.72	0	
0	0	0	424.84	0	103.69	No	0	0	0	NO	0	0	
378.247	378.247	0	0	0	0	No	378.91	0	30.17	YES	379.06	0	
373.582	373.582	0	378.85	0	23.12	Yes	375.4	0	37.18	YES	377.56	0	
376.559	376.559	0	374.66	0	25.91	Yes	377.07	0	36.79	YES	377.57	0	
456.759	456.759	0	377	0	25.82	Yes	463.3	2.27	2.27	YES	465.3	0.278	

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Inflow (100-year)
322.304	322.304	0	345.87	0.9	2.8	No	322.46	0.15	9.67	YES	322.55	0.004	0
425.492	427.612	2.12	322.39	0.09	2.81	Yes	425.78	2.37	2.37	NO	425.94	0.494	0
390.33	392.453	2.123	425.65	0.7	0.7	No	390.71	2.84	5.21	NO	390.93	0.689	0
436.1	436.1	0	390.54	0.82	1.51	No	439.44	0	6.14	YES	439.45	0	0
337.828	337.828	0	439.43	0	3.72	Yes	337.96	0.46	6.18	YES	338.04	0.014	0
436.348	438.478	2.13	337.9	0.24	2.01	Yes	436.5	0.63	0.63	NO	436.57	0.083	0
402.12	404.423	2.303	436.43	0.19	0.19	No	402.37	1.34	2.11	NO	402.49	0.129	0
379.62	381.752	2.132	402.26	0.42	0.65	No	379.95	0.96	4.14	NO	380.09	0.082	0
340.225	340.225	0	379.81	0.3	1.29	No	340.46	0.76	4.03	YES	340.54	0.026	0
367.81	369.935	2.125	340.38	0.35	1.32	Yes	368.27	3.02	8.44	NO	368.5	0.316	0
390.532	390.532	0	368.08	0.93	2.53	No	390.53	0	0	NO	390.53	0	0
351.842	351.842	0	390.53	0	0	No	351.84	0	0	NO	351.84	0	0
395.139	395.139	0	351.84	0	0	No	395.14	0	0	YES	395.14	0	0
411.318	411.318	0	395.14	0	0	Yes	411.32	0	0	YES	411.32	0	0
426.066	426.066	0	411.32	0	0	Yes	427.17	0	27.5	YES	427.33	0	0
420.914	420.914	0	427.02	0	15.3	Yes	421.07	0.19	0.19	YES	421.11	0.008	0
426.15	426.15	0	421.02	0.07	0.07	Yes	426.44	1.08	1.08	YES	426.53	0.098	0
440	447.678	7.678	426.33	0.34	0.34	Yes	440.82	6.29	14.44	NO	441.16	0.372	0
392.52	402.84	10.32	440.6	3.57	8.16	No	400.04	2.11	61.42	NO	399.95	0.091	0
451.59	459.716	8.126	394.03	1.34	33.78	No	452.42	6.22	6.22	NO	452.83	0.372	0
393.589	401.935	8.346	452.19	3.48	3.48	No	408.92	19.66	59.3	YES	410.33	1.58	0
391.75	402.436	10.686	395.07	11.11	32.66	No	394.27	5.49	71.03	NO	395.21	0.334	0
451.26	459.386	8.126	393.51	3.23	39.22	No	451.89	2.07	8.28	NO	452.12	0.132	0
395.14	402.376	7.236	451.73	1.2	4.67	No	419.99	26.91	39.8	YES	424.54	2.15	0
396.124	401.754	5.63	396.27	15.38	22.52	No	396.12	0	0	NO	396.12	0	0
0	0	0	396.12	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
465.982	465.982	0	0	0	0	No	466.95	0	1.61	YES	466.96	0	0
411.082	420.582	9.5	466.94	0	0.97	Yes	417.58	11.15	25.07	NO	421.66	0.616	0
378.15	378.15	0	412.01	6.71	18.55	No	378.36	0	27.07	YES	378.42	0	0
440.799	440.799	0	378.33	0	20.99	Yes	440.8	0	0	YES	440.8	0	0
0	0	0	440.8	0	0	Yes	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
378.836	378.836	0	0	0	0	No	378.84	0	0	YES	378.84	0	0
447.833	447.833	0	378.84	0	0	Yes	449.44	0	4.92	YES	449.45	0	0
342.941	343.503	0	449.4	0	3.28	Yes	342.94	0	0	NO	342.94	0	0
292.767	298.545	5.778	342.94	0	0	No	294.17	6.57	6.57	NO	298.94	0.365	0
297.747	303.535	5.788	293.66	3.81	3.81	No	298.54	37.09	37.09	NO	300.74	2.27	0
299.747	305.53	5.783	298.34	21.41	21.41	No	300.07	2.16	2.16	NO	300.15	0.102	0
294.587	300.365	5.778	299.99	1.25	1.25	No	295.23	0.19	15.33	NO	297.21	0.007	0
298.607	304.387	5.78	295.07	0.12	8.94	No	299.16	13	15.15	NO	299.34	0.746	0
292.467	295.249	2.782	299.03	7.6	8.84	No	292.88	2.78	2.91	NO	295.98	0.126	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
443.669	443.669	0	293.62	0.07	25.25	No	444.29	0	14.15	YES	444.37	0	0
431.82	439.226	7.406	444.22	0	7.82	Yes	432.33	1.52	6.01	NO	432.47	0.079	0
336.08	357.698	21.618	432.21	0.94	3.57	No	337.34	0	49.1	NO	337.69	0	0
348.62	355.955	7.335	337.07	0	31.24	No	349.28	4.46	35.66	NO	349.48	0.28	0
412.22	420.404	8.184	349.13	2.53	22.14	No	412.55	0.96	0.96	NO	412.65	0.044	0
407.928	407.928	0	412.47	0.6	0.6	No	408	0	5.98	YES	408.02	0	0
342.317	342.317	0	407.98	0	3.55	Yes	344.87	0.71	23.19	YES	345.22	0.03	0
360.341	360.341	0	344.35	0.46	17.2	Yes	362.48	0.75	21.41	YES	362.49	0.031	0
374.544	374.544	0	361.62	0.46	6.19	Yes	377.36	19.67	23.35	YES	378.82	1.19	0
432.82	440.412	7.592	376.41	11.32	13.12	Yes	433.27	4.51	4.51	NO	433.39	0.221	0
387.525	387.525	0	433.16	2.64	2.64	No	389.06	12.99	14.77	YES	389.81	0.935	0
0	0	0	388.62	7.59	8.65	Yes	0	0	0	NO	0	0	0
411.92	418.789	6.869	0	0	0	No	412.35	1.18	2.13	NO	412.46	0.06	0
383.685	383.685	0	412.26	0.72	1.32	No	383.79	0	6.46	YES	383.81	0	0
373.477	373.477	0	383.77	0	4.01	Yes	373.67	0	15.48	YES	373.7	0	0
355.51	355.51	0	373.65	0	10.03	Yes	356.7	0	11.91	YES	359.66	0	0
406.459	406.459	0	355.75	0	5.85	Yes	406.49	0	2.11	YES	406.51	0	0
337.12	357.484	20.364	406.48	0	1.3	Yes	338.24	0	49.03	NO	338.57	0	0
350.45	356.52	6.07	337.99	0	31.22	No	353.45	31.33	31.33	NO	356.78	1.33	0
345.995	345.995	0	351.54	19.6	19.6	No	346.59	0	23.12	YES	346.63	0	0
365.027	365.027	0	346.52	0	17.16	Yes	367.16	14.4	18.33	YES	367.78	0.585	0
360.448	360.448	0	366.53	8.94	11.19	Yes	362.47	0	21.95	YES	362.5	0	0
354.155	354.155	0	361.62	0	6.25	Yes	357.91	26.72	38.26	YES	360.6	1.33	0
353.954	353.954	0	356.67	15.53	22.24	Yes	357.36	0	21.26	YES	359.99	0	0
350.949	350.949	0	354.46	0	10.89	Yes	357.36	2.25	21.57	YES	359.99	0.093	0
350.105	350.105	0	354.15	1.48	11.13	Yes	356.7	0	38.68	YES	359.65	0	0
348.91	348.91	0	353.64	0	13.07	Yes	356.7	12.58	24.2	YES	359.65	0.503	0
388.104	390.234	2.13	353.63	7.81	17.27	Yes	388.33	0	5.7	NO	388.39	0	0
349.134	349.134	0	388.29	0	3.34	No	356.7	0	49.51	YES	359.65	0	0
348.967	348.967	0	353.63	0	17.73	Yes	350.43	0	78.06	YES	351.9	0	0
372.14	378.539	6.399	349.47	0	32.44	Yes	373.28	4.14	29.27	NO	379.38	0.328	0
373.61	378.66	5.05	372.92	2.32	16.24	No	375.36	25.13	25.13	NO	379.58	1.86	0
412.19	426.462	14.272	374.48	13.9	13.9	No	413.4	0	24.86	NO	417.32	1.87	0
414.5	421.106	6.606	413.05	0	13.85	No	416.04	24.86	24.86	NO	423.6	0	0
408.751	408.751	0	415.54	13.82	13.82	No	408.83	0	24.83	YES	408.86	0	0
336.02	341.742	5.722	408.81	0	13.85	Yes	336.15	0.42	0.42	NO	336.18	0.019	0
309.391	309.391	0	336.12	0.25	0.25	No	309.4	0	0.41	YES	309.4	0	0
329.402	329.402	0	309.4	0	0.25	Yes	329.96	0	49.18	YES	330.99	0	0
380.182	380.182	0	329.82	0	31.3	Yes	380.7	0	124.98	YES	380.7	0	0
303.185	303.185	0	380.7	0	124.98	Yes	312.19	0	778.06	YES	313.03	0	0
0	0	0	311.51	0	514.92	Yes	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
439.754	442.524	0.524	0	0	0	No	442.39	0	16.81	NO	442.48	0	0
399.04	405.421	6.381	442.31	0	8.6	No	404.13	0	110.25	NO	404.95	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Inflow (100-year)
284.72	287.162	0	288.88	3.81	3.81	No	284.72	0	0	NO	284.72	0	0
290.031	290.3	0	284.72	0	0	No	290.06	2.99	2.99	NO	290.07	0.181	0
284.023	289.023	5	290.05	1.69	1.69	No	284.02	0	0	NO	284.02	0	0
286.259	291.259	5	284.02	0	0	No	286.26	0	0	NO	286.26	0	0
390.636	390.636	0	286.26	0	0	No	390.64	0	0	YES	390.64	0	0
456.901	456.901	0	390.64	0	0	Yes	456.95	0	4.62	YES	456.95	0	0
407.805	412.805	5	456.95	0	4.58	Yes	409.51	0	31.1	NO	424.12	0	0
432.83	434.83	2	408.74	0	17.81	No	432.89	0	8.77	NO	432.91	0	0
432	439.133	7.133	432.87	0	5.07	No	432	0	0	NO	432	0	0
427.5	438.767	11.267	432	0	0	No	428.28	0	7.69	NO	428.51	0	0
444.596	450.096	5.5	428.1	0	4.53	No	446.69	51.89	53.83	NO	477.68	3.62	0
279.406	284.406	5	445.67	28.54	29.58	No	279.41	0	0	NO	279.41	0	0
278.841	289.841	11	279.41	0	0	No	278.84	0	0	NO	278.84	0	0
277.337	288.337	11	278.84	0	0	No	277.34	0	0	NO	277.34	0	0
276.159	281.159	5	277.34	0	0	No	276.35	0	0.96	NO	276.4	0	0
396.068	396.068	0	276.3	0	0.54	No	398.6	29.15	37.26	YES	399.78	1.71	0
272.269	277.269	5	397.83	15.9	20.75	Yes	274.64	0	5.16	NO	276.28	0	0
279.665	284.665	5	274.23	0	6.17	No	279.85	0	0.96	NO	279.91	0	0
282.607	287.607	5	279.81	0	0.54	No	282.61	0	0	NO	282.61	0	0
273.809	278.309	4.5	282.61	0	0	No	274.55	0	1.76	NO	278.9	0	0
285	287	2	274.06	0	0.61	No	285.81	0	7.61	NO	286.09	0	0
284.5	288.1	3.6	285.6	0	4.34	No	285.31	0	7.61	NO	285.6	0	0
283.96	288.96	5	285.1	0	4.34	No	284.59	0	7.61	NO	285.05	0	0
282.5	288.17	5.67	284.43	0	4.33	No	283.97	6.8	14.12	NO	284.84	0.375	0
<Null>	<Null>	<Null>	283.54	3.78	7.94	No	<Null>	<Null>	<Null>	#VALUE!	<Null>	<Null>	<Null>
429.307	429.307	0	<Null>	<Null>	<Null>	Yes	429.39	0	0.35	YES	429.41	0	0
335.956	335.956	0	429.37	0	0.21	Yes	335.96	0	0	YES	335.96	0	0
302.981	307.481	4.5	335.96	0	0	Yes	302.98	0	0	NO	302.98	0	0
300.132	309.632	9.5	302.98	0	0	No	300.13	0	0	NO	300.13	0	0
297.613	302.613	5	300.13	0	0	No	297.61	0	0	NO	297.61	0	0
289.103	294.103	5	297.61	0	0	No	289.1	0	0	NO	289.1	0	0
307.266	307.392	0	289.1	0	0	No	307.27	0	0	NO	307.27	0	0
283.742	283.742	0	307.27	0	0	No	283.74	0	0	NO	284.83	0	0
279.146	282.113	0	283.74	0	0	No	280.18	0	98.23	NO	281.71	0	0
<Null>	341.7	<Null>	279.96	0	76.7	No	<Null>	<Null>	<Null>	#VALUE!	<Null>	<Null>	<Null>
308.57	314.57	6	<Null>	<Null>	<Null>	Yes	309.85	0	19.78	NO	310.26	0	0
443.961	443.961	0	309.48	0	10.29	No	444.14	0	8.75	YES	444.2	0	0
423.859	423.859	0	444.09	0	4.87	Yes	423.9	0	2.82	YES	423.92	0	0
422.08	422.08	0	423.89	0	1.58	Yes	422.46	0	37.26	YES	422.51	0	0
408.713	417.122	8.409	422.35	0	21	Yes	412.3	0	61.71	NO	413.65	0	0
329.574	330.639	0	411.13	0	33.6	No	333.82	0	278.55	YES	335.13	0	0
338	340.918	2.918	333.57	0	161.4	Yes	339.71	0	60.33	NO	339.99	0	0
391.511	396.011	4.5	339.46	0	33.3	No	392.13	0	4.51	NO	392.35	0	0
399.374	399.374	0	391.97	0	2.54	No	399.37	0	0	NO	399.37	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year			100-year			
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
402.294	402.294	0	0	0	0	No	402.34	0	1.06	YES	402.35	0	0
376	378.889	2.889	402.33	0	0.64	Yes	379.99	0	339.53	YES	380.68	0	0
374.214	375.214	1	379.12	0	194.65	Yes	377.57	0	77.44	YES	378.12	0	0
370.868	370.892	0	376.45	0	3.27	Yes	375.64	0	399.03	YES	376.26	0	0
367.076	367.076	0	374.6	0	221.45	Yes	372.24	0	464.01	YES	372.79	0	0
358.082	358.082	0	371.12	0	285.64	Yes	363.39	0	440.04	YES	364.16	0	0
391.492	394.492	3	361.92	0	285.15	Yes	393.34	0	10.24	NO	393.51	0	0
386	390.022	4.022	392.94	0	3.05	No	393.69	0	87.02	YES	395.57	0	0
428.66	432.66	4	389.54	0	44.26	No	428.66	0	0	NO	428.66	0	0
431.296	431.296	0	428.66	0	0	No	431.34	0	1.93	YES	431.37	0	0
419.927	419.927	0	431.33	0	1.11	Yes	421.04	0	41.47	YES	421.36	0	0
0	0	0	420.77	0	21.18	Yes	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
373.791	373.791	0	0	0	0	No	378.39	0	234.2	YES	378.8	0	0
373.41	373.41	0	377.49	0	147.12	Yes	378.39	0	15.53	YES	378.81	0	0
343.804	343.804	0	377.5	0	7.74	Yes	350.07	15.4	471.73	YES	350.12	1.04	0
364.917	364.917	0	349.27	9.05	265.31	Yes	365.31	0	5.23	YES	365.39	0	0
334.377	339.877	5.5	365.24	0	3.18	Yes	339.37	0	898.32	NO	340.95	0	0
335.843	335.843	0	338.1	0	570.16	No	342.06	6.52	489.22	YES	342.45	0.321	0
0	0	0	341.45	3.88	318.64	Yes	0	0	0	NO	0	0	0
314.352	314.352	0	0	0	0	No	314.83	0	15.82	YES	315.22	0	0
422.077	433.577	11.5	314.74	0	11.81	Yes	424.86	0	201.71	NO	425.39	0	0
444.1	451.752	7.652	423.94	0	103.3	No	444.82	0	5.52	NO	445.08	0	0
377.895	378.238	0	444.61	0	3.14	No	377.91	0	1.53	NO	377.92	0	0
383.758	388.008	4.25	377.91	0	0.92	No	383.96	0	0.43	NO	384	0	0
401.88	407.88	6	383.91	0	0.26	No	405.12	0	165.45	NO	405.79	0	0
396.2	400.698	4.498	404.44	0	119.53	No	398.8	0	201.6	NO	400.02	0	0
436.531	441.031	4.5	398.08	0	142.84	No	439.81	0	70.52	NO	440.01	0	0
441.489	446.989	5.5	439.59	0	39.37	No	441.49	0	0	NO	441.49	0	0
392.364	397.864	5.5	441.49	0	0	No	393.6	21.96	28.46	NO	394.06	1.07	0
347.449	356.449	9	393.29	13.23	16.92	No	350.76	2.65	274.59	NO	351.15	0.212	0
329.52	334.52	5	349.4	1.57	119.4	No	336.37	12.63	421.85	YES	337.24	0.786	0
381.627	386.127	4.5	333.49	7.24	227.72	No	382.88	2.48	22.54	NO	386.6	0.117	0
380.896	385.896	5	382.48	1.37	12.57	No	382.39	0.28	37.52	NO	386.2	0.012	0
452.01	459.236	7.226	381.95	0.18	21	No	457.78	0	155.15	NO	459.69	0	0
280.66	280.66	0	453.9	0	104.34	No	283.48	0	1092.99	YES	284.88	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
424.5	428.38	3.88	425.45	7.02	7.02	No	425.8	12.47	12.47	NO	426.67	0.95	0
450.764	455.264	4.5	451.46	1.18	5.65	No	451.78	2.09	10.23	NO	455	0.123	0
451.855	456.355	4.5	452.41	4.48	4.48	No	452.65	8.14	8.14	NO	455.67	0.546	0
398.477	403.977	5.5	399.39	0	24.32	No	399.7	0	40.68	NO	399.98	0	0
388.508	394.008	5.5	389.58	0.25	24.51	No	389.97	0.59	41.18	NO	390.38	0.027	0
368.507	373.007	4.5	369.38	6.52	7.56	No	369.96	12.48	14.84	NO	373.35	0.762	0

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year			100-year			
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Inflow (100-year)
418.758	423.258	4.5	418.94	0.41	0.41	No	418.98	0.64	0.64	NO	419.03	0.028	
331.454	331.454	0	334.43	0	653.14	Yes	334.96	0	884.54	YES	335.12	0	
432.528	437.028	4.5	433.12	4.71	4.71	No	433.33	7.95	7.95	NO	434.59	0.636	
430.902	435.402	6.5	431.41	1.4	6.1	No	431.58	2.32	10.26	NO	433.29	0.158	
430.835	437.335	4.5	431.11	1.17	1.17	No	431.18	1.97	1.97	NO	431.28	0.133	
368.519	373.019	4.5	368.93	0.53	5.7	No	369.05	0.87	10.37	NO	369.23	0.052	
430.99	430.99	0	431.32	1.54	2.88	Yes	431.42	2.56	4.85	YES	431.53	0.132	
420.792	425.292	4.5	421.78	1.06	5.8	No	422.21	1.81	9.06	NO	423.75	0.101	
445.979	451.979	6	446.9	1.23	16.91	No	447.23	1.93	30.12	NO	447.36	0.089	
449.7	455.7	6	449.97	1.09	5.21	No	450.03	1.72	8.27	NO	450.11	0.08	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
367.455	367.455	0	367.46	0	0.13	Yes	367.46	0	0.21	YES	367.46	0	
421.182	421.182	0	421.39	4.16	14.79	Yes	421.47	6.78	25.47	YES	421.55	0.277	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
440.598	441.439	0	440.82	0	3.09	No	440.91	0	5.46	NO	441.01	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
397.026	404.026	7	397.14	1.03	1.03	No	397.17	1.65	1.65	NO	397.21	0.077	
398.346	402.346	4	398.64	0.78	0.78	No	398.72	1.27	1.27	NO	399.65	0.063	
401.57	405.57	4	401.93	2.12	2.12	No	402.04	3.46	3.46	NO	402.3	0.17	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
333.579	339.079	5.5	336.05	0	660.04	No	336.62	0	994.41	NO	336.85	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
403.07	407.07	4	403.25	0.67	0.67	No	403.3	1.07	1.07	NO	403.36	0.048	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
333.774	337.274	3.5	336.34	0.26	3.63	No	336.94	0.41	18.31	NO	337.16	0.02	
430.004	430.004	0	491.71	15.86	15.86	Yes	530.5	27.96	27.96	YES	530.5	1.89	

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
443.026	448.526	5.5	443.64	8.29	8.29	No	443.87	15.07	15.07	NO	444.18	1.04	0
437	442.916	5.916	437.33	1.42	4.14	No	437.42	2.4	6.82	NO	437.53	0.155	0
321.137	325.387	4.25	321.83	4.6	19.51	No	322.09	7.96	34.87	NO	322.8	0.506	0
426.882	431.382	4.5	427.28	2.56	5.26	No	427.41	4.45	8.96	NO	427.54	0.262	0
407.347	411.017	3.67	407.35	0	0	No	407.35	0	0	NO	407.35	0	0
411.927	415.597	3.67	411.93	0	0	No	411.93	0	0	NO	411.93	0	0
399.296	399.296	0	401.05	0	3.43	Yes	401.08	0	6.12	YES	401.1	0	0
430.397	433.397	3	430.63	1.06	1.06	No	430.7	1.8	1.8	NO	432.08	0.119	0
431.3	434.554	3.254	431.56	0.65	0.65	No	431.63	1.06	1.06	NO	432.59	0.063	0
430.72	434.594	3.874	431.17	1.23	1.87	No	431.32	2.07	3.12	NO	432.57	0.127	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
379.112	383.112	4	379.45	0.92	0.92	No	379.55	1.54	1.54	NO	379.68	0.078	0
337.71	337.71	0	339.29	26.34	45.8	Yes	339.93	46.63	83.99	YES	340.86	4.38	0
446.857	451.107	4.25	447.53	3.18	3.18	No	447.84	5.62	5.62	NO	450.87	0.364	0
360.343	388.343	28	361.2	11.14	32.24	No	361.39	19.17	47.78	NO	361.64	0.825	0
409.786	414.286	4.5	410.16	3.45	3.45	No	410.29	6.16	6.16	NO	410.45	0.365	0
432.412	436.912	4.5	432.63	1.81	1.81	No	432.7	3.19	3.19	NO	432.78	0.159	0
398.477	398.477	0	398.78	0	11.87	Yes	399.01	0	24.87	YES	399.3	0	0
410.045	413.045	3	413	3.48	3.48	No	413.05	6.47	6.47	YES	413.11	0.338	0
440.398	444.898	4.5	440.66	2.16	2.16	No	440.73	3.6	3.6	NO	440.82	0.182	0
433.958	436.958	3	437.41	0.57	2.72	Yes	437.45	0.9	4.48	YES	437.49	0.042	0
387.672	387.672	0	387.82	4.84	4.84	Yes	387.85	8.33	8.33	YES	387.88	0.49	0
449.983	449.983	0	449.98	0	0	No	449.98	0	0	NO	449.98	0	0
298.493	301.993	3.5	299.08	2.87	2.87	No	300.8	4.94	61.13	NO	303.86	0.452	0
298.901	302.901	4	300.94	11.37	11.37	No	304.35	20.47	98.58	YES	304.75	1.36	0
298.6	302.863	4.263	300.75	1.3	24.06	No	302.27	2.19	107.31	NO	303.81	0.111	0
320.989	325.489	4.5	321.31	1.57	1.57	No	321.42	2.86	2.86	NO	321.54	0.158	0
320.264	324.764	4.5	320.51	0.84	2.41	No	320.6	1.49	4.34	NO	320.69	0.084	0
369.07	369.494	0.424	372.31	0	208.33	Yes	372.7	0	308.51	YES	372.85	0	0
313.437	317.937	4.5	313.68	2.85	2.85	No	313.76	5.02	5.02	NO	313.86	0.297	0
338.278	338.278	0	338.68	5.95	6.95	Yes	338.83	9.63	13.3	YES	339.01	0.385	0
330.32	330.32	0	330.6	2.55	3.81	Yes	330.77	4.59	9.89	YES	330.98	0.244	0
311.124	311.124	0	311.44	2.01	3.95	Yes	311.67	3.67	12.41	YES	311.97	0.202	0
283.829	283.829	0	286.3	14.5	740.38	Yes	286.56	24.95	1095.03	YES	288.08	1.95	0
433.124	438.124	5	433.8	5.41	5.41	No	434.03	9.55	9.55	NO	434.39	0.79	0
426.3	430.8	4.5	427.15	10.62	11.18	No	427.5	19	20.05	NO	428.21	0.926	0
444.322	444.322	0	444.34	0	0.91	Yes	444.35	0	1.53	YES	444.36	0	0
462.187	465.857	3.67	462.43	0.91	0.91	No	462.51	1.54	1.54	NO	462.61	0.072	0
424.931	430.431	5.5	425.83	0	16.38	No	426.17	0	29.29	NO	426.64	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
431.617	434.617	3	432.73	2.55	5.99	No	432.73	2.55	5.99	NO	432.73	0.082	0
432.276	434.276	2	432.97	3.46	3.46	No	432.97	3.46	3.46	NO	432.97	0.105	0
458.916	458.916	0	458.92	0	0	Yes	458.92	0	0	YES	458.92	0	0
470.135	470.135	0	470.13	0	0	No	470.13	0	0	NO	470.13	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
449.513	449.513	0	449.82	5.82	5.82	Yes	449.89	10.29	10.29	YES	449.98	0.612	
396.521	400.521	4	397.84	12.83	15.66	No	398.49	22.82	29.66	NO	402.9	1.28	
437.614	442.114	4.5	437.91	2.23	2.23	No	438	4	4	NO	438.11	0.198	
408.85	414.841	5.991	410.47	0	45.24	No	411.06	0	77.57	NO	412.5	0	
298.292	298.292	0	299.02	0	84.32	Yes	299.95	0	222.26	YES	302.08	0	
427.435	430.435	3	427.8	2.21	2.21	No	427.92	3.82	3.82	NO	428.07	0.209	
361.942	366.442	4.5	362.63	7.36	7.36	No	362.95	12.97	12.98	NO	366.51	0.857	
358.777	363.777	5	360.07	9.59	22.43	No	360.6	16.68	39.65	NO	361.53	1.19	
359.051	363.551	4.5	360.12	5.1	5.1	No	360.65	8.96	8.96	NO	361.74	0.501	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
351.671	351.671	0	351.71	0	0.33	Yes	351.72	0	0.54	YES	351.73	0	
352.442	355.442	3	352.58	0.17	0.17	No	352.65	0.28	0.28	NO	352.7	0.01	
356.717	356.717	0	356.74	0	0.33	Yes	356.75	0	0.61	YES	356.76	0	
357.838	359.838	2	358.1	0.45	0.45	No	358.2	0.79	0.79	NO	358.36	0.032	
335.492	341.492	6	336.95	2.5	64.73	No	337.5	4.35	112.2	NO	338.28	0.225	
293.532	293.532	0	297.17	0	722.72	Yes	297.77	0	1076.17	YES	298.98	0	
357.021	363.021	6	358.44	6.39	63.4	No	358.96	10.68	109.87	NO	359.38	0.498	
324.518	329.518	5	325.99	13.88	47.34	No	326.75	24.04	79.76	NO	330.22	1.77	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
323.25	329.25	6	325.35	1.9	112.74	No	326.27	3.21	193.47	NO	329.93	0.145	
307.735	314.235	6.5	309.83	7.84	128.11	No	310.67	13.2	219.58	NO	315.21	0.601	
317.905	324.405	6.5	319.79	14.16	124.16	No	320.54	24.21	212.96	NO	325.11	2.04	
343.742	343.742	0	344.13	2.03	36.07	Yes	344.27	3.42	64.67	YES	344.45	0.156	
388.178	392.678	4.5	388.55	2.37	2.37	No	388.68	4.28	4.28	NO	388.85	0.255	
387.081	391.581	4.5	387.53	4.06	6.42	No	387.69	7.29	11.57	NO	387.91	0.577	
323.814	323.814	0	323.92	0	6.39	Yes	323.97	0	11.52	YES	324.02	0	
311.843	311.843	0	314.18	0	666.85	Yes	314.51	0	884.75	YES	314.8	0	
286.491	290.991	4.5	287.52	4.17	21.26	No	288.04	7.31	38.1	NO	291.06	0.422	
289.44	293.94	4.5	290.24	12.69	17.13	No	290.55	22.12	30.18	NO	294.02	1.68	
272.351	276.601	4.25	274.12	1.6	4.55	No	281.48	2.69	5.6	YES	280.99	0.152	
282.9	283.147	0.247	282.91	0	0.02	No	282.91	0	0.02	NO	282.91	0	
282.8	286.59	3.79	283.56	0.53	1.38	No	283.98	0.89	2.44	NO	284.85	0.035	
288.332	288.552	0	288.33	0	0	No	288.33	0	0	NO	288.33	0	
283.664	286.664	3	283.76	0.18	0.18	No	283.97	0.29	0.29	NO	284.84	0.01	
287.793	292.293	4.5	287.99	1.01	1.01	No	288.05	1.73	1.73	NO	288.12	0.074	
381.253	381.253	0	381.25	0	0	No	381.25	0	0	NO	381.25	0	
342.789	342.789	0	343.21	1.61	1.61	Yes	343.34	3.02	3.02	YES	343.48	0.16	
299.021	299.021	0	302.46	0	677.08	Yes	302.83	0	909.69	YES	303.12	0	
341.772	341.772	0	341.82	0	1.63	Yes	341.84	0	3.07	YES	341.86	0	
364.496	364.496	0	364.58	0	0.24	Yes	364.6	0	0.47	YES	364.62	0	
364.832	367.832	3	365.08	0.36	0.36	No	365.17	0.65	0.65	NO	365.29	0.027	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
390.481	390.481	0	390.48	0	0	No	390.48	0	0	NO	390.48	0	
365.526	368.517	0	366.54	0.98	0.98	No	366.55	1.82	1.82	NO	366.56	0.084	

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year			100-year			
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
339.343	339.343	0	339.34	0	0	No	339.34	0	0	NO	339.34	0	0
289.196	289.196	0	292.02	0	724.61	Yes	292.53	0	1079.64	YES	293.41	0	0
355.086	359.086	4	355.3	0.87	0.87	No	355.38	1.59	1.59	NO	355.47	0.069	0
330.673	330.918	0	330.7	0	0.83	No	330.71	0	1.53	NO	330.73	0	0
361.332	361.332	0	361.33	0	0	No	361.33	0	0	NO	361.33	0	0
369.974	370.069	0	369.97	0	0	No	369.97	0	0	NO	369.97	0	0
325.299	325.299	0	325.35	0	2.03	Yes	325.37	0	3.6	YES	325.39	0	0
335.384	335.384	0	335.67	2.04	2.04	Yes	335.76	3.61	3.61	YES	335.86	0.176	0
307.133	311.633	4.5	307.75	3.74	4.95	No	307.95	6.3	8.11	NO	311.03	0.373	0
306.435	310.685	4.25	306.96	1.93	6.93	No	307.15	3.38	11.74	NO	310.49	0.218	0
310.145	313.645	3.5	310.34	0.73	2.41	No	310.39	1.19	3.73	NO	310.45	0.074	0
322.381	326.631	4.25	323.23	13.8	14.69	No	323.58	24.55	26.44	NO	324.66	1.92	0
344.652	344.652	0	344.66	1.21	1.21	Yes	344.67	2	2	YES	344.67	0.088	0
338.439	339.368	0	338.44	0.19	0.19	No	338.45	0.31	0.31	NO	338.45	0.01	0
325.417	325.417	0	325.42	0	0	Yes	325.42	0	0	YES	325.42	0	0
360.875	360.875	0	360.88	0	0	Yes	360.88	0	0	YES	360.88	0	0
355	361.564	6.564	355.96	1.91	12.92	No	356.37	3.4	22.79	NO	357.36	0.191	0
356.523	361.523	5	357.18	11.02	11.02	No	357.44	19.37	19.37	NO	358.09	1.21	0
414.171	414.837	0	414.17	0	0	No	414.17	0	0	NO	414.17	0	0
355.647	355.797	0	355.65	0	0	No	355.65	0	0	NO	355.65	0	0
385.759	389.259	3.5	386.65	10.08	10.78	No	387.02	17.65	19.03	NO	387.69	1.16	0
385.226	389.726	4.5	385.73	1.78	12.42	No	385.9	3.09	21.99	NO	386.11	0.172	0
417.533	417.701	0	418.06	0	23.16	Yes	418.26	0	39.62	YES	418.49	0	0
409.422	409.422	0	409.62	0.31	0.31	Yes	409.68	0.54	0.54	YES	409.74	0.021	0
326	328.439	2.439	326.31	1.44	1.44	No	326.4	2.37	2.37	NO	330.04	0.113	0
330.839	335.339	4.5	331.04	0.88	0.88	No	331.09	1.45	1.45	NO	331.14	0.067	0
346.684	351.184	4.5	347.13	0.37	2.52	No	347.28	0.65	4.27	NO	347.46	0.027	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
369.362	373.862	4.5	369.6	0	2.16	No	369.67	0	3.64	NO	369.75	0	0
369.679	374.179	4.5	370.14	2.17	2.17	No	370.29	3.64	3.64	NO	370.48	0.161	0
432	432.923	0.923	432.32	1.35	1.35	No	432.43	2.3	2.3	NO	432.58	0.119	0
385	401.047	16.047	385.17	0.03	0.27	No	385.21	0.05	0.43	NO	385.26	0.002	0
386.155	390.405	4.25	386.28	0.24	0.24	No	386.32	0.39	0.39	NO	386.35	0.014	0
412.288	412.288	0	412.75	0	27.09	Yes	412.88	0	47.56	YES	413.06	0	0
383	389.31	6.31	383.32	1.64	1.89	No	383.43	2.96	3.38	NO	383.55	0.15	0
376.6	377.153	0	376.64	0.56	2.44	No	376.65	0.9	4.26	NO	376.67	0.034	0
342.615	347.115	4.5	343.14	5.96	6.96	No	343.34	10.39	12.34	NO	343.63	0.519	0
329.839	335.339	5.5	330.98	0.99	21.11	No	331.44	1.57	37.81	NO	332.17	0.06	0
330.274	335.024	4.75	331.26	8.63	11.81	No	331.7	15.11	20.92	NO	332.44	0.963	0
334.501	334.501	0	335.12	3.17	3.18	Yes	335.35	5.78	5.8	YES	335.57	0.295	0
332.061	337.061	5	337.13	0	0	Yes	337.13	0	0.01	YES	337.13	0	0
438.01	442.01	4	438.51	1	4.5	No	438.67	1.69	7.38	NO	438.83	0.076	0
440.645	444.645	4	441.26	3.53	3.53	No	442.23	6.1	6.1	NO	445.26	0.304	0
405.68	410.18	4.5	405.71	4.58	4.58	No	405.73	8.06	8.06	NO	405.74	0.437	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
425.421	425.421	0	426.25	5.46	5.46	Yes	426.29	9.68	9.68	YES	426.33	0.701	
437.822	442.322	4.5	438.38	3.83	3.83	No	438.6	6.79	6.79	NO	438.95	0.508	
437.238	441.738	4.5	437.8	0.53	4.37	No	438.02	0.85	7.66	NO	438.37	0.044	
433.48	436.98	3.5	434.05	0.76	5.08	No	434.22	1.19	8.78	NO	434.47	0.053	
433.714	437.214	4.5	433.55	0.35	4.19	No	433.91	0.57	7.16	NO	437.21	0.028	
433.052	437.552	4.5	433.79	3.84	3.84	No	434.13	6.6	6.6	NO	437.55	0.343	
437.381	441.881	4.5	437.5	0.62	0.62	No	437.53	0.96	0.96	NO	437.56	0.041	
429.747	441.747	12	430.12	0	4.01	No	430.25	0	6.87	NO	430.43	0	
431	431.438	0.438	431.12	0	5.86	No	431.12	0	5.86	NO	431.12	0	
388.898	394.398	5.5	389.73	0.95	24.4	No	390.01	1.52	41.57	NO	390.42	0.067	
437.691	438.013	0	438.09	0.61	0.61	Yes	438.11	0.98	0.98	YES	438.13	0.046	
438.048	438.048	0	438.66	3	3	Yes	438.69	5.25	5.25	YES	438.72	0.333	
428.178	433.178	5	428.93	9.51	9.51	No	429.21	16.66	16.66	NO	430.55	1.1	
423.422	428.422	5	424.5	1.58	10.97	No	424.92	2.74	19.2	NO	427.34	0.13	
406.705	411.205	4.5	406.98	3.46	3.46	No	407.06	5.7	5.7	NO	407.16	0.227	
429.445	433.695	4.25	430.15	0	2.9	No	430.43	0	4.87	NO	432.05	0	
427.77	432.02	4.25	428.19	0	2.86	No	428.32	0	4.77	NO	428.44	0	
399.825	399.965	0	399.95	0	0.15	No	399.96	0	0.26	NO	399.97	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
439.853	439.853	0	439.97	0	5.6	Yes	440.02	0	10	YES	440.09	0	
401.708	401.708	0	402.49	0	0.17	Yes	402.5	0	0.26	YES	402.5	0	
395.871	395.871	0	396.35	0	5.17	Yes	396.37	0	8.53	YES	396.4	0	
396.816	396.816	0	397.05	5.23	5.23	Yes	397.13	8.61	8.61	YES	397.24	0.491	
404.367	404.367	0	404.4	0.18	0.18	Yes	404.4	0.27	0.27	YES	404.41	0.01	
400.667	401.923	0	400.71	2.23	2.23	No	400.72	3.85	3.85	NO	400.74	0.181	
403.791	408.291	4.5	404.53	3.8	5.34	No	404.81	6.06	8.77	NO	405.71	0.291	
403.025	407.695	4.67	403.57	1.16	6.47	No	403.75	1.93	10.64	NO	404.04	0.108	
387.769	392.439	4.67	388.65	1.8	8.16	No	388.96	2.96	13.43	NO	389.5	0.146	
432.733	435.733	3	432.89	1.17	1.17	No	432.94	1.83	1.83	NO	433	0.084	
404.7	411.909	7.209	405.99	0.6	51.9	No	406.13	0.98	63.1	NO	406.29	0.052	
377.086	380.221	3.135	377.38	0	15.27	No	377.51	0	29.44	NO	377.59	0	
407.174	411.674	4.5	407.38	0.94	0.94	No	407.44	1.57	1.57	NO	407.52	0.105	
405.174	412.174	7	406.9	7.38	52.41	No	407.07	12.24	62.22	NO	407.27	0.864	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
392.013	397.013	5	392.4	1.31	1.31	No	392.5	2.14	2.14	NO	392.63	0.107	
387.39	387.39	0	387.78	0	1.24	Yes	388.08	0	2.29	YES	388.48	0	
439	447.55	8.55	440.42	7.24	9.59	No	443.89	12.56	16.38	NO	446.78	0.835	
440	448.482	8.482	440.43	2.35	2.35	No	443.9	3.95	3.95	NO	447.81	0.195	
457	466.873	9.873	459.2	3.85	104.15	No	465.22	6.42	160.08	NO	467.1	0.371	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
398.605	403.105	4.5	399.05	2.02	2.02	No	399.18	3.35	3.35	NO	399.35	0.208	
426.099	426.099	0	426.31	0	7.03	Yes	426.4	0	12.92	YES	426.52	0	
415.002	415.325	0	415.04	1.9	2.27	No	415.05	2.93	3.57	NO	415.06	0.129	

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)			
487.091	492.591	5.5	487.32	1.19	1.5	No	487.4	2	2.66	NO	487.5	0.096	0
503.89	506.89	3	503.89	0	0	No	503.89	0	0	NO	503.89	0	0
392.33	395.33	3	392.73	0	5.05	No	392.85	0	7.95	NO	393.03	0	0
407	410.832	3.832	407.91	5.12	5.12	No	408.32	8.07	8.07	NO	408.83	0.375	0
409.773	409.773	0	409.77	0	0	No	409.77	0	0	NO	409.77	0	0
407.656	410.656	3	407.66	0	0	No	407.66	0	0	NO	407.66	0	0
426.025	429.025	3	426.05	0	2.21	No	426.06	0	3.82	NO	426.08	0	0
408.179	411.179	3	408.18	0	0	No	408.18	0	0	NO	408.18	0	0
421.791	426.291	4.5	422.17	0.93	1.44	No	422.29	1.6	2.48	NO	422.44	0.077	0
428.617	433.117	4.5	428.73	0.51	0.51	No	428.77	0.88	0.88	NO	428.8	0.039	0
404.316	407.316	3	404.5	0	2.81	No	404.55	0	4.47	NO	404.61	0	0
492.692	495.692	3	492.8	0.72	0.72	No	492.84	1.28	1.28	NO	492.88	0.067	0
451.575	456.575	5	451.75	0.53	2.39	No	451.8	0.91	4.34	NO	451.87	0.042	0
456.446	461.446	5	456.73	1.87	1.87	No	456.83	3.44	3.44	NO	456.94	0.187	0
399	400.5	1.5	400.41	0	15.62	No	400.74	0	26.7	YES	400.84	0	0
419.641	424.141	4.5	419.82	0.51	0.51	No	419.87	0.8	0.8	NO	419.92	0.036	0
357.827	357.827	0	358.13	0	23.2	Yes	358.26	0	41.37	YES	358.45	0	0
428.125	431.625	3.5	428.32	0.86	0.86	No	428.37	1.38	1.38	NO	428.44	0.068	0
428.177	431.677	3.5	428.4	0.9	0.9	No	428.46	1.44	1.44	NO	428.53	0.07	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
477	482.094	5.094	477.17	0.35	0.54	No	477.21	0.54	0.83	NO	477.25	0.023	0
477.527	482.027	4.5	477.65	0.19	0.19	No	477.68	0.29	0.29	NO	477.71	0.012	0
463.593	467.093	3.5	463.88	1.03	1.03	No	463.95	1.6	1.6	NO	464.05	0.071	0
463.371	466.871	3.5	463.64	1.28	1.28	No	463.72	2	2	NO	463.83	0.09	0
474.541	478.041	3.5	474.89	1.57	1.57	No	474.98	2.56	2.56	NO	475.1	0.121	0
440.847	445.347	4.5	441.06	1.18	1.18	No	441.11	1.85	1.85	NO	441.17	0.085	0
435.393	440.393	5	435.74	0.1	4.8	No	435.83	0.16	7.61	NO	435.94	0.007	0
284.149	284.96	0	286.83	0	469.24	Yes	287.05	0	542.84	YES	287.66	0	0
436.204	440.704	4.5	436.68	0.41	3.52	No	436.81	0.67	5.61	NO	436.98	0.034	0
437.662	441.662	4	437.83	0.66	0.66	No	437.88	1.05	1.05	NO	437.93	0.051	0
436.434	440.934	4.5	436.99	2.46	2.46	No	437.16	3.91	3.91	NO	437.39	0.186	0
398.07	401.57	3.5	398.86	4.91	7.17	No	399.4	9.23	13.89	NO	401.28	0.556	0
397.292	401.792	4.5	398.34	1.97	9.12	No	398.8	3.53	17.36	NO	399.37	0.224	0
368	373.286	5.286	368.6	2.18	9.72	No	368.89	3.91	19.24	NO	371.07	0.232	0
382.69	382.763	0	382.69	0	0	No	382.69	0	0	NO	382.69	0	0
394.661	400.271	3	394.67	0.41	0.41	No	394.68	1.09	1.09	NO	394.68	0.054	0
399.676	402.676	3	400.02	0.15	1.51	No	400.15	0.24	2.84	NO	401.48	0.01	0
414.174	414.415	0	414.21	0	1.34	No	414.23	0	2.69	NO	414.25	0	0
271.9	274.05	2.15	273.7	0	25.85	No	274.39	0	199.81	YES	275.16	0	0
419.295	419.451	0	419.3	0	0	No	419.3	0	0	NO	419.3	0	0
445.039	448.039	3	445.04	0	0	No	445.04	0	0	NO	445.04	0	0
461.001	461.001	0	461.24	2.03	2.03	Yes	461.32	3.61	3.61	YES	461.4	0.181	0
410.162	413.162	3	410.39	1.38	1.38	No	410.47	2.62	2.62	NO	410.56	0.154	0
414.249	417.249	3	414.25	0	0	No	414.25	0	0	NO	414.25	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
392.392	392.392	0	392.44	0	1.81	Yes	392.46	0	3.38	YES	392.49	0	0
317.992	322.492	4.5	318.57	3.23	3.23	No	318.81	5.83	5.83	NO	319.23	0.377	0
271.632	271.852	0	273.7	0	466.33	Yes	274.36	0	894.77	YES	275.06	0	0
316.715	324.715	8	317.33	2.3	5.5	No	317.53	4.06	9.84	NO	317.82	0.286	0
312.366	317.366	5	312.71	3.89	3.89	No	312.83	7.17	7.17	NO	312.97	0.355	0
308.463	313.963	5.5	309.02	7.09	10.96	No	309.22	12.9	20.04	NO	309.47	0.771	0
305.908	311.908	6	306.42	0.71	10.89	No	306.6	1.14	20.32	NO	306.87	0.05	0
304.323	311.323	7	305.18	0.26	26.08	No	305.58	0.4	49.68	NO	306.1	0.017	0
306.598	311.098	4.5	306.75	0.65	0.65	No	306.8	1.15	1.15	NO	306.86	0.05	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
312.789	312.789	0	313.21	1.18	1.18	Yes	313.44	2.16	2.16	YES	313.68	0.105	0
306.501	311.501	5	307.44	2.65	2.65	No	307.68	4.1	4.1	NO	308.01	0.175	0
369.199	373.699	4.5	369.82	5.18	5.18	No	370.09	9.51	9.51	NO	370.65	0.588	0
393.765	393.765	0	393.94	4.51	4.51	Yes	394	8.05	8.05	YES	394.07	0.47	0
382.15	386.65	4.5	382.93	11.18	11.18	No	383.28	20.03	20.03	NO	386.78	1.98	0
381.595	386.095	4.5	382.21	2.8	3.17	No	382.88	5.1	8.25	NO	386.42	0.317	0
422	424.458	2.458	422.72	5.31	6.3	No	422.96	9.28	11.35	NO	423.27	0.562	0
400.34	403.34	3	403.37	2.79	3.13	Yes	403.42	4.81	5.59	YES	403.46	0.274	0
403.582	403.582	0	403.82	5.91	5.91	Yes	403.88	9.79	9.79	YES	403.95	0.473	0
387.699	392.199	4.5	388.04	4.19	4.19	No	388.19	7.66	8.5	NO	388.69	0.488	0
384.087	392.087	8	385.95	9.42	94.54	No	386.6	16.22	161.33	NO	387.62	1.23	0
389.034	394.034	5	389.25	0.77	0.77	No	389.42	1.32	1.32	NO	391.88	0.072	0
399.916	406.916	7	401.54	6.67	78.23	No	402.11	11.92	131.88	NO	403.35	0.835	0
365.901	366.056	0	365.9	0	0	No	365.9	0	0	NO	365.9	0	0
403.591	409.591	6	405.35	11.91	72.09	No	405.97	21.11	120.79	NO	408.33	1.36	0
412.155	419.155	7	413.67	2.66	59.15	No	414.17	4.8	97.54	NO	415.14	0.28	0
410.751	417.751	7	412.07	2.7	61.52	No	412.48	4.91	101.79	NO	413.52	0.318	0
428.97	432.97	4	429.45	3.75	3.75	No	429.66	6.72	6.72	NO	433	0.374	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
416.937	416.937	0	418.75	3.73	3.73	Yes	418.77	6.52	6.52	YES	418.79	0.335	0
372.202	378.202	6	372.66	5.71	10.63	No	372.82	9.78	19.25	NO	373.03	0.518	0
374.636	379.136	4.5	375.13	2.6	5.4	No	375.34	4.53	10.37	NO	375.65	0.207	0
351.326	357.326	6	352.22	13.7	25.17	No	352.55	23.44	44.5	NO	353.15	1.79	0
378.866	383.366	4.5	379.33	2.78	2.78	No	379.48	4.76	4.76	NO	379.69	0.21	0
412.747	417.747	5	413.68	0	15.35	No	414.08	0	27.4	NO	418.14	0	0
294.138	294.138	0	298.58	0	425.2	Yes	299.11	0	599.59	YES	299.93	0	0
346.543	351.043	4.5	347.18	2.9	5.65	No	347.42	5.04	9.76	NO	347.84	0.257	0
410.045	414.045	4	410.33	3.54	3.54	No	410.41	6.2	6.2	NO	410.52	0.401	0
354.506	359.006	4.5	355.86	6.56	9.84	No	356.85	11.38	17.26	NO	358.69	0.667	0
369.959	375.959	6	371.15	7.94	19.32	No	371.58	13.9	34.53	NO	372.42	0.838	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
375.7	376.7	1	375.7	0	0	No	375.7	0	0	NO	375.7	0	0
432.412	435.412	3	432.52	0.32	0.32	No	432.54	0.51	0.51	NO	432.58	0.022	0
421.326	421.653	0	421.34	0	0.17	No	421.35	0	0.27	NO	421.35	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
357.604	362.104	4.5	357.95	1.38	1.38	No	358.07	2.5	2.5	NO	358.21	0.121	
350.929	350.929	0	351.04	0	1.34	Yes	351.07	0	2.45	YES	351.1	0	
342.593	347.593	5	343.8	8.52	8.82	No	344.44	15.37	16.19	NO	347.6	0.914	
375.14	385.14	10	375.94	7.35	14.66	No	376.25	13.33	26.06	NO	376.74	0.818	
383.778	386.778	3	385.93	0.22	0.26	No	385.93	0.41	0.47	NO	385.94	0.018	
379.692	382.692	3	379.79	0.11	0.11	No	379.82	0.2	0.2	NO	379.85	0.008	
377.031	380.031	3	377.84	0.75	0.86	No	378.54	1.6	1.79	NO	379.81	0.092	
403.981	403.981	0	404.09	0	0.26	Yes	404.12	0	0.46	YES	404.16	0	
406.563	411.063	4.5	406.76	0.27	0.27	No	406.83	0.47	0.48	NO	406.9	0.019	
306.046	306.138	0	313.13	0	570.34	Yes	313.98	0	839.16	YES	314.71	0	
442.346	445.346	3	442.68	3	3	No	442.79	5.43	5.43	NO	442.93	0.329	
417.134	420.134	3	417.24	0.18	0.18	No	417.27	0.31	0.31	NO	417.3	0.012	
436.584	439.584	3	436.65	0.1	0.1	No	436.67	0.16	0.16	NO	436.68	0.006	
411.917	418.498	3	411.92	0	0.28	No	411.93	0	0.47	NO	411.93	0	
423.965	429.465	5.5	424.68	3.79	10.87	No	424.95	6.8	19.38	NO	425.51	0.618	
457	458.054	1.054	457.08	0.1	0.1	No	457.1	0.16	0.16	NO	457.12	0.006	
453.778	457.699	3.5	453.79	0.21	0.27	No	453.8	0.35	0.45	NO	453.8	0.013	
452.592	452.592	0	452.61	0	0.27	Yes	452.61	0	0.44	YES	452.62	0	
456.732	456.732	0	456.98	0	0.03	Yes	456.98	0	0.05	YES	456.98	0	
421.298	425.798	4.5	421.61	1.29	1.29	No	421.71	2.34	2.34	NO	421.83	0.12	
337.321	337.321	0	337.56	0.35	0.35	Yes	337.63	0.55	0.55	YES	337.71	0.017	
416.801	416.855	0	416.86	0	1.28	Yes	416.89	0	2.32	YES	416.92	0	
403.919	403.919	0	404.29	0	2.29	Yes	404.31	0	3.87	YES	404.33	0	
439.355	439.355	0	439.82	1.38	1.38	Yes	440.07	2.58	2.58	YES	440.43	0.139	
448.232	451.232	3	448.39	0.72	0.72	No	448.44	1.25	1.25	NO	448.49	0.056	
406	408.023	2.023	406.38	0.78	0.85	No	406.53	1.43	1.55	NO	406.81	0.066	
404.499	404.499	0	404.63	0	0.83	Yes	404.64	0	1.51	YES	404.66	0	
421.723	424.723	3	421.77	0.08	0.08	No	421.79	0.12	0.12	NO	421.79	0.005	
401.157	401.157	0	401.31	0.31	0.54	Yes	401.37	0.63	1.08	YES	401.42	0.03	
408.234	408.234	0	408.35	0.24	0.24	Yes	408.4	0.46	0.46	YES	408.44	0.022	
377.262	377.262	0	377.29	0	0.53	Yes	377.3	0	1.06	YES	377.32	0	
322.549	328.027	4.027	322.7	0	4.76	No	323.27	0	7.19	NO	324.3	0	
487.003	487.003	0	487	0	0	No	487	0	0	NO	487	0	
459.715	459.715	0	459.71	0	0	No	459.71	0	0	NO	459.71	0	
458.209	458.407	0	458.21	0	0	No	458.21	0	0	NO	458.21	0	
465.837	466.298	0	465.84	0	0	No	465.84	0	0	NO	465.84	0	
420.677	425.177	4.5	420.87	0.27	1.18	No	421.02	0.46	4.02	NO	422.3	0.02	
416.881	424.881	8	418.53	0.45	39.43	No	419.17	0.78	69.7	NO	421.93	0.035	
415.701	427.701	12	417.45	15.01	54.1	No	418.09	26.91	91.21	NO	420.52	2.48	
415	427.361	12.361	416.67	1.21	55.15	No	417.3	2.03	92.44	NO	417.5	0.121	
413.6	420.6	7	415.48	1.83	56.9	No	416.18	3.31	94.5	NO	417.96	0.201	
425.948	429.948	4	427.08	17.63	17.63	No	430.09	31.21	31.21	YES	430.25	3.47	
317.128	317.128	0	322.49	0	528.97	Yes	323.22	0	926.5	YES	323.82	0	
420.074	425.324	5.25	420.42	1.73	3.16	No	420.55	3.08	6.03	NO	422.56	0.172	

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year			100-year			
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
434.401	434.401	0	434.81	0	0.03	Yes	434.83	0	0.05	YES	434.85	0	0
437.078	437.458	0	437.63	4.97	4.97	Yes	437.66	8.95	9.64	YES	437.7	0.543	0
437.244	437.244	0	437.64	2.35	2.54	Yes	437.71	4.16	4.16	YES	437.83	0.248	0
440.5	443.025	2.525	440.76	0.26	2.59	No	440.91	0.45	4.62	NO	441.09	0.019	0
441.912	446.412	4.5	442.44	2.35	2.35	No	442.62	4.2	4.2	NO	442.86	0.245	0
436.596	439.596	3	437.82	0.5	11.37	No	439.7	0.76	20.12	YES	439.77	0.033	0
404.183	406.01	0	404.18	0	0	No	404.18	0	0	NO	404.18	0	0
436.995	440.495	3.5	438.14	10.89	10.89	No	440.15	19.29	19.29	NO	440.71	1.98	0
479.458	482.128	2.67	479.46	0	0	No	479.46	0	0	NO	479.46	0	0
478.195	482.195	4	478.74	3.4	3.71	No	479.02	6.11	6.82	NO	482.27	0.384	0
468.79	468.79	0	468.96	0	3.7	Yes	469.01	0	6.79	YES	469.04	0	0
491.857	491.857	0	492.02	0.56	0.56	Yes	492.07	1	1	YES	492.13	0.042	0
430.381	433.881	3.5	431.16	0	5.69	No	434.01	0	10.43	YES	434.1	0	0
435.311	438.641	3.33	438.71	0	4.05	Yes	438.75	0	7.7	YES	438.81	0	0
448.005	448.005	0	448.1	0.98	11.77	Yes	448.13	1.71	18.03	YES	448.16	0.1	0
449.534	449.927	0	449.86	15.42	15.51	No	449.95	27.77	27.77	YES	450.07	2.63	0
424.212	424.212	0	424.21	0	0	No	424.21	0	0	NO	424.21	0	0
408.446	408.446	0	408.45	0	0	Yes	408.45	0	0	YES	408.45	0	0
407.032	411.032	4	408.6	13.93	20.25	No	410.31	25.01	33.1	NO	411.56	2.04	0
406.5	411.09	4.59	408.32	3.53	23.32	No	410.13	6.41	38.19	NO	411.51	0.47	0
405.8	411.162	5.362	408.01	2.7	25.8	No	409.71	4.72	55.32	NO	411.81	0.245	0
405.55	411.55	6	407.91	1.14	85.36	No	409.24	2.02	154.02	NO	411.37	0.109	0
407.387	413.387	6	409.88	3.07	40.47	No	413.87	5.36	65.72	YES	414.21	0.265	0
397.156	403.656	6.5	399.79	4.62	93.55	No	402.54	8.07	168.78	NO	404.79	0.533	0
396.863	403.863	7	399.55	0.26	98.68	No	402.06	0.43	180.35	NO	404.6	0.019	0
424.217	430.217	6	424.9	0.22	18.13	No	425.13	0.35	32.45	NO	425.46	0.016	0
424.947	430.947	6	425.41	4.77	4.77	No	425.58	8.54	8.54	NO	425.84	0.702	0
411.435	414.935	3.5	414.13	0	0	No	414.57	0	0	NO	414.83	0	0
344.859	344.892	0	345.69	0	66.47	Yes	346.03	0	103.79	YES	346.46	0	0
418.362	424.362	6	420.01	7.64	27.03	No	420.77	13.14	49.45	NO	421.46	0.77	0
418.22	424.22	6	419.21	0.9	27.85	No	419.63	1.59	55.6	NO	420.53	0.095	0
430.026	436.026	6	430.86	9.17	13.81	No	431.11	16.37	22.79	NO	431.5	1.38	0
428.532	434.032	5.5	429.34	2.19	19.13	No	429.67	3.68	35.7	NO	430.15	0.22	0
432.277	438.277	6	432.83	13.15	13.15	No	433.02	23.59	23.59	NO	433.27	1.96	0
440.024	443.024	3	442.17	0.29	0.29	No	442.18	0.44	0.44	NO	442.18	0.018	0
439.703	439.703	0	439.82	0.22	0.22	Yes	439.84	0.35	0.35	YES	439.87	0.016	0
437.637	437.637	0	437.68	0	0.24	Yes	437.69	0	0.36	YES	437.71	0	0
460.531	470.031	9.5	461.58	0.16	30.04	No	461.96	0.27	54.14	NO	462.42	0.011	0
448.857	452.357	3.5	450.47	1.62	35.21	No	451.07	3	62.56	NO	452.44	0.186	0
385.539	387.235	0	385.58	0	2.85	No	385.59	0	4.81	NO	385.61	0	0
449.3	453.3	4	450.51	5.86	5.86	No	451.11	10.5	10.5	NO	452.53	0.627	0
464.836	469.336	4.5	465.78	0.18	28.19	No	466.13	0.27	49.61	NO	466.95	0.012	0
461.021	465.521	4.5	462.8	0.21	28.36	No	463.53	0.32	49.87	NO	464.58	0.014	0
465.807	470.307	4.5	467.19	11.21	28.08	No	467.97	20.09	49.58	NO	469.7	1.49	0

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
486.593	486.593	0	486.59	0	0	No	486.59	0	0	NO	486.66	0	0
501.847	506.347	4.5	502.19	2.17	2.17	No	502.31	3.88	3.88	NO	502.46	0.228	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
373.308	373.308	0	373.69	0	1.97	Yes	373.7	0	3.28	YES	373.72	0	0
493.811	493.811	4.5	494.63	1.59	8.01	No	495.03	2.9	13.84	NO	498.69	0.184	0
488.673	493.173	4.5	489.54	1.73	9.56	No	490.41	3.12	16.54	NO	493.16	0.192	0
484.251	488.751	4.5	485.25	3.73	13.01	No	485.67	6.75	22.49	NO	486.14	0.467	0
473.845	478.345	4.5	474.73	2.5	17.71	No	475.04	4.1	30.9	NO	475.4	0.176	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
434.677	436.677	2	434.68	0	0	No	434.68	0	0	NO	434.68	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
509.211	512.211	3	509.28	0.13	0.13	No	509.3	0.23	0.23	NO	509.32	0.009	0
415.315	420.315	5	415.8	6.23	6.42	No	415.96	11.03	11.37	NO	416.17	0.619	0
407.62	411.667	4.047	408.31	1.46	12.87	No	408.53	2.23	22.25	NO	408.8	0.092	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
411.2	415.402	4.202	411.67	4.8	4.94	No	411.81	8.12	8.42	NO	412.12	0.554	0
399.39	403.352	3.962	400.6	8.67	58.92	No	401.12	14.35	100.06	NO	403.57	0.863	0
401.63	405.352	3.722	402.21	2.49	15.39	No	402.39	4.18	26.75	NO	403.29	0.211	0
396.45	401.54	5.09	398.31	8.72	75.2	No	399.39	15.35	129.39	NO	401.75	0.958	0
393.384	399.884	6.5	397.64	0.41	224.27	No	398.29	0.65	335.2	NO	399.44	0.032	0
392.191	398.691	6.5	397.6	3.02	258	No	397.98	4.73	339.19	NO	398.98	0.215	0
392	402.342	10.342	396.56	0.51	255.09	No	397.66	0.81	338.66	NO	398.04	0.04	0
391.7	402.531	10.831	396.42	3.55	272.69	No	397.29	5.69	364.21	NO	397.86	0.281	0
442.511	447.011	4.5	442.86	2.5	3.12	No	442.96	4.14	5.19	NO	443.08	0.193	0
442.608	447.108	4.5	442.93	0.63	0.63	No	443.03	1.06	1.06	NO	443.14	0.043	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
440.846	445.346	4.5	441.08	0.28	3.41	No	441.15	0.48	5.67	NO	441.23	0.023	0
431.523	438.023	6.5	434.84	5	117.08	No	436.13	8.31	162.1	NO	436.98	0.388	0
397.02	399.763	2.743	398.73	4.67	138.61	No	399.35	7.71	195.6	NO	400.49	0.436	0
397.528	401.028	3.5	398.78	5.61	5.73	No	399.68	9.34	9.56	NO	401.05	0.446	0
411.5	418.354	6.854	412.83	16.22	33.73	No	413.42	28.02	56.4	NO	417.3	2.04	0
410.5	418.136	7.636	412.06	4.06	45.25	No	412.77	6.66	77.66	NO	415.46	0.351	0
421.226	425.726	4.5	421.65	0	0.02	No	421.97	0	0.03	NO	425.83	0	0
426.976	431.476	4.5	427.8	0.36	6.44	No	428.11	0.56	10.79	NO	431.48	0.023	0
440.164	440.164	0	440.16	0	0	No	440.16	0	0	NO	440.16	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
438.335	438.335	0	438.33	0	0	No	438.33	0	0	NO	438.33	0	0
431.235	443.493	3.67	434.92	0.81	0.81	No	434.92	1.29	1.29	NO	434.93	0.057	0
450.532	450.532	0	450.53	0	0	No	450.53	0	0	NO	450.53	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
469.653	469.653	0	469.65	0	0	No	469.65	0	0	NO	469.65	0	0
413.253	419.159	0	415.79	6.06	6.86	No	415.8	9.93	11.57	NO	415.82	0.533	0
464.829	469.329	4.5	465.59	15.77	15.77	No	465.96	28.34	28.34	NO	469.45	1.96	0
437.454	441.954	4.5	437.96	9.69	9.99	No	438.13	16.95	17.58	NO	438.37	1.08	0
443.671	448.171	4.5	444.42	8.68	8.68	No	444.67	14.49	14.49	NO	446.88	0.759	0
439.602	444.602	5	440.9	0.59	12.63	No	442.08	0.92	21.78	NO	444.42	0.039	0
444.673	448.673	4	444.88	0.74	0.74	No	444.94	1.2	1.2	NO	446.71	0.065	0
444	449.117	5.117	444.67	0.35	3.03	No	444.88	0.56	4.97	NO	446.43	0.027	0
444.271	448.771	4.5	444.96	2.69	2.69	No	445.19	4.44	4.44	NO	446.7	0.247	0
442.117	446.617	4.5	442.58	0.05	3.05	No	442.74	0.07	5.03	NO	445.44	0.003	0
445.677	449.677	4	445.85	0.65	0.65	No	445.91	1.1	1.1	NO	446.08	0.057	0
445.69	450.69	5	446.7	1.05	16.91	No	447.15	1.68	32.27	NO	447.37	0.077	0
434.447	434.447	0	434.52	0	1.36	Yes	434.54	0	2.33	YES	434.58	0	0
454.769	459.769	5	455.76	7.37	16.05	No	456.35	12.62	30.7	NO	459.94	0.802	0
456.383	461.383	5	457	0.13	9.33	No	457.32	0.19	18.92	NO	460.61	0.008	0
437.936	441.606	3.67	441.81	20.39	22.8	Yes	441.81	20.39	22.8	YES	441.81	0.741	0
436.406	440.906	4.5	439.64	0.17	0.17	No	439.97	0.26	0.26	NO	440.3	0.012	0
437	440.918	3.918	439.67	9.86	38.59	No	440.09	16.61	69.59	NO	440.53	0.993	0
429.206	434.706	5.5	429.34	0.72	0.72	No	431.09	1.14	9.52	NO	431.12	0.05	0
434.521	439.021	4.5	435.3	11.06	11.06	No	436.66	19.54	19.54	NO	439.82	2.03	0
425.87	434.373	8.503	428.43	8.36	61.45	No	431.5	14.47	166.88	NO	431.6	0.973	0
425.5	434.527	9.027	428.28	7.48	79.41	No	430.45	12.71	214.85	NO	430.73	0.774	0
433.344	437.344	4	435.75	11.84	11.84	No	437.36	20.35	20.35	YES	437.83	1.97	0
387.049	387.809	0.76	387.86	0	8.04	Yes	388.12	0	13.26	YES	388.47	0	0
432.747	436.747	4	435.7	4.47	36.16	No	437.16	7.58	75.85	YES	437.12	0.593	0
448.232	450.062	1.83	448.23	0	0	No	448.23	0	0	YES	448.23	0	0
447.818	447.818	0	447.82	0	0	Yes	447.82	0	0	YES	447.82	0	0
494.373	500.373	6	494.54	1.02	1.02	No	494.58	1.67	1.67	NO	494.64	0.083	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
451.96	452.96	1	453.02	6.14	6.14	Yes	453.1	10.77	10.77	YES	453.19	0.824	0
430.296	434.796	4.5	430.51	0.54	0.73	No	430.6	0.98	1.42	NO	431.97	0.045	0
433.591	438.091	4.5	434.13	4.07	4.07	No	434.31	6.85	6.85	NO	434.6	0.358	0
438.569	431.569	3	429.31	7.52	7.52	No	429.63	13	13	NO	430.38	1.04	0
404.179	404.179	0	404.79	0	58.08	Yes	404.88	0	73.96	YES	404.98	0	0
433.62	437.62	4	433.74	0.2	0.2	No	433.8	0.46	0.46	NO	433.87	0.022	0
427.256	429.756	2.5	428.4	0.89	0.89	No	428.74	1.58	1.58	NO	429.18	0.093	0
426.8	427.849	1.049	428.23	0.19	13.25	Yes	428.43	0.31	22.96	YES	428.65	0.012	0
414.454	418.454	4	415.53	16.95	16.95	No	415.95	29.79	29.79	NO	417.14	2.61	0
397.703	400.203	2.5	400.28	2.91	28.15	Yes	401.16	4.92	42.92	YES	401.88	0.292	0
394.557	401.557	7	396.84	2.37	113.94	No	398.95	4	206.38	NO	401.43	0.258	0
393.891	401.391	7.5	396.1	5.71	117.96	No	398.41	9.61	213.68	NO	400.48	0.549	0
437.133	441.633	4.5	437.68	2.06	2.06	No	437.86	3.58	3.58	NO	438.1	0.189	0
436.654	440.904	4.25	437.07	2.23	4.25	No	437.21	3.88	7.4	NO	437.38	0.209	0

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year			100-year			
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
389.992	398.992	9	391.96	1.82	1.82	No	394.24	2.93	13.83	NO	396.88	0.157	
389.5	398.261	8.761	394.49	0	152.71	No	397.1	0	267.66	NO	398.45	0	
393.458	398.958	5.5	393.77	3.06	3.2	No	393.99	5.31	8.71	NO	397.28	0.443	
390.694	395.194	4.5	391.26	1.31	1.51	No	393.99	2.1	3.11	NO	395.77	0.108	
390.146	394.646	4.5	390.75	7.96	8	No	393.72	14.11	14.18	NO	395.72	0.95	
387.21	394.71	7.5	389.82	0.41	162.8	No	393.26	0.64	286.33	NO	395.24	0.028	
384.5	390.957	6.457	387.16	0.74	180.4	No	389.9	1.2	311.2	NO	392.39	0.063	
387.103	391.603	4.5	388.23	15.86	17.17	No	392.05	28.28	30.73	YES	392.57	2.68	
390.3	397.54	7.24	394.65	0	152.02	No	397.55	0	266.76	YES	399.02	0	
394	396.967	2.967	395.27	4.31	45.56	No	397.86	7.23	71.27	YES	399.11	0.403	
390.415	396.915	6.5	394.69	3.04	152.21	No	397.63	5.15	274.42	YES	399.04	0.321	
398.776	403.776	5	400.31	9.52	40.17	No	402.21	15.58	66.17	NO	404.19	0.797	
395.816	399.816	4	397.66	1.95	41.81	No	399.01	3.17	66.15	NO	400.69	0.149	
412.26	417.26	5	413.51	4.47	4.47	No	414.02	7.14	7.14	NO	417.46	0.355	
440.437	440.437	0	440.9	5.66	5.66	Yes	441.05	9.77	9.77	YES	441.31	0.732	
441.482	441.482	0	441.96	5.06	5.06	Yes	441.98	9.01	9.01	YES	442.02	0.556	
431.118	436.618	5.5	432.19	0.59	19.84	No	432.57	0.97	32.38	NO	436.3	0.062	
430.498	436.498	6	431.56	1.37	21.09	No	431.99	2.26	34.31	NO	435.97	0.132	
431.753	436.253	4.5	432.56	6.6	19.3	No	432.87	11.53	31.54	NO	436.38	0.829	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
465.037	465.525	0	465.04	0	0	No	465.04	0	0	NO	465.04	0	
419.201	424.201	5	420.32	7.17	27.96	No	420.71	12.35	45.89	NO	422.86	0.957	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
451.132	451.132	0	451.13	0	0	No	451.13	0	0	NO	451.13	0	
441.836	448.836	7	442.92	0.22	14.61	No	444.79	0.37	24.94	NO	445.61	0.016	
445.493	449.493	4	445.96	4.09	4.09	No	446.72	7.32	7.32	NO	449.89	0.464	
447.618	452.118	4.5	447.95	1.42	1.42	No	448.06	2.52	2.52	NO	448.18	0.127	
442.611	445.611	3	443.61	7.83	9.2	No	445.3	14.04	16.5	NO	445.95	1.18	
448.672	448.672	0	449.21	1.23	1.23	Yes	449.54	2.13	2.13	YES	449.7	0.098	
436.799	440.299	3.5	440.93	2.91	9.54	Yes	441.01	5.23	17.21	YES	441.1	0.317	
437.292	440.292	3	440.94	3.92	6.13	Yes	441.02	7.07	11.34	YES	441.11	0.448	
395.898	395.898	0	395.92	0	2.01	Yes	395.93	0	3.34	YES	395.94	0	
422.292	426.292	4	422.64	1.87	1.87	No	422.77	3.36	3.36	NO	422.95	0.192	
398.03	403.53	5.5	404.5	17.33	48.57	Yes	405.09	30.67	65.42	YES	405.37	2.19	
397.69	403.69	6	404.48	0.18	49.88	Yes	404.99	0.28	65.42	YES	405.34	0.012	
415.29	420.79	5.5	416.28	3.62	21.73	No	416.67	6.24	38.67	NO	417.32	0.368	
437.586	442.086	4.5	438.22	5.9	5.9	No	438.49	10.6	10.6	NO	439.16	0.608	
436.72	441.72	5	437.49	0.76	18.45	No	437.8	1.25	32.98	NO	438.18	0.073	
440.396	444.896	4.5	440.79	2.6	2.6	No	441.06	4.57	4.57	NO	441.57	0.227	
439.5	444.5	5	440.55	0.21	12.3	No	440.96	0.33	21.9	NO	441.42	0.016	
445.064	450.064	5	446.07	6.53	9.68	No	446.57	11.72	17.31	NO	450.14	0.748	
446.5	450.799	4.299	447.05	3.21	3.21	No	447.33	5.78	5.78	NO	451.13	0.394	
401.528	401.528	0	401.64	8.44	8.44	Yes	401.68	14.12	14.12	YES	401.73	0.76	
454.786	458.286	3.5	455.81	0.73	2.21	No	456.52	1.27	3.87	NO	457.89	0.068	

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year				100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
451.253	454.253	3	454.33	4.02	6.62	Yes	454.39	7.23	13	YES	454.45	0.493	
437.324	439.824	2.5	439.48	3.71	3.71	No	439.58	6.73	6.73	NO	439.64	0.438	
434.395	440.895	6.5	434.46	0.06	0.06	No	434.46	0.09	0.09	NO	434.5	0.003	
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
442.035	442.035	0	443.03	4.32	4.36	Yes	443.57	7.91	8.01	YES	444.41	0.398	
437.61	437.61	0	437.91	0	3.48	Yes	437.96	0	6.71	YES	438.02	0	0
495.41	495.41	0	495.63	0	0.32	Yes	495.71	0	0.56	YES	495.85	0	0
464.611	464.611	0	464.72	0.28	0.28	Yes	464.75	0.46	0.46	YES	464.78	0.02	
454.901	454.901	0	455.1	0	0.27	Yes	455.11	0	0.44	YES	455.12	0	0
461.249	461.249	0	461.3	1.52	1.52	Yes	461.32	2.86	2.86	YES	461.35	0.14	
448.15	451.022	2.872	450.07	2.72	3.28	No	450.94	4.83	4.95	NO	451.06	0.285	
448.3	450.801	2.501	450.08	0.58	0.58	No	450.93	0.99	0.99	YES	450.98	0.05	
445.428	448.928	3.5	449.6	3.71	7.82	Yes	449.73	6.55	9.99	YES	449.81	0.387	
446.507	449.507	3	449.77	7.09	7.09	Yes	449.83	12.54	12.54	YES	449.9	0.813	
445.043	449.043	4	449.36	0.38	7.91	Yes	449.38	0.63	9.82	YES	449.39	0.03	
444.5	448.323	3.823	445.27	1.67	10.29	No	445.73	2.91	24.07	NO	445.98	0.205	
446.74	447.601	0	448.43	0.94	7.44	Yes	448.6	1.67	12.32	YES	448.61	0.085	
491.421	491.421	0	491.57	0	1.78	Yes	495.71	0	14.56	YES	500.66	0	0
446.628	450.128	3.5	447.07	2.37	2.37	No	447.24	4.09	4.09	NO	447.42	0.271	
447.356	447.356	0	448.46	0	2.09	Yes	448.68	0	4.12	YES	448.77	0	0
432.406	435.906	3.5	432.41	0	0	No	432.41	0	0	NO	432.41	0	0
416.473	419.473	3	416.59	2.85	2.85	No	416.63	4.81	4.81	NO	416.68	0.244	
457.826	457.826	0	459.84	5.95	5.95	Yes	459.87	10.74	10.74	YES	459.9	0.85	
450.207	450.207	0	450.3	0.22	0.22	Yes	450.32	0.36	0.36	YES	450.34	0.015	
464.582	464.582	0	464.62	0.4	0.4	Yes	464.63	0.74	0.74	YES	464.65	0.033	
460.446	460.446	0	460.52	0	0.01	Yes	460.52	0	0.02	YES	460.52	0	0
444.367	447.867	3.5	445.09	4.89	4.89	No	445.36	8.78	8.79	NO	445.75	0.455	
462.854	468.354	5.5	464.04	2.42	36.31	No	468.36	3.88	120.14	YES	468.81	0.19	
445.726	449.976	4.25	445.83	0.49	0.49	No	445.86	0.82	0.82	NO	445.9	0.035	
429.445	434.445	5	430.38	8.25	18.54	No	430.79	14.7	33.36	NO	435.13	1.53	
429.883	434.883	5	430.94	9.86	10.34	No	431.44	17.56	18.37	NO	435.69	1.73	
428.871	432.871	4	429.2	1.58	1.58	No	429.32	2.83	2.83	NO	429.47	0.149	
426.5	431.5	5	427.64	2.48	20.97	No	428.18	4.24	37.29	NO	431.77	0.23	
433.27	433.27	0	433.27	0	0	No	433.27	0	0	NO	433.27	0	0
406.56	413.699	7.139	407.85	3.99	37.07	No	408.81	7.21	68.19	NO	410.52	0.393	
433.517	433.517	0	433.52	0	0	Yes	433.52	0	0	YES	433.52	0	0
370.026	378.526	8.5	371.32	4	21.32	No	371.91	7.18	39.25	NO	372.76	0.516	
392.715	397.215	4.5	392.98	1.59	1.59	No	393.06	2.84	2.84	NO	393.17	0.161	
391.65	393.886	0	391.66	0.61	0.61	No	391.67	0.92	0.92	NO	391.67	0.04	
390.88	396.88	6	391.55	3.38	17.35	No	391.79	6.16	31.43	NO	392.08	0.32	
340.691	345.191	4.5	341.87	4.79	33.32	No	342.35	8.01	60.29	NO	343.21	0.464	
356.775	362.275	5.5	357.56	6.25	28.96	No	357.85	11.29	52.96	NO	358.23	0.572	
368.536	374.036	5.5	369.47	2.72	23.53	No	369.83	4.87	43.27	NO	370.34	0.256	
404.524	408.524	4	404.59	0.12	0.12	No	404.61	0.19	0.19	NO	404.63	0.006	

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
329.345	335.345	6	330.93	0.45	29.04	No	331.67	0.72	50.58	NO	335.54	0.035	
330.774	335.274	4.5	331.55	9.06	9.34	No	332.14	16.01	16.46	NO	335.86	1.16	
	0	0	0	0		No	0	0	0	NO	0	0	
328.011	334.261	6.25	328.96	0.89	29.88	No	330.97	1.45	52.32	NO	334.66	0.079	
324.393	333.393	9	328.64	0.31	170.58	No	330.85	0.48	320.3	NO	334.65	0.022	
324.895	333.895	9	328.65	1.34	20.49	No	330.98	2.36	51.05	NO	335.46	0.159	
330.3	332.109	1.809	333.34	9.41	19.95	Yes	333.57	16.21	30.49	YES	335.19	0.971	
326.975	331.475	4.5	331.72	10.28	82.94	Yes	333.6	17.29	291.11	YES	335.31	0.883	
325.466	333.466	8	329.83	3.07	441.01	No	331.98	5.19	654.36	NO	334.98	0.248	
399	399	0	399	0	0	No	399	0	0	NO	399	0	
370.882	370.882	0	370.88	0	0	No	370.88	0	0	NO	370.88	0	
362.899	366.899	4	363.97	6.24	9.3	No	365.07	11.14	16.54	NO	368.13	0.756	
363.316	367.816	4.5	364.01	3.1	3.1	No	365.15	5.51	5.51	NO	368.12	0.364	
418.836	418.836	0	419.24	2.83	2.83	Yes	419.35	4.49	4.49	YES	419.5	0.212	
376.3	381.8	5.5	377.89	4.89	51.12	No	378.51	8.79	87.7	NO	382.36	0.554	
399.731	404.231	4.5	400.03	2.55	2.55	No	400.13	4.52	4.52	NO	400.25	0.244	
383.948	386.948	3	387.49	3.44	42.63	Yes	387.87	6.56	80.39	YES	388.15	0.323	
399.593	404.68	5.087	400.91	4.89	40.45	No	401.4	9.05	75.86	NO	401.89	0.666	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
420.768	423.768	3	420.95	0.65	0.65	No	421	1.07	1.07	NO	421.07	0.052	
388.848	392.348	3.5	388.85	0	0	No	388.85	0	0	NO	392.37	0	
377.131	386.131	9	380.75	6.57	185.02	No	382.24	10.97	316.72	NO	383.96	0.585	
381.03	386.03	5	381.25	1.19	1.19	No	381.32	2.04	2.04	NO	382.24	0.127	
374.125	378.625	4.5	374.69	2.75	2.75	No	376.07	4.86	4.86	NO	377.83	0.275	
454.192	454.234	0	454.38	0	0.72	Yes	454.44	0	1.27	YES	454.51	0	
375.234	377.234	2	376.58	3.29	3.29	No	377.74	5.5	5.5	YES	378.16	0.274	
372.628	377.128	4.5	374.67	4.41	7.14	No	375.93	7.81	12.54	NO	377.55	0.373	
371.628	376.628	5	374.64	3.43	10.4	No	375.79	5.99	18.46	NO	377.13	0.421	
359.277	361.277	2	361.83	2.88	2.88	Yes	363.17	4.72	7.44	YES	363.71	0.206	
393.3	395.169	1.869	393.99	1.28	1.28	No	394.29	2.26	2.26	NO	395.62	0.114	
392.971	395.971	3	393.46	1.79	3.05	No	393.83	3.22	5.46	NO	395.3	0.195	
382.401	385.401	3	383.29	8.34	49.93	No	383.55	14.48	94.29	NO	383.7	0.871	
376.515	379.515	3	378	0.17	49.98	No	378.34	0.32	94.24	NO	378.51	0.014	
429.842	432.672	2.83	429.84	0	0	No	429.84	0	0	NO	429.84	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
426.564	429.564	3	429.62	0.67	0.67	Yes	429.64	1.15	1.15	YES	429.67	0.056	
427.595	430.595	3	429.62	0	0.16	No	429.64	0	0.02	NO	429.67	0	
427.3	430.233	2.933	427.79	0.66	0.66	No	428	1.18	1.18	NO	428.34	0.064	
427.093	430.093	3	427.77	2.59	3.24	No	427.97	4.61	5.78	NO	428.25	0.311	
426.71	427.304	0.594	426.81	0	3.24	No	426.85	0	5.78	NO	426.89	0	
438.316	438.316	0	438.7	1.11	1.11	Yes	438.78	1.94	1.94	YES	438.87	0.094	
429.872	434.372	4.5	430.35	3.62	6.57	No	430.57	6.48	13.01	NO	431.02	0.537	
407.47	411.97	4.5	407.74	1.01	1.01	No	408.08	1.59	1.59	NO	408.42	0.078	

Proposed Condition Junctions Results Summary Table													
Dimensions				2-year				10-year			100-year		
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
400	402.104	2.104	401.79	1.14	1.14	No	401.8	1.84	1.84	NO	401.81	0.087	
392.193	396.693	4.5	392.84	5.47	7.39	No	393.38	9.14	12.25	NO	393.71	0.591	
389.915	394.415	4.5	390.62	8.42	9.02	No	392.57	14.05	15.46	NO	396.7	0.838	
384.69	394.502	9.812	387.1	0.45	375.55	No	387.89	0.71	617.9	NO	388.35	0.031	
391.401	396.401	5	391.47	0.16	0.16	No	391.49	0.25	0.25	NO	391.61	0.012	
391.814	396.814	5	391.96	0.64	1.05	No	392	1.05	1.6	NO	392.06	0.06	
375.706	385.206	9.5	379.62	2.35	387.01	No	381.12	3.83	595.89	NO	383.14	0.18	
377.7	395.716	18.016	381.2	9.64	163.9	No	382.35	16.3	266	NO	384.62	1.05	
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
384.852	390.852	6	385.32	0.4	48.34	No	385.38	0.63	86.39	NO	385.46	0.028	
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
380.165	384.165	4	380.39	1.24	1.24	No	380.39	1.24	1.24	NO	380.39	0.036	
374.5	379.668	5.168	377.49	3.88	27.92	No	378.59	6.4	39.35	NO	379.09	0.354	
375	378.011	3.011	377.6	1.27	3.25	No	379.13	1.99	11.68	YES	379.31	0.092	
374.808	377.808	3	377.54	0.53	0.59	No	378.51	0.87	1.65	YES	378.61	0.043	
374.3	379.258	4.958	377.52	10.42	18.46	No	378.57	17.1	53.99	NO	378.99	0.926	
373.397	373.41	0	377.5	3.56	390.58	Yes	378.39	6.03	603.84	YES	378.8	0.344	
371.507	380.507	9	373.22	3.36	63.29	No	373.76	5.37	106.53	NO	374.83	0.26	
358.75	367.496	8.746	361.16	2.93	153.55	No	362.25	4.89	270.82	NO	369.29	0.292	
361.887	369.887	8	364.28	5.6	106.38	No	364.93	9.33	155.11	NO	370.64	0.567	
363.095	363.095	0	363.78	0	3.18	Yes	364.1	0	5.22	YES	364.52	0	
416.707	421.707	5	417.58	0	15.22	No	417.97	0	27.74	NO	419.83	0	
351.038	356.038	5	351.43	0.4	3.48	No	351.54	0.64	6.01	NO	352.22	0.032	
346.053	352.053	6	349.57	2.96	12.71	No	350.44	4.87	23.34	NO	352.47	0.271	
347.115	352.115	5	349.58	5.88	9.08	No	350.46	9.58	14.9	NO	352.55	0.521	
344	348.189	4.189	344.88	8.04	8.04	No	347.77	13.82	37.7	NO	348.88	1.02	
366.766	372.266	5.5	367.72	2.69	29.26	No	368.05	4.47	49.27	NO	368.96	0.258	
352.16	359.345	7.185	354.44	4.38	53.15	No	356.93	7.11	112.85	NO	360.42	0.368	
351.67	359.394	7.724	354.28	2.41	105.74	No	356.64	3.98	163.98	NO	360.35	0.218	
369.755	375.755	6	370.73	1.77	26.5	No	371.04	2.95	44.68	NO	371.49	0.174	
366.5	371.112	4.612	367.04	3.2	3.2	No	367.2	5.25	5.25	NO	367.4	0.273	
358.056	364.556	6.5	359.12	0.22	24.16	No	359.31	0.33	32.97	NO	359.39	0.014	
420.284	425.284	5	421.17	14.18	14.18	No	421.55	25.52	25.52	NO	428.83	1.51	
336.3	341.436	5.136	338.9	1.91	271.75	No	340.56	3.03	578.47	NO	342.63	0.15	
337.2	342.84	5.64	339.69	10.26	229	No	341.38	17.05	573.2	NO	343.82	1.04	
357.328	357.328	0	357.48	0	0.22	Yes	357.53	0	1.4	YES	358.55	0	
351.106	351.106	0	351.11	0	0	Yes	351.11	0	0	YES	351.14	0	
419.952	443.952	24	420.55	0.24	9.19	No	420.72	0.37	15.14	NO	420.95	0.016	
414.319	417.319	3	417.96	0.24	9.3	Yes	417.99	0.36	15.37	YES	418.03	0.016	
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
0	0	0	0	0	0	No	0	0	0	NO	0	0	0
399.285	404.285	5	400.04	0.23	10.78	No	400.31	0.35	18.82	NO	402.12	0.014	
451.16	451.91	0	451.22	0	4.91	No	451.24	0	9.06	NO	451.27	0	
417.67	422.42	4.75	418.22	10.59	10.59	No	418.41	18.53	18.53	NO	418.68	1.43	

Proposed Condition Junctions Results Summary Table													
Dimensions			2-year				10-year			100-year			
Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Max. HGL (2-year) (feet)	Max. Lateral Inflow (2-year) (cfs)	Max. Total Inflow (2-year) (cfs)	Surcharging (2-year)	Max. HGL (10-year) (feet)	Max. Lateral Inflow (10-year) (cfs)	Max. Total Inflow (10-year) (cfs)	Surcharging (10-year)	Max. HGL (100-year) (feet)	Max. Lateral Inflow (100-year) (cfs)	Max. Total Inflow (100-year) (cfs)
394.708	402.658	7.95	398.69	0.3	310.76	No	400.68	0.49	463.12	NO	401.65	0.026	
398.472	403.472	5	400.9	2.31	2.31	No	402.18	3.85	3.85	NO	403.27	0.227	
412.093	416.593	4.5	413.17	3.55	23.04	No	415.21	6.18	38.62	NO	417.34	0.365	
413.654	418.154	4.5	414.39	6.59	6.59	No	415.56	11.43	11.45	NO	418.43	0.7	
402.25	406.25	4	403.91	0.94	0.94	No	405.59	1.5	1.5	NO	406.46	0.076	
400.607	405.607	5	403.91	8.43	9.4	No	405.57	14.25	15.8	NO	406.44	0.88	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
400.821	405.821	5	403.89	5.84	5.84	No	405.52	9.69	11.78	NO	406.53	0.566	
403.359	407.859	4.5	408.53	22.64	22.64	Yes	408.65	39.86	39.86	YES	408.75	5.03	
403.209	407.709	4.5	404.2	7.58	7.58	No	407.57	12.81	13.12	NO	407.83	0.814	
414.978	420.478	5.5	415.66	9.24	12	No	415.92	16.62	21.97	NO	416.32	1.13	
412.957	418.457	5.5	413.81	2.99	15.52	No	414.16	5.38	28.51	NO	414.87	0.372	
406.412	411.412	5	407.33	5.5	20.81	No	408.03	9.26	36.48	NO	410.14	0.55	
405.405	409.905	4.5	406.05	1.47	1.47	No	407.53	2.4	2.4	NO	410.93	0.129	
410.082	414.582	4.5	410.63	1.33	1.33	No	411.41	2.21	2.21	NO	415.2	0.118	
415.434	419.934	4.5	416.03	4.58	4.59	No	416.26	7.89	7.93	NO	419.62	0.5	
413.722	417.722	4	414.83	14.86	15.12	No	415.49	26.35	26.89	NO	417.95	2.43	
0	0	0	0	0	0	No	0	0	0	NO	0	0	
405.18	409.214	4.034	407.57	3.34	193.73	No	408.78	5.58	297.8	NO	409.41	0.314	
404.78	410.315	5.535	406.6	0.95	54.34	No	408.16	1.54	61.79	NO	408.9	0.077	
406.82	411.683	4.863	410.43	4.15	191.95	No	411.63	7.02	280.59	NO	411.76	0.407	
410	415.479	5.479	413.31	0.78	125.87	No	415.59	1.25	183.52	YES	416.73	0.058	
410.867	416.867	6	413.24	1.23	68.82	No	415.68	2.04	92.61	NO	416.74	0.112	
412.032	416.282	4.25	413.16	0.57	0.88	No	415.41	0.94	0.94	NO	416.49	0.054	

G. Costs and Prioritization

	72	\$26,807	\$9,550	\$1,269	\$10,819	1	0.08	\$47,110	\$6,344	\$53,454
	72	\$26,892	\$9,620	\$1,269	\$10,889	2	0.17	\$47,220	\$6,344	\$53,564
	17	\$29,287	\$9,820	\$1,970	\$11,790	3	0.25	\$48,620	\$9,828	\$58,448
	07	\$38,552	\$12,730	\$2,924	\$15,654	4	0.33	\$62,370	\$14,337	\$76,707
	14	\$45,339	\$12,780	\$5,474	\$18,254	5	0.42	\$62,500	\$27,996	\$90,496
	777	\$52,037	\$15,300	\$5,861	\$21,161	6	0.50	\$73,860	\$29,645	\$103,505
	700	\$55,391	\$15,508	\$7,019	\$22,527	7	0.58	\$74,662	\$35,512	\$110,174
	524	\$58,746	\$15,717	\$8,177	\$23,894	8	0.67	\$75,463	\$41,380	\$116,843
	547	\$62,100	\$15,925	\$9,335	\$25,260	9	0.75	\$76,265	\$47,247	\$123,512
	470	\$65,453	\$16,133	\$10,493	\$26,626	10	0.83	\$77,067	\$53,114	\$130,181
	394	\$68,808	\$16,342	\$11,652	\$27,994	11	0.92	\$77,868	\$58,982	\$136,850
	1317	\$72,162	\$16,550	\$12,810	\$29,360	12	1.00	\$78,670	\$64,849	\$143,519
	001	\$87,326	\$19,500	\$17,160	\$36,660	24	2.00	\$85,700	\$86,075	\$171,775
	333	\$94,538	\$21,100	\$18,731	\$39,831	36	3.00	\$92,580	\$93,124	\$185,704
	000	\$103,355	\$23,400	\$20,000	\$43,400	48	4.00	\$103,280	\$100,000	\$203,280

cash value loss.

Note:

The \$/sqft is based on the square foot assigned.

	Average	\$/sqft	Small
1	\$26,807	\$13.40	\$10,819
2	\$26,892	\$13.45	\$10,889
3	\$29,287	\$14.64	\$11,790
4	\$38,552	\$19.28	\$15,654
5	\$45,339	\$22.67	\$18,254
6	\$52,037	\$26.02	\$21,161
7	\$55,391	\$27.70	\$22,527
8	\$58,746	\$29.37	\$23,894
9	\$62,100	\$31.05	\$25,260
10	\$65,453	\$32.73	\$26,626
11	\$68,808	\$34.40	\$27,994
12	\$72,162	\$36.08	\$29,360
24	\$87,326	\$43.66	\$36,660
36	\$94,538	\$47.27	\$39,831
48	\$103,355	\$51.68	\$43,400

Asset and Project Costs									
	Asset Costs					Project Costs			
	Description	Construction Cost	Cost_Design	Cost_Total	Construction Cost2	P&D Cost	Total Cost	Bundled FC	Priority Score
	Inlet	\$ 13,775.00	\$ 6,612.00	\$ 20,387.00	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Inlet	\$ 13,775.00	\$ 6,612.00	\$ 20,387.00	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Inlet	\$ 13,775.00	\$ 6,612.00	\$ 20,387.00	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Connector	<Null>	<Null>	<Null>	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Inlet	\$ 13,775.00	\$ 6,612.00	\$ 20,387.00	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Connector	<Null>	<Null>	<Null>	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Other	<Null>	<Null>	<Null>	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
78	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
98	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
45	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Connector	<Null>	<Null>	<Null>	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Connector	<Null>	<Null>	<Null>	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Connector	<Null>	<Null>	<Null>	\$ 1,173,106.71	\$ 563,091.22	\$ 1,736,197.93		788266.8063
	Storm Drain Pipe	\$ 12,428.39	\$ 5,965.63	\$ 18,394.01	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Storm Drain Pipe	\$ 171,742.50	\$ 82,436.40	\$ 254,178.89	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Storm Drain Pipe	\$ 24,516.34	\$ 11,767.84	\$ 36,284.18	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Storm Drain Pipe	\$ 124,808.97	\$ 59,908.31	\$ 184,717.27	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Storm Drain Pipe	\$ 63,151.13	\$ 30,312.54	\$ 93,463.67	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Storm Drain Pipe	\$ 62,910.73	\$ 30,197.15	\$ 93,107.89	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Storm Drain Pipe	\$ 101,478.00	\$ 48,709.44	\$ 150,187.44	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Storm Drain Pipe	\$ 59,227.98	\$ 28,429.43	\$ 87,657.41	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Inlet	\$ 13,775.00	\$ 6,612.00	\$ 20,387.00	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646
	Headwall	\$ 9,976.00	\$ 4,788.48	\$ 14,764.48	\$ 807,140.03	\$ 387,427.21	\$ 1,194,567.24		917990.7646

Asset and Project Costs													
		Asset Costs					Project Costs						
		Description	Construction Cost	Cost_Design	Cost_Total	Construction Cost2	P&D Cost	Total Cost	Bundled FC Priority Score				
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Cleanout	\$	11,600.00	\$	5,568.00	\$	17,168.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Connector	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	807,140.03	\$	387,427.21	\$	1,194,567.24	917990.7646
Storm Drain Pipe	\$	58,112.47	\$	27,893.99	\$	86,006.46	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Storm Drain Pipe	\$	281,184.97	\$	134,968.78	\$	416,153.75	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Storm Drain Pipe	\$	482,053.74	\$	231,385.79	\$	713,439.53	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Cleanout	\$	11,600.00	\$	5,568.00	\$	17,168.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Cleanout	\$	11,600.00	\$	5,568.00	\$	17,168.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Cleanout	\$	11,600.00	\$	5,568.00	\$	17,168.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Cleanout	\$	11,600.00	\$	5,568.00	\$	17,168.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Cleanout	\$	11,600.00	\$	5,568.00	\$	17,168.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Cleanout	\$	11,600.00	\$	5,568.00	\$	17,168.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Other	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Headwall	\$	9,976.00	\$	4,788.48	\$	14,764.48	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Outlet	\$	9,976.00	\$	4,788.48	\$	14,764.48	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74
Inlet	\$	13,775.00	\$	6,612.00	\$	20,387.00	\$	1,623,433.18	\$	779,247.92	\$	2,402,681.10	1215599.74



CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 4

Meeting Date: February 18, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: **City Manager's** Office

Staff Contact: Mike James, Assistant City Manager / Public Works Director

mjames@lemongrove.ca.gov

Item Title: Lemon Grove Homelessness Partnership Plan

Recommended Action: That the City Council receives the report and provides direction to staff regarding the Lemon Grove Homelessness Partnership Plan.

Summary: The passage of Senate Bill 850 (SB 850) in July of 2018, provided \$18.8 million to the San Diego County region to provide immediate assistance to people experience homelessness. A portion of that total grant amount, equal to \$1.9 million, was allocated specifically to those partners that would increase the level of homeless services in the East San Diego County Region.

This staff report details what partnership activities have occurred in the City and what are some of the impacts to City workload. Lastly, staff seeks direction from the City Council regarding options to fund or consider moving forward. This plan is dynamic in that staff recommends that at least every six months it should be brought back to the City Council to evaluate its progress, funding thresholds, and progress. Staff recommends that during the next City Council goal setting workshop, staff returns with an update and further requests.

Background: The Homeless Emergency Aid Program (HEAP) authorized by Senate Bill 850 (SB 850) and signed into law on July 27, 2018, provided \$18.8 million of one-time block grant funds to be distributed by the San Diego Regional Task Force on the Homeless (RTFH) for distribution within San Diego County over a two-year period. The deadline to expend all grant funds is June 30, 2021. That funding intended to provide immediate emergency assistance to people experiencing homelessness or who are at imminent risk of homelessness within San Diego County.

On November 6, 2018, the Lemon Grove City Council adopted Resolution No. 2018-3617, which declared a shelter crisis in the City. This declaration was necessary to allow the

City’s participation in an East San Diego County request for community based organizations to receive HEAP funds to fund homeless services. That Resolution of Support and Declaration was provided to the RTFH, which staff believes helped to strengthen the amount of funds that were allocated to the four (4) entities that committed to serving the East County Region. A summary of the partners that received funds to support East San Diego County is shown below.

Exhibit 1: HEAP Funded Partners

Entity	Sub recipients	Funds Received	Area of Focus
Crisis House	N/A	\$300,000	Outreach, Rapid Rehousing, Client Flex Funds
Family Health Centers of San Diego (FHCS)	N/A	\$285,000	Housing Navigation, Client Flex Funds
Home Start – East County Collaboration	PATH	\$500,000	Street Outreach, Rapid Rehousing, Client Flex Funds, Youth (Prevention/Diversion, Outreach, Client Flex Funds, Youth Housing Navigation)
Home Start – East County Youth Homelessness Project		\$123,916	Prevention and Diversion, Outreach, Client Flex Funds, Youth Housing Navigation.
Salvation Army	211, Alpha Project, Home Start, Interfaith Shelter Network, The Center, VVSD, VCS	\$886,491	Prevention/Diversion, Client Flex Funds

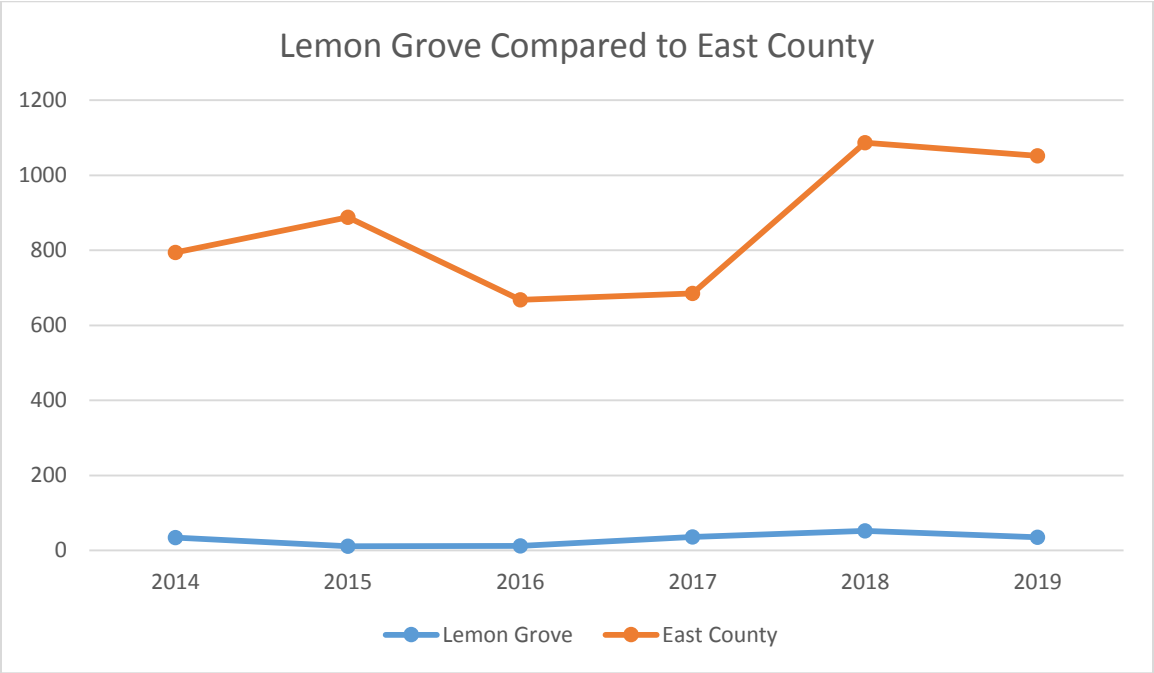
Collectively, there was \$1.9 million awarded to entities that committed to focus specifically on the East County Region in their application to the RTFH for HEAP Funds. These funds were allocated for the first year only, and there is no guarantee that the entities will continue to receive funding into the second year of the HEAP Grant Program. At this time, staff is still awaiting the financial update from the four (4) partners to determine if they will continue to support to Lemon Grove, as well as the East County Region’s efforts, with homeless services.

Based on the Annual Point in Time Count (PIT), Exhibits 2 and 3, detail **the City’s total** number of homeless individuals when compared to the East County and San Diego County as a whole.

Exhibit 2: Summary of PIT Count

Year	Lemon Grove Total	East County Total	County Total
2019	35	1,052	8,102
2018	52	1,087	8,576
2017	36	685	9,116
2016	12	668	8,692
2015	11	888	8,742
2014	34	794	8,506

Exhibit 3: Graph Comparing Lemon Grove and East County Counts



The pattern that the city has experience since 2014 is consistent with the overall East County and San Diego County trends especially during the 2017 and 2018 years.

At the time of the report, staff did not have the results from the 2020 Point in Time count that occurred on January 23, 2020. However, based on the 2019 count, 35 individuals surveyed were experiencing homelessness. Like past counts, each number is a snapshot **of one morning's work** with volunteers made up of both City and County residents. The primary reason for the count is help identify those that are experiencing homeless with a secondary goal to establish a measurable number in which future grant funds may be used to allocate amounts throughout the County.

Discussion: On September 27, 2019, staff met with three of the four partners outlined in Exhibit 1. From that meeting, staff learned that each partner awarded HEAP funds had a specific role in the East County region. While some of the tasks may overlap, each partner is focused on a different type service.

1. *Crisis House*: Based out of El Cajon, Crisis House focuses on urban homelessness while providing housing navigation, case management, expanded street outreach, meals, rapid rehousing, and client flexible assistance, which includes but not limited to application fees, moving deposits, and utility payments. Crisis House received \$300,000 of HEAP funds for Year 1: \$150,563.70 allocated for staff and operations, \$135,000 for rapid rehousing, and \$14,436.30 for flex client funds.

At the time this report was finalized a summary of **Crisis House's** activities in the City was not available.

2. *Home Start – East County Collaboration*: Based out of San Diego, Home Start works closely with its sub recipient People Assisting the Homeless (PATH) who provides an Enhanced Outreach Team, together this partnership provides coordinated and targeted street based outreach to individuals experiencing homelessness in East County, including families, those with severe mental illness, and transitional age youth. Home Start also has a memorandum of understanding with Crisis House to provide outreach and rapid rehousing in the East County. HEAP funds are used for street outreach services, rapid rehousing assistance and client flexible assistance which includes but not limited to short term motel/hotel vouchers, transportation assistance, small amounts of food, rent, utilities, deposits, car repairs, one-time move in assistance, impound fees, application fees, prescription assistance, credit repair if credit issues are jeopardizing the housing or application process, and expungement through the Clean Slate Clinic. This project received \$500,000 of HEAP funds for Year 1: \$237,126 allocated for staff and operations, \$255,000 for rapid rehousing, and \$7,874 for flex client funds.
3. *Home Start – East County Youth Homelessness Project*: Employs a youth housing navigator to provide housing prevention, diversion, housing navigation, and street outreach services. The program dedicated to unaccompanied minors and transitional age youth between the ages of 18 and 24 in East County, which includes Lemon Grove. Client flexible assistance includes short-term motel/hotel vouchers, transportation assistance, small amounts of food, rent, utilities, deposits, car repairs, one-time move in assistance, impound fees, application fees, prescription assistance, credit repair if credit issues are jeopardizing the housing or application process, and expungement through the Clean Slate Clinic. This project received \$123,916 of HEAP funds for Year 1: \$85,916 allocated for staff and operations, \$4,000 for prevention client funds, \$28,000 for diversion client funds, and \$6,000 for flex client funds.

Home Start has been very active in the City. Earlier this month staff received a summary of their activities, which is summarized below:

- Placed one household in permanent housing through rapid rehousing and is working with four other households.
- Outreach team has engaged with twenty-four (24) individuals and is providing ongoing case-management to six (6) of them.
- Distributed hygiene packs/socks to nineteen (19) people.
- Assisted twelve (12) people with obtaining free California Identification Cards.
- Provided additional referrals for services to ten (10) people.

Additionally, there are three specific examples that highlight the Home Start's successes in Lemon Grove.

- a. After receiving information from the City about a family living at the Lemon Grove Avenue **Trolley Station**, Home Start's outreach staff engaged with the family to develop trust and build rapport. They were able to enroll the household into its active outreach caseload and start working with them closely to connect them to resources. The outreach staff placed the **household in a motel while they started working with Home Start's Rapid** Rehousing Case Manager. After being entered into the Coordinated Entry System in two weeks, the family was **matched to Home Start's Rapid** Rehousing Program. The household faced many barriers during the housing search because of a lack of income and prior evictions. However, in less than a month Home Start was able to get the family approved for an apartment and they moved into their new permanent home shortly thereafter.
- b. During regular outreach in Lemon Grove, Home Start staff engaged with two transitional aged youth living in a car. The outreach staff developed rapport with the youth and enrolled them onto our active caseload. Both **referred to Home Start's Youth System's** Navigator and placed in a motel. Currently, both youth are searching for employment. In addition, the individuals received California Identification Cards, created resumes and are learning job-searching skills.
- c. Home Start outreach staff encountered a person at the park who was at risk of being evicted due to non-payment of rent. The person received a three-day notice to pay or quit from the property owner. The outreach staff immediately connected this **person to Home Start's Homelessness** Prevention Program. Through the program Home Start was able to pay the past due rent to prevent the client from being evicted. Home Start also provided additional case management to ensure the client had the knowledge and resources to avoid this situation in the future.

4. *Salvation Army*: Based out of El Cajon, the program focuses on prevention and diversion collaborations with a multitude of partners. This project received \$886,491 of HEAP funds for Year 1: \$161,491 allocated for staff and operations, \$494,375 for prevention client funds, and \$230,625 for diversion client funds. The partners that were listed in the HEAP Grant Application included:
- a. *211 San Diego* – A free source of information to access community, health, social and disaster services by dialing 211. The call is free, confidential and available in more than 200 languages.
 - b. *Alpha Project* – Focuses on assisting severe mental illness (SMI), terminally ill/end of life clients, including illness such as Cancer, Parkinson's, ALS etc.
 - c. *Home Start* – Similar services previously described.
 - d. *Interfaith Shelter Network* – Coordinating efforts of participating congregations, social service agencies and governmental programs to provide shelter and other resources to homeless individuals and families with the goal of moving them toward self-sufficiency.
 - e. *San Diego LGBT Community Center (The Center)* – Provides assistance and services to the lesbian, gay, bisexual and transgender community and their families, and those living with or affected by HIV/AIDS.
 - f. *Veterans Community Services* – Focus on helping military service **members and veteran's transition successfully** into civilian life. Committed to reducing the risks of homelessness, drug abuse, violence, and family disruptions that have accompanied inadequate transitional programs for wounded and disabled veterans in San Diego County.
 - g. *Veterans Village of San Diego (VVSD)* – Committed to leaving no one **behind, VVSD is focused on serving homeless military veteran's** within San Diego County with housing, homeless court, employment & training, rehabilitation and mental health services.
 - h. *A Way Back Home* – A reunification program that has been very successful in El Cajon, by reuniting individuals experiencing homelessness with their family that are living outside of California.

At the time this report was finalized, **a summary of Salvation Army's activities in the City** was not available.

The partner that staff did not meet with in September was Family Health Center of San Diego (FHCSO). At the time that staff met with the other three providers, staff was not aware that there was a fourth partner who had agreed to support the East County. It was not until December 2020, when staff asked the RTFH for a list of all East County Service Providers did it realize there was another homeless outreach/service partner that would serve the City. The details of what the FHCSO provides are listed below.

Family Health Centers of San Diego (FHCSO): Focus on housing navigation services for individual adults and families, especially the chronically homeless suffering from mental health issues, substance use disorder, and/or chronic medical concerns (e.g. HIV+ HCV, diabetes) in East and South County.

The health needs population will benefit from housing navigation, cross referrals to other housing services such as prevention and diversion, and access to FHCSO - provided wraparound services including primary and dental health, substance abuse and mental health counseling, benefits assistance, and intensive case management, trauma informed care, and other evidence based practice interventions as appropriate to the client's specific situation, needs, and personal values and goals.

Satellite Resource Centers (SRC) and Housing Navigators (HN) will support the expansion of coordinated, timely, and impactful housing navigation services leading to housing placement, beyond what is currently available in San Diego, through the establishment of two (2) SRC's in areas of highest need and near two FHCSO clinic sites. In addition to the primary goal of obtaining housing, HN's will promote quality of life and self-sufficiency by assessing client needs for other supportive services on an ongoing basis, providing assisted and unassisted referrals, and helping schedule and attending appointments (as requested by the client) for medical, dental, mental health, SAT, vocational training, legal, and other services.

This project received \$285,000 of HEAP funds for Year 1: \$212,365 allocated for staff and operations and \$72,635 for flex client funds.

Since meeting with the partners in September, staff has primarily worked with Home **Start's case manager** during field responses. Using the example from the Home Start discussion on pages 4-5 of this report, staff contacts a Homeless Outreach Specialist who will respond in the field by contact families or individuals experiencing homeless. That differs from the services that Crisis House provides, because Crisis House focuses on established service locations where homeless individuals frequent to receive some form of service, food, clothing or shelter. In either instance, Home Start continues to serve as **the City's** primary point of contact. Any follow up referrals, from Home Start to the other three partners or vice versa, occurs automatically based on the type of service needed.

Lastly, staff is also aware of the presence of the Interfaith Shelter Network, which is heavily supported by the Lemon Grove faith based community, that provides assistance to those experiencing homelessness in the City. While not coordinated by the City, staff understands that food pantries, providing clothing, supporting a rotational winter shelter, and mobile showers are available in the City.

With the presence of these partners, staff has still seen an increase for City resources that are required to mitigate the homeless encampments, as well as respond to calls for service from the businesses and residents. The next section details the impacts that the City manages **as they directly relate to Public Works, Sheriff’s Department and Fire Department** activities.

Impacts to the City Services: The majority of the homeless calls for service emanate from the businesses, residents and guests in the City. On average, the Public Works Department receives five (5) calls per week regarding requests that are directly related to homelessness (e.g. camps, illegal dumping, shopping carts, and debris in the right-of-way, blocking the right-of-way, or creating a disturbance in public). While some of the calls **are relayed to the Sheriff’s Department** to respond, and vacate the individuals from the area; there are those calls that involve camps on private property, camps and debris near the underpasses of State Route 94 and 125 or in San Diego MTS right-of-way, and camps in vacant lots, shopping carts and debris in open channel creeks in the City.

In most cases, a two-person Public Works field team will respond to manage the call for service. However, in instances when a homeless encampment is found to be in the public right-of-way, it requires a significant amount of work to remove the camp. Typically, the steps include posting a public notice at the camp notifying of the date and time of the cleaning, coordinating **with the Sheriff’s** Department for assistance, mobilization of Public Works heavy equipment, wearing the property personnel protective equipment during the work, delivery of an EDCO provided dumpster(s), and the presence of the majority of the Public Works field team which often exceeds 3-5 people for at least four (4) hours. In order to provide a cost estimate to clear a small camp Exhibit 4 was created to show the fiscal impact. Keep in the mind that this estimate does not account for administrative staff time to coordinate the clean up because that role can vary from Front Counter Personnel to Department Directors, **the cost for Sheriff’s presence since they are** patrol deputies on duty at the time, nor the cost for the dumpster because it is provided by EDCO.

Exhibit 4: Three Employees for a Four-Hour Camp Clean Up

Description	Fully Burdened Cost Per Hour	Quantity	Number of Hours	Total Cost
Supervisor	\$54	1	4	\$216
Tech II	\$42	1	4	\$168

Tech I	\$28	1	4	\$112
Vehicles/Equipment	\$65	3	4	\$780
Total Cost				\$1,276

Staff currently responds to a minimum of three (3) larger encampment clean-ups per quarter. Taking into account the information in Exhibit 4 staff estimates a total annual cost of \$15,312, to respond and clean up smaller homeless encampments. The other service area impacted by homelessness is public safety. A summary of homeless related **activities related to the Sheriff's and Fire Department summarized** is shown below.

Sheriff's Department: Since 2017, the Sheriff's Department has seen a noticeable increase in the number of homeless related contacts occurring in the City. Exhibit 5 shows the history of only those contacts that resulted in a crime or arrest report.

Exhibit 5: Transient Related Crimes (by type) Per Year (Jan. 2015 through Feb. 2020)

Crime Type	2015	2016	2017	2018	2019	2020
Property						
Larceny Theft	1		20	28	41	5
Non-Residential Burglary			1	1	2	
Residential Burglary			1	1	1	1
Theft From a Vehicle				2	2	
Vehicle Theft				4	7	
Property						
Assault	3			9	11	5
Rape				1		
Robbery				6	8	
Total	4	0	22	52	72	11

The **Sheriff's Department began to focus more on** recording incidents that involve homeless individuals because the City began to receive more calls for service and City staff began attending local and regional homeless meetings to learn more about what are some solutions available. Based on the direction from the **City, the Sheriff's Department began** to log all cases/crimes that involved homeless individuals. Some additional observations include:

- Calls for service involving homelessness has increased over time.
- An estimated 90% or more of the homeless calls for service involve a mental illness, being under the influence of alcohol, drugs or both.
- There is no methodology in place that tracks daily radio calls for homelessness, however, general observation concludes that those calls have increased over time. That conclusion supported by a trend that is very clear when looking at Exhibit 5, there are increasing incidents occurring annually since 2017. If the current trend

continues in 2020, the estimated number of incidents may increase to as high as 88.

It is very apparent that the Sheriff's Department must be involved in the solutions that the City considers moving forward but it should not be sole solution to solve homelessness. Often times, the calls for service that require the Sheriff's Department to respond are related to homeless individuals committing a crime, being under the influence of drugs or alcohol, trespassing on to private property, or causing disturbance in the public. During each of the examples, our Sheriff's Department responds, tries to provide information about services that are available nearby, but those offers are often rejected, hence there is no other recourse for the Sheriff's Department to take when a crime is not committed, because being homeless in and of itself is not a crime.

It is important to note that there have been legal changes, which influenced the Sheriff Department's ability to respond to residents calls for services that involve homelessness. The most notable occurring in December 2019, when the United States Supreme Court denied a petition by the City of Boise to review the case *Martin v. Boise*. This left in place by an earlier ruling of the 9th Circuit that homeless persons cannot be punished for sleeping outside on public property in the absence of adequate alternative shelter. That means if there were no options of sleeping indoors, the City could not criminalize homeless people for sleeping outdoors or on public property. This directly affects the City because there are no homeless shelters within City limits; therefore, there are no alternative shelters, and ultimately cannot be a citable action. However, there are two distinct circumstances when the City may cite individuals that may or may not be homeless. First, per Lemon Grove Municipal Code 12.20.050 states in part, **"It is unlawful to remain upon the grounds of any city park, or any part thereof, except between the hours of dawn to dusk."** This applies to all individuals and is mutually exclusive of their housing status. Second, 647(C) of the California Penal Code, states, **"every person who willfully and maliciously obstructs the free movement of any person on any street, sidewalk or other public place or on or in any place open to the public is guilty of a misdemeanor."** This situation may occur when a camp blocks a sidewalk and force pedestrians to walk into the street or on to private property.

Fire Department: The Fire Department began the same tracking process for their calls for service as they relate to homeless individuals beginning in 2017. In Exhibit 6, a summary of homeless calls for service summarizes the total calls for service and homeless calls for service.

Exhibit 6: Fire Department Call For Service Comparison

Fire Engine	2017	2018	2019	Total
Homelessness Calls For Service	128	259	167	554
Percentage of Total Calls	5%	6%	4%	5% (average)
# of Total Calls	2,236	4,163	4,054	10,453

The percentage of total calls related to homelessness has remained relatively constant when compared to the total number of calls for service.

Options Moving Forward: Understanding the fiscal impacts that the City currently has, there are no available discretionary funds available to support the Homelessness Partnership Plan. However, staff included the following options for the City Council to discuss and provide feedback to staff. If the City Council wishes to pursue some of these options staff will return with options to reducing funding to other programs in order to fund these options.

Option #1: Continue to Participate in the ECHTF. Staff recommends continuing to participate in the meetings with the East County Homeless Task Force (ECHTF), which operates under the East County Chamber of Commerce, to share information and participate in regional discussions. As a reminder, the ECHTF requested that the City participate in a \$33,100 annual cost-sharing model in 2017, which was before the HEAP funds were allocated. At that time, no items were selected for funding. Those items included:

1. Hire an ECHTF Director: This position will identify and prioritize key problem areas based on the 11 teams that are a part of the ECHTF.
Lemon Grove: \$5,000. Total Need: \$40,000.

2. Marketing Program:
Signage: Adopt the idea that there are better ways to support homeless individuals rather than giving directly to them. The sign has already been created and the City of El Cajon already posted them in frequently known homeless panhandling areas.
Lemon Grove: \$42 per sign. Total Need: Unknown.

3. *Posters*: Allow businesses to place posters in storefront windows that educate businesses and residents about the drawbacks to giving directly to panhandlers. The benefits of businesses participating is that the poster will not count towards the advertising space limitation.
Lemon Grove: \$0 (funded by the business community). Total Need: \$0

4. Access to Services: This is a new app solution for homeless individuals to access available services from their mobile phones. ConnectEC.org was produced by the East County Leadership Team and will work with text only or smart phones. Bracelets with numbers to text and cards for wallets will also be provided.
Lemon Grove: Unknown. Total Need: Unknown.

5. Portable Showers: For the east county region, the showers will be supported by the faith & service community. These showers will be used in conjunction with additional services for the homeless.
Lemon Grove: \$2,600. Total Need: \$26,000.
6. Reunification Program: East County Salvation Army supported program that will connect homeless with family members that are willing to accept them at their destination.
Lemon Grove: \$2,000 (\$500 per individual). Total Need: Unknown.
7. Housing Navigator: This request is to fund a housing navigator for Lemon Grove to assist with case work and to help with long term housing. It will be managed through Crisis House and will focus only on homeless individuals in Lemon Grove.
Lemon Grove: \$7,500. Total Need: Unknown.
8. Rental Assistance: Request support for rental assistance for up to five homeless **family's coordinated by Crisis House. This will assist families with the first three months of rent.**
Lemon Grove: \$16,000. Total Need: Unknown.

Option #2: Continue to Partner with East County Cities and the County of San Diego. Since 2017, the East County Cities (El Cajon, La Mesa and Santee) and the County of San Diego have met to discuss various partnerships that would be beneficial to the entire East County Region. By collectively voicing the concerns specific to the East County Region, this partnership may result in the City receiving assistance, service or funding from the RTFH, the County, and the State of California.

Cost: \$0.

*Option #3: Update the **City's Website**.* The City Council directed staff to host a Homeless Services Workshop on November 20, 2019. One of the primary requests from the residents and business owners that attended was there is no readily accessible information available. Staff can create a webpage on the **City's website** that can share information about the City partners and the priorities for the City Council concerning homelessness within the City.

Cost: \$0.

Option #4: Offer Workspace for Home Start to Operate within City Hall. After having additional discussions with Home Start, City staff learned that they are interested in expanding on its current partnership to increase its presence in the City. City staff has reviewed the current workstation layout in City Hall and concluded the feasibility of adding an additional workstation in City Hall that can accommodate a Homeless Outreach Specialist from Home Start. City staff estimates that Home Start require minimal resources from the City. Staff can return to the City Council with a no-fee lease agreement with Home Start to occupy a workstation in City Hall.

Cost: \$0.

Option #5: Contract Clean Up Services to a Contractor. The estimated city staff cost to cleaning up homeless camps each year east equals \$15,000. There are third party **companies that respond to illegal camp cleanup projects as well as monitor “hot spot”** illegal camp locations. However, that cost will likely exceed what staff is currently estimating. The greatest benefit to exploring this option is enable the streets division employees to focus on other city priorities rather than responding to clean up homeless camps.

Cost: \$9,000 for one day/one encampment clean up (estimate provided in 2018).

Option #6: Explore Grants and Other Funds. When researching the programs that other San Diego County cities have implemented to assist with homelessness there are other funds that have been used in this manner as well as the possibility of new funds that may be allocated to the region. Those funds include:

- California State Budget FY 2020-2021 (\$1.4 billion of new money for homeless services and housing),
- Community Development Block Grant Fund,
- General Fund,
- Reserve Fund, and
- Regional Task Force on the Homeless (San Diego Continuum of Care).

If this is an option that the City Council would like to further explore it can return with options during the FY 2020-2021 budget process.

Cost: Unknown.

Option #7: Contract with Home Start for an Outreach Specialist. A full time Outreach Specialist would work exclusively in Lemon Grove and would be the most responsive tool to address homelessness in the City. Under the current model, Home Start staff is allocated to the entire East County Region. A dedicated Outreach Specialist could consistently and intensively work with people experiencing homelessness in Lemon Grove while also leveraging all of our other resources to connect those in need with housing and support services.

Cost: \$80,000 per year.

Conclusion: The single greatest reason why the staff is not recommending a more robust partnership at this time is lack of unallocated discretionary funds to pay for services or staffing. Without additional funds, the only two ways to support these options are to use the General Reserve Fund or reallocated funds from other City services. For example, Community Development Block Grant funds may be used to fund homeless services, however, that would reduce the amount of funds available for street rehabilitation.

Staff seeks feedback from the City Council on which of the options presented the City Council would like staff to pursue or not. Additionally, if there are other activities that the City Council desires, staff could incorporate that analysis into the annual goal-setting workshop for further discussion.

Environmental Review:

- Not subject to review Negative Declaration
 Categorical Exemption, Section | Mitigated Negative Declaration

Fiscal Impact: There is no direct fiscal impact with this discussion. Depending on the feedback from the City Council, staff will return at a future meeting with the fiscal impact of each option selected for implementation.

Public Notification: None.

Staff Recommendation: That the City Council receives the report and provides direction to staff regarding the Lemon Grove Homelessness Partnership Plan.

Attachments: None.



CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 5

Meeting Date: February 18, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: City Manager's Office

Staff Contact: Lydia Romero, City Manager
Rod Greek, Interim Admin Services Director
lromero@lemongrove.ca.gov and rgreek@lemongrove.ca.gov

Item Title: Fiscal Year 2019-20 Mid-Year Budget Update

Recommended Action:

Adopt a resolution (Attachment C) approving the Fiscal Year 2019-20 City of Lemon Grove Mid-Year Budget

Adopt a resolution (Attachment D) approving the Fiscal Year 2019-20 Appropriations Limit.

Authorize the transfer of \$804,924 from the FY 18-19 Fund balance to the City's 115 Trust for investment towards future CalPERS obligations.

Summary:

On June 18, 2019, the City Council adopted the Fiscal Year 2019-20 Lemon Grove Consolidated Operating and Capital Budget. In keeping with best financial practices, mid-way through the fiscal year the City Council shall adjust the adopted budget to reflect revised revenue and expenditure projections, and the results of the prior year financial audit. Besides improving the accuracy of the approved budget, this procedure is designed to provide the City Council and the public with a review of City's financial health.

Discussion:

Proposed mid-year adjustments are included for budget line items that are projected to be over/under the original adopted budget by at least \$5,000 or represent new line items that were not previously in the budget.

General Fund:

The following table compares a summary of the adopted FY 2019-2020 General Fund Budget with the proposed mid-year adjustments.

	FY 2019-2020	
	Adopted	Proposed
General Fund		
Balance Forward	\$ 6,280,923	\$ 6,280,923
Revenue	14,054,324	14,506,228
Expenditures	(14,606,428)	(14,832,428)
Reserve Revenue	-	-
Transfers	126,072	107,302
Ending Balance	\$ 5,854,891	\$ 6,062,025

The following discussion of mid-year adjustments will present the adjustments in terms of their net impact on the budget, rather than what the new total for each specific line item or account will be.

Staff recommends that General Fund revenues be increased in total by \$451,904. See attachment A for the detailed breakdown of adjustments. The main drivers are:

- Additional \$190,000 of Property Tax, due to rising property values.
- Additional \$186,904 due to a reimbursement from SDG&E for Lemon Grove Avenue Realignment costs incurred in FY2019.
- Additional \$68,000 in Permit Fees, due to increased activity.
- Additional \$28,000 of Rent Revenue as original projection did not include CPI adjustment.
- Reduction of (\$62,000) Passport processing fees as there is lower activity than anticipated.
- Reduction of \$(20,000) in Administrative Citations as anticipated proceeds from a settlement were shifted to FY2019 from FY2020.

Transfer activity is reflected in the budget book at the end of the revenue section. This section of the budget includes any inter-fund transfer to or from the General Fund. The proposed mid-year transfer adjustment is in attachment A, and has to do with the Successor Agency for the Redevelopment Authority. Staff recommends that General Fund transfers be decreased by \$18,770 for Administrative costs related to the 2019 A&B Bonds which were issued to redeem the outstanding 2007 and 2010 bonds. These costs were expensed directly to the Successor Agency rather than to the general fund as originally budgeted.

Staff recommends that General Fund expenditures be increased by \$216,000. See attachment A for details on each line item included in the adjustment. The most significant changes are:

- Increase of \$150,000 in Fire JPA costs due to reorganization of Heartland Fire & Rescue Joint Powers Authority.

- Increase of \$33,000 in Public Works for emergency repairs on vehicles, HVAC, lighting and plumbing; and for additional workload related to storm response, dropbox, and opening/closing of public facilities.
- Increase of \$28,000 for election costs.
- Increase of \$10,000 for costs related to FLSA litigation, investigations and a CalPERS audit.
- Increase of \$5,000 for SANDAG membership dues.

After the proposed mid-year budget adjustments, total General Fund resources total \$14,613,530, while total General Fund expenditures total \$14,832,428. Estimated expenditures exceed estimated resources by \$218,898, which means the General Fund is still expected to end the fiscal year in a deficit. The original budget had projected a \$426,032 deficit. We've made every effort to hold positions vacant, trim costs where absolutely necessary. The increases we are requesting are necessary to continue to provide minimum service levels to the community. Fortunately we were able to offset the increase in costs with projected increases in revenue which is closing the gap in our original budget deficit.

This is an indicator that the City's long-term structural deficit is continuing. The City has implemented cost cutting measures by underfunding needs on the expenditure side. Deferring investment in capital replacement and staff is not a long-term solution. In addition, general economic projections show a recession or slow-down coming in the next few years. Therefore, the City needs to continue to prioritize generating new sources of revenue.

FY18/19 General Fund Surplus

The General Fund ended FY18-19 with a surplus of \$804,924. In accordance with the City's adopted General Reserve Policy, half is required to be transferred to reserves and the other half is to be used for one-time expenditures per direction from the City Council. In December 2019, Council directed staff to investment the entire surplus of \$804,924 in the City's 115 Pension Trust. Council's direction is consistent with the existing general reserve policy as the 115 trust is a reserve account.

As a reminder, investing the cash in a 115 Trust, rather than in an extra payment directly to CalPERS or keeping the funds in the District's and City's pooled cash investments, maintains local control of the investment while providing the opportunity for investment in options that have the potential to generate higher interest earnings. The District's initial deposit into the 115 Trust was made in October 2018. Over the last year (Oct 2018 – Oct 2019), the 115 Trust has returned net interest earnings of 9.3%.

General Fund Current Year Finance Report:

Since the General Fund has been the focal point of the City's on-going financial worries, staff thought it was important to provide the City Council and general public with additional financial reporting on a regular basis. Attachment C is review of the General Fund revenue and expenditure activity between July 1, 2019 and December 31, 2019 and a comparison to the prior year's activity. Once the proposed mid-year budget is adopted, the budget column on the report will be updated. Staff will provide this report to Council on a quarterly basis.

Other Funds

In addition to the General Fund, a few of the other funds have line items that are projected to be more than \$5,000 different than the original budget.

Supplemental Law Enforcement Services Fund (07)

The City received an additional payment from the County beyond the contracted \$100,000 annual amount.

Transportation Development Act (TDA) (10)

The original budget will be decreased for a reimbursement amount for FY2019 due to actual costs coming in lower than anticipated and a reduction in cost estimates for allowable street repair expenditures. These changes result in a \$10,000 decrease to the fund balance.

Sanitation District: Operating (15)

Received refund of \$550,899 from City of San Diego Metro JPA for annual expense reconciliation. This reduces our annual expenditure budget for Metro Capacity and Treatment by the same amount. Funds were placed in the 115 Trust per direction from District Board in December 2019.

Sanitation District: Capital (16)

Continued Rehabilitation of sewer mains is resulting in an increase of \$270,000 in expenditures for this fund.

Appropriations Limit

As mentioned during the discussion of the Annual Financial Report for FY18-19 at the December 17, 2019, City Council meeting, the audit found that last year's adopted Appropriations Limit (or Gann Limit) was understated by \$240. Each year's limit is calculated from the prior year's limit, therefore, the FY19-20 Appropriations Limit Council adopted in June 2019 is also incorrect. Attachment E is the amended FY20 Appropriation Limit to adopt based on the corrected calculation.

Environmental Review:

- Not subject to review Negative Declaration
 Categorical Exemption, Section | | Mitigated Negative Declaration

Fiscal Impact:

Approving the Mid-Year Budget update authorizes expenditures within those budget limits.

Public Notification:

None.

Staff Recommendation:

Adopt a resolution approving the Fiscal Year 2019-20 City of Lemon Grove Mid-Year Budget;
Adopt a resolution approving the revised Fiscal Year 2019-20 Appropriations Limit.
Authorize the transfer of \$804,924 from the General Fund to the City’s 115 Trust for investment towards future CalPERS obligations.

Attachments:

- Attachment A – Proposed FY2019-20 Budget Adjustments
- Attachment B – July 1, 2019 – December 31, 2019 Finance Report
- Attachment C – Resolution Approving FY2019-20 Lemon Grove Budget
- Attachment D – Resolution Approving FY2019-20 Appropriations Limit

City of Lemon Grove FY 2019-2020 Budget Adjustments

Exhibit 1 of Budget Resolution

General Fund

Adopted Budget **\$ 6,280,923**

REVENUE

Description	Adjustment	Reason
Property Tax Secured and Unsecured	190,000	Higher growth than anticipated
Rent Revenue - Long Term	28,000	Original projection didn't include CPI adjustment
Fire Plan Review & Inspection	5,000	More activity than projected
Fire Cost Recovery	24,000	More activity than projected
Building Permits	40,000	More activity than projected
Planning Permits	20,000	More activity than projected
Engineering Permits	8,000	More activity than projected
Passport Processing Fees	(62,000)	Less activity than projected
Cost Recovery	186,904	Reimbursement from SDG&E for LG Realignment costs incurred in FY19
Other Revenues	12,000	Received reimbursement for staff time on Successor Agency Bond Refunding
Administrative Citations	(20,000)	Proceeds from settlement with property owner counted as FY19 revenue
Interest Revenue - LAIF	20,000	Interest rates staying slightly higher than estimated
Increase in Revenue	451,904	

TRANSFERS

Description	Adjustment	Reason
Interfund Transfer - Successor Agency	(18,770)	Paid some admin costs directly from Fund 60
Decrease in Transfers	(18,770)	

EXPENDITURES

Description	Adjustment	Reason
City Council		
Membership and Dues	5,000	SANDAG Dues increased \$4,535 from FY19
Human Resources		
Professional Services	10,000	Costs related to FLSA litigation, investigations and a CalPERS audit
Fire		
Quarterly JPA Reconciliation	150,000	Costs related to reorganization
Public Works		
Repair & Maintenance - Vehicles	5,000	Emergency repairs on aging fleet
Overtime - Public Works	10,000	Additional work required due to storms, dropbox and opening/closing facilities
Lighting Maintenance	8,000	Emergency parking lot lights for recreation center
Repair and Maintenance - Facilities	10,000	Emergency HVAC, lighting and plumbing repairs
Non-Departmental		
Election Costs	28,000	LG specific measure added to March ballot
Increase in Expenditures	226,000	

Original Revenue	14,054,324
Increase in Revenue	451,904
Original Transfers	126,072
Decrease in Transfers	(18,770)
Original Expenditures	(14,606,428)
Increase in Expenditures	(226,000)
Increase in Reserve Revenue	-
Revised Budget	\$ 6,062,025

Sanitation District: Operating

Beginning Fund Balance \$ 9,056,502

EXPENSE

Description	Adjustment	Reason
Metro Annual Capacity & Treatment	(550,899)	METRO JPA Annual Reconciliation refund

Original Revenue	8,411,389
Original Expenditures	(8,830,008)
Decrease in Expenditures	550,899
Ending Fund Balance	\$ 9,188,782

Sanitation District: Capital

Beginning Fund Balance \$ 10,363,583

EXPENSE

Description	Adjustment	Reason
FY 17-18 Sewer Main Rehab - Construction	270,000	Projected in FY19, but work continued into FY20

Original Revenue	1,545,000
Original Expenditures	(2,356,495)
Increase in Expenditures	(270,000)
Ending Fund Balance	\$ 9,282,088

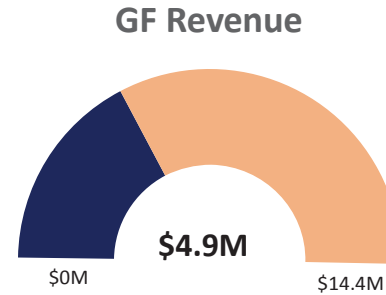
As of Dec 31, 2019

ATTACHMENT B

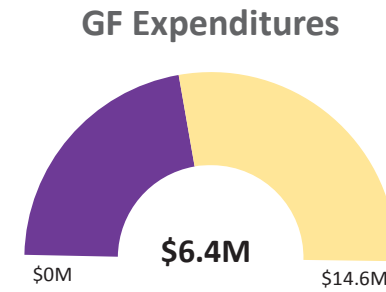
General Fund Revenue & Expenditure

*Expect total % expended to be approximately 50%

Revenue	Budget	YTD	% Collected	PY YTD	Variance
Sales Tax	5,547,721.00	2,064,967.60	37%	2,435,685.10	-15%
Property Tax	2,716,430.00	1,133,792.32	42%	1,020,437.59	11%
Property Tax In Lieu	2,742,418.00	-	0%	-	#DIV/0!
Franchise Fees	1,070,100.00	307,855.54	29%	318,106.53	-3%
Building Permits	250,000.00	228,639.95	91%	228,196.60	0%
Other Rev	2,036,031.00	1,150,534.35	57%	1,091,275.75	5%
TOTAL REV	\$ 14,362,700.00	\$ 4,885,789.76	34%	\$ 5,093,701.57	-4%



Expenditures	Budget	YTD	% Expended	PY YTD	Variance
City Council	115,186.00	61,306.65	53%	40,081.38	53%
City Manager	283,646.00	134,679.39	47%	127,331.34	6%
Human Resources	102,531.00	60,526.90	59%	45,435.54	33%
City Clerk	111,459.00	53,553.22	48%	32,060.71	67%
City Attorney	195,000.00	79,215.69	41%	92,946.23	-15%
Finance	388,663.00	196,049.73	50%	137,725.43	42%
Public Safety	6,590,770.00	2,168,535.68	33%	2,103,020.30	3%
Fire	4,547,556.00	2,512,805.56	55%	2,464,332.59	2%
Community Development	626,876.00	335,379.32	54%	330,888.99	1%
Public Works	1,580,741.00	807,538.31	51%	699,072.27	16%
Non-Departmental	64,000.00	6,493.50	10%	18,855.18	-66%
TOTAL EXP	\$ 14,606,428.00	\$ 6,416,083.95	44%	\$ 6,091,749.96	5%



Narrative:

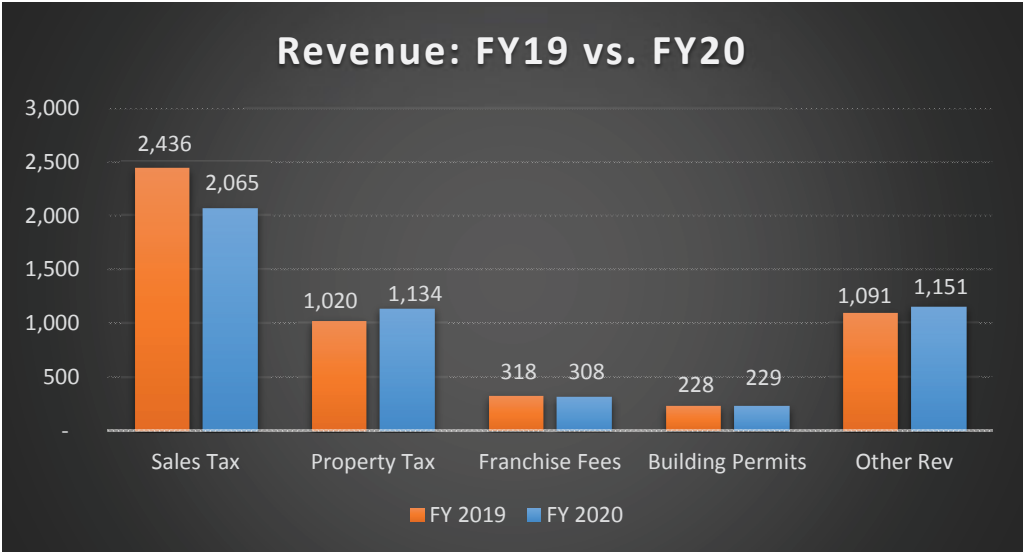
Above is a brief overview of the City's General Fund activity from July 1st through December 31st of the 2019-2020 fiscal year.

Highlights:

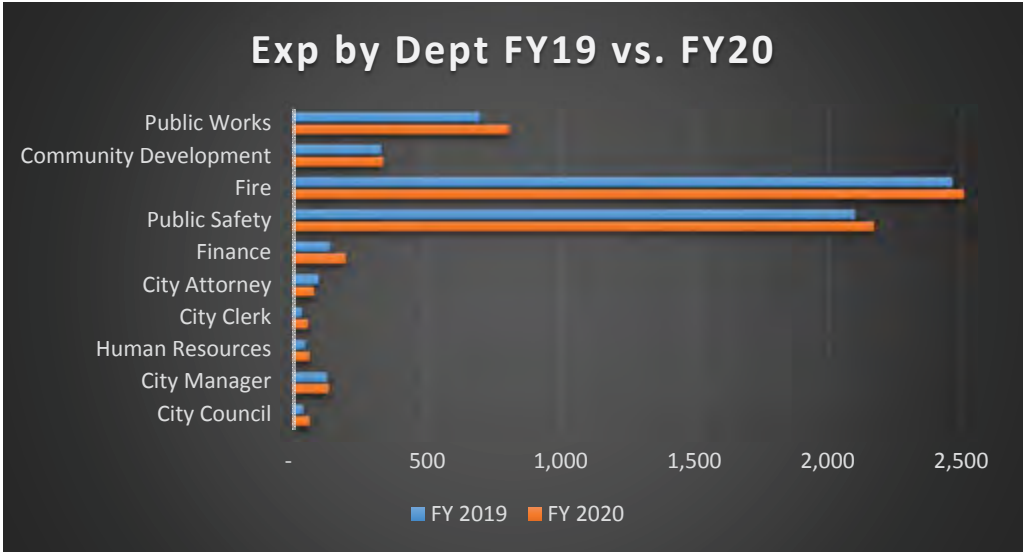
Sales tax revenue is lagging last year by 15% but is up an average of 2.9% over the past 2 fiscal years. The first few months of FY2019 were high due to systems issues at the State. Property tax revenue is up 11% halfway through the year. Other revenue is over 50% mainly due to receipt of the LG Realignment reimbursement. Building Permit activity is consistent with last fiscal year at this time reflecting consistent economic activity for Lemon Grove.

Halfway through the fiscal year expenditures should be around 50% of the budget. Overall, we are under that percentage (44%) mainly due to the Sheriff's Department being one month behind in their billing. Fire is at 55% expended mainly due to increased use of overtime to backfill for absences due to injuries.

Salaries and Benefits for the General Fund are about 3.4% over where we would expect them to be at mid-year. This is mainly due to Overtime in both Fire and Public Works, and Retirement across the board.

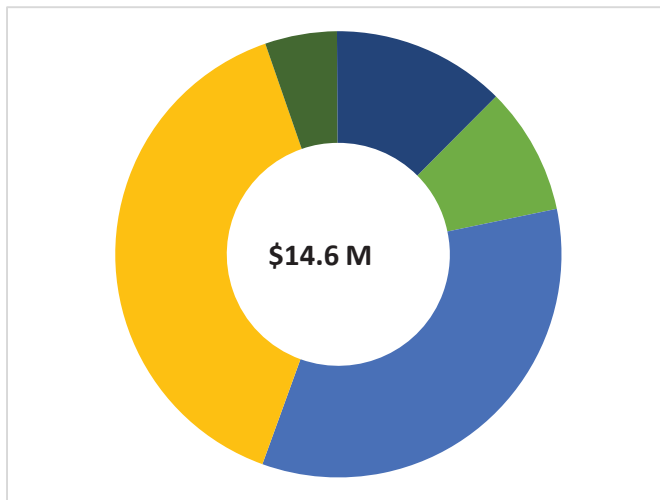


**REVENUES AND EXPENDITURES
AS OF
DECEMBER 31, 2018 AND 2019**

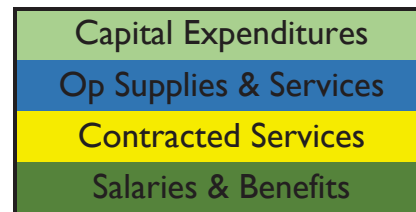
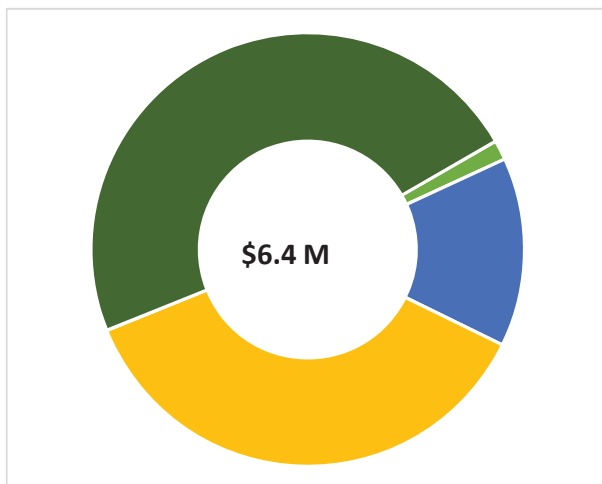


Department	FY 19/20 Budget	% of Total
Administration	1,260,485.00	9%
Public Safety	6,590,770.00	45%
Fire	4,547,556.00	31%
Community Development	626,876.00	4%
Public Works	1,580,741.00	11%
Total Budget	14,606,428.00	100.00%

FY 2020 BUDGET



FY 2020 EXPENDITURES THROUGH December 31, 2019



RESOLUTION NO. 2020-

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LEMON GROVE,
CALIFORNIA, APPROVING THE CITY OF LEMON GROVE MID-YEAR
BUDGET FOR FISCAL YEAR 2019-2020 AND AUTHORIZING EXPENDITURES
THERE TO**

WHEREAS, on June 18, 2019 the City Council adopted Resolution No. 2019-3666 approving the Consolidated Budget for Fiscal Year 2019-20; and

WHEREAS, said Budget warrants revision to reflect new information regarding revenue and expenditure projections; and

WHEREAS, said Budget warrants revision to reflect actions taken by the City Council since its adoption that impact the Budget; and

WHEREAS, the City Council has reviewed the proposed revisions.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Lemon Grove, California, hereby

1. Approves the Lemon Grove Fiscal Year 2019-20 Mid-Year Budget (Exhibit 1);
and
2. Authorizes expenditures thereto.

PASSED AND ADOPTED on February 18, 2020, the City Council of the City of Lemon Grove, California, adopted Resolution No. 2020-_____, passed by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

Raquel Vasquez, Mayor

Attest:

Shelley Chapel, MMC, City Clerk

Approved as to Form:

Kristen Steinke, City Attorney

City of Lemon Grove FY 2019-2020 Budget Adjustments

Exhibit 1 of Budget Resolution

General Fund

Adopted Budget **\$ 6,280,923**

REVENUE

Description	Adjustment	Reason
Property Tax Secured and Unsecured	190,000	Higher growth than anticipated
Rent Revenue - Long Term	28,000	Original projection didn't include CPI adjustment
Fire Plan Review & Inspection	5,000	More activity than projected
Fire Cost Recovery	24,000	More activity than projected
Building Permits	40,000	More activity than projected
Planning Permits	20,000	More activity than projected
Engineering Permits	8,000	More activity than projected
Passport Processing Fees	(62,000)	Less activity than projected
Cost Recovery	186,904	Reimbursement from SDG&E for LG Realignment costs incurred in FY19
Other Revenues	12,000	Received reimbursement for staff time on Successor Agency Bond Refunding
Administrative Citations	(20,000)	Proceeds from settlement with property owner counted as FY19 revenue
Interest Revenue - LAIF	20,000	Interest rates staying slightly higher than estimated
Increase in Revenue	451,904	

TRANSFERS

Description	Adjustment	Reason
Interfund Transfer - Successor Agency	(18,770)	Paid some admin costs directly from Fund 60
Decrease in Transfers	(18,770)	

EXPENDITURES

Description	Adjustment	Reason
City Council		
Membership and Dues	5,000	SANDAG Dues increased \$4,535 from FY19
Human Resources		
Professional Services	10,000	Costs related to FLSA litigation, investigations and a CalPERS audit
Fire		
Quarterly JPA Reconciliation	150,000	Costs related to reorganization
Public Works		
Repair & Maintenance - Vehicles	5,000	Emergency repairs on aging fleet
Overtime - Public Works	10,000	Additional work required due to storms, dropbox and opening/closing facilities
Lighting Maintenance	8,000	Emergency parking lot lights for recreation center
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Election Costs	28,000	LG specific measure added to March ballot
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Increase in Reserve Revenue	-
Revised Budget	\$ 6,062,025

Sanitation District: Operating

Beginning Fund Balance \$ 9,056,502

EXPENSE

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Original Revenue	1,545,000
Original Expenditures	(2,356,495)
Increase in Expenditures	(270,000)
Ending Fund Balance	\$ 9,282,088

RESOLUTION NO. 2020-

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LEMON GROVE,
CALIFORNIA, ESTABLISHING THE APPROPRIATIONS LIMIT FOR FISCAL
YEAR 2019-2020**

WHEREAS, on June 18, 2019 the City Council adopted Resolution No. 2019-3668 establishing the Appropriations Limit for Fiscal Year 2019-20; and

WHEREAS, each year's appropriation limit calculation begins with the prior fiscal year's appropriation limit; and

WHEREAS, each year the City hires an independent accountant to perform agreed-upon procedures applied to the Appropriations Limitation prescribed by Article XIII B of the California Constitution to assist the City in meeting the requirements of Section 1.5 of Article XIII B of the California Constitution; and

WHEREAS, during the independent accountant's review of the adopted fiscal year 2018-2019 Appropriations Limit, they found the limit to be understated by \$240; and

WHEREAS, the fiscal year 2019-2020 Appropriations Limit has been recalculated using the information from the State Department of Finance listed in Resolution No. 2019-3668 and the corrected FY2018-2019 limit; and

WHEREAS, the fiscal year 2019-2020 Appropriations Limit adopted by this Resolution supersedes the limit adopted by Resolution No. 2019-3668.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Lemon Grove, California, hereby establishes the Fiscal Year 2019-2020 Appropriations Limit at \$52,075,183.

PASSED AND ADOPTED on February 18, 2020, the City Council of the City of Lemon Grove, California, adopted Resolution No. 2020-_____, passed by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

Raquel Vasquez, Mayor

Attest:

Shelley Chapel, MMC, City Clerk

Approved as to Form:

Kristen Steinke, City Attorney