

- FINAL DRAFT -  
TOWN-WIDE STORM DRAINAGE AND  
FLOOD CONTROL STUDY  
PHASE 2

APPENDICES

FOR

TOWN OF CORTE MADERA

December 2008

**ANWEST** INC.  
Civil and Structural Consulting Engineers

**APPENDIX A**

**CONSTRUCTION COST ESTIMATES**

**Recommended SD Improvements  
Summary  
Storm Drainage and Flood Control Study - Phase II  
Engineer's Cost Estimate**

<b>ITEM NO.</b>	<b>ITEM DESCRIPTION</b>	<b>COST</b>
1	Watershed 1	\$ 1,670,000
2	Watershed 2	\$ 963,000
3	Watershed 3	\$ 773,000
4	Watershed 4A	\$ 792,000
5	Watershed 4B	\$ 715,000
6	Watershed 8	\$ 8,000
7	Watershed 9	\$ 391,000
8	Watershed 10	\$ 252,000
<b>RECOMMENDED STORM DRAINAGE IMPROVEMENTS GRAND TOTAL</b>		<b>\$ 5,564,000</b>
<b>RECOMMENDED STORM DRAINAGE IMPROVEMENTS ROUNDED TOTAL</b>		<b>\$ 5,600,000</b>

**Recommended SD Improvements**  
**WS1**  
**Storm Drainage and Flood Control Study - Phase II**  
**Engineer's Cost Estimate**

ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 63,604	\$ 63,604
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 63,604</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	6,110	LF	\$ 10	\$ 61,100
3	Remove Existing Curb, Gutter & Sidewalk	3,930	LF	\$ 10	\$ 39,300
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 100,400</b>
<b>WATERSHED 1 STORM DRAINAGE</b>					
4	12" Dia. PVC Storm Drain Pipe	3,185	LF	\$ 65	\$ 207,025
5	12" Dia. CMP Storm Drain Pipe	205	LF	\$ 75	\$ 15,375
6	15" Dia. PVC Storm Drain Pipe	995	LF	\$ 70	\$ 69,650
7	18" Dia. PVC Storm Drain Pipe	640	LF	\$ 75	\$ 48,000
8	21" Dia. PVC Storm Drain Pipe	610	LF	\$ 80	\$ 48,800
9	24" Dia. PVC Storm Drain Pipe	695	LF	\$ 85	\$ 59,075
10	30" Dia. PVC Storm Drain Pipe	575	LF	\$ 100	\$ 57,500
11	Catch Basins	16	EA	\$ 3,550	\$ 56,800
12	Connect to Existing SD System	11	EA	\$ 1,100	\$ 12,100
13	Concrete Curb & Gutter with Grated Line Drain	3,930	LF	\$ 120	\$ 471,600
14	Reconstruct Existing Sidewalk	19,650	SF	\$ 5	\$ 98,250
15	Reconstruct Existing AC Pavement	3,930	LF	\$ 7	\$ 27,510
<b>WATERSHED 1 STORM DRAINAGE SUBTOTAL</b>					<b>\$ 1,171,685</b>

<b>TOTAL</b>		<b>\$ 1,335,689</b>
Contingency	25%	\$ 333,922
<b>GRAND TOTAL</b>		<b>\$ 1,669,612</b>
<b>ROUNDED TOTAL</b>		<b>\$ 1,670,000</b>



**Recommended SD Improvements**  
**WS2**  
**Storm Drainage and Flood Control Study - Phase II**  
**Engineer's Cost Estimate**

ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 36,677	\$ 36,677
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 36,677</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	670	LF	\$ 10	\$ 6,700
3	Remove Existing Curb, Gutter & Sidewalk	2,110	LF	\$ 10	\$ 21,100
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 27,800</b>
<b>WATERSHED 2 STORM DRAINAGE</b>					
4	12" Dia. PVC Storm Drain Pipe	1,275	LF	\$ 65	\$ 82,875
5	18" Dia. PVC Storm Drain Pipe	120	LF	\$ 75	\$ 9,000
6	Catch Basins	7	EA	\$ 3,550	\$ 24,850
7	Connect to Existing SD System	3	EA	\$ 1,100	\$ 3,300
8	Concrete Curb & Gutter with Grated Line Drain	2,110	LF	\$ 120	\$ 253,200
9	Reconstruct Existing Sidewalk	10,550	SF	\$ 5	\$ 52,750
10	Reconstruct Existing AC Pavement	2,110	LF	\$ 7	\$ 14,770
11	Pump Station Replacement	1	LS	\$ 250,000	\$ 250,000
12	Discharge Box	1	LS	\$ 5,000	\$ 5,000
13	Gravity Bypass Manhole	1	LS	\$ 10,000	\$ 10,000
<b>WATERSHED 2 STORM DRAINAGE SUBTOTAL</b>					<b>\$ 705,745</b>

<b>TOTAL</b>	<b>\$ 770,222</b>
Contingency 25%	\$ 192,556
<b>GRAND TOTAL</b>	<b>\$ 962,778</b>
<b>ROUNDED TOTAL</b>	<b>\$ 963,000</b>

**Recommended SD Improvements**  
**WS3**  
**Storm Drainage and Flood Control Study - Phase II**  
**Engineer's Cost Estimate**

ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 29,435	\$ 29,435
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 29,435</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	4,065	LF	\$ 10	\$ 40,650
3	Remove Existing Curb, Gutter & Sidewalk	810	LF	\$ 10	\$ 8,100
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 48,750</b>
<b>WATERSHED 3 STORM DRAINAGE</b>					
4	12" Dia. PVC Storm Drain Pipe	915	LF	\$ 65	\$ 59,475
5	12" Dia. CMP Storm Drain Pipe	135	LF	\$ 75	\$ 10,125
6	15" Dia. PVC Storm Drain Pipe	440	LF	\$ 70	\$ 30,800
7	18" Dia. PVC Storm Drain Pipe	480	LF	\$ 75	\$ 36,000
8	24" Dia. PVC Storm Drain Pipe	1,355	LF	\$ 85	\$ 115,175
9	42" Dia. RCP Storm Drain Pipe	395	LF	\$ 200	\$ 79,000
10	48" Dia. RCP Storm Drain Pipe	345	LF	\$ 250	\$ 86,250
11	Concrete Curb & Gutter with Grated Line Drain	810	LF	\$ 120	\$ 97,200
12	Reconstruct Existing Sidewalk	4,050	SF	\$ 5	\$ 20,250
13	Reconstruct Existing AC Pavement	810	LF	\$ 7	\$ 5,670
<b>WATERSHED 3 STORM DRAINAGE SUBTOTAL</b>					<b>\$ 539,945</b>

<b>TOTAL</b>		<b>\$ 618,130</b>
Contingency	25%	\$ 154,532
<b>GRAND TOTAL</b>		<b>\$ 772,662</b>
<b>ROUNDED TOTAL</b>		<b>\$ 773,000</b>

**Recommended SD Improvements**  
**WS4A**  
**Storm Drainage and Flood Control Study - Phase II**  
**Engineer's Cost Estimate**

ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 30,185	\$ 30,185
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 30,185</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	3,985	LF	\$ 10	\$ 39,850
3	Remove Existing Curb, Gutter & Sidewalk	1,260	LF	\$ 10	\$ 12,600
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 52,450</b>
<b>WATERSHED 4A STORM DRAINAGE</b>					
4	12" Dia. PVC Storm Drain Pipe	1,240	LF	\$ 65	\$ 80,600
5	18" Dia. PVC Storm Drain Pipe	1,500	LF	\$ 75	\$ 112,500
6	24" Dia. PVC Storm Drain Pipe	445	LF	\$ 85	\$ 37,825
7	30" Dia. PVC Storm Drain Pipe	525	LF	\$ 100	\$ 52,500
8	42" Dia. RCP Storm Drain Pipe	335	LF	\$ 200	\$ 67,000
9	Catch Basins	2	EA	\$ 3,550	\$ 7,100
10	Connect to Existing SD System	2	EA	\$ 1,100	\$ 2,200
11	Concrete Curb & Gutter with Grated Line Drain	1,260	LF	\$ 120	\$ 151,200
12	Reconstruct Existing Sidewalk	6,300	SF	\$ 5	\$ 31,500
13	Reconstruct Existing AC Pavement	1,260	LF	\$ 7	\$ 8,820
<b>WATERSHED 4A STORM DRAINAGE SUBTOTAL</b>					<b>\$ 551,245</b>

<b>TOTAL</b>	<b>\$ 633,880</b>
Contingency 25%	\$ 158,470
<b>GRAND TOTAL</b>	<b>\$ 792,350</b>
<b>ROUNDED TOTAL</b>	<b>\$ 792,000</b>

**Recommended SD Improvements**  
**WS4B**  
**Storm Drainage and Flood Control Study - Phase II**  
**Engineer's Cost Estimate**

ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 27,247	\$ 27,247
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 27,247</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	2,855	LF	\$ 10	\$ 28,550
3	Remove Existing Curb, Gutter & Sidewalk	135	LF	\$ 10	\$ 1,350
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 29,900</b>
<b>WATERSHED 4B STORM DRAINAGE</b>					
4	12" Dia. PVC Storm Drain Pipe	100	LF	\$ 65	\$ 6,500
5	15" Dia. PVC Storm Drain Pipe	200	LF	\$ 70	\$ 14,000
6	18" Dia. PVC Storm Drain Pipe	365	LF	\$ 75	\$ 27,375
7	24" Dia. PVC Storm Drain Pipe	40	LF	\$ 85	\$ 3,400
8	30" Dia. PVC Storm Drain Pipe	390	LF	\$ 100	\$ 39,000
9	36" Dia. RCP Storm Drain Pipe	320	LF	\$ 150	\$ 48,000
10	42" Dia. RCP Storm Drain Pipe	530	LF	\$ 200	\$ 106,000
11	48" Dia. RCP Storm Drain Pipe	455	LF	\$ 250	\$ 113,750
12	54" Dia. RCP Storm Drain Pipe	455	LF	\$ 300	\$ 136,500
13	Concrete Curb & Gutter with Grated Line Drain	135	LF	\$ 120	\$ 16,200
14	Reconstruct Existing Sidewalk	675	SF	\$ 5	\$ 3,375
15	Reconstruct Existing AC Pavement	135	LF	\$ 7	\$ 945
<b>WATERSHED 4B STORM DRAINAGE SUBTOTAL</b>					<b>\$ 515,045</b>

<b>TOTAL</b>		<b>\$ 572,192</b>
Contingency	25%	<b>\$ 143,048</b>
<b>GRAND TOTAL</b>		<b>\$ 715,240</b>
<b>ROUNDED TOTAL</b>		<b>\$ 715,000</b>

**Recommended SD Improvements**  
**WS8**  
 Storm Drainage and Flood Control Study - Phase II  
 Engineer's Cost Estimate

ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 306	\$ 306
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 306</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	75	LF	\$ 10	\$ 750
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 750</b>
<b>WATERSHED 8 STORM DRAINAGE</b>					
3	12" Dia. PVC Storm Drain Pipe	25	LF	\$ 65	\$ 1,625
4	18" Dia. PVC Storm Drain Pipe	50	LF	\$ 75	\$ 3,750
<b>WATERSHED 8 STORM DRAINAGE SUBTOTAL</b>					<b>\$ 5,375</b>

<b>TOTAL</b>		<b>\$ 6,431</b>
Contingency	25%	\$ 1,608
<b>GRAND TOTAL</b>		<b>\$ 8,039</b>
<b>ROUNDED TOTAL</b>		<b>\$ 8,000</b>

**Recommended SD Improvements**  
**WS9**  
**Storm Drainage and Flood Control Study - Phase II**  
**Engineer's Cost Estimate**

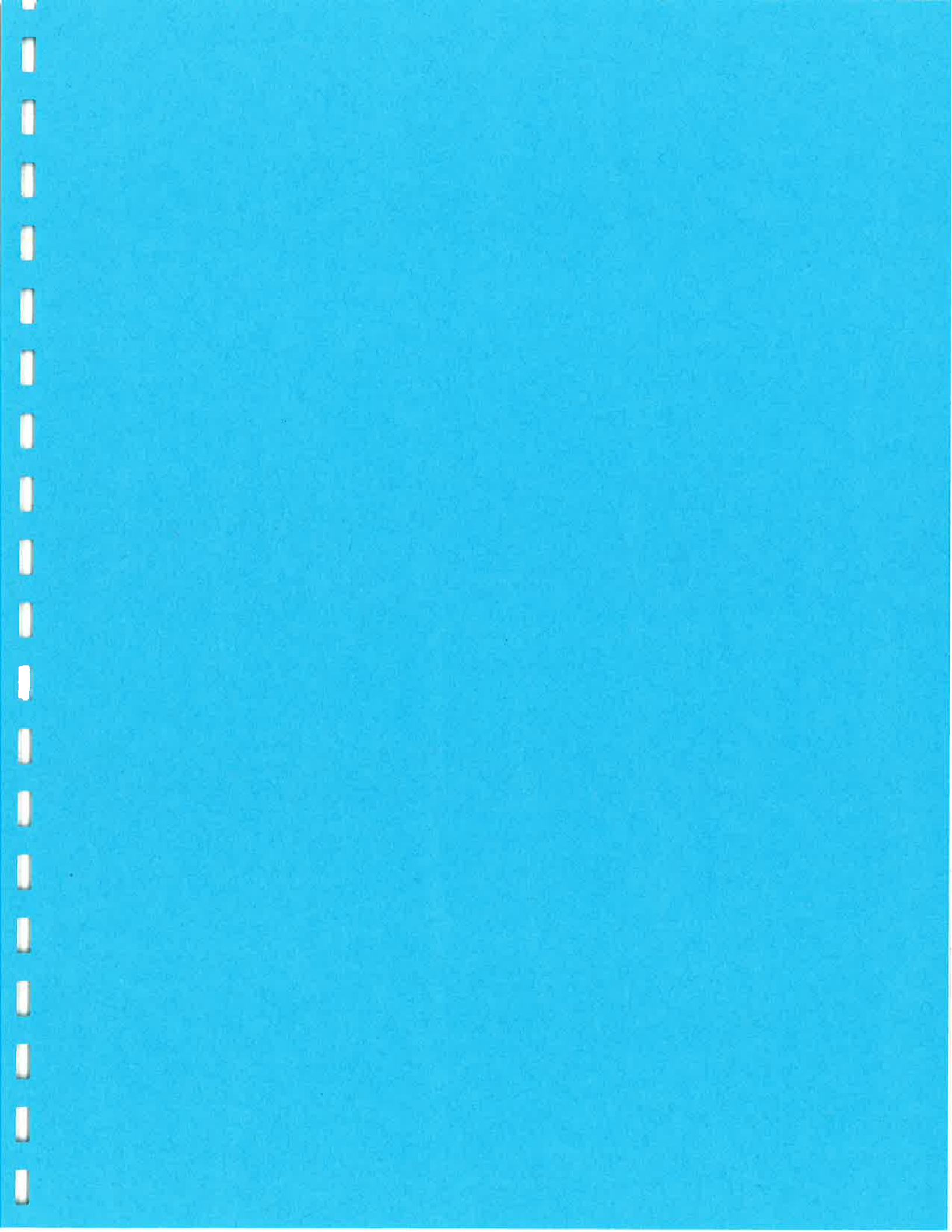
ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 14,894	\$ 14,894
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 14,894</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	1,210	LF	\$ 10	\$ 12,100
3	Remove Existing Curb, Gutter & Sidewalk	1,075	LF	\$ 10	\$ 10,750
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 22,850</b>
<b>WATERSHED 9 STORM DRAINAGE</b>					
4	12" Dia. PVC Storm Drain Pipe	150	LF	\$ 65	\$ 9,750
5	15" Dia. PVC Storm Drain Pipe	325	LF	\$ 70	\$ 22,750
6	21" Dia. PVC Storm Drain Pipe	315	LF	\$ 80	\$ 25,200
7	24" Dia. PVC Storm Drain Pipe	315	LF	\$ 85	\$ 26,775
8	30" Dia. PVC Storm Drain Pipe	225	LF	\$ 100	\$ 22,500
9	Catch Basins	1	EA	\$ 3,550	\$ 3,550
10	Connect to Existing SD System	1	EA	\$ 1,100	\$ 1,100
11	Concrete Curb & Gutter with Grated Line Drain	1,075	LF	\$ 120	\$ 129,000
12	Reconstruct Existing Sidewalk	5,375	SF	\$ 5	\$ 26,875
13	Reconstruct Existing AC Pavement	1,075	LF	\$ 7	\$ 7,525
<b>WATERSHED 9 STORM DRAINAGE SUBTOTAL</b>					<b>\$ 275,025</b>

<b>TOTAL</b>	<b>\$ 312,769</b>
Contingency 25%	\$ 78,192
<b>GRAND TOTAL</b>	<b>\$ 390,961</b>
<b>ROUNDED TOTAL</b>	<b>\$ 391,000</b>

**Recommended SD Improvements**  
**WS10**  
**Storm Drainage and Flood Control Study - Phase II**  
**Engineer's Cost Estimate**

ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>MOBILIZATION</b>					
1	Mobilization (5%)	1	LS	\$ 9,614	\$ 9,614
<b>MOBILIZATION SUBTOTAL</b>					<b>\$ 9,614</b>
<b>DEMOLITION</b>					
2	Remove Existing Pipe To Be Replaced	245	LF	\$ 10	\$ 2,450
3	Remove Existing Curb, Gutter & Sidewalk	1,010	LF	\$ 10	\$ 10,100
<b>DEMOLITION SUBTOTAL</b>					<b>\$ 12,550</b>
<b>WATERSHED 10 STORM DRAINAGE</b>					
4	12" Dia. PVC Storm Drain Pipe	35	LF	\$ 65	\$ 2,275
5	15" Dia. PVC Storm Drain Pipe	60	LF	\$ 70	\$ 4,200
6	18" Dia. PVC Storm Drain Pipe	65	LF	\$ 75	\$ 4,875
7	24" Dia. PVC Storm Drain Pipe	120	LF	\$ 85	\$ 10,200
8	Catch Basins	1	EA	\$ 3,550	\$ 3,550
9	Connect to Existing SD System	1	EA	\$ 1,100	\$ 1,100
10	Concrete Curb & Gutter with Grated Line Drain	1,010	LF	\$ 120	\$ 121,200
11	Reconstruct Existing Sidewalk	5,050	SF	\$ 5	\$ 25,250
12	Reconstruct Existing AC Pavement	1,010	LF	\$ 7	\$ 7,070
<b>WATERSHED 10 STORM DRAINAGE SUBTOTAL</b>					<b>\$ 179,720</b>

<b>TOTAL</b>		<b>\$ 201,884</b>
Contingency	25%	<b>\$ 50,471</b>
<b>GRAND TOTAL</b>		<b>\$ 252,354</b>
<b>ROUNDED TOTAL</b>		<b>\$ 252,000</b>

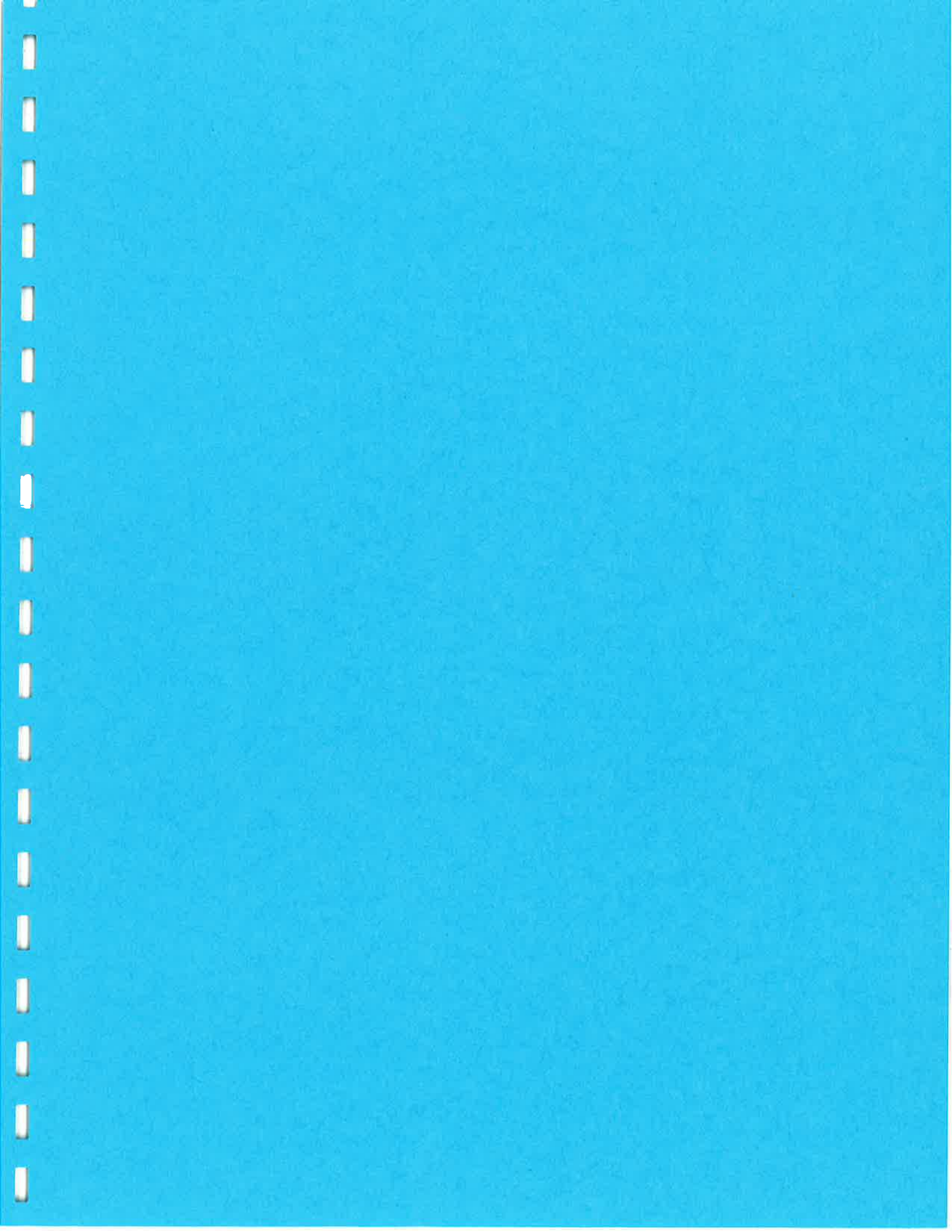




ITEM NO.	ITEM DESCRIPTION	EST QUAN	UNIT	UNIT COST	COST
<b>CORTE MADERA CREEK - TOP OF WALL EL. 8.5 (1,570 LF)</b>					
1	Mobilization (flood wall and levee)	1	LS	\$ 70,000	\$ 70,000
2	Concrete Flood Wall	1,570	LF	\$ 400	\$ 628,000
3	Drainage System	20	EA	\$ 500	\$ 10,000
4	Stairways	16	EA	\$ 2,600	\$ 41,600
<b>CORTE MADERA CREEK - TOP OF WALL EL. 8.5 (Lucky Drive) SUBTOTAL</b>					<b>\$ 749,600</b>
<b>CORTE MADERA CREEK - TOP OF LEVEE EL. 9.0 (430 LF)</b>					
5	Clearing & Grubbing	1	AC	\$ 4,200	\$ 4,200
6	Imported Compacted Fill	770	CY	\$ 30	\$ 23,100
7	Geogrid Reinforcements	17,240	SF	\$ 3	\$ 51,720
<b>CORTE MADERA CREEK - TOP OF LEVEE EL. 9.0 (Lucky Drive) SUBTOTAL</b>					<b>\$ 79,020</b>
<b>CORTE MADERA CREEK - DOCK REMOVAL &amp; REPLACEMENT</b>					
8	Dock Removal & Replacement	16	EA	\$ 10,000	\$ 160,000
<b>CORTE MADERA CREEK - DOCK REMOVAL &amp; REPLACEMENT SUBTOTAL</b>					<b>\$ 160,000</b>
<b>NWPRR - TOP OF LEVEE EL. 10.0 (STA 10+00 TO STA 59+86)</b>					
9	Mobilization	1	LS	\$ 260,000	\$ 260,000
10	Clearing & Grubbing	4	AC	\$ 4,200	\$ 16,800
11	Excavation and Backfill	42,880	CY	\$ 30	\$ 1,286,400
12	Geogrid Reinforcements	418,800	SF	\$ 3	\$ 1,256,400
<b>NWPRR - TOP OF LEVEE EL. 10.0 (STA 10+00 TO STA 59+86) SUBTOTAL</b>					<b>\$ 2,819,600</b>

<b>TOTAL</b>	<b>\$ 3,808,220</b>
Contingency 25%	\$ 952,055
<b>GRAND TOTAL</b>	<b>\$ 4,760,275</b>
<b>ROUNDED TOTAL</b>	<b>\$ 4,800,000</b>

Note: The construction cost estimates do not include any cost for utility relocations, permanent or temporary construction easements, environmental studies, permitting, or engineering design services.



# PROPOSED CAPITAL IMPROVEMENT PROJECTS

**Proposed Capital Improvement Projects**  
 (From Town-Wide Storm Drainage and  
 Flood control Study Phase 2)

ITEM NO.	PROJECT	DESCRIPTION	COST	PRIORITY
1	Watershed #2 Pump Station	Pump Station Replacement	\$348,000	High
2	Watershed #1 Piping Improvements	12" - 30" Storm Drain Pipes, Catch Basins and Misc.	\$834,000	Medium
3	Watershed #1 Curb Drain Improvements	Grated Line Drains, Concrete Curb & Gutter, Reconstruct Existing Sidewalk and AC Pavement	\$836,000	Medium
4	Watershed #2 Piping Improvements	12" - 18" Storm Drain Pipes, Catch Basins and Misc.	\$166,000	Medium
5	Watershed #2 Curb Drain Improvements	Grated Line Drains, Concrete Curb & Gutter, Reconstruct Existing Sidewalk and AC Pavement	\$449,000	Medium
6	Sub-Watershed #4A Piping Improvements	12" - 42" Storm Drain Pipes, Catch Basins and Misc.	\$524,000	Medium
7	Sub-Watershed #4A Curb Drain Improvements	Grated Line Drains, Concrete Curb & Gutter, Reconstruct Existing Sidewalk and AC Pavement	\$268,000	Medium
8	Sub-Watershed #4B Piping Improvements	12" - 54" Storm Drain Pipes, Catch Basins and Misc.	\$687,000	Medium
9	Sub-Watershed #4B Curb Drain Improvements	Grated Line Drains, Concrete Curb & Gutter, Reconstruct Existing Sidewalk and AC Pavement	\$29,000	Medium
10	Watershed #3 Piping Improvements	12" - 48" Storm Drain Pipes, Catch Basins and Misc.	\$600,000	Low
11	Watershed #3 Curb Drain Improvements	Grated Line Drains, Concrete Curb & Gutter, Reconstruct Existing Sidewalk and AC Pavement	\$172,000	Low
12	Watershed #8 Piping Improvements	12" - 18" Storm Drain Pipes, Catch Basins and Misc.	\$8,000	Low
13	Watershed #9 Piping Improvements	12" - 30" Storm Drain Pipes, Catch Basins and Misc.	\$162,000	Low
14	Watershed #9 Curb Drain Improvements	Grated Line Drains, Concrete Curb & Gutter, Reconstruct Existing Sidewalk and AC Pavement	\$229,000	Low
15	Watershed #10 Piping Improvements	12" - 24" Storm Drain Pipes, Catch Basins and Misc.	\$38,000	Low
16	Watershed #10 Curb Drain Improvements	Grated Line Drains, Concrete Curb & Gutter, Reconstruct Existing Sidewalk and AC Pavement	\$215,000	Low
<b>RECOMMENDED STORM DRAINAGE IMPROVEMENTS - PHASE 2</b>			<b>\$5,600,000</b>	
<b>ROUNDED TOTAL</b>				
17	Watershed #4 & #9 Levees & Floodwalls	Levees and Floodwalls (Tidal Improvements)	\$4,800,000	High
<b>RECOMMENDED STORM DRAINAGE &amp; TIDAL IMPROVEMENTS – PHASE 2</b>			<b>\$10,400,000</b>	
<b>GRAND TOTAL</b>				

- Notes:**
- The construction cost estimates do not include any costs for utility relocations, permanent or temporary construction easements, rights-of-way, environmental studies, permitting, or engineering design services
  - Pump Stations should be constructed prior to or at the same time as Piping Improvements for each Sub-Watershed or Watershed.
  - Tidal Inundation Improvements (i.e. Levees and Floodwalls) should be constructed as one project for Phase 1 and as one project for Phase 2.
  - For location of Storm Drainage Improvements by Sub-Watershed or Watershed, refer to Exhibit "G" Plans.

### **Basis for Selection of Priority Factors**

The following is the basis for selection of Priority Factors (High, Medium or Low) for the proposed CIP Storm Drainage Improvement Projects:

#### **HIGH (SEE NOTE BELOW)**

1. High potential for significant ponding / flooding from hydraulic backwater effects.
2. Subwatershed / watershed size is medium to large.
3. Subwatershed / watershed topography average elevations are low to medium.
4. Subwatershed / watershed is subject to tidal flooding.
5. The need for a new pump station is high.

#### **MEDIUM:**

1. Medium potential for significant ponding / flooding from hydraulic backwater effects.
2. Subwatershed / watershed size is medium to large.
3. Subwatershed / watershed topography average elevations are medium to high.
4. The need for a new pump station is medium or storm drain piping connects to an existing pump station.

#### **LOW:**

1. Low potential for significant ponding / flooding from hydraulic backwater effects.
2. Subwatershed / watershed size is small to medium.
3. Subwatershed / watershed topography average elevations are medium to high.
4. The need for a new pump station is low or storm drain piping connects to an existing pump station.

#### **NOTE:**

In addition, we consider all the Tidal Inundation Improvements (i.e. Levees and Floodwalls) to be a HIGH Priority and recommend that they be constructed as one project for Phase 1 and as one project for Phase 2.

## **APPENDIX B**

# **HYDROLOGIC AND HYDRAULIC CALCULATIONS**

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
1B1	G	17		2.19	0.50	0.00	1.09	0.50	0	0	110	10.79	2.85	2.37	3.12	2.59	15	RCP	0.015	1.23	110	2.15	1B1	2.59	0.31	0.0022	0.24	0.05	0.00	-0.20	n/a	n/a
1B2	G	18	2.19	2.19	0.50	1.09	1.09	0.50	60	480	0	10.33	2.90	2.41	3.17	2.63	15	RCP	0.015	1.23	110	2.15	1B2	2.63	0.31	0.0022	0.24	0.05	0.00	0.05	3.0	2.95
1C6	G	58		11.33	0.50	0.00	7.22	0.64	0	0	125	13.54	2.60	2.16	18.77	15.58							1C6	15.58						-0.20	n/a	n/a
1C5	G	53	0.31	11.33	0.50	0.16	7.22	0.64	0	0	40	13.02	2.65	2.20	19.13	15.88	36	RCP	0.015	7.07	125	2.25	1C5	15.88	0.75	0.0008	0.09	1.50	0.12	0.01	1.8	1.79
1C4	G	51	1.10	8.20	0.90	0.99	5.65	0.69	0	0	250	12.85	2.65	2.20	14.98	12.43	30	RCP	0.015	4.91	40	2.53	1C4	12.43	0.63	0.0012	0.05	1.40	0.14	0.20	1.8	1.60
1C3	G	49	1.01	5.97	0.50	0.50	3.65	0.61	0	0	340	11.81	2.75	2.28	10.03	8.33	30	RCP	0.015	4.91	250	1.70	1C3	8.33	0.63	0.0005	0.14	1.00	0.04	0.38	1.8	1.42
1C2	G	47	0.89	4.96	0.90	0.80	3.14	0.63	0	0	35	10.40	2.90	2.41	9.12	7.57	30	RCP	0.015	4.91	340	1.54	1C2	7.57	0.63	0.0005	0.15	0.20	0.01	0.54	3.0	2.46
1C1	G	46	1.65	4.07	0.10	0.17	2.34	0.57	0	0	20	10.25	2.90	2.41	6.79	5.63	30	RCP	0.015	4.91	35	1.15	1C1	5.63	0.63	0.0002	0.01	0.05	0.00	0.55	n/a	n/a
1C5	G	53		0.96	0.50	0.00	0.48	0.50	0	0	165	8.63	3.15	2.61	1.52	1.26							1C5	1.26						0.01	1.8	1.79
1C11	G	54	0.67	0.96	0.50	0.33	0.48	0.50	60	135	115	7.94	3.30	2.74	1.59	1.32	6	PVC	0.009	0.20	165	6.73	1C11	1.32	0.13	0.0264	4.36	0.10	0.07	4.44	2.1	-2.34
1C12	G	195	0.30	0.30	0.50	0.15	0.15	0.50	40	120	0	6.89	3.50	2.91	0.52	0.43	6	PVC	0.009	0.20	140	2.20	1C12	0.43	0.13	0.0028	0.40	0.45	0.03	4.87	3.0	-1.87
1C4	G	51		1.13	0.90	0.00	1.02	0.90	0	0	165	8.02	3.20	2.66	3.26	2.70							1C4	2.70						0.20	1.8	1.60
1C21	G	52	1.13	1.13	0.90	1.02	1.02	0.90	0	280	0	7.33	3.40	2.82	3.46	2.87	8	PVC	0.009	0.35	165	8.22	1C21	2.87	0.17	0.0269	4.44	0.05	0.05	4.69	1.8	-2.89
1C5	G	53		1.86	0.50	0.00	0.93	0.50	0	0	175	10.48	2.90	2.41	2.69	2.23							1C5	2.23						0.01	1.8	1.79
1C31	G	57	0.52	1.86	0.50	0.26	0.93	0.50	0	0	165	9.75	3.00	2.49	2.78	2.31	12	RCP	0.015	0.79	175	2.94	1C31	2.31	0.25	0.0056	0.97	1.00	0.13	1.12	2.5	1.38
1C32	G	220	0.31	1.33	0.50	0.15	0.67	0.50	0	0	95	9.06	3.05	2.53	2.03	1.69	12	RCP	0.015	0.79	165	2.15	1C32	1.69	0.25	0.0030	0.49	1.00	0.07	1.68	2.8	1.12
1C33	G	223	0.31	1.03	0.50	0.16	0.51	0.50	0	0	120	8.67	3.15	2.61	1.62	1.34	8	PVC	0.009	0.35	95	3.85	1C33	1.34	0.17	0.0059	0.56	2.70	0.62	2.86	2.8	-0.06
1C34	G	225	0.72	0.72	0.50	0.36	0.36	0.50	105	100	0	8.17	3.20	2.66	1.15	0.95	6	PVC	0.009	0.20	120	4.84	1C34	0.95	0.13	0.0137	1.64	0.45	0.16	4.67	3.0	-1.67
1D1	G	68		2.42	0.90	0.00	2.18	0.90	0	0	260	10.17	2.95	2.45	6.42	5.33							1D1	5.33						0.55	n/a	n/a
1D2	G	71	0.79	2.42	0.90	0.71	2.18	0.90	0	0	110	9.08	3.05	2.53	6.64	5.51	10	RCP	0.015	0.55	260	10.10	1D2	5.51	0.21	0.0837	21.75	0.60	0.95	23.25	4.5	-18.75
1D3	G	72	0.40	1.63	0.90	0.36	1.47	0.90	0	0	150	8.63	3.15	2.61	4.62	3.84	8	RCP	0.015	0.35	110	11.00	1D3	3.84	0.17	0.1336	14.69	0.40	0.75	38.70	3.0	-35.70
1D4	G	73	1.23	1.23	0.90	1.11	1.11	0.90	0	360	0	8.00	3.30	2.74	3.65	3.03	6	RCP	0.015	0.20	150	15.45	1D4	3.03	0.13	0.3869	58.03	0.05	0.19	96.92	3.8	-93.12
1E1	G	108		4.20	0.50	0.00	2.10	0.50	0	0	140	10.10	2.95	2.45	6.19	5.14							1E1	5.14						-0.20	n/a	n/a
1E2	G	109	0.26	4.20	0.50	0.13	2.10	0.50	0	0	200	9.52	3.00	2.49	6.30	5.23	18	RCP	0.015	1.77	140	2.96	1E2	5.23	0.38	0.0033	0.46	1.00	0.14	0.39	2.5	2.11
1E3	G	228	0.93	1.54	0.50	0.47	0.77	0.50	0	0	165	8.69	3.15	2.61	2.43	2.01	12	RCP	0.015	0.79	200	2.56	1E3	2.01	0.25	0.0042	0.85	2.00	0.20	1.44	3.0	1.56
1E4	G	230	0.61	0.61	0.50	0.30	0.30	0.50	105	80	0	8.00	3.30	2.74	1.00	0.83	8	PVC	0.009	0.35	165	2.39	1E4	0.83	0.17	0.0023	0.37	0.05	0.00	1.82	3.5	1.68
1E2	G	109		2.40	0.50	0.00	1.20	0.50	0	0	75	9.38	3.00	2.49	3.60	2.99							1E2	2.99						0.39	2.5	2.11
1E11	G	110	0.46	2.40	0.50	0.23	1.20	0.50	0	0	100	9.06	3.05	2.53	3.66	3.04	18	RCP	0.015	1.77	75	1.72	1E11	3.04	0.38	0.0011	0.08	1.00	0.05	0.52	2.5	1.98
1E12	G	114	0.99	1.48	0.50	0.49	0.74	0.50	0	0	195	8.65	3.15	2.61	2.33	1.94	15	RCP	0.015	1.23	100	1.58	1E12	1.94	0.31	0.0012	0.12	0.90	0.03	0.68	2.0	1.32
1E13	G	116	0.49	0.49	0.50	0.25	0.25	0.50	105	60	0	7.83	3.30	2.74	0.81	0.67	12	RCP	0.015	0.79	195	0.86	1E13	0.67	0.25	0.0005	0.09	1.00	0.01	0.78	3.0	2.22
1E11	G	110		0.46	0.50	0.00	0.23	0.50	0	0	90	7.90	3.30	2.74	0.75	0.63							1E11	0.63						0.52	2.5	1.98
1E21	G	111	0.25	0.46	0.50	0.13	0.23	0.50	0	0	60	7.53	3.30	2.74	0.75	0.63	12	PVC	0.009	0.79	90	0.80	1E21	0.63	0.25	0.0001	0.01	0.10	0.00	0.54	2.5	1.96
1E22	G	113	0.20	0.20	0.50	0.10	0.10	0.50	80	60	0	7.28	3.40	2.82	0.35	0.29	12	PVC	0.009	0.79	60	0.37	1E22	0.29	0.25	0.0000	0.00	0.15	0.00	0.54	2.5	1.96
1F1	G	117		2.12	0.50	0.00	1.53	0.72	0	0	145	11.21	2.80	2.32	4.28	3.56							1F1	3.56						-0.20	n/a	n/a
1F2	G	118	0.96	2.12	0.50	0.48	1.53	0.72	0	0	45	10.60	2.90	2.41	4.44	3.68	18	RCP	0.015	1.77	145	2.08	1F2	3.68	0.38	0.0016	0.24	0.10	0.01	0.04	2.5	2.46
1F3	G	119	1.17	1.17	0.90	1.05	1.05	0.90	0	650	0	10.42	2.90	2.41	3.05	2.53	18	RCP	0.015	1.77	45	1.43	1F3	2.53	0.38	0.0008	0.03	0.05	0.00	0.08	1.5	1.42
1G1	G	210		2.49	0.50	0.00	1.25	0.50	0	0	120	12.04	2.70	2.24	3.36	2.79							1G1	2.79						-0.20	n/a	n/a
1G2	G	211	0.19	2.49	0.50	0.09	1.25	0.50	0	0	180	11.54	2.80	2.32	3.49	2.89	15	PVC	0.009	1.23	120	2.36	1G2	2.89	0.31	0.0010	0.11	1.50	0.13	0.04	1.5	1.46
1G3	G	212	0.50	2.30	0.50	0.25	1.15	0.50	0	0	130	10.79	2.85	2.37	3.28	2.73	10	RCP	0.015	0.55	180	5.00	1G3	2.73	0.21							



Tributary POC <sup>1</sup>	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev <sup>**</sup>	Rim/Grate Elev	Delta ft	
1L1	G	103		119.14	0.10	0.00	55.20	0.46	0	0	50	39.63	1.60	1.33	88.31	73.30							1L1	73.30						-0.11	n/a	n/a	
1L2	G	104	0.43	119.14	0.10	0.04	55.20	0.46	0	0	240	39.42	1.60	1.33	88.31	73.30	72	RCP	0.015	28.27	50	2.59	1L2	73.30	1.50	0.0004	0.02	1.00	0.10	0.01	n/a	n/a	
1K11	G	105		1.95	0.50	0.00	0.97	0.50	0	0	0	10.33	2.90	2.41	2.82	2.34								1K11	2.34						0.01	n/a	n/a
1K12	G	106	0.98	1.95	0.50	0.49	0.97	0.50	150	240	0	10.33	2.90	2.41	2.82	2.34	8	RCP	0.015	0.35	180	6.72	1K12	2.34	0.17	0.0498	8.97	1.80	1.26	10.24	2.0	-8.24	
1K13	G	107	0.97	0.97	0.50	0.48	0.48	0.50	100	270	0	9.47	3.00	2.49	1.45	1.21	6	PVC	0.009	0.20	35	6.14	1K13	1.21	0.13	0.0220	0.77	0.05	0.03	11.04	2.5	-8.54	
1M1	G	169		1.50	0.50	0.00	0.75	0.50	0	0	160	10.06	2.95	2.45	2.21	1.83								1M1	1.83						0.01	n/a	n/a
1M2	G	170	0.92	1.50	0.50	0.46	0.75	0.50	0	0	135	9.40	3.00	2.49	2.24	1.86	15	RCP	0.015	1.23	160	1.52	1M2	1.86	0.31	0.0011	0.18	0.90	0.03	0.22	2.0	1.78	
1M3	G	171	0.57	0.57	0.50	0.29	0.29	0.50	120	140	0	8.83	3.10	2.57	0.88	0.73	12	RCP	0.015	0.79	135	0.93	1M3	0.73	0.25	0.0006	0.08	0.05	0.00	0.29	2.0	1.71	
1N1	G	167		115.27	0.10	0.00	53.43	0.46	0	0	60	38.42	1.60	1.33	85.49	70.96								1N1	70.96						0.01	n/a	n/a
1N2	G	168	4.78	115.27	0.10	0.48	53.43	0.46	0	0	750	38.17	1.60	1.33	85.49	70.96	48	RCP	0.015	12.57	60	2.82	1N2	35.48	1.00	0.0032	0.19	1.00	0.12	0.33	n/a	n/a	
1P1	G	184		2.86	0.50	0.00	1.43	0.50	0	0	165	12.42	2.70	2.24	3.86	3.20								1P1	3.20						0.33	n/a	n/a
1P2	G	185	0.73	2.86	0.50	0.36	1.43	0.50	125	475	0	11.74	2.75	2.28	3.93	3.26	15	RCP	0.015	1.23	165	2.66	1P2	3.26	0.31	0.0034	0.56	0.10	0.01	0.89	2.0	1.11	
1P3	G	187	2.13	2.13	0.50	1.07	1.07	0.50	120	190	0	9.25	3.05	2.53	3.25	2.70	12	RCP	0.015	0.79	80	3.43	1P3	2.70	0.25	0.0076	0.61	0.95	0.17	1.68	2.0	0.32	
1Q1	G	182		0.85	0.90	0.00	0.76	0.90	0	0	200	9.79	3.00	2.49	2.29	1.90								1Q1	1.90						0.33	n/a	n/a
1Q2	G	183	0.85	0.85	0.90	0.76	0.76	0.90	0	475	0	8.96	3.10	2.57	2.36	1.96	4	PVC	0.009	0.09	200	22.47	1Q2	1.96	0.08	0.5063	101.25	0.05	0.39	101.97	2.2	-99.77	
1R1	G	194		11.34	0.90	0.00	6.02	0.53	0	0	420	16.32	2.35	1.95	14.14	11.73								1R1	11.73						0.33	n/a	n/a
1R2	G	195	1.38	11.34	0.90	1.25	6.02	0.53	0	0	300	14.57	2.50	2.08	15.04	12.48	18	RCP	0.015	1.77	420	7.06	1R2	12.48	0.38	0.0187	7.85	1.00	0.77	8.95	1.5	-7.45	
1R3	G	177	2.23	8.36	0.90	2.01	4.29	0.51	0	0	135	13.32	2.60	2.16	11.15	9.26	12	RCP	0.015	0.79	300	11.79	1R3	9.26	0.25	0.0894	26.82	1.00	2.16	37.94	4.0	-33.94	
1R4	G	178	0.07	4.48	0.30	0.02	1.79	0.40	0	0	90	12.76	2.65	2.20	4.73	3.93	15	RCP	0.015	1.23	135	3.20	1R4	3.93	0.31	0.0049	0.66	1.50	0.24	38.84	2.5	-36.34	
1R5	G	181	0.49	0.49	0.30	0.15	0.15	0.30	150	0	0	8.33	3.20	2.66	0.47	0.39	15	RCP	0.015	1.23	100	0.32	1R5	0.39	0.31	0.0000	0.00	0.90	0.00	38.84	2.5	-36.34	
1R2	G	195		1.60	0.30	0.00	0.48	0.30	0	0	160	13.67	2.60	2.16	1.25	1.03								1R2	1.03						8.95	1.5	-7.45
1R11	G	197	0.75	1.60	0.30	0.23	0.48	0.30	360	0	0	13.00	2.65	2.20	1.27	1.05	12	RCP	0.015	0.79	160	1.34	1R11	1.05	0.25	0.0012	0.19	1.00	0.03	9.17	1.5	-7.67	
1R12	G	200	0.84	0.84	0.30	0.25	0.25	0.30	220	0	0	9.89	2.95	2.45	0.75	0.62	6	PVC	0.009	0.20	60	3.15	1R12	0.62	0.13	0.0058	0.35	1.50	0.23	9.75	2.0	-7.75	
1R3	G	177		1.65	0.30	0.00	0.49	0.30	0	0	110	13.24	2.60	2.16	1.28	1.07								1R3	1.07						37.94	4.0	-33.94
1R21	G	176	1.65	1.65	0.30	0.49	0.49	0.30	350	0	0	12.78	2.65	2.20	1.31	1.09	12	PVC	0.009	0.79	110	1.38	1R21	1.09	0.25	0.0004	0.05	0.05	0.00	37.99	n/a	n/a	
1R4	G	178		2.21	0.50	0.00	1.11	0.50	0	0	90	12.76	2.65	2.20	2.93	2.43								1R4	2.43						38.84	2.5	-36.34
1R31	G	179?	0.59	2.21	0.50	0.29	1.11	0.50	0	0	65	12.38	2.70	2.24	2.99	2.48	15	RCP	0.015	1.23	90	2.02	1R31	2.48	0.31	0.0020	0.18	0.90	0.06	39.07	2.5	-36.57	
1R32	G	180	1.63	1.63	0.50	0.81	0.81	0.50	320	0	0	12.11	2.70	2.24	2.19	1.82	8	CMP	0.024	0.35	65	5.22	1R32	1.82	0.17	0.0770	5.00	0.50	0.21	44.28	2.5	-41.78	
1R4	G	178		1.70	0.30	0.00	0.51	0.30	0	0	140	10.69	2.90	2.41	1.48	1.23								1R4	1.23						38.84	2.5	-36.34
1R41	K	1	1.70	1.70	0.30	0.51	0.51	0.30	230	0	0	10.11	2.95	2.45	1.51	1.25	12	RCP	0.015	0.79	140	1.59	1R41	1.25	0.25	0.0016	0.23	0.05	0.00	39.07	2.5	-36.57	
1T1	K	2		50.74	0.50	0.00	21.23	0.42	0	0	375	35.04	1.65	1.37	35.03	29.08								1T1	29.08						0.33	n/a	n/a
1T2	K	5	2.90	50.74	0.50	1.45	21.23	0.42	0	0	400	33.48	1.70	1.41	36.09	29.96	30	RCP	0.015	4.91	375	6.10	1T2	29.96	0.63	0.0071	2.65	1.50	0.87	3.84	3.5	-0.34	
1T3	K	22	0.00	37.74	0.50	0.00	15.82	0.42	0	0	55	31.81	1.75	1.45	27.69	22.98	30	RCP	0.015	4.91	400	4.68	1T3	22.98	0.63	0.0042	1.66	0.60	0.20	5.71	9.0	3.29	
1T4	K	23	1.00	37.74	0.50	0.50	15.82	0.42	0	0	305	31.58	1.75	1.45	27.69	22.98	18	PVC	0.009	1.77	55	6.50	1T4	11.49	0.38	0.0228	1.25	0.60	0.39	7.36	9.0	1.64	
1T5	K	25	2.26	36.74	0.50	1.13	15.32	0.42	0	0	205	30.31	1.80	1.49	27.58	22.89	18	PVC	0.009	1.77	55	6.50		11.49									
1T6	K	27	0.12	34.48	0.50	0.06	14.19	0.41	0	0	105	29.46	1.80	1.49	25.55	21.20	18	RCP	0.015	1.77	305	12.95	1T5	22.89	0.38	0.0629	19.18	0.60	1.56	28.10	31.0	2.90	
1T7	K	29	0.57	24.73	0.50	0.29	10.21	0.41	0	0	135	29.02	1.85	1.54	18.88	15.67	18	RCP	0.015	1.77	205	12.00	1T6	21.20	0.38	0.0540	11.06	0.50	1.12	40.28	49.0	8.72	
1T8	K	32	1.77	22.68	0.50	0.89	9.33	0.41	0	0	275	28.46	1.85	1.54	17.26	14.32	18	RCP	0.015	1.77	105	8.87	1T7	15.67	0.38	0.0295	3.09	0.90	1.10	44.48	60.0	15.52	
1T9	K	34	0.80	20.90	0.50	0.40	8.44	0.40	0	0	210	27.31	1.90	1.58	16.04	13.31	18	RCP	0.015	1.77	135	8.11	1										



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe	n	Area	Length	Velocity <sub>25</sub>	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
1T2	K	5		9.01	0.30	0.00	3.63	0.40	0	0	185	16.21	2.40	1.99	8.72	7.23							1T2	7.23	0.31	0.0173	3.20	0.10	0.06	3.89	3.5	-0.39
1T31	K	10	1.14	9.01	0.30	0.34	3.63	0.40	0	0	320	15.44	2.45	2.03	8.90	7.39	15	RCP	0.015	1.23	185	6.02	1T31	7.39	0.31	0.0173	3.20	0.10	0.06	7.15	5.5	-1.65
1T32	K	11	3.23	7.87	0.30	0.97	3.29	0.42	0	0	115	14.10	2.55	2.12	8.39	6.97	15	RCP	0.015	1.23	320	5.68	1T32	6.97	0.31	0.0154	4.93	0.90	0.45	12.53	5.0	-7.53
1T33	K	12	0.57	4.64	0.50	0.28	2.32	0.50	0	0	85	13.63	2.60	2.16	6.04	5.01	15	RCP	0.015	1.23	115	4.08	1T33	5.01	0.31	0.0080	0.92	1.00	0.26	13.70	5.5	-8.20
1T34	K	16	0.54	3.85	0.50	0.27	1.92	0.50	0	0	65	13.27	2.60	2.16	5.00	4.15	15	RCP	0.015	1.23	85	3.38	1T34	4.15	0.31	0.0055	0.46	1.50	0.27	14.43	6.5	-7.93
1T35	K	18	0.70	1.05	0.50	0.35	0.52	0.50	0	0	85	7.49	3.40	2.82	1.78	1.48	15	RCP	0.015	1.23	140	1.21	1T35	1.48	0.31	0.0007	0.10	0.20	0.00	14.54	7.0	-7.54
1T36	J	228	0.35	0.35	0.50	0.17	0.17	0.50	70	70	0	7.14	3.40	2.82	0.59	0.49	15	RCP	0.015	1.23	85	0.40	1T36	0.49	0.31	0.0001	0.01	0.15	0.00	14.54	7.5	-7.04
1T7	K	29		1.48	0.40	0.00	0.59	0.40	0	0	95	19.81	2.20	1.83	1.30	1.08							1T7	1.08						44.53	60.0	15.47
1T41	K	30	1.48	1.48	0.40	0.59	0.59	0.40	540	290	0	19.42	2.20	1.83	1.30	1.08	12	RCP	0.015	0.79	95	1.38	1T41	1.08	0.25	0.0012	0.12	0.05	0.00	44.64	71.0	26.36
1T33	K	12		0.23	0.50	0.00	0.12	0.50	0	0	160	8.33	3.20	2.66	0.37	0.31							1T33	0.31						13.70	5.5	-8.20
1T51	K	13	0.23	0.23	0.50	0.12	0.12	0.50	120	0	0	7.67	3.30	2.74	0.38	0.32	8	PVC	0.009	0.35	160	0.91	1T51	0.32	0.17	0.0003	0.05	0.05	0.00	13.76	6.5	-7.26
1T34	K	16		2.26	0.50	0.00	1.13	0.50	0	0	65	13.27	2.60	2.16	2.94	2.44							1T34	2.44						14.43	6.5	-7.93
1T61	K	21	2.26	2.26	0.50	1.13	1.13	0.50	240	320	0	13.00	2.65	2.20	3.00	2.49	12	RCP	0.015	0.79	65	3.17	1T61	2.49	0.25	0.0065	0.42	1.00	0.16	15.01	7.0	-8.01
1T6	K	27		9.63	0.50	0.00	3.93	0.41	0	0	45	23.31	2.00	1.66	7.85	6.52							1T6	6.52						40.33	49.0	8.67
1T71	K	28	0.73	9.63	0.50	0.36	3.93	0.41	0	0	160	23.13	2.05	1.70	8.05	6.68	12	CMP	0.024	0.79	45	8.50	1T71	6.68	0.25	0.1191	5.36	0.05	0.06	45.75	54.0	8.25
1T72	K	187	0.00	8.91	0.40	0.00	3.56	0.40	0	0	100	22.46	2.05	1.70	7.30	6.06							1T72	6.06						45.75	71.0	25.25
1T73	K	188	8.91	8.91	0.40	3.56	3.56	0.40	660	0	570	22.04	2.10	1.74	7.48	6.21	21	RCP	0.015	2.41	100	2.58	1T73	6.21	0.44	0.0020	0.20	0.05	0.01	45.96	78.0	32.04
1T12	K	201		7.22	0.40	0.00	2.89	0.40	0	0	30	20.40	2.15	1.78	6.21	5.15							1T12	5.15						76.65	149.0	72.35
1T81	K	202	2.13	7.22	0.40	0.85	2.89	0.40	0	0	105	20.27	2.15	1.78	6.21	5.15	12	CMP	0.024	0.79	30	6.56	1T81	5.15	0.25	0.0709	2.13	0.05	0.03	78.81	149.0	70.19
1T82	O	7	0.00	5.09	0.40	0.00	2.03	0.40	0	0	275	19.83	2.20	1.83	4.48	3.71							1T82	3.71						78.81	163.0	84.19
1T83	O	8	0.37	5.09	0.40	0.15	2.03	0.40	0	0	15	18.69	2.25	1.87	4.58	3.80	12	RCP	0.015	0.79	275	4.84	1T83	3.80	0.25	0.0151	4.14	0.05	0.02	82.96	196.5	113.54
1T84	O	9	0.00	4.71	0.40	0.00	1.88	0.40	0	0	70	18.63	2.25	1.87	4.24	3.52							1T84	3.52						82.96	198.0	115.04
1T85	O	10	2.22	4.71	0.40	0.89	1.88	0.40	600	0	0	18.33	2.25	1.87	4.24	3.52	18	CMP	0.024	1.77	70	1.99	1T85	3.52	0.38	0.0038	0.27	0.05	0.00	83.23	210.0	126.77
1T86	O	11	0.00	1.17	0.40	0.00	0.47	0.40	0	0	60	14.57	2.50	2.08	1.17	0.97							1T86	0.97						83.23	218.0	134.77
1T87	O	12	0.00	1.17	0.40	0.00	0.47	0.40	0	0	40	14.32	2.50	2.08	1.17	0.97	12	CMP	0.024	0.79	60	1.24	1T87	0.97	0.25	0.0025	0.15	0.10	0.00	83.39	222.0	138.61
1T88	O	13	1.17	1.17	0.40	0.47	0.47	0.40	200	565	0	14.15	2.55	2.12	1.19	0.99	12	CMP	0.024	0.79	40	1.26	1T88	0.99	0.25	0.0026	0.11	0.05	0.00	83.49	233.0	149.51
1T85	O	10		1.32	0.40	0.00	0.53	0.40	0	0	70	12.16	2.70	2.24	1.43	1.18							1T85	1.18						83.23	210.0	126.77
1T91	O	14	0.00	1.32	0.40	0.00	0.53	0.40	0	0	175	11.87	2.75	2.28	1.45	1.21							1T91	1.21					0.00	83.23	230.0	146.77
1T92	O	15	1.32	1.32	0.40	0.53	0.53	0.40	70	550	0	11.14	2.80	2.32	1.48	1.23	12	CMP	0.024	0.79	70	1.56	1T92	1.23	0.25	0.0040	0.70	0.05	0.00	83.94	309.0	225.06
1V1	K	37		20.19	0.50	0.00	10.69	0.53	0	0	170	16.13	2.40	1.99	25.66	21.29							1V1	21.29						0.38	n/a	n/a
1V2	K	38	0.59	20.19	0.50	0.29	10.69	0.53	0	0	85	15.42	2.45	2.03	26.19	21.74	48	RCP	0.015	12.57	170	1.73	1V2	21.74	1.00	0.0003	0.05	1.50	0.07	0.50	1.5	1.00
1V3	K	43	0.24	16.88	0.50	0.12	9.03	0.54	0	0	195	15.06	2.45	2.03	22.14	18.37	48	RCP	0.015	12.57	85	1.46	1V3	18.37	1.00	0.0002	0.02	0.60	0.02	0.54	1.5	0.96
1V4	K	210	1.37	6.65	0.50	0.69	3.53	0.53	0	0	65	14.25	2.55	2.12	9.00	7.47	42	RCP	0.015	9.62	195	0.78	1V4	7.47	0.88	0.0001	0.01	1.00	0.01	0.56	1.8	1.24
1V5	K	212	0.63	3.92	0.50	0.31	2.17	0.55	0	0	230	13.98	2.55	2.12	5.52	4.58	36	RCP	0.015	7.07	65	0.65	1V5	4.58	0.75	0.0001	0.00	1.00	0.01	0.57	1.5	0.93
1V6	K	215	0.65	3.30	0.50	0.32	1.85	0.56	0	0	255	13.02	2.65	2.20	4.91	4.08	36	RCP	0.015	7.07	230	0.58	1V6	4.08	0.75	0.0000	0.01	1.50	0.01	0.59	1.5	0.91
1V7	K	218	0.00	2.65	0.50	0.00	1.53	0.58	0	0	35	11.96	2.75	2.28	4.20	3.49	36	RCP	0.015	7.07	255	0.49	1V7	3.49	0.75	0.0000	0.01	1.40	0.01	0.60	1.8	1.20
1V8	K	219	0.31	2.65	0.50	0.16	1.53	0.58	0	0	195	11.81	2.75	2.28	4.20	3.49	24	RCP	0.015	3.14	35	1.11	1V8	3.49	0.50	0.0003	0.01	0.60	0.01	0.63	1.5	0.87
1V9	K	125	1.82	2.33	0.50	0.91	1.37	0.59	105	440	0	11.00	2.85	2.37	3.91	3.24	18	RCP	0.015	1.77	195	1.84	1V9	3.24	0.38	0.0013	0.25	0.90	0.05	0.92	1.0	0.08
1V10	K	126	0.51	0.51	0.90	0.46	0.46	0.90	75	100	0	7.50	3.40	2.82	1.56	1.30	15	RCP	0.015	1.23	80	1.06	1V10	1.30								

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
1V12	K	47		2.14	0.50	0.00	1.07	0.50	0	0	350	11.13	2.80	2.32	2.99	2.48							1V12	2.48						1.85	1.0	-0.85	
1V61	K	46	1.60	2.14	0.50	0.80	1.07	0.50	120	240	0	9.67	3.00	2.49	3.20	2.66	10	RCP	0.015	0.55	350	4.87	1V61	2.66	0.21	0.0195	6.83	0.20	0.07	8.75	1.5	-7.25	
1V62	G	202	0.53	0.53	0.50	0.27	0.27	0.50	120	100	0	8.50	3.15	2.61	0.84	0.70		10	RCP	0.015	0.55	265	1.28	1V62	0.70	0.21	0.0013	0.36	0.05	0.00	9.11	2.0	-7.11
1V15	K	53		0.69	0.90	0.00	0.62	0.90	0	0	170	8.96	3.10	2.57	1.91	1.59							1V15	1.59						2.82	2.0	-0.82	
1V71	K	55	0.69	0.69	0.90	0.62	0.62	0.90	0	390	0	8.25	3.20	2.66	1.97	1.64	12	RCP	0.015	0.79	170	2.09	1V71	1.64	0.25	0.0028	0.48	0.95	0.06	3.36	2.0	-1.36	
1W1	K	90		1.42	0.90	0.00	1.28	0.90	0	0	205	8.13	3.20	2.66	4.09	3.40							1W1	3.40						0.38	n/a	n/a	
1W2	K	92	0.40	1.42	0.90	0.36	1.28	0.90	0	0	145	7.27	3.40	2.82	4.35	3.61	12	RCP	0.015	0.79	205	4.59	1W2	3.61	0.25	0.0136	2.79	1.00	0.33	3.49	6.0	2.51	
1W3	K	94	0.25	0.25	0.90	0.23	0.23	0.90	0	80	0	5.67	3.80	3.15	0.87	0.72	12	RCP	0.015	0.79	115	0.92	1W3	0.72	0.25	0.0005	0.06	0.05	0.00	3.55	6.0	2.45	
1W2	K	92		0.77	0.90	0.00	0.69	0.90	0	0	145	7.27	3.40	2.82	2.35	1.95							1W2	1.95						3.49	6.0	2.51	
1W11	K	93	0.77	0.77	0.90	0.69	0.69	0.90	0	200	0	6.67	3.50	2.91	2.42	2.01	12	RCP	0.015	0.79	145	2.56	1W11	2.01	0.25	0.0042	0.61	0.05	0.01	4.10	6.2	2.10	
1X1	K			15.87	0.50	0.00	7.93	0.50	0	0	180	28.25	1.85	1.54	14.68	12.18							1X1	12.18						0.38	n/a	n/a	
1X2	K	99	1.40	15.87	0.50	0.70	7.93	0.50	0	0	80	27.50	1.90	1.58	15.08	12.51	24	RCP	0.015	3.14	180	3.98	1X2	12.51	0.50	0.0041	0.73	0.20	0.05	1.16	4.5	3.34	
1X3	K	101	0.22	14.47	0.50	0.11	7.23	0.50	0	0	50	27.17	1.90	1.58	13.74	11.41	24	RCP	0.015	3.14	80	3.63	1X3	11.41	0.50	0.0034	0.27	1.00	0.20	1.63	6.0	4.37	
1X4	K	102	2.60	14.25	0.50	1.30	7.12	0.50	0	0	295	26.96	1.90	1.58	13.53	11.23	18	RCP	0.015	1.77	50	6.36	1X4	11.23	0.38	0.0151	0.76	0.90	0.56	2.95	6.0	3.05	
1X5	K	103	0.79	11.64	0.50	0.39	5.82	0.50	0	0	35	25.73	1.95	1.62	11.35	9.42	15	RCP	0.015	1.23	295	7.68	1X5	9.42	0.31	0.0282	8.31	0.90	0.82	12.09	31.0	18.91	
1X6	K	104	10.86	10.86	0.50	5.43	5.43	0.50	600	870	0	25.58	1.95	1.62	10.59	8.79	12	RCP	0.015	0.79	35	11.19	1X6	8.79	0.25	0.0805	2.82	0.90	1.75	16.65	32.0	15.35	
1Y1	K			7.23	0.50	0.00	3.61	0.50	0	0	535	21.33	2.10	1.74	7.59	6.30							1Y1	6.30						0.38	n/a	n/a	
1Y2	K	110	0.00	7.23	0.50	0.00	3.61	0.50	0	0	55	19.10	2.20	1.83	7.95	6.60	24	RCP	0.015	3.14	535	2.10	1Y2	6.60	0.50	0.0011	0.60	2.50	0.17	1.15	2.5	1.35	
1Y3	K	112	3.08	7.23	0.50	1.54	3.61	0.50	0	0	255	18.87	2.20	1.83	7.95	6.60	12	RCP	0.015	0.79	55	8.40	1Y3	6.60	0.25	0.0454	2.50	1.00	1.10	4.74	3.0	-1.74	
1Y4	K	115	1.15	4.15	0.50	0.58	2.07	0.50	0	0	130	17.81	2.25	1.87	4.67	3.87	18	RCP	0.015	1.77	255	2.19	1Y4	3.87	0.38	0.0018	0.46	0.90	0.07	5.27	1.5	-3.77	
1Y5	K	118	0.21	2.99	0.50	0.11	1.50	0.50	0	0	25	17.26	2.30	1.91	3.44	2.86	18	RCP	0.015	1.77	130	1.62	1Y5	2.86	0.38	0.0010	0.13	0.10	0.00	5.40	6.2	0.80	
1Y6	K	119	1.16	2.78	0.50	0.58	1.39	0.50	0	0	130	17.16	2.30	1.91	3.20	2.66	12	RCP	0.015	0.79	25	3.38	1Y6	2.66	0.25	0.0074	0.18	0.90	0.16	5.75	6.2	0.45	
1Y7	K	120	0.00	1.63	0.50	0.00	0.81	0.50	0	0	90	16.62	2.35	1.95	1.91	1.59	12	RCP	0.015	0.79	130	2.02	1Y7	1.59	0.25	0.0026	0.34	0.90	0.06	6.14	6.5	0.36	
1Y8	K	121	0.54	1.63	0.50	0.27	0.81	0.50	0	0	45	16.24	2.40	1.99	1.95	1.62	12	RCP	0.015	0.79	90	2.06	1Y8	1.62	0.25	0.0027	0.25	0.05	0.00	6.39	15.0	8.61	
1Y9	K	140	0.00	1.09	0.50	0.00	0.54	0.50	0	0	120	16.06	2.40	1.99	1.31	1.08		OC			45		1Y9	1.08				1.00	0.00	6.39	30.0	23.61	
1Y10	K	142	1.09	1.09	0.50	0.54	0.54	0.50	475	0	0	15.56	2.40	1.99	1.31	1.08	12	RCP	0.015	0.79	120	1.38	1Y10	1.08	0.25	0.0012	0.15	0.05	0.00	6.54	64.0	57.46	

Notes:  
1. POC = Point of Concentration  
2. Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.  
3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.  
4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.  
\*\* Assumed Lagoon 1 starting water surface elevation of -0.20 NGVD and very low velocities within Low Canal.

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
2A1	D	154		32.22			13.34	0.41	0	0	270	26.77	1.90	1.58	25.34	21.03	30	RCP	0.015	4.91	270	4.40	2A1	21.03						-0.20	n/a	n/a	
2A2	D	153	6.93	32.22	0.10	0.69	13.34	0.41	0	0	540	25.65	1.95	1.62	26.01	21.59	30	RCP	0.015	4.91	270	4.40	2A2	21.59	0.63	0.0037	0.99	1.05	0.32	1.11	PS	0.00	
2B3	D	127		1.17			0.59	0.50	0	0	115	8.81	3.10	2.57	1.82	1.51								2B3	1.51						-0.20	n/a	n/a
2B2	D	125	0.64	1.17	0.50	0.32	0.59	0.50	60	240	0	8.33	3.20	2.66	1.88	1.56	10	RCP	0.015	0.55	115	2.86	2B2	1.56	0.21	0.0067	0.77	1.10	0.14	0.71	2.5	1.79	
2B1	D	124	0.53	0.53	0.50	0.26	0.26	0.50	45	200	0	7.67	3.30	2.74	0.87	0.73	12	PVC	0.009	0.79	30	0.92	2B1	0.73	0.25	0.0002	0.01	0.05	0.00	0.72	2.5	1.78	
2C1	D	150		1.55			0.77	0.50	0	0	115	8.82	3.10	2.57	2.40	1.99								2C1	1.99						-0.20	n/a	n/a
2C2	D	151	0.85	1.55	0.50	0.42	0.77	0.50	0	0	35	8.34	3.20	2.66	2.48	2.06	10	RCP	0.015	0.55	115	3.77	2C2	2.06	0.21	0.0117	1.34	1.10	0.24	1.39	4.5	3.11	
2C3	D	152	0.70	0.70	0.50	0.35	0.35	0.50	50	250	0	8.19	3.20	2.66	1.12	0.93	10	RCP	0.015	0.55	35	1.71	2C3	0.93	0.21	0.0024	0.08	0.05	0.00	1.47	4.5	3.03	
2D1	G	12		1.39			0.70	0.50	0	0	130	8.64	3.15	2.61	2.19	1.82								2D1	1.82						-0.20	n/a	n/a
2D2	G	13	0.78	1.39	0.50	0.39	0.70	0.50	0	0	30	8.10	3.20	2.66	2.22	1.85	12	RCP	0.015	0.79	130	2.35	2D2	1.85	0.25	0.0036	0.46	1.10	0.09	0.36	3.0	2.64	
2D3	G	14	0.61	0.61	0.50	0.31	0.31	0.50	40	250	0	7.97	3.30	2.74	1.01	0.84	12	RCP	0.015	0.79	30	1.07	2D3	0.84	0.25	0.0007	0.02	0.05	0.00	0.38	3.0	2.62	
2E1	G	5		6.23			3.11	0.50	0	0	120	18.70	2.25	1.87	7.01	5.82								2E1	5.82						-0.20	n/a	n/a
2E2	G	6	0.41	6.23	0.50	0.20	3.11	0.50	0	0	65	18.20	2.25	1.87	7.01	5.82	12	RCP	0.015	0.79	120	7.40	2E2	5.82	0.25	0.0353	4.23	1.40	1.19	5.23	4.5	-0.73	
2E3	G	7	3.11	5.82	0.50	1.56	2.91	0.50	0	0	390	17.93	2.25	1.87	6.55	5.43	10	RCP	0.015	0.55	65	9.96	2E3	5.43	0.21	0.0814	5.29	0.90	1.39	11.90	5.5	-6.40	
2E4	G	10	0.85	2.70	0.50	0.42	1.35	0.50	0	0	60	16.31	2.35	1.95	3.18	2.64	10	RCP	0.015	0.55	390	4.84	2E4	2.64	0.21	0.0192	7.48	0.20	0.07	19.46	56.0	36.54	
2E5	G	11	1.85	1.85	0.50	0.93	0.93	0.50	280	580	0	16.06	2.40	1.99	2.23	1.85	10	RCP	0.015	0.55	60	3.39	2E5	1.85	0.21	0.0094	0.56	0.05	0.01	20.03	59.0	38.97	
2F1	D	201		8.63			4.32	0.50	0	0	120	23.40	2.00	1.66	8.63	7.16								2F1	7.16						-0.20	n/a	n/a
2F2	G	1	0.77	8.63	0.50	0.39	4.32	0.50	0	0	35	22.90	2.05	1.70	8.85	7.34	12	RCP	0.015	0.79	120	9.35	2F2	7.34	0.25	0.0563	6.75	1.10	1.49	8.05	3.0	-5.05	
2F3	G	2	4.85	7.86	0.50	2.43	3.93	0.50	600	530	0	22.75	2.05	1.70	8.06	6.69	12	RCP	0.015	0.79	35	8.51	2F3	6.69	0.25	0.0466	1.63	0.90	1.01	10.69	3.5	-7.19	
2F4	G	3	1.09	3.01	0.50	0.54	1.50	0.50	0	0	50	15.69	2.40	1.99	3.61	3.00	6	VCP	0.015	0.20	170	15.26	2F4	3.00	0.13	0.3778	64.23	0.10	0.36	75.28	3.5	-71.78	
2F5	G	4	1.92	1.92	0.50	0.96	0.96	0.50	410	165	0	15.49	2.45	2.03	2.35	1.95	6	VCP	0.015	0.20	40	9.94	2F5	1.95	0.13	0.1603	6.41	0.05	0.08	81.77	3.5	-78.27	
2G1	D	145		3.63			1.81	0.50	0	0	120	12.16	2.70	2.24	4.90	4.07								2G1	4.07						-0.20	n/a	n/a
2G2	D	146	0.75	3.63	0.50	0.37	1.81	0.50	0	0	25	11.66	2.75	2.28	4.99	4.14	10	RCP	0.015	0.55	120	7.59	2G2	4.14	0.21	0.0473	5.68	1.10	0.99	6.46	2.0	-4.46	
2G3	D	147	2.88	2.88	0.50	1.44	1.44	0.50	115	480	0	11.56	2.80	2.32	4.03	3.35	10	RCP	0.015	0.55	25	6.13	2G3	3.35	0.21	0.0309	0.77	0.05	0.03	7.27	2.5	-4.77	
2H1	D	121		1.46			0.73	0.50	0	0	125	9.58	3.00	2.49	2.19	1.82								2H1	1.82						-0.20	n/a	n/a
2H2	D	122	0.86	1.46	0.50	0.43	0.73	0.50	70	300	0	9.06	3.05	2.53	2.23	1.85	10	RCP	0.015	0.55	125	3.39	2H2	1.85	0.21	0.0094	1.18	1.10	0.20	1.17	2.0	0.83	
2H3	D	123	0.59	0.59	0.50	0.30	0.30	0.50	40	250	0	7.97	3.30	2.74	0.98	0.81	10	RCP	0.015	0.55	30	1.49	2H3	0.81	0.21	0.0018	0.05	0.05	0.00	1.23	2.0	0.77	
2J1	D	148		1.23			0.61	0.50	0	0	120	9.17	3.05	2.53	1.87	1.55								2J1	1.55						-0.20	n/a	n/a
2J2	D	149	1.23	1.23	0.50	0.61	0.61	0.50	90	200	0	8.67	3.15	2.61	1.93	1.60	10	RCP	0.015	0.55	120	2.94	2J2	1.60	0.21	0.0071	0.85	1.05	0.14	0.79	2.5	1.71	

Notes:  
 1. POC = Point of Concentration  
 2. Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.  
 3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.  
 4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.  
 \*\* Lagoon 2 starting water surface elevation of -0.20 NGVD based on Town of Corte Madera's operating schedule.



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
POC <sup>1</sup>	D	130		3.04	0.10	0.00	2.16	0.71	0	0	60	11.15	2.80	2.32	6.04	5.01								3A1	5.01						3.20	n/a	n/a
3A1	D	131	0.52	3.04	0.10	0.05	2.16	0.71	0	0	100	10.90	2.85	2.37	6.15	5.10	18	CMP	0.024	1.77	60	2.89		3A2	5.10	0.38	0.0080	0.48	0.05	0.01	3.69	n/a	n/a
3A2	D	132	0.00	2.52	0.10	0.00	2.11	0.83	0	0	35	10.48	2.90	2.41	6.11	5.07		OC			100			3A3	5.07						3.69	n/a	n/a
3A3	D	133	0.25	0.25	0.70	0.17	0.17	0.70	240	0	0	10.33	2.90	2.41	0.50	0.41	12	CMP	0.024	0.79	35	0.53		3A4	0.41	0.25	0.0005	0.02	0.05	0.00	3.70	5.00	1.30
3A4	D	132		2.28	0.10	0.00	1.93	0.85	0	0	310	10.25	2.90	2.41	5.61	4.65								3A3	4.65						3.69	n/a	n/a
3A5	D	134	0.00	2.28	0.10	0.00	1.93	0.85	0	0	30	6.52	3.60	2.99	6.96	5.78		OC			310			3A5	5.78					0.00	3.69	n/a	n/a
3A6	D	135	0.09	0.29	0.70	0.06	0.21	0.70	0	0	55	6.40	3.60	2.99	0.74	0.61	12	CMP	0.024	0.79	30	0.78		3A6	0.61	0.25	0.0010	0.03	0.10	0.00	3.72	4.00	0.28
3A7	D	136	0.21	0.21	0.70	0.15	0.15	0.70	30	60	0	6.17	3.70	3.07	0.54	0.45	12	CMP	0.024	0.79	55	0.57		3A7	0.45	0.25	0.0005	0.03	0.05	0.00	3.75	6.50	2.75
3A8	D	137	0.00	1.98	0.10	0.00	1.73	0.87	0	0	125	8.96	3.10	2.57	5.35	4.44								3A5	4.44						3.69	n/a	n/a
3A9	D	138	0.10	0.47	0.70	0.07	0.36	0.77	0	0	115	7.48	3.40	2.82	1.23	1.02	12	CMP	0.024	0.79	30	1.30		3A8	4.73					0.00	3.69	n/a	n/a
3A10	D	139	0.20	0.20	0.70	0.14	0.14	0.70	90	0	0	7.00	3.50	2.91	0.49	0.41	12	RCP	0.015	0.79	115	0.52		3A9	1.02	0.25	0.0028	0.08	0.90	0.02	3.79	6.00	2.21
3A11	D	138A	0.17	0.17	0.70	0.15	0.15	0.90	0	0	60	6.90	3.50	2.91	0.54	0.45	12	RCP	0.015	0.79	60	0.57		3A10	0.41	0.25	0.0002	0.02	0.05	0.00	3.81	8.00	4.19
3A12	D	141	0.04	1.52	0.10	0.00	1.37	0.90	0	0	30	8.44	3.15	2.61	4.30	3.57								3A9	0.45						3.79	6.00	2.21
3A13	D	142	0.20	1.48	0.90	0.18	1.33	0.90	0	0	45	8.10	3.20	2.66	4.27	3.54	18	RCP	0.015	1.77	50	2.00		3A11	0.45	0.25	0.0002	0.01	0.05	0.00	3.81	6.00	2.19
3A14	D	144	1.29	1.29	0.90	1.16	1.16	0.90	0	350	0	7.92	3.30	2.74	3.82	3.17	18	CMP	0.024	1.77	45	1.79		3A8	3.57						3.69	n/a	n/a
3B1	D	155		4.95	0.70	0.00	3.47	0.70	0	0	100	8.96	3.10	2.57	10.74	8.92								3A8	3.57						3.69	n/a	n/a
3B2	D	156	0.19	4.95	0.70	0.14	3.47	0.70	0	0	60	8.54	3.15	2.61	10.92	9.06	21	CMP	0.024	2.41	100	3.77		3A12	3.63	0.50	0.0003	0.01	0.10	0.00	3.70	5.50	1.80
3B3	D	157	0.64	4.76	0.70	0.45	3.33	0.70	0	0	140	8.29	3.20	2.66	10.66	8.84	18	RCP	0.015	1.77	60	5.01		3A13	3.54	0.38	0.0015	0.08	0.10	0.01	3.78	5.50	1.72
3B4	D	158	0.51	1.71	0.70	0.36	1.19	0.70	0	0	105	7.08	3.40	2.82	4.06	3.37	15	RCP	0.015	1.23	195	2.75		3A14	3.17	0.38	0.0031	0.14	1.05	0.05	3.97	6.00	2.03
3B5	D	160	0.72	1.20	0.70	0.50	0.84	0.70	0	0	195	6.65	3.50	2.91	2.93	2.43	12	RCP	0.015	0.79	105	3.10		3B1	8.92						3.25	n/a	n/a
3B6	D	164	0.48	0.48	0.70	0.34	0.34	0.70	0	100	0	5.83	3.70	3.07	1.25	1.04	12	RCP	0.015	0.79	195	1.32		3B2	9.06	0.44	0.0111	1.11	0.40	0.09	4.45	6.00	1.55
3B7	D	166	0.36	0.36	0.70	0.25	0.25	0.70	0	50	0	5.42	3.90	3.24	0.99	0.82	12	RCP	0.015	0.79	180	1.04		3B3	0.78						5.59	6.50	0.91
3B8	D	167	0.71	2.05	0.70	0.50	1.43	0.70	0	0	140	8.29	3.20	2.66	4.58	3.81								3B3	3.81						5.59	6.50	0.91
3B9	D	170	0.52	1.34	0.70	0.36	0.94	0.70	0	0	175	6.90	3.50	2.91	3.28	2.72	12	RCP	0.015	0.79	195	3.47		3B4	3.37	0.31	0.0036	0.70	1.00	0.12	6.41	7.00	0.59
3B10	D	172	0.82	0.82	0.70	0.58	0.58	0.70	0	105	70	6.17	3.70	3.07	2.13	1.77	12	RCP	0.015	0.79	175	2.25		3B5	2.43	0.25	0.0062	0.65	1.50	0.22	7.29	7.00	-0.29
3C1	G	34		384.21	0.10	0.00	166.30	0.43	0	0	55	91.68	1.10	0.91	182.93	151.83								3B6	1.04	0.25	0.0011	0.22	0.45	0.01	7.52	8.50	0.98
3C2	G	35	2.30	384.21	0.10	0.23	166.30	0.43	0	0	710	91.45	1.10	0.91	182.93	151.83	8X7	RCBC	0.015	56.00	55	2.71		3B7	0.82	0.25	0.0007	0.13	0.95	0.02	5.73	8.50	2.77
3D1	G	89		381.91	0.10	0.00	166.07	0.43	0	0	60	88.49	1.10	0.91	182.68	151.62								3B8	3.92	0.31	0.0049	0.68	1.00	0.16	6.44	6.50	0.06
3D2	G	93	2.98	381.91	0.10	0.30	166.07	0.43	0	0	1350	88.24	1.10	0.91	182.68	151.62	96	RCP	0.015	50.27	60	3.02		3B9	2.72	0.25	0.0077	1.51	1.00	0.19	8.13	6.50	-1.63
3D2B	G	102	4.30	4.30	0.50	2.15	2.15	0.50	0	1465	0	17.21	2.30	1.91	4.95	4.10	15	CMP	0.024	1.23	35	3.34		3B10	1.77	0.25	0.0033	0.57	1.40	0.11	8.81	8.50	-0.31
3E1	G	91	0.77	12.74	0.50	0.39	6.37	0.50	0	0	120	18.74	2.25	1.87	14.34	11.90								3B8	3.92	0.31	0.0049	0.68	1.00	0.16	6.44	6.50	0.06
3E2	G	95	2.35	11.97	0.50	1.17	5.99	0.50	0	0	280	18.24	2.25	1.87	13.47	11.18	18	RCP	0.015	1.77	120	6.33		3B9	2.72	0.25	0.0077	1.51	1.00	0.19	8.13	6.50	-1.63
3E3	G	97	9.62	9.62	0.50	4.81	4.81	0.50	350	500	30	17.07	2.30	1.91	11.07	9.19	18	RCP	0.015	1.77	280	5.20		3B10	1.77	0.25	0.0033	0.57	1.40	0.11	8.81	8.50	-0.31
3G1	G	172		2.41	0.50	0.00	1.27	0.53	0	0	80	13.76	2.60	2.16	3.29	2.73								3B6	1.04	0.25	0.0011	0.22	0.45	0.01	7.52	8.50	0.98
3G2	G	173	0.15	2.41	0.90	0.14	1.27	0.53	0	0	30	13.43	2.60	2.16	3.29	2.73	12	RCP	0.015	0.79	80	3.48		3G1	2.73						3.70	n/a	n/a
3G3	J	8	2.25	2.25	0.50	1.13	1.13	0.50	250	330	0	13.31	2.60	2.16	2.93	2.43	12	RCP	0.015	0.79	30	3.10		3G2	2.73	0.25	0.0078	0.62	0.10	0.02	4.34	9.50	5.16
																								3G3	2.43	0.25	0.0062	0.18	0.05	0.01	4.53	9.50	4.97

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
3J1	F	9		161.55	0.50	0.00	68.09	0.42	0	0	190	51.91	1.40	1.16	95.33	79.12							3J1	79.12						3.75	n/a	n/a	
3J2	F	56	0.00	161.55	0.50	0.00	68.09	0.42	0	0	590	51.12	1.40	1.16	95.33	79.12	48	RCP	0.015	12.57	190	6.30	3J2	79.12	1.00	0.0040	0.76	0.10	0.06	4.57	4.50	-0.07	
3J3	J	78	0.07	161.55	0.50	0.03	68.09	0.42	0	0	345	48.66	1.45	1.20	98.73	81.95	48	RCP	0.015	12.57	590	6.52	3J3	81.95	1.00	0.0043	2.54	0.60	0.40	7.51	8.50	0.99	
3J4	J	82	0.27	161.48	0.50	0.13	68.06	0.42	0	0	365	47.22	1.45	1.20	98.68	81.90	4X2	RCBC	0.015	8.00	345	10.24	3J4	81.90	0.67	0.0182	6.29	1.00	1.63	15.43	13.50	-1.93	
3J5	J	85	0.00	156.21	0.50	0.00	65.42	0.42	0	0	110	45.70	1.50	1.25	98.13	81.44	42	RCP	0.015	9.62	365	8.47	3J5	81.44	0.88	0.0087	3.17	0.90	1.00	19.60	23.50	3.90	
3J6	J	86	2.30	156.21	0.50	1.15	65.42	0.42	0	0	295	45.24	1.50	1.25	98.13	81.44	36	RCP	0.015	7.07	110	11.52	3J6	81.44	0.75	0.0197	2.17	1.50	3.09	24.87	20.50	-4.37	
3J7	J	110	4.26	50.48	0.50	2.13	21.92	0.43	0	0	150	44.01	1.50	1.25	32.88	27.29	18	RCP	0.015	1.77	295	15.44	3J7	27.29	0.38	0.0894	26.37	1.00	3.70	54.94	34.50	-20.44	
3J8	J	114	0.25	46.22	0.50	0.12	19.79	0.43	0	0	40	43.39	1.50	1.25	29.68	24.64	18	RCP	0.015	1.77	150	13.94	3J8	24.64	0.38	0.0729	10.93	0.20	0.60	66.47	42.50	-23.97	
3J9	J	115	0.00	45.97	0.50	0.00	19.67	0.43	0	0	25	43.22	1.50	1.25	29.50	24.48	24	RCP	0.015	3.14	40	7.79	3J9	24.48	0.50	0.0155	0.62	0.05	0.05	67.14	50.00	-17.14	
3J10	J	116	0.00	45.97	0.50	0.00	19.67	0.43	0	0	60	43.12	1.50	1.25	29.50	24.48		OC			25		3J10	24.48					0.00	67.14	55.00	-12.14	
3J11	J	117	0.59	45.97	0.50	0.30	19.67	0.43	0	0	155	42.87	1.55	1.29	30.48	25.30	24	RCP	0.015	3.14	60	8.05	3J11	25.30	0.50	0.0166	0.99	1.00	1.01	69.14	56.00	-13.14	
3J12	J	120	2.16	44.65	0.50	1.08	19.00	0.43	0	0	155	42.22	1.55	1.29	29.46	24.45	18	PVC	0.009	1.77	155	13.84	3J12	24.45	0.38	0.0258	4.00	1.00	2.97	76.12	64.00	-12.12	
3J13	J	122	1.00	42.49	0.50	0.50	17.92	0.42	0	0	115	41.58	1.55	1.29	27.78	23.06	15	PVC	0.009	1.23	155	18.79	3J13	23.06	0.31	0.0607	9.41	2.30	12.61	98.14	74.00	-24.14	
3J14	J	124	4.32	7.42	0.50	2.16	3.71	0.50	0	0	135	25.13	1.95	1.62	7.24	6.01	12	CMP	0.024	0.79	125	7.65	3J14	6.01	0.25	0.0963	12.04	1.30	1.18	111.36	81.50	-29.86	
3J15	J	125	3.11	3.11	0.50	1.55	1.55	0.50	630	650	35	24.56	2.00	1.66	3.11	2.58	8	VCP	0.015	0.35	135	7.39	3J15	2.58	0.17	0.0603	8.14	0.50	0.42	119.93	106.00	-13.93	
3J4	J	82		5.01	0.50	0.00	2.51	0.50	0	0	0	15.83	2.40	1.99	6.01	4.99							3J4	4.99						15.43	13.50	-1.93	
3J21	K	136	5.01	5.01	0.50	2.51	2.51	0.50	300	380	240	15.83	2.40	1.99	6.01	4.99	18	RCP	0.015	1.77	240	2.82	3J21	4.99	0.38	0.0030	0.72	0.90	0.11	16.26	10.50	-5.76	
3J6	J	86		103.42	0.50	0.00	42.34	0.41	0	0	30	41.12	1.55	1.29	65.63	54.48							3J6	54.48						24.87	20.50	-4.37	
3J31	J	89	1.72	103.42	0.50	0.86	42.34	0.41	0	0	145	40.99	1.55	1.29	65.63	54.48	36	PVC	0.009	7.07	30	7.71	3J31	54.48	0.75	0.0032	0.10	0.20	0.18	25.15	25.00	-0.15	
3J32	J	90	1.02	101.71	0.50	0.51	41.49	0.41	0	0	90	40.39	1.55	1.29	64.30	53.37	36	RCP	0.015	7.07	145	7.55	3J32	53.37	0.75	0.0085	1.23	0.05	0.04	26.42	36.00	9.58	
3J33	J	91	0.00	100.68	0.50	0.00	40.98	0.41	0	0	160	40.01	1.55	1.29	63.51	52.71		OC			90		3J33	52.71					0.00	26.42	32.50	6.08	
3J34	J	92	5.11	100.68	0.50	2.56	40.98	0.41	0	0	135	39.35	1.60	1.33	65.56	54.42	42	RCP	0.015	9.62	160	5.66	3J34	54.42	0.88	0.0039	0.62	0.05	0.02	27.07	39.00	11.93	
3J35	J	93	0.00	95.57	0.50	0.00	38.42	0.40	0	0	280	38.78	1.60	1.33	61.47	51.02		OC			135		3J35	51.02					0.00	27.07	41.00	13.93	
3J36	N	5	1.91	95.57	0.50	0.96	38.42	0.40	0	0	145	37.62	1.60	1.33	61.47	51.02	48	RCP	0.015	12.57	280	4.06	3J36	51.02	1.00	0.0017	0.47	1.10	0.28	27.81	56.00	28.19	
3J37	N	7	93.66	93.66	0.40	37.46	37.46	0.40	1300	0	750	37.01	1.60	1.33	59.94	49.75	36	RCP	0.015	7.07	145	7.04	3J37	49.75	0.75	0.0074	1.07	0.45	0.35	29.23	67.00	37.77	
3J11	J	117		0.73	0.50	0.00	0.37	0.50	0	0	195	10.99	2.85	2.37	1.04	0.87							3J11	0.87						69.14	56.00	-13.14	
3J41	J	118	0.73	0.73	0.50	0.37	0.37	0.50	145	235	0	10.18	2.95	2.45	1.08	0.90	12	CMP	0.024	0.79	195	1.14	3J41	0.90	0.25	0.0022	0.42	0.45	0.01	69.57	71.00	1.43	
3J13	J	122		34.06	0.50	0.00	13.71	0.40	0	0	115	41.58	1.55	1.29	21.25	17.64							3J13	17.64						98.14	74.50	-23.64	
3J51	J	130	0.86	34.06	0.50	0.43	13.71	0.40	0	0	90	41.10	1.55	1.29	21.25	17.64	15	PVC	0.009	1.23	115	14.37	3J51	17.64	0.31	0.0355	4.09	0.40	1.28	103.51	80.00	-23.51	
3J52	J	131	33.20	33.20	0.40	13.28	13.28	0.40	1420	0	1000	40.72	1.55	1.29	20.59	17.09	15	RCP	0.015	1.23	90	13.92	3J52	17.09	0.31	0.0926	8.34	1.00	3.01	114.86	80.50	-34.36	
3K1	F	9		27.33	0.70	0.00	16.39	0.60	0	0	225	24.54	2.00	1.66	32.77	27.20							3K1	27.20						3.75	n/a	n/a	
3K2	J	39	1.52	27.33	0.70	1.06	16.39	0.60	0	0	100	23.60	2.00	1.66	32.77	27.20	48	RCP	0.015	12.57	225	2.16	3K2	27.20	1.00	0.0005	0.11	1.00	0.07	3.93	5.50	1.57	
3K3	J	41	0.00	23.53	0.70	0.00	13.73	0.58	0	0	230	23.19	2.05	1.70	28.14	23.35	36	RCP	0.015	7.07	100	3.30	3K3	23.35	0.75	0.0016	0.16	1.00	0.17	4.26	5.50	1.24	
3K4	J	42	0.53	22.47	0.70	0.37	12.98	0.58	0	0	260	22.23	2.05	1.70	26.62	22.09	36	RCP	0.015	7.07	230	3.13	3K4	22.09	0.75	0.0015	0.33	1.50	0.23	4.82	5.50	0.68	
3K5	J	62	1.22	21.94	0.70	0.85	12.61	0.57	0	0	35	21.15	2.10	1.74	26.49	21.99	36	RCP	0.015	7.07	260	3.11	3K5	10.99	0.75	0.0014	0.37	1.00	0.15	5.35	8.50	3.15	
3K6	J	69	3.89	17.67	0.50	1.94	9.62	0.54	0	0	430	21.00	2.15	1.78	20.68	17.16	36	RCP	0.015	7.07	260	1.56		10.99									
3K7	J	72	1.50	7.16	0.50	0.75	3.58	0.50	0	0	230	19.21	2.20	1.83	7.87	6.53	30	CMP	0.024	4.91	35	3.50	3K6	17.16	0.63	0.0059	0.21	1.00	0.19	5.75	9.00	3.25	
3K8	J	74	5.66	5.66	0.50	2.83	2.83	0.50	360	630	0	18.25	2.25	1.87	6.36	5.28	12	RCP	0.015	0.79	230	6.73	3K7	6.53	0.63	0.0009	0.37	0.50	0.01	6.13	15.50	9.37	
3K2	J	39		2.28	0.70	0.00	1.60	0.70	0	0	95	9.04	3.05	2.53	4.87	4.04							3K2	4.04						3.93	5.50	1.57	
3K11	J	40	2.28	2.28	0.70	1.60	1.60	0.70	0	300	275	8.65	3.15	2.61	5.03	4.17	21	RCP	0.015	2.41	95	1.74	3K11	4.17	0.44	0.0009	0.09	0.40	0.02	4.04	7.50	3.46	
3K3	J	41		1.06	0.70	0.00	0.74	0.70	0	0	125	8.40	3.20	2.66	2.37	1.97							3K3	1.97						4.26	5.50	1.24	
3K21	J	44	0.00	1.06	0.70	0.00	0.74	0.70	0	0	130	7.88	3.30	2.74	2.45	2.03	12	CMP	0.024	0.79	125	2.59	3K21	2.03	0.25	0.0110	1.38	1.10	0.11	5.75	8.00	2.25	
3K22	J	46	1.06	1.06	0.70	0.74	0.74	0.70	0	280	0	7.33	3.40																				



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
3L1	F	10		183.34	0.50	0.00	77.88	0.42	0	0	395	82.62	1.10	0.91	85.67	71.11								3L1	71.11						3.75	n/a	n/a
3L2	F	13	6.75	183.34	0.50	3.37	77.88	0.42	0	0	220	80.97	1.15	0.95	89.57	74.34	36	RCP	0.015	7.07	395	10.52	3L2	74.34	0.75	0.0165	6.50	1.00	1.72	11.97	8.00	-3.97	
3L3	F	16	0.00	176.59	0.50	0.00	74.51	0.42	0	0	25	80.06	1.15	0.95	85.69	71.12	5X2	RCBC	0.015	10.00	220	7.11	3L3	71.12	0.71	0.0080	1.77	0.60	0.47	14.20	12.50	-1.70	
3L4	F	56	0.00	59.72	0.50	0.00	26.43	0.44	0	0	315	46.14	1.45	1.20	38.33	31.81	3X2	RCBC	0.015	6.00	100	5.30	3L4	31.81	0.60	0.0056	0.56	0.10	0.04	14.81	14.00	-0.81	
3L5	F	58	1.70	59.72	0.50	0.85	26.43	0.44	0	0	215	44.83	1.50	1.25	39.65	32.91	30	PVC	0.009	4.91	315	6.70	3L5	32.91	0.63	0.0031	0.97	0.90	0.63	16.40	29.50	13.10	
3L6	J	232	0.38	58.02	0.50	0.19	25.58	0.44	0	0	165	43.93	1.50	1.25	38.37	31.85	30	PVC	0.009	4.91	215	6.49	3L6	31.85	0.63	0.0029	0.62	0.10	0.07	17.09	40.00	22.91	
3L7	J	10	0.93	57.64	0.50	0.47	25.39	0.44	0	0	215	43.24	1.50	1.25	38.08	31.61	24	RCP	0.015	3.14	165	10.06	3L7	31.61	0.50	0.0259	4.27	1.40	2.20	23.55	52.00	28.45	
3L8	J	13	3.50	56.70	0.50	1.75	24.92	0.44	0	0	85	42.35	1.55	1.29	38.63	32.06	24	RCP	0.015	3.14	215	10.21	3L8	32.06	0.50	0.0266	5.72	1.60	2.59	31.86	69.50	37.64	
3L9	J	14	1.46	51.40	0.50	0.73	22.27	0.43	0	0	290	41.99	1.55	1.29	34.52	28.65	21	PVC	0.009	2.41	85	11.91	3L9	28.65	0.44	0.0156	1.33	1.50	3.31	36.49	69.50	33.01	
3L10	J	18	0.27	49.94	0.50	0.13	21.54	0.43	0	0	335	40.78	1.55	1.29	33.39	27.71	21	PVC	0.009	2.41	290	11.52	3L10	27.71	0.44	0.0146	4.23	3.00	6.18	46.90	93.00	46.10	
3L11	J	23	1.52	41.41	0.50	0.76	17.28	0.42	0	0	120	39.39	1.60	1.33	27.64	22.94	21	PVC	0.009	2.41	335	9.54	3L11	22.94	0.44	0.0100	3.35	1.90	2.68	52.93	117.50	64.57	
3L12	J	26	5.36	18.07	0.50	2.68	7.79	0.43	0	0	100	36.72	1.65	1.37	12.85	10.66	21	PVC	0.009	2.41	100	4.43	3L12	10.66	0.44	0.0022	0.22	1.00	0.31	53.46	121.00	67.54	
3L13	J	29	0.00	12.47	0.50	0.00	4.99	0.40	0	0	15	36.30	1.65	1.37	8.23	6.83	12	CMP	0.024	0.79	100	8.70	3L13	6.83	0.25	0.1246	12.46	0.05	0.06	65.98	130.00	64.02	
3L14	J	30	0.00	12.47	0.50	0.00	4.99	0.40	0	0	35	36.24	1.65	1.37	8.23	6.83		OC			15		3L14	6.83					0.00	65.98	131.50	65.52	
3L15	J	30A	0.00	12.47	0.50	0.00	4.99	0.40	0	0	60	36.09	1.65	1.37	8.23	6.83	18	RCP	0.015	1.77	35	3.87	3L15	6.83	0.38	0.0056	0.20	0.05	0.01	66.19	140.00	73.81	
3L16	J	31	0.00	12.47	0.50	0.00	4.99	0.40	0	0	100	35.84	1.65	1.37	8.23	6.83		OC			60		3L16	6.83					0.00	66.19	151.00	84.81	
3L17	J	32	0.00	12.47	0.40	0.00	4.99	0.40	0	0	35	35.42	1.65	1.37	8.23	6.83	15	RCP	0.015	1.23	100	5.57	3L17	4.17	0.31	0.0148	1.48	0.40	0.19	67.86	170.50	102.64	
3L18	J	33	12.47	12.47	0.40	4.99	4.99	0.40	1100	700	0	35.28	1.65	1.37	8.23	6.83	12	RCP	0.015	0.79	100	3.39		2.67									
																	18	CMP	0.024	1.77	35	3.87	3L18	6.83	0.38	0.0143	0.50	0.05	0.01	68.37	170.50	102.13	
3L3	F	16		116.87	0.50	0.00	48.08	0.41	0	0	25	80.06	1.15	0.95	55.29	45.89								3L3	45.89						14.20	12.50	-1.70
3L31	F	33,25	0.00	116.87	0.50	0.00	48.08	0.41	0	0	95	79.95	1.15	0.95	55.29	45.89	3X2	RCBC	0.015	6.00	25	7.65	3L31	45.89	0.60	0.0117	0.29	1.00	0.91	15.40	13.00	-2.40	
3L32	F	34	1.86	83.30	0.50	0.93	31.29	0.38	0	0	130	79.56	1.15	0.95	35.99	29.87	3X2	RCBC	0.015	6.00	95	4.98	3L32	29.87	0.60	0.0050	0.47	0.50	0.19	16.07	15.00	-1.07	
3L33	F		0.00	81.44	0.50	0.00	30.36	0.37	0	0	345	79.01	1.15	0.95	34.92	28.98	3X2	RCBC	0.015	6.00	130	4.83	3L33	28.98	0.60	0.0047	0.61	0.10	0.04	16.71	20.00	3.29	
3L34	F	37	7.69	81.44	0.50	3.84	30.36	0.37	0	0	210	77.58	1.15	0.95	34.92	28.98	27	RCP	0.015	3.98	345	7.29	3L34	28.98	0.56	0.0116	4.00	0.90	0.74	21.46	25.50	4.04	
3L35	F	43	14.23	73.75	0.50	7.11	26.52	0.36	0	0	60	76.70	1.15	0.95	30.50	25.31	24	CMP	0.024	3.14	210	8.06	3L35	25.31	0.50	0.0424	8.91	0.15	0.15	30.52	37.00	6.48	
3L36	F	44	0.00	59.53	0.50	0.00	19.41	0.33	0	0	60	76.45	1.15	0.95	22.32	18.52		OC			60		3L36	18.52					0.00	30.52	39.00	8.48	
3L37	F	45	0.00	59.53	0.50	0.00	19.41	0.33	0	0	10	76.20	1.15	0.95	22.32	18.52	24	RCP	0.015	3.14	60	5.90	3L37	18.52	0.50	0.0089	0.53	0.05	0.03	31.08	46.50	15.42	
3L38	F	46	0.00	59.53	0.50	0.00	19.41	0.33	0	0	380	76.16	1.15	0.95	22.32	18.52		OC			10		3L38	18.52					0.00	31.08	46.50	15.42	
3L39	F	49	0.82	59.53	0.50	0.41	19.41	0.33	0	0	40	74.58	1.20	1.00	23.29	19.33	24	RCP	0.015	3.14	380	6.15	3L39	19.33	0.50	0.0097	3.67	2.40	1.41	36.16	65.50	29.34	
3L40	F	59	0.00	58.70	0.50	0.00	19.00	0.32	0	0	15	74.41	1.20	1.00	22.79	18.92	24	RCP	0.015	3.14	40	6.02	3L40	18.92	0.50	0.0093	0.37	2.30	1.30	37.83	67.00	29.17	
3L41	J	231	1.69	1.69	0.50	0.84	0.84	0.50	300	350	0	14.58	2.50	2.08	2.11	1.75	15	RCP	0.015	1.23	440	1.43	3L41	1.75	0.31	0.0010	0.43	1.40	0.04	38.30	68.50	30.20	
3L31	F	16		3.20	0.50	0.00	1.60	0.50	0	0	15	20.99	2.15	1.78	3.44	2.85								3L31	2.85						15.40	13.00	-2.40
3L31A	F	25	3.20	3.20	0.50	1.60	1.60	0.50	400	845	0	20.93	2.15	1.78	3.44	2.85	12	CMP	0.024	0.79	15	3.63	3L31A	2.85	0.25	0.0217	0.33	0.00	0.00	15.73	13.00	-2.73	
3L31	F	16		5.89	0.50	0.00	2.94	0.50	0	0	15	17.77	2.30	1.91	6.77	5.62								3L31	5.62						15.40	13.00	-2.40
3L31B	F	33	5.89	5.89	0.50	2.94	2.94	0.50	450	325	0	17.71	2.30	1.91	6.77	5.62	12	CMP	0.024	0.79	15	7.15	3L31B	5.62	0.25	0.0843	1.26	0.00	0.00	16.67	13.00	-3.67	
3L8	J	13		1.80	0.50	0.00	0.90	0.50	0	0	120	14.69	2.50	2.08	2.25	1.87								3L8	1.87						31.86	69.50	37.64
3L51	J	34	0.40	1.80	0.50	0.20	0.90	0.50	0	0	65	14.19	2.55	2.12	2.30	1.91	2X2	RCBC	0.015	4.00	120	0.48	3L51	1.91	0.50	0.0001	0.01	0.15	0.00	31.87	74.50	42.63	
3L52	J	35	0.35	1.40	0.50	0.18	0.70	0.50	0	0	115	13.92	2.55	2.12	1.78	1.48	12	PVC	0.009	0													

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
4B1	E	57	0.00	0.60	0.00	0.00	0.54	0.90	0	0	150	7.79	3.30	2.74	1.77	1.47	12	PVC	0.009	0.79	150	1.93	4B1	1.47	0.25	0.0009	0.13	1.05	0.06	-2.00	0.00	2.00
4B2	D	118	0.60	0.60	0.90	0.54	0.54	0.90	0	260	0	7.17	3.40	2.82	1.82	1.51	12	PVC	0.009	0.79	150	1.93	4B2	1.51	0.25	0.0009	0.13	1.05	0.06	-1.81	9.00	10.81
4C1	E	58	0.00	2.49	0.00	0.00	2.00	0.80	0	0	100	10.42	2.90	2.41	5.79	4.80	18	RCP	0.015	1.77	100	2.77	4C1	4.80	0.38	0.0029	0.29	1.05	0.12	-2.00	0.00	2.00
4C2	D	200	2.49	2.49	0.80	2.00	2.00	0.80	600	0	10.00	2.95	2.45	5.89	4.89	18	RCP	0.015	1.77	100	2.77	4C2	4.89	0.38	0.0029	0.29	1.05	0.12	-1.59	5.50	7.09	
4D1	D	177	0.00	1.16	0.00	0.00	1.04	0.90	0	0	30	11.21	2.80	2.32	2.92	2.42	15	RCP	0.015	1.23	30	2.01	4D1	2.42	0.31	0.0019	0.06	0.10	0.01	4.00	5.00	1.00
4D2	D	178	1.16	1.16	0.90	1.04	1.04	0.90	730	0	11.08	2.85	2.37	2.97	2.47	15	RCP	0.015	1.23	30	2.01	4D2	2.47	0.31	0.0019	0.06	0.10	0.01	4.06	8.00	3.94	
4E1	H	94	0.00	1.90	0.00	0.00	1.71	0.90	0	0	30	16.25	2.40	1.99	4.10	3.40	12	PVC	0.009	0.79	30	4.33	4E1	3.40	0.25	0.0043	0.13	1.10	0.32	-2.00	0.00	2.00
4E2	H	95	0.74	1.90	0.90	0.67	1.71	0.90	0	590	0	16.13	2.40	1.99	4.10	3.40	12	PVC	0.009	0.79	30	4.33	4E2	3.40	0.25	0.0043	0.13	1.10	0.32	-1.55	1.40	2.95
4F1	H	1	0.00	0.39	0.00	0.00	0.35	0.90	0	0	50	6.13	3.70	3.07	1.29	1.07	12	RCP	0.015	0.79	50	1.37	4F1	1.07	0.25	0.0012	0.06	1.10	0.03	-2.00	0.00	2.00
4F2	H	2	0.39	0.39	0.90	0.35	0.35	0.90	0	110	0	5.92	3.70	3.07	1.29	1.07	12	RCP	0.015	0.79	50	1.37	4F2	1.07	0.25	0.0012	0.06	1.10	0.03	-1.91	2.00	3.91
4G1	H	3	0.00	47.58	0.00	0.00	38.06	0.80	0	0	290	28.21	1.85	1.54	70.41	58.44	5X6	RCBC	0.015	30.00	290	2.00	4G1	58.44	1.36	0.0003	0.08	1.45	0.09	-2.00	0.00	2.00
4G2	G	61	47.58	47.58	0.80	38.06	38.06	0.80	0	0	0	27.00	1.90	1.58	72.32	60.02	5X6	RCBC	0.015	30.00	290	2.00	4G2	60.02	1.36	0.0003	0.08	1.45	0.09	-1.83	1.00	2.83
4H1	H	4	0.14	6.40	0.00	0.00	5.64	0.88	0	0	130	12.29	2.70	2.24	15.22	12.63	24	RCP	0.015	3.14	130	4.10	4H1	12.63	0.50	0.0043	0.56	1.15	0.30	-2.00	0.00	2.00
4H2	H	6	0.93	6.26	0.90	0.84	5.64	0.90	0	0	320	11.75	2.75	2.28	15.50	12.87	24	RCP	0.015	3.14	130	4.10	4H2	12.87	0.50	0.0043	0.56	1.15	0.30	-1.14	4.00	5.14
4H3	H	9	1.03	5.33	0.90	0.93	4.80	0.90	0	0	340	10.42	2.90	2.41	13.92	11.56	24	RCP	0.015	3.14	320	3.68	4H3	11.56	0.50	0.0035	1.11	2.60	0.55	0.51	6.00	5.49
4H4	H	16	1.71	3.06	0.90	1.54	2.76	0.90	0	0	430	9.00	3.10	2.57	8.55	7.09	18	RCP	0.015	1.77	340	4.01	4H4	7.09	0.38	0.0060	2.05	0.90	0.23	2.79	5.80	3.01
4H5	H	19	0.73	1.35	0.90	0.66	1.22	0.90	0	0	150	7.21	3.40	2.82	4.14	3.44	15	RCP	0.015	1.23	430	2.80	4H5	3.44	0.31	0.0037	1.61	0.30	0.04	4.43	6.50	2.07
4H6	H	20	0.62	0.62	0.90	0.56	0.56	0.90	0	190	0	6.58	3.60	2.99	2.01	1.67	12	RCP	0.015	0.79	150	2.13	4H6	1.67	0.25	0.0029	0.44	0.10	0.01	4.88	6.00	1.12
4H3	H	9	1.03	2.27	0.90	0.93	2.04	0.90	0	0	60	7.13	3.40	2.82	6.95	5.77	15	RCP	0.015	1.23	60	2.64	4H3	5.77	0.31	0.0033	0.20	0.60	0.06	0.51	6.00	5.49
4H11	H	10	0.54	1.24	0.90	0.49	1.11	0.90	0	0	70	6.88	3.50	2.91	3.90	3.23	15	RCP	0.015	1.23	60	2.64	4H11	3.23	0.31	0.0033	0.20	0.60	0.06	0.77	6.00	5.23
4H12	H	12	0.70	0.70	0.90	0.63	0.63	0.90	0	190	0	6.58	3.60	2.99	2.25	1.87	12	RCP	0.015	0.79	70	2.38	4H12	1.87	0.25	0.0036	0.26	1.10	0.10	1.12	6.00	4.88
4J1	H	21	0.00	0.45	0.00	0.00	0.40	0.90	0	0	80	6.58	3.60	2.99	1.46	1.21	12	RCP	0.015	0.79	80	1.54	4J1	1.21	0.25	0.0015	0.12	1.10	0.04	-2.00	0.00	2.00
4J2	H	22	0.14	0.45	0.90	0.13	0.40	0.90	0	0	60	6.25	3.60	2.99	1.46	1.21	12	RCP	0.015	0.79	80	1.54	4J2	1.21	0.25	0.0015	0.12	1.10	0.04	-1.84	4.00	5.84
4J3	H	23	0.31	0.31	0.90	0.28	0.28	0.90	0	120	0	6.00	3.70	3.07	1.02	0.85	12	RCP	0.015	0.79	60	1.08	4J3	0.85	0.25	0.0008	0.05	0.05	0.00	-1.79	5.20	6.99
4K1	H	24	0.00	3.56	0.00	0.00	3.21	0.90	0	0	200	9.29	3.05	2.53	9.78	8.12	24	RCP	0.015	3.14	200	2.67	4K1	8.12	0.50	0.0018	0.36	1.55	0.17	-2.00	0.00	2.00
4K2	H	26	1.60	3.56	0.90	1.44	3.21	0.90	0	0	190	8.46	3.15	2.61	10.11	8.39	24	RCP	0.015	3.14	200	2.67	4K2	8.39	0.50	0.0018	0.36	1.55	0.17	-1.46	3.50	4.96
4K3	H	29	0.22	1.97	0.90	0.20	1.77	0.90	0	0	140	7.67	3.30	2.74	5.85	4.85	18	RCP	0.015	1.77	190	2.75	4K3	4.85	0.38	0.0028	0.54	1.60	0.19	-0.74	4.00	4.74
4K4	H	30	0.67	1.74	0.90	0.60	1.57	0.90	0	0	80	7.08	3.40	2.82	5.34	4.43	18	RCP	0.015	1.77	140	2.51	4K4	4.43	0.38	0.0024	0.33	1.00	0.10	-0.31	4.00	4.31
4K5	H	31	0.61	1.08	0.90	0.55	0.97	0.90	0	0	60	6.75	3.50	2.91	3.39	2.81	15	RCP	0.015	1.23	80	2.29	4K5	2.81	0.31	0.0025	0.20	0.10	0.01	-0.10	4.00	4.10
4K6	H	32	0.46	0.46	0.90	0.42	0.42	0.90	0	180	0	6.50	3.60	2.99	1.50	1.25	12	RCP	0.015	0.79	60	1.59	4K6	1.25	0.25	0.0016	0.10	1.00	0.04	0.03	3.50	3.47
4L1	H	33	0.00	1.32	0.00	0.00	1.19	0.90	0	0	100	7.83	3.30	2.74	3.91	3.25	18	RCP	0.015	1.77	100	1.89	4L1	3.25	0.38	0.0013	0.13	1.05	0.06	-2.00	0.00	2.00
4L2	H	34	0.57	1.32	0.90	0.51	1.19	0.90	0	290	0	7.42	3.40	2.82	4.03	3.35	18	RCP	0.015	1.77	100	1.89	4L2	3.35	0.38	0.0013	0.13	1.05	0.06	-1.81	3.20	5.01
4L3	H	36	0.22	0.75	0.90	0.20	0.67	0.90	0	0	30	6.38	3.60	2.99	2.42	2.01	15	RCP	0.015	1.23	60	1.64	4L3	2.01	0.31	0.0013	0.08	0.50	0.02	-1.71	3.20	4.91
4L4	H	37	0.53	0.53	0.90	0.48	0.48	0.90	0	150	0	6.25	3.60	2.99	1.72	1.43	12	RCP	0.015	0.79	30	1.82	4L4	1.43	0.25	0.0021	0.06	0.10	0.01	-1.64	3.70	5.34
4M1	H	38	0.00	8.17	0.00	0.00	7.35	0.90	0	0	60	10.17	2.95	2.45	21.69	18.00	24	RCP	0.015	3.14	60	5.73	4M1	18.00	0.50	0.0084	0.50	1.00	0.05	-2.00	0.00	2.00
4M2	H	39	0.35	8.17	0.90	0.32	7.35	0.90	0	0	80	9.92	2.95	2.45	21.69	18.00	24	RCP	0.015	3.14	60	5.73	4M2	18.00	0.50	0.0084	0.50	1.00	0.05	-1.45	3.20	4.65
4M3	H	40	0.58	7.82	0.90	0.52	7.03	0.90	0	0	220	9.58	3.00	2.49	21.10	17.51	24	RCP	0.015	3.14	80	5.58	4M3	17.51	0.50	0.0079	0.64	1.10				



Tributary	Sheet	Old	Trib Area	Cumulative	C	C-Area	Cumulative	Avg C	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe	n	Area	Length	Velocity <sub>25</sub>	Tributary	Q <sub>25</sub>	Hydraulic	Hydraulic	Friction	k	Minor	WS	Rim/Grate	Delta		
		Node	ac	Area, ac	Value	C-Area	C-Area	Value	ft	ft	ft	min	in/hr	in/hr	ft <sup>3</sup> /s	ft <sup>3</sup> /s	in	Material		sf	ft	fps	POC <sup>1</sup>	ft <sup>3</sup> /s	Radius	Slope	Loss		Loss	Elev**	Elev	ft		
POC <sup>1</sup>																																		
4N1	H	52	0.00	2.23	0.00	0.00	2.01	0.90	0	0	60	10.00	2.95	2.45	5.92	4.91							4N1	4.91						-2.00	0.00	2.00		
4N2	H	53	0.28	2.23	0.90	0.26	2.01	0.90	0	0	70	9.75	3.00	2.49	6.02	5.00	18	RCP	0.015	1.77	60	2.83	4N2	5.00	0.38	0.0030	0.18	1.10	0.14	-1.68	4.00	5.68		
4N3	H	55	0.41	1.95	0.90	0.37	1.75	0.90	0	0	190	9.46	3.00	2.49	5.25	4.36	18	RCP	0.015	1.77	70	2.47	4N3	4.36	0.38	0.0023	0.16	0.10	0.01	-1.51	4.00	5.51		
4N4	H	56	0.22	1.54	0.90	0.20	1.38	0.90	0	0	60	8.67	3.15	2.61	4.35	3.61	15	RCP	0.015	1.23	190	2.94	4N4	3.61	0.31	0.0041	0.79	0.20	0.03	-0.70	5.50	6.20		
4N5	H	57	0.88	1.32	0.90	0.79	1.18	0.90	0	0	120	8.42	3.15	2.61	3.73	3.10	15	RCP	0.015	1.23	60	2.52	4N5	3.10	0.31	0.0030	0.18	1.00	0.10	-0.42	5.90	6.32		
4N6	H	59	0.44	0.44	0.90	0.39	0.39	0.90	0	350	0	7.92	3.30	2.74	1.30	1.08	12	RCP	0.015	0.79	120	1.38	4N6	1.08	0.25	0.0012	0.15	1.10	0.03	-0.24	6.20	6.44		
4P1	H	60	0.00	0.43	0.00	0.00	0.38	0.90	0	0	50	6.33	3.60	2.99	1.38	1.14							4P1	1.14						-2.00	0.00	2.00		
4P2	H	61	0.19	0.43	0.90	0.17	0.38	0.90	0	0	80	6.13	3.70	3.07	1.42	1.18	15	RCP	0.015	1.23	50	0.96	4P2	1.18	0.31	0.0004	0.02	1.10	0.02	-1.96	4.30	6.26		
4P3	H	62	0.12	0.24	0.90	0.11	0.21	0.90	0	0	30	5.79	3.80	3.15	0.81	0.67	15	RCP	0.015	1.23	80	0.55	4P3	0.67	0.31	0.0001	0.01	0.10	0.00	-1.95	4.30	6.25		
4P4	H	63	0.12	0.12	0.90	0.11	0.11	0.90	0	80	0	5.67	3.80	3.15	0.41	0.34	12	RCP	0.015	0.79	30	0.43	4P4	0.34	0.25	0.0001	0.00	0.10	0.00	-1.95	5.00	6.95		
4Q1	H	64	0.00	0.67	0.00	0.00	0.61	0.90	0	0	50	6.88	3.50	2.91	2.13	1.76							4Q1	1.76						-2.00	0.00	2.00		
4Q2	H	65	0.15	0.67	0.90	0.14	0.61	0.90	0	0	80	6.67	3.50	2.91	2.13	1.76	12	RCP	0.015	0.79	50	2.25	4Q2	1.76	0.25	0.0032	0.16	1.10	0.09	-1.75	4.00	5.75		
4Q3	H	66	0.23	0.52	0.90	0.20	0.47	0.90	0	0	20	6.33	3.60	2.99	1.69	1.41	12	RCP	0.015	0.79	80	1.79	4Q3	1.41	0.25	0.0021	0.16	0.10	0.00	-1.58	4.00	5.58		
4Q4	H	67	0.29	0.29	0.90	0.27	0.27	0.90	0	150	0	6.25	3.60	2.99	0.96	0.79	12	RCP	0.015	0.79	20	1.01	4Q4	0.79	0.25	0.0007	0.01	0.50	0.01	-1.56	5.00	6.56		
4R1	H	68	0.00	6.03	0.00	0.00	5.43	0.90	0	0	50	12.00	2.75	2.28	14.92	12.39							4R1	12.39						-2.00	0.00	2.00		
4R2	H	69	0.17	6.03	0.90	0.16	5.43	0.90	0	0	80	11.79	2.75	2.28	14.92	12.39	24	RCP	0.015	3.14	50	3.94	4R2	12.39	0.50	0.0040	0.20	1.10	0.27	-1.54	4.00	5.54		
4R3	H	70	0.45	5.86	0.90	0.41	5.27	0.90	0	0	180	11.46	2.80	2.32	14.76	12.25	24	RCP	0.015	3.14	80	3.90	4R3	12.25	0.50	0.0039	0.31	0.10	0.02	-1.20	4.00	5.20		
4R4	H	73	0.79	5.40	0.90	0.71	4.86	0.90	0	0	190	10.71	2.85	2.37	13.86	11.51	24	RCP	0.015	3.14	180	3.66	4R4	11.51	0.50	0.0034	0.62	0.30	0.06	-0.52	4.80	5.32		
4R5	H	76	2.95	2.95	0.90	2.65	2.65	0.90	0	590	0	9.92	2.95	2.45	7.82	6.49	24	RCP	0.015	3.14	190	2.07	4R5	6.49	0.50	0.0011	0.21	1.00	0.07	-0.25	7.50	7.75		
4R4	H	73	0.79	2.46	0.90	0.71	2.21	0.90	0	0	110	8.79	3.10	2.57	6.86	5.70							4R4	5.70						-0.52	4.80	5.32		
4R11	H	74	0.58	1.67	0.90	0.52	1.50	0.90	0	0	20	8.33	3.20	2.66	4.81	3.99	18	RCP	0.015	1.77	110	2.26	4R11	3.99	0.38	0.0019	0.21	1.00	0.08	-0.23	5.80	6.03		
4R12	H	75	1.09	1.09	0.90	0.98	0.98	0.90	0	390	0	8.25	3.20	2.66	3.15	2.61	12	RCP	0.015	0.79	20	3.33	4R12	2.61	0.25	0.0071	0.14	1.00	0.17	0.08	5.80	5.72		
4S1	H	77	0.00	0.62	0.00	0.00	0.56	0.90	0	0	50	6.96	3.50	2.91	1.95	1.62							4S1	1.62						-2.00	0.00	2.00		
4S2	H	78	0.20	0.62	0.90	0.18	0.56	0.90	0	0	80	6.75	3.50	2.91	1.95	1.62	18	RCP	0.015	1.77	50	0.91	4S2	1.62	0.38	0.0003	0.02	1.10	0.01	-1.97	3.80	5.77		
4S3	H	79	0.18	0.42	0.90	0.16	0.38	0.90	0	0	20	6.42	3.60	2.99	1.35	1.12	18	RCP	0.015	1.77	80	0.64	4S3	1.12	0.38	0.0002	0.01	0.10	0.00	-1.96	4.00	5.96		
4S4	H	80	0.24	0.24	0.90	0.21	0.21	0.90	0	160	0	6.33	3.60	2.99	0.77	0.64	12	RCP	0.015	0.79	20	0.82	4S4	0.64	0.25	0.0004	0.01	0.10	0.00	-1.95	4.50	6.45		
4T1	H	81	0.00	5.35	0.00	0.00	4.81	0.90	0	0	70	11.96	2.75	2.28	13.23	10.98							4T1	10.98						-2.00	0.00	2.00		
4T2	H	82	0.21	5.35	0.90	0.19	4.81	0.90	0	0	80	11.67	2.75	2.28	13.23	10.98	24	RCP	0.015	3.14	70	3.50	4T2	10.98	0.50	0.0031	0.22	1.10	0.21	-1.57	3.80	5.37		
4T3	H	83	0.20	5.14	0.90	0.18	4.62	0.90	0	0	20	11.33	2.80	2.32	12.95	10.74	24	RCP	0.015	3.14	80	3.42	4T3	10.74	0.50	0.0030	0.24	0.10	0.02	-1.32	3.80	5.12		
4T4	H	84	0.22	4.94	0.90	0.20	4.44	0.90	0	0	170	11.25	2.80	2.32	12.44	10.33	24	RCP	0.015	3.14	20	3.29	4T4	10.33	0.50	0.0028	0.06	0.60	0.10	-1.16	4.00	5.16		
4T5	L	10	0.11	3.56	0.90	0.10	3.20	0.90	0	0	130	10.54	2.90	2.41	9.29	7.71	24	RCP	0.015	3.14	170	2.45	4T5	7.71	0.50	0.0015	0.26	1.60	0.15	-0.75	4.70	5.45		
4T6	L	12	0.17	2.78	0.90	0.15	2.51	0.90	0	0	80	10.00	2.95	2.45	7.39	6.14	24	RCP	0.015	3.14	130	1.95	4T6	6.14	0.50	0.0010	0.13	0.60	0.04	-0.59	4.20	4.79		
4T7	L	14	0.12	2.62	0.90	0.10	2.36	0.90	0	0	70	9.67	3.00	2.49	7.07	5.86	18	RCP	0.015	1.77	80	3.32	4T7	5.86	0.38	0.0041	0.33	0.60	0.10	-0.15	4.20	4.35		
4T8	L	16	0.70	1.96	0.90	0.63	1.76	0.90	0	0	320	9.38	3.00	2.49	5.28	4.38	18	RCP	0.015	1.77	70	2.48	4T8	4.38	0.38	0.0023	0.16	0.60	0.06	0.06	4.50	4.44		
4T9	L	19	0.35	1.25	0.90	0.31	1.13	0.90	0	0	130	8.04	3.20	2.66	3.61	2.99	15	RCP	0.015	1.23	320	2.44	4T9	2.99	0.31	0.0028	0.91	0.70	0.06	1.04	6.50	5.46		
4T10	H	88	0.46	0.90	0.90	0.41	0.81	0.90	0	0	180	7.50	3.40	2.82	2.77	2.30	12	RCP	0.015	0.79	130	2.92	4T10	2.30	0.25	0.0055	0.72	0.20	0.03	1.78	6.00	4.22		
4T11	H	90	0.45	0.45	0.90	0.40	0.40	0.90	0	210	0	6.75	3.50	2.91	1.41	1.17	12	RCP	0.015	0.79	180	1.49	4T11	1.17	0.25	0.0014	0.							



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area Value	Cumulative C-Area Value	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
POC <sup>1</sup> 4U6	L	68		4.65	0.90	0.00	4.18	0.90	0	0	525	11.31	2.80	2.32	11.72	9.72							4U6 4U6	9.72						-0.62	1.50	2.12	
4U41	L	72	0.82	4.65	0.90	0.73	4.18	0.90	0	0	115	9.13	3.05	2.53	12.76	10.59	24	RCP	0.015	3.14	525	3.37	4U41	10.59	0.50	0.0029	1.52	1.40	0.25	1.15	1.50	0.35	
4U42	L	74	0.30	2.01	0.90	0.27	1.81	0.90	0	0	115	8.65	3.15	2.61	5.70	4.73	12	RCP	0.015	0.79	115	6.02	4U42	4.73	0.25	0.0233	2.68	1.40	0.79	4.62	1.50	-3.12	
4U43	L	76	0.85	1.25	0.90	0.77	1.12	0.90	0	380	0	8.17	3.20	2.66	3.59	2.98	12	RCP	0.015	0.79	115	3.80	4U43	2.98	0.25	0.0093	1.07	1.80	0.40	6.09	1.50	-4.59	
4U44	L	77	0.39	0.39	0.90	0.36	0.36	0.90	0	150	0	6.25	3.60	2.99	1.28	1.06	12	RCP	0.015	0.79	90	1.35	4U44	1.06	0.25	0.0012	0.11	1.00	0.03	6.22	2.00	-4.22	
4U41	L	72		1.82	0.90	0.00	1.64	0.90	0	0	195	8.98	3.10	2.57	5.08	4.22							4U41	4.22						1.15	1.50	0.35	
4U51	L	73	1.82	1.82	0.90	1.64	1.64	0.90	0	380	0	8.17	3.20	2.66	5.25	4.36	12	RCP	0.015	0.79	195	5.55	4U51	4.36	0.25	0.0198	3.86	1.00	0.48	5.48	1.50	-3.98	
4U42	L	74		0.46	0.90	0.00	0.42	0.90	0	0	80	6.71	3.50	2.91	1.46	1.21							4U42	1.21						4.62	1.50	-3.12	
4U61	L	79	0.28	0.46	0.90	0.25	0.42	0.90	0	0	120	6.38	3.60	2.99	1.50	1.24	10	RCP	0.015	0.55	80	2.28	4U61	1.24	0.21	0.0043	0.34	1.00	0.08	5.04	3.00	-2.04	
4U62	L	81	0.19	0.19	0.90	0.17	0.17	0.90	0	105	0	5.88	3.70	3.07	0.62	0.52	10	RCP	0.015	0.55	120	0.94	4U62	0.52	0.21	0.0007	0.09	1.40	0.02	5.15	2.50	-2.65	
4V1	L	39		97.25	0.50	0.00	50.23	0.52	0	0	235	47.95	1.45	1.20	72.83	60.45							4V1	60.45						-0.81	2.00	2.81	
4V2	L	42	0.00	97.25	0.50	0.00	50.23	0.52	0	0	110	46.97	1.45	1.20	72.83	60.45	48	RCP	0.015	12.57	235	4.81	4V2	60.45	1.00	0.0023	0.55	0.30	0.11	-0.15	n/a	n/a	
4V3	L	42A	1.20	97.25	0.50	0.60	50.23	0.52	0	0	20	46.51	1.45	1.20	72.83	60.45	4X5	RCBC	0.015	20.00	110	3.02	4V3	60.45	1.11	0.0008	0.09	1.00	0.14	0.08	n/a	n/a	
4V4	L	29	0.00	96.05	0.50	0.00	49.63	0.52	0	0	80	46.43	1.45	1.20	71.96	59.73							4V4	59.73						0.00	0.08	n/a	n/a
4V5	L	27	0.00	92.83	0.50	0.00	46.73	0.50	0	0	25	46.10	1.45	1.20	67.76	56.24							4V5	56.24						0.00	0.08	n/a	n/a
4V6	L	25	0.00	92.83	0.50	0.00	46.73	0.50	0	0	30	45.99	1.50	1.25	70.10	58.18							4V6	58.18						0.00	0.08	n/a	n/a
4V7	L	112	0.00	92.37	0.50	0.00	46.31	0.50	0	0	5	45.87	1.50	1.25	69.47	57.66							4V7	57.66						0.00	0.08	n/a	n/a
4V8	L	114	0.00	90.70	0.50	0.00	44.82	0.49	0	0	5	45.85	1.50	1.25	67.22	55.80							4V8	55.80						0.00	0.08	n/a	n/a
4V9	L	43	0.00	88.90	0.50	0.00	43.20	0.49	0	0	120	45.83	1.50	1.25	64.79	53.78							4V9	53.78						0.00	0.08	n/a	n/a
4V10	L	44	0.29	88.90	0.50	0.15	43.20	0.49	0	0	20	45.33	1.50	1.25	64.79	53.78	6X5	RCBC	0.015	30.00	120	1.79	4V10	53.78	1.36	0.0002	0.03	1.00	0.05	0.16	n/a	n/a	
4V11	L	23	0.00	88.61	0.50	0.00	43.05	0.49	0	0	60	45.24	1.50	1.25	64.57	53.60							4V11	53.60						0.00	0.16	n/a	n/a
4V12	L	45	0.00	88.51	0.50	0.00	42.96	0.49	0	0	40	44.99	1.50	1.25	64.44	53.49							4V12	53.49						0.00	0.16	n/a	n/a
4V13	L	46	2.54	88.51	0.50	1.27	42.96	0.49	0	0	175	44.83	1.50	1.25	64.44	53.49	6X5	RCBC	0.015	30.00	40	1.78	4V13	53.49	1.36	0.0002	0.01	1.00	0.05	0.22	n/a	n/a	
4V14	L	47	0.00	85.98	0.50	0.00	41.69	0.48	0	0	200	44.10	1.50	1.25	62.54	51.91							4V14	51.91						0.00	0.22	n/a	n/a
4V15	L	48	5.96	85.98	0.50	2.98	41.69	0.48	0	0	195	43.26	1.50	1.25	62.54	51.91	6X5	RCBC	0.015	30.00	200	1.73	4V15	51.91	1.36	0.0002	0.04	1.00	0.05	0.30	n/a	n/a	
4V16	L	49	0.00	80.02	0.50	0.00	38.71	0.48	0	0	165	42.45	1.55	1.29	60.01	49.81							4V16	49.81						0.00	0.30	n/a	n/a
4V17	L	50	0.00	80.02	0.90	0.00	38.71	0.48	0	0	130	41.76	1.55	1.29	60.01	49.81	6X5	RCBC	0.015	30.00	165	1.66	4V17	49.81	1.36	0.0002	0.03	1.00	0.04	0.38	3.00	2.62	
4V18	L	52	1.93	72.68	0.90	1.73	32.11	0.44	0	0	235	41.22	1.55	1.29	49.76	41.30	54	RCP	0.015	15.90	130	2.60	4V18	41.30	1.13	0.0006	0.08	1.00	0.10	0.56	2.50	1.94	
4V19	L	54,55	0.00	70.28	0.90	0.00	29.95	0.43	0	0	120	40.24	1.55	1.29	46.42	38.53	54	RCP	0.015	15.90	235	2.42	4V19	38.53	1.13	0.0005	0.12	2.40	0.22	0.89	4.50	3.61	
4V20	L	56	0.16	48.92	0.90	0.15	21.40	0.44	0	0	335	36.80	1.65	1.37	35.31	29.31	48	RCP	0.015	12.57	80	2.33	4V20	29.31	1.00	0.0006	0.04	1.00	0.08	1.02	5.00	3.98	
4V21	K	144	0.00	45.31	0.90	0.00	19.53	0.43	0	0	110	35.40	1.65	1.37	32.23	26.75	48	RCP	0.015	12.57	335	2.13	4V21	26.75	1.00	0.0005	0.15	1.50	0.11	1.28	6.50	5.22	
4V22	K	162	0.22	29.67	0.50	0.11	12.55	0.42	0	0	220	34.94	1.65	1.37	20.71	17.19	24	RCP	0.015	3.14	110	2.74	4V22	8.59	0.50	0.0076	0.84	0.20	0.02	2.15	12.00	9.85	
4V23	K	163	0.56	29.45	0.50	0.28	12.44	0.42	0	0	95	34.03	1.70	1.41	21.15	17.56	36	RCP	0.015	7.07	220	2.48	4V23	17.56	0.75	0.0009	0.20	1.00	0.10	2.44	44.00	41.56	
4V24	K	165	1.46	28.23	0.50	0.73	11.90	0.42	0	0	115	33.63	1.70	1.41	20.23	16.79	36	RCP	0.015	7.07	95	2.38	4V24	16.79	0.75	0.0008	0.08	1.50	0.13	2.66	58.00	55.34	
4V25	K	176	1.32	11.51	0.50	0.66	5.07	0.44	0	0	185	20.49	2.15	1.78	10.89	9.04	24	RCP	0.015	3.14	250	2.88	4V25	9.04	0.50	0.0021	0.53	1.50	0.19	3.38	96.00	92.62	
4V26	K	182	3.29	8.87	0.50	1.64	3.88	0.44	0	0	145	19.72	2.20	1.83	8.53	7.08	21	RCP	0.015	2.41	185	2.94	4V26	7.08	0.44	0.0026	0.49	1.50	0.20	4.07	120.00	115.93	
4V27	O	23	0.20	3.89	0.40	0.08	1.56	0.40	0	0	135	19.12	2.20	1.83	3.43	2.84	12	RCP	0.015	0.79	145	3.62	4V27	2.84	0.25	0.0084	1.22	1.50	0.31	5.60	142.00	136.40	
4V28	O	24	1.32	1.32	0.40	0.53	0.53	0.40	610	0	0	18.56	2.25	1.87	1.19	0.98	18	RCP	0.015	1.77	135	0.56	4V28	0.98	0.38	0.0001	0.02	1.00	0.00	5.62	166.00	160.38	
4V4	L	29		3.22	0.90	0.00</																											

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
POC <sup>1</sup> 4V18	L	52		0.47	0.90	0.00	0.42	0.90	0	0	40	7.25	3.40	2.82	1.44	1.20	12	RCP	0.015	0.79	40	1.52	4V18	1.20	0.25	0.0015	0.06	1.00	0.04	0.56	2.50	1.94	
4V101	L	53	0.47	0.47	0.90	0.42	0.42	0.90	0	250	0	7.08	3.40	2.82	1.44	1.20	12	RCP	0.015	0.79	40	1.52	4V101	1.20	0.25	0.0015	0.06	1.00	0.04	0.65	2.00	1.35	
4V19	L	54,55		21.36	0.40	0.00	8.55	0.40	0	0	120	40.24	1.55	1.29	13.24	10.99								4V19	10.99						0.89	4.50	3.61
4V111	L	58	1.38	21.36	0.40	0.55	8.55	0.40	0	0	50	39.74	1.60	1.33	13.67	11.35	18	CMP	0.024	1.77	120	6.42	4V111	11.35	0.38	0.0396	4.75	1.00	0.64	6.28	7.00	0.72	
4V112	L	59	0.00	19.98	0.40	0.00	7.99	0.40	0	0	75	39.53	1.60	1.33	12.79	10.62							4V112	10.62					0.00	6.28	10.00	3.72	
4V113	L	60	13.35	19.98	0.40	5.34	7.99	0.40	0	0	900	39.22	1.60	1.33	12.79	10.62	12	CMP	0.024	0.79	65	13.52	4V113	10.62	0.25	0.3009	19.56	1.00	2.84	28.68	15.00	-13.68	
4V114	P	1	0.00	6.63	0.40	0.00	2.65	0.40	0	0	45	35.47	1.65	1.37	4.38	3.63							4V114	3.63					0.00	28.68	72.00	43.32	
4V115	P	2	4.34	6.63	0.40	1.74	2.65	0.40	0	0	175	35.28	1.65	1.37	4.38	3.63	12	CMP	0.024	0.79	45	4.63	4V115	3.63	0.25	0.0353	1.59	1.00	0.33	30.60	74.00	43.40	
4V116	P	3	0.00	2.29	0.40	0.00	0.92	0.40	1330	0	0	34.56	1.65	1.37	1.51	1.26							4V116	1.26					0.00	30.60	86.00	55.40	
4V117	P	4	0.78	1.76	0.40	0.31	0.70	0.40	0	0	130	15.71	2.40	1.99	1.69	1.40	12	CMP	0.024	0.79	50	1.79	4V117	1.40	0.25	0.0053	0.26	1.00	0.05	30.91	89.00	58.09	
4V118	P	5	0.00	0.98	0.40	0.00	0.39	0.40	0	0	40	15.17	2.45	2.03	0.96	0.80							4V118	0.80					0.00	30.91	97.00	66.09	
4V119	P	6	0.98	0.98	0.40	0.39	0.39	0.40	450	0	0	15.00	2.50	2.08	0.98	0.81	12	CMP	0.024	0.79	40	1.03	4V119	0.81	0.25	0.0018	0.07	1.00	0.02	31.00	98.00	67.00	
4V20	L	56		3.44	0.50	0.00	1.72	0.50	0	0	35	15.67	2.40	1.99	4.13	3.43							4V20	3.43						1.02	5.00	3.98	
4V121	K	57	3.44	3.44	0.50	1.72	1.72	0.50	350	330	0	15.53	2.40	1.99	4.13	3.43	12	RCP	0.015	0.79	35	4.37	4V121	3.43	0.25	0.0123	0.43	1.00	0.30	1.75	5.50	3.75	
4V21	K	144		0.04	0.90	0.00	0.03	0.90	0	0	45	5.73	3.80	3.15	0.13	0.10							4V21	0.10						1.28	6.50	5.22	
4V131	K	161	0.04	0.04	0.90	0.03	0.03	0.90	0	65	0	5.54	3.80	3.15	0.13	0.10	18	RCP	0.015	1.77	45	0.06	4V131	0.10	0.38	0.0000	0.00	1.00	0.00	1.28	7.00	5.72	
4V21	K	144		15.60	0.50	0.00	6.95	0.45	0	0	305	25.79	1.95	1.62	13.55	11.25							4V21	11.25						1.28	6.50	5.22	
4V141	K	150	0.31	15.60	0.50	0.16	6.95	0.45	0	0	20	24.52	2.00	1.66	13.90	11.53	30	RCP	0.015	4.91	305	1.88	4V141	9.23	0.63	0.0010	0.32	1.00	0.05	1.66	6.00	4.34	
4V142	K	148	6.75	15.29	0.50	3.37	6.79	0.44	0	0	395	24.44	2.00	1.66	13.58	11.27	15	RCP	0.015	1.23	305	1.88	4V142	11.27	0.31	0.0403	0.81	1.00	1.31	3.77	6.00	2.23	
4V143	K	152	2.43	8.54	0.40	0.97	3.42	0.40	0	0	210	22.79	2.05	1.70	7.00	5.81	15	RCP	0.015	1.23	395	4.74	4V143	5.81	0.31	0.0107	4.24	1.10	0.38	8.39	6.50	-1.89	
4V144	K	155	0.00	6.12	0.40	0.00	2.45	0.40	0	0	65	21.92	2.10	1.74	5.14	4.26	15	RCP	0.015	1.23	210	3.48	4V144	4.26	0.31	0.0058	1.21	0.40	0.08	9.68	7.50	-2.18	
4V145	K	156	0.39	6.12	0.40	0.16	2.45	0.40	0	0	140	21.65	2.10	1.74	5.14	4.26	12	VCP	0.015	0.79	65	5.43	4V145	4.26	0.25	0.0190	1.23	1.00	0.46	11.37	18.00	6.63	
4V146	K	157	0.00	5.73	0.40	0.00	2.29	0.40	0	0	85	21.06	2.10	1.74	4.81	3.99							4V146	3.99					0.00	11.37	57.00	45.63	
4V147	K	158	2.92	5.73	0.40	1.17	2.29	0.40	0	0	185	20.71	2.15	1.78	4.93	4.09	10	VCP	0.015	0.55	85	7.50	4V147	4.09	0.21	0.0461	3.92	1.00	0.87	16.17	62.00	45.83	
4V148	K	189	0.00	2.81	0.40	0.00	1.12	0.40	0	0	65	19.94	2.20	1.83	2.47	2.05							4V148	2.05					0.00	16.17	93.00	76.83	
4V149	K	190	1.89	2.81	0.40	0.76	1.12	0.40	660	0	0	19.67	2.20	1.83	2.47	2.05	10	VCP	0.015	0.55	65	3.76	4V149	2.05	0.21	0.0116	0.76	1.00	0.22	17.14	105.00	87.86	
4V150	K	204	0.00	0.92	0.40	0.00	0.37	0.40	0	0	55	14.12	2.55	2.12	0.94	0.78							4V150	0.78					0.00	17.14	140.00	122.86	
4V151	K	205	0.92	0.92	0.40	0.37	0.37	0.40	400	0	0	13.89	2.55	2.12	0.94	0.78	18	CMP	0.024	1.77	55	0.44	4V151	0.78	0.38	0.0002	0.01	1.00	0.00	17.15	158.00	140.85	
4V23	K	163		0.66	0.40	0.00	0.27	0.40	0	0	100	13.97	2.55	2.12	0.68	0.56							4V23	0.56						2.44	44.00	41.56	
4V161	K	164	0.66	0.66	0.40	0.27	0.27	0.40	385	0	0	13.56	2.60	2.16	0.69	0.57	12	RCP	0.015	0.79	100	0.73	4V161	0.57	0.25	0.0003	0.03	1.00	0.01	2.49	33.00	30.51	
4V24	K	165		1.11	0.40	0.00	0.44	0.40	0	0	95	15.73	2.40	1.99	1.06	0.88							4V24	0.88						2.66	58.00	55.34	
4V171	K	168	0.40	1.11	0.40	0.16	0.44	0.40	465	0	0	15.33	2.45	2.03	1.08	0.90	15	RCP	0.015	1.23	95	0.73	4V171	0.90	0.31	0.0003	0.02	0.60	0.01	2.68	67.00	64.32	
4V172	K	169	0.71	0.71	0.40	0.28	0.28	0.40	275	0	0	11.11	2.80	2.32	0.79	0.66	12	RCP	0.015	0.79	95	0.84	4V172	0.66	0.25	0.0005	0.04	1.00	0.01	2.74	77.00	74.26	
4V24	K	165		14.15	0.40	0.00	5.66	0.40	0	0	115	33.63	1.70	1.41	9.62	7.98							4V24	7.98						2.66	58.00	55.34	
4V181	K	170	0.14	14.15	0.40	0.05	5.66	0.40	0	0	90	33.15	1.70	1.41	9.62	7.98	30	RCP	0.015	4.91	115	1.63	4V181	7.98	0.63	0.0005	0.06	1.00	0.04	2.75	76.00	73.25	
4V182	K	173	0.41	2.15	0.40	0.17	0.86	0.40	0	0	185	22.63	2.05	1.70	1.77	1.47	15	RCP	0.015	1.23	215	1.19	4V182	1.47	0.31	0.0007	0.15	0.20	0.00	2.90	105.00	102.10	
4V183	O	27	0.49	1.74	0.40	0.20	0.70	0.40	0	0	205	21.85	2.10	1.74	1.46	1.21	12	RCP	0.015	0.79	185	1.54	4V183	1.21	0.25	0.0015	0.28	1.40	0.05	3.24	139.00	135.76	
4V184	O	30	1.25	1.25	0.40	0.50	0.50	0.40	720	0	0	21.00	2.15	1.78	1.08	0.89	12	RCP	0.015	0.79	205	1.14	4V184	0.89	0.25	0.0008	0.17	1.80	0.04	3.45	158.00	154.55	
4V25	K	176		1.31	0.40	0.00	0.53	0.40	0																								

Tributary	Sheet	Old	Trib Area	Cumulative	C	C-Area	Cumulative	Avg C	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe	n	Area	Length	Velocity <sub>25</sub>	Tributary	Q <sub>25</sub>	Hydraulic	Hydraulic	Friction	k	Minor	WS	Rim/Grate	Delta
POC <sup>1</sup>	Node	ac	Area, ac	Value		C-Area	Value	Value	ft	ft	ft	min	in/hr	in/hr	ft <sup>3</sup> /s	ft <sup>3</sup> /s	in	Material		sf	ft	fps	POC <sup>1</sup>	ft <sup>3</sup> /s	Radius	Slope	Loss		Loss	Elev**	Elev	ft
4G2	61	14.63	14.63	0.90	0.00	9.38	0.64	0	0	20	0	17.11	2.30	1.91	21.58	17.91		OC			20		4G2	17.91		0.0060	0.12		0.00	-1.83	5.00	6.83
4W1	G	59	1.21	14.63	0.90	1.09	9.38	0.64	0	110	0	16.94	2.35	1.95	22.05	18.30		OC			110		4W1	18.30		0.0060	0.66		0.00	-1.71	2.00	3.71
4W2	G	217	0.00	13.42	0.90	0.00	8.30	0.62	0	210	0	16.03	2.40	1.99	19.91	16.53		OC			210		4W2	16.53		0.0060	1.26		0.00	0.21	2.00	1.79
4W3	G	23	0.91	13.42	0.90	0.81	8.30	0.62	0	93	0	14.28	2.55	2.12	21.16	17.56		OC			90		4W3	17.56		0.0060	0.54		0.00	0.75	3.00	2.25
4W4	G	20	3.06	12.51	0.90	2.76	7.48	0.60	0	280	0	13.50	2.60	2.16	19.46	16.15		OC			280		4W4	16.15		0.0060	1.68		0.00	2.43	5.00	2.57
4W5	D	179	3.61	9.45	0.50	1.80	4.73	0.50	0	0	80	11.17	2.80	2.32	13.23	10.98		OC			80		4W5	10.98		0.0060	0.46	0.10	0.02	2.91	4.00	1.09
4W6	D	180	1.01	5.84	0.50	0.51	2.92	0.50	0	0	350	10.83	2.85	2.37	8.32	6.91	18	RCP	0.015	1.77	80	3.91	4W6	6.91	0.38	0.0057	4.01	0.30	0.11	7.04	4.00	-3.04
4W7	D	183	1.89	4.83	0.50	0.95	2.41	0.50	0	525	0	9.38	3.00	2.49	7.24	6.01	15	RCP	0.015	1.23	350	4.90	4W7	6.01	0.50	0.0002	0.01	0.60	0.01	7.05	4.00	-3.05
4W8	D	186	1.98	2.94	0.50	0.99	1.47	0.50	70	0	580	8.97	3.10	2.57	4.56	3.78	2X2	RCBC	0.015	4.00	30	0.95	4W8	3.78	0.25	0.0018	0.20	1.10	0.05	7.30	8.00	0.70
4W9	D	189	0.96	0.96	0.50	0.48	0.48	0.50	90	0	210	7.88	3.30	2.74	1.58	1.31	12	RCP	0.015	0.79	110	1.67	4W9	1.31								
4W3	G	23	0.47	0.91	0.90	0.42	0.81	0.90	0	0	180	6.75	3.50	2.91	2.85	2.37							4W3	2.37						0.21	2.00	1.79
4W41	G	25	0.44	0.44	0.90	0.39	0.39	0.90	0	120	0	6.00	3.70	3.07	1.45	1.20	8	ACP	0.015	0.35	180	3.45	4W41	1.20	0.17	0.0131	2.36	0.20	0.04	2.61	2.00	-0.61
4W4	G	20	0.25	0.39	0.90	0.22	0.35	0.90	0	0	185	6.27	3.60	2.99	1.27	1.06							4W4	1.06						0.75	3.00	2.25
4W51	G	22	0.15	0.15	0.90	0.13	0.13	0.90	0	60	0	5.50	3.90	3.24	0.52	0.43	8	ACP	0.015	0.35	185	1.23	4W51	0.43	0.17	0.0017	0.31	0.20	0.00	1.06	2.00	0.94
4W5	D	179	3.24	3.61	0.70	2.27	2.60	0.72	0	460	0	10.67	2.90	2.41	7.54	6.26							4W5	6.26						2.43	5.00	2.57
4W61	D	196	0.00	0.37	0.90	0.00	0.33	0.90	0	0	120	6.83	3.50	2.91	1.16	0.97		OC			460		4W61	0.97						2.43	10.00	7.57
4W62	D	197	0.09	0.37	0.90	0.08	0.33	0.90	0	0	120	6.33	3.60	2.99	1.20	0.99	6	PVC	0.009	0.20	120	5.06	4W62	0.99	0.13	0.0150	1.80	0.05	0.02	4.24	10.00	5.76
4W63	D	199	0.28	0.28	0.90	0.25	0.25	0.90	0	100	0	5.83	3.70	3.07	0.92	0.76	6	PVC	0.009	0.20	120	3.88	4W63	0.76	0.13	0.0088	1.06	0.60	0.14	5.44	8.90	3.46
4W7	D	183	0.54	1.89	0.90	0.49	1.70	0.90	0	0	90	8.58	3.15	2.61	5.36	4.45							4W7	4.45						7.04	4.00	-3.04
4W71	D	184	0.65	1.35	0.90	0.59	1.22	0.90	0	0	130	8.21	3.20	2.66	3.89	3.23	12	PVC	0.009	0.79	90	4.11	4W71	3.23	0.25	0.0039	0.35	1.40	0.37	7.76	6.50	-1.26
4W72	D	185	0.70	0.70	0.90	0.63	0.63	0.90	0	320	0	7.67	3.30	2.74	2.08	1.73	10	PVC	0.009	0.55	130	3.16	4W72	1.73	0.21	0.0030	0.38	0.10	0.02	8.16	7.60	-0.56
4W8	D	186		0.33	0.00	0.00	0.17	0.50	0	0	80	8.05	3.20	2.66	0.54	0.44							4W8	0.44						7.05	4.00	-3.05
4W81	D	N/A	0.33	0.33	0.50	0.17	0.17	0.50	19	275	0	7.71	3.30	2.74	0.55	0.46	12	RCP	0.015	0.79	80	0.58	4W81	0.46	0.25	0.0002	0.02	1.00	0.01	7.07	5.50	-1.57
4W8	D	186		1.34	0.00	0.00	0.67	0.50	0	0	50	8.93	3.10	2.57	2.08	1.73							4W8	1.73						7.05	4.00	-3.05
4W91	D	187	1.34	1.34	0.50	0.67	0.67	0.50	70	0	520	8.72	3.10	2.57	2.08	1.73	12	PVC	0.009	0.79	50	2.20	4W91	1.73	0.25	0.0011	0.06	0.10	0.01	7.12	5.50	-1.62



Tributary	Sheet	Old	Trib Area	Cumulative	C	C-Area	Cumulative	Avg C	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe	n	Area	Length	Velocity <sub>25</sub>	Tributary	Q <sub>25</sub>	Hydraulic	Hydraulic	Friction	k	Minor	WS	Rim/Grate	Delta
POC <sup>1</sup>	Node	ac	Area, ac	Value		C-Area	Value		ft	ft	ft	min	in/hr	in/hr	ft <sup>3</sup> /s	ft <sup>3</sup> /s	in	Material		sf	ft	fps	POC <sup>1</sup>	ft <sup>3</sup> /s	Radius	Slope	Loss		Loss	Elev**	Elev	ft
4G2	G	61	1.09	7.06	0.80	0.87	5.05	0.72	0	130	0	27.00	1.90	1.58	9.59	7.96							4G2	7.96						-1.83	1.00	2.83
4Y1	G	78	2.19	5.97	0.70	1.53	4.18	0.70	0	0	540	25.92	1.95	1.62	8.14	6.76		OC			130		4Y1	6.76					0.00	-1.83	2.50	4.33
4Y2	G	82	1.48	3.78	0.70	1.04	2.64	0.70	0	240	0	23.67	2.00	1.66	5.29	4.39	24	RCP	0.015	3.14	540	1.40	4Y2	4.39	0.50	0.0005	0.27	0.05	0.00	-1.56	4.00	5.56
4Y3	G	165	2.30	2.30	0.70	1.61	1.61	0.70	630	320	0	21.67	2.10	1.74	3.38	2.80		OC			240		4Y3	2.80					0.00	-1.56	4.00	5.56
Notes:																																
1. POC = Point of Concentration																																
2. Average velocity Landscape = 0.75 fps, Pavement/earth ditch = 2 fps, Pipe/conc ditch = 4 fps																																
3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.																																
4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.																																
** Assumed Marsh starting water surface elevation of -2.00 NGVD.																																

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
PS			0.00	38.12	0.90	0.00	34.31	0.90	0	0	211	21.66	2.10	1.74	72.05	59.80							PS	59.80						-1.60	n/a	n/a	
4U7	L	83	2.68	38.12	0.90	2.41	34.31	0.90	0	0	245	20.78	2.15	1.78	73.77	61.23	42	RCP	0.015	9.62	210	3.18	4U7	30.61	0.88	0.0049	1.03	1.50	0.24	-0.33	1.50	1.83	
4U8	L	85	0.00	35.44	0.90	0.00	31.90	0.90	0	0	60	19.76	2.20	1.83	70.17	58.24	42	RCP	0.015	9.62	245	6.05	4U8	58.24	0.88	0.0044	1.09	1.10	0.63	1.38	1.00	-0.38	
4U9	L	97	2.13	19.78	0.90	1.92	17.80	0.90	0	0	180	15.27	2.45	2.03	43.61	36.20	30	RCP	0.015	4.91	215	7.37	4U9	36.20	0.63	0.0103	2.22	0.10	0.08	3.68	1.00	-2.68	
4U10	L	98	0.00	17.64	0.90	0.00	15.88	0.90	0	0	125	14.52	2.50	2.08	39.70	32.95	30	RCP	0.015	4.91	180	6.71	4U10	32.95	0.63	0.0085	1.54	1.00	0.70	5.92	1.50	-4.42	
4U11	L	99	0.17	15.26	0.90	0.16	13.73	0.90	0	0	140	14.00	2.55	2.12	35.02	29.07	30	RCP	0.015	4.91	125	5.92	4U11	29.07	0.63	0.0067	0.83	1.40	0.76	7.51	3.50	-4.01	
4U12	L	103	0.86	14.36	0.90	0.77	12.92	0.90	0	0	320	13.42	2.60	2.16	33.60	27.89	24	RCP	0.015	3.14	140	8.88	4U12	27.89	0.50	0.0201	2.82	1.00	1.22	11.55	3.50	-8.05	
4U13	P	11	1.91	10.51	0.90	1.72	9.46	0.90	0	0	100	12.08	2.70	2.24	25.54	21.20	24	RCP	0.015	3.14	320	6.75	4U13	21.20	0.50	0.0116	3.72	0.90	0.64	15.91	1.50	-14.41	
4U14	P	12	0.57	8.60	0.90	0.52	7.74	0.90	0	0	40	11.67	2.75	2.28	21.28	17.66	24	RCP	0.015	3.14	100	5.62	4U14	17.66	0.50	0.0081	0.81	0.40	0.20	16.91	1.50	-15.41	
4U15	P	13	1.99	8.02	0.90	1.79	7.22	0.90	0	0	70	11.50	2.80	2.32	20.22	16.78	18	RCP	0.015	1.77	40	9.50	4U15	16.78	0.38	0.0338	1.35	1.50	2.10	20.37	3.50	-16.87	
4U16	P	14	0.76	2.50	0.90	0.68	2.25	0.90	0	0	250	11.21	2.80	2.32	6.30	5.23	18	RCP	0.015	1.77	70	2.96	4U16	5.23	0.38	0.0033	0.23	0.40	0.05	20.65	4.00	-16.65	
4U17	P	17	1.74	1.74	0.90	1.56	1.56	0.90	0	620	0	10.17	2.95	2.45	4.62	3.83	18	RCP	0.015	1.77	250	2.17	4U17	3.83	0.38	0.0018	0.44	1.20	0.09	21.18	9.50	-11.68	
4U8	L	85		15.66	0.90	0.00	14.10	0.90	0	0	60	19.76	2.20	1.83	31.01	25.74							4U8	25.74						1.38	1.00	-0.38	
4U71	L	86	0.00	15.66	0.90	0.00	14.10	0.90	0	0	350	19.51	2.20	1.83	31.01	25.74	30	RCP	0.015	4.91	60	5.24	4U71	25.74	0.63	0.0052	0.31	1.00	0.43	2.12	2.00	-0.12	
4U72	L	87	1.87	15.50	0.90	1.68	13.95	0.90	0	0	215	18.05	2.25	1.87	31.39	26.05		OC			350		4U72	26.05					0.00	2.12	1.00	-1.12	
4U73	L	90	1.01	13.63	0.90	0.91	12.27	0.90	0	0	50	17.15	2.30	1.91	28.22	23.43	30	PVC	0.009	4.91	215	4.77	4U73	23.43	0.63	0.0016	0.33	2.00	0.71	3.16	1.50	-1.66	
4U74	L	91	1.56	12.62	0.90	1.41	11.36	0.90	0	0	30	16.94	2.35	1.95	26.70	22.16	24	CMP	0.024	3.14	50	3.53	4U74	11.08	0.50	0.0325	1.63	1.00	0.19	4.98	1.50	-3.48	
4U75	L	92	0.00	11.06	0.90	0.00	9.96	0.90	0	0	200	16.82	2.35	1.95	23.40	19.42		OC			30		4U75	19.42						0.00	4.98	1.60	-3.38
4U76	L	93,164	2.49	11.06	0.90	2.24	9.96	0.90	0	0	260	15.99	2.40	1.99	23.89	19.83	3X2	RCBC	0.015	6.00	200	3.31	4U76	19.83	0.60	0.0022	0.44	1.50	0.25	5.67	3.00	-2.67	
4U77	L	117	0.85	3.31	0.90	0.77	2.98	0.90	0	0	210	14.90	2.50	2.08	7.44	6.17	15	RCP	0.015	1.23	260	5.03	4U77	6.17	0.31	0.0121	3.14	1.00	0.39	9.21	7.00	-2.21	
4U78	L	122	2.45	2.45	0.90	2.21	2.21	0.90	200	550	0	14.03	2.55	2.12	5.63	4.67	15	RCP	0.015	1.23	210	3.81	4U78	4.67	0.31	0.0069	1.45	2.00	0.45	11.11	16.00	4.89	
4U71	L	86		0.16	0.90	0.00	0.14	0.90	0	0	340	7.58	3.30	2.74	0.48	0.40							4U71	0.40						2.12	2.00	-0.12	
4U81	L	158	0.00	0.16	0.90	0.00	0.14	0.90	0	0	100	6.17	3.70	3.07	0.54	0.44		OC			340		4U81	0.44						0.00	2.12	1.00	-1.12
4U82	L	159	0.16	0.16	0.90	0.14	0.14	0.90	0	90	0	5.75	3.80	3.15	0.55	0.46	6	CMP	0.024	0.20	100	2.32	4U82	0.46	0.13	0.0224	2.24	1.00	0.08	4.44	0.00	-4.44	
4U76	L	93		5.27	0.90	0.00	4.74	0.90	0	0	290	11.90	2.75	2.28	13.04	10.83							4U76	10.83						5.67	3.00	-2.67	
4U84	L	95	5.27	5.27	0.90	4.74	4.74	0.90	80	470	0	10.69	2.90	2.41	13.76	11.42	12	RCP	0.015	0.79	290	14.54	4U84	11.42	0.25	0.1360	39.44	1.90	6.23	51.34	1.50	-49.84	
4U11	L	99		0.73	0.90	0.00	0.66	0.90	0	0	85	6.94	3.50	2.91	2.30	1.91							4U11	1.91						7.51	3.50	-4.01	
4U91	L	101,102	0.73	0.73	0.90	0.66	0.66	0.90	0	190	0	6.58	3.60	2.99	2.36	1.96	12	CMP	0.024	0.79	85	1.25	4U91	0.98	0.25	0.0103	0.87	1.90	0.05	8.43	3.50	-4.93	
4U12	L	103		2.99	0.90	0.00	2.69	0.90	0	0	250	13.06	2.65	2.20	7.14	5.92							4U12	5.92						11.55	3.50	-8.05	
4U101	L	106	0.18	2.99	0.90	0.16	2.69	0.90	0	0	115	12.01	2.70	2.24	7.27	6.04	15	RCP	0.015	1.23	250	4.92	4U101	6.04	0.31	0.0116	2.89	0.60	0.23	14.67	6.00	-8.67	
4U102	L	107	0.44	2.81	0.90	0.39	2.53	0.90	0	0	25	11.53	2.80	2.32	7.09	5.89	12	RCP	0.015	0.79	115	7.49	4U102	5.89	0.25	0.0361	4.16	0.40	0.35	19.17	3.00	-16.17	
4U103	L	108	0.92	2.38	0.90	0.83	2.14	0.90	0	0	150	11.43	2.80	2.32	5.99	4.97	18	RCP	0.015	1.77	25	2.81	4U103	4.97	0.38	0.0030	0.07	0.10	0.01	19.26	3.50	-15.76	
4U104	L	110	1.46	1.46	0.90	1.31	1.31	0.90	70	510	0	10.81	2.85	2.37	3.74	3.10	18	RCP	0.015	1.77	150	1.75	4U104	3.10	0.38	0.0012	0.17	1.10	0.05	19.48	7.50	-11.98	
4U15	P	13	1.99	3.54	0.90	1.79	3.18	0.90	0	0	40	8.33	3.20	2.66	10.19	8.46							4U15	8.46						20.37	3.50	-16.87	
4U111	P	19	0.43	1.55	0.90	0.39	1.39	0.90	0	0	220	8.17	3.20	2.66	4.46	3.70	18	RCP	0.015	1.77	40	2.09	4U111	3.70	0.38	0.0016	0.07	1.50	0.10	20.53	6.00	-14.53	
4U112	P	20	0.17	1.12	0.90	0.16	1.01	0.90	0	0	160	7.25	3.40	2.82	3.42	2.84	12	RCP	0.015	0.79	220	3.62	4U112	2.84	0.25	0.0084	1.85	0.50	0.10	22.49	10.00	-12.49	
4U113	P	21	0.95	0.95	0.90	0.85	0.85	0.90	0	190	0	6.58	3.60	2.99	3.06	2.54	12	RCP	0.015	0.79	160	3.24	4U113	2.54	0.25	0.0067	1.08	0.50	0.08	23.65	9.50	-14.15	
4U10	L	98		2.38	0.90	0.00	2.14	0.90	0	0	150	11.68	2.75	2.28	5.90	4.90							4U10	4.90						5.92	1.		

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
9A1	D	204		20.17	0.90	0.00	18.15	0.90	0	0	70	11.45	2.80	2.32	50.82	42.18	60	RCP	0.015	19.63	70	2.15	9A1	42.18					0.00	n/a	n/a	
9A2	D	205	0.71	20.17	0.90	0.64	18.15	0.90	0	0	75	11.16	2.80	2.32	50.82	42.18	60	RCP	0.015	19.63	70	0.81	9A2	15.98	1.25	0.0003	0.02	0.05	0.00	0.03	n/a	n/a
																	48	RCP	0.015	12.57	70	0.81		10.23								
9A3	D	62	0.00	19.45	0.90	0.00	17.51	0.90	0	0	265	10.85	2.85	2.37	49.90	41.42		OC					9A3	41.42		0.0005	0.04		0.07	n/a	n/a	
9A4	D	83	0.00	17.84	0.90	0.00	16.06	0.90	0	0	75	9.74	3.00	2.49	48.18	39.99		OC					9A4	39.99		0.0005	0.13		0.20	n/a	n/a	
9A5	D	85	0.00	17.05	0.90	0.00	15.35	0.90	0	0	270	9.43	3.00	2.49	46.04	38.22		OC					9A5	38.22		0.0005	0.04		0.24	n/a	n/a	
9A6	D	91	0.00	14.95	0.90	0.00	13.46	0.90	0	0	195	8.31	3.20	2.66	43.07	35.75		OC					9A6	35.75		0.0005	0.14		0.37	n/a	n/a	
9A7	D	98	0.00	12.27	0.90	0.00	11.05	0.90	0	0	15	7.49	3.40	2.82	37.56	31.17		OC					9A7	31.17		0.0005	0.10		0.47	n/a	n/a	
9A8	D	119	0.00	0.00	0.90	0.00	0.00	0.90	0	0	50	7.43	3.40	2.82	0.00	0.00		OC					9A8	0.00		0.0005	0.01		0.48	n/a	n/a	
9A9	D	120	0.00	0.00	0.90	0.00	0.00	0.90	100	0	0	7.22	3.40	2.82	0.00	0.00	18	CMP	0.024	1.77	50		9A9	0.00	0.38	0.0000	0.00	0.05	0.00	0.48	4.00	3.52
9A3	D	62		1.61	0.90	0.00	1.45	0.90	0	0	170	8.60	3.15	2.61	4.57	3.79							9A3	3.79					0.07	n/a	n/a	
9A11	D	63,68	0.32	1.61	0.90	0.29	1.45	0.90	0	0	115	7.90	3.30	2.74	4.78	3.97	15	RCP	0.015	1.23	170	3.23	9A11	3.97	0.31	0.0050	0.85	1.00	0.16	1.08	10.50	9.42
9A12	D	64,69	0.63	1.29	0.90	0.57	1.16	0.90	0	0	135	7.42	3.40	2.82	3.95	3.28	12	?	0.015	0.79	115	4.18	9A12	3.28	0.25	0.0112	1.29	1.00	0.27	2.64	10.50	7.86
9A13	D	65,70	0.25	0.66	0.90	0.22	0.60	0.90	0	0	75	6.85	3.50	2.91	2.09	1.73	12	?	0.015	0.79	135	2.21	9A13	1.73	0.25	0.0031	0.42	1.00	0.08	3.14	9.70	6.56
9A14	D	66,71	0.19	0.42	0.90	0.17	0.37	0.90	0	0	90	6.54	3.60	2.99	1.35	1.12	12	?	0.015	0.79	75	1.43	9A14	1.12	0.25	0.0013	0.10	1.00	0.03	3.27	9.50	6.23
9A15	D	72	0.23	0.23	0.90	0.21	0.21	0.90	0	140	0	6.17	3.70	3.07	0.76	0.63	12	?	0.015	0.79	90	0.80	9A15	0.63	0.25	0.0004	0.04	0.95	0.01	3.32	10.50	7.18
9A4	D	83		0.79	0.90	0.00	0.71	0.90	0	0	125	6.73	3.50	2.91	2.49	2.06							9A4	2.06					0.20	n/a	n/a	
9A21	D	84	0.79	0.79	0.90	0.71	0.71	0.90	0	145	0	6.21	3.60	2.99	2.56	2.12	15	RCP	0.015	1.23	125	1.73	9A21	2.12	0.31	0.0014	0.18	0.05	0.00	0.38	7.50	7.12
9A5	D	85		2.10	0.90	0.00	1.89	0.90	0	0	40	8.65	3.15	2.61	5.95	4.94							9A5	4.94					0.24	n/a	n/a	
9A31	D	86	0.39	2.10	0.90	0.35	1.89	0.90	0	0	65	8.48	3.15	2.61	5.95	4.94	12	RCP	0.015	0.79	40	6.29	9A31	4.94	0.25	0.0255	1.02	0.40	0.25	1.50	6.00	4.50
9A32	D	87	0.32	1.71	0.90	0.29	1.54	0.90	0	0	190	8.21	3.20	2.66	4.92	4.08	12	RCP	0.015	0.79	65	5.20	9A32	4.08	0.25	0.0174	1.13	0.40	0.17	2.80	7.00	4.20
9A33	D	89	0.98	1.39	0.90	0.88	1.25	0.90	0	290	0	7.42	3.40	2.82	4.25	3.53	12	RCP	0.015	0.79	190	4.49	9A33	3.53	0.25	0.0130	2.47	1.00	0.31	5.58	8.50	2.92
9A34	D	90	0.41	0.41	0.90	0.37	0.37	0.90	0	170	0	6.42	3.60	2.99	1.32	1.10	12	RCP	0.015	0.79	45	1.39	9A34	1.10	0.25	0.0013	0.06	0.05	0.00	5.63	8.50	2.87
9A6	D	91		2.68	0.90	0.00	2.41	0.90	0	0	35	8.27	3.20	2.66	7.72	6.41							9A6	6.41					0.37	n/a	n/a	
9A41	D	92	1.39	2.68	0.90	1.25	2.41	0.90	0	0	205	8.13	3.20	2.66	7.72	6.41	12	RCP	0.015	0.79	35	8.16	9A41	6.41	0.25	0.0428	1.50	1.50	1.55	3.42	6.00	2.58
9A42	D	95	0.00	1.29	0.90	0.00	1.16	0.90	0	0	85	7.27	3.40	2.82	3.94	3.27	12	RCP	0.015	0.79	205	4.16	9A42	3.27	0.25	0.0112	2.29	0.90	0.24	5.95	8.00	2.05
9A43	D	97	1.29	1.29	0.90	1.16	1.16	0.90	0	230	0	6.92	3.50	2.91	4.06	3.37	12	RCP	0.015	0.79	85	4.29	9A43	3.37	0.25	0.0118	1.00	0.15	0.04	7.00	8.00	1.00
9A7	D	98		12.27	0.90	0.00	11.05	0.90	0	0	75	12.06	2.70	2.24	29.82	24.75							9A7	24.75					0.47	n/a	n/a	
9A51	D	99	0.41	12.27	0.90	0.37	11.05	0.90	0	0	150	11.75	2.75	2.28	30.38	25.21	24	RCP	0.015	3.14	75	8.03	9A51	25.21	0.50	0.0164	1.23	1.40	1.40	3.10	7.50	4.40
9A52	D	101	0.27	11.53	0.90	0.24	10.38	0.90	0	0	50	11.13	2.80	2.32	29.06	24.12	24	RCP	0.015	3.14	150	7.68	9A52	24.12	0.50	0.0151	2.26	0.10	0.09	5.45	8.50	3.05
9A53	D	102	0.55	11.27	0.90	0.50	10.14	0.90	0	0	265	10.92	2.85	2.37	28.90	23.98	18	RCP	0.015	1.77	50	13.57	9A53	23.98	0.38	0.0690	3.45	1.00	2.86	11.76	8.50	-3.26
9A54	D	106	0.00	8.70	0.90	0.00	7.83	0.90	0	0	315	9.81	2.95	2.45	23.11	19.18	18	RCP	0.015	1.77	265	10.85	9A54	19.18	0.38	0.0441	11.70	1.00	1.83	25.29	8.00	-17.29
9A55	D	107	4.38	6.80	0.90	3.95	6.12	0.90	0	0	140	8.50	3.15	2.61	19.28	16.00	18	?	0.015	1.77	315	9.05	9A55	16.00	0.38	0.0307	9.68	1.50	1.91	36.88	8.00	-28.88
9A56	D	108	1.03	1.03	0.90	0.92	0.92	0.90	0	350	0	7.92	3.30	2.74	3.05	2.53	18	?	0.015	1.77	140	1.43	9A56	2.53	0.38	0.0008	0.11	1.00	0.03	37.02	14.00	-23.02
9A51	D	99		0.33	0.90	0.00	0.30	0.90	0	0	45	6.02	3.70	3.07	1.10	0.91							9A51	0.91					3.10	7.50	4.40	
9A61	D	100	0.33	0.33	0.90	0.30	0.30	0.90	0	100	0	5.83	3.70	3.07	1.10	0.91	12	RCP	0.015	0.79	45	1.16	9A61	0.91	0.25	0.0009	0.04	0.05	0.00	3.14	7.50	4.36
9A53	D	102		2.01	0.90	0.00	1.81	0.90	0	0	35	7.73	3.30	2.74	5.97	4.96							9A53	4.96					11.76	8.50	-3.26	
9A71	D	103	0.65	2.01	0.90	0.58	1.81	0.90	0	0	140	7.58	3.30	2.74	5.97	4.96	12	RCP	0.015	0.79	35	6.31	9A71	4.96	0.25	0.0256	0.90	0.10	0.06	12.72	8.00	-4.72
9A72	D	104	0.60	1.36	0.90	0.54	1.23	0.90	0	0	30	7.00	3.50	2.91	4.29	3.56	12	RCP	0.015	0.79	140	4.53	9A72	3.56	0.25	0.0132	1.85	0.10	0.03	14.61	6.80	-7.81
9A73	D	105	0.76	0.76	0.90	0.68	0.68	0.90	0	225	0	6.88	3.50																			

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
9D1		21	3.79	44.64	0.00	0.00	34.81	0.78	0	0	190	31.29	1.75	1.45	60.92	50.56							9D1	50.56						0.00	n/a	n/a
9D2			0.00	40.85	0.00	0.00	34.81	0.85				30.50	1.80	1.49	62.66	52.00	36	HDPE	0.015	7.07	190	7.36	9D2	52.00	0.75	0.0081	1.53	0.00	0.00	0.00	n/a	n/a
9D3	A	10	0.00	30.59	0.00	0.00	26.67	0.87				22.10	2.10	1.74	56.01	46.49		OC			450		9D3	46.49		0.0005	0.23			0.23	n/a	n/a
9D4	A	9	0.00	30.59	0.00	0.00	26.67	0.87				21.60	2.10	1.74	56.01	46.49	3X4	RCBC	0.015	12.00	75	3.87	9D4	46.49	0.86	0.0019	0.14	1.50	0.35	0.71	3.00	2.29
9D5	A	8	0.00	26.24	0.00	0.00	22.93	0.87	0	0	195	21.21	2.10	1.74	48.16	39.97	3X4	RCBC	0.015	12.00	25	3.33	9D5	39.97	0.86	0.0014	0.03	1.00	0.17	0.92	3.50	2.58
9D6	A	11	15.98	15.98	0.87	13.90	13.90	0.87				20.40	2.15	1.78	29.89	24.81	3X4	RCBC	0.015	12.00	195	2.07	9D6	24.81	0.86	0.0005	0.10	1.50	0.10	1.12	4.00	2.88
9D4	A	9		4.35	0.86	0.00	3.74	0.86				15.50	2.45	2.03	9.17	7.61							9D4	7.61						0.71	3.50	2.79
9D11	A	10A	4.35	4.35	0.86	3.74	3.74	0.86				14.50	2.50	2.08	9.35	7.76	18	RCP	0.015	1.77	200	4.39	9D11	7.76	0.38	0.0072	1.45	0.05	0.01	2.18	n/a	n/a
9D5	A	8		10.26	0.88	0.00	9.03	0.88	0	0	390	17.03	2.30	1.91	20.77	17.24							9D5	17.24						0.92	3.50	2.58
9D21	A	2	5.00	10.26	0.88	4.40	9.03	0.88				15.40	2.45	2.03	22.12	18.36	36	RCP	0.015	7.07	390	2.60	9D21	18.36	0.75	0.0010	0.39	1.00	0.10	1.42	2.00	0.58
9D22	B	18	5.26	5.26	0.88	4.63	4.63	0.88				14.00	2.55	2.12	11.80	9.80	18	RCP	0.015	1.77	175	5.54	9D22	9.80	0.38	0.0115	2.02	0.10	0.05	3.48	5.00	1.52
9D2	A	25		5.22	0.79	0.00	4.12	0.79				12.90	2.65	2.20	10.93	9.07							9D2	9.07						0.00	n/a	n/a
9D11	A		0.83	5.22	0.79	0.66	4.12	0.79				12.90	2.65	2.20	10.93	9.07	24	PVC	0.009	3.14	30	2.89	9D11	9.07	0.50	0.0008	0.02	1.40	0.18	0.20	1.50	1.30
9D12	A	26	0.00	4.39	0.79	0.00	3.47	0.79				11.60	2.80	2.32	9.71	8.06	18	PVC	0.009	1.77	210	4.56	9D12	8.06	0.38	0.0028	0.59	1.00	0.32	1.12	3.00	1.88
9D13	A	27	1.24	3.99	0.79	0.98	3.15	0.79				11.10	2.85	2.37	8.98	7.46	18	PVC	0.009	1.77	95	4.22	9D13	7.46	0.38	0.0024	0.23	1.50	0.41	1.76	3.00	1.24
9D14	D	29	2.75	2.75	0.79	2.17	2.17	0.79				10.00	2.95	2.45	6.41	5.32	18	PVC	0.009	1.77	170	3.01	9D14	5.32	0.38	0.0012	0.21	1.00	0.14	2.11	2.50	0.39
9D12	A	26		0.40	0.79	0.00	0.32	0.79	0	0	25	6.48	3.60	2.99	1.14	0.94							9D12	0.94						1.12	3.00	1.88
9D121	A	28	0.40	0.40	0.79	0.32	0.32	0.79	0	0	190	6.38	3.60	2.99	1.14	0.94	12	RCP	0.015	0.79	25	1.20	9D121	0.94	0.25	0.0009	0.02	1.00	0.02	1.16	4.00	2.84
9E1	A	15		1.78	0.90	0.00	1.50	0.84	0	0	40	13.57	2.60	2.16	3.90	3.24							9E1	3.24						0.23	n/a	n/a
9E2	A	16	0.10	1.78	0.90	0.09	1.50	0.84				13.40	2.60	2.16	3.90	3.24	15	CMP	0.024	1.23	40	2.64	9E2	3.24	0.31	0.0085	0.34	0.40	0.04	0.61	2.50	1.89
9E3	A	17	1.68	1.68	0.84	1.41	1.41	0.84				11.00	2.85	2.37	4.02	3.34	15	CMP	0.024	1.23	285	2.72	9E3	3.34	0.31	0.0091	2.58	1.00	0.11	3.30	2.20	-1.10
9F1	A	7		3.26	0.77	0.00	2.51	0.77	0	0	195	14.81	2.50	2.08	6.28	5.21							9F1	5.21						0.23	n/a	n/a
9F2	A	6	1.48	3.26	0.77	1.14	2.51	0.77				14.00	2.55	2.12	6.40	5.32	18	RCP	0.015	1.77	195	3.01	9F2	5.32	0.38	0.0034	0.66	0.90	0.13	1.01	2.00	0.99
9F3	A	5	0.00	1.78	0.77	0.00	1.37	0.77				12.50	2.70	2.24	3.70	3.07	18	RCP	0.015	1.77	60	1.74	9F3	3.07	0.38	0.0011	0.07	0.10	0.00	1.09	2.00	0.91
9F4	A	4	1.78	1.78	0.77	1.37	1.37	0.77				12.50	2.70	2.24	3.70	3.07	18	RCP	0.015	1.77	205	1.74	9F4	3.07	0.38	0.0011	0.23	0.40	0.02	1.34	1.50	0.16
9F5	A	3	0.00	0.00	0.77	0.00	0.00	0.77				5.00	4.10	3.40	0.00	0.00	18	RCP	0.015	1.77	70	0.00	9F5	0.00	0.38	0.0000	0.00	0.05	0.00	1.34	2.00	0.66

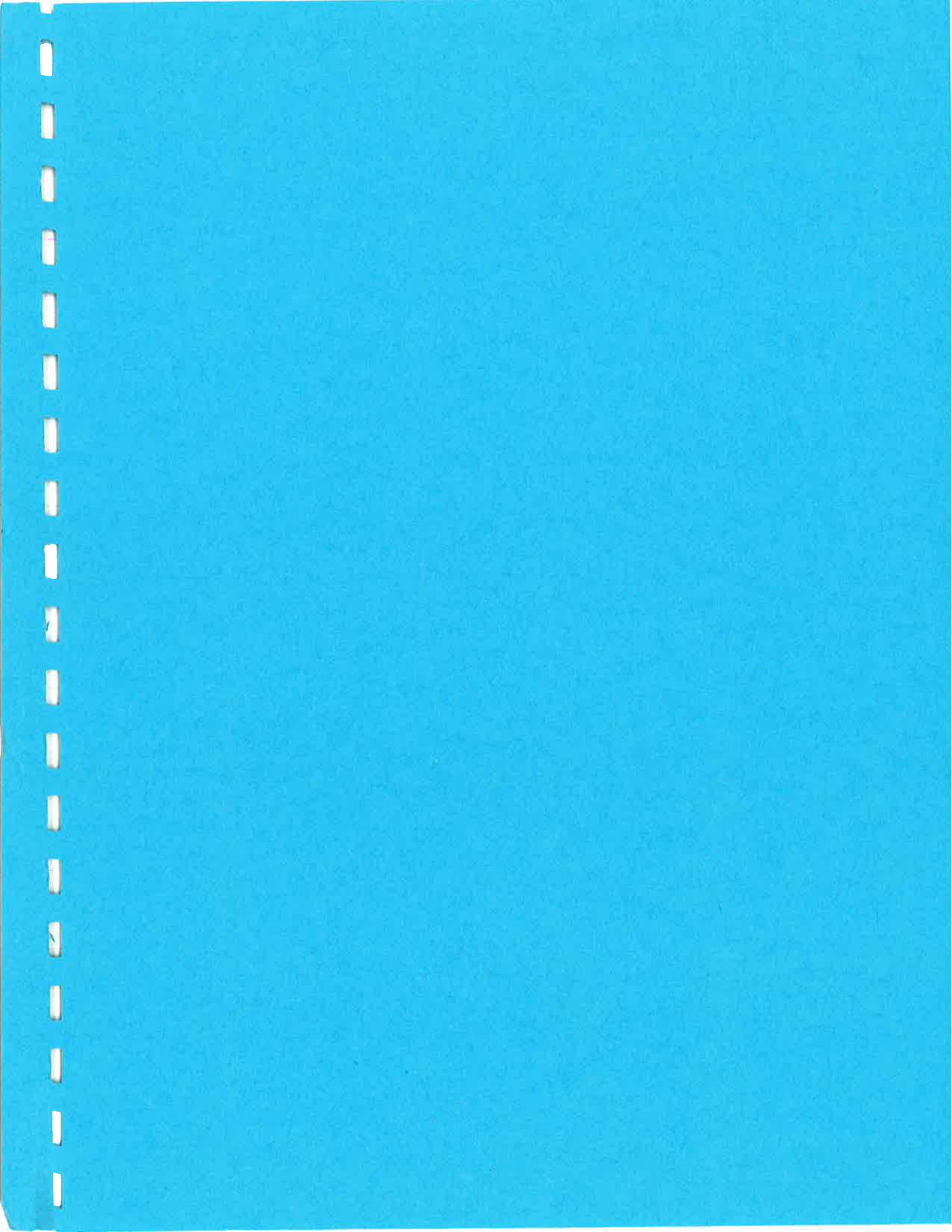
Notes:  
 1. POC = Point of Concentration  
 2. Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.  
 3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.  
 4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.  
 \*\* Assumed Marsh starting water surface elevation of 0.00 NGVD.



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
POC <sup>1</sup>																																	
10A1	C	3	0.00	1.62	0.50	0.00	0.81	0.50	0	0	90	19.59	2.20	1.83	1.78	1.48							10A1	1.48						1.00			
10A2	C	4	0.00	1.62	0.50	0.00	0.81	0.50	0	0	30	19.22	2.20	1.83	1.78	1.48	36	CMP	0.024	7.07	90	0.09	10A2	0.63	0.75	0.0000	0.00	1.00	0.00	1.00	n/a	n/a	
																	42	CMP	0.024	9.62	90	0.09		0.85									
10B1	C	5		1.62			0.81	0.50	0	0	75	19.09	2.20	1.83	1.78	1.48							10B1	1.48						1.00			
10B2	C	6	1.62	1.62	0.50	0.81	0.81	0.50	620	0	0	18.78	2.25	1.87	1.82	1.51	36	CMP	0.024	7.07	75	0.21	10B2	1.51	0.75	0.0000	0.00	1.00	0.00	1.00	n/a	n/a	
10C1	C	7		21.81			10.91	0.50	0	0	205	25.08	1.95	1.62	21.26	17.65							10C1	17.65						1.00			
10C2	C	11	2.28	21.81	0.50	1.14	10.91	0.50	0	0	120	24.22	2.00	1.66	21.81	18.10	30	PVC	0.009	4.91	205	3.69	10C2	18.10	0.63	0.0009	0.19	1.90	0.40	1.59	2.20	0.61	
10C3	C	14	4.63	19.53	0.50	2.31	9.77	0.50	0	0	200	23.72	2.00	1.66	19.53	16.21	15	PVC	0.009	1.23	120	6.61	10C3	8.11	0.31	0.0300	3.60	1.50	1.02	6.21	3.00	-3.21	
																	15	PVC	0.009	1.23	120	6.61		8.11									
10C4	C	17	0.00	12.00			6.00	0.50	0	0	60	22.89	2.05	1.70	12.30	10.21	24	PVC	0.009	3.14	200	3.25	10C4	10.21	0.50	0.0010	0.19	0.40	0.07	6.47	3.50	-2.97	
10C5	C	18	7.67	12.00	0.50	3.83	6.00	0.50	700	250	0	22.64	2.05	1.70	12.30	10.21	15	PVC	0.009	1.23	65	8.32	10C5	10.21	0.31	0.0119	0.77	0.40	0.43	7.68	3.80	-3.88	
10C6	C	19	1.85	4.33	0.50	0.92	2.17	0.50	0	0	250	18.93	2.20	1.83	4.77	3.96	12	RCP	0.015	0.79	60	5.04	10C6	3.96	0.25	0.0163	0.98	0.90	0.35	9.01	3.80	-5.21	
10C7	C	4	2.48	2.48	0.50	1.24	1.24	0.50	580	0	0	17.89	2.25	1.87	2.80	2.32	10	RCP	0.015	0.55	440	4.25	10C7	2.32	0.21	0.0148	6.53	0.15	0.04	15.58	59.00	43.42	
10C3	C	14		2.91			1.45	0.50	0	0	250	20.04	2.15	1.78	3.13	2.60							10C3	2.60						6.21	3.00	-3.21	
10C11	n/a	n/a	2.91	2.91	0.50	1.45	1.45	0.50	630	0	0	19.00	2.20	1.83	3.20	2.66	12	NEW	0.015	0.79	250	3.38	10C11	2.66	0.25	0.0074	1.84	0.05	0.01	8.06	10.00	1.94	

- Notes:
- POC = Point of Concentration
  - Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.
  - Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.
  - Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.
- \*\* Assumed Marsh starting water surface elevation of 1.00 NGVD.





Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
1B1	G	17		2.19	0.50	0.00	1.09	0.50	0	0	110	10.79	2.85	2.37	3.12	2.59	15	RCP	0.015	1.23	110	2.15	1B1	2.59						-0.20	n/a	n/a
1B2	G	18	2.19	2.19	0.50	1.09	1.09	0.50	60	480	0	10.33	2.90	2.41	3.17	2.63	15	RCP	0.015	1.23	110	2.15	1B2	2.63	0.31	0.0022	0.24	0.05	0.00	0.05	3.0	2.95
1C6	G	58		11.33	0.50	0.00	7.22	0.64	0	0	125	13.54	2.60	2.16	18.77	15.58							1C6	15.58						-0.20	n/a	n/a
1C5	G	53	0.31	11.33	0.50	0.16	7.22	0.64	0	0	40	13.02	2.65	2.20	19.13	15.88							1C5	15.88	0.75	0.0008	0.09	1.50	0.12	0.01	1.8	1.79
1C4	G	51	1.10	8.20	0.90	0.99	5.65	0.69	0	0	250	12.85	2.65	2.20	14.98	12.43	36	RCP	0.015	7.07	125	2.25	1C4	12.43	0.63	0.0012	0.05	1.40	0.14	0.20	1.8	1.60
1C3	G	49	1.01	5.97	0.50	0.50	3.65	0.61	0	0	340	11.81	2.75	2.28	10.03	8.33	30	RCP	0.015	4.91	250	1.70	1C3	8.33	0.63	0.0005	0.14	1.00	0.04	0.38	1.8	1.42
1C2	G	47	0.89	4.96	0.90	0.80	3.14	0.63	0	0	35	10.40	2.90	2.41	9.12	7.57	30	RCP	0.015	4.91	340	1.54	1C2	7.57	0.63	0.0005	0.15	0.20	0.01	0.54	3.0	2.46
1C1	G	46	1.65	4.07	0.10	0.17	2.34	0.57	0	0	20	10.25	2.90	2.41	6.79	5.63	30	RCP	0.015	4.91	35	1.15	1C1	5.63	0.63	0.0002	0.01	0.05	0.00	0.55	n/a	n/a
1C5	G	53		0.96	0.50	0.00	0.48	0.50	0	0	165	8.63	3.15	2.61	1.52	1.26							1C5	1.26						0.01	1.8	1.79
1C11	G	54	0.67	0.96	0.50	0.33	0.48	0.50	60	135	115	7.94	3.30	2.74	1.59	1.32	12	PVC	0.009	0.79	165	1.68	1C11	1.32	0.25	0.0007	0.11	0.10	0.00	0.12	2.1	1.98
1C12	G	195	0.30	0.30	0.50	0.15	0.15	0.50	40	120	0	6.89	3.50	2.91	0.52	0.43	12	PVC	0.009	0.79	140	0.55	1C12	0.43	0.25	0.0001	0.01	0.45	0.00	0.14	3.0	2.86
1C4	G	51		1.13	0.90	0.00	1.02	0.90	0	0	165	8.02	3.20	2.66	3.26	2.70							1C4	2.70						0.20	1.8	1.60
1C21	G	52	1.13	1.13	0.90	1.02	1.02	0.90	0	280	0	7.33	3.40	2.82	3.46	2.87	12	PVC	0.009	0.79	165	3.66	1C21	2.87	0.25	0.0031	0.51	0.05	0.01	0.72	1.8	1.08
1C5	G	53		1.86	0.50	0.00	0.93	0.50	0	0	175	10.48	2.90	2.41	2.69	2.23							1C5	2.23						0.01	1.8	1.79
1C31	G	57	0.52	1.86	0.50	0.26	0.93	0.50	0	0	165	9.75	3.00	2.49	2.78	2.31	12	RCP	0.015	0.79	175	2.94	1C31	2.31	0.25	0.0056	0.97	1.00	0.13	1.12	2.5	1.38
1C32	G	220	0.31	1.33	0.50	0.15	0.67	0.50	0	0	95	9.06	3.05	2.53	2.03	1.69	12	RCP	0.015	0.79	165	2.15	1C32	1.69	0.25	0.0030	0.49	1.00	0.07	1.68	2.8	1.12
1C33	G	223	0.31	1.03	0.50	0.16	0.51	0.50	0	0	120	8.67	3.15	2.61	1.62	1.34	12	PVC	0.009	0.79	95	1.71	1C33	1.34	0.25	0.0007	0.06	2.70	0.12	1.87	2.8	0.93
1C34	G	225	0.72	0.72	0.50	0.36	0.36	0.50	105	100	0	8.17	3.20	2.66	1.15	0.95	12	PVC	0.009	0.79	120	1.21	1C34	0.95	0.25	0.0003	0.04	0.45	0.01	1.92	3.0	1.08
1D1	G	68		2.42	0.90	0.00	2.18	0.90	0	0	260	10.17	2.95	2.45	6.42	5.33							1D1	5.33						0.55	n/a	n/a
1D2	G	71	0.79	2.42	0.90	0.71	2.18	0.90	0	0	110	9.08	3.05	2.53	6.64	5.51	15	PVC	0.009	1.23	260	4.49	1D2	5.51	0.31	0.0035	0.90	0.60	0.19	1.64	4.5	2.86
1D3	G	72	0.40	1.63	0.90	0.36	1.47	0.90	0	0	150	8.63	3.15	2.61	4.62	3.84	12	PVC	0.009	0.79	110	4.89	1D3	3.84	0.25	0.0055	0.61	0.40	0.15	2.40	3.0	0.60
1D4	G	73	1.23	1.23	0.90	1.11	1.11	0.90	0	360	0	8.00	3.30	2.74	3.65	3.03	12	PVC	0.009	0.79	150	3.86	1D4	3.03	0.25	0.0035	0.52	0.05	0.01	2.93	3.8	0.87
1E1	G	108		4.20	0.50	0.00	2.10	0.50	0	0	140	10.10	2.95	2.45	6.19	5.14							1E1	5.14						-0.20	n/a	n/a
1E2	G	109	0.26	4.20	0.50	0.13	2.10	0.50	0	0	200	9.52	3.00	2.49	6.30	5.23	18	RCP	0.015	1.77	140	2.96	1E2	5.23	0.38	0.0033	0.46	1.00	0.14	0.39	2.5	2.11
1E3	G	228	0.93	1.54	0.50	0.47	0.77	0.50	0	0	165	8.69	3.15	2.61	2.43	2.01	12	RCP	0.015	0.79	200	2.56	1E3	2.01	0.25	0.0042	0.85	2.00	0.20	1.44	3.0	1.56
1E4	G	230	0.61	0.61	0.50	0.30	0.30	0.50	105	80	0	8.00	3.30	2.74	1.00	0.83	12	PVC	0.009	0.79	165	1.06	1E4	0.83	0.25	0.0003	0.04	0.05	0.00	1.49	3.5	2.01
1E2	G	109		2.40	0.50	0.00	1.20	0.50	0	0	75	9.38	3.00	2.49	3.60	2.99							1E2	2.99						0.39	2.5	2.11
1E11	G	110	0.46	2.40	0.50	0.23	1.20	0.50	0	0	100	9.06	3.05	2.53	3.66	3.04	18	RCP	0.015	1.77	75	1.72	1E11	3.04	0.38	0.0011	0.08	1.00	0.05	0.52	2.5	1.98
1E12	G	114	0.99	1.48	0.50	0.49	0.74	0.50	0	0	195	8.65	3.15	2.61	2.33	1.94	15	RCP	0.015	1.23	100	1.58	1E12	1.94	0.31	0.0012	0.12	0.90	0.03	0.68	2.0	1.32
1E13	G	116	0.49	0.49	0.50	0.25	0.25	0.50	105	60	0	7.83	3.30	2.74	0.81	0.67	12	RCP	0.015	0.79	195	0.86	1E13	0.67	0.25	0.0005	0.09	1.00	0.01	0.78	3.0	2.22
1E11	G	110		0.46	0.50	0.00	0.23	0.50	0	0	90	7.90	3.30	2.74	0.75	0.63							1E11	0.63						0.52	2.5	1.98
1E21	G	111	0.25	0.46	0.50	0.13	0.23	0.50	0	0	60	7.53	3.30	2.74	0.75	0.63	12	PVC	0.009	0.79	90	0.80	1E21	0.63	0.25	0.0001	0.01	0.10	0.00	0.54	2.5	1.96
1E22	G	113	0.20	0.20	0.50	0.10	0.10	0.50	80	60	0	7.28	3.40	2.82	0.35	0.29	12	PVC	0.009	0.79	60	0.37	1E22	0.29	0.25	0.0000	0.00	0.15	0.00	0.54	2.5	1.96
1F1	G	117		2.12	0.50	0.00	1.53	0.72	0	0	145	11.21	2.80	2.32	4.28	3.56							1F1	3.56						-0.20	n/a	n/a
1F2	G	118	0.96	2.12	0.50	0.48	1.53	0.72	0	0	45	10.60	2.90	2.41	4.44	3.68	18	RCP	0.015	1.77	145	2.08	1F2	3.68	0.38	0.0016	0.24	0.10	0.01	0.04	2.5	2.46
1F3	G	119	1.17	1.17	0.90	1.05	1.05	0.90	0	650	0	10.42	2.90	2.41	3.05	2.53	18	RCP	0.015	1.77	45	1.43	1F3	2.53	0.38	0.0008	0.03	0.05	0.00	0.08	1.5	1.42
1G1	G	210		2.49	0.50	0.00	1.25	0.50	0	0	120	12.04	2.70	2.24	3.36	2.79							1G1	2.79						-0.20	n/a	n/a
1G2	G	211	0.19	2.49	0.50	0.09	1.25	0.50	0	0	180	11.54	2.80	2.32	3.49	2.89	15	PVC	0.009	1.23	120	2.36	1G2	2.89	0.31	0.0010	0.11	1.50	0.13	0.04	1.5	1.46
1G3	G	212	0.50	2.30	0.50	0.25	1.15	0.50	0	0	130	10.79	2.85	2.37	3.28	2.73	12	PVC	0.009	0.79	180	3.47	1G3	2.73	0.25	0.0028	0.50					



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
1L1	G	103		121.94	0.10	0.00	57.71	0.47	0	0	50	39.63	1.60	1.33	92.34	76.64								1L1	76.64						-0.11	n/a	n/a
1L2	G	104	0.43	121.94	0.10	0.04	57.71	0.47	0	0	240	39.42	1.60	1.33	92.34	76.64	72	RCP	0.015	28.27	50	2.71	1L2	76.64	1.50	0.0004	0.02	1.00	0.11	0.03	n/a	n/a	
1K11	G	105		1.95	0.50	0.00	0.97	0.50	0	0	0	10.33	2.90	2.41	2.82	2.34								1K11	2.34						0.03	n/a	n/a
1K12	G	106	0.98	1.95	0.50	0.49	0.97	0.50	150	240	0	10.33	2.90	2.41	2.82	2.34	12	PVC	0.009	0.79	180	2.98	1K12	2.34	0.25	0.0021	0.37	1.80	0.25	0.65	2.0	1.35	
1K13	G	107	0.97	0.97	0.50	0.48	0.48	0.50	100	270	0	9.47	3.00	2.49	1.45	1.21	12	PVC	0.009	0.79	35	1.53	1K13	1.21	0.25	0.0005	0.02	0.05	0.00	0.67	2.5	1.83	
1M1	G	169		1.50	0.50	0.00	0.75	0.50	0	0	160	10.06	2.95	2.45	2.21	1.83								1M1	1.83						0.03	n/a	n/a
1M2	G	170	0.92	1.50	0.50	0.46	0.75	0.50	0	0	135	9.40	3.00	2.49	2.24	1.86	15	RCP	0.015	1.23	160	1.52	1M2	1.86	0.31	0.0011	0.18	0.90	0.03	0.24	2.0	1.76	
1M3	G	171	0.57	0.57	0.50	0.29	0.29	0.50	120	140	0	8.83	3.10	2.57	0.88	0.73	12	RCP	0.015	0.79	135	0.93	1M3	0.73	0.25	0.0006	0.08	0.05	0.00	0.31	2.0	1.69	
1N1	G	167		118.07	0.10	0.00	55.95	0.47	0	0	60	38.42	1.60	1.33	89.51	74.30								1N1	74.30						0.03	n/a	n/a
1N2	G	168	4.78	118.07	0.10	0.48	55.95	0.47	0	0	750	38.17	1.60	1.33	89.51	74.30	48	RCP	0.015	12.57	60	2.96	1N2	37.15	1.00	0.0035	0.21	1.00	0.14	0.38	n/a	n/a	
																	48	RCP	0.015	12.57	60	2.96		37.15									
1P1	G	184		2.86	0.50	0.00	1.43	0.50	0	0	165	12.42	2.70	2.24	3.86	3.20								1P1	3.20						0.38	n/a	n/a
1P2	G	185	0.73	2.86	0.50	0.36	1.43	0.50	125	475	0	11.74	2.75	2.28	3.93	3.26	15	RCP	0.015	1.23	165	2.66	1P2	3.26	0.31	0.0034	0.56	0.10	0.01	0.94	2.0	1.06	
1P3	G	187	2.13	2.13	0.50	1.07	1.07	0.50	120	190	0	9.25	3.05	2.53	3.25	2.70	12	RCP	0.015	0.79	80	3.43	1P3	2.70	0.25	0.0076	0.61	0.95	0.17	1.73	2.0	0.27	
1Q1	G	182		3.64	0.90	0.00	3.28	0.90	0	0	200	9.79	3.00	2.49	9.83	8.16								1Q1	8.16						0.38	n/a	n/a
1Q2	G	183	3.64	3.64	0.90	3.28	3.28	0.90	0	475	0	8.96	3.10	2.57	10.15	8.43	15	PVC	0.009	1.23	200	6.87	1Q2	8.43	0.31	0.0081	1.62	0.05	0.04	2.04	2.2	0.16	
1R1	G	194		11.34	0.90	0.00	6.02	0.53	0	0	420	16.32	2.35	1.95	14.14	11.73								1R1	11.73						0.38	n/a	n/a
1R2	G	195	1.38	11.34	0.90	1.25	6.02	0.53	0	0	300	14.57	2.50	2.08	15.04	12.48	24	PVC	0.009	3.14	420	3.97	1R2	12.48	0.50	0.0015	0.61	1.00	0.25	1.23	1.5	0.27	
1R3	G	177	2.23	8.36	0.90	2.01	4.29	0.51	0	0	135	13.32	2.60	2.16	11.15	9.26	21	PVC	0.009	2.41	300	3.85	1R3	9.26	0.44	0.0016	0.49	1.00	0.23	1.95	4.0	2.05	
1R4	G	178	0.07	4.48	0.30	0.02	1.79	0.40	0	0	90	12.76	2.65	2.20	4.73	3.93	18	PVC	0.009	1.77	135	2.22	1R4	3.93	0.38	0.0007	0.09	1.50	0.12	2.16	2.5	0.34	
1R5	G	181	0.49	0.49	0.30	0.15	0.15	0.30	150	0	0	8.33	3.20	2.66	0.47	0.39	15	RCP	0.015	1.23	100	0.32	1R5	0.39	0.31	0.0000	0.00	0.90	0.00	2.16	2.5	0.34	
1R2	G	195		1.60	0.30	0.00	0.48	0.30	0	0	160	13.67	2.60	2.16	1.25	1.03								1R2	1.03						1.23	1.5	0.27
1R11	G	197	0.75	1.60	0.30	0.23	0.48	0.30	360	0	0	13.00	2.65	2.20	1.27	1.05	12	RCP	0.015	0.79	160	1.34	1R11	1.05	0.25	0.0012	0.19	1.00	0.03	1.45	1.5	0.05	
1R12	G	200	0.84	0.84	0.30	0.25	0.25	0.30	220	0	0	9.89	2.95	2.45	0.75	0.62	12	PVC	0.009	0.79	60	0.79	1R12	0.62	0.25	0.0001	0.01	1.50	0.01	1.47	2.0	0.53	
1R3	G	177		1.65	0.30	0.00	0.49	0.30	0	0	110	13.24	2.60	2.16	1.28	1.07								1R3	1.07						1.95	4.0	2.05
1R21	G	176	1.65	1.65	0.30	0.49	0.49	0.30	350	0	0	12.78	2.65	2.20	1.31	1.09	12	PVC	0.009	0.79	110	1.38	1R21	1.09	0.25	0.0004	0.05	0.05	0.00	2.00	n/a	n/a	
1R4	G	178		2.21	0.50	0.00	1.11	0.50	0	0	90	12.76	2.65	2.20	2.93	2.43								1R4	2.43						2.16	2.5	0.34
1R31	G	179?	0.59	2.21	0.50	0.29	1.11	0.50	0	0	65	12.38	2.70	2.24	2.99	2.48	15	RCP	0.015	1.23	90	2.02	1R31	2.48	0.31	0.0020	0.18	0.90	0.06	2.39	2.5	0.11	
1R32	G	180	1.63	1.63	0.50	0.81	0.81	0.50	320	0	0	12.11	2.70	2.24	2.19	1.82	15	PVC	0.009	1.23	65	1.48	1R32	1.82	0.31	0.0004	0.02	0.50	0.02	2.43	2.5	0.07	
1R4	G	178		1.70	0.30	0.00	0.51	0.30	0	0	140	10.69	2.90	2.41	1.48	1.23								1R4	1.23						2.16	2.5	0.34
1R41	K	1	1.70	1.70	0.30	0.51	0.51	0.30	230	0	0	10.11	2.95	2.45	1.51	1.25	12	RCP	0.015	0.79	140	1.59	1R41	1.25	0.25	0.0016	0.23	0.05	0.00	2.39	2.5	0.11	
1T1	K	2		50.74	0.50	0.00	21.23	0.42	0	0	375	35.04	1.65	1.37	35.03	29.08								1T1	29.08						0.38	n/a	n/a
1T2	K	5	2.90	50.74	0.50	1.45	21.23	0.42	0	0	400	33.48	1.70	1.41	36.09	29.96	30	PVC	0.009	4.91	375	6.10	1T2	29.96	0.63	0.0025	0.95	1.50	0.87	2.20	3.5	1.30	
1T3	K	22	0.00	37.74	0.50	0.00	15.82	0.42	0	0	55	31.81	1.75	1.45	27.69	22.98	30	RCP	0.015	4.91	400	4.68	1T3	22.98	0.63	0.0042	1.66	0.60	0.20	4.07	9.0	4.93	
1T4	K	23	1.00	37.74	0.50	0.50	15.82	0.42	0	0	305	31.58	1.75	1.45	27.69	22.98	18	PVC	0.009	1.77	55	6.50	1T4	11.49	0.38	0.0228	1.25	0.60	0.39	5.71	9.0	3.29	
1T5	K	25	2.26	36.74	0.50	1.13	15.32	0.42	0	0	205	30.31	1.80	1.49	27.58	22.89	18	PVC	0.009	1.77	55	6.50		11.49									
1T6	K	27	0.12	34.48	0.50	0.06	14.19	0.41	0	0	105	29.46	1.80	1.49	25.55	21.20	18	RCP	0.015	1.77	305	12.95	1T5	22.89	0.38	0.0629	19.18	0.60	1.56	26.46	31.0	4.54	
1T7	K	29	0.57	24.73	0.50	0.29	10.21	0.41	0	0	135	29.02	1.85	1.54	18.88	15.67	18	RCP	0.015	1.77	205	12.00	1T6	21.20	0.38	0.0540	11.06	0.50	1.12	38.64	49.0	10.36	
1T8	K	32	1.77	22.68	0.50	0.89	9.33	0.41	0	0	275	28.46	1.85	1.54	17.26	14.32	18	RCP	0.015	1.77	105	8.87	1T7	15.67	0.38	0.0295	3.09	0.90	1.10	42.83	60.0	17.17	
1T9	K	34	0.80																														

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
1T2	K	5		9.01	0.30	0.00																	1T2	7.23						2.20	3.5	1.30	
1T31	K	10	1.14	9.01	0.30	0.34	3.63	0.40	0	0	320	16.21	2.40	1.99	8.72	7.23	18	PVC	0.009	1.77	185	4.18	1T31	7.39	0.38	0.0024	0.44	0.10	0.03	2.66	5.5	2.84	
1T32	K	11	3.23	7.87	0.30	0.97	3.29	0.42	0	0	115	14.10	2.55	2.12	8.39	6.97	18	PVC	0.009	1.77	320	3.94	1T32	6.97	0.38	0.0021	0.67	0.90	0.22	3.55	5.0	1.45	
1T33	K	12	0.57	4.64	0.50	0.28	2.32	0.50	0	0	85	13.63	2.60	2.16	6.04	5.01	15	RCP	0.015	1.23	115	4.08	1T33	5.01	0.31	0.0080	0.92	1.00	0.26	4.72	5.5	0.78	
1T34	K	16	0.54	3.85	0.50	0.27	1.92	0.50	0	0	65	13.27	2.60	2.16	5.00	4.15	15	RCP	0.015	1.23	85	3.38	1T34	4.15	0.31	0.0055	0.46	1.50	0.27	5.45	6.5	1.05	
1T35	K	18	0.70	1.05	0.50	0.35	0.52	0.50	0	0	85	7.49	3.40	2.82	1.78	1.48	15	RCP	0.015	1.23	140	1.21	1T35	1.48	0.31	0.0007	0.10	0.20	0.00	5.56	7.0	1.44	
1T36	J	228	0.35	0.35	0.50	0.17	0.17	0.50	70	70	0	7.14	3.40	2.82	0.59	0.49	15	RCP	0.015	1.23	85	0.40	1T36	0.49	0.31	0.0001	0.01	0.15	0.00	5.56	7.5	1.94	
1T7	K	29		1.48	0.40	0.00	0.59	0.40	0	0	95	19.81	2.20	1.83	1.30	1.08																	
1T41	K	30	1.48	1.48	0.40	0.59	0.59	0.40	540	290	0	19.42	2.20	1.83	1.30	1.08	12	RCP	0.015	0.79	95	1.38	1T7	1.08						42.83	60.0	17.17	
1T33	K	12		0.23	0.50	0.00	0.12	0.50	0	0	160	8.33	3.20	2.66	0.37	0.31																	
1T51	K	13	0.23	0.23	0.50	0.12	0.12	0.50	120	0	0	7.67	3.30	2.74	0.38	0.32	12	PVC	0.009	0.79	160	0.40	1T33	0.31						4.72	5.5	0.78	
1T34	K	16		2.26	0.50	0.00	1.13	0.50	0	0	65	13.27	2.60	2.16	2.94	2.44																	
1T61	K	21	2.26	2.26	0.50	1.13	1.13	0.50	240	320	0	13.00	2.65	2.20	3.00	2.49	12	RCP	0.015	0.79	65	3.17	1T34	2.44						5.45	6.5	1.05	
1T6	K	27		9.63	0.50	0.00	3.93	0.41	0	0	45	23.31	2.00	1.66	7.85	6.52																	
1T71	K	28	0.73	9.63	0.50	0.36	3.93	0.41	0	0	160	23.13	2.05	1.70	8.05	6.68	12	CMP	0.024	0.79	45	8.50	1T6	6.52						38.64	49.0	10.36	
1T72	K	187	0.00	8.91	0.40	0.00	3.56	0.40	0	0	100	22.46	2.05	1.70	7.30	6.06																	
1T73	K	188	8.91	8.91	0.40	3.56	3.56	0.40	660	0	570	22.04	2.10	1.74	7.48	6.21	21	RCP	0.015	2.41	100	2.58	1T72	6.06	0.25	0.1191	5.36	0.05	0.06	44.05	54.0	9.95	
1T81	K	201		7.22	0.40	0.00	2.89	0.40	0	0	30	20.40	2.15	1.78	6.21	5.15																	
1T82	O	7	0.00	5.09	0.40	0.00	2.03	0.40	0	0	275	19.83	2.20	1.83	4.48	3.71	12	CMP	0.024	0.79	30	6.56	1T81	5.15	0.25	0.0709	2.13	0.05	0.03	74.95	149.0	74.05	
1T83	O	8	0.37	5.09	0.40	0.15	2.03	0.40	0	0	15	18.69	2.25	1.87	4.58	3.80																	
1T84	O	9	0.00	4.71	0.40	0.00	1.88	0.40	0	0	70	18.63	2.25	1.87	4.24	3.52	12	RCP	0.015	0.79	275	4.84	1T82	3.71						77.11	163.0	85.89	
1T85	O	10	2.22	4.71	0.40	0.89	1.88	0.40	600	0	0	18.33	2.25	1.87	4.24	3.52																	
1T86	O	11	0.00	1.17	0.40	0.00	0.47	0.40	0	0	60	14.57	2.50	2.08	1.17	0.97	18	CMP	0.024	1.77	70	1.99	1T83	3.80	0.25	0.0151	4.14	0.05	0.02	81.27	196.5	115.23	
1T87	O	12	0.00	1.17	0.40	0.00	0.47	0.40	0	0	40	14.32	2.50	2.08	1.17	0.97																	
1T88	O	13	1.17	1.17	0.40	0.47	0.47	0.40	200	565	0	14.15	2.55	2.12	1.19	0.99	12	CMP	0.024	0.79	40	1.26	1T84	3.52	0.38	0.0038	0.27	0.05	0.00	81.54	210.0	128.46	
1T85	O	10		1.32	0.40	0.00	0.53	0.40	0	0	70	12.16	2.70	2.24	1.43	1.18																	
1T91	O	14	0.00	1.32	0.40	0.00	0.53	0.40	0	0	175	11.87	2.75	2.28	1.45	1.21																	
1T92	O	15	1.32	1.32	0.40	0.53	0.53	0.40	70	550	0	11.14	2.80	2.32	1.48	1.23	12	CMP	0.024	0.79	175	1.56	1T85	1.18						81.54	210.0	128.46	
1V1	K	37		20.19	0.50	0.00	10.69	0.53	0	0	170	16.13	2.40	1.99	25.66	21.29																	
1V2	K	38	0.59	20.19	0.50	0.29	10.69	0.53	0	0	85	15.42	2.45	2.03	26.19	21.74																	
1V3	K	43	0.24	16.88	0.50	0.12	9.03	0.54	0	0	195	15.06	2.45	2.03	22.14	18.37	48	RCP	0.015	12.57	170	1.73	1V1	21.29	1.00	0.0003	0.05	1.50	0.07	0.50	n/a	n/a	
1V4	K	210	1.37	6.65	0.50	0.69	3.53	0.53	0	0	65	14.25	2.55	2.12	9.00	7.47	48	RCP	0.015	12.57	85	1.46	1V2	21.74	1.00	0.0002	0.02	0.60	0.02	0.54	1.5	1.00	
1V5	K	212	0.63	3.92	0.50	0.31	2.17	0.55	0	0	230	13.98	2.55	2.12	5.52	4.58	42	RCP	0.015	9.62	195	0.78	1V3	18.37	1.00	0.0001	0.01	1.00	0.01	0.56	1.8	1.24	
1V6	K	215	0.65	3.30	0.50	0.32	1.85	0.56	0	0	255	13.02	2.65	2.20	4.91	4.08	36	RCP	0.015	7.07	65	0.65	1V4	7.47	0.88	0.0001	0.01	1.00	0.01	0.56	1.8	1.24	
1V7	K	218	0.00	2.65	0.50	0.00	1.53	0.58	0	0	35	11.96	2.75	2.28	4.20	3.49	36	RCP	0.015	7.07	230	0.58	1V5	4.58	0.75	0.0001	0.00	1.00	0.01	0.57	1.5	0.93	
1V8	K	219	0.31	2.65	0.50	0.16	1.53	0.58	0	0	195	11.81	2.75	2.28	4.20	3.49	36	RCP	0.015	7.07	255	0.49	1V6	4.08	0.75	0.0000	0.01	1.50	0.01	0.59	1.5	0.91	
1V9	K	125	1.82	2.33	0.50	0.91	1.37	0.59	105	440	0	11.00	2.85	2.37	3.91	3.24	24	RCP	0.015	3.14	35	1.11	1V7	3.49	0.75	0.0000	0.01	1.40	0.01	0.60	1.8	1.20	
1V10	K	126	0.51	0.51	0.90	0.46	0.46	0.90	75	100	0	7.50	3.40	2.82	1.56	1.30	18	RCP	0.015	1.77	195	1.84	1V8	3.49	0.50	0.0003	0.01	0.60	0.01	0.63	1.5	0.87	
1V3	K	43		9.99	0.50	0.00	5.38	0.54	0	0	200	14.06	2.55	2.12	13.73	11.40	15	RCP	0.015	1.23	80	1.06	1V9	3.24	0.38	0.0013	0.25	0.90	0.05	0.92	1.0	0.08	
1V11	K	44	0.98	9.99	0.50	0.49	5.38	0.54	0	0	45	13.23	2.60	2.16	14.00	11.62	30	PVC	0.009	4.91	200	2.37	1V10	1.30	0.31	0.0005	0.04	0.05	0.00	0.96	1.0	0.04	
1V12	K	47	0.52	7.31	0.50	0.26	4.05	0.55	0	0	230	13.04	2.65	2.20	10.72	8.90	24	PVC															



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
1V12	K	47		2.14	0.50	0.00	1.07	0.50	0	0	350	11.13	2.80	2.32	2.99	2.48								1V12	2.48						0.86	1.0	0.14
1V61	K	46	1.60	2.14	0.50	0.80	1.07	0.50	120	240	0	9.67	3.00	2.49	3.20	2.66	15	PVC	0.009	1.23	350	2.17	1V61	2.66	0.31	0.0008	0.28	0.20	0.01	1.16	1.5	0.34	
1V62	G	202	0.53	0.53	0.50	0.27	0.27	0.50	120	100	0	8.50	3.15	2.61	0.84	0.70	10	RCP	0.015	0.55	265	1.28	1V62	0.70	0.21	0.0013	0.36	0.05	0.00	1.51	2.0	0.49	
1V15	K	53		0.69	0.90	0.00	0.62	0.90	0	0	170	8.96	3.10	2.57	1.91	1.59								1V15	1.59						1.46	2.0	0.54
1V71	K	55	0.69	0.69	0.90	0.62	0.62	0.90	0	390	0	8.25	3.20	2.66	1.97	1.64	12	RCP	0.015	0.79	170	2.09	1V71	1.64	0.25	0.0028	0.48	0.95	0.06	2.00	2.0	0.00	
1W1	K	90		1.42	0.90	0.00	1.28	0.90	0	0	205	8.13	3.20	2.66	4.09	3.40								1W1	3.40						0.38	n/a	n/a
1W2	K	92	0.40	1.42	0.90	0.36	1.28	0.90	0	0	145	7.27	3.40	2.82	4.35	3.61	12	RCP	0.015	0.79	205	4.59	1W2	3.61	0.25	0.0136	2.79	1.00	0.33	3.49	6.0	2.51	
1W3	K	94	0.25	0.25	0.90	0.23	0.23	0.90	0	80	0	5.67	3.80	3.15	0.87	0.72	12	RCP	0.015	0.79	115	0.92	1W3	0.72	0.25	0.0005	0.06	0.05	0.00	3.55	6.0	2.45	
1W2	K	92		0.77	0.90	0.00	0.69	0.90	0	0	145	7.27	3.40	2.82	2.35	1.95								1W2	1.95						3.49	6.0	2.51
1W11	K	93	0.77	0.77	0.90	0.69	0.69	0.90	0	200	0	6.67	3.50	2.91	2.42	2.01	12	RCP	0.015	0.79	145	2.56	1W11	2.01	0.25	0.0042	0.61	0.05	0.01	4.10	6.2	2.10	
1X1	K			15.87	0.50	0.00	7.93	0.50	0	0	180	28.25	1.85	1.54	14.68	12.18								1X1	12.18						0.38	n/a	n/a
1X2	K	99	1.40	15.87	0.50	0.70	7.93	0.50	0	0	80	27.50	1.90	1.58	15.08	12.51	24	RCP	0.015	3.14	180	3.98	1X2	12.51	0.50	0.0041	0.73	0.20	0.05	1.16	4.5	3.34	
1X3	K	101	0.22	14.47	0.50	0.11	7.23	0.50	0	0	50	27.17	1.90	1.58	13.74	11.41	24	RCP	0.015	3.14	80	3.63	1X3	11.41	0.50	0.0034	0.27	1.00	0.20	1.63	6.0	4.37	
1X4	K	102	2.60	14.25	0.50	1.30	7.12	0.50	0	0	295	26.96	1.90	1.58	13.53	11.23	18	RCP	0.015	1.77	50	6.36	1X4	11.23	0.38	0.0151	0.76	0.90	0.56	2.95	6.0	3.05	
1X5	K	103	0.79	11.64	0.50	0.39	5.82	0.50	0	0	35	25.73	1.95	1.62	11.35	9.42	15	RCP	0.015	1.23	295	7.68	1X5	9.42	0.31	0.0282	8.31	0.90	0.82	12.09	31.0	18.91	
1X6	K	104	10.86	10.86	0.50	5.43	5.43	0.50	600	870	0	25.58	1.95	1.62	10.59	8.79	12	RCP	0.015	0.79	35	11.19	1X6	8.79	0.25	0.0805	2.82	0.90	1.75	16.65	32.0	15.35	
1Y1	K			7.23	0.50	0.00	3.61	0.50	0	0	535	21.33	2.10	1.74	7.59	6.30								1Y1	6.30						0.38	n/a	n/a
1Y2	K	110	0.00	7.23	0.50	0.00	3.61	0.50	0	0	55	19.10	2.20	1.83	7.95	6.60	24	RCP	0.015	3.14	535	2.10	1Y2	6.60	0.50	0.0011	0.60	2.50	0.17	1.15	2.5	1.35	
1Y3	K	112	3.08	7.23	0.50	1.54	3.61	0.50	0	0	255	18.87	2.20	1.83	7.95	6.60	21	PVC	0.009	2.41	55	2.74	1Y3	6.60	0.44	0.0008	0.05	1.00	0.12	1.31	3.0	1.69	
1Y4	K	115	1.15	4.15	0.50	0.58	2.07	0.50	0	0	130	17.81	2.25	1.87	4.67	3.87	21	PVC	0.009	2.41	255	1.61	1Y4	3.87	0.44	0.0003	0.07	0.90	0.04	1.42	1.5	0.08	
1Y5	K	118	0.21	2.99	0.50	0.11	1.50	0.50	0	0	25	17.26	2.30	1.91	3.44	2.86	18	RCP	0.015	1.77	130	1.62	1Y5	2.86	0.38	0.0010	0.13	0.10	0.00	1.55	6.2	4.65	
1Y6	K	119	1.16	2.78	0.50	0.58	1.39	0.50	0	0	130	17.16	2.30	1.91	3.20	2.66	12	RCP	0.015	0.79	25	3.38	1Y6	2.66	0.25	0.0074	0.18	0.90	0.16	1.90	6.2	4.30	
1Y7	K	120	0.00	1.63	0.50	0.00	0.81	0.50	0	0	90	16.62	2.35	1.95	1.91	1.59	12	RCP	0.015	0.79	130	2.02	1Y7	1.59	0.25	0.0026	0.34	0.90	0.06	2.30	6.5	4.20	
1Y8	K	121	0.54	1.63	0.50	0.27	0.81	0.50	0	0	45	16.24	2.40	1.99	1.95	1.62	12	RCP	0.015	0.79	90	2.06	1Y8	1.62	0.25	0.0027	0.25	0.05	0.00	2.55	15.0	12.45	
1Y9	K	140	0.00	1.09	0.50	0.00	0.54	0.50	0	0	120	16.06	2.40	1.99	1.31	1.08								1Y9	1.08				1.00	0.00	2.55	30.0	27.45
1Y10	K	142	1.09	1.09	0.50	0.54	0.54	0.50	475	0	0	15.56	2.40	1.99	1.31	1.08	12	RCP	0.015	0.79	120	1.38	1Y10	1.08	0.25	0.0012	0.15	0.05	0.00	2.69	64.0	61.31	

Notes:  
 1. POC = Point of Concentration  
 2. Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.  
 3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.  
 4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.  
 \*\* Assumed Lagoon 1 starting water surface elevation of -0.20 NGVD and very low velocities within Low Canal.

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
2A1	D	154		32.22			13.34	0.41	0	0	270	26.77	1.90	1.58	25.34	21.03							2A1	21.03						-0.20	n/a	n/a
2A2	D	153	6.93	32.22	0.10	0.69	13.34	0.41	0	0	540	25.65	1.95	1.62	26.01	21.59	30	RCP	0.015	4.91	270	4.40	2A2	21.59	0.63	0.0037	0.99	1.05	0.32	1.11	PS	0.00
2B3	D	127		1.17			0.59	0.50	0	0	115	8.81	3.10	2.57	1.82	1.51							2B3	1.51						-0.20	n/a	n/a
2B2	D	125	0.64	1.17	0.50	0.32	0.59	0.50	60	240	0	8.33	3.20	2.66	1.88	1.56	10	RCP	0.015	0.55	115	2.86	2B2	1.56	0.21	0.0067	0.77	1.10	0.14	0.71	2.5	1.79
2B1	D	124	0.53	0.53	0.50	0.26	0.26	0.50	45	200	0	7.67	3.30	2.74	0.87	0.73	12	PVC	0.009	0.79	30	0.92	2B1	0.73	0.25	0.0002	0.01	0.05	0.00	0.72	2.5	1.78
2C1	D	150		1.55			0.77	0.50	0	0	115	8.82	3.10	2.57	2.40	1.99							2C1	1.99						-0.20	n/a	n/a
2C2	D	151	0.85	1.55	0.50	0.42	0.77	0.50	0	0	35	8.34	3.20	2.66	2.48	2.06	10	RCP	0.015	0.55	115	3.77	2C2	2.06	0.21	0.0117	1.34	1.10	0.24	1.39	4.5	3.11
2C3	D	152	0.70	0.70	0.50	0.35	0.35	0.50	50	250	0	8.19	3.20	2.66	1.12	0.93	10	RCP	0.015	0.55	35	1.71	2C3	0.93	0.21	0.0024	0.08	0.05	0.00	1.47	4.5	3.03
2D1	G	12		1.39			0.70	0.50	0	0	130	8.64	3.15	2.61	2.19	1.82							2D1	1.82						-0.20		
2D2	G	13	0.78	1.39	0.50	0.39	0.70	0.50	0	0	30	8.10	3.20	2.66	2.22	1.85	12	RCP	0.015	0.79	130	2.35	2D2	1.85	0.25	0.0036	0.46	1.10	0.09	0.36	3.0	2.64
2D3	G	14	0.61	0.61	0.50	0.31	0.31	0.50	40	250	0	7.97	3.30	2.74	1.01	0.84	12	RCP	0.015	0.79	30	1.07	2D3	0.84	0.25	0.0007	0.02	0.05	0.00	0.38	3.0	2.62
2E1	G	5		6.23			3.11	0.50	0	0	120	18.70	2.25	1.87	7.01	5.82							2E1	5.82						-0.20	n/a	n/a
2E2	G	6	0.41	6.23	0.50	0.20	3.11	0.50	0	0	65	18.20	2.25	1.87	7.01	5.82	12	PVC	0.009	0.79	120	7.40	2E2	5.82	0.25	0.0127	1.52	1.40	1.19	2.52	4.5	1.98
2E3	G	7	3.11	5.82	0.50	1.56	2.91	0.50	0	0	390	17.93	2.25	1.87	6.55	5.43	12	PVC	0.009	0.79	65	6.92	2E3	5.43	0.25	0.0111	0.72	0.90	0.67	3.91	5.5	1.59
2E4	G	10	0.85	2.70	0.50	0.42	1.35	0.50	0	0	60	16.31	2.35	1.95	3.18	2.64	10	RCP	0.015	0.55	390	4.84	2E4	2.64	0.21	0.0192	7.48	0.20	0.07	11.46	56.0	44.54
2E5	G	11	1.85	1.85	0.50	0.93	0.93	0.50	280	580	0	16.06	2.40	1.99	2.23	1.85	10	RCP	0.015	0.55	60	3.39	2E5	1.85	0.21	0.0094	0.56	0.05	0.01	12.04	59.0	46.96
2F1	D	201		8.63			4.32	0.50	0	0	120	23.40	2.00	1.66	8.63	7.16							2F1	7.16						-0.20	n/a	n/a
2F2	G	1	0.77	8.63	0.50	0.39	4.32	0.50	0	0	35	22.90	2.05	1.70	8.85	7.34	18	PVC	0.009	1.77	120	4.16	2F2	7.34	0.38	0.0023	0.28	1.10	0.29	0.37	3.0	2.63
2F3	G	2	4.85	7.86	0.50	2.43	3.93	0.50	600	530	0	22.75	2.05	1.70	8.06	6.69	12	PVC	0.009	0.79	35	8.51	2F3	6.69	0.25	0.0168	0.59	0.90	1.01	1.98	3.5	1.52
2F4	G	3	1.09	3.01	0.50	0.54	1.50	0.50	0	0	50	15.69	2.40	1.99	3.61	3.00	12	PVC	0.009	0.79	170	3.82	2F4	3.00	0.25	0.0034	0.57	0.10	0.02	2.57	3.5	0.93
2F5	G	4	1.92	1.92	0.50	0.96	0.96	0.50	410	165	0	15.49	2.45	2.03	2.35	1.95	12	PVC	0.009	0.79	40	2.49	2F5	1.95	0.25	0.0014	0.06	0.05	0.00	2.63	3.5	0.87
2G1	D	145		3.63			1.81	0.50	0	0	120	12.16	2.70	2.24	4.90	4.07							2G1	4.07						-0.20	n/a	n/a
2G2	D	146	0.75	3.63	0.50	0.37	1.81	0.50	0	0	25	11.66	2.75	2.28	4.99	4.14	12	PVC	0.009	0.79	120	5.27	2G2	4.14	0.25	0.0064	0.77	1.10	0.48	1.05	2.0	0.95
2G3	D	147	2.88	2.88	0.50	1.44	1.44	0.50	115	480	0	11.56	2.80	2.32	4.03	3.35	10	RCP	0.015	0.55	25	6.13	2G3	3.35	0.21	0.0309	0.77	0.05	0.03	1.85	2.5	0.65
2H1	D	121		1.46			0.73	0.50	0	0	125	9.58	3.00	2.49	2.19	1.82							2H1	1.82						-0.20	n/a	n/a
2H2	D	122	0.86	1.46	0.50	0.43	0.73	0.50	70	300	0	9.06	3.05	2.53	2.23	1.85	10	RCP	0.015	0.55	125	3.39	2H2	1.85	0.21	0.0094	1.18	1.10	0.20	1.17	2.0	0.83
2H3	D	123	0.59	0.59	0.50	0.30	0.30	0.50	40	250	0	7.97	3.30	2.74	0.98	0.81	10	RCP	0.015	0.55	30	1.49	2H3	0.81	0.21	0.0018	0.05	0.05	0.00	1.23	2.0	0.77
2J1	D	148		1.23			0.61	0.50	0	0	120	9.17	3.05	2.53	1.87	1.55							2J1	1.55						-0.20	n/a	n/a
2J2	D	149	1.23	1.23	0.50	0.61	0.61	0.50	90	200	0	8.67	3.15	2.61	1.93	1.60	10	RCP	0.015	0.55	120	2.94	2J2	1.60	0.21	0.0071	0.85	1.05	0.14	0.79	2.5	1.71

- Notes:  
1. POC = Point of Concentration  
2. Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.  
3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.  
4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.  
\*\* Lagoon 2 starting water surface elevation of -0.20 NGVD based on Town of Corte Madera's operating schedule.

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
3A1	D	130		3.04	0.10	0.00	2.16	0.71	0	0	60	11.15	2.80	2.32	6.04	5.01								3A1	5.01						3.20	n/a	n/a
3A2	D	131	0.52	3.04	0.10	0.05	2.16	0.71	0	0	100	10.90	2.85	2.37	6.15	5.10	18	CMP	0.024	1.77	60	2.89	3A2	5.10	0.38	0.0080	0.48	0.05	0.01	3.69	n/a	n/a	
3A3	D	132	0.00	2.52	0.10	0.00	2.11	0.83	0	0	35	10.48	2.90	2.41	6.11	5.07								3A3	5.07					0.00	3.69	n/a	n/a
3A4	D	133	0.25	0.25	0.70	0.17	0.17	0.70	240	0	0	10.33	2.90	2.41	0.50	0.41	12	CMP	0.024	0.79	35	0.53	3A4	0.41	0.25	0.0005	0.02	0.05	0.00	3.70	5.00	1.30	
3A3	D	132		2.28	0.10	0.00	1.93	0.85	0	0	310	10.25	2.90	2.41	5.61	4.65								3A3	4.65						3.69	n/a	n/a
3A5	D	134	0.00	2.28	0.10	0.00	1.93	0.85	0	0	30	6.52	3.60	2.99	6.96	5.78								3A5	5.78					0.00	3.69	n/a	n/a
3A6	D	135	0.09	0.29	0.70	0.06	0.21	0.70	0	0	55	6.40	3.60	2.99	0.74	0.61	12	CMP	0.024	0.79	30	0.78	3A6	0.61	0.25	0.0010	0.03	0.10	0.00	3.72	4.00	0.28	
3A7	D	136	0.21	0.21	0.70	0.15	0.15	0.70	30	60	0	6.17	3.70	3.07	0.54	0.45	12	CMP	0.024	0.79	55	0.57	3A7	0.45	0.25	0.0005	0.03	0.05	0.00	3.75	6.50	2.75	
3A5	D	134		1.98	0.10	0.00	1.73	0.87	0	0	125	8.96	3.10	2.57	5.35	4.44								3A5	4.44						3.69	n/a	n/a
3A8	D	137	0.00	1.98	0.10	0.00	1.73	0.87	0	0	30	7.60	3.30	2.74	5.70	4.73								3A8	4.73					0.00	3.69	n/a	n/a
3A9	D	138	0.10	0.47	0.70	0.07	0.36	0.77	0	0	115	7.48	3.40	2.82	1.23	1.02	12	CMP	0.024	0.79	30	1.30	3A9	1.02	0.25	0.0028	0.08	0.90	0.02	3.79	6.00	2.21	
3A10	D	139	0.20	0.20	0.70	0.14	0.14	0.70	90	0	0	7.00	3.50	2.91	0.49	0.41	12	RCP	0.015	0.79	115	0.52	3A10	0.41	0.25	0.0002	0.02	0.05	0.00	3.81	8.00	4.19	
3A9	D	138		0.17	0.70	0.00	0.15	0.90	0	0	60	6.90	3.50	2.91	0.54	0.45								3A9	0.45						3.79	6.00	2.21
3A11	D	138A	0.17	0.17	0.90	0.15	0.15	0.90	20	145	0	6.65	3.50	2.91	0.54	0.45	12	RCP	0.015	0.79	60	0.57	3A11	0.45	0.25	0.0002	0.01	0.05	0.00	3.81	6.00	2.19	
3A8	D	137		1.52	0.10	0.00	1.37	0.90	0	0	30	8.44	3.15	2.61	4.30	3.57								3A8	3.57						3.69	n/a	n/a
3A12	D	141	0.04	1.52	0.90	0.03	1.37	0.90	0	0	50	8.31	3.20	2.66	4.37	3.63	24	RCP	0.015	3.14	30	1.16	3A12	3.63	0.50	0.0003	0.01	0.10	0.00	3.70	5.50	1.80	
3A13	D	142	0.20	1.48	0.90	0.18	1.33	0.90	0	0	45	8.10	3.20	2.66	4.27	3.54	18	RCP	0.015	1.77	50	2.00	3A13	3.54	0.38	0.0015	0.08	0.10	0.01	3.78	5.50	1.72	
3A14	D	144	1.29	1.29	0.90	1.16	1.16	0.90	0	350	0	7.92	3.30	2.74	3.82	3.17	18	CMP	0.024	1.77	45	1.79	3A14	3.17	0.38	0.0031	0.14	1.05	0.05	3.97	6.00	2.03	
3B1	D	155		4.95	0.70	0.00	3.47	0.70	0	0	100	8.96	3.10	2.57	10.74	8.92								3B1	8.92						3.25	n/a	n/a
3B2	D	156	0.19	4.95	0.70	0.14	3.47	0.70	0	0	60	8.54	3.15	2.61	10.92	9.06	21	CMP	0.024	2.41	100	3.77	3B2	9.06	0.44	0.0111	1.11	0.40	0.09	4.45	6.00	1.55	
3B3	D	157	0.64	4.76	0.70	0.45	3.33	0.70	0	0	140	8.29	3.20	2.66	10.66	8.84	18	RCP	0.015	1.77	60	5.01	3B3	8.84	0.38	0.0094	0.56	1.50	0.58	5.59	6.50	0.91	
3B4	D	158	0.51	1.71	0.70	0.36	1.19	0.70	0	0	105	7.08	3.40	2.82	4.06	3.37	15	RCP	0.015	1.23	195	2.75	3B4	3.37	0.31	0.0036	0.70	1.00	0.12	6.41	7.00	0.59	
3B5	D	160	0.72	1.20	0.70	0.50	0.84	0.70	0	0	195	6.65	3.50	2.91	2.93	2.43	15	PVC	0.009	1.23	105	1.98	3B5	2.43	0.31	0.0007	0.07	1.50	0.09	6.58	7.00	0.42	
3B6	D	164	0.48	0.48	0.70	0.34	0.34	0.70	0	100	0	5.83	3.70	3.07	1.25	1.04	12	RCP	0.015	0.79	195	1.32	3B6	1.04	0.25	0.0011	0.22	0.45	0.01	6.81	8.50	1.69	
3B3	D	157		0.36	0.70	0.00	0.25	0.70	0	0	180	6.17	3.70	3.07	0.93	0.78								3B3	0.78						5.59	6.50	0.91
3B7	D	166	0.36	0.36	0.70	0.25	0.25	0.70	0	50	0	5.42	3.90	3.24	0.99	0.82	12	RCP	0.015	0.79	180	1.04	3B7	0.82	0.25	0.0007	0.13	0.95	0.02	5.73	8.50	2.77	
3B3	D	157		2.05	0.70	0.00	1.43	0.70	0	0	140	8.29	3.20	2.66	4.58	3.81								3B3	3.81						5.59	6.50	0.91
3B8	D	167	0.71	2.05	0.70	0.50	1.43	0.70	0	0	195	7.71	3.30	2.74	4.73	3.92	15	PVC	0.009	1.23	140	3.20	3B8	3.92	0.31	0.0018	0.25	1.00	0.16	6.00	6.50	0.50	
3B9	D	170	0.52	1.34	0.70	0.36	0.94	0.70	0	0	175	6.90	3.50	2.91	3.28	2.72	15	PVC	0.009	1.23	195	2.22	3B9	2.72	0.31	0.0008	0.16	1.00	0.08	6.24	6.50	0.26	
3B10	D	172	0.82	0.82	0.70	0.58	0.58	0.70	0	105	70	6.17	3.70	3.07	2.13	1.77	12	RCP	0.015	0.79	175	2.25	3B10	1.77	0.25	0.0033	0.57	1.40	0.11	6.92	8.50	1.58	
3C1	G	34		384.21	0.10	0.00	166.30	0.43	0	0	55	91.68	1.10	0.91	182.93	151.83								3C1	151.83						3.40	n/a	n/a
3C2	G	35	2.30	384.21	0.10	0.23	166.30	0.43	0	0	710	91.45	1.10	0.91	182.93	151.83	8X7	RCBC	0.015	56.00	55	2.71	3C2	151.83	1.87	0.0003	0.02	0.05	0.01	3.42	n/a	n/a	
3D1	G	89		381.91	0.10	0.00	166.07	0.43	0	0	60	88.49	1.10	0.91	182.68	151.62								3D1	151.62						3.50	n/a	n/a
3D2	G	93	2.98	381.91	0.10	0.30	166.07	0.43	0	0	1350	88.24	1.10	0.91	182.68	151.62	96	RCP	0.015	50.27	60	3.02	3D2	151.62	2.00	0.0004	0.02	1.50	0.21	3.73	n/a	n/a	
3D2	G	93		4.30	0.50	0.00	2.15	0.50	0	0	35	17.35	2.30	1.91	4.95	4.10								3D2	4.10						3.50	n/a	n/a
3D2B	G	102	4.30	4.30	0.50	2.15	2.15	0.50	0	1465	0	17.21	2.30	1.91	4.95	4.10	15	CMP	0.024	1.23	35	3.34	3D2B	4.10	0.31	0.0137	0.48	1.00	0.17	4.15	5.00	0.85	
3E1	G	91	0.77	12.74	0.50	0.39	6.37	0.50	0	0	120	18.74	2.25	1.87	14.34	11.90								3E1	11.90						3.50	n/a	n/a
3E2	G	95	2.35	11.97	0.50	1.17	5.99	0.50	0	0	280	18.24	2.25	1.87	13.47	11.18	18	RCP	0.015	1.77	120	6.33	3E2	11.18	0.38	0.0150	1.80	0.60	0.37	5.67	13.00	7.33	
3E3	G	97	9.62	9.62	0.50	4.81	4.81	0.50	350	500	30	17.07	2.30	1.91	11.07	9.19	18	RCP	0.015	1.77	280	5.20	3E3	9.19	0.38	0.0101	2.84	1.00	0.42	8.93	20.00	11.07	
3G1	G	172		2.41	0.50																												



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
3J1	F	9		161.55	0.50	0.00	68.09	0.42	0	0	190	51.91	1.40	1.16	95.33	79.12							3J1	79.12						3.75	n/a	n/a
3J2	F	56	0.00	161.55	0.50	0.00	68.09	0.42	0	0	190	51.91	1.40	1.16	95.33	79.12	48	RCP	0.015	12.57	190	6.30	3J2	79.12	1.00	0.0040	0.76	0.10	0.06	4.57	4.50	-0.07
3J3	J	78	0.07	161.55	0.50	0.03	68.09	0.42	0	0	590	51.12	1.40	1.16	95.33	79.12	48	RCP	0.015	12.57	590	6.52	3J3	81.95	1.00	0.0043	2.54	0.60	0.40	7.51	8.50	0.99
3J4	J	82	0.27	161.48	0.50	0.13	68.06	0.42	0	0	345	48.66	1.45	1.20	98.73	81.95	48	RCP	0.015	12.57	345	6.52	3J4	81.90	1.00	0.0043	1.49	1.00	0.66	9.66	13.50	3.84
3J5	J	85	0.00	156.21	0.50	0.00	65.42	0.42	0	0	365	47.22	1.45	1.20	98.68	81.90	48	RCP	0.015	12.57	365	6.52	3J5	81.44	0.88	0.0087	3.17	0.90	1.00	13.83	23.50	9.67
3J6	J	86	2.30	156.21	0.50	1.15	65.42	0.42	0	0	295	45.24	1.50	1.25	98.13	81.44	42	RCP	0.015	9.62	365	8.47	3J6	81.44	0.75	0.0197	2.17	1.50	3.09	19.09	20.50	1.41
3J7	J	110	4.26	50.48	0.50	2.13	21.92	0.43	0	0	150	44.01	1.50	1.25	32.88	27.29	24	PVC	0.009	3.14	295	8.69	3J7	27.29	0.50	0.0069	2.05	1.00	1.17	22.31	34.50	12.19
3J8	J	114	0.25	46.22	0.50	0.12	19.79	0.43	0	0	40	43.39	1.50	1.25	29.68	24.64	24	PVC	0.009	3.14	150	7.84	3J8	24.64	0.50	0.0057	0.85	0.20	0.19	23.35	42.50	19.15
3J9	J	115	0.00	45.97	0.50	0.00	19.67	0.43	0	0	25	43.22	1.50	1.25	29.50	24.48	24	RCP	0.015	3.14	40	7.79	3J9	24.48	0.50	0.0155	0.62	0.05	0.05	24.02	50.00	25.98
3J10	J	116	0.00	45.97	0.50	0.00	19.67	0.43	0	0	60	43.12	1.50	1.25	29.50	24.48		OC			25		3J10	24.48					0.00	24.02	55.00	30.98
3J11	J	117	0.59	45.97	0.50	0.30	19.67	0.43	0	0	155	42.87	1.55	1.29	30.48	25.30	24	RCP	0.015	3.14	60	8.05	3J11	25.30	0.50	0.0166	0.99	1.00	1.01	26.02	56.00	29.98
3J12	J	120	2.16	44.65	0.50	1.08	19.00	0.43	0	0	155	42.22	1.55	1.29	29.46	24.45	18	PVC	0.009	1.77	155	13.84	3J12	24.45	0.38	0.0258	4.00	1.00	2.97	32.99	64.00	31.01
3J13	J	122	1.00	42.49	0.50	0.50	17.92	0.42	0	0	115	41.58	1.55	1.29	27.78	23.06	15	PVC	0.009	1.23	155	18.79	3J13	23.06	0.31	0.0607	9.41	2.30	12.61	55.01	74.00	18.99
3J14	J	124	4.32	7.42	0.50	2.16	3.71	0.50	0	0	135	25.13	1.95	1.62	7.24	6.01	12	CMP	0.024	0.79	125	7.65	3J14	6.01	0.25	0.0963	12.04	1.30	1.18	68.24	81.50	13.26
3J15	J	125	3.11	3.11	0.50	1.55	1.55	0.50	630	650	35	24.56	2.00	1.66	3.11	2.58	8	VCP	0.015	0.35	135	7.39	3J15	2.58	0.17	0.0603	8.14	0.50	0.42	76.80	106.00	29.20
3J4	J	82		5.01	0.50	0.00	2.51	0.50	0	0	15.83	2.40	1.99	6.01	4.99								3J4	4.99						9.66	13.50	3.84
3J21	K	136	5.01	5.01	0.50	2.51	2.51	0.50	300	380	240	15.83	2.40	1.99	6.01	4.99	18	RCP	0.015	1.77	240	2.82	3J21	4.99	0.38	0.0030	0.72	0.90	0.11	10.49	10.50	0.01
3J6	J	86		103.42	0.50	0.00	42.34	0.41	0	0	30	41.12	1.55	1.29	65.63	54.48							3J6	54.48						19.09	20.50	1.41
3J31	J	89	1.72	103.42	0.50	0.86	42.34	0.41	0	0	145	40.99	1.55	1.29	65.63	54.48	36	PVC	0.009	7.07	30	7.71	3J31	54.48	0.75	0.0032	0.10	0.20	0.18	19.37	25.00	5.63
3J32	J	90	1.02	101.71	0.50	0.51	41.49	0.41	0	0	90	40.39	1.55	1.29	64.30	53.37	36	RCP	0.015	7.07	145	7.55	3J32	53.37	0.75	0.0085	1.23	0.05	0.04	20.65	36.00	15.35
3J33	J	91	0.00	100.68	0.50	0.00	40.98	0.41	0	0	160	40.01	1.55	1.29	63.51	52.71		OC			90		3J33	52.71					0.00	20.65	32.50	11.85
3J34	J	92	5.11	100.68	0.50	2.56	40.98	0.41	0	0	135	39.35	1.60	1.33	65.56	54.42	42	RCP	0.015	9.62	160	5.66	3J34	54.42	0.88	0.0039	0.62	0.05	0.02	21.29	39.00	17.71
3J35	J	93	0.00	95.57	0.50	0.00	38.42	0.40	0	0	280	38.78	1.60	1.33	61.47	51.02		OC			135		3J35	51.02					0.00	21.29	41.00	19.71
3J36	N	5	1.91	95.57	0.50	0.96	38.42	0.40	0	0	145	37.62	1.60	1.33	61.47	51.02	48	RCP	0.015	12.57	280	4.06	3J36	51.02	1.00	0.0017	0.47	1.10	0.28	22.04	56.00	33.96
3J37	N	7	93.66	93.66	0.40	37.46	37.46	0.40	1300	0	750	37.01	1.60	1.33	59.94	49.75	36	RCP	0.015	7.07	145	7.04	3J37	49.75	0.75	0.0074	1.07	0.45	0.35	23.45	67.00	43.55
3J11	J	117		0.73	0.50	0.00	0.37	0.50	0	0	195	10.99	2.85	2.37	1.04	0.87							3J11	0.87						26.02	56.00	29.98
3J41	J	118	0.73	0.73	0.50	0.37	0.37	0.50	145	235	0	10.18	2.95	2.45	1.08	0.90	12	CMP	0.024	0.79	195	1.14	3J41	0.90	0.25	0.0022	0.42	0.45	0.01	26.45	71.00	44.55
3J13	J	122		34.06	0.50	0.00	13.71	0.40	0	0	115	41.58	1.55	1.29	21.25	17.64							3J13	17.64						55.01	74.50	19.49
3J51	J	130	0.86	34.06	0.50	0.43	13.71	0.40	0	0	90	41.10	1.55	1.29	21.25	17.64	15	PVC	0.009	1.23	115	14.37	3J51	17.64	0.31	0.0355	4.09	0.40	1.28	60.39	80.00	19.61
3J52	J	131	33.20	33.20	0.40	13.28	13.28	0.40	1420	0	1000	40.72	1.55	1.29	20.59	17.09	15	RCP	0.015	1.23	90	13.92	3J52	17.09	0.31	0.0926	8.34	1.00	3.01	71.73	80.50	8.77
3K1	F	9		27.33	0.70	0.00	16.39	0.60	0	0	225	24.54	2.00	1.66	32.77	27.20							3K1	27.20						3.75	n/a	n/a
3K2	J	39	1.52	27.33	0.70	1.06	16.39	0.60	0	0	100	23.60	2.00	1.66	32.77	27.20	48	RCP	0.015	12.57	225	2.16	3K2	27.20	1.00	0.0005	0.11	1.00	0.07	3.93	5.50	1.57
3K3	J	41	0.00	23.53	0.70	0.00	13.73	0.58	0	0	230	23.19	2.05	1.70	28.14	23.35	36	RCP	0.015	7.07	100	3.30	3K3	23.35	0.75	0.0016	0.16	1.00	0.17	4.26	5.50	1.24
3K4	J	42	0.53	22.47	0.70	0.37	12.98	0.58	0	0	260	22.23	2.05	1.70	26.62	22.09	36	RCP	0.015	7.07	230	3.13	3K4	22.09	0.75	0.0015	0.33	1.50	0.23	4.82	5.50	0.68
3K5	J	62	1.22	21.94	0.70	0.85	12.61	0.57	0	0	35	21.15	2.10	1.74	26.49	21.99	36	RCP	0.015	7.07	260	3.11	3K5	10.99	0.75	0.0014	0.37	1.00	0.15	5.35	8.50	3.15
3K6	J	69	3.89	17.67	0.50	1.94	9.62	0.54	0	0	430	21.00	2.15	1.78	20.68	17.16	36	RCP	0.015	7.07	260	1.56	3K6	10.99								
3K7	J	72	1.50	7.16	0.50	0.75	3.58	0.50	0	0	230	19.21	2.20	1.83	7.87	6.53	30	CMP	0.024	4.91	35	3.50	3K7	17.16	0.63	0.0059	0.21	1.00	0.19	5.75	9.00	3.25
3K8	J	74	5.66	5.66	0.50	2.83	2.83	0.50	360	630	0	18.25	2.25	1.87	6.36	5.28	12	RCP														



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
3L1	F	10		183.34	0.50	0.00	77.88	0.42	0	0	395	82.62	1.10	0.91	85.67	71.11								3L1	71.11						3.75	n/a	n/a
3L2	F	13	6.75	183.34	0.50	3.37	77.88	0.42	0	0	220	80.97	1.15	0.95	89.57	74.34	42	RCP	0.015	9.62	395	7.73	3L2	74.34	0.88	0.0072	2.86	1.00	0.93	7.53	8.00	0.47	
3L3	F	16	0.00	176.59	0.50	0.00	74.51	0.42	0	0	25	80.06	1.15	0.95	85.69	71.12	5X2	RCBC	0.015	10.00	220	7.11	3L3	71.12	0.71	0.0080	1.77	0.60	0.47	9.77	12.50	2.73	
3L4	F	56	0.00	59.72	0.50	0.00	26.43	0.44	0	0	315	46.14	1.45	1.20	38.33	31.81	3X2	RCBC	0.015	6.00	100	5.30	3L4	31.81	0.60	0.0056	0.56	0.10	0.04	10.38	14.00	3.62	
3L5	F	58	1.70	59.72	0.50	0.85	26.43	0.44	0	0	215	44.83	1.50	1.25	39.65	32.91	30	PVC	0.009	4.91	315	6.70	3L5	32.91	0.63	0.0031	0.97	0.90	0.63	11.97	29.50	17.53	
3L6	J	232	0.38	58.02	0.50	0.19	25.58	0.44	0	0	165	43.24	1.50	1.25	38.08	31.85	30	PVC	0.009	4.91	215	6.49	3L6	31.85	0.63	0.0029	0.62	0.10	0.07	12.65	40.00	27.35	
3L7	J	10	0.93	57.64	0.50	0.47	25.39	0.44	0	0	215	43.24	1.50	1.25	38.08	31.61	24	RCP	0.015	3.14	165	10.06	3L7	31.61	0.50	0.0259	4.27	1.40	2.20	19.12	52.00	32.88	
3L8	J	13	3.50	56.70	0.50	1.75	24.92	0.44	0	0	85	42.35	1.55	1.29	38.63	32.06	24	RCP	0.015	3.14	215	10.21	3L8	32.06	0.50	0.0266	5.72	1.60	2.59	27.43	69.50	42.07	
3L9	J	14	1.46	51.40	0.50	0.73	22.27	0.43	0	0	290	41.99	1.55	1.29	34.52	28.65	21	PVC	0.009	2.41	85	11.91	3L9	28.65	0.44	0.0156	1.33	1.50	3.31	32.06	69.50	37.44	
3L10	J	18	0.27	49.94	0.50	0.13	21.54	0.43	0	0	335	40.78	1.55	1.29	33.39	27.71	21	PVC	0.009	2.41	290	11.52	3L10	27.71	0.44	0.0146	4.23	3.00	6.18	42.47	93.00	50.53	
3L11	J	23	1.52	41.41	0.50	0.76	17.28	0.42	0	0	120	39.39	1.60	1.33	27.64	22.94	21	PVC	0.009	2.41	335	9.54	3L11	22.94	0.44	0.0100	3.35	1.90	2.68	48.50	117.50	69.00	
3L12	J	26	5.36	18.07	0.50	2.68	7.79	0.43	0	0	100	36.72	1.65	1.37	12.85	10.66	21	PVC	0.009	2.41	100	4.43	3L12	10.66	0.44	0.0022	0.22	1.00	0.31	49.02	121.00	71.98	
3L13	J	29	0.00	12.47	0.50	0.00	4.99	0.40	0	0	15	36.30	1.65	1.37	8.23	6.83	12	CMP	0.024	0.79	100	8.70	3L13	6.83	0.25	0.1246	12.46	0.05	0.06	61.55	130.00	68.45	
3L14	J	30	0.00	12.47	0.50	0.00	4.99	0.40	0	0	35	36.24	1.65	1.37	8.23	6.83		OC			15		3L14	6.83					0.00	61.55	131.50	69.95	
3L15	J	30A	0.00	12.47	0.50	0.00	4.99	0.40	0	0	60	36.09	1.65	1.37	8.23	6.83	18	RCP	0.015	1.77	35	3.87	3L15	6.83	0.38	0.0056	0.20	0.05	0.01	61.75	140.00	78.25	
3L16	J	31	0.00	12.47	0.50	0.00	4.99	0.40	0	0	100	35.84	1.65	1.37	8.23	6.83		OC			60		3L16	6.83					0.00	61.75	151.00	89.25	
3L17	J	32	0.00	12.47	0.40	0.00	4.99	0.40	0	0	35	35.42	1.65	1.37	8.23	6.83	15	RCP	0.015	1.23	100	5.57	3L17	4.17	0.31	0.0148	1.48	0.40	0.19	63.43	170.50	107.07	
3L18	J	33	12.47	12.47	0.40	4.99	4.99	0.40	1100	700	0	35.28	1.65	1.37	8.23	6.83	12	RCP	0.015	0.79	100	3.39		2.67									
																	18	CMP	0.024	1.77	35	3.87	3L18	6.83	0.38	0.0143	0.50	0.05	0.01	63.94	170.50	106.56	
3L3	F	16		116.87	0.50	0.00	48.08	0.41	0	0	25	80.06	1.15	0.95	55.29	45.89								3L3	45.89						9.77	12.50	2.73
3L31	F	33,25	0.00	116.87	0.50	0.00	48.08	0.41	0	0	95	79.95	1.15	0.95	55.29	45.89	3X2	RCBC	0.015	6.00	25	7.65	3L31	45.89	0.60	0.0117	0.29	1.00	0.91	10.97	13.00	2.03	
3L32	F	34	1.86	83.30	0.50	0.93	31.29	0.38	0	0	130	79.56	1.15	0.95	35.99	29.87	3X2	RCBC	0.015	6.00	95	4.98	3L32	29.87	0.60	0.0050	0.47	0.50	0.19	11.64	15.00	3.36	
3L33	F		0.00	81.44	0.50	0.00	30.36	0.37	0	0	345	79.01	1.15	0.95	34.92	28.98	3X2	RCBC	0.015	6.00	130	4.83	3L33	28.98	0.60	0.0047	0.61	0.10	0.04	12.28	20.00	7.72	
3L34	F	37	7.69	81.44	0.50	3.84	30.36	0.37	0	0	210	77.58	1.15	0.95	34.92	28.98	27	RCP	0.015	3.98	345	7.29	3L34	28.98	0.56	0.0116	4.00	0.90	0.74	17.02	25.50	8.48	
3L35	F	43	14.23	73.75	0.50	7.11	26.52	0.36	0	0	60	76.70	1.15	0.95	30.50	25.31	24	CMP	0.024	3.14	210	8.06	3L35	25.31	0.50	0.0424	8.91	0.15	0.15	26.09	37.00	10.91	
3L36	F	44	0.00	59.53	0.50	0.00	19.41	0.33	0	0	60	76.45	1.15	0.95	22.32	18.52		OC			60		3L36	18.52					0.00	26.09	39.00	12.91	
3L37	F	45	0.00	59.53	0.50	0.00	19.41	0.33	0	0	10	76.20	1.15	0.95	22.32	18.52	24	RCP	0.015	3.14	60	5.90	3L37	18.52	0.50	0.0089	0.53	0.05	0.03	26.65	46.50	19.85	
3L38	F	46	0.00	59.53	0.50	0.00	19.41	0.33	0	0	380	76.16	1.15	0.95	22.32	18.52		OC			10		3L38	18.52					0.00	26.65	46.50	19.85	
3L39	F	49	0.82	59.53	0.50	0.41	19.41	0.33	0	0	40	74.58	1.20	1.00	23.29	19.33	24	RCP	0.015	3.14	380	6.15	3L39	19.33	0.50	0.0097	3.67	2.40	1.41	31.73	65.50	33.77	
3L40	F	59	0.00	58.70	0.50	0.00	19.00	0.32	0	0	15	74.41	1.20	1.00	22.79	18.92	24	RCP	0.015	3.14	40	6.02	3L40	18.92	0.50	0.0093	0.37	2.30	1.30	33.40	67.00	33.60	
3L41	J	231	1.69	1.69	0.50	0.84	0.84	0.50	300	350	0	14.58	2.50	2.08	2.11	1.75	15	RCP	0.015	1.23	440	1.43	3L41	1.75	0.31	0.0010	0.43	1.40	0.04	33.87	68.50	34.63	
3L31	F	16		3.20	0.50	0.00	1.60	0.50	0	0	15	20.99	2.15	1.78	3.44	2.85								3L31	2.85						10.97	13.00	2.03
3L31A	F	25	3.20	3.20	0.50	1.60	1.60	0.50	400	845	0	20.93	2.15	1.78	3.44	2.85	12	CMP	0.024	0.79	15	3.63	3L31A	2.85	0.25	0.0217	0.33	0.00	0.00	11.30	13.00	1.70	
3L31	F	16		5.89	0.50	0.00	2.94	0.50	0	0	15	17.77	2.30	1.91	6.77	5.62								3L31	5.62						10.97	13.00	2.03
3L31B	F	33	5.89	5.89	0.50	2.94	2.94	0.50	450	325	0	17.71	2.30	1.91	6.77	5.62	12	CMP	0.024	0.79	15	7.15	3L31B	5.62	0.25	0.0843	1.26	0.00	0.00	12.24	13.00	0.76	
3L8	J	13		1.80	0.50	0.00	0.90	0.50	0	0	120	14.69	2.50	2.08	2.25	1.87								3L8	1.87						27.43	69.50	42.07
3L51	J	34	0.40	1.80	0.50	0.20	0.90	0.50	0	0	65	14.19	2.55	2.12	2.30	1.91	2X2	RCBC	0.015	4.00	120	0.48	3L51	1.91	0.50	0.0001	0.01	0.15	0.00	27.43	74.50	47.07	
3L52	J	35	0.35	1.40	0.50	0.18	0.70	0.50	0	0	115	13.92	2.55	2.12	1.78	1.48	12	PVC	0.009														

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
4B1	E	57	0.00	0.60	0.00	0.00	0.54	0.90	0	0	150	7.79	3.30	2.74	1.77	1.47	12	PVC	0.009	0.79	150	1.93	4B1	1.47	0.25	0.0009	0.13	1.05	0.06	-2.00	0.00	2.00
4B2	D	118	0.60	0.60	0.90	0.54	0.54	0.90	0	260	0	7.17	3.40	2.82	1.82	1.51	12	PVC	0.009	0.79	150	1.93	4B2	1.51	0.25	0.0009	0.13	1.05	0.06	-1.81	9.00	10.81
4C1	E	58	0.00	2.49	0.00	0.00	2.00	0.80	0	0	100	10.42	2.90	2.41	5.79	4.80	18	RCP	0.015	1.77	100	2.77	4C1	4.80						-2.00	0.00	2.00
4C2	D	200	2.49	2.49	0.80	2.00	2.00	0.80	0	600	0	10.00	2.95	2.45	5.89	4.89	18	RCP	0.015	1.77	100	2.77	4C2	4.89	0.38	0.0029	0.29	1.05	0.12	-1.59	5.50	7.09
4D1	D	177	0.00	1.16	0.00	0.00	1.04	0.90	0	0	30	11.21	2.80	2.32	2.92	2.42	15	RCP	0.015	1.23	30	2.01	4D1	2.42						4.00	5.00	1.00
4D2	D	178	1.16	1.16	0.90	1.04	1.04	0.90	0	730	0	11.08	2.85	2.37	2.97	2.47	15	RCP	0.015	1.23	30	2.01	4D2	2.47	0.31	0.0019	0.06	0.10	0.01	4.06	8.00	3.94
4E1	H	94	0.00	1.90	0.00	0.00	1.71	0.90	0	0	30	16.25	2.40	1.99	4.10	3.40	12	PVC	0.009	0.79	30	4.33	4E1	3.40						-2.00	0.00	2.00
4E2	H	95	0.74	1.90	0.90	0.67	1.71	0.90	0	590	0	16.13	2.40	1.99	4.10	3.40	12	PVC	0.009	0.79	30	4.33	4E2	3.40	0.25	0.0043	0.13	1.10	0.32	-1.55	1.40	2.95
4F1	H	1	0.00	0.39	0.00	0.00	0.35	0.90	0	0	50	6.13	3.70	3.07	1.29	1.07	12	RCP	0.015	0.79	50	1.37	4F1	1.07						-2.00	0.00	2.00
4F2	H	2	0.39	0.39	0.90	0.35	0.35	0.90	0	110	0	5.92	3.70	3.07	1.29	1.07	12	RCP	0.015	0.79	50	1.37	4F2	1.07	0.25	0.0012	0.06	1.10	0.03	-1.91	2.00	3.91
4G1	H	3	0.00	47.58	0.00	0.00	38.06	0.80	0	0	290	28.21	1.85	1.54	70.41	58.44	5X6	RCBC	0.015	30.00	290	2.00	4G1	58.44						-2.00	0.00	2.00
4G2	G	61	47.58	47.58	0.80	38.06	38.06	0.80	0	0	0	27.00	1.90	1.58	72.32	60.02	5X6	RCBC	0.015	30.00	290	2.00	4G2	60.02	1.36	0.0003	0.08	1.45	0.09	-1.83	1.00	2.83
4H1	H	4	0.14	6.40	0.00	0.00	5.64	0.88	0	0	130	12.29	2.70	2.24	15.22	12.63	24	RCP	0.015	3.14	130	4.10	4H1	12.63						-2.00	0.00	2.00
4H2	H	6	0.93	6.26	0.90	0.84	5.64	0.90	0	0	320	11.75	2.75	2.28	15.50	12.87	24	RCP	0.015	3.14	130	4.10	4H2	12.87	0.50	0.0043	0.56	1.15	0.30	-1.14	4.00	5.14
4H3	H	9	1.03	5.33	0.90	0.93	4.80	0.90	0	0	340	10.42	2.90	2.41	13.92	11.56	24	RCP	0.015	3.14	320	3.68	4H3	11.56	0.50	0.0035	1.11	2.60	0.55	-0.51	6.00	5.49
4H4	H	16	1.71	3.06	0.90	1.54	2.76	0.90	0	0	430	9.00	3.10	2.57	8.55	7.09	18	RCP	0.015	1.77	340	4.01	4H4	7.09	0.38	0.0060	2.05	0.90	0.23	2.79	5.80	3.01
4H5	H	19	0.73	1.35	0.90	0.66	1.22	0.90	0	0	150	7.21	3.40	2.82	4.14	3.44	15	RCP	0.015	1.23	430	2.80	4H5	3.44	0.31	0.0037	1.61	0.30	0.04	4.43	6.50	2.07
4H6	H	20	0.62	0.62	0.90	0.56	0.56	0.90	0	190	0	6.58	3.60	2.99	2.01	1.67	12	RCP	0.015	0.79	150	2.13	4H6	1.67	0.25	0.0029	0.44	0.10	0.01	4.88	6.00	1.12
4H3	H	9	1.03	2.27	0.90	0.93	2.04	0.90	0	0	60	7.13	3.40	2.82	6.95	5.77	15	RCP	0.015	1.23	60	2.64	4H3	5.77						0.51	6.00	5.49
4H11	H	10	0.54	1.24	0.90	0.49	1.11	0.90	0	0	70	6.88	3.50	2.91	3.90	3.23	15	RCP	0.015	1.23	60	2.64	4H11	3.23	0.31	0.0033	0.20	0.60	0.06	0.77	6.00	5.23
4H12	H	12	0.70	0.70	0.90	0.63	0.63	0.90	0	190	0	6.58	3.60	2.99	2.25	1.87	12	RCP	0.015	0.79	70	2.38	4H12	1.87	0.25	0.0036	0.26	1.10	0.10	1.12	6.00	4.88
4J1	H	21	0.00	0.45	0.00	0.00	0.40	0.90	0	0	80	6.58	3.60	2.99	1.46	1.21	12	RCP	0.015	0.79	80	1.54	4J1	1.21						-2.00	0.00	2.00
4J2	H	22	0.14	0.45	0.90	0.13	0.40	0.90	0	0	60	6.25	3.60	2.99	1.46	1.21	12	RCP	0.015	0.79	80	1.54	4J2	1.21	0.25	0.0015	0.12	1.10	0.04	-1.84	4.00	5.84
4J3	H	23	0.31	0.31	0.90	0.28	0.28	0.90	0	120	0	6.00	3.70	3.07	1.02	0.85	12	RCP	0.015	0.79	60	1.08	4J3	0.85	0.25	0.0008	0.05	0.05	0.00	-1.79	5.20	6.99
4K1	H	24	0.00	3.56	0.00	0.00	3.21	0.90	0	0	200	9.29	3.05	2.53	9.78	8.12	24	RCP	0.015	3.14	200	2.67	4K1	8.12						-2.00	0.00	2.00
4K2	H	26	1.60	3.56	0.90	1.44	3.21	0.90	0	0	190	8.46	3.15	2.61	10.11	8.39	24	RCP	0.015	3.14	200	2.67	4K2	8.39	0.50	0.0018	0.36	1.55	0.17	-1.46	3.50	4.96
4K3	H	29	0.22	1.97	0.90	0.20	1.77	0.90	0	0	140	7.67	3.30	2.74	5.85	4.85	18	RCP	0.015	1.77	190	2.75	4K3	4.85	0.38	0.0028	0.54	1.60	0.19	-0.74	4.00	4.74
4K4	H	30	0.67	1.74	0.90	0.60	1.57	0.90	0	0	80	7.08	3.40	2.82	5.34	4.43	18	RCP	0.015	1.77	140	2.51	4K4	4.43	0.38	0.0024	0.33	1.00	0.10	-0.31	4.00	4.31
4K5	H	31	0.61	1.08	0.90	0.55	0.97	0.90	0	0	60	6.75	3.50	2.91	3.39	2.81	15	RCP	0.015	1.23	80	2.29	4K5	2.81	0.31	0.0025	0.20	0.10	0.01	-0.10	4.00	4.10
4K6	H	32	0.46	0.46	0.90	0.42	0.42	0.90	0	180	0	6.50	3.60	2.99	1.50	1.25	12	RCP	0.015	0.79	60	1.59	4K6	1.25	0.25	0.0016	0.10	1.00	0.04	0.03	3.50	3.47
4L1	H	33	0.00	1.32	0.00	0.00	1.19	0.90	0	0	100	7.83	3.30	2.74	3.91	3.25	18	RCP	0.015	1.77	100	1.89	4L1	3.25						-2.00	0.00	2.00
4L2	H	34	0.57	1.32	0.90	0.51	1.19	0.90	0	290	0	7.42	3.40	2.82	4.03	3.35	18	RCP	0.015	1.77	100	1.89	4L2	3.35	0.38	0.0013	0.13	1.05	0.06	-1.81	3.20	5.01
4L3	H	36	0.22	0.75	0.90	0.20	0.67	0.90	0	0	30	6.38	3.60	2.99	2.42	2.01	15	RCP	0.015	1.23	60	1.64	4L3	2.01	0.31	0.0013	0.08	0.50	0.02	-1.71	3.20	4.91
4L4	H	37	0.53	0.53	0.90	0.48	0.48	0.90	0	150	0	6.25	3.60	2.99	1.72	1.43	12	RCP	0.015	0.79	30	1.82	4L4	1.43	0.25	0.0021	0.06	0.10	0.01	-1.64	3.70	5.34
4M1	H	38	0.00	8.17	0.00	0.00	7.35	0.90	0	0	60	10.17	2.95	2.45	21.69	18.00	24	RCP	0.015	3.14	60	5.73	4M1	18.00						-2.00	0.00	2.00
4M2	H	39	0.35	8.17	0.90	0.32	7.35	0.90	0	0	80	9.92	2.95	2.45	21.69	18.00	24	RCP	0.015	3.14	60	5.73	4M2	18.00	0.50	0.0084	0.50	0.10	0.05	-1.45	3.20	4.65
4M3	H	40	0.58	7.82	0.90	0.52	7.03	0.90	0	0	220	9.58	3.00	2.49	21.10	17.51	24	RCP	0.015	3.14	80	5.58	4M3	17.51	0.50	0.0079	0.64	1.10	0.53	-0.28	4.00	4.28
4M4	H	44	0.80	6.77	0.90	0.72	6.09	0.90	0	0	60	8.67	3.15	2.61	19.18	15.92	24	RCP	0.015	3.14	220	5.07	4M4	15.92								



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
POC <sup>1</sup>																																	
4N1	H	52	0.00	2.23	0.00	0.00	2.01	0.90	0	0	60	10.00	2.95	2.45	5.92	4.91	18	RCP	0.015	1.77	60	2.83	4N1	4.91						-2.00	0.00	2.00	
4N2	H	53	0.28	2.23	0.90	0.26	2.01	0.90	0	0	60	9.75	3.00	2.49	6.02	5.00	18	RCP	0.015	1.77	70	2.47	4N2	5.00	0.38	0.0030	0.18	1.10	0.14	-1.68	4.00	5.68	
4N3	H	55	0.41	1.95	0.90	0.37	1.75	0.90	0	0	190	9.46	3.00	2.49	5.25	4.36	18	RCP	0.015	1.77	70	2.47	4N3	4.36	0.38	0.0023	0.16	0.10	0.01	-1.51	4.00	5.51	
4N4	H	56	0.22	1.54	0.90	0.20	1.38	0.90	0	0	60	8.67	3.15	2.61	4.35	3.61	15	RCP	0.015	1.23	190	2.94	4N4	3.61	0.31	0.0041	0.79	0.20	0.03	-0.70	5.50	6.20	
4N5	H	57	0.88	1.32	0.90	0.79	1.18	0.90	0	0	120	8.42	3.15	2.61	3.73	3.10	15	RCP	0.015	1.23	60	2.52	4N5	3.10	0.31	0.0030	0.18	1.00	0.10	-0.42	5.90	6.32	
4N6	H	59	0.44	0.44	0.90	0.39	0.39	0.90	0	350	0	7.92	3.30	2.74	1.30	1.08	12	RCP	0.015	0.79	120	1.38	4N6	1.08	0.25	0.0012	0.15	1.10	0.03	-0.24	6.20	6.44	
4P1	H	60	0.00	0.43	0.00	0.00	0.38	0.90	0	0	50	6.33	3.60	2.99	1.38	1.14																	
4P2	H	61	0.19	0.43	0.90	0.17	0.38	0.90	0	0	80	6.13	3.70	3.07	1.42	1.18	15	RCP	0.015	1.23	50	0.96	4P1	1.14						-2.00	0.00	2.00	
4P3	H	62	0.12	0.24	0.90	0.11	0.21	0.90	0	0	30	5.79	3.80	3.15	0.81	0.67	15	RCP	0.015	1.23	80	0.55	4P2	1.18	0.31	0.0004	0.02	1.10	0.02	-1.96	4.30	6.26	
4P4	H	63	0.12	0.12	0.90	0.11	0.11	0.90	0	80	0	5.67	3.80	3.15	0.41	0.34	12	RCP	0.015	0.79	30	0.43	4P3	0.67	0.31	0.0001	0.01	0.10	0.00	-1.95	4.30	6.25	
4Q1	H	64	0.00	0.67	0.00	0.00	0.61	0.90	0	0	50	6.88	3.50	2.91	2.13	1.76																	
4Q2	H	65	0.15	0.67	0.90	0.14	0.61	0.90	0	0	80	6.67	3.50	2.91	2.13	1.76	12	RCP	0.015	0.79	50	2.25	4Q1	1.76						-2.00	0.00	2.00	
4Q3	H	66	0.23	0.52	0.90	0.20	0.47	0.90	0	0	20	6.33	3.60	2.99	1.69	1.41	12	RCP	0.015	0.79	80	1.79	4Q2	1.76	0.25	0.0032	0.16	1.10	0.09	-1.75	4.00	5.75	
4Q4	H	67	0.29	0.29	0.90	0.27	0.27	0.90	0	150	0	6.25	3.60	2.99	0.96	0.79	12	RCP	0.015	0.79	20	1.01	4Q3	1.41	0.25	0.0021	0.16	0.10	0.00	-1.58	4.00	5.58	
4R1	H	68	0.00	6.03	0.00	0.00	5.43	0.90	0	0	50	12.00	2.75	2.28	14.92	12.39																	
4R2	H	69	0.17	6.03	0.90	0.16	5.43	0.90	0	0	80	11.79	2.75	2.28	14.92	12.39	24	RCP	0.015	3.14	50	3.94	4R1	12.39						-2.00	0.00	2.00	
4R3	H	70	0.45	5.86	0.90	0.41	5.27	0.90	0	0	180	11.46	2.80	2.32	14.76	12.25	24	RCP	0.015	3.14	80	3.90	4R2	12.39	0.50	0.0040	0.20	1.10	0.27	-1.54	4.00	5.54	
4R4	H	73	0.79	5.40	0.90	0.71	4.86	0.90	0	0	190	10.71	2.85	2.37	13.86	11.51	24	RCP	0.015	3.14	180	3.66	4R3	12.25	0.50	0.0039	0.31	0.10	0.02	-1.20	4.00	5.20	
4R5	H	76	2.95	2.95	0.90	2.65	2.65	0.90	0	590	0	9.92	2.95	2.45	7.82	6.49	24	RCP	0.015	3.14	190	2.07	4R4	11.51	0.50	0.0034	0.62	0.30	0.06	-0.52	4.80	5.32	
4R4	H	73	0.79	2.46	0.90	0.71	2.21	0.90	0	0	110	8.79	3.10	2.57	6.86	5.70																	
4R11	H	74	0.58	1.67	0.90	0.52	1.50	0.90	0	0	20	8.33	3.20	2.66	4.81	3.99	18	RCP	0.015	1.77	110	2.26	4R5	6.49	0.50	0.0011	0.21	1.00	0.07	-0.25	7.50	7.75	
4R12	H	75	1.09	1.09	0.90	0.98	0.98	0.90	0	390	0	8.25	3.20	2.66	3.15	2.61	12	RCP	0.015	0.79	20	3.33	4R11	3.99	0.38	0.0019	0.21	1.00	0.08	-0.23	5.80	6.03	
4S1	H	77	0.00	0.62	0.00	0.00	0.56	0.90	0	0	50	6.96	3.50	2.91	1.95	1.62																	
4S2	H	78	0.20	0.62	0.90	0.18	0.56	0.90	0	0	80	6.75	3.50	2.91	1.95	1.62	18	RCP	0.015	1.77	50	0.91	4S1	1.62						-2.00	0.00	2.00	
4S3	H	79	0.18	0.42	0.90	0.16	0.38	0.90	0	0	20	6.42	3.60	2.99	1.35	1.12	18	RCP	0.015	1.77	80	0.64	4S2	1.62	0.38	0.0003	0.02	1.10	0.01	-1.97	3.80	5.77	
4S4	H	80	0.24	0.24	0.90	0.21	0.21	0.90	0	160	0	6.33	3.60	2.99	0.77	0.64	12	RCP	0.015	0.79	20	0.82	4S3	1.12	0.38	0.0002	0.01	0.10	0.00	-1.96	4.00	5.96	
4T1	H	81	0.00	5.35	0.00	0.00	4.81	0.90	0	0	70	11.96	2.75	2.28	13.23	10.98																	
4T2	H	82	0.21	5.35	0.90	0.19	4.81	0.90	0	0	80	11.67	2.75	2.28	13.23	10.98	24	RCP	0.015	3.14	70	3.50	4T1	10.98						-2.00	0.00	2.00	
4T3	H	83	0.20	5.14	0.90	0.18	4.62	0.90	0	0	20	11.33	2.80	2.32	12.95	10.74	24	RCP	0.015	3.14	80	3.42	4T2	10.98	0.50	0.0031	0.22	1.10	0.21	-1.57	3.80	5.37	
4T4	H	84	0.22	4.94	0.90	0.20	4.44	0.90	0	0	170	11.25	2.80	2.32	12.44	10.33	24	RCP	0.015	3.14	20	3.29	4T3	10.74	0.50	0.0030	0.24	0.10	0.02	-1.32	3.80	5.12	
4T5	L	10	0.11	3.56	0.90	0.10	3.20	0.90	0	0	130	10.54	2.90	2.41	9.29	7.71	24	RCP	0.015	3.14	170	2.45	4T4	10.33	0.50	0.0028	0.06	0.60	0.10	-1.16	4.00	5.16	
4T6	L	12	0.17	2.78	0.90	0.15	2.51	0.90	0	0	80	10.00	2.95	2.45	7.39	6.14	24	RCP	0.015	3.14	130	1.95	4T5	7.71	0.50	0.0015	0.26	1.60	0.15	-0.75	4.70	5.45	
4T7	L	14	0.12	2.62	0.90	0.10	2.36	0.90	0	0	70	9.67	3.00	2.49	7.07	5.86	18	RCP	0.015	1.77	80	3.32	4T6	6.14	0.50	0.0010	0.13	0.60	0.04	-0.59	4.20	4.79	
4T8	L	16	0.70	1.96	0.90	0.63	1.76	0.90	0	0	320	9.38	3.00	2.49	5.28	4.38	18	RCP	0.015	1.77	70	2.48	4T7	5.86	0.38	0.0041	0.33	0.60	0.10	-0.15	4.20	4.35	
4T9	L	19	0.35	1.25	0.90	0.31	1.13	0.90	0	0	130	8.04	3.20	2.66	3.61	2.99	15	RCP	0.015	1.77	70	2.48	4T8	4.38	0.38	0.0023	0.16	0.60	0.06	0.06	4.50	4.44	
4T10	H	88	0.46	0.90	0.90	0.41	0.81	0.90	0	0	180	7.50	3.40	2.82	2.77	2.30	12	RCP	0.015	1.23	320	2.44	4T9	2.99	0.31	0.0028	0.91	0.70	0.06	1.04	6.50	5.46	
4T11	H	90	0.45	0.45	0.90	0.40	0.40	0.90	0	210	0	6.75	3.50	2.91	1.41	1.17	12	RCP	0.015	0.79	130	2.92	4T10	2.30	0.25	0.0055	0.72	0.20	0.03	1.78	6.00	4.22	
4T4	H	84	0.22	1.38	0.90	0.20	1.24	0.90	0	0	80	7.75	3.30	2.74	4.10	3.40																	
4T21	H	85	0.73	1.16	0.90	0.66	1.05	0.90	0	0	120	7.42	3.40	2.82	3.56	2.																	

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
POC <sup>1</sup>		68		4.65	0.90	0.00	4.18	0.90	0	0	525	11.31	2.80	2.32	11.72	9.72							POC <sup>1</sup>	9.72						-0.62	1.50	2.12
4U6	L	72	0.82	4.65	0.90	0.73	4.18	0.90	0	0	115	9.13	3.05	2.53	12.76	10.59	24	RCP	0.015	3.14	525	3.37	4U41	10.59	0.50	0.0029	1.52	1.40	0.25	1.15	1.50	0.35
4U42	L	74	0.30	2.01	0.90	0.27	1.81	0.90	0	0	115	8.65	3.15	2.61	5.70	4.73	24	PVC	0.009	3.14	115	1.51	4U42	4.73	0.50	0.0002	0.02	1.40	0.05	1.22	1.50	0.28
4U43	L	76	0.85	1.25	0.90	0.77	1.12	0.90	0	380	0	8.17	3.20	2.66	3.59	2.98	18	PVC	0.009	1.77	115	1.69	4U43	2.98	0.38	0.0004	0.04	1.80	0.08	1.34	1.50	0.16
4U44	L	77	0.39	0.39	0.90	0.36	0.36	0.90	0	150	0	6.25	3.60	2.99	1.28	1.06	12	RCP	0.015	0.79	90	1.35	4U44	1.06	0.25	0.0012	0.11	1.00	0.03	1.48	2.00	0.52
4U41	L	72		1.82	0.90	0.00	1.64	0.90	0	0	195	8.98	3.10	2.57	5.08	4.22	18	PVC	0.009	1.77	195	2.46	4U41	4.22						1.15	1.50	0.35
4U51	L	73	1.82	1.82	0.90	1.64	1.64	0.90	0	380	0	8.17	3.20	2.66	5.25	4.36	18	PVC	0.009	1.77	195	2.46	4U51	4.36	0.38	0.0008	0.16	1.00	0.09	1.40	1.50	0.10
4U42	L	74		0.46	0.90	0.00	0.42	0.90	0	0	80	6.71	3.50	2.91	1.46	1.21	12	PVC	0.009	0.79	80	1.58	4U42	1.21						1.22	1.50	0.28
4U61	L	79	0.28	0.46	0.90	0.25	0.42	0.90	0	0	120	6.38	3.60	2.99	1.50	1.24	12	PVC	0.009	0.79	120	0.66	4U61	1.24	0.25	0.0006	0.05	1.00	0.04	1.30	3.00	1.70
4U62	L	81	0.19	0.19	0.90	0.17	0.17	0.90	0	105	0	5.88	3.70	3.07	0.62	0.52	12	PVC	0.009	0.79	120	0.66	4U62	0.52	0.25	0.0001	0.01	1.40	0.01	1.33	2.50	1.17
4V1	L	39		97.25	0.50	0.00	50.23	0.52	0	0	235	47.95	1.45	1.20	72.83	60.45	48	RCP	0.015	12.57	235	4.81	4V1	60.45						-0.81	2.00	2.81
4V2	L	42	0.00	97.25	0.50	0.00	50.23	0.52	0	0	110	46.97	1.45	1.20	72.83	60.45	4X5	RCBC	0.015	20.00	110	3.02	4V2	60.45	1.00	0.0023	0.55	0.30	0.11	-0.15	n/a	n/a
4V3	L	42A	1.20	97.25	0.50	0.60	50.23	0.52	0	0	20	46.51	1.45	1.20	72.83	60.45	4X5	RCBC	0.015	20.00	110	3.02	4V3	60.45	1.11	0.0008	0.09	1.00	0.14	0.08	n/a	n/a
4V4	L	29	0.00	96.05	0.50	0.00	49.63	0.52	0	0	80	46.43	1.45	1.20	71.96	59.73		OC			20		4V4	59.73		0.0010	0.02		0.00	0.10	n/a	n/a
4V5	L	27	0.00	92.83	0.50	0.00	46.73	0.50	0	0	25	46.10	1.45	1.20	67.76	56.24		OC			80		4V5	56.24		0.0010	0.08		0.00	0.18	n/a	n/a
4V6	L	25	0.00	92.83	0.50	0.00	46.73	0.50	0	0	30	45.99	1.50	1.25	70.10	58.18		OC			25		4V6	58.18		0.0010	0.03		0.00	0.21	n/a	n/a
4V7	L	112	0.00	92.37	0.50	0.00	46.31	0.50	0	0	5	45.87	1.50	1.25	69.47	57.66		OC			30		4V7	57.66		0.0010	0.03		0.00	0.24	n/a	n/a
4V8	L	114	0.00	90.70	0.50	0.00	44.82	0.49	0	0	5	45.85	1.50	1.25	67.22	55.80		OC			5		4V8	55.80		0.0010	0.01		0.00	0.24	n/a	n/a
4V9	L	43	0.00	88.90	0.50	0.00	43.20	0.49	0	0	120	45.83	1.50	1.25	64.79	53.78		OC			5		4V9	53.78		0.0010	0.01		0.00	0.25	n/a	n/a
4V10	L	44	0.29	88.90	0.50	0.15	43.20	0.49	0	0	20	45.33	1.50	1.25	64.79	53.78	6X5	RCBC	0.015	30.00	120	1.79	4V10	53.78	1.36	0.0002	0.03	1.00	0.05	0.32	n/a	n/a
4V11	L	23	0.00	88.61	0.50	0.00	43.05	0.49	0	0	60	45.24	1.50	1.25	64.57	53.60		OC			20		4V11	53.60		0.0010	0.02		0.00	0.34	n/a	n/a
4V12	L	45	0.00	88.51	0.50	0.00	42.96	0.49	0	0	40	44.99	1.50	1.25	64.44	53.49		OC			60		4V12	53.49		0.0010	0.06		0.00	0.40	n/a	n/a
4V13	L	46	2.54	88.51	0.50	1.27	42.96	0.49	0	0	175	44.83	1.50	1.25	64.44	53.49	6X5	RCBC	0.015	30.00	40	1.78	4V13	53.49	1.36	0.0002	0.01	1.00	0.05	0.46	n/a	n/a
4V14	L	47	0.00	85.98	0.50	0.00	41.69	0.48	0	0	195	43.26	1.50	1.25	62.54	51.91		OC			175		4V14	51.91		0.0010	0.18		0.00	0.64	n/a	n/a
4V15	L	48	5.96	85.98	0.50	2.98	41.69	0.48	0	0	165	42.45	1.55	1.29	60.01	49.81	6X5	RCBC	0.015	30.00	200	1.73	4V15	51.91	1.36	0.0002	0.04	1.00	0.05	0.72	n/a	n/a
4V16	L	49	0.00	80.02	0.50	0.00	38.71	0.48	0	0	130	41.76	1.55	1.29	60.01	49.81	6X5	RCBC	0.015	30.00	165	1.66	4V16	49.81		0.0010	0.20		0.00	0.92	n/a	n/a
4V17	L	50	0.00	80.02	0.90	0.00	38.71	0.48	0	0	235	41.22	1.55	1.29	49.76	41.30	54	RCP	0.015	15.90	130	2.60	4V17	49.81	1.36	0.0002	0.03	1.00	0.04	0.99	3.00	2.01
4V18	L	52	1.93	72.68	0.90	1.73	32.11	0.44	0	0	120	40.24	1.55	1.29	46.42	38.53	54	RCP	0.015	15.90	235	2.42	4V18	41.30	1.13	0.0006	0.08	1.00	0.10	1.17	2.50	1.33
4V19	L	54,55	0.00	70.28	0.90	0.00	29.95	0.43	0	0	335	36.80	1.65	1.37	35.31	29.31	48	RCP	0.015	12.57	80	2.33	4V19	38.53	1.13	0.0005	0.12	2.40	0.22	1.51	4.50	2.99
4V20	L	56	0.16	48.92	0.90	0.15	21.40	0.44	0	0	110	35.40	1.65	1.37	32.23	26.75	48	RCP	0.015	12.57	335	2.13	4V20	29.31	1.00	0.0006	0.04	1.00	0.08	1.64	5.00	3.36
4V21	K	144	0.00	45.31	0.90	0.00	19.53	0.43	0	0	220	34.94	1.65	1.37	20.71	17.19	24	RCP	0.015	3.14	110	2.74	4V21	26.75	1.00	0.0005	0.15	1.50	0.11	1.90	6.50	4.60
4V22	K	162	0.22	29.67	0.50	0.11	12.55	0.42	0	0	95	34.03	1.70	1.41	21.15	17.56	24	RCP	0.015	3.14	50	2.74	4V22	8.59	0.50	0.0076	0.84	0.20	0.02	2.76	12.00	9.24
4V23	K	163	0.56	29.45	0.50	0.28	12.44	0.42	0	0	115	33.63	1.70	1.41	20.23	16.79	36	RCP	0.015	7.07	220	2.48	4V23	17.56	0.75	0.0009	0.20	1.00	0.10	3.06	44.00	40.94
4V24	K	165	1.46	28.23	0.50	0.73	11.90	0.42	0	0	185	20.49	2.15	1.78	10.89	9.04	24	RCP	0.015	7.07	95	2.38	4V24	16.79	0.75	0.0008	0.08	1.50	0.13	3.27	58.00	54.73
4V25	K	176	1.32	11.51	0.50	0.66	5.07	0.44	0	0	145	19.72	2.20	1.83	8.53	7.08	21	RCP	0.015	3.14	250	2.88	4V25	9.04	0.50	0.0021	0.53	1.50	0.19	3.99	96.00	92.01
4V26	K	182	3.29	8.87	0.50	1.64	3.88	0.44	0	0	135	19.12	2.20	1.83	3.43	2.84	12	RCP	0.015	0.79	145	3.62	4V26	7.08	0.44	0.0026	0.49	1.50	0.20	4.68	120.00	115.32
4V27	O	23	0.20	3.89	0.40	0.08	1.56	0.40	0	0	18.56	2.25	1.87	1.19	0.98		18	RCP	0.015	1.77	135	0.56	4V27	2.84	0.25	0.0084	1.22	1.50	0.31	6.21	142.00	135.79
4V28	O	24	1.32	1.32	0.40	0.53	0.53	0.40	610	0	0						18	RCP	0.015	1.77	135	0.56	4V28	0.98	0.38	0.0001	0.02</					



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe	n	Area	Length	Velocity <sub>25</sub>	Tributary	Q <sub>25</sub>	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta		
POC <sup>1</sup>																																		
4V18	L	52		0.47	0.90	0.00	0.42	0.90	0	0	40	7.25	3.40	2.82	1.44	1.20	12	RCP	0.015	0.79	40	1.52	4V18	1.20	0.25	0.0015	0.06	1.00	0.04	1.17	2.50	1.33		
4V101	L	53	0.47	0.47	0.90	0.42	0.42	0.90	0	250	0	7.08	3.40	2.82	1.44	1.20	12	RCP	0.015	0.79	40	1.52	4V101	1.20	0.25	0.0015	0.06	1.00	0.04	1.27	2.00	0.73		
4V19	L	54,55		21.36	0.40	0.00	8.55	0.40	0	0	120	40.24	1.55	1.29	13.24	10.99																		
4V111	L	58	1.38	21.36	0.40	0.55	8.55	0.40	0	0	50	39.74	1.60	1.33	13.67	11.35	18	PVC	0.009	1.77	120	6.42	4V19	10.99	0.38	0.0056	0.67	1.00	0.64	1.51	4.50	2.99		
4V112	L	59	0.00	19.98	0.40	0.00	7.99	0.40	0	0	75	39.53	1.60	1.33	12.79	10.62	18	PVC	0.009	1.77	50	6.42	4V111	11.35	0.38	0.0020	0.10	1.00	0.00	2.82	7.00	4.18		
4V113	L	60	13.35	19.98	0.40	5.34	7.99	0.40	0	0	900	39.22	1.60	1.33	12.79	10.62	12	PVC	0.009	0.79	65	13.52	4V112	10.62	0.25	0.0423	2.75	1.00	2.84	8.50	15.00	6.50		
4V114	P	1	0.00	6.63	0.40	0.00	2.65	0.40	0	0	45	35.47	1.65	1.37	4.38	3.63	12	OC	0.024	0.79	900	4.63	4V113	10.62	0.25	0.0020	1.80	1.00	0.00	10.30	72.00	61.70		
4V115	P	2	4.34	6.63	0.40	1.74	2.65	0.40	0	0	175	35.28	1.65	1.37	4.38	3.63	12	CMP	0.024	0.79	45	4.63	4V114	3.63	0.25	0.0353	1.59	1.00	0.33	12.22	74.00	61.78		
4V116	P	3	0.00	2.29	0.40	0.00	0.92	0.40	1330	0	0	34.56	1.65	1.37	1.51	1.26	12	OC	0.024	0.79	175	1.79	4V115	3.63	0.25	0.0020	0.35	1.00	0.00	12.57	86.00	73.43		
4V117	P	4	0.78	1.76	0.40	0.31	0.70	0.40	0	0	130	15.71	2.40	1.99	1.69	1.40	12	CMP	0.024	0.79	50	1.79	4V116	1.26	0.25	0.0053	0.26	1.00	0.05	12.89	89.00	76.11		
4V118	P	5	0.00	0.98	0.40	0.00	0.39	0.40	0	0	40	15.17	2.45	2.03	0.96	0.80	12	OC	0.024	0.79	130	1.03	4V117	1.40	0.25	0.0020	0.26	1.00	0.00	13.15	97.00	83.85		
4V119	P	6	0.98	0.98	0.40	0.39	0.39	0.40	450	0	0	15.00	2.50	2.08	0.98	0.81	12	CMP	0.024	0.79	40	1.03	4V118	0.80	0.25	0.0018	0.07	1.00	0.02	13.23	98.00	84.77		
4V20	L	56		3.44	0.50	0.00	1.72	0.50	0	0	35	15.67	2.40	1.99	4.13	3.43																		
4V121	K	57	3.44	3.44	0.50	1.72	1.72	0.50	350	330	0	15.53	2.40	1.99	4.13	3.43	12	RCP	0.015	0.79	35	4.37	4V20	3.43	0.25	0.0123	0.43	1.00	0.30	1.64	5.00	3.36		
4V21	K	144		0.04	0.90	0.00	0.03	0.90	0	0	45	5.73	3.80	3.15	0.13	0.10																		
4V131	K	161	0.04	0.04	0.90	0.03	0.03	0.90	0	65	0	5.54	3.80	3.15	0.13	0.10	18	RCP	0.015	1.77	45	0.06	4V21	0.10	0.38	0.0000	0.00	1.00	0.00	1.90	6.50	4.60		
4V21	K	144		15.60	0.50	0.00	6.95	0.45	0	0	305	25.79	1.95	1.62	13.55	11.25																		
4V141	K	150	0.31	15.60	0.50	0.16	6.95	0.45	0	0	20	24.52	2.00	1.66	13.90	11.53	30	RCP	0.015	4.91	305	1.73	4V131	0.10	0.63	0.0010	0.32	1.00	0.05	1.90	6.50	4.60		
4V142	K	148	6.75	15.29	0.50	3.37	6.79	0.44	0	0	395	24.44	2.00	1.66	13.58	11.27	18	PVC	0.009	1.77	305	1.73	4V21	11.25	0.63	0.0010	0.32	1.00	0.05	2.26	6.00	3.74		
4V143	K	152	2.43	8.54	0.40	0.97	3.42	0.40	0	0	210	22.79	2.05	1.70	7.00	5.81	18	PVC	0.009	1.77	20	6.38	4V141	8.48	0.38	0.0055	0.11	1.00	0.63	3.00	6.00	3.00		
4V144	K	155	0.00	6.12	0.40	0.00	2.45	0.40	0	0	65	21.92	2.10	1.74	5.14	4.26	15	PVC	0.009	1.77	395	3.29	4V142	11.27	0.38	0.0015	0.58	1.10	0.18	3.77	6.50	2.73		
4V145	K	156	0.39	6.12	0.40	0.16	2.45	0.40	0	0	140	21.65	2.10	1.74	5.14	4.26	15	RCP	0.015	1.23	210	3.48	4V143	5.81	0.31	0.0058	1.21	0.40	0.08	5.05	7.50	2.45		
4V146	K	157	0.00	5.73	0.40	0.00	2.29	0.40	0	0	85	21.06	2.10	1.74	4.81	3.99	12	VCP	0.015	0.79	65	5.43	4V144	4.26	0.25	0.0190	1.23	1.00	0.46	6.74	18.00	11.26		
4V147	K	158	2.92	5.73	0.40	1.17	2.29	0.40	0	0	185	20.71	2.15	1.78	4.93	4.09	10	OC	0.015	0.55	140	7.50	4V145	4.26	0.25	0.0020	0.28	1.00	0.00	7.02	57.00	49.98		
4V148	K	189	0.00	2.81	0.40	0.00	1.12	0.40	0	0	65	19.94	2.20	1.83	2.47	2.05	10	VCP	0.015	0.55	85	7.50	4V146	3.99	0.21	0.0461	3.92	1.00	0.87	11.82	62.00	50.18		
4V149	K	190	1.89	2.81	0.40	0.76	1.12	0.40	660	0	0	19.67	2.20	1.83	2.47	2.05	10	OC	0.015	0.55	185	3.76	4V147	4.09	0.21	0.0020	0.37	1.00	0.00	12.19	93.00	80.81		
4V150	K	204	0.00	0.92	0.40	0.00	0.37	0.40	0	0	55	14.12	2.55	2.12	0.94	0.78	10	VCP	0.015	0.55	65	3.76	4V148	2.05	0.21	0.0116	0.76	1.00	0.22	13.16	105.00	91.84		
4V151	K	205	0.92	0.92	0.40	0.37	0.37	0.40	400	0	0	13.89	2.55	2.12	0.94	0.78	18	OC	0.024	1.77	105	0.44	4V149	2.05	0.21	0.0020	0.21	1.00	0.00	13.37	140.00	126.63		
4V23	K	163		0.66	0.40	0.00	0.27	0.40	0	0	100	13.97	2.55	2.12	0.68	0.56																		
4V161	K	164	0.66	0.66	0.40	0.27	0.27	0.40	385	0	0	13.56	2.60	2.16	0.69	0.57	12	RCP	0.015	0.79	100	0.73	4V150	0.78	0.38	0.0002	0.01	1.00	0.00	13.39	158.00	144.61		
4V24	K	165		1.11	0.40	0.00	0.44	0.40	0	0	95	15.73	2.40	1.99	1.06	0.88																		
4V171	K	168	0.40	1.11	0.40	0.16	0.44	0.40	465	0	0	15.33	2.45	2.03	1.08	0.90	15	RCP	0.015	1.23	95	0.73	4V23	0.56	0.25	0.0003	0.03	1.00	0.01	3.06	44.00	40.94		
4V172	K	169	0.71	0.71	0.40	0.28	0.28	0.40	275	0	0	11.11	2.80	2.32	0.79	0.66	12	RCP	0.015	0.79	95	0.84	4V161	0.57	0.25	0.0005	0.04	1.00	0.01	3.10	33.00	29.90		
4V24	K	165		14.15	0.40	0.00	5.66	0.40	0	0	115	33.63	1.70	1.41	9.62	7.98																		
4V181	K	170	0.14	14.15	0.40	0.05	5.66	0.40	0	0	90	33.15	1.70	1.41	9.62	7.98	30	RCP	0.015	4.91	115	1.63	4V24	7.98	0.63	0.0005	0.06	1.00	0.04	3.27	58.00	54.73		
4V182	K	173	0.41	2.15	0.40	0.17	0.86	0.40	0	0	185	22.63	2.05	1.70	1.77	1.47	15	RCP	0.015	1.23	215	1.19	4V181	7.98	0.31	0.0007	0.15	0.20	0.00	3.52	105.00	101.48		
4V183	O	27	0.49	1.74	0.40	0.20	0.70	0.40	0	0	205	21.85	2.10	1.74	1.46	1.21	12	RCP	0.015	0.79	185	1.54	4V182	1.47	0.25	0.0015	0.28	1.40	0.05	3.86	139.00	135.14		
4V184	O	30	1.25	1.25	0.40	0.50	0.50	0.40	720																									

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	I <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
POC <sup>1</sup> 4G2		61		14.63	0.90	0.00	9.38	0.64	0	20	0	17.11	2.30	1.91	21.58	17.91							POC <sup>1</sup> 4G2	17.91						-1.83	5.00	6.83
4W1	G	59	1.21	14.63	0.90	1.09	9.38	0.64	0	110	0	16.94	2.35	1.95	22.05	18.30		OC			20		4W1	18.30		0.0060	0.12		0.00	-1.71	2.00	3.71
4W2	G	217	0.00	13.42	0.90	0.00	8.30	0.62	0	210	0	16.03	2.40	1.99	19.91	16.53		OC			110		4W2	16.53		0.0060	0.66		0.00	-1.05	2.00	3.05
4W3	G	23	0.91	13.42	0.90	0.81	8.30	0.62	0	93	0	14.28	2.55	2.12	21.16	17.56		OC			210		4W3	17.56		0.0060	1.26		0.00	0.21	2.00	1.79
4W4	G	20	3.06	12.51	0.90	2.76	7.48	0.60	0	280	0	13.50	2.60	2.16	19.46	16.15		OC			90		4W4	16.15		0.0060	0.54		0.00	0.75	3.00	2.25
4W5	D	179	3.61	9.45	0.50	1.80	4.73	0.50	0	0	80	11.17	2.80	2.32	13.23	10.98		OC			280		4W5	10.98		0.0060	1.68		0.00	2.43	5.00	2.57
4W6	D	180	1.01	5.84	0.50	0.51	2.92	0.50	0	0	350	10.83	2.85	2.37	8.32	6.91	18	RCP	0.015	1.77	80	3.91	4W6	6.91	0.38	0.0057	0.46	0.10	0.02	2.91	4.00	1.09
4W7	D	183	1.89	4.83	0.50	0.95	2.41	0.50	0	525	0	9.38	3.00	2.49	7.24	6.01	18	PVC	0.009	1.77	350	3.40	4W7	6.01	0.38	0.0016	0.55	0.30	0.05	3.51	4.00	0.49
4W8	D	186	1.98	2.94	0.50	0.99	1.47	0.50	70	0	580	8.97	3.10	2.57	4.56	3.78	2X2	RCBC	0.015	4.00	30	0.95	4W8	3.78	0.50	0.0002	0.01	0.60	0.01	3.53	4.00	0.47
4W9	D	189	0.96	0.96	0.50	0.48	0.48	0.50	90	0	210	7.88	3.30	2.74	1.58	1.31	12	RCP	0.015	0.79	110	1.67	4W9	1.31	0.25	0.0018	0.20	1.10	0.05	3.77	8.00	4.23
4W3	G	23	0.47	0.91	0.90	0.42	0.81	0.90	0	0	180	6.75	3.50	2.91	2.85	2.37							4W3	2.37						0.21	2.00	1.79
4W41	G	25	0.44	0.44	0.90	0.39	0.39	0.90	0	120	0	6.00	3.70	3.07	1.45	1.20	12	PVC	0.009	0.79	180	1.53	4W41	1.20	0.25	0.0005	0.10	0.20	0.01	0.31	2.00	1.69
4W4	G	20	0.25	0.39	0.90	0.22	0.35	0.90	0	0	185	6.27	3.60	2.99	1.27	1.06							4W4	1.06						0.75	3.00	2.25
4W51	G	22	0.15	0.15	0.90	0.13	0.13	0.90	0	60	0	5.50	3.90	3.24	0.52	0.43	12	PVC	0.009	0.79	185	0.55	4W51	0.43	0.25	0.0001	0.01	0.20	0.00	0.76	2.00	1.24
4W5	D	179	3.24	3.61	0.70	2.27	2.60	0.72	0	460	0	10.67	2.90	2.41	7.54	6.26							4W5	6.26						2.43	5.00	2.57
4W61	D	196	0.00	0.37	0.90	0.00	0.33	0.90	0	0	120	6.83	3.50	2.91	1.16	0.97		OC			460		4W61	0.97						2.43	10.00	7.57
4W62	D	197	0.09	0.37	0.90	0.08	0.33	0.90	0	0	120	6.33	3.60	2.99	1.20	0.99	12	PVC	0.009	0.79	120	1.27	4W62	0.99	0.25	0.0004	0.04	0.05	0.00	2.47	10.00	7.53
4W63	D	199	0.28	0.28	0.90	0.25	0.25	0.90	0	100	0	5.83	3.70	3.07	0.92	0.76	12	PVC	0.009	0.79	120	0.97	4W63	0.76	0.25	0.0002	0.03	0.60	0.01	2.51	8.90	6.39
4W7	D	183	0.54	1.89	0.90	0.49	1.70	0.90	0	0	90	8.58	3.15	2.61	5.36	4.45							4W7	4.45						3.51	4.00	0.49
4W71	D	184	0.65	1.35	0.90	0.59	1.22	0.90	0	0	130	8.21	3.20	2.66	3.89	3.23							4W71	3.23	0.25	0.0039	0.35	1.40	0.37	4.23	6.50	2.27
4W72	D	185	0.70	0.70	0.90	0.63	0.63	0.90	0	320	0	7.67	3.30	2.74	2.08	1.73	12	PVC	0.009	0.79	130	2.20	4W72	1.73	0.25	0.0011	0.15	0.10	0.01	4.38	7.60	3.22
4W8	D	186		0.33	0.00	0.00	0.17	0.50	0	0	80	8.05	3.20	2.66	0.54	0.44							4W8	0.44						3.53	4.00	0.47
4W81	D	N/A	0.33	0.33	0.50	0.17	0.17	0.50	19	275	0	7.71	3.30	2.74	0.55	0.46	12	RCP	0.015	0.79	80	0.58	4W81	0.46	0.25	0.0002	0.02	1.00	0.01	3.55	5.50	1.95
4W8	D	186		1.34	0.00	0.00	0.67	0.50	0	0	50	8.93	3.10	2.57	2.08	1.73							4W8	1.73						3.53	4.00	0.47
4W91	D	187	1.34	1.34	0.50	0.67	0.67	0.50	70	0	520	8.72	3.10	2.57	2.08	1.73	12	PVC	0.009	0.79	50	2.20	4W91	1.73	0.25	0.0011	0.06	0.10	0.01	3.59	5.50	1.91

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft	
4G2	G	61	1.09	7.06	0.80	0.87	5.05	0.72	0	130	0	27.00	1.90	1.58	9.59	7.96								4G2	7.96						-1.83	1.00	2.83
4Y1	G	78	2.19	5.97	0.70	1.53	4.18	0.70	0	0	540	25.92	1.95	1.62	8.14	6.76								4Y1	6.76					0.00	-1.83	2.50	4.33
4Y2	G	82	1.48	3.78	0.70	1.04	2.64	0.70	0	240	0	23.67	2.00	1.66	5.29	4.39	24	RCP	0.015	3.14	540	1.40		4Y2	4.39	0.50	0.0005	0.27	0.05	0.00	-1.56	4.00	5.56
4Y3	G	165	2.30	2.30	0.70	1.61	1.61	0.70	630	320	0	21.67	2.10	1.74	3.38	2.80		OC			240			4Y3	2.80					0.00	-1.56	4.00	5.56
Notes:																																	
1. POC = Point of Concentration																																	
2. Average velocity: Landscape = 0.75 fps, Pavement/earth ditch = 2 fps, Pipe/conc ditch = 4 fps																																	
3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.																																	
4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.																																	
** Assumed Marsh starting water surface elevation of -2.00 NGVD.																																	



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup>	L <sub>paved</sub> <sup>2</sup>	L <sub>pipe</sub> <sup>2</sup>	t <sub>c</sub> <sup>3</sup>	I <sub>100</sub> <sup>4</sup>	I <sub>25</sub> <sup>4</sup>	Q <sub>100</sub>	Q <sub>25</sub>	Diameter	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
PS			0.00	38.12	0.90	0.00	34.31	0.90	0	0	211	21.66	2.10	1.74	72.05	59.80							PS	59.80						-1.60	n/a	n/a
4U7	L	83	2.68	38.12	0.90	2.41	34.31	0.90	0	0	245	20.78	2.15	1.78	73.77	61.23	54	RCP	0.015	15.90	210	3.85	4U7	61.23	1.13	0.0013	0.27	1.50	0.35	-0.99	1.50	2.49
4U8	L	85	0.00	35.44	0.90	0.00	31.90	0.90	0	0	60	19.76	2.20	1.83	70.17	58.24	54	RCP	0.015	15.90	245	3.66	4U8	58.24	1.13	0.0012	0.28	1.10	0.23	-0.47	1.00	1.47
4U9	L	97	2.13	19.78	0.90	1.92	17.80	0.90	0	0	180	15.27	2.45	2.03	43.61	36.20	48	RCP	0.015	12.57	215	2.88	4U9	36.20	1.00	0.0008	0.18	0.10	0.01	-0.28	1.00	1.28
4U10	L	98	0.00	17.64	0.90	0.00	15.88	0.90	0	0	125	14.52	2.50	2.08	39.70	32.95	48	RCP	0.015	12.57	180	2.62	4U10	32.95	1.00	0.0007	0.13	1.00	0.11	-0.05	1.50	1.55
4U11	L	99	0.17	15.26	0.90	0.16	13.73	0.90	0	0	140	14.00	2.55	2.12	35.02	29.07	42	RCP	0.015	9.62	125	3.02	4U11	29.07	0.88	0.0011	0.14	1.40	0.20	0.29	3.50	3.21
4U12	L	103	0.86	14.36	0.90	0.77	12.92	0.90	0	0	320	13.42	2.60	2.16	33.60	27.89	42	RCP	0.015	9.62	140	2.90	4U12	27.89	0.88	0.0010	0.14	1.00	0.13	0.56	3.50	2.94
4U13	P	11	1.91	10.51	0.90	1.72	9.46	0.90	0	0	100	12.08	2.70	2.24	25.54	21.20	36	RCP	0.015	7.07	320	3.00	4U13	21.20	0.75	0.0013	0.43	0.90	0.13	1.12	1.50	0.38
4U14	P	12	0.57	8.60	0.90	0.52	7.74	0.90	0	0	40	11.67	2.75	2.28	21.28	17.66	30	PVC	0.009	4.91	100	3.60	4U14	17.66	0.63	0.0009	0.09	0.40	0.08	1.29	1.50	0.21
4U15	P	13	1.99	8.02	0.90	1.79	7.22	0.90	0	0	70	11.50	2.80	2.32	20.22	16.78	24	PVC	0.009	3.14	40	5.34	4U15	16.78	0.50	0.0026	0.10	1.50	0.66	2.06	3.50	1.44
4U16	P	14	0.76	2.50	0.90	0.68	2.25	0.90	0	0	250	11.21	2.80	2.32	6.30	5.23	18	RCP	0.015	1.77	70	2.96	4U16	5.23	0.38	0.0033	0.23	0.40	0.05	2.34	4.00	1.66
4U17	P	17	1.74	1.74	0.90	1.56	1.56	0.90	0	620	0	10.17	2.95	2.45	4.62	3.83	18	RCP	0.015	1.77	250	2.17	4U17	3.83	0.38	0.0018	0.44	1.20	0.09	2.87	9.50	6.63
4U8	L	85		15.66	0.90	0.00	14.10	0.90	0	0	60	19.76	2.20	1.83	31.01	25.74							4U8	25.74						-0.47	1.00	1.47
4U71	L	86	0.00	15.66	0.90	0.00	14.10	0.90	0	0	350	19.51	2.20	1.83	31.01	25.74	48	RCP	0.015	12.57	60	2.05	4U71	25.74	1.00	0.0004	0.03	1.00	0.07	-0.38	2.00	2.38
4U72	L	87	1.87	15.50	0.90	1.68	13.95	0.90	0	0	215	18.05	2.25	1.87	31.39	26.05		OC			350		4U72	26.05		0.0010	0.35		0.00	-0.03	1.00	1.03
4U73	L	90	1.01	13.63	0.90	0.91	12.27	0.90	0	0	50	17.15	2.30	1.91	28.22	23.43	42	RCP	0.015	9.62	215	2.43	4U73	23.43	0.88	0.0007	0.15	2.00	0.18	0.31	1.50	1.19
4U74	L	91	1.56	12.62	0.90	1.41	11.36	0.90	0	0	30	16.94	2.35	1.95	26.70	22.16	42	RCP	0.015	9.62	50	2.30	4U74	22.16	0.88	0.0006	0.03	1.00	0.08	0.42	1.50	1.08
4U75	L	92	0.00	11.06	0.90	0.00	9.96	0.90	0	0	200	16.82	2.35	1.95	23.40	19.42		OC			30		4U75	19.42		0.0030	0.09		0.00	0.51	1.60	1.09
4U76	L	93,164	2.49	11.06	0.90	2.24	9.96	0.90	0	0	260	15.99	2.40	1.99	23.89	19.83	3X2	RCBC	0.015	6.00	200	3.31	4U76	19.83	0.60	0.0022	0.44	1.50	0.25	1.20	3.00	1.80
4U77	L	117	0.85	3.31	0.90	0.77	2.98	0.90	0	0	210	14.90	2.50	2.08	7.44	6.17	15	RCP	0.015	1.23	260	5.03	4U77	6.17	0.31	0.0121	3.14	1.00	0.39	4.74	7.00	2.26
4U78	L	122	2.45	2.45	0.90	2.21	2.21	0.90	200	550	0	14.03	2.55	2.12	5.63	4.67	15	RCP	0.015	1.23	210	3.81	4U78	4.67	0.31	0.0069	1.45	2.00	0.45	6.65	16.00	9.35
4U71	L	86		0.16	0.90	0.00	0.14	0.90	0	0	340	7.58	3.30	2.74	0.48	0.40							4U71	0.40						-0.38	2.00	2.38
4U81	L	158	0.00	0.16	0.90	0.00	0.14	0.90	0	0	100	6.17	3.70	3.07	0.54	0.44		OC			340		4U81	0.44		0.0010	0.34		0.00	-0.04	1.00	1.04
4U82	L	159	0.16	0.16	0.90	0.14	0.14	0.90	0	90	0	5.75	3.80	3.15	0.55	0.46	12	PVC	0.009	0.79	100	0.58	4U82	0.46	0.25	0.0001	0.01	1.00	0.01	-0.03	0.00	0.03
4U76	L	93		5.27	0.90	0.00	4.74	0.90	0	0	290	11.90	2.75	2.28	13.04	10.83							4U76	10.83						1.20	3.00	1.80
4U84	L	95	5.27	5.27	0.90	4.74	4.74	0.90	80	470	0	10.69	2.90	2.41	13.76	11.42	30	PVC	0.009	4.91	290	2.33	4U84	11.42	0.63	0.0004	0.11	1.90	0.16	1.47	1.50	0.03
4U11	L	99		0.73	0.90	0.00	0.66	0.90	0	0	85	6.94	3.50	2.91	2.30	1.91							4U11	1.91						0.29	3.50	3.21
4U91	L	101,102	0.73	0.73	0.90	0.66	0.66	0.90	0	190	0	6.58	3.60	2.99	2.36	1.96	12	CMP	0.024	0.79	85	1.25	4U91	0.98	0.25	0.0103	0.87	1.90	0.05	1.21	3.50	2.29
4U12	L	103		2.99	0.90	0.00	2.69	0.90	0	0	250	13.06	2.65	2.20	7.14	5.92							4U12	5.92						0.56	3.50	2.94
4U101	L	106	0.18	2.99	0.90	0.16	2.69	0.90	0	0	115	12.01	2.70	2.24	7.27	6.04	18	PVC	0.009	1.77	250	3.42	4U101	6.04	0.38	0.0016	0.39	0.60	0.11	1.07	6.00	4.93
4U102	L	107	0.44	2.81	0.90	0.39	2.53	0.90	0	0	25	11.53	2.80	2.32	7.09	5.89	18	PVC	0.009	1.77	115	3.33	4U102	5.89	0.38	0.0015	0.17	0.40	0.07	1.31	3.00	1.69
4U103	L	108	0.92	2.38	0.90	0.83	2.14	0.90	0	0	150	11.43	2.80	2.32	5.99	4.97	18	RCP	0.015	1.77	25	2.81	4U103	4.97	0.38	0.0030	0.07	0.10	0.01	1.39	3.50	2.11
4U104	L	110	1.46	1.46	0.90	1.31	1.31	0.90	70	510	0	10.81	2.85	2.37	3.74	3.10	18	RCP	0.015	1.77	150	1.75	4U104	3.10	0.38	0.0012	0.17	1.10	0.05	1.62	7.50	5.88
4U15	P	13	1.99	3.54	0.90	1.79	3.18	0.90	0	0	40	8.33	3.20	2.66	10.19	8.46							4U15	8.46						2.06	3.50	1.44
4U111	P	19	0.43	1.55	0.90	0.39	1.39	0.90	0	0	220	8.17	3.20	2.66	4.46	3.70	18	RCP	0.015	1.77	40	2.09	4U111	3.70	0.38	0.0016	0.07	1.50	0.10	2.22	6.00	3.78
4U112	P	20	0.17	1.12	0.90	0.16	1.01	0.90	0	0	160	7.25	3.40	2.82	3.42	2.84	12	RCP	0.015	0.79	220	3.62	4U112	2.84	0.25	0.0084	1.85	0.50	0.10	4.18	10.00	5.82
4U113	P	21	0.95	0.95	0.90	0.85	0.85	0.90	0	190	0	6.58	3.60	2.99	3.06	2.54	12	RCP	0.015	0.79	160	3.24	4U113	2.54	0.25	0.0067	1.08	0.50	0.08	5.34	9.50	4.16
4U10	L	98		2.38	0.90	0.00	2.14	0.90	0	0	150	11.68	2.75	2.28	5.90	4.90							4U10	4.90						-0.05	1.50	1.55
4U121</																																



Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
9A1	D	204		20.17	0.90	0.00	18.15	0.90	0	0	70	11.45	2.80	2.32	50.82	42.18								9A1	42.18					0.00	n/a	n/a
9A2	D	205	0.71	20.17	0.90	0.64	18.15	0.90	0	0	75	11.16	2.80	2.32	50.82	42.18	60	RCP	0.015	19.63	70	2.15	9A1	42.18	1.25	0.0003	0.02	0.05	0.00	0.03	n/a	n/a
																	60	RCP	0.015	19.63	70	0.81	9A2	15.98							n/a	n/a
																	48	RCP	0.015	12.57	70	0.81		15.98								
9A3	D	62	0.00	19.45	0.90	0.00	17.51	0.90	0	0	265	10.85	2.85	2.37	49.90	41.42								9A3	41.42		0.0005	0.04		0.07	n/a	n/a
9A4	D	83	0.00	17.84	0.90	0.00	16.06	0.90	0	0	75	9.74	3.00	2.49	48.18	39.99								9A4	39.99		0.0005	0.13		0.20	n/a	n/a
9A5	D	85	0.00	17.05	0.90	0.00	15.35	0.90	0	0	270	9.43	3.00	2.49	46.04	38.22								9A5	38.22		0.0005	0.04		0.24	n/a	n/a
9A6	D	91	0.00	14.95	0.90	0.00	13.46	0.90	0	0	195	8.31	3.20	2.66	43.07	35.75								9A6	35.75		0.0005	0.14		0.37	n/a	n/a
9A7	D	98	0.00	12.27	0.90	0.00	11.05	0.90	0	0	15	7.49	3.40	2.82	37.56	31.17								9A7	31.17		0.0005	0.10		0.47	n/a	n/a
9A8	D	119	0.00	0.00	0.90	0.00	0.00	0.90	0	0	50	7.43	3.40	2.82	0.00	0.00								9A8	0.00		0.0005	0.01		0.48	n/a	n/a
9A9	D	120	0.00	0.00	0.90	0.00	0.00	0.90	100	0	0	7.22	3.40	2.82	0.00	0.00	18	CMP	0.024	1.77	50		9A9	0.00	0.38	0.0000	0.00	0.05	0.00	0.48	4.00	3.52
9A3	D	62		1.61	0.90	0.00	1.45	0.90	0	0	170	8.60	3.15	2.61	4.57	3.79								9A3	3.79					0.07	n/a	n/a
9A11	D	63,68	0.32	1.61	0.90	0.29	1.45	0.90	0	0	115	7.90	3.30	2.74	4.78	3.97	15	RCP	0.015	1.23	170	3.23	9A11	3.97	0.31	0.0050	0.85	1.00	0.16	1.08	10.50	9.42
9A12	D	64,69	0.63	1.29	0.90	0.57	1.16	0.90	0	0	135	7.42	3.40	2.82	3.95	3.28	12	?	0.015	0.79	115	4.18	9A12	3.28	0.25	0.0112	1.29	1.00	0.27	2.64	10.50	7.86
9A13	D	65,70	0.25	0.66	0.90	0.22	0.60	0.90	0	0	75	6.85	3.50	2.91	2.09	1.73	12	?	0.015	0.79	135	2.21	9A13	1.73	0.25	0.0031	0.42	1.00	0.08	3.14	9.70	6.56
9A14	D	66,71	0.19	0.42	0.90	0.17	0.37	0.90	0	0	90	6.54	3.60	2.99	1.35	1.12	12	?	0.015	0.79	75	1.43	9A14	1.12	0.25	0.0013	0.10	1.00	0.03	3.27	9.50	6.23
9A15	D	72	0.23	0.23	0.90	0.21	0.21	0.90	0	140	0	6.17	3.70	3.07	0.76	0.63	12	?	0.015	0.79	90	0.80	9A15	0.63	0.25	0.0004	0.04	0.95	0.01	3.32	10.50	7.18
9A4	D	83		0.79	0.90	0.00	0.71	0.90	0	0	125	6.73	3.50	2.91	2.49	2.06								9A4	2.06					0.20	n/a	n/a
9A21	D	84	0.79	0.79	0.90	0.71	0.71	0.90	0	0	145	6.21	3.60	2.99	2.56	2.12	15	RCP	0.015	1.23	125	1.73	9A21	2.12	0.31	0.0014	0.18	0.05	0.00	0.38	7.50	7.12
9A5	D	85		2.10	0.90	0.00	1.89	0.90	0	0	40	8.65	3.15	2.61	5.95	4.94								9A5	4.94					0.24	n/a	n/a
9A31	D	86	0.39	2.10	0.90	0.35	1.89	0.90	0	0	65	8.48	3.15	2.61	5.95	4.94	12	RCP	0.015	0.79	40	6.29	9A31	4.94	0.25	0.0255	1.02	0.40	0.25	1.50	6.00	4.50
9A32	D	87	0.32	1.71	0.90	0.29	1.54	0.90	0	0	190	8.21	3.20	2.66	4.92	4.08	12	RCP	0.015	0.79	65	5.20	9A32	4.08	0.25	0.0174	1.13	0.40	0.17	2.80	7.00	4.20
9A33	D	89	0.98	1.39	0.90	0.88	1.25	0.90	0	290	0	7.42	3.40	2.82	4.25	3.53	12	RCP	0.015	0.79	190	4.49	9A33	3.53	0.25	0.0130	2.47	1.00	0.31	5.58	8.50	2.92
9A34	D	90	0.41	0.41	0.90	0.37	0.37	0.90	0	170	0	6.42	3.60	2.99	1.32	1.10	12	RCP	0.015	0.79	45	1.39	9A34	1.10	0.25	0.0013	0.06	0.05	0.00	5.63	8.50	2.87
9A6	D	91		2.68	0.90	0.00	2.41	0.90	0	0	35	8.27	3.20	2.66	7.72	6.41								9A6	6.41					0.37	n/a	n/a
9A41	D	92	1.39	2.68	0.90	1.25	2.41	0.90	0	0	205	8.13	3.20	2.66	7.72	6.41	12	RCP	0.015	0.79	35	8.16	9A41	6.41	0.25	0.0428	1.50	1.50	1.55	3.42	6.00	2.58
9A42	D	95	0.00	1.29	0.90	0.00	1.16	0.90	0	0	85	7.27	3.40	2.82	3.94	3.27	12	RCP	0.015	0.79	205	4.16	9A42	3.27	0.25	0.0112	2.29	0.90	0.24	5.95	8.00	2.05
9A43	D	97	1.29	1.29	0.90	1.16	1.16	0.90	0	230	0	6.92	3.50	2.91	4.06	3.37	12	RCP	0.015	0.79	85	4.29	9A43	3.37	0.25	0.0118	1.00	0.15	0.04	7.00	8.00	1.00
9A7	D	98		12.27	0.90	0.00	11.05	0.90	0	0	75	12.06	2.70	2.24	29.82	24.75								9A7	24.75					0.47	n/a	n/a
9A51	D	99	0.41	12.27	0.90	0.37	11.05	0.90	0	0	150	11.75	2.75	2.28	30.38	25.21	30	PVC	0.009	4.91	75	5.14	9A51	25.21	0.63	0.0018	0.14	1.40	0.57	1.18	7.50	6.32
9A52	D	101	0.27	11.53	0.90	0.24	10.38	0.90	0	0	50	11.13	2.80	2.32	29.06	24.12	30	PVC	0.009	4.91	150	4.91	9A52	24.12	0.63	0.0016	0.25	0.10	0.04	1.46	8.50	7.04
9A53	D	102	0.55	11.27	0.90	0.50	10.14	0.90	0	0	265	10.92	2.85	2.37	28.90	23.98	24	PVC	0.009	3.14	50	7.63	9A53	23.98	0.50	0.0054	0.27	1.00	0.91	2.63	8.50	5.87
9A54	D	106	0.00	8.70	0.90	0.00	7.83	0.90	0	0	315	9.81	2.95	2.45	23.11	19.18	24	PVC	0.009	3.14	265	6.11	9A54	19.18	0.50	0.0034	0.91	1.00	0.58	4.12	8.00	3.88
9A55	D	107	4.38	6.80	0.90	3.95	6.12	0.90	0	0	140	8.50	3.15	2.61	19.28	16.00	21	PVC	0.009	2.41	315	6.65	9A55	16.00	0.44	0.0049	1.53	1.50	1.03	6.68	8.00	1.32
9A56	D	108	1.03	1.03	0.90	0.92	0.92	0.90	0	350	0	7.92	3.30	2.74	3.05	2.53	18	?	0.015	1.77	140	1.43	9A56	2.53	0.38	0.0008	0.11	1.00	0.03	6.82	14.00	7.18
9A51	D	99		0.33	0.90	0.00	0.30	0.90	0	0	45	6.02	3.70	3.07	1.10	0.91								9A51	0.91					1.18	7.50	6.32
9A61	D	100	0.33	0.33	0.90	0.30	0.30	0.90	0	100	0	5.83	3.70	3.07	1.10	0.91	12	RCP	0.015	0.79	45	1.16	9A61	0.91	0.25	0.0009	0.04	0.05	0.00	1.22	7.50	6.28
9A53	D	102		2.01	0.90	0.00	1.81	0.90	0	0	35	7.73	3.30	2.74	5.97	4.96								9A53	4.96					2.63	8.50	5.87
9A71	D	103	0.65	2.01	0.90	0.58	1.81	0.90	0	0	140	7.58	3.30	2.74	5.97	4.96	12	RCP	0.015	0.79	35	6.31	9A71	4.96	0.25	0.0256	0.90	0.10	0.06	3.59	8.00	4.41
9A72	D	104	0.60	1.36	0.90	0.54	1.23	0.90	0	0	30	7.00	3.50	2.91	4.29	3.56	12	RCP	0.015	0.79	140	4.53</										

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft
9D1		21	3.79	44.64	0.00	0.00	34.81	0.78	0	0	190	31.29	1.75	1.45	60.92	50.56							9D1	50.56						0.00	n/a	n/a
9D2			0.00	40.85	0.00	0.00	34.81	0.85				30.50	1.80	1.49	62.66	52.00	36	HDPE	0.015	7.07	190	7.36	9D2	52.00	0.75	0.0081	1.53	0.00	0.00	0.00	n/a	n/a
9D3	A	10	0.00	30.59	0.00	0.00	26.67	0.87				22.10	2.10	1.74	56.01	46.49		OC			450		9D3	46.49		0.0005	0.23			0.23	n/a	n/a
9D4	A	9	0.00	30.59	0.00	0.00	26.67	0.87				21.60	2.10	1.74	56.01	46.49	3X4	RCBC	0.015	12.00	75	3.87	9D4	46.49	0.86	0.0019	0.14	1.50	0.35	0.71	3.00	2.29
9D5	A	8	0.00	26.24	0.00	0.00	22.93	0.87	0	0	195	21.21	2.10	1.74	48.16	39.97	3X4	RCBC	0.015	12.00	25	3.33	9D5	39.97	0.86	0.0014	0.03	1.00	0.17	0.92	3.50	2.58
9D6	A	11	15.98	15.98	0.87	13.90	13.90	0.87				20.40	2.15	1.78	29.89	24.81	3X4	RCBC	0.015	12.00	195	2.07	9D6	24.81	0.86	0.0005	0.10	1.50	0.10	1.12	4.00	2.88
9D4	A	9		4.35	0.86	0.00	3.74	0.86				15.50	2.45	2.03	9.17	7.61							9D4	7.61						0.71	3.50	2.79
9D11	A	10A	4.35	4.35	0.86	3.74	3.74	0.86				14.50	2.50	2.08	9.35	7.76	18	RCP	0.015	1.77	200	4.39	9D11	7.76	0.38	0.0072	1.45	0.05	0.01	2.18	n/a	n/a
9D5	A	8		10.26	0.88	0.00	9.03	0.88	0	0	390	17.03	2.30	1.91	20.77	17.24							9D5	17.24						0.92	3.50	2.58
9D21	A	2	5.00	10.26	0.88	4.40	9.03	0.88				15.40	2.45	2.03	22.12	18.36	36	RCP	0.015	7.07	390	2.60	9D21	18.36	0.75	0.0010	0.39	1.00	0.10	1.42	2.00	0.58
9D22	B	18	5.26	5.26	0.88	4.63	4.63	0.88				14.00	2.55	2.12	11.80	9.80	18	RCP	0.015	1.77	175	5.54	9D22	9.80	0.38	0.0115	2.02	0.10	0.05	3.48	5.00	1.52
9D2	A	25		5.22	0.79	0.00	4.12	0.79				12.90	2.65	2.20	10.93	9.07							9D2	9.07						0.00	n/a	n/a
9D11	A		0.83	5.22	0.79	0.66	4.12	0.79				12.90	2.65	2.20	10.93	9.07	24	PVC	0.009	3.14	30	2.89	9D11	9.07	0.50	0.0008	0.02	1.40	0.18	0.20	1.50	1.30
9D12	A	26	0.00	4.39	0.79	0.00	3.47	0.79				11.60	2.80	2.32	9.71	8.06	18	PVC	0.009	1.77	210	4.56	9D12	8.06	0.38	0.0028	0.59	1.00	0.32	1.12	3.00	1.88
9D13	A	27	1.24	3.99	0.79	0.98	3.15	0.79				11.10	2.85	2.37	8.98	7.46	18	PVC	0.009	1.77	95	4.22	9D13	7.46	0.38	0.0024	0.23	1.50	0.41	1.76	3.00	1.24
9D14	D	29	2.75	2.75	0.79	2.17	2.17	0.79				10.00	2.95	2.45	6.41	5.32	18	PVC	0.009	1.77	170	3.01	9D14	5.32	0.38	0.0012	0.21	1.00	0.14	2.11	2.50	0.39
9D12	A	26		0.40	0.79	0.00	0.32	0.79	0	0	25	6.48	3.60	2.99	1.14	0.94							9D12	0.94						1.12	3.00	1.88
9D121	A	28	0.40	0.40	0.79	0.32	0.32	0.79	0	0	190	6.38	3.60	2.99	1.14	0.94	12	RCP	0.015	0.79	25	1.20	9D121	0.94	0.25	0.0009	0.02	1.00	0.02	1.16	4.00	2.84
9E1	A	15		1.78	0.90	0.00	1.50	0.84	0	0	40	13.57	2.60	2.16	3.90	3.24							9E1	3.24						0.23	n/a	n/a
9E2	A	16	0.10	1.78	0.90	0.09	1.50	0.84				13.40	2.60	2.16	3.90	3.24	15	PVC	0.009	1.23	40	2.64	9E2	3.24	0.31	0.0012	0.05	0.40	0.04	0.32	2.50	2.18
9E3	A	17	1.68	1.68	0.84	1.41	1.41	0.84				11.00	2.85	2.37	4.02	3.34	15	PVC	0.009	1.23	285	2.72	9E3	3.34	0.31	0.0013	0.36	1.00	0.11	0.79	2.20	1.41
9F1	A	7		3.26	0.77	0.00	2.51	0.77	0	0	195	14.81	2.50	2.08	6.28	5.21							9F1	5.21						0.23	n/a	n/a
9F2	A	6	1.48	3.26	0.77	1.14	2.51	0.77				14.00	2.55	2.12	6.40	5.32	18	RCP	0.015	1.77	195	3.01	9F2	5.32	0.38	0.0034	0.66	0.90	0.13	1.01	2.00	0.99
9F3	A	5	0.00	1.78	0.77	0.00	1.37	0.77				12.50	2.70	2.24	3.70	3.07	18	RCP	0.015	1.77	60	1.74	9F3	3.07	0.38	0.0011	0.07	0.10	0.00	1.09	2.00	0.91
9F4	A	4	1.78	1.78	0.77	1.37	1.37	0.77				12.50	2.70	2.24	3.70	3.07	18	RCP	0.015	1.77	205	1.74	9F4	3.07	0.38	0.0011	0.23	0.40	0.02	1.34	1.50	0.16
9F5	A	3	0.00	0.00	0.77	0.00	0.00	0.77				5.00	4.10	3.40	0.00	0.00	18	RCP	0.015	1.77	70	0.00	9F5	0.00	0.38	0.0000	0.00	0.05	0.00	1.34	2.00	0.66

Notes:  
1. POC = Point of Concentration  
2. Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.  
3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.  
4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.  
\*\* Assumed Marsh starting water surface elevation of 0.00 NGVD.

Tributary	Sheet	Old Node	Trib Area ac	Cumulative Area, ac	C Value	C-Area	Cumulative C-Area	Avg C Value	L <sub>landscape</sub> <sup>2</sup> ft	L <sub>paved</sub> <sup>2</sup> ft	L <sub>pipe</sub> <sup>2</sup> ft	t <sub>c</sub> <sup>3</sup> min	I <sub>100</sub> <sup>4</sup> in/hr	I <sub>25</sub> <sup>4</sup> in/hr	Q <sub>100</sub> ft <sup>3</sup> /s	Q <sub>25</sub> ft <sup>3</sup> /s	Diameter in	Pipe Material	n	Area sf	Length ft	Velocity <sub>25</sub> fps	Tributary POC <sup>1</sup>	Q <sub>25</sub> ft <sup>3</sup> /s	Hydraulic Radius	Hydraulic Slope	Friction Loss	k	Minor Loss	WS Elev**	Rim/Grate Elev	Delta ft		
10A1	C	3	0.00	1.62	0.50	0.00	0.81	0.50	0	0	90	19.59	2.20	1.83	1.78	1.48	36	CMP	0.024	7.07	90	0.09	10A1	1.48	0.75	0.0000	0.00	1.00	0.00	1.00	n/a	n/a		
10A2	C	4	0.00	1.62	0.50	0.00	0.81	0.50	0	0	30	19.22	2.20	1.83	1.78	1.48	42	CMP	0.024	9.62	90	0.09	10A2	0.63	0.75	0.0000	0.00	1.00	0.00	1.00	n/a	n/a		
10B1	C	5		1.62			0.81	0.50	0	0	75	19.09	2.20	1.83	1.78	1.48																		
10B2	C	6	1.62	1.62	0.50	0.81	0.81	0.50	620	0	0	18.78	2.25	1.87	1.82	1.51	36	CMP	0.024	7.07	75	0.21	10B1	1.48	0.75	0.0000	0.00	1.00	0.00	1.00	n/a	n/a		
10C1	C	7		21.81			10.91	0.50	0	0	205	25.08	1.95	1.62	21.26	17.65																		
10C2	C	11	2.28	21.81	0.50	1.14	10.91	0.50	0	0	120	24.22	2.00	1.66	21.81	18.10	30	PVC	0.009	4.91	205	3.69	10C1	17.65	0.63	0.0009	0.19	1.90	0.40	1.59	2.20	0.61		
10C3	C	14	4.63	19.53	0.50	2.31	9.77	0.50	0	0	200	23.72	2.00	1.66	19.53	16.21	24	PVC	0.009	3.14	120	3.71	10C2	18.10	0.50	0.0024	0.29	1.50	0.32	2.21	3.00	0.79		
10C4	C	17	0.00	12.00			6.00	0.50	0	0	60	22.89	2.05	1.70	12.30	10.21	15	PVC	0.009	1.23	120	3.71	10C3	11.66	0.50	0.0024	0.29	1.50	0.32	2.21	3.00	0.79		
10C5	C	18	7.67	12.00	0.50	3.83	6.00	0.50	700	250	0	22.64	2.05	1.70	12.30	10.21	24	PVC	0.009	3.14	200	3.25	10C4	10.21	0.50	0.0010	0.19	0.40	0.07	2.47	3.50	1.03		
10C6	C	19	1.85	4.33	0.50	0.92	2.17	0.50	0	0	250	18.93	2.20	1.83	4.77	3.96	18	PVC	0.009	1.77	65	5.78	10C5	10.21	0.38	0.0045	0.29	0.40	0.21	2.97	3.80	0.83		
10C7	C	4	2.48	2.48	0.50	1.24	1.24	0.50	580	0	0	17.89	2.25	1.87	2.80	2.32	15	PVC	0.009	1.23	60	3.22	10C6	3.96	0.31	0.0018	0.11	0.90	0.15	3.22	3.80	0.58		
10C3	C	14		2.91			1.45	0.50	0	0	250	20.04	2.15	1.78	3.13	2.60	10	RCP	0.015	0.55	440	4.25	10C7	2.32	0.21	0.0148	6.53	0.15	0.04	9.79	59.00	49.21		
10C11	n/a	n/a	2.91	2.91	0.50	1.45	1.45	0.50	630	0	0	19.00	2.20	1.83	3.20	2.66	12	NEW	0.015	0.79	250	3.38	10C3	2.60	0.25	0.0074	1.84	0.05	0.01	4.06	10.00	5.94		

- Notes:
1. POC = Point of Concentration
  2. Average velocity: Landscape = 0.75 fps, Pavement = 2 fps, Pipe = 4 fps.
  3. Initial Time of Concentration for Buildings = 5 minutes. 5 minutes minimum for all areas.
  4. Intensity based on 25-Year and 100-Year Design Storm from Caltrans Intensity Curves.
- \*\* Assumed Marsh starting water surface elevation of 1.00 NGVD.

