URS

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Client: **City of Arlington** Project: **Stormwater Comprehensive Plan**

Location: **Arlington, WA** Subject: **XP-SWMM Hydraulic Model**

Project No: **33757537** Calculation No: **HM-1** Revision No. **0** Sheet **1** of _____

(Title of Calculations/Document)

STEP 1

	Signature	Date
Methodology & Assumptions Developed	[signature]	3/20/08
Methodology & Assumptions Approved	Carla Jalich	3/20/08

STEP 2

Calculations Completed	[signature]	3/24/08
Calculations Checked	Carla Jalich	3/25/08

STEP 3

Task Manager Approved		
Project Manager Approved		

COMMENTS

Purpose: Evaluate the existing stormwater conveyance system that routes flows from within the Downtown 4th tier basin to the Stillaguamish River.

Background: Initial modeling was conducted using elevation data obtained via GPS surveying provided by the City of Arlington (City). The rim elevations of the manholes were measured via GPS and invert elevations were determined by measuring from the rim elevation to the pipe invert. To improve the accuracy of the elevation data, a second, more accurate survey was conducted using a total station in December 2006. The survey generated new rim elevations and new invert elevations were created based on subtracting the original measure down distances from the new survey data. This stormwater model used the most current total station survey data combined with as-built information for the Olympic stormwater line.

The focus of this evaluation was to locate potential problems within the existing Downtown Basin stormwater system. Stormwater flow routing was completed using XP-SWMM to identify necessary improvements to the stormwater drainage system.

Stormwater hydraulic problems previously identified in 1995, 1999, and 2003 assessment memos include: local flooding along First Street (between McLeod and Lenore Avenues), Lenore Avenue (between First and Third Streets), and along French Avenue (between First and Third Streets); and conveyance limitations within manholes along SR9 (north of Burke Avenue).

Approach: The Downtown Basin was evaluated to determine the capacity of the existing storm drainage network under fully developed conditions. The storm drainage network is not a continuous diameter storm drain; it includes a network of pipes with diameters ranging from 2- to 36-inch pipe diameters.

The location of the Downtown Basin (a.k.a Old Town) within the City is shown in Figure 1 and Figure 2. The model area schematic is shown in Figure 3.

The hydrology was developed based on the 24-hour frequency design storm (See Attachment 1). This evaluation used the rainfall data from the 2-year, 10-year, 25-year, and 100-year 24-hour storms and identified areas where flooding would be expected during similar conditions. Areas with flooding and capacity issues are identified for future stormwater drainage system upgrades. A summary of the rainfall data is presented in Table 1.

The existing storm drainage network was modeled in XP-SWMM using 24-hour frequency design storm hydrology and fully developed conditions. Hydraulics were routed for each event using XP-SWMM. Input to the model network for the Downtown Basin is included in Attachment 2. This information includes assumed drainage area and invert elevations of storage nodes and links.

Areas of flooding observed by model results under these design conditions were identified. Several nodes throughout the drainage network were surcharged during the peak flood conditions.

Results: Attachment 2 presents selected XP-SWMM model results. Based on the assumptions made for pipe geometry and precipitation, described previously, the existing network was modeled under fully developed conditions.

The model results identified surcharging problems in the following locations:

- The storm drain along Lenore Avenue, near East 2nd Street (location BE-09);
- The storm drain along First Street, between Gifford and Lenore Avenues (locations: BE-10 and BE-11);
- Trunk line along SR-9 near Burke Avenue (location: DM-05);

- The storm drain along West Division Street, near North Dunham Avenue(location: DM-17);
- The storm drain along S West Avenue , south of E 3rd Street (location: W-09); and
- The storm drain along S Olympic Avenue, north of Maple Street (location: OL-22).

See Table 2 for a summary of flooding conditions within the Downtown Basin.

Surcharging issues at BE-09, BE-10, BE-11, and DM-05 has already been identified as problems in the 1995, 1999, and 2003 assessment reports and the City has planned projects to resolve these issues. The problems at BE-09, BE-10, and BE-11 should be resolved during the completion of Projects No. 11 and 201. The problem at DM-05 should be resolved during the completion of Project No. 12. See Attachment 3 for a brief description of these projects.

The model indicated flooding issues at DM-17 during the 10-year storm event, which is a significant event. Downstream of the DM-17 manhole, the slope becomes flatter and the pipe decreases from a 24-inch to a 21-inch diameter. These two reductions in the stormwater conveyance performance potential triggered the model to detect flooding during the 10-year storm. It is recommended that the City monitor and record observations in this area during and following storm events to determine if additional modeling, and potentially upgrading the stormwater system, at this location is necessary.

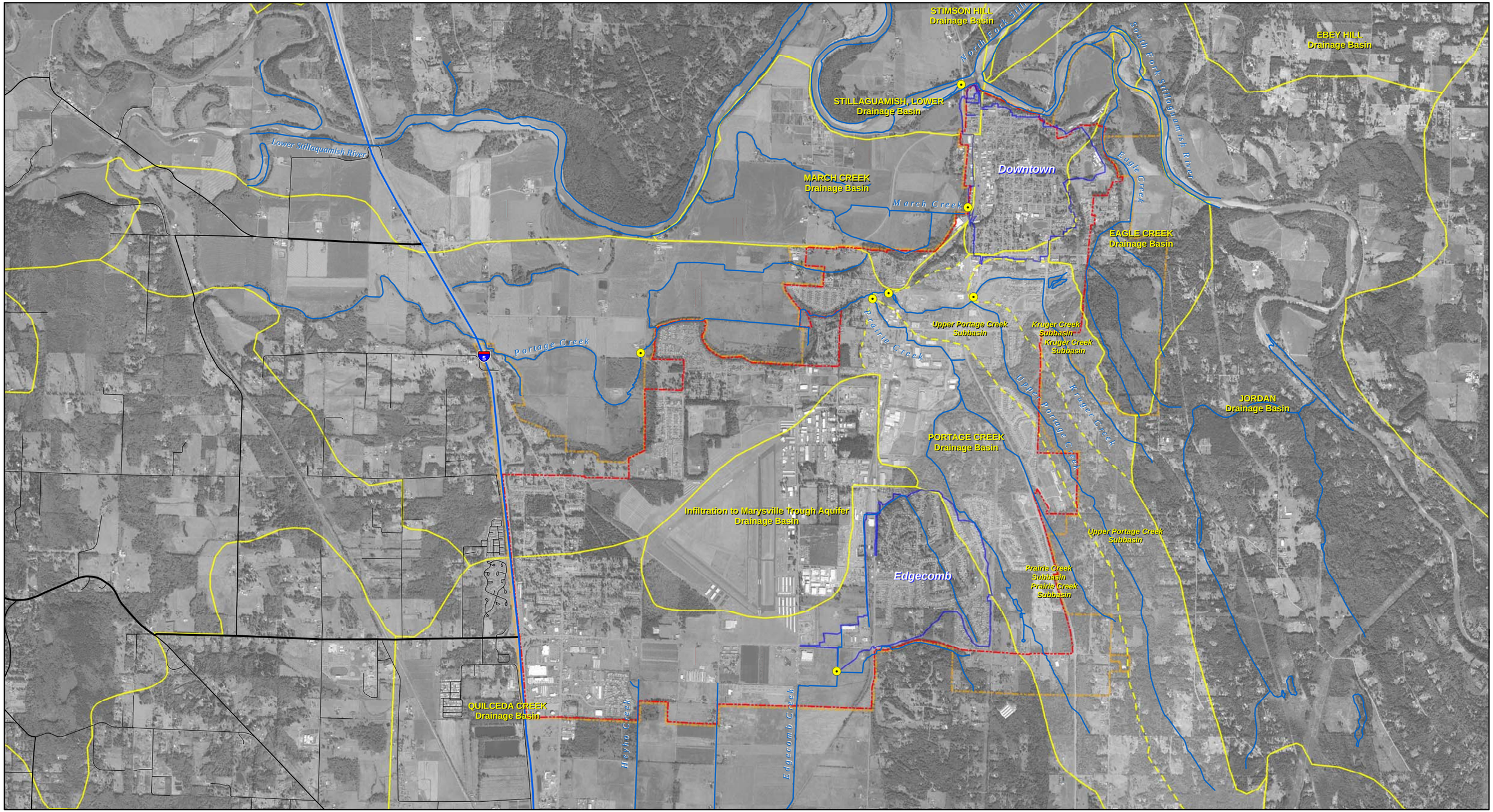
The model indicated a problem at W-09, but it is believed that these results occurred due to incorrect elevation data. According to the model, W-09 will flood during the 2-year, 24-hour storm event. A profile of the storm drain line near W-09 indicates an unusual low point at this structure. The model estimated that OL-22 will flood during the 10-year storm event. The conduits downstream of OL-22 have the same diameter and approximately the same slope, but do not produce any surcharging issues. It appears that the estimated flooding at OL-22 is a program error. Attachment 2 shows profiles of the storm drain line at W-09 and OL-22. Since the data for these two structures is believed to be flawed, upgrades are not recommended for these two areas.

Table 1 – 24-Hour Design Rainfall

Return Period (years)	Rainfall Depth (inches)	Return Period (years)	Rainfall Depth (inches)
2-year	1.80	25-year	3.20
10-year	2.75	100-year	3.75

Table 2 - Flooding Summary

Node	100-year Storm			25-year Storm			10-year Storm			2-year Storm		
	Flooded	Flood Volume		Flooded	Flood Volume		Flooded	Flood Volume		Flooded	Flood Volume	
	Time (min)	(cf)	(ac-ft)	Time (min)	(cf)	(ac-ft)	Time (min)	(cf)	(ac-ft)	Time (min)	(cf)	(ac-ft)
DM-05	127	169,408	3.89	96	128,582	2.95	74	98,538	2.26	40	30,966	0.71
DM-17	38	10,460	0.24	30	8,000	0.18	24	4,687	0.11	--	--	--
BE-09	50	15,207	0.35	42	9,756	0.22	35	5,769	0.13	9	145	0
BE-10	45	7,229	0.17	37	5,909	0.14	30	4,000	0.09	--	--	--
BE-11	26	1,872	0.04	19	708	0.02	--	--	--	--	--	--



Legend

- Drainage Basin Outfalls
- State Highway
- Arterial
- Street
- Arlington City Limits
- UGA Zones
- Drainage Basins
- Subbasins

N

1 0.5 0 1
Miles

Figure 1
Arlington Drainage Basins and Subbasins

\\Seaprojects\project\Arlington\GIS\maps\Figure 1 - Arlington Drainage Basins and Subbasins.mxd

Figure 2

Old Town Arlington

0 125 250 500 Feet

Legend

Pipe_network_0401

Material

- Unspecified
- CMP Cor Metal
- Concrete
- Ductal Iron
- HDPE Corrugated
- HDPE Smooth
- PVC Smooth
- Perforated HDPE
- Perforated PVC
- Steel
- Contour_20
- Contour_10

Watersheds WS4

WS4

- Broadway
- Butler East
- Butler West
- Centennial Trail
- Division Main
- Edgecomb
- Haller Park
- Seventh Day Adventist
- Talcott
- Utilities
- West
- West RR
- Butler DT

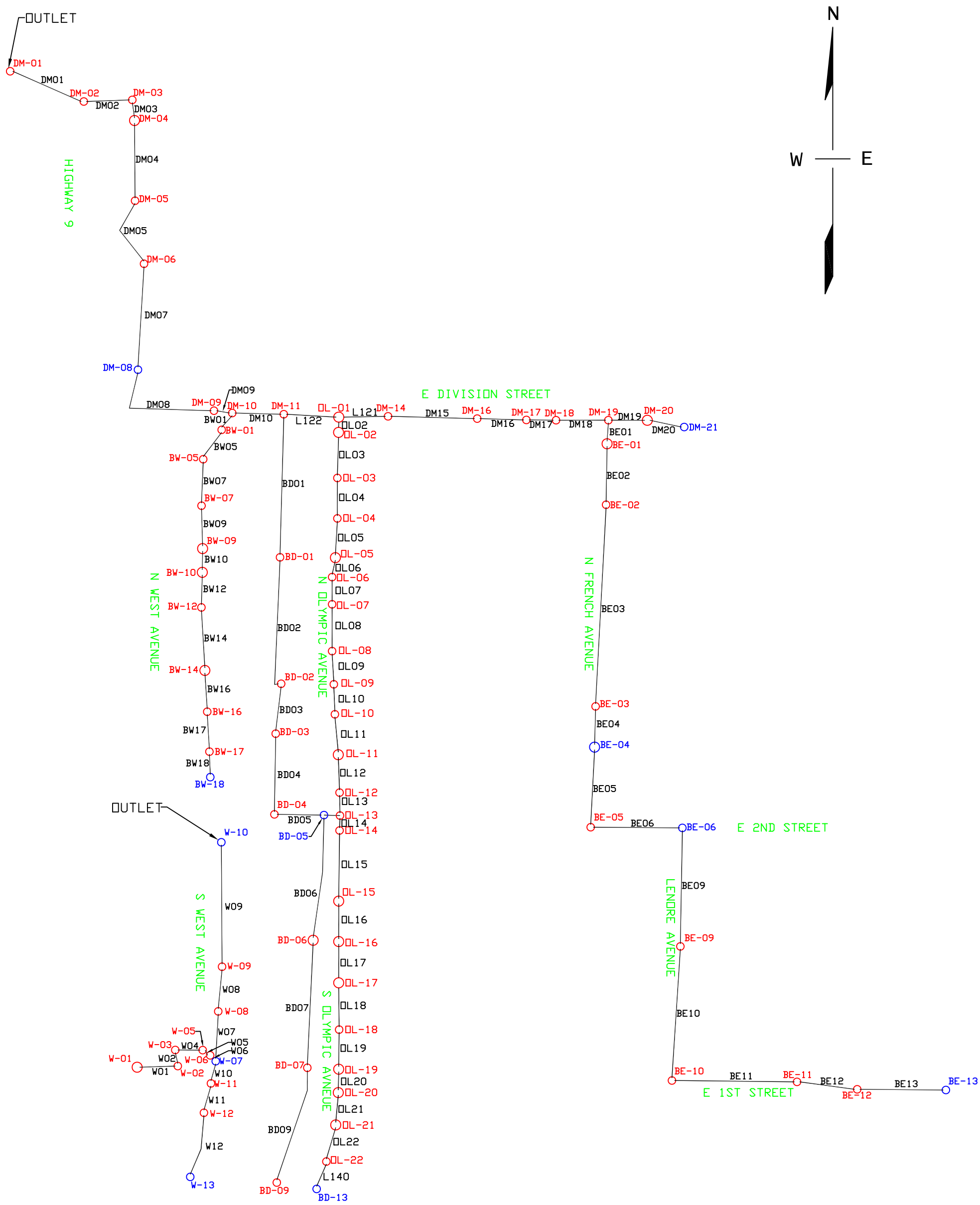


FIGURE 3
OLD TOWN BASIN STORMWATER SYSTEM SCHEMATIC

LEGEND:

○ X-#	CONVEYANCE STRUCTURE WITHOUT INLET
○ X-#	CONVEYANCE STRUCTURE WITH INLET
— X#	PIPELINE

ATTACHMENT 1
Isopluvials of 24-Hour Precipitation

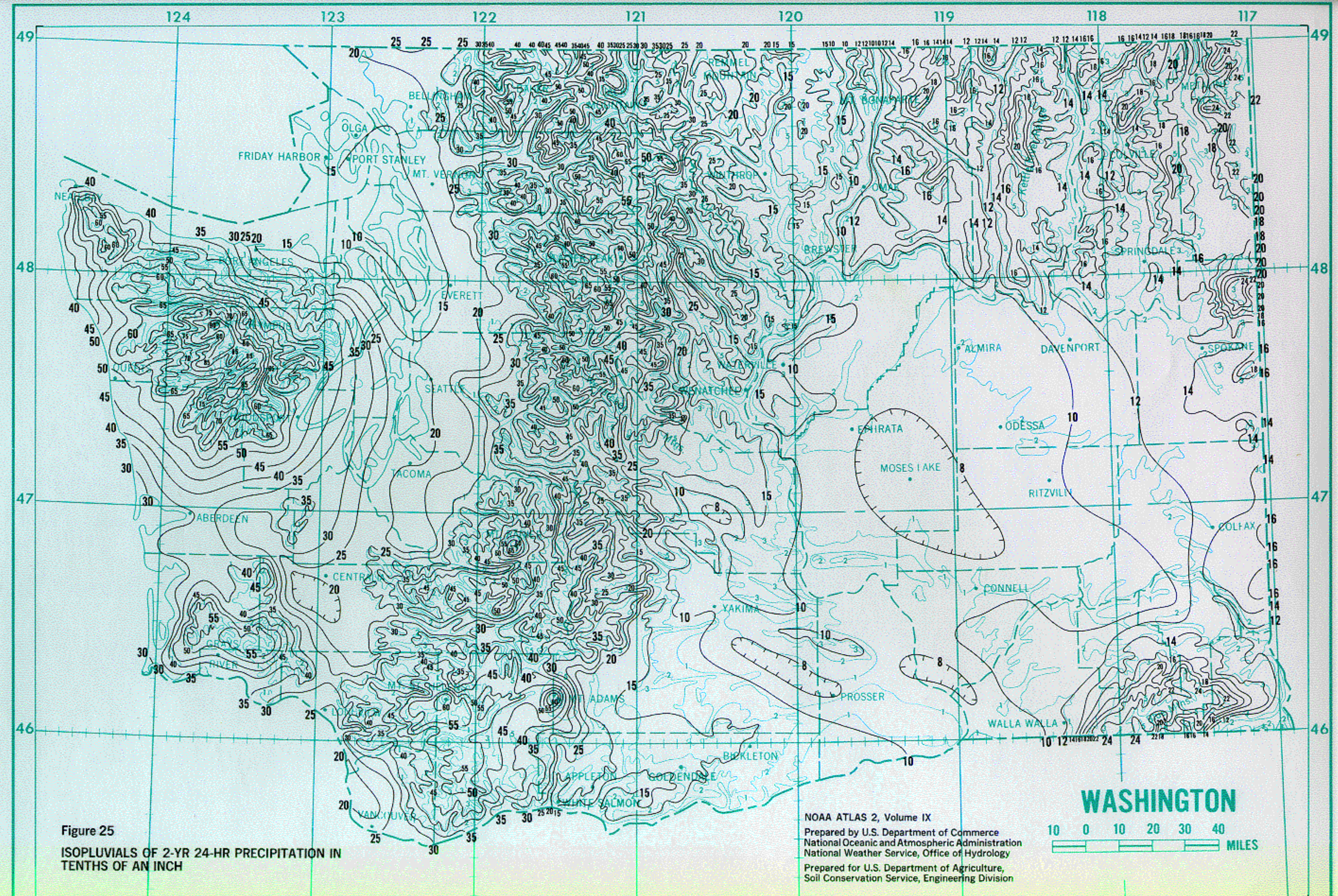


Figure 25

ISOPLUVIALS OF 2-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

NOAA ATLAS 2, Volume IX

Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service, Office of Hydrology

Prepared for U.S. Department of Agriculture,
Soil Conservation Service, Engineering Division

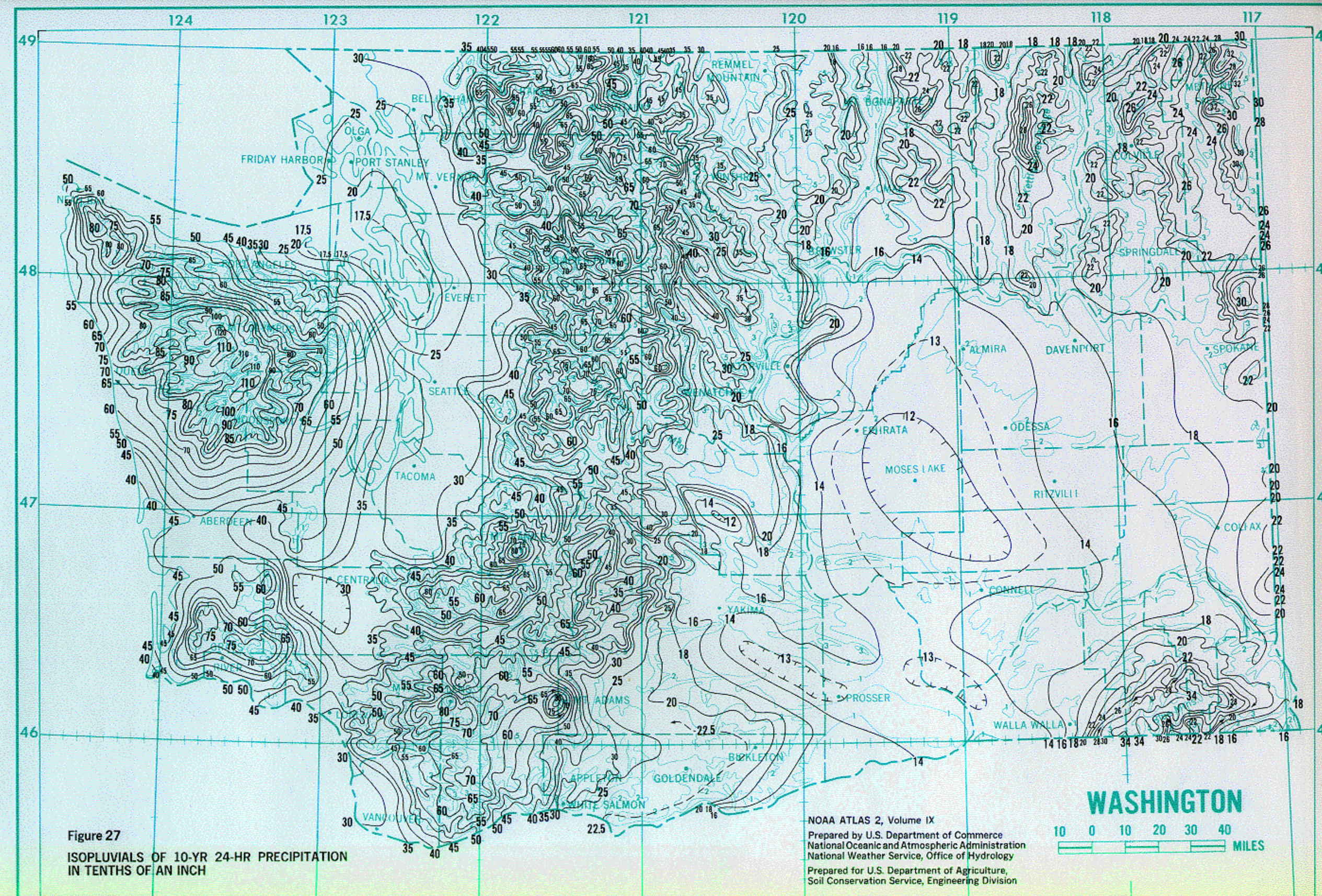


Figure 27

ISOPLUVIALS OF 10-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

NOAA ATLAS 2, Volume IX

Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service, Office of Hydrology

Prepared for U.S. Department of Agriculture,
Soil Conservation Service, Engineering Division

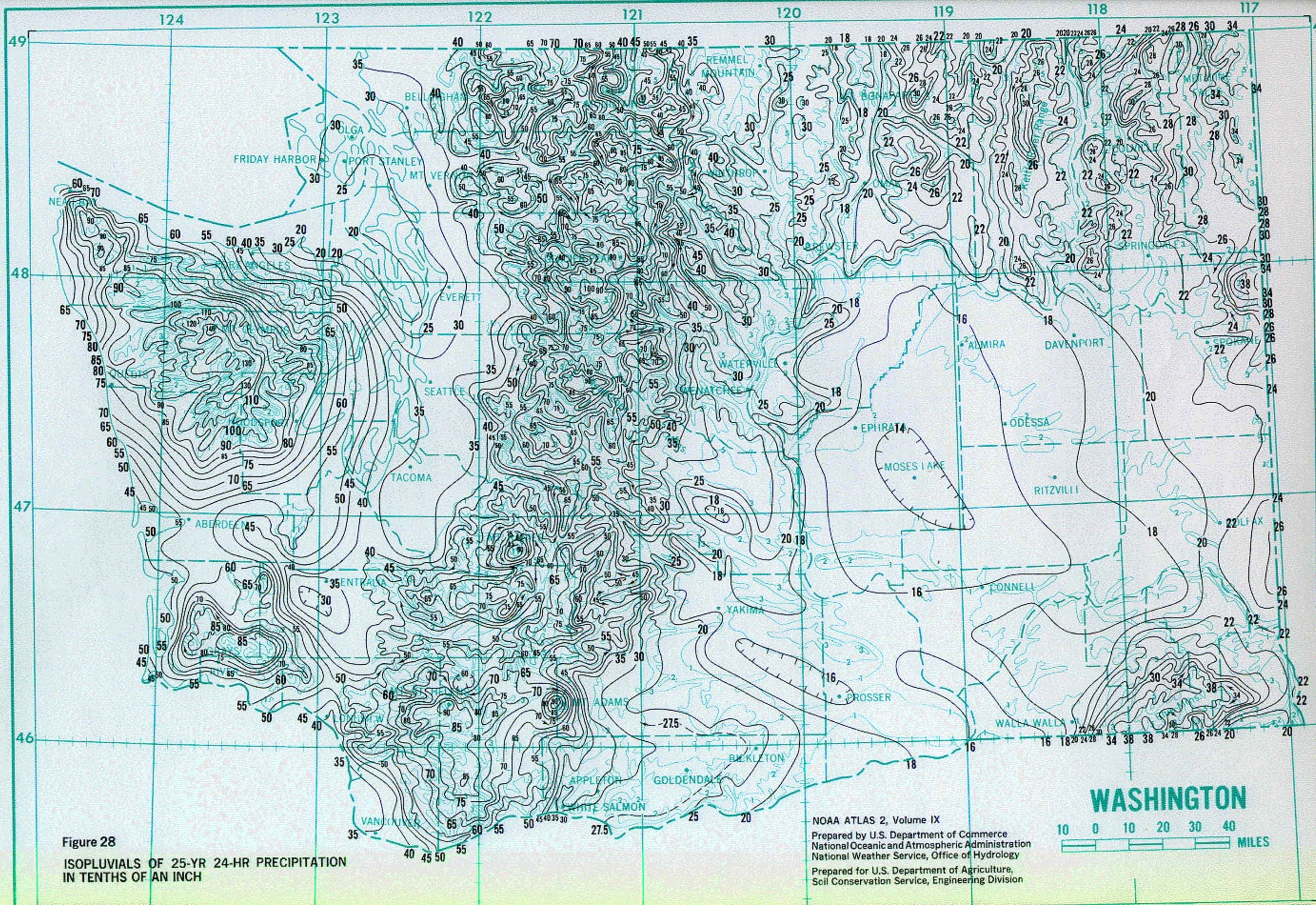


Figure 28

ISOPLUVIALS OF 25-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

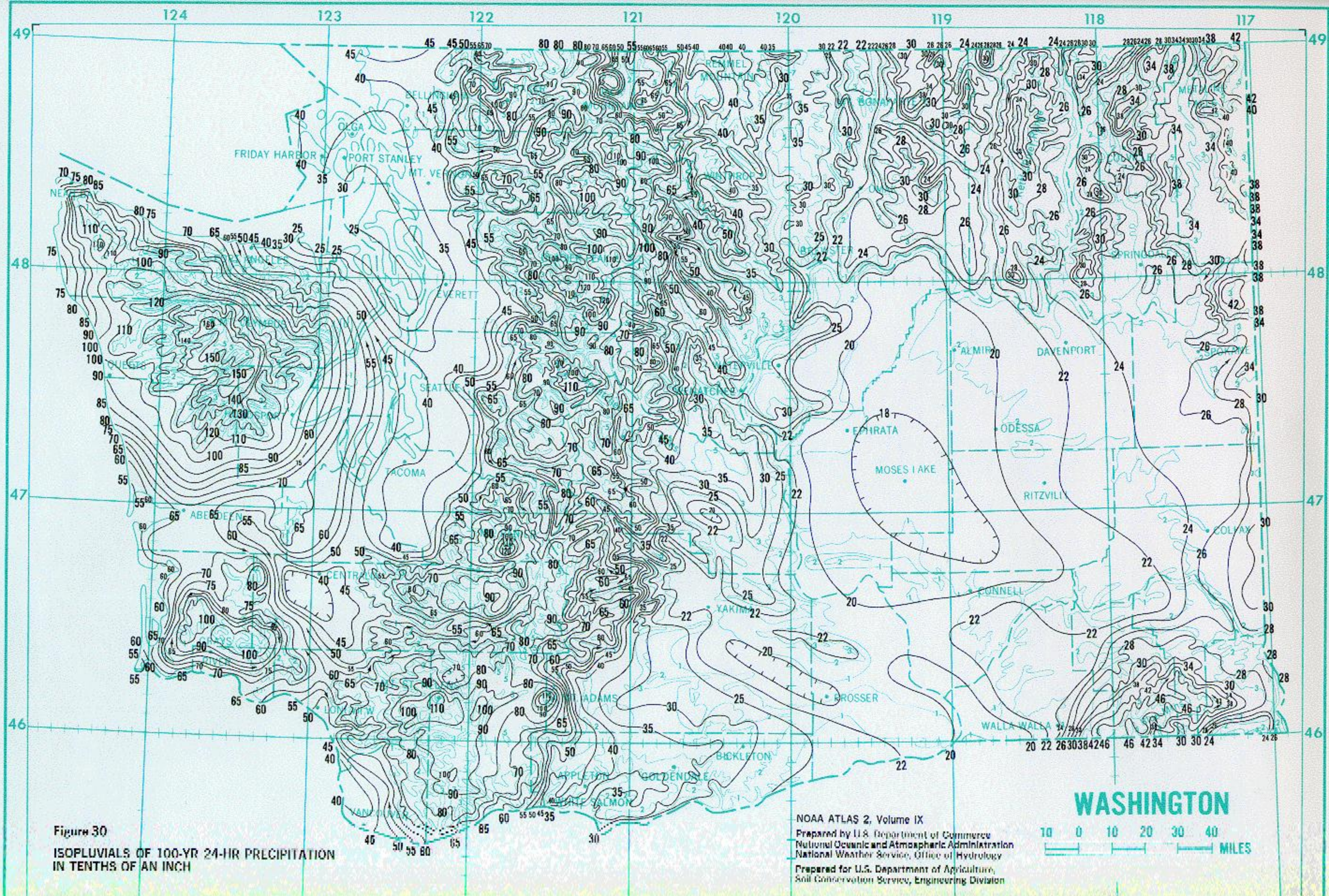


Figure 30

ISOPLUVIALS OF 100-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

NOAA ATLAS 2, Volume IX

Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service, Office of Hydrology

Prepared for U.S. Department of Agriculture,
Soil Conservation Service, Engineering Division

ATTACHMENT 2

Summary of XP-SWMM Input & Output

Downtown Basin - Summary of Impervious Areas

Node Name	Rainfall Reference	Width (ft)	Area (ac)	Impervious Percentage %	Slope
BW-18	SCS Type IA	1,140	5.7	65	0.004
BD-13	SCS Type IA	2,920	122.3	53.4	0.022
OL-13	SCS Type IA	1,850	30.5	53.4	0.048
BE-13	SCS Type IA	1,560	24.2	51.1	0.073
BE-06	SCS Type IA	1,500	34.8	51.1	0.019
BE-04	SCS Type IA	1,340	19.3	51.1	0.033
DM-21a	SCS Type IA	1,800	16.1	64.9	0.021
DM-21b	SCS Type IA	870	8.9	64.9	0.021
DM-08	SCS Type IA	1,260	19.9	64.9	0.029
W-13	SCS Type IA	180	1.7	66.8	0.032
W-10	SCS Type IA	840	2.9	66.8	0.015
W-07	SCS Type IA	490	7.6	65	0.003

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| Table E1 - Conduit Data |
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Inp Num	Conduit Name	Length (ft)	Conduit Class	Area (ft^2)	Manning Coef.	Max Width (ft)	Depth (ft)	Trapezoid Side Slopes
1	DM01	285.2000	Circular	7.0686	0.0240	3.0000	3.0000	
2	DM07	367.5000	Circular	7.0686	0.0140	3.0000	3.0000	
3	DM05	245.1000	Circular	7.0686	0.0140	3.0000	3.0000	
4	DM04	279.4000	Circular	19.6350	0.0240	5.0000	5.0000	
5	DM02	161.8000	Circular	7.0686	0.0240	3.0000	3.0000	
6	DM08	427.6100	Circular	7.0686	0.0140	3.0000	3.0000	
7	BW18	87.5000	Circular	1.0751	0.0120	1.1700	1.1700	
8	BW17	141.8000	Circular	1.0751	0.0120	1.1700	1.1700	
9	BW14	216.1000	Circular	1.0751	0.0120	1.1700	1.1700	
10	BW12	125.2000	Circular	1.0751	0.0120	1.1700	1.1700	
11	BW10	81.6000	Circular	1.0751	0.0120	1.1700	1.1700	
12	BW07	170.6000	Circular	1.0751	0.0120	1.1700	1.1700	
13	BW05	122.0000	Circular	1.3893	0.0120	1.3300	1.3300	
14	BW01	67.3000	Circular	1.7671	0.0120	1.5000	1.5000	
15	DM09	66.9000	Circular	7.0686	0.0140	3.0000	3.0000	
16	BE01	62.1000	Circular	2.4053	0.0140	1.7500	1.7500	
17	DM20	130.4000	Circular	1.2272	0.0140	1.2500	1.2500	
18	DM19	138.1000	Circular	0.7854	0.0140	1.0000	1.0000	
19	DM17	143.4000	Circular	3.1416	0.0140	2.0000	2.0000	
20	DM15	310.9000	Circular	2.4053	0.0140	1.7500	1.7500	
21	DM10	181.3000	Circular	7.0686	0.0140	3.0000	3.0000	
22	BD02	465.0000	Circular	6.2902	0.0140	2.8300	2.8300	
23	BD01	503.0000	Circular	7.0686	0.0140	3.0000	3.0000	
24	BD09	419.2000	Circular	3.1416	0.0140	2.0000	2.0000	
25	BD07	442.3000	Circular	3.1416	0.0140	2.0000	2.0000	
26	BD06	443.7000	Circular	3.9761	0.0140	2.2500	2.2500	
27	BD05	178.3000	Circular	3.9761	0.0140	2.2500	2.2500	
28	BD03	166.9000	Circular	4.9087	0.0140	2.5000	2.5000	
29	BE10	459.5000	Circular	1.7671	0.0140	1.5000	1.5000	
30	BE09	423.0000	Circular	2.4053	0.0140	1.7500	1.7500	
31	BE06	317.8000	Circular	1.7671	0.0140	1.5000	1.5000	
32	W09	434.8000	Circular	0.7854	0.0120	1.0000	1.0000	
33	W06	32.9000	Circular	0.7854	0.0120	1.0000	1.0000	
34	W04	99.2000	Circular	0.7854	0.0120	1.0000	1.0000	
35	W02	52.3000	Circular	0.7854	0.0120	1.0000	1.0000	
36	W01	138.1000	Circular	1.7671	0.0120	1.5000	1.5000	
37	W12	228.1000	Circular	0.7854	0.0120	1.0000	1.0000	
38	DM03	80.4000	Circular	4.9087	0.0240	2.5000	2.5000	
39	BW16	142.7000	Circular	1.0751	0.0120	1.1700	1.1700	
40	BW09	142.6000	Circular	1.0207	0.0120	1.1400	1.1400	
41	BD04	278.9000	Circular	3.9761	0.0140	2.2500	2.2500	
42	DM16	170.0000	Circular	3.1416	0.0140	2.0000	2.0000	
43	DM18	144.1000	Circular	3.1416	0.0140	2.0000	2.0000	
44	BE02	238.6000	Circular	2.4053	0.0140	1.7500	1.7500	
45	BE05	268.7000	Circular	2.4053	0.0140	1.7500	1.7500	
46	BE04	155.1000	Circular	2.4053	0.0140	1.7500	1.7500	
47	BE03	698.2000	Circular	2.4053	0.0140	1.7500	1.7500	
48	BE13	320.4000	Circular	1.2272	0.0140	1.2500	1.2500	
49	BE12	189.6000	Circular	1.2272	0.0140	1.2500	1.2500	
50	BE11	445.7000	Circular	1.7671	0.0140	1.5000	1.5000	
51	W11	111.1000	Circular	0.7854	0.0120	1.0000	1.0000	
52	W10	71.5000	Circular	0.7854	0.0120	1.0000	1.0000	
53	W08	160.3000	Circular	0.7854	0.0120	1.0000	1.0000	
54	W07	180.7000	Circular	0.7854	0.0120	1.0000	1.0000	
55	W05	26.1000	Circular	0.7854	0.0120	1.0000	1.0000	
56	OL05	149.0000	Circular	7.0686	0.0140	3.0000	3.0000	
57	OL04	120.0000	Circular	7.0686	0.0140	3.0000	3.0000	
58	OL03	149.0000	Circular	7.0686	0.0140	3.0000	3.0000	
59	OL02	69.0000	Circular	7.0686	0.0140	3.0000	3.0000	
60	L121	183.0500	Circular	7.0686	0.0140	3.0000	3.0000	
61	L122	183.0500	Circular	7.0686	0.0140	3.0000	3.0000	
62	OL09	77.0000	Circular	7.0686	0.0140	3.0000	3.0000	
63	OL08	149.0000	Circular	7.0686	0.0140	3.0000	3.0000	
64	OL07	145.0000	Circular	7.0686	0.0140	3.0000	3.0000	
65	OL06	71.0000	Circular	7.0686	0.0140	3.0000	3.0000	
66	OL13	57.0000	Circular	7.0686	0.0140	3.0000	3.0000	
67	OL12	124.0000	Circular	7.0686	0.0140	3.0000	3.0000	
68	OL11	108.0000	Circular	7.0686	0.0140	3.0000	3.0000	
69	OL10	122.0000	Circular	7.0686	0.0140	3.0000	3.0000	
70	OL14	49.0000	Circular	7.0686	0.0140	3.0000	3.0000	
71	OL16	91.0000	Circular	7.0686	0.0140	3.0000	3.0000	
72	OL15	267.0000	Circular	7.0686	0.0140	3.0000	3.0000	
73	OL19	49.0000	Circular	7.0686	0.0140	3.0000	3.0000	
74	OL18	163.0000	Circular	7.0686	0.0140	3.0000	3.0000	
75	OL17	212.0000	Circular	7.0686	0.0140	3.0000	3.0000	
76	OL20	91.0000	Circular	7.0686	0.0140	3.0000	3.0000	
77	OL22	113.0000	Circular	7.0686	0.0140	3.0000	3.0000	
78	OL21	146.0000	Circular	7.0686	0.0140	3.0000	3.0000	
79	L140	73.0000	Circular	7.0686	0.0140	3.0000	3.0000	
80	Overflow	200.0000	Circular	0.7854	0.0140	1.0000	1.0000	

Total length of all conduits .... 15600.7100 feet

Table E3a - Junction Data

Inp Num	Junction Name	Ground Elevation	Crown Elevation	Invert Elevation	Qinst cfs	Initial Depth-ft	Interface Flow (%)
1	DM-02	65.4400	58.1200	55.1200	0.0000	0.0000	100.0000
2	DM-01	57.4200	54.7000	51.7000	0.0000	0.0000	100.0000
3	DM-03	67.6900	59.0200	56.0200	0.0000	0.0000	100.0000
4	DM-05	70.0000	63.9000	58.9000	0.0000	0.0000	100.0000
5	DM-06	97.5200	66.1000	63.1000	0.0000	0.0000	100.0000
6	DM-08	98.8200	88.6800	85.6800	0.0000	0.0000	100.0000
7	DM-09	103.1100	93.5000	90.5000	0.0000	0.0000	100.0000
8	DM-10	103.2100	94.7900	91.7900	0.0000	0.0000	100.0000
9	BW-01	103.2300	99.5100	98.0100	0.0000	0.0000	100.0000
10	BW-05	103.1700	100.2400	98.9100	0.0000	0.0000	100.0000
11	BW-07	104.4600	102.0900	100.9200	0.0000	0.0000	100.0000
12	BW-10	107.8900	104.0700	102.9000	0.0000	0.0000	100.0000
13	BW-12	111.0900	104.8900	103.7200	0.0000	0.0000	100.0000
14	BW-14	111.8500	105.9300	104.7600	0.0000	0.0000	100.0000
15	BW-17	110.4500	107.3400	106.1700	0.0000	0.0000	100.0000
16	BW-18	110.7700	107.9300	106.7600	0.0000	0.0000	100.0000
17	DM-11	101.3000	96.0700	93.0700	0.0000	0.0000	100.0000
18	DM-14	111.0800	99.6600	94.7000	0.0000	0.0000	100.0000
19	DM-17	113.2000	107.0300	105.0300	0.0000	0.0000	100.0000
20	DM-19	124.9500	122.1600	120.1600	0.0000	0.0000	100.0000
21	BE-05	168.2000	159.2400	157.4900	0.0000	0.0000	100.0000
22	DM-20	137.2200	130.7500	129.5000	0.0000	0.0000	100.0000
23	DM-21	139.6700	132.6000	131.3500	0.0000	0.0000	100.0000
24	BD-01	108.3790	101.1400	96.8200	0.0000	0.0000	100.0000
25	BD-02	111.3980	104.3000	101.4700	0.0000	0.0000	100.0000
26	BD-03	115.0550	105.3300	102.8300	0.0000	0.0000	100.0000
27	BD-05	110.9320	107.3900	103.7700	0.0000	0.0000	100.0000
28	BD-06	114.3850	107.2700	105.0100	0.0000	0.0000	100.0000
29	BD-07	115.1780	108.5600	106.5400	0.0000	0.0000	100.0000
30	BD-09	115.6970	109.1600	107.1000	0.0000	0.0000	100.0000
31	BD-13	114.5000	110.6700	107.6700	0.0000	0.0000	100.0000
32	BE-06	170.7200	163.9600	161.4600	0.0000	0.0000	100.0000
33	BE-09	166.9400	164.6600	162.9100	0.0000	0.0000	100.0000
34	BE-13	193.8900	189.8600	188.6100	0.0000	0.0000	100.0000
35	W-10	110.9800	108.7200	107.7200	0.0000	0.0000	100.0000
36	W-07	110.6480	101.4000	99.1500	0.0000	0.0000	100.0000
37	W-13	120.7010	116.3000	115.3000	0.0000	0.0000	100.0000
38	W-05	109.5400	100.2800	99.2300	0.0000	0.0000	100.0000
39	W-03	107.5690	101.1000	100.0600	0.0000	0.0000	100.0000
40	W-02	113.4460	103.8600	102.3600	0.0000	0.0000	100.0000
41	W-01	93.1500	93.1500	91.6500	0.0000	0.0000	100.0000
42	DM-04	68.4500	61.6000	56.5600	0.0000	0.0000	100.0000
43	BW-16	111.0800	106.7700	105.6000	0.0000	0.0000	100.0000
44	BW-09	105.7900	103.0600	101.8900	0.0000	0.0000	100.0000
45	BD-04	113.4460	105.7200	103.4700	0.0000	0.0000	100.0000
46	DM-16	112.2600	103.2600	101.2600	0.0000	0.0000	100.0000
47	DM-18	116.7400	112.1400	110.1400	0.0000	0.0000	100.0000
48	BE-01	140.4400	136.2700	134.5200	0.0000	0.0000	100.0000
49	BE-02	142.1700	138.6300	136.8800	0.0000	0.0000	100.0000
50	BE-03	164.3700	157.8700	156.1200	0.0000	0.0000	100.0000
51	BE-04	167.2500	158.5800	156.8300	0.0000	0.0000	100.0000
52	BE-10	170.2400	166.4200	164.9200	0.0000	0.0000	100.0000
53	BE-11	178.9700	172.9500	171.4500	0.0000	0.0000	100.0000
54	BE-12	183.9400	179.6200	178.3700	0.0000	0.0000	100.0000
55	W-12	108.9280	103.7500	102.7100	0.0000	0.0000	100.0000
56	W-11	111.1880	103.9400	102.5800	0.0000	0.0000	100.0000
57	W-09	108.4470	106.2800	105.2600	0.0000	0.0000	100.0000
58	W-08	112.3300	109.2600	108.1200	0.0000	0.0000	100.0000
59	W-06	110.0000	100.2500	99.2500	0.0000	0.0000	100.0000
60	OL-02	109.8200	105.5800	102.5800	0.0000	0.0000	100.0000
61	OL-03	109.8300	105.8900	102.8900	0.0000	0.0000	100.0000
62	OL-04	111.4300	106.1400	103.1400	0.0000	0.0000	100.0000
63	OL-05	114.5700	106.4900	103.4900	0.0000	0.0000	100.0000
64	OL-01	109.8300	105.4300	93.9300	0.0000	0.0000	100.0000
65	OL-09	114.9800	107.3200	104.3200	0.0000	0.0000	100.0000
66	OL-08	114.8000	107.1700	104.1700	0.0000	0.0000	100.0000
67	OL-07	114.7000	106.8700	103.8700	0.0000	0.0000	100.0000
68	OL-06	114.8100	106.5800	103.5800	0.0000	0.0000	100.0000
69	OL-13	114.6700	108.1500	105.1500	0.0000	0.0000	100.0000
70	OL-12	114.8700	108.0300	105.0300	0.0000	0.0000	100.0000
71	OL-11	114.7400	107.7800	104.7800	0.0000	0.0000	100.0000
72	OL-10	114.5700	107.5600	104.5600	0.0000	0.0000	100.0000
73	OL-14	114.5100	108.2400	105.2400	0.0000	0.0000	100.0000
74	OL-15	114.4300	108.7700	105.7700	0.0000	0.0000	100.0000
75	OL-16	114.6700	108.9500	105.9500	0.0000	0.0000	100.0000
76	OL-17	114.4500	109.3800	106.3800	0.0000	0.0000	100.0000
77	OL-18	114.4400	109.7000	106.7000	0.0000	0.0000	100.0000
78	OL-19	114.9000	109.8000	106.8000	0.0000	0.0000	100.0000
79	OL-20	114.3400	109.9700	106.9700	0.0000	0.0000	100.0000
80	OL-21	114.2400	110.2700	107.2700	0.0000	0.0000	100.0000
81	OL-22	113.7600	110.5000	107.5000	0.0000	0.0000	100.0000

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| Table E4 - Conduit Connectivity |
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Input Number	Conduit Name	Upstream Node	Downstream Node	Upstream Elevation	Downstream Elevation	
1	DM01	DM-02	DM-01	55.1200	51.7000	No Design
2	DM07	DM-08	DM-06	85.6800	63.1000	No Design
3	DM05	DM-06	DM-05	63.1000	58.9000	No Design
4	DM04	DM-05	DM-04	58.9000	56.6000	No Design
5	DM02	DM-03	DM-02	56.0200	55.1200	No Design
6	DM08	DM-09	DM-08	90.5000	85.6800	No Design
7	BW18	BW-18	BW-17	106.7600	106.1700	No Design
8	BW17	BW-17	BW-16	106.1700	105.6000	No Design
9	BW14	BW-14	BW-12	104.7600	103.7200	No Design
10	BW12	BW-12	BW-10	103.7200	102.9000	No Design
11	BW10	BW-10	BW-09	102.9000	101.8900	No Design
12	BW07	BW-07	BW-05	100.9200	98.9100	No Design
13	BW05	BW-05	BW-01	98.9100	98.0100	No Design
14	BW01	BW-01	DM-10	98.0100	91.7900	No Design
15	DM09	DM-10	DM-09	91.7900	90.5000	No Design
16	BE01	BE-01	DM-19	134.5200	120.1600	No Design
17	DM20	DM-21	DM-20	131.3500	129.5000	No Design
18	DM19	DM-20	DM-19	129.5000	120.1600	No Design
19	DM17	DM-18	DM-17	110.1400	105.0300	No Design
20	DM15	DM-16	DM-14	101.2600	97.9100	No Design
21	DM10	DM-11	DM-10	93.0700	91.7900	No Design
22	BD02	BD-02	BD-01	101.4700	98.3100	No Design
23	BD01	BD-01	DM-11	96.8200	93.0700	No Design
24	BD09	BD-09	BD-07	107.1600	106.5400	No Design
25	BD07	BD-07	BD-06	106.5600	105.2700	No Design
26	BD06	BD-06	BD-05	105.0100	103.7700	No Design
27	BD05	BD-05	BD-04	103.7700	103.4700	No Design
28	BD03	BD-03	BD-02	102.8300	101.4700	No Design
29	BE10	BE-10	BE-09	164.9200	162.9100	No Design
30	BE09	BE-09	BE-06	162.9100	161.4600	No Design
31	BE06	BE-06	BE-05	162.4600	157.4900	No Design
32	W09	W-10	W-09	107.7200	105.2800	No Design
33	W06	W-06	W-07	99.2500	99.1500	No Design
34	W04	W-03	W-05	100.1000	99.2300	No Design
35	W02	W-02	W-03	102.8000	100.0700	No Design
36	W01	W-02	W-01	102.3600	91.6500	No Design
37	W12	W-13	W-12	115.3000	102.7100	No Design
38	DM03	DM-04	DM-03	56.5600	56.0200	No Design
39	BW16	BW-16	BW-14	105.6000	104.7600	No Design
40	BW09	BW-09	BW-07	101.8900	100.9200	No Design
41	BD04	BD-04	BD-03	103.4700	102.8300	No Design
42	DM16	DM-17	DM-16	105.0300	101.2600	No Design
43	DM18	DM-19	DM-18	120.1600	110.1400	No Design
44	BE02	BE-02	BE-01	136.8800	134.5200	No Design
45	BE05	BE-05	BE-04	157.4900	156.8300	No Design
46	BE04	BE-04	BE-03	156.8300	156.1200	No Design
47	BE03	BE-03	BE-02	156.1200	136.8800	No Design
48	BE13	BE-13	BE-12	188.6100	178.3700	No Design
49	BE12	BE-12	BE-11	178.3700	171.4500	No Design
50	BE11	BE-11	BE-10	171.4500	164.9200	No Design
51	W11	W-11	W-12	102.9400	102.7500	No Design
52	W10	W-11	W-07	102.5800	100.2900	No Design
53	W08	W-08	W-09	108.2600	105.2600	No Design
54	W07	W-08	W-07	108.1200	100.4000	No Design
55	W05	W-05	W-06	99.2800	99.2500	No Design
56	OL05	OL-05	OL-04	103.4900	103.1400	No Design
57	OL04	OL-04	OL-03	103.1400	102.8900	No Design
58	OL03	OL-03	OL-02	102.8900	102.5800	No Design
59	OL02	OL-02	OL-01	102.5800	102.4300	No Design
60	L121	DM-14	OL-01	94.7000	93.9300	No Design
61	L122	OL-01	DM-11	93.9300	93.0700	No Design
62	OL09	OL-09	OL-08	104.3200	104.1700	No Design
63	OL08	OL-08	OL-07	104.1700	103.8700	No Design
64	OL07	OL-07	OL-06	103.8700	103.5800	No Design
65	OL06	OL-06	OL-05	103.5800	103.4900	No Design
66	OL13	OL-13	OL-12	105.1500	105.0300	No Design
67	OL12	OL-12	OL-11	105.0300	104.7800	No Design
68	OL11	OL-11	OL-10	104.7800	104.5600	No Design
69	OL10	OL-10	OL-09	104.5600	104.3200	No Design
70	OL14	OL-14	OL-13	105.2400	105.1500	No Design
71	OL16	OL-16	OL-15	105.9500	105.7700	No Design
72	OL15	OL-15	OL-14	105.7700	105.2400	No Design
73	OL19	OL-19	OL-18	106.8000	106.7000	No Design
74	OL18	OL-18	OL-17	106.7000	106.3800	No Design
75	OL17	OL-17	OL-16	106.3800	105.9500	No Design
76	OL20	OL-20	OL-19	106.9700	106.8000	No Design
77	OL22	OL-22	OL-21	107.5000	107.2700	No Design
78	OL21	OL-21	OL-20	107.2700	106.9700	No Design
79	L140	BD-13	OL-22	107.6700	107.5000	No Design
80	Overflow	OL-13	BD-05	106.8000	106.3900	No Design

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*================================*
 |   Conduit Convergence Criteria  |
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Conduit Name	Full Flow	Conduit Slope
DM01	39.5627	0.0120
DM07	153.5196	0.0614
DM05	81.0744	0.0171
DM04	127.9955	0.0082
DM02	26.9451	0.0056
DM08	65.7552	0.0113
BW18	4.8173	0.0067
BW17	3.7195	0.0040
BW14	4.0698	0.0048
BW12	4.7477	0.0065
BW10	6.5268	0.0124
BW07	6.3678	0.0118
BW05	7.0920	0.0074
BW01	34.5954	0.0924
DM09	86.0028	0.0193
BE01	70.7522	0.2312
DM20	7.1447	0.0142
DM19	8.6037	0.0676
DM17	39.6543	0.0356
DM15	15.2729	0.0108
DM10	52.0399	0.0071
BD02	43.7007	0.0068
BD01	53.4764	0.0075
BD09	8.0787	0.0015
BD07	11.3446	0.0029
BD06	15.2029	0.0028
BD05	11.7963	0.0017
BD03	34.3813	0.0081
BE10	6.4512	0.0044
BE09	8.6144	0.0034
BE06	12.1979	0.0156
W09	2.8914	0.0056
W06	2.1279	0.0030
W04	3.6146	0.0088
W02	8.8183	0.0522
W01	31.6905	0.0776
W12	9.0678	0.0552
DM03	18.2082	0.0067
BW16	4.5010	0.0059
BW09	4.5147	0.0068
BD04	13.7761	0.0023
DM16	31.2824	0.0222
DM18	55.3931	0.0695
BE02	14.6329	0.0099
BE05	7.2920	0.0025
BE04	9.9548	0.0046
BE03	24.4243	0.0276
BE13	10.7235	0.0320
BE12	11.4596	0.0365
BE11	11.8064	0.0147
W11	1.5962	0.0017
W10	6.9075	0.0320
W08	5.2802	0.0187
W07	7.9778	0.0427
W05	1.3086	0.0011
OL05	30.0173	0.0023
OL04	28.2690	0.0021
OL03	28.2500	0.0021
OL02	28.8770	0.0022
L121	40.1690	0.0042
L122	42.4517	0.0047
OL09	27.3357	0.0019
OL08	27.7906	0.0020
OL07	27.6978	0.0020
OL06	22.0507	0.0013
OL13	28.4174	0.0021
OL12	27.8093	0.0020
OL11	27.9531	0.0020
OL10	27.4699	0.0020
OL14	26.5432	0.0018
OL16	27.5452	0.0020
OL15	27.5939	0.0020
OL19	27.9790	0.0020
OL18	27.4418	0.0020
OL17	27.8931	0.0020
OL20	26.7691	0.0019
OL22	27.9419	0.0020
OL21	28.0747	0.0021
L140	29.8878	0.0023
Overflow	1.4979	0.0021

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*=========================================================*
 |     Table E15 - SPREADSHEET INFO LIST                   |
 | Conduit Flow and Junction Depth Information for use in  |
 | spreadsheets.  The maximum values in this table are the |
 | true maximum values because they sample every time step.|
 | The values in the review results may only be the        |
 | maximum of a subset of all the time steps in the run.   |
 | Note: These flows are only the flows in a single barrel.|
 *=========================================================*
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Conduit Name	Maximum Flow (cfs)	Total Flow (ft^3)	Maximum Velocity (ft/s)	Maximum Volume (ft^3)	##	Junction Name	Invert Elevation (ft)	Maximum Elevation (ft)
DM01	53.8321	921455.2474	7.6971	1301.6345	##	DM-02	55.1200	60.3912
DM07	59.4382	926440.8684	18.1441	827.1731	##	DM-01	51.7000	54.0827
DM05	59.4403	926167.6118	10.5272	1758.4101	##	DM-03	56.0200	63.9184
DM04	59.4410	925887.8694	4.5321	5533.8533	##	DM-05	58.9000	68.9497
DM02	53.8245	921729.1583	7.5408	1186.6594	##	DM-06	63.1000	71.1419
DM08	54.9114	848509.5555	9.8144	514.6789	##	DM-08	85.6800	87.0073
BW18	1.5564	21993.4037	3.8295	35.2172	##	DM-09	90.5000	92.8282
BW17	1.5553	21981.5295	3.2637	52.7447	##	DM-10	91.7900	93.7238
BW14	1.5533	21959.0102	3.4842	42.8206	##	BW-01	98.0100	98.2259
BW12	1.5526	21945.4540	3.8523	21.4946	##	BW-05	98.9100	99.3776
BW10	1.5525	21937.7086	4.8044	14.0779	##	BW-07	100.9200	101.3134
BW07	1.5518	21918.4438	4.7601	14.2322	##	BW-10	102.9000	103.2891
BW05	1.5514	21905.2007	3.8090	8.1521	##	BW-12	103.7200	104.1980
BW01	1.5513	21900.7469	4.8677	21.5657	##	BW-14	104.7600	105.2698
DM09	54.9209	848753.6561	11.1581	357.2962	##	BW-17	106.1700	106.7094
BE01	16.2045	241068.6098	22.0589	3.6545	##	BW-18	106.7600	107.2247
DM20	6.8763	98148.4363	6.4382	42.2086	##	DM-11	93.0700	95.4295
DM19	6.8751	98136.4542	11.8411	8.5066	##	DM-14	94.7000	96.8898
DM17	22.7860	339116.1613	12.1735	295.1056	##	DM-17	105.0300	108.6866
DM15	22.7769	338878.9432	9.3796	364.9699	##	DM-19	120.1600	121.0549
DM10	53.4068	826944.5288	9.1367	975.0265	##	BE-05	157.4900	161.2659
BD02	1.7879	2769.0553	3.3878	29.8061	##	DM-20	129.5000	130.1760
BD01	1.7777	2766.4339	1.7101	859.2564	##	DM-21	131.3500	132.4140
BD09	0.0000	0.0000	0.0000	0.0000	##	BD-01	96.8200	97.1942
BD07	0.0000	0.0000	0.0000	0.0000	##	BD-02	101.4700	101.8611
BD06	0.0000	0.0000	0.0000	60.3624	##	BD-03	102.8300	103.2200
BD05	1.8175	2738.7139	2.1576	148.2528	##	BD-05	103.7700	104.3666
BD03	1.8126	2744.0653	3.7060	23.4612	##	BD-06	105.0100	105.0100
BE10	5.1976	75208.0394	3.8486	824.3614	##	BD-07	106.5400	106.5400
BE09	5.5003	75152.3194	2.5850	1028.2992	##	BD-09	107.1000	107.1000
BE06	12.1986	181762.0951	6.9669	430.7450	##	BD-13	107.6700	109.9245
W09	0.8315	11631.1301	1.3271	345.1237	##	BE-06	161.4600	166.1461
W06	-2.4043	-42995.6281	-2.9818	27.0881	##	BE-09	162.9100	166.6361
W04	-2.4011	-42901.1010	-2.9852	79.8526	##	BE-13	188.6100	189.2411
W02	-2.4014	-42809.6953	-4.1595	41.7258	##	W-10	107.7200	108.6335
W01	2.4014	42804.2957	10.5351	0.8141	##	W-07	99.1500	104.3630
W12	0.4833	6889.0408	4.1407	16.3759	##	W-13	115.3000	115.4567
DM03	53.8766	921951.0079	10.7302	411.2441	##	W-05	99.2300	104.1435
BW16	1.5543	21971.0564	3.7571	37.1898	##	W-03	100.0600	103.7761
BW09	1.5525	21927.3014	3.8948	20.7732	##	W-02	102.3600	102.6397
BD04	1.8094	2741.1031	2.3096	107.4803	##	W-01	91.6500	91.9279
DM16	22.7773	339055.0716	9.5606	542.0824	##	DM-04	56.5600	68.4500
DM18	22.8268	339167.1755	16.0350	32.5549	##	BW-16	105.6000	106.0750
BE02	16.2049	241089.4598	7.2157	84.0977	##	BW-09	101.8900	102.3700
BE05	12.2104	181649.2666	5.0417	668.9489	##	BD-04	103.4700	104.0534
BE04	16.2249	241380.5392	6.9864	301.4034	##	DM-16	101.2600	106.7172
BE03	16.2139	241263.5268	10.2402	269.5387	##	DM-18	110.1400	111.4386
BE13	5.2775	75356.3021	8.5613	11.1670	##	BE-01	134.5200	135.0895
BE12	5.2765	75329.3081	8.9368	12.8540	##	BE-02	136.8800	140.2923
BE11	5.2748	75275.8143	6.0900	304.8639	##	BE-03	156.1200	157.1714
W11	-0.4753	-6812.0952	-0.8570	91.0299	##	BE-04	156.8300	159.4374
W10	0.4778	6831.1722	2.6336	57.2540	##	BE-10	164.9200	167.8494
W08	-0.0638	-4926.4412	-0.5440	107.8410	##	BE-11	171.4500	172.1755
W07	0.1227	4934.3587	1.5420	61.7970	##	BE-12	178.3700	178.9658
W05	-2.4019	-43015.7346	-2.9827	21.4894	##	W-12	102.7100	104.3865
OL05	29.3720	485829.2380	5.0159	866.7627	##	W-11	102.5800	104.3706
OL04	29.3679	485686.4805	5.1132	676.8995	##	W-09	105.2600	108.4470
OL03	29.3693	485540.9568	5.3869	775.4821	##	W-08	108.1200	108.1243
OL02	29.3709	485397.6102	6.0677	316.9249	##	W-06	99.2500	104.2398
L121	22.7274	338807.5557	4.3108	1124.6544	##	OL-02	102.5800	104.5439
L122	51.8426	824010.0959	7.7351	1165.4548	##	OL-03	102.8900	105.0748
OL09	29.4240	486342.3042	4.6480	486.2503	##	OL-04	103.1400	105.4222
OL08	29.4070	486228.4697	4.6809	931.5218	##	OL-05	103.4900	105.8110
OL07	29.3886	486068.5087	4.7393	892.9928	##	OL-01	93.9300	96.6795
OL06	29.3772	485945.0426	4.8314	424.9280	##	OL-09	104.3200	106.8400
OL13	29.5320	486707.2476	4.5989	367.1550	##	OL-08	104.1700	106.6697
OL12	29.5043	486605.1387	4.5884	796.8924	##	OL-07	103.8700	106.3353
OL11	29.4714	486479.7547	4.6000	691.2720	##	OL-06	103.5800	105.9987
OL10	29.4459	486358.1753	4.6138	776.3718	##	OL-13	105.1500	107.7198
OL14	25.2944	390532.8977	3.9580	314.8309	##	OL-12	105.0300	107.5995
OL16	25.1776	390840.8820	4.1124	559.7434	##	OL-11	104.7800	107.3356
OL15	25.2296	390676.0443	4.0746	1680.6788	##	OL-10	104.5600	107.1045
OL19	25.2678	391244.4792	4.3432	288.3158	##	OL-14	105.2400	107.7936
OL18	25.2315	391144.5544	4.3042	966.6842	##	OL-15	105.7700	108.2234
OL17	25.1749	390981.4591	4.2265	1280.6765	##	OL-16	105.9500	108.3740
OL20	25.2943	391315.3035	4.3463	534.0430	##	OL-17	106.3800	108.7413
OL22	25.3866	391546.7305	4.4307	653.9760	##	OL-18	106.7000	109.0344
OL21	25.3385	391423.8357	4.3951	851.9043	##	OL-19	106.8000	109.1228
L140	25.4217	391627.8598	4.4939	418.5360	##	OL-20	106.9700	109.2920
Overflow	1.8297	2734.6641	2.5173	121.2457	##	OL-21	107.2700	109.5664
FREE # 1	53.8579	921451.8971	0.0000	0.0000	##	OL-22	107.5000	109.7837
FREE # 2	2.4014	42804.2065	0.0000	0.0000	##			

```
*==================================================*
|     Table E15a - SPREADSHEET REACH LIST          |
| Peak flow and Total Flow listed by Reach or those |
|      conduits or diversions having the same      |
|      upstream and downstream nodes.              |
*==================================================*
```

Upstream Node	Downstream Node	Maximum Flow (cfs)	Total Flow (ft^3)
DM-02	DM-01	53.8321	921455.247
DM-08	DM-06	59.4382	926440.868
DM-06	DM-05	59.4403	926167.612
DM-05	DM-04	59.4410	925887.869
DM-03	DM-02	53.8245	921729.158
DM-09	DM-08	54.9114	848509.555
BW-18	BW-17	1.5564	21993.4037
BW-17	BW-16	1.5553	21981.5295
BW-14	BW-12	1.5533	21959.0102
BW-12	BW-10	1.5526	21945.4540
BW-10	Bw-09	1.5525	21937.7086
BW-07	BW-05	1.5518	21918.4438
BW-05	BW-01	1.5514	21905.2007
BW-01	DM-10	1.5513	21900.7469
DM-10	DM-09	54.9209	848753.656
BE-01	DM-19	16.2045	241068.610
DM-21	DM-20	6.8763	98148.4363
DM-20	DM-19	6.8751	98136.4542
DM-18	DM-17	22.7860	339116.161
DM-16	DM-14	22.7769	338878.943
DM-11	DM-10	53.4068	826944.529
BD-02	BD-01	1.7879	2769.0553
BD-01	DM-11	1.7777	2766.4339
BD-05	BD-04	1.8175	2738.7139
BD-03	BD-02	1.8126	2744.0653
BE-10	BE-09	5.1976	75208.0394
BE-09	BE-06	5.5003	75152.3194
BE-06	BE-05	12.1986	181762.095
W-10	W-09	0.8315	11631.1301
W-06	W-07	2.4043	42995.6281
W-03	W-05	2.4011	42901.1010
W-02	W-03	2.4014	42809.6953
W-02	W-01	2.4014	42804.2957
W-13	W-12	0.4833	6889.0408
DM-04	DM-03	53.8766	921951.008
BW-16	BW-14	1.5543	21971.0564
BW-09	BW-07	1.5525	21927.3014
BD-04	BD-03	1.8094	2741.1031
DM-17	DM-16	22.7773	339055.072
DM-19	DM-18	22.8268	339167.176
BE-02	BE-01	16.2049	241089.460
BE-05	BE-04	12.2104	181649.267
BE-04	BE-03	16.2249	241380.539
BE-03	BE-02	16.2139	241263.527
BE-13	BE-12	5.2775	75356.3021
BE-12	BE-11	5.2765	75329.3081
BE-11	BE-10	5.2748	75275.8143
W-11	W-12	0.4753	6812.0952
W-11	W-07	0.4778	6831.1722
W-08	W-09	0.0638	4926.4412
W-08	W-07	0.1227	4934.3587
W-05	W-06	2.4019	43015.7346
OL-05	OL-04	29.3720	485829.238
OL-04	OL-03	29.3679	485686.480
OL-03	OL-02	29.3693	485540.957
OL-02	OL-01	29.3709	485397.610
DM-14	OL-01	22.7274	338807.556
OL-01	DM-11	51.8426	824010.096
OL-09	OL-08	29.4240	486342.304
OL-08	OL-07	29.4070	486228.470
OL-07	OL-06	29.3886	486068.509
OL-06	OL-05	29.3772	485945.043
OL-13	OL-12	29.5320	486707.248
OL-12	OL-11	29.5043	486605.139
OL-11	OL-10	29.4714	486479.755
OL-10	OL-09	29.4459	486358.175
OL-14	OL-13	25.2944	390532.898
OL-16	OL-15	25.1776	390840.882
OL-15	OL-14	25.2296	390676.044
OL-19	OL-18	25.2678	391244.479
OL-18	OL-17	25.2315	391144.554
OL-17	OL-16	25.1749	390981.459
OL-20	OL-19	25.2943	391315.304
OL-22	OL-21	25.3866	391546.731
OL-21	OL-20	25.3385	391423.836
BD-13	OL-22	25.4217	391627.860
OL-13	BD-05	1.8297	2734.6641

```
##########################################################
# Table E16. New Conduit Information Section            #
#            Conduit Invert (IE) Elevation and Conduit  #
#            Maximum Water Surface (WS) Elevations      #
##########################################################
```

Conduit Name	Upstream Node	Downstream Node	IE Up	IE Dn	WS Up	WS Dn	Conduit Type
DM01	DM-02	DM-01	55.1200	51.7000	60.3901	54.0827	Circular
DM07	DM-08	DM-06	85.6800	63.1000	87.0073	71.1419	Circular
DM05	DM-06	DM-05	63.1000	58.9000	71.1419	68.9448	Circular
DM04	DM-05	DM-04	58.9000	56.6000	68.9448	68.4500	Circular
DM02	DM-03	DM-02	56.0200	55.1200	63.9186	60.3901	Circular
DM08	DM-09	DM-08	90.5000	85.6800	92.8282	87.0073	Circular
BW18	BW-18	BW-17	106.7600	106.1700	107.2247	106.7094	Circular
BW17	BW-17	BW-16	106.1700	105.6000	106.7094	106.0750	Circular
BW14	BW-14	BW-12	104.7600	103.7200	105.2698	104.1980	Circular
BW12	BW-12	BW-10	103.7200	102.9000	104.1980	103.2891	Circular
BW10	BW-10	BW-09	102.9000	101.8900	103.2891	102.3700	Circular
BW07	BW-07	BW-05	100.9200	98.9100	101.3134	99.3776	Circular
BW05	BW-05	BW-01	98.9100	98.0100	99.3776	98.2259	Circular
BW01	BW-01	DM-10	98.0100	91.7900	98.2259	93.7238	Circular
DM09	DM-10	DM-09	91.7900	90.5000	93.7238	92.8282	Circular
BE01	BE-01	DM-19	134.5200	120.1600	135.0895	121.0549	Circular
DM20	DM-21	DM-20	131.3500	129.5000	132.4140	130.1760	Circular
DM19	DM-20	DM-19	129.5000	120.1600	130.1760	121.0549	Circular
DM17	DM-18	DM-17	110.1400	105.0300	111.4386	108.6866	Circular
DM15	DM-16	DM-14	101.2600	97.9100	106.7172	99.5549	Circular
DM10	DM-11	DM-10	93.0700	91.7900	95.4295	93.7238	Circular
BD02	BD-02	BD-01	101.4700	98.3100	101.8611	98.6964	Circular
BD01	BD-01	DM-11	96.8200	93.0700	97.1942	95.4295	Circular
BD09	BD-09	BD-07	107.1600	106.5400	106.5400	106.5400	Circular
BD07	BD-07	BD-06	106.5600	105.2700	105.0100	105.0100	Circular
BD06	BD-06	BD-05	105.0100	103.7700	105.0100	104.3666	Circular
BD05	BD-05	BD-04	103.7700	103.4700	104.3666	104.0534	Circular
BD03	BD-03	BD-02	102.8300	101.4700	103.2200	101.8611	Circular
BE10	BE-10	BE-09	164.9200	162.9100	167.8494	166.6361	Circular
BE09	BE-09	BE-06	162.9100	161.4600	166.6361	166.1461	Circular
BE06	BE-06	BE-05	162.4600	157.4900	166.1460	161.2659	Circular
W09	W-10	W-09	107.7200	105.2800	108.6335	108.4470	Circular
W06	W-06	W-07	99.2500	99.1500	104.2398	104.3630	Circular
W04	W-03	W-05	100.1000	99.2300	103.7761	104.1435	Circular
W02	W-02	W-03	102.8000	100.0700	103.4631	103.7761	Circular
W01	W-02	W-01	102.3600	91.6500	102.6397	91.9279	Circular
W12	W-13	W-12	115.3000	102.7100	115.4567	104.3865	Circular
DM03	DM-04	DM-03	56.5600	56.0200	68.4500	63.9184	Circular
BW16	BW-16	BW-14	105.6000	104.7600	106.0750	105.2698	Circular
BW09	BW-09	BW-07	101.8900	100.9200	102.3700	101.3134	Circular
BD04	BD-04	BD-03	103.4700	102.8300	104.0534	103.2200	Circular
DM16	DM-17	DM-16	105.0300	101.2600	108.6866	106.7172	Circular
DM18	DM-19	DM-18	120.1600	110.1400	121.0549	111.4386	Circular
BE02	BE-02	BE-01	136.8800	134.5200	140.2923	135.0895	Circular
BE05	BE-05	BE-04	157.4900	156.8300	161.2659	159.4374	Circular
BE04	BE-04	BE-03	156.8300	156.1200	159.4374	157.1714	Circular
BE03	BE-03	BE-02	156.1200	136.8800	157.1714	140.2923	Circular
BE13	BE-13	BE-12	188.6100	178.3700	189.2411	178.9658	Circular
BE12	BE-12	BE-11	178.3700	171.4500	178.9658	172.1755	Circular
BE11	BE-11	BE-10	171.4500	164.9200	172.1755	167.8494	Circular
W11	W-11	W-12	102.9400	102.7500	104.3706	104.3865	Circular
W10	W-11	W-07	102.5800	100.2900	104.3706	104.3630	Circular
W08	W-08	W-09	108.2600	105.2600	108.3608	108.4470	Circular
W07	W-08	W-07	108.1200	100.4000	108.1238	104.3630	Circular
W05	W-05	W-06	99.2800	99.2500	104.1435	104.2398	Circular
OL05	OL-05	OL-04	103.4900	103.1400	105.8110	105.4222	Circular
OL04	OL-04	OL-03	103.1400	102.8900	105.4222	105.0748	Circular
OL03	OL-03	OL-02	102.8900	102.5800	105.0748	104.5439	Circular
OL02	OL-02	OL-01	102.5800	102.4300	104.5439	104.1837	Circular
L121	DM-14	OL-01	94.7000	93.9300	96.8898	96.6795	Circular
L122	OL-01	DM-11	93.9300	93.0700	96.6795	95.4295	Circular
OL09	OL-09	OL-08	104.3200	104.1700	106.8400	106.6697	Circular
OL08	OL-08	OL-07	104.1700	103.8700	106.6697	106.3353	Circular
OL07	OL-07	OL-06	103.8700	103.5800	106.3353	105.9987	Circular
OL06	OL-06	OL-05	103.5800	103.4900	105.9987	105.8110	Circular
OL13	OL-13	OL-12	105.1500	105.0300	107.7198	107.5995	Circular
OL12	OL-12	OL-11	105.0300	104.7800	107.5995	107.3356	Circular
OL11	OL-11	OL-10	104.7800	104.5600	107.3356	107.1045	Circular
OL10	OL-10	OL-09	104.5600	104.3200	107.1045	106.8400	Circular
OL14	OL-14	OL-13	105.2400	105.1500	107.7936	107.7198	Circular
OL16	OL-16	OL-15	105.9500	105.7700	108.3740	108.2234	Circular
OL15	OL-15	OL-14	105.7700	105.2400	108.2234	107.7936	Circular
OL19	OL-19	OL-18	106.8000	106.7000	109.1228	109.0344	Circular
OL18	OL-18	OL-17	106.7000	106.3800	109.0344	108.7413	Circular
OL17	OL-17	OL-16	106.3800	105.9500	108.7413	108.3740	Circular
OL20	OL-20	OL-19	106.9700	106.8000	109.2920	109.1228	Circular
OL22	OL-22	OL-21	107.5000	107.2700	109.7837	109.5664	Circular
OL21	OL-21	OL-20	107.2700	106.9700	109.5664	109.2920	Circular
L140	BD-13	OL-22	107.6700	107.5000	109.9245	109.7837	Circular
Overflow	OL-13	BD-05	106.8000	106.3900	107.7198	106.9657	Circular

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*====================================================*
| Table E20 - Junction Flooding and Volume Listing.   |
|             The maximum volume is the total volume  |
|             in the node including the volume in the |
|             flooded storage area. This is the max   |
|             volume at any time. The volume in the   |
|             flooded storage area is the total volume|
|             above the ground elevation, where the   |
|             flooded pond storage area starts.       |
*====================================================*
```

Junction Name	Surcharged Time (min)	Flooded Time(min)	Out of 1D-System (Flooded Volume)	Maximum Volume	Passed to 2D cell OR Volume Stored in allowed Flood Pond of 1D-System
DM-02	33.4722	0.0000	0.0000	66.2265	0.0000
DM-01	0.0000	0.0000	0.0000	29.9405	0.0000
DM-03	48.4444	0.0000	0.0000	99.2534	0.0000
DM-05	32.7222	0.0000	0.0000	126.2234	0.0000
DM-06	28.6111	0.0000	0.0000	101.0541	0.0000
DM-08	0.0000	0.0000	0.0000	16.6787	0.0000
DM-09	0.0000	0.0000	0.0000	29.2564	0.0000
DM-10	0.0000	0.0000	0.0000	24.2999	0.0000
BW-01	0.0000	0.0000	0.0000	2.7125	0.0000
BW-05	0.0000	0.0000	0.0000	5.8759	0.0000
BW-07	0.0000	0.0000	0.0000	4.9429	0.0000
BW-10	0.0000	0.0000	0.0000	4.8892	0.0000
BW-12	0.0000	0.0000	0.0000	6.0063	0.0000
BW-14	0.0000	0.0000	0.0000	6.4056	0.0000
BW-17	0.0000	0.0000	0.0000	6.7784	0.0000
BW-18	0.0000	0.0000	0.0000	5.8393	0.0000
DM-11	0.0000	0.0000	0.0000	29.6500	0.0000
DM-14	0.0000	0.0000	0.0000	27.5166	0.0000
DM-17	15.1944	0.0000	0.0000	45.9488	0.0000
DM-19	0.0000	0.0000	0.0000	11.2448	0.0000
BE-05	34.1667	0.0000	0.0000	47.4485	0.0000
DM-20	0.0000	0.0000	0.0000	8.4946	0.0000
DM-21	0.0000	0.0000	0.0000	13.3702	0.0000
BD-01	0.0000	0.0000	0.0000	4.7022	0.0000
BD-02	0.0000	0.0000	0.0000	4.9151	0.0000
BD-03	0.0000	0.0000	0.0000	4.9008	0.0000
BD-05	0.0000	0.0000	0.0000	7.4969	0.0000
BD-06	0.0000	0.0000	0.0000	0.0000	0.0000
BD-07	0.0000	0.0000	0.0000	0.0000	0.0000
BD-09	0.0000	0.0000	0.0000	0.0000	0.0000
BD-13	0.0000	0.0000	0.0000	28.3295	0.0000
BE-06	22.9778	0.0000	0.0000	58.8852	0.0000
BE-09	19.4583	0.0000	0.0000	46.8218	0.0000
BE-13	0.0000	0.0000	0.0000	7.9309	0.0000
W-10	0.0000	0.0000	0.0000	11.4788	0.0000
W-07	1307.8333	0.0000	0.0000	65.5068	0.0000
W-13	0.0000	0.0000	0.0000	1.9693	0.0000
W-05	1323.7083	0.0000	0.0000	61.7430	0.0000
W-03	1310.7500	0.0000	0.0000	46.6961	0.0000
W-02	0.0000	0.0000	0.0000	3.5150	0.0000
W-01	0.0000	0.0000	0.0000	3.4927	0.0000
DM-04	43.6667	15.1111	3613.6406	149.4097	0.0000
BW-16	0.0000	0.0000	0.0000	5.9695	0.0000
BW-09	0.0000	0.0000	0.0000	6.0322	0.0000
BD-04	0.0000	0.0000	0.0000	7.3316	0.0000
DM-16	33.8611	0.0000	0.0000	68.5756	0.0000
DM-18	0.0000	0.0000	0.0000	16.3178	0.0000
BE-01	0.0000	0.0000	0.0000	7.1569	0.0000
BE-02	26.2500	0.0000	0.0000	42.8791	0.0000
BE-03	0.0000	0.0000	0.0000	13.2118	0.0000
BE-04	29.5000	0.0000	0.0000	32.7648	0.0000
BE-10	12.6500	0.0000	0.0000	36.8113	0.0000
BE-11	0.0000	0.0000	0.0000	9.1167	0.0000
BE-12	0.0000	0.0000	0.0000	7.4870	0.0000
W-12	48.6667	0.0000	0.0000	21.0668	0.0000
W-11	33.7222	0.0000	0.0000	22.5002	0.0000
W-09	1331.0417	1225.9722	6273.7379	40.0478	0.0000
W-08	0.0000	0.0000	0.0000	0.0476	0.0000
W-06	1324.2917	0.0000	0.0000	62.7014	0.0000
OL-02	0.0000	0.0000	0.0000	24.6784	0.0000
OL-03	0.0000	0.0000	0.0000	27.4537	0.0000
OL-04	0.0000	0.0000	0.0000	28.6782	0.0000
OL-05	0.0000	0.0000	0.0000	29.1652	0.0000
OL-01	0.0000	0.0000	0.0000	34.5499	0.0000
OL-09	0.0000	0.0000	0.0000	31.6665	0.0000
OL-08	0.0000	0.0000	0.0000	31.4112	0.0000
OL-07	0.0000	0.0000	0.0000	30.9793	0.0000
OL-06	0.0000	0.0000	0.0000	30.3936	0.0000
OL-13	0.0000	0.0000	0.0000	32.2924	0.0000
OL-12	0.0000	0.0000	0.0000	32.2883	0.0000
OL-11	0.0000	0.0000	0.0000	32.1133	0.0000
OL-10	0.0000	0.0000	0.0000	31.9744	0.0000
OL-14	0.0000	0.0000	0.0000	32.0886	0.0000
OL-15	0.0000	0.0000	0.0000	30.8297	0.0000
OL-16	0.0000	0.0000	0.0000	30.4600	0.0000
OL-17	0.0000	0.0000	0.0000	29.6717	0.0000
OL-18	0.0000	0.0000	0.0000	29.3337	0.0000
OL-19	0.0000	0.0000	0.0000	29.1885	0.0000
OL-20	0.0000	0.0000	0.0000	29.1786	0.0000
OL-21	0.0000	0.0000	0.0000	28.8568	0.0000
OL-22	0.0000	0.0000	0.0000	28.6968	0.0000

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*================================*
|   Conduit Convergence Criteria  |
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Conduit Name	Full Flow	Conduit Slope
DM01	39.5627	0.0120
DM07	153.5196	0.0614
DM05	81.0744	0.0171
DM04	20.1580	0.0082
DM02	26.9451	0.0056
DM08	65.7552	0.0113
BW18	4.8173	0.0067
BW17	3.7195	0.0040
BW14	4.0698	0.0048
BW12	4.7477	0.0065
BW10	6.5268	0.0124
BW07	6.3678	0.0118
BW05	7.0920	0.0074
BW01	34.5954	0.0924
DM09	86.0028	0.0193
BE01	70.7522	0.2312
DM20	7.1447	0.0142
DM19	8.6037	0.0676
DM17	39.6543	0.0356
DM15	15.2729	0.0108
DM10	52.0399	0.0071
BD02	43.7007	0.0068
BD01	53.4764	0.0075
BD09	8.0787	0.0015
BD07	11.3446	0.0029
BD06	15.2029	0.0028
BD05	11.7963	0.0017
BD03	34.3813	0.0081
BE10	3.9672	0.0044
BE09	5.7108	0.0034
BE06	12.1979	0.0156
W09	2.8914	0.0056
W06	2.1279	0.0030
W04	3.6146	0.0088
W02	8.8183	0.0522
W01	31.6905	0.0776
W12	9.0678	0.0552
DM03	18.2082	0.0067
BW16	4.5010	0.0059
BW09	4.5147	0.0068
BD04	13.7761	0.0023
DM16	21.9106	0.0222
DM18	55.3931	0.0695
BE02	14.6329	0.0099
BE05	7.2920	0.0025
BE04	9.9548	0.0046
BE03	24.4243	0.0276
BE13	10.7235	0.0320
BE12	11.4596	0.0365
BE11	7.2605	0.0147
W11	1.5962	0.0017
W10	6.9075	0.0320
W08	5.2802	0.0187
W07	7.9778	0.0427
W05	1.3086	0.0011
OL05	30.0173	0.0023
OL04	28.2690	0.0021
OL03	28.2500	0.0021
OL02	28.8770	0.0022
L121	40.1690	0.0042
L122	42.4517	0.0047
OL09	27.3357	0.0019
OL08	27.7906	0.0020
OL07	27.6978	0.0020
OL06	22.0507	0.0013
OL13	28.4174	0.0021
OL12	27.8093	0.0020
OL11	27.9531	0.0020
OL10	27.4699	0.0020
OL14	26.5432	0.0018
OL16	27.5452	0.0020
OL15	27.5939	0.0020
OL19	27.9790	0.0020
OL18	27.4418	0.0020
OL17	27.8931	0.0020
OL20	26.7691	0.0019
OL22	27.9419	0.0020
OL21	28.0747	0.0021
L140	29.8878	0.0023
Overflow	1.4979	0.0021

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*=========================================================*
|     Table E15 - SPREADSHEET INFO LIST                   |
| Conduit Flow and Junction Depth Information for use in  |
| spreadsheets.  The maximum values in this table are the |
| true maximum values because they sample every time step.|
| The values in the review results may only be the        |
| maximum of a subset of all the time steps in the run.   |
| Note: These flows are only the flows in a single barrel.|
*=========================================================*
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Conduit Name	Maximum Flow (cfs)	Total Flow (ft^3)	Maximum Velocity (ft/s)	Maximum Volume (ft^3)	##	Junction Name	Invert Elevation (ft)	Maximum Elevation (ft)
DM01	38.7388	1334908.595	6.3575	951.2262	##	DM-02	55.1200	57.5831
DM07	79.3886	1435457.570	17.6658	1186.5141	##	DM-01	51.7000	53.7258
DM05	79.3909	1435099.895	11.0480	1762.2894	##	DM-03	56.0200	59.3550
DM04	38.8086	1335955.152	7.7481	1413.2626	##	DM-05	58.9000	70.0000
DM02	38.7404	1335310.010	5.3425	1098.2168	##	DM-06	63.1000	73.8961
DM08	71.2234	1313290.041	10.4245	873.4746	##	DM-08	85.6800	87.4036
BW18	2.4098	34706.8226	4.2577	53.2762	##	DM-09	90.5000	94.4806
BW17	2.4087	34692.0754	3.6813	87.3688	##	DM-10	91.7900	95.3717
BW14	2.4066	34659.8277	3.8974	74.6475	##	BW-01	98.0100	98.2753
BW12	2.4060	34641.4178	4.3789	37.7777	##	BW-05	98.9100	99.4985
BW10	2.4059	34631.2801	5.3603	24.7727	##	BW-07	100.9200	101.4185
BW07	2.4052	34605.8291	5.3775	24.3880	##	BW-10	102.9000	103.3974
BW05	2.4050	34588.3832	4.3957	13.3831	##	BW-12	103.7200	104.3261
BW01	2.9926	34579.2522	8.6965	53.2068	##	BW-14	104.7600	105.4191
DM09	71.6544	1313597.496	11.3138	490.0487	##	BW-17	106.1700	106.8639
BE01	18.8377	368378.2249	22.3671	6.4966	##	BW-18	106.7600	107.3602
DM20	10.5975	153853.8941	8.3858	163.3163	##	DM-11	93.0700	97.5671
DM19	10.5921	153839.6097	13.1270	14.5197	##	DM-14	94.7000	99.8316
DM17	29.4299	522107.8716	12.0015	459.3522	##	DM-17	105.0300	113.2000
DM15	25.2804	517134.9621	10.3352	442.5009	##	DM-19	120.1600	121.3766
DM10	69.3741	1279136.310	9.7785	1324.5795	##	BE-05	157.4900	161.8951
BD02	4.1159	9922.3158	4.3593	81.2042	##	DM-20	129.5000	134.7886
BD01	4.5803	9933.8899	2.8399	2593.4458	##	DM-21	131.3500	138.6524
BD09	0.0000	0.0000	0.0000	0.0000	##	BD-01	96.8200	97.5719
BD07	0.0000	0.0000	0.0000	0.0000	##	BD-02	101.4700	102.0571
BD06	0.0000	0.0000	0.0000	163.7568	##	BD-03	102.8300	103.4152
BD05	4.1251	9852.1318	2.7537	261.3888	##	BD-05	103.7700	104.6793
BD03	4.1233	9879.5421	4.7203	63.0944	##	BD-06	105.0100	105.0100
BE10	5.1765	113652.4288	4.1352	571.8751	##	BD-07	106.5400	106.5400
BE09	4.9783	107797.1125	2.7885	759.9993	##	BD-09	107.1000	107.1000
BE06	12.4110	275370.2713	6.9707	503.9120	##	BD-13	107.6700	114.0600
W09	1.2794	18288.7329	1.5641	346.8600	##	BE-06	161.4600	166.8991
W06	-3.7399	-63821.2022	-4.6052	27.0875	##	BE-09	162.9100	166.9400
W04	-3.7381	-63721.8511	-4.6239	80.2838	##	BE-13	188.6100	189.4786
W02	-3.7382	-63630.3091	-5.3261	41.8767	##	W-10	107.7200	108.8978
W01	3.7382	63624.0357	12.0164	1.3902	##	W-07	99.1500	105.5342
W12	0.9767	10787.7221	6.4607	33.5381	##	W-13	115.3000	115.4787
DM03	38.7914	1335601.348	7.8526	411.2459	##	W-05	99.2300	105.0129
BW16	2.4077	34677.1407	4.1886	66.7752	##	W-03	100.0600	104.1307
BW09	2.4058	34618.1956	4.4120	36.0705	##	W-02	102.3600	102.7081
BD04	4.1223	9867.5837	3.0173	282.7949	##	W-01	91.6500	91.9971
DM16	25.3919	517346.2122	10.3198	417.0220	##	DM-04	56.5600	61.7770
DM18	29.4292	522164.1985	16.0753	247.2578	##	BW-16	105.6000	106.2123
BE02	18.8377	368403.6957	8.3138	94.4977	##	BW-09	101.8900	102.5022
BE05	12.4389	275207.0558	5.1258	668.8828	##	BD-04	103.4700	104.3431
BE04	18.8406	368782.2101	7.9958	326.1165	##	DM-16	101.2600	108.4716
BE03	18.8381	368618.9573	10.5262	418.3706	##	DM-18	110.1400	115.9326
BE13	8.1084	117845.1502	9.3468	109.6299	##	BE-01	134.5200	135.1365
BE12	8.1075	117807.1861	9.1254	225.5579	##	BE-02	136.8800	141.8503
BE11	8.1069	117732.0751	6.4366	455.1686	##	BE-03	156.1200	157.3479
W11	-0.7363	-10698.4398	-1.0267	91.0294	##	BE-04	156.8300	160.0180
W10	0.7322	10716.8040	2.9612	57.6724	##	BE-10	164.9200	170.2400
W08	-0.0638	-5105.1437	-0.5440	107.8410	##	BE-11	171.4500	177.9933
W07	0.1214	5135.8305	1.5247	84.3550	##	BE-12	178.3700	181.3700
W05	-3.7386	-63838.0682	-4.6142	21.4895	##	W-12	102.7100	105.5917
OL05	40.4465	752931.0963	5.5679	1067.9326	##	W-11	102.5800	105.5552
OL04	40.4457	752761.8493	5.7810	823.2386	##	W-09	105.2600	108.4470
OL03	40.4455	752586.1913	6.1140	939.4317	##	W-08	108.1200	108.1242
OL02	40.4454	752407.7178	6.9101	383.5864	##	W-06	99.2500	105.2431
L121	25.3704	517041.3884	4.3171	1342.8027	##	OL-02	102.5800	104.9252
L122	65.6790	1269184.572	9.2490	1342.7964	##	OL-03	102.8900	105.5877
OL09	41.2568	753557.5807	5.8244	570.5786	##	OL-04	103.1400	106.0913
OL08	41.0352	753406.6389	5.7692	1104.1140	##	OL-05	103.4900	106.7102
OL07	40.6113	753220.7991	5.5943	1074.2887	##	OL-01	93.9300	99.5348
OL06	40.4759	753071.0679	5.4763	518.6864	##	OL-09	104.3200	108.5132
OL13	41.5342	754091.5576	5.8520	422.3792	##	OL-08	104.1700	108.1861
OL12	41.3620	753973.1438	5.8287	918.8602	##	OL-07	103.8700	107.5552
OL11	41.3553	753828.9562	5.8314	800.2974	##	OL-06	103.5800	106.9939
OL10	41.3071	753686.4729	5.8279	904.0374	##	OL-13	105.1500	110.2550
OL14	35.3799	609107.4101	4.9857	363.0972	##	OL-12	105.0300	110.0139
OL16	35.3445	609486.5125	4.9760	674.3248	##	OL-11	104.7800	109.4888
OL15	35.3642	609288.4208	4.9802	1978.4376	##	OL-10	104.5600	109.0310
OL19	35.6041	609982.5244	5.0068	363.0959	##	OL-14	105.2400	110.4008
OL18	35.4869	609851.7892	4.9907	1207.8563	##	OL-15	105.7700	111.1945
OL17	35.3297	609653.5920	4.9714	1570.9548	##	OL-16	105.9500	111.4649
OL20	35.7307	610065.9922	5.0231	674.3219	##	OL-17	106.3800	112.0942
OL22	36.0755	610331.8352	5.0696	837.3388	##	OL-18	106.7000	112.5778
OL21	35.9016	610194.0972	5.0460	1081.8815	##	OL-19	106.8000	112.7234
L140	39.9547	614796.6471	5.6122	540.9391	##	OL-20	106.9700	112.9936
Overflow	4.1344	9843.5290	5.2364	151.3494	##	OL-21	107.2700	113.4264
FREE # 1	38.7593	1334906.653	0.0000	0.0000	##	OL-22	107.5000	113.7600
FREE # 2	3.7382	63624.0266	0.0000	0.0000	##			

```
*==================================================*
|     Table E15a - SPREADSHEET REACH LIST          |
| Peak flow and Total Flow listed by Reach or those |
|      conduits or diversions having the same      |
|      upstream and downstream nodes.              |
*==================================================*
```

Upstream Node	Downstream Node	Maximum Flow (cfs)	Total Flow (ft^3)
DM-02	DM-01	38.7388	1334908.59
DM-08	DM-06	79.3886	1435457.57
DM-06	DM-05	79.3909	1435099.89
DM-05	DM-04	38.8086	1335955.15
DM-03	DM-02	38.7404	1335310.01
DM-09	DM-08	71.2234	1313290.04
BW-18	BW-17	2.4098	34706.8226
BW-17	BW-16	2.4087	34692.0754
BW-14	BW-12	2.4066	34659.8277
BW-12	BW-10	2.4060	34641.4178
BW-10	Bw-09	2.4059	34631.2801
BW-07	BW-05	2.4052	34605.8291
BW-05	BW-01	2.4050	34588.3832
BW-01	DM-10	2.9926	34579.2522
DM-10	DM-09	71.6544	1313597.50
BE-01	DM-19	18.8377	368378.225
DM-21	DM-20	10.5975	153853.894
DM-20	DM-19	10.5921	153839.610
DM-18	DM-17	29.4299	522107.872
DM-16	DM-14	25.2804	517134.962
DM-11	DM-10	69.3741	1279136.31
BD-02	BD-01	4.1159	9922.3158
BD-01	DM-11	4.5803	9933.8899
BD-05	BD-04	4.1251	9852.1318
BD-03	BD-02	4.1233	9879.5421
BE-10	BE-09	5.1765	113652.429
BE-09	BE-06	4.9783	107797.113
BE-06	BE-05	12.4110	275370.271
W-10	W-09	1.2794	18288.7329
W-06	W-07	3.7399	63821.2022
W-03	W-05	3.7381	63721.8511
W-02	W-03	3.7382	63630.3091
W-02	W-01	3.7382	63624.0357
W-13	W-12	0.9767	10787.7221
DM-04	DM-03	38.7914	1335601.35
BW-16	BW-14	2.4077	34677.1407
BW-09	BW-07	2.4058	34618.1956
BD-04	BD-03	4.1223	9867.5837
DM-17	DM-16	25.3919	517346.212
DM-19	DM-18	29.4292	522164.199
BE-02	BE-01	18.8377	368403.696
BE-05	BE-04	12.4389	275207.056
BE-04	BE-03	18.8406	368782.210
BE-03	BE-02	18.8381	368618.957
BE-13	BE-12	8.1084	117845.150
BE-12	BE-11	8.1075	117807.186
BE-11	BE-10	8.1069	117732.075
W-11	W-12	0.7363	10698.4398
W-11	W-07	0.7322	10716.8040
W-08	W-09	0.0638	5105.1437
W-08	W-07	0.1214	5135.8305
W-05	W-06	3.7386	63838.0682
OL-05	OL-04	40.4465	752931.096
OL-04	OL-03	40.4457	752761.849
OL-03	OL-02	40.4455	752586.191
OL-02	OL-01	40.4454	752407.718
DM-14	OL-01	25.3704	517041.388
OL-01	DM-11	65.6790	1269184.57
OL-09	OL-08	41.2568	753557.581
OL-08	OL-07	41.0352	753406.639
OL-07	OL-06	40.6113	753220.799
OL-06	OL-05	40.4759	753071.068
OL-13	OL-12	41.5342	754091.558
OL-12	OL-11	41.3620	753973.144
OL-11	OL-10	41.3553	753828.956
OL-10	OL-09	41.3071	753686.473
OL-14	OL-13	35.3799	609107.410
OL-16	OL-15	35.3445	609486.512
OL-15	OL-14	35.3642	609288.421
OL-19	OL-18	35.6041	609982.524
OL-18	OL-17	35.4869	609851.789
OL-17	OL-16	35.3297	609653.592
OL-20	OL-19	35.7307	610065.992
OL-22	OL-21	36.0755	610331.835
OL-21	OL-20	35.9016	610194.097
BD-13	OL-22	39.9547	614796.647
OL-13	BD-05	4.1344	9843.5290

```
##########################################################
# Table E16. New Conduit Information Section            #
#            Conduit Invert (IE) Elevation and Conduit  #
#            Maximum Water Surface (WS) Elevations      #
##########################################################
```

Conduit Name	Upstream Node	Downstream Node	IE Up	IE Dn	WS Up	WS Dn	Conduit Type
DM01	DM-02	DM-01	55.1200	51.7000	57.5831	53.7258	Circular
DM07	DM-08	DM-06	85.6800	63.1000	87.4036	73.8961	Circular
DM05	DM-06	DM-05	63.1000	58.9000	73.8961	70.0000	Circular
DM04	DM-05	DM-04	58.9000	56.6000	70.0000	61.7770	Circular
DM02	DM-03	DM-02	56.0200	55.1200	59.3550	57.5831	Circular
DM08	DM-09	DM-08	90.5000	85.6800	94.4806	87.4036	Circular
BW18	BW-18	BW-17	106.7600	106.1700	107.3602	106.8639	Circular
BW17	BW-17	BW-16	106.1700	105.6000	106.8639	106.2123	Circular
BW14	BW-14	BW-12	104.7600	103.7200	105.4191	104.3261	Circular
BW12	BW-12	BW-10	103.7200	102.9000	104.3261	103.3974	Circular
BW10	BW-10	BW-09	102.9000	101.8900	103.3974	102.5022	Circular
BW07	BW-07	BW-05	100.9200	98.9100	101.4185	99.4985	Circular
BW05	BW-05	BW-01	98.9100	98.0100	99.4985	98.2753	Circular
BW01	BW-01	DM-10	98.0100	91.7900	98.2753	95.3717	Circular
DM09	DM-10	DM-09	91.7900	90.5000	95.3717	94.4806	Circular
BE01	BE-01	DM-19	134.5200	120.1600	135.1365	121.3766	Circular
DM20	DM-21	DM-20	131.3500	129.5000	138.6524	134.7886	Circular
DM19	DM-20	DM-19	129.5000	120.1600	134.7886	121.3766	Circular
DM17	DM-18	DM-17	110.1400	105.0300	115.9326	113.2000	Circular
DM15	DM-16	DM-14	101.2600	97.9100	108.4716	99.8316	Circular
DM10	DM-11	DM-10	93.0700	91.7900	97.5671	95.3717	Circular
BD02	BD-02	BD-01	101.4700	98.3100	102.0571	98.8954	Circular
BD01	BD-01	DM-11	96.8200	93.0700	97.5719	97.5671	Circular
BD09	BD-09	BD-07	107.1600	106.5400	106.5400	106.5400	Circular
BD07	BD-07	BD-06	106.5600	105.2700	105.0100	105.0100	Circular
BD06	BD-06	BD-05	105.0100	103.7700	105.0100	104.6793	Circular
BD05	BD-05	BD-04	103.7700	103.4700	104.6793	104.3431	Circular
BD03	BD-03	BD-02	102.8300	101.4700	103.4152	102.0571	Circular
BE10	BE-10	BE-09	164.9200	162.9100	170.2400	166.9400	Circular
BE09	BE-09	BE-06	162.9100	161.4600	166.9400	166.8991	Circular
BE06	BE-06	BE-05	162.4600	157.4900	166.8991	161.8951	Circular
W09	W-10	W-09	107.7200	105.2800	108.8978	108.4470	Circular
W06	W-06	W-07	99.2500	99.1500	105.2431	105.5342	Circular
W04	W-03	W-05	100.1000	99.2300	104.1307	105.0129	Circular
W02	W-02	W-03	102.8000	100.0700	103.6226	104.1307	Circular
W01	W-02	W-01	102.3600	91.6500	102.7081	91.9971	Circular
W12	W-13	W-12	115.3000	102.7100	115.4787	105.5917	Circular
DM03	DM-04	DM-03	56.5600	56.0200	61.7770	59.3550	Circular
BW16	BW-16	BW-14	105.6000	104.7600	106.2123	105.4191	Circular
BW09	BW-09	BW-07	101.8900	100.9200	102.5022	101.4185	Circular
BD04	BD-04	BD-03	103.4700	102.8300	104.3431	103.4152	Circular
DM16	DM-17	DM-16	105.0300	101.2600	113.2000	108.4716	Circular
DM18	DM-19	DM-18	120.1600	110.1400	121.3766	115.9326	Circular
BE02	BE-02	BE-01	136.8800	134.5200	141.8503	135.1365	Circular
BE05	BE-05	BE-04	157.4900	156.8300	161.8951	160.0180	Circular
BE04	BE-04	BE-03	156.8300	156.1200	160.0180	157.3479	Circular
BE03	BE-03	BE-02	156.1200	136.8800	157.3479	141.8503	Circular
BE13	BE-13	BE-12	188.6100	178.3700	189.4786	181.3700	Circular
BE12	BE-12	BE-11	178.3700	171.4500	181.3700	177.9933	Circular
BE11	BE-11	BE-10	171.4500	164.9200	177.9933	170.2400	Circular
W11	W-11	W-12	102.9400	102.7500	105.5552	105.5917	Circular
W10	W-11	W-07	102.5800	100.2900	105.5552	105.5342	Circular
W08	W-08	W-09	108.2600	105.2600	108.3608	108.4470	Circular
W07	W-08	W-07	108.1200	100.4000	108.1238	105.5342	Circular
W05	W-05	W-06	99.2800	99.2500	105.0129	105.2431	Circular
OL05	OL-05	OL-04	103.4900	103.1400	106.7102	106.0913	Circular
OL04	OL-04	OL-03	103.1400	102.8900	106.0913	105.5877	Circular
OL03	OL-03	OL-02	102.8900	102.5800	105.5877	104.9252	Circular
OL02	OL-02	OL-01	102.5800	102.4300	104.9252	104.4999	Circular
L121	DM-14	OL-01	94.7000	93.9300	99.8316	99.5348	Circular
L122	OL-01	DM-11	93.9300	93.0700	99.5348	97.5671	Circular
OL09	OL-09	OL-08	104.3200	104.1700	108.5132	108.1861	Circular
OL08	OL-08	OL-07	104.1700	103.8700	108.1861	107.5552	Circular
OL07	OL-07	OL-06	103.8700	103.5800	107.5552	106.9939	Circular
OL06	OL-06	OL-05	103.5800	103.4900	106.9939	106.7102	Circular
OL13	OL-13	OL-12	105.1500	105.0300	110.2550	110.0139	Circular
OL12	OL-12	OL-11	105.0300	104.7800	110.0139	109.4888	Circular
OL11	OL-11	OL-10	104.7800	104.5600	109.4888	109.0310	Circular
OL10	OL-10	OL-09	104.5600	104.3200	109.0310	108.5132	Circular
OL14	OL-14	OL-13	105.2400	105.1500	110.4008	110.2550	Circular
OL16	OL-16	OL-15	105.9500	105.7700	111.4649	111.1945	Circular
OL15	OL-15	OL-14	105.7700	105.2400	111.1945	110.4008	Circular
OL19	OL-19	OL-18	106.8000	106.7000	112.7234	112.5778	Circular
OL18	OL-18	OL-17	106.7000	106.3800	112.5778	112.0942	Circular
OL17	OL-17	OL-16	106.3800	105.9500	112.0942	111.4649	Circular
OL20	OL-20	OL-19	106.9700	106.8000	112.9937	112.7234	Circular
OL22	OL-22	OL-21	107.5000	107.2700	113.7600	113.4264	Circular
OL21	OL-21	OL-20	107.2700	106.9700	113.4265	112.9936	Circular
L140	BD-13	OL-22	107.6700	107.5000	114.0600	113.7600	Circular
Overflow	OL-13	BD-05	106.8000	106.3900	110.2550	107.2477	Circular

```
*=====================================================*
| Table E20 - Junction Flooding and Volume Listing.   |
|             The maximum volume is the total volume  |
|             in the node including the volume in the |
|             flooded storage area. This is the max   |
|             volume at any time. The volume in the   |
|             flooded storage area is the total volume|
|             above the ground elevation, where the   |
|             flooded pond storage area starts.       |
*=====================================================*
```

Junction Name	Surcharged Time (min)	Flooded Time(min)	Out of 1D-System (Flooded Volume)	Maximum Volume	Passed to 2D cell OR Volume Stored in allowed Flood Pond of 1D-System
DM-02	0.0000	0.0000	0.0000	30.9513	0.0000
DM-01	0.0000	0.0000	0.0000	25.4563	0.0000
DM-03	86.8889	0.0000	0.0000	41.9081	0.0000
DM-05	218.6667	73.9444	98537.7676	139.4826	0.0000
DM-06	107.3056	0.0000	0.0000	135.6639	0.0000
DM-08	0.0000	0.0000	0.0000	21.6593	0.0000
DM-09	23.8833	0.0000	0.0000	50.0208	0.0000
DM-10	14.8167	0.0000	0.0000	45.0076	0.0000
BW-01	0.0000	0.0000	0.0000	3.3332	0.0000
BW-05	0.0000	0.0000	0.0000	7.3950	0.0000
BW-07	0.0000	0.0000	0.0000	6.2643	0.0000
BW-10	0.0000	0.0000	0.0000	6.2499	0.0000
BW-12	0.0000	0.0000	0.0000	7.6160	0.0000
BW-14	0.0000	0.0000	0.0000	8.2818	0.0000
BW-17	0.0000	0.0000	0.0000	8.7199	0.0000
BW-18	0.0000	0.0000	0.0000	7.5416	0.0000
DM-11	23.7333	0.0000	0.0000	56.5107	0.0000
DM-14	6.4833	0.0000	0.0000	64.4833	0.0000
DM-17	46.9750	23.7250	4687.1518	102.6642	0.0000
DM-19	0.0000	0.0000	0.0000	15.2883	0.0000
BE-05	55.3611	0.0000	0.0000	55.3542	0.0000
DM-20	22.3500	0.0000	0.0000	66.4568	0.0000
DM-21	31.1583	0.0000	0.0000	91.7621	0.0000
BD-01	0.0000	0.0000	0.0000	9.4480	0.0000
BD-02	0.0000	0.0000	0.0000	7.3776	0.0000
BD-03	0.0000	0.0000	0.0000	7.3532	0.0000
BD-05	0.0000	0.0000	0.0000	11.4261	0.0000
BD-06	0.0000	0.0000	0.0000	0.0000	0.0000
BD-07	0.0000	0.0000	0.0000	0.0000	0.0000
BD-09	0.0000	0.0000	0.0000	0.0000	0.0000
BD-13	32.0167	0.0000	0.0000	80.2967	0.0000
BE-06	41.9333	0.0000	0.0000	68.3478	0.0000
BE-09	44.4083	35.0583	5769.2928	50.6410	0.0000
BE-13	0.0000	0.0000	0.0000	10.9147	0.0000
W-10	27.4778	0.0000	0.0000	14.8004	0.0000
W-07	1343.2083	0.0000	0.0000	80.2231	0.0000
W-13	0.0000	0.0000	0.0000	2.2461	0.0000
W-05	1354.0000	0.0000	0.0000	72.6679	0.0000
W-03	1345.2500	0.0000	0.0000	51.1530	0.0000
W-02	0.0000	0.0000	0.0000	4.3743	0.0000
W-01	0.0000	0.0000	0.0000	4.3616	0.0000
DM-04	203.4444	0.0000	0.0000	65.5563	0.0000
BW-16	0.0000	0.0000	0.0000	7.6938	0.0000
BW-09	0.0000	0.0000	0.0000	7.6923	0.0000
BD-04	0.0000	0.0000	0.0000	10.9718	0.0000
DM-16	56.7056	0.0000	0.0000	90.6211	0.0000
DM-18	32.3667	0.0000	0.0000	72.7903	0.0000
BE-01	0.0000	0.0000	0.0000	7.7468	0.0000
BE-02	46.6500	0.0000	0.0000	62.4565	0.0000
BE-03	0.0000	0.0000	0.0000	15.4295	0.0000
BE-04	48.6861	0.0000	0.0000	40.0599	0.0000
BE-10	48.2139	30.4500	4000.1931	66.8511	0.0000
BE-11	34.7333	0.0000	0.0000	82.2226	0.0000
BE-12	18.3333	0.0000	0.0000	37.6974	0.0000
W-12	93.3056	0.0000	0.0000	36.2115	0.0000
W-11	62.3806	0.0000	0.0000	37.3866	0.0000
W-09	1360.1667	1331.6111	12761.0559	40.0478	0.0000
W-08	0.0000	0.0000	0.0000	0.0476	0.0000
W-06	1354.3750	0.0000	0.0000	75.3087	0.0000
OL-02	0.0000	0.0000	0.0000	29.4692	0.0000
OL-03	0.0000	0.0000	0.0000	33.8993	0.0000
OL-04	0.0000	0.0000	0.0000	37.0858	0.0000
OL-05	18.9250	0.0000	0.0000	40.4651	0.0000
OL-01	0.0000	0.0000	0.0000	70.4297	0.0000
OL-09	28.0667	0.0000	0.0000	52.6921	0.0000
OL-08	26.5417	0.0000	0.0000	50.4668	0.0000
OL-07	23.8000	0.0000	0.0000	46.3083	0.0000
OL-06	21.1833	0.0000	0.0000	42.8986	0.0000
OL-13	33.7083	0.0000	0.0000	64.1498	0.0000
OL-12	33.1167	0.0000	0.0000	62.6271	0.0000
OL-11	31.4083	0.0000	0.0000	59.1710	0.0000
OL-10	29.9583	0.0000	0.0000	56.1825	0.0000
OL-14	33.7917	0.0000	0.0000	64.8508	0.0000
OL-15	33.5667	0.0000	0.0000	68.1644	0.0000
OL-16	33.5000	0.0000	0.0000	69.2997	0.0000
OL-17	32.9750	0.0000	0.0000	71.8046	0.0000
OL-18	32.8750	0.0000	0.0000	73.8609	0.0000
OL-19	32.7750	0.0000	0.0000	74.4335	0.0000
OL-20	32.7667	0.0000	0.0000	75.6932	0.0000
OL-21	32.4417	0.0000	0.0000	77.3621	0.0000
OL-22	32.3083	16.7000	4359.1474	78.6632	0.0000

```
*================================*
|   Conduit Convergence Criteria  |
*================================*
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Conduit Name	Full Flow	Conduit Slope
DM01	39.5627	0.0120
DM07	153.5196	0.0614
DM05	81.0744	0.0171
DM04	20.1580	0.0082
DM02	26.9451	0.0056
DM08	65.7552	0.0113
BW18	4.8173	0.0067
BW17	3.7195	0.0040
BW14	4.0698	0.0048
BW12	4.7477	0.0065
BW10	6.5268	0.0124
BW07	6.3678	0.0118
BW05	7.0920	0.0074
BW01	34.5954	0.0924
DM09	86.0028	0.0193
BE01	70.7522	0.2312
DM20	7.1447	0.0142
DM19	8.6037	0.0676
DM17	39.6543	0.0356
DM15	15.2729	0.0108
DM10	52.0399	0.0071
BD02	43.7007	0.0068
BD01	53.4764	0.0075
BD09	8.0787	0.0015
BD07	11.3446	0.0029
BD06	15.2029	0.0028
BD05	11.7963	0.0017
BD03	34.3813	0.0081
BE10	3.9672	0.0044
BE09	5.7108	0.0034
BE06	12.1979	0.0156
W09	2.8914	0.0056
W06	2.1279	0.0030
W04	3.6146	0.0088
W02	8.8183	0.0522
W01	31.6905	0.0776
W12	9.0678	0.0552
DM03	18.2082	0.0067
BW16	4.5010	0.0059
BW09	4.5147	0.0068
BD04	13.7761	0.0023
DM16	21.9106	0.0222
DM18	55.3931	0.0695
BE02	14.6329	0.0099
BE05	7.2920	0.0025
BE04	9.9548	0.0046
BE03	24.4243	0.0276
BE13	10.7235	0.0320
BE12	11.4596	0.0365
BE11	7.2605	0.0147
W11	1.5962	0.0017
W10	6.9075	0.0320
W08	5.2802	0.0187
W07	7.9778	0.0427
W05	1.3086	0.0011
OL05	30.0173	0.0023
OL04	28.2690	0.0021
OL03	28.2500	0.0021
OL02	28.8770	0.0022
L121	40.1690	0.0042
L122	42.4517	0.0047
OL09	27.3357	0.0019
OL08	27.7906	0.0020
OL07	27.6978	0.0020
OL06	22.0507	0.0013
OL13	28.4174	0.0021
OL12	27.8093	0.0020
OL11	27.9531	0.0020
OL10	27.4699	0.0020
OL14	26.5432	0.0018
OL16	27.5452	0.0020
OL15	27.5939	0.0020
OL19	27.9790	0.0020
OL18	27.4418	0.0020
OL17	27.8931	0.0020
OL20	26.7691	0.0019
OL22	27.9419	0.0020
OL21	28.0747	0.0021
L140	29.8878	0.0023
Overflow	1.4979	0.0021

```
*=========================================================*
|     Table E15 - SPREADSHEET INFO LIST                   |
| Conduit Flow and Junction Depth Information for use in  |
| spreadsheets.  The maximum values in this table are the |
| true maximum values because they sample every time step.|
| The values in the review results may only be the        |
| maximum of a subset of all the time steps in the run.   |
| Note: These flows are only the flows in a single barrel.|
*=========================================================*
```

Conduit Name	Maximum Flow (cfs)	Total Flow (ft^3)	Maximum Velocity (ft/s)	Maximum Volume (ft^3)	##	Junction Name	Invert Elevation (ft)	Maximum Elevation (ft)
DM01	38.7388	1532511.326	6.3576	951.2243	##	DM-02	55.1200	57.5831
DM07	81.9164	1663357.440	17.7022	1220.1678	##	DM-01	51.7000	53.7258
DM05	81.9169	1662950.325	11.3942	1762.2894	##	DM-03	56.0200	59.3550
DM04	38.7575	1533691.613	7.7379	1413.2557	##	DM-05	58.9000	70.0000
DM02	38.7405	1532970.741	5.3334	1098.2151	##	DM-06	63.1000	74.1448
DM08	72.4769	1520193.044	10.6404	902.3380	##	DM-08	85.6800	87.4541
BW18	2.8132	40731.9314	4.4026	59.9564	##	DM-09	90.5000	94.6205
BW17	2.8122	40715.0843	3.8314	98.2488	##	DM-10	91.7900	95.5296
BW14	2.8101	40679.8847	4.0441	91.5022	##	BW-01	98.0100	98.2892
BW12	2.8096	40660.5261	4.5757	46.4582	##	BW-05	98.9100	99.5464
BW10	2.8094	40649.6977	5.5553	30.5010	##	BW-07	100.9200	101.4642
BW07	2.8088	40622.0024	5.6111	29.3213	##	BW-10	102.9000	103.4453
BW05	2.8086	40603.8864	4.6113	15.1508	##	BW-12	103.7200	104.3824
BW01	3.3250	40593.9387	9.3890	57.0729	##	BW-14	104.7600	105.4878
DM09	72.4825	1520500.156	11.3401	490.3863	##	BW-17	106.1700	106.9351
BE01	19.3574	426412.6103	22.4710	6.8723	##	BW-18	106.7600	107.4221
DM20	11.0208	178867.3207	8.6784	164.0111	##	DM-11	93.0700	97.8030
DM19	10.8889	178851.5942	13.4570	14.7475	##	DM-14	94.7000	100.1157
DM17	30.2287	605153.8858	12.0215	459.3522	##	DM-17	105.0300	113.2000
DM15	25.3053	596849.8603	10.3438	496.8267	##	DM-19	120.1600	121.4124
DM10	69.8183	1480022.502	9.8336	1324.5971	##	BE-05	157.4900	162.0794
BD02	4.2688	12887.8297	4.4040	84.7777	##	DM-20	129.5000	135.6411
BD01	4.6164	12914.8862	2.7915	2799.5876	##	DM-21	131.3500	139.6700
BD09	0.0000	0.0000	0.0000	0.0000	##	BD-01	96.8200	97.7804
BD07	0.0000	0.0000	0.0000	0.0000	##	BD-02	101.4700	102.0679
BD06	0.0000	0.0000	0.0000	171.0871	##	BD-03	102.8300	103.4250
BD05	4.2729	12809.2484	2.7821	267.8844	##	BD-05	103.7700	104.6965
BD03	4.2718	12843.0698	4.7679	65.8996	##	BD-06	105.0100	105.0100
BE10	5.1765	131161.7380	4.1352	571.8751	##	BD-07	106.5400	106.5400
BE09	4.9519	121304.8264	2.7750	760.2888	##	BD-09	107.1000	107.1000
BE06	12.4420	317752.2606	6.9758	525.3678	##	BD-13	107.6700	114.1726
W09	1.4918	21444.2077	1.8927	346.8600	##	BE-06	161.4600	166.9903
W06	-4.3806	-73647.5215	-5.3712	27.0876	##	BE-09	162.9100	166.9400
W04	-4.3763	-73546.3798	-5.3972	80.5393	##	BE-13	188.6100	191.2989
W02	-4.3763	-73455.2881	-5.9353	41.9276	##	W-10	107.7200	109.0914
W01	4.3763	73448.7722	12.5772	1.6835	##	W-07	99.1500	106.2384
W12	0.9843	12634.7695	6.4813	44.4062	##	W-13	115.3000	115.4800
DM03	38.7534	1533289.118	7.8446	411.2358	##	W-05	99.2300	105.5280
BW16	2.8113	40698.7218	4.3359	83.1213	##	W-03	100.0600	104.3252
BW09	2.8094	40635.3858	4.6048	44.0856	##	W-02	102.3600	102.7368
BD04	4.2721	12827.7987	3.0532	294.9807	##	W-01	91.6500	92.0258
DM16	25.5571	597081.5863	10.3873	417.2374	##	DM-04	56.5600	61.7770
DM18	30.2271	605209.0863	16.1634	255.2825	##	BW-16	105.6000	106.2751
BE02	19.3574	426440.6415	8.5280	96.5430	##	BW-09	101.8900	102.5609
BE05	12.4562	317568.7664	5.1345	668.8811	##	BD-04	103.4700	104.3589
BE04	19.8014	427177.5737	8.3583	335.2094	##	DM-16	101.2600	108.6164
BE03	19.7996	426998.0883	10.5693	450.7242	##	DM-18	110.1400	116.0822
BE13	9.4573	137975.8353	9.4526	199.7139	##	BE-01	134.5200	135.1455
BE12	9.4572	137940.0772	9.2907	239.9698	##	BE-02	136.8800	142.1700
BE11	8.6295	137153.1890	6.8217	455.4287	##	BE-03	156.1200	157.4183
W11	-0.8568	-12537.2889	-1.0999	91.0294	##	BE-04	156.8300	160.2380
W10	0.8523	12555.7556	3.0339	57.9243	##	BE-10	164.9200	170.2400
W08	-0.0638	-5150.5163	-0.5440	107.8410	##	BE-11	171.4500	178.9700
W07	0.1219	5185.8784	1.5282	98.0569	##	BE-12	178.3700	183.4785
W05	-4.3776	-73662.8051	-5.3833	21.4894	##	W-12	102.7100	106.3141
OL05	41.0754	871263.8020	5.6012	1076.1237	##	W-11	102.5800	106.2651
OL04	41.0752	871080.8350	5.8206	830.3081	##	W-09	105.2600	108.4470
OL03	41.0751	870894.2432	6.1568	947.4887	##	W-08	108.1200	108.1242
OL02	41.0750	870693.6734	6.9575	386.8809	##	W-06	99.2500	105.8416
L121	25.2624	596752.7963	4.3066	1342.5622	##	OL-02	102.5800	104.9458
L122	66.2873	1467155.398	9.3338	1342.8009	##	OL-03	102.8900	105.6193
OL09	42.8449	871929.9568	5.9979	570.5825	##	OL-04	103.1400	106.1591
OL08	42.4199	871773.1579	5.9636	1104.1133	##	OL-05	103.4900	106.7967
OL07	41.6033	871574.4787	5.7828	1074.4737	##	OL-01	93.9300	99.8280
OL06	41.0756	871408.9014	5.5668	523.2431	##	OL-09	104.3200	108.6652
OL13	43.2187	872508.2189	6.0936	422.3783	##	OL-08	104.1700	108.3281
OL12	42.9428	872380.6102	6.0522	918.8578	##	OL-07	103.8700	107.6751
OL11	42.9956	872229.9276	6.0643	800.2976	##	OL-06	103.5800	107.0808
OL10	42.8444	872069.0956	6.0471	904.0400	##	OL-13	105.1500	110.4602
OL14	35.7116	703974.4156	5.0315	363.0981	##	OL-12	105.0300	110.2117
OL16	36.0011	704364.8385	5.0676	674.3248	##	OL-11	104.7800	109.6706
OL15	35.9726	704155.5308	5.0651	1978.4303	##	OL-10	104.5600	109.1988
OL19	36.4654	704863.9568	5.1277	363.0980	##	OL-14	105.2400	110.5974
OL18	36.4618	704732.5110	5.1281	1207.8548	##	OL-15	105.7700	111.3444
OL17	36.1920	704530.9352	5.0933	1570.9535	##	OL-16	105.9500	111.5989
OL20	36.6678	704948.3648	5.1556	674.3228	##	OL-17	106.3800	112.1913
OL22	37.2508	705219.6504	5.2338	837.3462	##	OL-18	106.7000	112.6466
OL21	36.9764	705075.1586	5.1977	1081.8838	##	OL-19	106.8000	112.7834
L140	46.8297	720616.5979	6.5765	540.9403	##	OL-20	106.9700	113.0375
Overflow	4.2745	12798.7776	5.4021	152.2544	##	OL-21	107.2700	113.4448
FREE # 1	38.7592	1532512.801	0.0000	0.0000	##	OL-22	107.5000	113.7600
FREE # 2	4.3763	73448.9474	0.0000	0.0000	##			

```
*==================================================*
|     Table E15a - SPREADSHEET REACH LIST          |
| Peak flow and Total Flow listed by Reach or those |
|      conduits or diversions having the same      |
|      upstream and downstream nodes.              |
*==================================================*
```

Upstream Node	Downstream Node	Maximum Flow (cfs)	Total Flow (ft^3)
DM-02	DM-01	38.7388	1532511.33
DM-08	DM-06	81.9164	1663357.44
DM-06	DM-05	81.9169	1662950.32
DM-05	DM-04	38.7575	1533691.61
DM-03	DM-02	38.7405	1532970.74
DM-09	DM-08	72.4769	1520193.04
BW-18	BW-17	2.8132	40731.9314
BW-17	BW-16	2.8122	40715.0843
BW-14	BW-12	2.8101	40679.8847
BW-12	BW-10	2.8096	40660.5261
BW-10	Bw-09	2.8094	40649.6977
BW-07	BW-05	2.8088	40622.0024
BW-05	BW-01	2.8086	40603.8864
BW-01	DM-10	3.3250	40593.9387
DM-10	DM-09	72.4825	1520500.16
BE-01	DM-19	19.3574	426412.610
DM-21	DM-20	11.0208	178867.321
DM-20	DM-19	10.8889	178851.594
DM-18	DM-17	30.2287	605153.886
DM-16	DM-14	25.3053	596849.860
DM-11	DM-10	69.8183	1480022.50
BD-02	BD-01	4.2688	12887.8297
BD-01	DM-11	4.6164	12914.8862
BD-05	BD-04	4.2729	12809.2484
BD-03	BD-02	4.2718	12843.0698
BE-10	BE-09	5.1765	131161.738
BE-09	BE-06	4.9519	121304.826
BE-06	BE-05	12.4420	317752.261
W-10	W-09	1.4918	21444.2077
W-06	W-07	4.3806	73647.5215
W-03	W-05	4.3763	73546.3798
W-02	W-03	4.3763	73455.2881
W-02	W-01	4.3763	73448.7722
W-13	W-12	0.9843	12634.7695
DM-04	DM-03	38.7534	1533289.12
BW-16	BW-14	2.8113	40698.7218
BW-09	BW-07	2.8094	40635.3858
BD-04	BD-03	4.2721	12827.7987
DM-17	DM-16	25.5571	597081.586
DM-19	DM-18	30.2271	605209.086
BE-02	BE-01	19.3574	426440.641
BE-05	BE-04	12.4562	317568.766
BE-04	BE-03	19.8014	427177.574
BE-03	BE-02	19.7996	426998.088
BE-13	BE-12	9.4573	137975.835
BE-12	BE-11	9.4572	137940.077
BE-11	BE-10	8.6295	137153.189
W-11	W-12	0.8568	12537.2889
W-11	W-07	0.8523	12555.7556
W-08	W-09	0.0638	5150.5163
W-08	W-07	0.1219	5185.8784
W-05	W-06	4.3776	73662.8051
OL-05	OL-04	41.0754	871263.802
OL-04	OL-03	41.0752	871080.835
OL-03	OL-02	41.0751	870894.243
OL-02	OL-01	41.0750	870693.673
DM-14	OL-01	25.2624	596752.796
OL-01	DM-11	66.2873	1467155.40
OL-09	OL-08	42.8449	871929.957
OL-08	OL-07	42.4199	871773.158
OL-07	OL-06	41.6033	871574.479
OL-06	OL-05	41.0756	871408.901
OL-13	OL-12	43.2187	872508.219
OL-12	OL-11	42.9428	872380.610
OL-11	OL-10	42.9956	872229.928
OL-10	OL-09	42.8444	872069.096
OL-14	OL-13	35.7116	703974.416
OL-16	OL-15	36.0011	704364.838
OL-15	OL-14	35.9726	704155.531
OL-19	OL-18	36.4654	704863.957
OL-18	OL-17	36.4618	704732.511
OL-17	OL-16	36.1920	704530.935
OL-20	OL-19	36.6678	704948.365
OL-22	OL-21	37.2508	705219.650
OL-21	OL-20	36.9764	705075.159
BD-13	OL-22	46.8297	720616.598
OL-13	BD-05	4.2745	12798.7776

```
##########################################################
# Table E16. New Conduit Information Section            #
#            Conduit Invert (IE) Elevation and Conduit  #
#            Maximum Water Surface (WS) Elevations      #
##########################################################
```

Conduit Name	Upstream Node	Downstream Node	IE Up	IE Dn	WS Up	WS Dn	Conduit Type
DM01	DM-02	DM-01	55.1200	51.7000	57.5831	53.7258	Circular
DM07	DM-08	DM-06	85.6800	63.1000	87.4541	74.1448	Circular
DM05	DM-06	DM-05	63.1000	58.9000	74.1448	70.0000	Circular
DM04	DM-05	DM-04	58.9000	56.6000	70.0000	61.7770	Circular
DM02	DM-03	DM-02	56.0200	55.1200	59.3550	57.5831	Circular
DM08	DM-09	DM-08	90.5000	85.6800	94.6205	87.4541	Circular
BW18	BW-18	BW-17	106.7600	106.1700	107.4221	106.9351	Circular
BW17	BW-17	BW-16	106.1700	105.6000	106.9351	106.2751	Circular
BW14	BW-14	BW-12	104.7600	103.7200	105.4878	104.3824	Circular
BW12	BW-12	BW-10	103.7200	102.9000	104.3824	103.4453	Circular
BW10	BW-10	BW-09	102.9000	101.8900	103.4453	102.5609	Circular
BW07	BW-07	BW-05	100.9200	98.9100	101.4642	99.5464	Circular
BW05	BW-05	BW-01	98.9100	98.0100	99.5464	98.2892	Circular
BW01	BW-01	DM-10	98.0100	91.7900	98.2892	95.5296	Circular
DM09	DM-10	DM-09	91.7900	90.5000	95.5296	94.6205	Circular
BE01	BE-01	DM-19	134.5200	120.1600	135.1455	121.4124	Circular
DM20	DM-21	DM-20	131.3500	129.5000	139.6700	135.6411	Circular
DM19	DM-20	DM-19	129.5000	120.1600	135.6411	121.4124	Circular
DM17	DM-18	DM-17	110.1400	105.0300	116.0822	113.2000	Circular
DM15	DM-16	DM-14	101.2600	97.9100	108.6164	100.1157	Circular
DM10	DM-11	DM-10	93.0700	91.7900	97.8030	95.5296	Circular
BD02	BD-02	BD-01	101.4700	98.3100	102.0679	98.9056	Circular
BD01	BD-01	DM-11	96.8200	93.0700	97.7804	97.8030	Circular
BD09	BD-09	BD-07	107.1600	106.5400	106.5400	106.5400	Circular
BD07	BD-07	BD-06	106.5600	105.2700	105.0100	105.0100	Circular
BD06	BD-06	BD-05	105.0100	103.7700	105.0100	104.6965	Circular
BD05	BD-05	BD-04	103.7700	103.4700	104.6965	104.3589	Circular
BD03	BD-03	BD-02	102.8300	101.4700	103.4250	102.0679	Circular
BE10	BE-10	BE-09	164.9200	162.9100	170.2400	166.9400	Circular
BE09	BE-09	BE-06	162.9100	161.4600	166.9400	166.9903	Circular
BE06	BE-06	BE-05	162.4600	157.4900	166.9903	162.0794	Circular
W09	W-10	W-09	107.7200	105.2800	109.0914	108.4470	Circular
W06	W-06	W-07	99.2500	99.1500	105.8416	106.2384	Circular
W04	W-03	W-05	100.1000	99.2300	104.3252	105.5280	Circular
W02	W-02	W-03	102.8000	100.0700	103.6774	104.3252	Circular
W01	W-02	W-01	102.3600	91.6500	102.7368	92.0258	Circular
W12	W-13	W-12	115.3000	102.7100	115.4800	106.3141	Circular
DM03	DM-04	DM-03	56.5600	56.0200	61.7770	59.3550	Circular
BW16	BW-16	BW-14	105.6000	104.7600	106.2751	105.4878	Circular
BW09	BW-09	BW-07	101.8900	100.9200	102.5609	101.4642	Circular
BD04	BD-04	BD-03	103.4700	102.8300	104.3589	103.4250	Circular
DM16	DM-17	DM-16	105.0300	101.2600	113.2000	108.6164	Circular
DM18	DM-19	DM-18	120.1600	110.1400	121.4124	116.0822	Circular
BE02	BE-02	BE-01	136.8800	134.5200	142.1700	135.1455	Circular
BE05	BE-05	BE-04	157.4900	156.8300	162.0794	160.2380	Circular
BE04	BE-04	BE-03	156.8300	156.1200	160.2380	157.4183	Circular
BE03	BE-03	BE-02	156.1200	136.8800	157.4183	142.1700	Circular
BE13	BE-13	BE-12	188.6100	178.3700	191.2989	183.4785	Circular
BE12	BE-12	BE-11	178.3700	171.4500	183.4785	178.9700	Circular
BE11	BE-11	BE-10	171.4500	164.9200	178.9700	170.2400	Circular
W11	W-11	W-12	102.9400	102.7500	106.2651	106.3141	Circular
W10	W-11	W-07	102.5800	100.2900	106.2651	106.2384	Circular
W08	W-08	W-09	108.2600	105.2600	108.3608	108.4470	Circular
W07	W-08	W-07	108.1200	100.4000	108.1238	106.2384	Circular
W05	W-05	W-06	99.2800	99.2500	105.5280	105.8416	Circular
OL05	OL-05	OL-04	103.4900	103.1400	106.7967	106.1591	Circular
OL04	OL-04	OL-03	103.1400	102.8900	106.1591	105.6193	Circular
OL03	OL-03	OL-02	102.8900	102.5800	105.6193	104.9458	Circular
OL02	OL-02	OL-01	102.5800	102.4300	104.9458	104.5160	Circular
L121	DM-14	OL-01	94.7000	93.9300	100.1157	99.8280	Circular
L122	OL-01	DM-11	93.9300	93.0700	99.8280	97.8030	Circular
OL09	OL-09	OL-08	104.3200	104.1700	108.6652	108.3281	Circular
OL08	OL-08	OL-07	104.1700	103.8700	108.3281	107.6751	Circular
OL07	OL-07	OL-06	103.8700	103.5800	107.6751	107.0808	Circular
OL06	OL-06	OL-05	103.5800	103.4900	107.0808	106.7967	Circular
OL13	OL-13	OL-12	105.1500	105.0300	110.4602	110.2117	Circular
OL12	OL-12	OL-11	105.0300	104.7800	110.2117	109.6706	Circular
OL11	OL-11	OL-10	104.7800	104.5600	109.6706	109.1988	Circular
OL10	OL-10	OL-09	104.5600	104.3200	109.1988	108.6652	Circular
OL14	OL-14	OL-13	105.2400	105.1500	110.5974	110.4602	Circular
OL16	OL-16	OL-15	105.9500	105.7700	111.5989	111.3444	Circular
OL15	OL-15	OL-14	105.7700	105.2400	111.3444	110.5974	Circular
OL19	OL-19	OL-18	106.8000	106.7000	112.7834	112.6466	Circular
OL18	OL-18	OL-17	106.7000	106.3800	112.6466	112.1913	Circular
OL17	OL-17	OL-16	106.3800	105.9500	112.1913	111.5989	Circular
OL20	OL-20	OL-19	106.9700	106.8000	113.0375	112.7834	Circular
OL22	OL-22	OL-21	107.5000	107.2700	113.7600	113.4448	Circular
OL21	OL-21	OL-20	107.2700	106.9700	113.4448	113.0375	Circular
L140	BD-13	OL-22	107.6700	107.5000	114.1726	113.7600	Circular
Overflow	OL-13	BD-05	106.8000	106.3900	110.4602	107.2591	Circular

```
*=====================================================*
| Table E20 - Junction Flooding and Volume Listing.   |
|             The maximum volume is the total volume  |
|             in the node including the volume in the |
|             flooded storage area. This is the max   |
|             volume at any time. The volume in the   |
|             flooded storage area is the total volume|
|             above the ground elevation, where the   |
|             flooded pond storage area starts.       |
*=====================================================*
```

Junction Name	Surcharged Time (min)	Flooded Time(min)	Out of 1D-System (Flooded Volume)	Maximum Volume	Passed to 2D cell OR Volume Stored in allowed Flood Pond of 1D-System
DM-02	0.0000	0.0000	0.0000	30.9512	0.0000
DM-01	0.0000	0.0000	0.0000	25.4563	0.0000
DM-03	113.5000	0.0000	0.0000	41.9082	0.0000
DM-05	292.7222	96.4444	128581.5784	139.4826	0.0000
DM-06	140.6111	0.0000	0.0000	138.7892	0.0000
DM-08	0.0000	0.0000	0.0000	22.2930	0.0000
DM-09	33.5667	0.0000	0.0000	51.7777	0.0000
DM-10	25.2500	0.0000	0.0000	46.9922	0.0000
BW-01	0.0000	0.0000	0.0000	3.5084	0.0000
BW-05	0.0000	0.0000	0.0000	7.9972	0.0000
BW-07	0.0000	0.0000	0.0000	6.8378	0.0000
BW-10	0.0000	0.0000	0.0000	6.8519	0.0000
BW-12	0.0000	0.0000	0.0000	8.3233	0.0000
BW-14	0.0000	0.0000	0.0000	9.1460	0.0000
BW-17	0.0000	0.0000	0.0000	9.6142	0.0000
BW-18	0.0000	0.0000	0.0000	8.3203	0.0000
DM-11	33.3250	0.0000	0.0000	59.4754	0.0000
DM-14	18.7333	0.0000	0.0000	68.0532	0.0000
DM-17	55.5250	30.1000	7999.7534	102.6642	0.0000
DM-19	0.0000	0.0000	0.0000	15.7377	0.0000
BE-05	71.0905	0.0000	0.0000	57.6702	0.0000
DM-20	29.6250	0.0000	0.0000	77.1692	0.0000
DM-21	37.6583	20.0000	1389.7469	104.5491	0.0000
BD-01	0.0000	0.0000	0.0000	12.0685	0.0000
BD-02	0.0000	0.0000	0.0000	7.5130	0.0000
BD-03	0.0000	0.0000	0.0000	7.4774	0.0000
BD-05	0.0000	0.0000	0.0000	11.6428	0.0000
BD-06	0.0000	0.0000	0.0000	0.0000	0.0000
BD-07	0.0000	0.0000	0.0000	0.0000	0.0000
BD-09	0.0000	0.0000	0.0000	0.0000	0.0000
BD-13	41.7417	0.0000	0.0000	81.7118	0.0000
BE-06	49.8750	0.0000	0.0000	69.4943	0.0000
BE-09	52.4000	42.1500	9756.0033	50.6410	0.0000
BE-13	16.9750	0.0000	0.0000	33.7889	0.0000
W-10	32.8583	0.0000	0.0000	17.2330	0.0000
W-07	1352.6250	0.0000	0.0000	89.0730	0.0000
W-13	0.0000	0.0000	0.0000	2.2614	0.0000
W-05	1362.4583	0.0000	0.0000	79.1407	0.0000
W-03	1354.4167	0.0000	0.0000	53.5968	0.0000
W-02	0.0000	0.0000	0.0000	4.7347	0.0000
W-01	0.0000	0.0000	0.0000	4.7218	0.0000
DM-04	272.6389	0.0000	0.0000	65.5563	0.0000
BW-16	0.0000	0.0000	0.0000	8.4830	0.0000
BW-09	0.0000	0.0000	0.0000	8.4301	0.0000
BD-04	0.0000	0.0000	0.0000	11.1695	0.0000
DM-16	72.3167	0.0000	0.0000	92.4400	0.0000
DM-18	39.6083	0.0000	0.0000	74.6698	0.0000
BE-01	0.0000	0.0000	0.0000	7.8596	0.0000
BE-02	55.0583	17.5583	325.1577	66.4741	0.0000
BE-03	0.0000	0.0000	0.0000	16.3142	0.0000
BE-04	57.6417	0.0000	0.0000	42.8251	0.0000
BE-10	56.2167	37.4083	5909.4623	66.8511	0.0000
BE-11	41.8833	19.1167	707.8601	94.4963	0.0000
BE-12	26.2583	0.0000	0.0000	64.1940	0.0000
W-12	122.3333	0.0000	0.0000	45.2888	0.0000
W-11	79.8583	0.0000	0.0000	46.3070	0.0000
W-09	1368.1667	1343.8889	15873.6390	40.0478	0.0000
W-08	0.0000	0.0000	0.0000	0.0476	0.0000
W-06	1362.8333	0.0000	0.0000	82.8295	0.0000
OL-02	0.0000	0.0000	0.0000	29.7285	0.0000
OL-03	0.0000	0.0000	0.0000	34.2959	0.0000
OL-04	16.2667	0.0000	0.0000	37.9386	0.0000
OL-05	28.5250	0.0000	0.0000	41.5516	0.0000
OL-01	0.0000	0.0000	0.0000	74.1139	0.0000
OL-09	37.7000	0.0000	0.0000	54.6018	0.0000
OL-08	36.1750	0.0000	0.0000	52.2502	0.0000
OL-07	33.4833	0.0000	0.0000	47.8143	0.0000
OL-06	30.9083	0.0000	0.0000	43.9909	0.0000
OL-13	43.0833	0.0000	0.0000	66.7279	0.0000
OL-12	42.5417	0.0000	0.0000	65.1128	0.0000
OL-11	41.0583	0.0000	0.0000	61.4550	0.0000
OL-10	39.6167	0.0000	0.0000	58.2908	0.0000
OL-14	43.1667	0.0000	0.0000	67.3210	0.0000
OL-15	43.0083	0.0000	0.0000	70.0478	0.0000
OL-16	42.9667	0.0000	0.0000	70.9837	0.0000
OL-17	42.4583	0.0000	0.0000	73.0254	0.0000
OL-18	42.4083	0.0000	0.0000	74.7253	0.0000
OL-19	42.3750	0.0000	0.0000	75.1880	0.0000
OL-20	42.3333	0.0000	0.0000	76.2439	0.0000
OL-21	42.1000	0.0000	0.0000	77.5930	0.0000
OL-22	42.0250	26.8583	15290.1553	78.6632	0.0000

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*================================*
|   Conduit Convergence Criteria  |
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Conduit Name	Full Flow	Conduit Slope
DM01	39.5627	0.0120
DM07	153.5196	0.0614
DM05	81.0744	0.0171
DM04	20.1580	0.0082
DM02	26.9451	0.0056
DM08	65.7552	0.0113
BW18	4.8173	0.0067
BW17	3.7195	0.0040
BW14	4.0698	0.0048
BW12	4.7477	0.0065
BW10	6.5268	0.0124
BW07	6.3678	0.0118
BW05	7.0920	0.0074
BW01	34.5954	0.0924
DM09	86.0028	0.0193
BE01	70.7522	0.2312
DM20	7.1447	0.0142
DM19	8.6037	0.0676
DM17	39.6543	0.0356
DM15	15.2729	0.0108
DM10	52.0399	0.0071
BD02	43.7007	0.0068
BD01	53.4764	0.0075
BD09	8.0787	0.0015
BD07	11.3446	0.0029
BD06	15.2029	0.0028
BD05	11.7963	0.0017
BD03	34.3813	0.0081
BE10	3.9672	0.0044
BE09	5.7108	0.0034
BE06	12.1979	0.0156
W09	2.8914	0.0056
W06	2.1279	0.0030
W04	3.6146	0.0088
W02	8.8183	0.0522
W01	31.6905	0.0776
W12	9.0678	0.0552
DM03	18.2082	0.0067
BW16	4.5010	0.0059
BW09	4.5147	0.0068
BD04	13.7761	0.0023
DM16	21.9106	0.0222
DM18	55.3931	0.0695
BE02	14.6329	0.0099
BE05	7.2920	0.0025
BE04	9.9548	0.0046
BE03	24.4243	0.0276
BE13	10.7235	0.0320
BE12	11.4596	0.0365
BE11	7.2605	0.0147
W11	1.5962	0.0017
W10	6.9075	0.0320
W08	5.2802	0.0187
W07	7.9778	0.0427
W05	1.3086	0.0011
OL05	30.0173	0.0023
OL04	28.2690	0.0021
OL03	28.2500	0.0021
OL02	28.8770	0.0022
L121	40.1690	0.0042
L122	42.4517	0.0047
OL09	27.3357	0.0019
OL08	27.7906	0.0020
OL07	27.6978	0.0020
OL06	22.0507	0.0013
OL13	28.4174	0.0021
OL12	27.8093	0.0020
OL11	27.9531	0.0020
OL10	27.4699	0.0020
OL14	26.5432	0.0018
OL16	27.5452	0.0020
OL15	27.5939	0.0020
OL19	27.9790	0.0020
OL18	27.4418	0.0020
OL17	27.8931	0.0020
OL20	26.7691	0.0019
OL22	27.9419	0.0020
OL21	28.0747	0.0021
L140	29.8878	0.0023
Overflow	1.4979	0.0021

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*=========================================================*
|     Table E15 - SPREADSHEET INFO LIST                   |
| Conduit Flow and Junction Depth Information for use in  |
| spreadsheets.  The maximum values in this table are the |
| true maximum values because they sample every time step.|
| The values in the review results may only be the        |
| maximum of a subset of all the time steps in the run.   |
| Note: These flows are only the flows in a single barrel.|
*=========================================================*
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Conduit Name	Maximum Flow (cfs)	Total Flow (ft^3)	Maximum Velocity (ft/s)	Maximum Volume (ft^3)	##	Junction Name	Invert Elevation (ft)	Maximum Elevation (ft)
DM01	38.7388	1763369.211	6.3575	951.2262	##	DM-02	55.1200	57.5831
DM07	85.1342	1935329.171	17.7244	1264.8624	##	DM-01	51.7000	53.7258
DM05	85.1371	1934897.224	11.8348	1762.2894	##	DM-03	56.0200	59.3550
DM04	38.7528	1764706.060	7.7369	1413.2395	##	DM-05	58.9000	70.0000
DM02	38.7404	1763884.120	5.3328	1098.2168	##	DM-06	63.1000	74.4754
DM08	73.8449	1766523.249	10.8092	942.4657	##	DM-08	85.6800	87.5211
BW18	3.3058	48098.1487	4.5369	68.0700	##	DM-09	90.5000	94.7256
BW17	3.3048	48079.4012	3.9832	111.3943	##	DM-10	91.7900	95.6649
BW14	3.3028	48039.6953	4.1924	113.8851	##	BW-01	98.0100	98.3025
BW12	3.3023	48018.0302	4.7831	58.0084	##	BW-05	98.9100	99.6023
BW10	3.3021	48006.0831	5.7490	38.1844	##	BW-07	100.9200	101.5175
BW07	3.3018	47975.9040	5.8631	35.6340	##	BW-10	102.9000	103.5027
BW05	3.3016	47957.7289	4.8510	18.0452	##	BW-12	103.7200	104.4500
BW01	3.5435	47947.0846	9.6446	60.3124	##	BW-14	104.7600	105.5733
DM09	73.8524	1766848.363	11.3581	490.7403	##	BW-17	106.1700	107.0245
BE01	19.3574	495093.7845	22.4876	6.8737	##	BW-18	106.7600	107.5000
DM20	11.1630	208047.4523	8.7910	164.0145	##	DM-11	93.0700	97.9950
DM19	10.8853	208028.0988	13.4534	14.7495	##	DM-14	94.7000	100.3436
DM17	30.2316	703022.1136	11.7491	459.3522	##	DM-17	105.0300	113.2000
DM15	25.3168	692210.2286	10.3478	548.1480	##	DM-19	120.1600	121.4126
DM10	70.5753	1719024.194	9.9460	1324.5987	##	BE-05	157.4900	162.5236
BD02	4.4307	16767.4467	4.4509	88.6194	##	DM-20	129.5000	135.6453
BD01	4.7291	16793.2195	2.7712	2968.6463	##	DM-21	131.3500	139.6700
BD09	0.0000	0.0000	0.0000	0.0000	##	BD-01	96.8200	97.9931
BD07	0.0000	0.0000	0.0000	0.0000	##	BD-02	101.4700	102.0791
BD06	0.0000	0.0000	0.0000	179.0174	##	BD-03	102.8300	103.4362
BD05	4.4328	16689.2609	2.8130	274.7369	##	BD-05	103.7700	104.7148
BD03	4.4322	16724.4296	4.8186	68.9374	##	BD-06	105.0100	105.0100
BE10	5.1765	152155.8889	4.1352	571.8751	##	BD-07	106.5400	106.5400
BE09	4.9621	136805.1040	2.7797	761.6954	##	BD-09	107.1000	107.1000
BE06	12.4586	368552.6510	6.9667	570.0003	##	BD-13	107.6700	114.3393
W09	1.7509	25302.4407	2.2185	346.8599	##	BE-06	161.4600	167.4339
W06	-5.1692	-85644.6615	-6.3004	27.0883	##	BE-09	162.9100	166.9400
W04	-5.1623	-85540.5301	-6.3399	80.8996	##	BE-13	188.6100	193.8900
W02	-5.1622	-85449.4865	-6.7726	41.9977	##	W-10	107.7200	109.3323
W01	5.1623	85442.3848	13.1938	2.0610	##	W-07	99.1500	107.2270
W12	1.0169	14894.5118	6.5005	59.9654	##	W-13	115.3000	115.4865
DM03	38.7504	1764239.515	7.8439	411.2367	##	W-05	99.2300	106.2544
BW16	3.3039	48061.6517	4.4775	105.5691	##	W-03	100.0600	104.5933
BW09	3.3020	47990.5587	4.8069	54.5152	##	W-02	102.3600	102.7697
BD04	4.4324	16708.4870	3.0905	308.1345	##	W-01	91.6500	92.0589
DM16	25.6281	692485.2661	10.4162	417.3534	##	DM-04	56.5600	61.7770
DM18	30.2288	703061.1719	15.9434	255.3558	##	BW-16	105.6000	106.3532
BE02	19.3574	495125.0655	8.5280	96.5430	##	BW-09	101.8900	102.6321
BE05	12.4724	368336.8053	5.1412	668.8769	##	BD-04	103.4700	104.3755
BE04	21.1289	497547.7059	8.8445	348.6213	##	DM-16	101.2600	108.6943
BE03	21.1248	497348.9623	10.6068	456.1026	##	DM-18	110.1400	116.0837
BE13	10.7902	162409.6741	9.5832	218.5439	##	BE-01	134.5200	135.1455
BE12	9.9471	161438.3122	9.2869	239.9955	##	BE-02	136.8800	142.1700
BE11	8.6295	159495.6152	6.8217	455.4287	##	BE-03	156.1200	157.5301
W11	-1.0115	-14788.6971	-1.2599	91.0283	##	BE-04	156.8300	160.6813
W10	1.0111	14805.8456	3.0710	58.2783	##	BE-10	164.9200	170.2400
W08	-0.0638	-5190.8673	-0.5441	107.8412	##	BE-11	171.4500	178.9700
W07	0.1294	5250.8089	1.6349	117.7194	##	BE-12	178.3700	183.9400
W05	-5.1689	-85657.2049	-6.3240	21.4892	##	W-12	102.7100	107.3383
OL05	41.8636	1011229.484	5.6757	1080.4744	##	W-11	102.5800	107.2697
OL04	41.8634	1011020.822	5.8785	838.2568	##	W-09	105.2600	108.4470
OL03	41.8633	1010809.723	6.2117	957.3385	##	W-08	108.1200	108.1263
OL02	41.8633	1010586.303	7.0161	390.9975	##	W-06	99.2500	106.6858
L121	25.4153	692108.0870	4.2507	1342.4036	##	OL-02	102.5800	104.9715
L122	66.9674	1702366.374	9.4285	1342.8314	##	OL-03	102.8900	105.6591
OL09	43.9551	1011989.549	6.1946	570.5826	##	OL-04	103.1400	106.2144
OL08	43.1760	1011810.130	6.0551	1104.1139	##	OL-05	103.4900	106.8643
OL07	42.2700	1011581.857	5.8882	1074.4739	##	OL-01	93.9300	100.0612
OL06	41.8637	1011395.059	5.6896	525.4323	##	OL-09	104.3200	108.8373
OL13	45.1160	1012661.064	6.3568	422.3794	##	OL-08	104.1700	108.4873
OL12	44.5992	1012512.579	6.2865	918.8592	##	OL-07	103.8700	107.8094
OL11	44.4205	1012334.478	6.2650	800.2963	##	OL-06	103.5800	107.1540
OL10	43.8234	1012151.794	6.1799	904.0326	##	OL-13	105.1500	110.7002
OL14	36.1063	815608.4474	5.0864	363.0981	##	OL-12	105.0300	110.4423
OL16	36.8451	816055.9287	5.2012	674.3235	##	OL-11	104.7800	109.8808
OL15	36.1115	815818.8708	5.0850	1978.4252	##	OL-10	104.5600	109.3911
OL19	36.8684	816623.6450	5.1982	363.0981	##	OL-14	105.2400	110.8274
OL18	36.4854	816478.6226	5.1426	1207.8557	##	OL-15	105.7700	111.5198
OL17	36.2366	816244.2075	5.0984	1570.9546	##	OL-16	105.9500	111.7557
OL20	37.1136	816719.7397	5.2346	674.3243	##	OL-17	106.3800	112.3051
OL22	38.7854	817027.7120	5.4537	837.3452	##	OL-18	106.7000	112.7273
OL21	37.5273	816867.8754	5.2809	1081.8828	##	OL-19	106.8000	112.8542
L140	55.4272	850023.0857	7.7815	540.9403	##	OL-20	106.9700	113.0898
Overflow	4.4335	16676.4420	5.5893	153.2327	##	OL-21	107.2700	113.4706
FREE # 1	38.7593	1763371.765	0.0000	0.0000	##	OL-22	107.5000	113.7600
FREE # 2	5.1623	85442.5716	0.0000	0.0000	##			

```
*==================================================*
|     Table E15a - SPREADSHEET REACH LIST          |
| Peak flow and Total Flow listed by Reach or those |
|      conduits or diversions having the same      |
|      upstream and downstream nodes.              |
*==================================================*
```

Upstream Node	Downstream Node	Maximum Flow (cfs)	Total Flow (ft^3)
DM-02	DM-01	38.7388	1763369.21
DM-08	DM-06	85.1342	1935329.17
DM-06	DM-05	85.1371	1934897.22
DM-05	DM-04	38.7528	1764706.06
DM-03	DM-02	38.7404	1763884.12
DM-09	DM-08	73.8449	1766523.25
BW-18	BW-17	3.3058	48098.1487
BW-17	BW-16	3.3048	48079.4012
BW-14	BW-12	3.3028	48039.6953
BW-12	BW-10	3.3023	48018.0302
BW-10	Bw-09	3.3021	48006.0831
BW-07	BW-05	3.3018	47975.9040
BW-05	BW-01	3.3016	47957.7289
BW-01	DM-10	3.5435	47947.0846
DM-10	DM-09	73.8524	1766848.36
BE-01	DM-19	19.3574	495093.785
DM-21	DM-20	11.1630	208047.452
DM-20	DM-19	10.8853	208028.099
DM-18	DM-17	30.2316	703022.114
DM-16	DM-14	25.3168	692210.229
DM-11	DM-10	70.5753	1719024.19
BD-02	BD-01	4.4307	16767.4467
BD-01	DM-11	4.7291	16793.2195
BD-05	BD-04	4.4328	16689.2609
BD-03	BD-02	4.4322	16724.4296
BE-10	BE-09	5.1765	152155.889
BE-09	BE-06	4.9621	136805.104
BE-06	BE-05	12.4586	368552.651
W-10	W-09	1.7509	25302.4407
W-06	W-07	5.1692	85644.6615
W-03	W-05	5.1623	85540.5301
W-02	W-03	5.1622	85449.4865
W-02	W-01	5.1623	85442.3848
W-13	W-12	1.0169	14894.5118
DM-04	DM-03	38.7504	1764239.51
BW-16	BW-14	3.3039	48061.6517
BW-09	BW-07	3.3020	47990.5587
BD-04	BD-03	4.4324	16708.4870
DM-17	DM-16	25.6281	692485.266
DM-19	DM-18	30.2288	703061.172
BE-02	BE-01	19.3574	495125.065
BE-05	BE-04	12.4724	368336.805
BE-04	BE-03	21.1289	497547.706
BE-03	BE-02	21.1248	497348.962
BE-13	BE-12	10.7902	162409.674
BE-12	BE-11	9.9471	161438.312
BE-11	BE-10	8.6295	159495.615
W-11	W-12	1.0115	14788.6971
W-11	W-07	1.0111	14805.8456
W-08	W-09	0.0638	5190.8673
W-08	W-07	0.1294	5250.8089
W-05	W-06	5.1689	85657.2049
OL-05	OL-04	41.8636	1011229.48
OL-04	OL-03	41.8634	1011020.82
OL-03	OL-02	41.8633	1010809.72
OL-02	OL-01	41.8633	1010586.30
DM-14	OL-01	25.4153	692108.087
OL-01	DM-11	66.9674	1702366.37
OL-09	OL-08	43.9551	1011989.55
OL-08	OL-07	43.1760	1011810.13
OL-07	OL-06	42.2700	1011581.86
OL-06	OL-05	41.8637	1011395.06
OL-13	OL-12	45.1160	1012661.06
OL-12	OL-11	44.5992	1012512.58
OL-11	OL-10	44.4205	1012334.48
OL-10	OL-09	43.8234	1012151.79
OL-14	OL-13	36.1063	815608.447
OL-16	OL-15	36.8451	816055.929
OL-15	OL-14	36.1115	815818.871
OL-19	OL-18	36.8684	816623.645
OL-18	OL-17	36.4854	816478.623
OL-17	OL-16	36.2366	816244.207
OL-20	OL-19	37.1136	816719.740
OL-22	OL-21	38.7854	817027.712
OL-21	OL-20	37.5273	816867.875
BD-13	OL-22	55.4272	850023.086
OL-13	BD-05	4.4335	16676.4420

```
##########################################################
# Table E16. New Conduit Information Section            #
#            Conduit Invert (IE) Elevation and Conduit  #
#            Maximum Water Surface (WS) Elevations      #
##########################################################
```

Conduit Name	Upstream Node	Downstream Node	IE Up	IE Dn	WS Up	WS Dn	Conduit Type
DM01	DM-02	DM-01	55.1200	51.7000	57.5831	53.7258	Circular
DM07	DM-08	DM-06	85.6800	63.1000	87.5211	74.4754	Circular
DM05	DM-06	DM-05	63.1000	58.9000	74.4754	70.0000	Circular
DM04	DM-05	DM-04	58.9000	56.6000	70.0000	61.7770	Circular
DM02	DM-03	DM-02	56.0200	55.1200	59.3550	57.5831	Circular
DM08	DM-09	DM-08	90.5000	85.6800	94.7256	87.5211	Circular
BW18	BW-18	BW-17	106.7600	106.1700	107.5000	107.0245	Circular
BW17	BW-17	BW-16	106.1700	105.6000	107.0245	106.3532	Circular
BW14	BW-14	BW-12	104.7600	103.7200	105.5733	104.4500	Circular
BW12	BW-12	BW-10	103.7200	102.9000	104.4500	103.5027	Circular
BW10	BW-10	BW-09	102.9000	101.8900	103.5027	102.6321	Circular
BW07	BW-07	BW-05	100.9200	98.9100	101.5175	99.6023	Circular
BW05	BW-05	BW-01	98.9100	98.0100	99.6023	98.3025	Circular
BW01	BW-01	DM-10	98.0100	91.7900	98.3025	95.6649	Circular
DM09	DM-10	DM-09	91.7900	90.5000	95.6649	94.7256	Circular
BE01	BE-01	DM-19	134.5200	120.1600	135.1455	121.4126	Circular
DM20	DM-21	DM-20	131.3500	129.5000	139.6700	135.6453	Circular
DM19	DM-20	DM-19	129.5000	120.1600	135.6453	121.4126	Circular
DM17	DM-18	DM-17	110.1400	105.0300	116.0837	113.2000	Circular
DM15	DM-16	DM-14	101.2600	97.9100	108.6943	100.3436	Circular
DM10	DM-11	DM-10	93.0700	91.7900	97.9950	95.6649	Circular
BD02	BD-02	BD-01	101.4700	98.3100	102.0791	98.9165	Circular
BD01	BD-01	DM-11	96.8200	93.0700	97.9931	97.9950	Circular
BD09	BD-09	BD-07	107.1600	106.5400	106.5400	106.5400	Circular
BD07	BD-07	BD-06	106.5600	105.2700	105.0100	105.0100	Circular
BD06	BD-06	BD-05	105.0100	103.7700	105.0100	104.7148	Circular
BD05	BD-05	BD-04	103.7700	103.4700	104.7148	104.3755	Circular
BD03	BD-03	BD-02	102.8300	101.4700	103.4362	102.0791	Circular
BE10	BE-10	BE-09	164.9200	162.9100	170.2400	166.9400	Circular
BE09	BE-09	BE-06	162.9100	161.4600	166.9400	167.4339	Circular
BE06	BE-06	BE-05	162.4600	157.4900	167.4339	162.5236	Circular
W09	W-10	W-09	107.7200	105.2800	109.3323	108.4470	Circular
W06	W-06	W-07	99.2500	99.1500	106.6858	107.2270	Circular
W04	W-03	W-05	100.1000	99.2300	104.5933	106.2544	Circular
W02	W-02	W-03	102.8000	100.0700	103.7235	104.5933	Circular
W01	W-02	W-01	102.3600	91.6500	102.7697	92.0589	Circular
W12	W-13	W-12	115.3000	102.7100	115.4865	107.3383	Circular
DM03	DM-04	DM-03	56.5600	56.0200	61.7770	59.3550	Circular
BW16	BW-16	BW-14	105.6000	104.7600	106.3532	105.5733	Circular
BW09	BW-09	BW-07	101.8900	100.9200	102.6321	101.5175	Circular
BD04	BD-04	BD-03	103.4700	102.8300	104.3755	103.4362	Circular
DM16	DM-17	DM-16	105.0300	101.2600	113.2000	108.6943	Circular
DM18	DM-19	DM-18	120.1600	110.1400	121.4126	116.0837	Circular
BE02	BE-02	BE-01	136.8800	134.5200	142.1700	135.1455	Circular
BE05	BE-05	BE-04	157.4900	156.8300	162.5236	160.6813	Circular
BE04	BE-04	BE-03	156.8300	156.1200	160.6813	157.5301	Circular
BE03	BE-03	BE-02	156.1200	136.8800	157.5301	142.1700	Circular
BE13	BE-13	BE-12	188.6100	178.3700	193.8900	183.9400	Circular
BE12	BE-12	BE-11	178.3700	171.4500	183.9400	178.9700	Circular
BE11	BE-11	BE-10	171.4500	164.9200	178.9700	170.2400	Circular
W11	W-11	W-12	102.9400	102.7500	107.2697	107.3383	Circular
W10	W-11	W-07	102.5800	100.2900	107.2697	107.2270	Circular
W08	W-08	W-09	108.2600	105.2600	108.3609	108.4470	Circular
W07	W-08	W-07	108.1200	100.4000	108.1263	107.2270	Circular
W05	W-05	W-06	99.2800	99.2500	106.2544	106.6858	Circular
OL05	OL-05	OL-04	103.4900	103.1400	106.8643	106.2144	Circular
OL04	OL-04	OL-03	103.1400	102.8900	106.2144	105.6591	Circular
OL03	OL-03	OL-02	102.8900	102.5800	105.6591	104.9715	Circular
OL02	OL-02	OL-01	102.5800	102.4300	104.9715	104.5362	Circular
L121	DM-14	OL-01	94.7000	93.9300	100.3436	100.0612	Circular
L122	OL-01	DM-11	93.9300	93.0700	100.0612	97.9950	Circular
OL09	OL-09	OL-08	104.3200	104.1700	108.8373	108.4873	Circular
OL08	OL-08	OL-07	104.1700	103.8700	108.4873	107.8094	Circular
OL07	OL-07	OL-06	103.8700	103.5800	107.8094	107.1540	Circular
OL06	OL-06	OL-05	103.5800	103.4900	107.1540	106.8643	Circular
OL13	OL-13	OL-12	105.1500	105.0300	110.7002	110.4423	Circular
OL12	OL-12	OL-11	105.0300	104.7800	110.4423	109.8808	Circular
OL11	OL-11	OL-10	104.7800	104.5600	109.8808	109.3911	Circular
OL10	OL-10	OL-09	104.5600	104.3200	109.3911	108.8373	Circular
OL14	OL-14	OL-13	105.2400	105.1500	110.8274	110.7002	Circular
OL16	OL-16	OL-15	105.9500	105.7700	111.7557	111.5198	Circular
OL15	OL-15	OL-14	105.7700	105.2400	111.5198	110.8274	Circular
OL19	OL-19	OL-18	106.8000	106.7000	112.8542	112.7273	Circular
OL18	OL-18	OL-17	106.7000	106.3800	112.7273	112.3051	Circular
OL17	OL-17	OL-16	106.3800	105.9500	112.3051	111.7557	Circular
OL20	OL-20	OL-19	106.9700	106.8000	113.0898	112.8542	Circular
OL22	OL-22	OL-21	107.5000	107.2700	113.7600	113.4706	Circular
OL21	OL-21	OL-20	107.2700	106.9700	113.4707	113.0898	Circular
L140	BD-13	OL-22	107.6700	107.5000	114.3393	113.7600	Circular
Overflow	OL-13	BD-05	106.8000	106.3900	110.7002	107.2715	Circular

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*====================================================*
| Table E20 - Junction Flooding and Volume Listing.   |
|             The maximum volume is the total volume  |
|             in the node including the volume in the |
|             flooded storage area. This is the max   |
|             volume at any time. The volume in the   |
|             flooded storage area is the total volume|
|             above the ground elevation, where the   |
|             flooded pond storage area starts.       |
*====================================================*
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Junction Name	Surcharged Time (min)	Flooded Time(min)	Out of 1D-System (Flooded Volume)	Maximum Volume	Passed to 2D cell OR Volume Stored in allowed Flood Pond of 1D-System
DM-02	0.0000	0.0000	0.0000	30.9513	0.0000
DM-01	0.0000	0.0000	0.0000	25.4563	0.0000
DM-03	149.5556	0.0000	0.0000	41.9081	0.0000
DM-05	398.6111	127.4722	169407.7024	139.4826	0.0000
DM-06	231.3333	0.0000	0.0000	142.9435	0.0000
DM-08	0.0000	0.0000	0.0000	23.1357	0.0000
DM-09	42.9417	0.0000	0.0000	53.0990	0.0000
DM-10	34.8583	0.0000	0.0000	48.6922	0.0000
BW-01	0.0000	0.0000	0.0000	3.6761	0.0000
BW-05	0.0000	0.0000	0.0000	8.7000	0.0000
BW-07	0.0000	0.0000	0.0000	7.5078	0.0000
BW-10	0.0000	0.0000	0.0000	7.5741	0.0000
BW-12	0.0000	0.0000	0.0000	9.1733	0.0000
BW-14	0.0000	0.0000	0.0000	10.2199	0.0000
BW-17	0.0000	0.0000	0.0000	10.7376	0.0000
BW-18	0.0000	0.0000	0.0000	9.2983	0.0000
DM-11	42.5667	0.0000	0.0000	61.8873	0.0000
DM-14	29.3333	0.0000	0.0000	70.9180	0.0000
DM-17	73.3500	38.1000	10460.4053	102.6642	0.0000
DM-19	0.0000	0.0000	0.0000	15.7399	0.0000
BE-05	99.3250	0.0000	0.0000	63.2524	0.0000
DM-20	36.3000	0.0000	0.0000	77.2215	0.0000
DM-21	44.3500	26.7417	4488.9534	104.5491	0.0000
BD-01	0.0000	0.0000	0.0000	14.7411	0.0000
BD-02	0.0000	0.0000	0.0000	7.6536	0.0000
BD-03	0.0000	0.0000	0.0000	7.6171	0.0000
BD-05	0.0000	0.0000	0.0000	11.8723	0.0000
BD-06	0.0000	0.0000	0.0000	0.0000	0.0000
BD-07	0.0000	0.0000	0.0000	0.0000	0.0000
BD-09	0.0000	0.0000	0.0000	0.0000	0.0000
BD-13	51.3333	0.0000	0.0000	83.8062	0.0000
BE-06	59.7167	0.0000	0.0000	75.0677	0.0000
BE-09	68.4917	50.4667	15207.3600	50.6410	0.0000
BE-13	24.9167	12.0250	181.0354	66.3485	0.0000
W-10	37.4167	0.0000	0.0000	20.2604	0.0000
W-07	1361.4583	0.0000	0.0000	101.4952	0.0000
W-13	0.0000	0.0000	0.0000	2.3432	0.0000
W-05	1370.6667	0.0000	0.0000	88.2686	0.0000
W-03	1363.1250	0.0000	0.0000	56.9649	0.0000
W-02	0.0000	0.0000	0.0000	5.1477	0.0000
W-01	0.0000	0.0000	0.0000	5.1382	0.0000
DM-04	384.0000	0.0000	0.0000	65.5563	0.0000
BW-16	0.0000	0.0000	0.0000	9.4644	0.0000
BW-09	0.0000	0.0000	0.0000	9.3246	0.0000
BD-04	0.0000	0.0000	0.0000	11.3782	0.0000
DM-16	97.5667	0.0000	0.0000	93.4199	0.0000
DM-18	48.1417	0.0000	0.0000	74.6886	0.0000
BE-01	0.0000	0.0000	0.0000	7.8596	0.0000
BE-02	73.6750	25.4750	1970.1441	66.4741	0.0000
BE-03	0.0000	0.0000	0.0000	17.7188	0.0000
BE-04	81.0250	0.0000	0.0000	48.3957	0.0000
BE-10	78.9000	45.2667	7229.2162	66.8511	0.0000
BE-11	50.2333	25.6917	1871.6298	94.4963	0.0000
BE-12	32.5750	21.3333	932.1201	69.9926	0.0000
W-12	192.1111	0.0000	0.0000	58.1590	0.0000
W-11	107.1881	0.0000	0.0000	58.9310	0.0000
W-09	1376.0417	1355.0833	19695.8888	40.0478	0.0000
W-08	0.0000	0.0000	0.0000	0.0792	0.0000
W-06	1371.0417	0.0000	0.0000	93.4385	0.0000
OL-02	0.0000	0.0000	0.0000	30.0519	0.0000
OL-03	0.0000	0.0000	0.0000	34.7963	0.0000
OL-04	22.4500	0.0000	0.0000	38.6335	0.0000
OL-05	37.5500	0.0000	0.0000	42.4021	0.0000
OL-01	0.0000	0.0000	0.0000	77.0448	0.0000
OL-09	47.0833	0.0000	0.0000	56.7639	0.0000
OL-08	45.5083	0.0000	0.0000	54.2512	0.0000
OL-07	42.6833	0.0000	0.0000	49.5024	0.0000
OL-06	40.0000	0.0000	0.0000	44.9106	0.0000
OL-13	52.5000	0.0000	0.0000	69.7444	0.0000
OL-12	51.9750	0.0000	0.0000	68.0114	0.0000
OL-11	50.5167	0.0000	0.0000	64.0966	0.0000
OL-10	49.0917	0.0000	0.0000	60.7076	0.0000
OL-14	52.6000	0.0000	0.0000	70.2112	0.0000
OL-15	52.4667	0.0000	0.0000	72.2522	0.0000
OL-16	52.4667	0.0000	0.0000	72.9548	0.0000
OL-17	52.0833	0.0000	0.0000	74.4546	0.0000
OL-18	51.9000	0.0000	0.0000	75.7387	0.0000
OL-19	51.8167	0.0000	0.0000	76.0766	0.0000
OL-20	51.9250	0.0000	0.0000	76.9010	0.0000
OL-21	51.7083	0.0000	0.0000	77.9184	0.0000
OL-22	51.6083	35.9167	32876.8057	78.6632	0.0000

ATTACHMENT 3
City of Arlington Stormwater Projects

Problem No.:	1	Basin ID:	DT-B-1
Primary Issue(s)	Local flooding		
Problem Description	Apparent surcharging along First Street between McLeod and Lenore Avenues, Lenore Avenue between First and Second Streets; and along French Avenue between First and Third Streets (variable pipe diameters in French Avenue);		
Information Sources	1995, 1999, and 2003 assessments; residual areas of Project 11, Downtown Drainage System Improvements, not addressed by the Olympic Avenue renovation in 2007; also Project 201		

Problem No.:	2	Basin ID:	DT-B-2
Primary Issue(s)	Conveyance limitations		
Problem Description	Trunk line along SR9 surcharges at manholes north of Burke Avenue; downstream-most pipe segment to outfall is old and outlet is crushed; requires realignment in conjunction with separate wetland treatment project		
Information Sources	1995, 1999, and 2003 assessments; residual areas of Project 12, Downtown Outfall Trunk Line		

Upper Mainstem Stillaguamish Basin

Problem Identified:
This project is intended to addresses capacity issues along this stretch of the drainage system
Proposed Project:
Downtown Drainage System Improvements, provides for collection of stormwater along Olympic Avenue from Division to East First Street, then up E First Street to Lenore Avenue and within a two block section along French Avenue from E First Street to Third Street.

ITEM NO.	ITEM	Quantity	Units	Unit Price	Total Price	2006 Unit Price	2006 Total Price
11	**Downtown Drainage System Improvements**						
1	Traffic Safety Control Devices	1	LS	$20,000	$20,000	$22,510	$22,510
2	Remove Manhole	5	EA	$500	$2,500	$563	$2,814
3	Remove Drainage Pipe	500	LF	$10	$5,000	$11	$5,628
4	Sawcut Existing Pavement (RSM)	6,580	LF	$2.00	$13,160	$2	$14,812
5	Remove & Dispose of AC Paving*	1,760	SY	$3.50	$6,160	$4	$6,933
6	Roadway Excavation, w/ Haul*	6,743	CY	$8.50	$57,316	$10	$64,509
7	Temporary Patch	301	Ton	$45	$13,545	$51	$15,245
8	AC Paving Class A*	301	Ton	$38	$11,438	$43	$12,874
9	Controlled Density Fill*	2,117	CY	$65	$137,605	$73	$154,876
10	Storm Sewer Pipe (21-inch)*	880	LF	$30	$26,400	$34	$29,713
11	Storm Sewer Pipe (24-inch)*	320	LF	$40	$12,800	$45	$14,407
12	Storm Sewer Pipe (27-inch)	990	LF	$48	$47,520	$54	$53,484
13	Storm Sewer Pipe (30-inch)*	0	LF	$52	$0	$59	$0
14	Storm Sewer Pipe (36-inch)*	2,470	LF	$50	$123,500	$56	$139,000
15	Storm Sewer Pipe (48-inch)	0	LF	$85	$0	$96	$0
16	Reconnect Existing Catch Basins	20	EA	$500	$10,000	$563	$11,255
17	Type 2 - 54" Catch Basins*	5	EA	$2,500	$12,500	$2,814	$14,069
18	Type 2 - 60" Catch Basins*	0	EA	$3,200	$0	$3,602	$0
19	Type 2 - 72" Catch Basins*	9	EA	$3,800	$34,200	$4,277	$38,492
20	Type 2 - 96" Catch Basins	0	EA	$7,500	$0	$8,441	$0
21	Relocate Existing Utilities	1	LS	$10,000	$10,000	$11,255	$11,255
22	Trench Safety	4,660	LF	$2	$9,320	$2	$10,490
New Items							
23	SPCC Plan, Silt Fence, & TESC Measures	4,660	LF	$5	$23,300	$6	$28
24	Traffic Control Labor	800	Hours	$35	$28,000	$39	$1,379
	Subtotal				**$604,264**		**$623,772**
25	Mobilization/Demob/Overhead & Profit	1	LS	10%	$60,426	10%	$62,377
26	Contingency	1	LS	30%	$199,407	30%	$205,845
27	Sales Tax	1	LS	8.5%	$73,448	8.5%	$75,820
	Estimated Construction Cost				**$937,545**		**$967,814**
28	Eng'r, Permitting, Legal, Admin (25%)	1	LS	25%	$234,386	25%	$241,953
29	Surveying (Design, Const. & As-built)	1	LS	4%	$37,502	4%	$38,713
30	Construction Management (4%)	1	LS	4%	$37,502	4%	$38,713
	CITY'S ESTIMATE (2004)				**$1,294,000**		
	TOTAL 2002 DOLLARS				**$1,246,935**		
	TOTAL 2006 DOLLARS						**$1,287,192**

Notes:
1 Quantities based on previous take-off in 1995 Comprehensive Plan with New Items.
2 (*) Indicates Unit Prices from 67th Ave. NE Bid Tab opened March 15, 2001.
3 (RSM) Indicates Unit Prices from RS Means.
4 Assumes a single contractor to perform all projects in the area under one contract.
5 See accompanying text for more detailed description.

Upper Mainstem Stillaguamish Basin

Problem Identified:
Listed in the 1995 Stormwater Master Plan, this project is intended to addresses capacity issues along this stretch of the drainage system.
Proposed Project:
The Downtown Outfall Trunk Line, includes an existing outfall to the Stillaguamish River. This outfall trunkline would be relocated (the outfall location to the river would probably not change but would be improved). The new trunk line would proceed down Division Street from Olympic due west across SR-9 to a new stormwater treatment facility.

ITEM NO.	ITEM	Quantity	Units	Unit Price	Total Price	2006 Unit Price	2006 Total Price
12	**Outfall Trunk Line Improvements**						
1	Traffic Safety Control Devices	1	LS	$7,500	$7,500	$8,441	$8,441
2	Remove Manhole	6	EA	$500	$3,000	$563	$3,377
3	Remove Drainage Pipe	550	LF	$10	$5,500	$11	$6,190
4	Sawcut Existing Pavement (RSM)	1,100	LF	$2.00	$2,200	$2	$2,476
5	Remove & Dispose of AC Paving*	336	SY	$3.50	$1,176	$4	$1,324
6	Roadway Excavation, w/ Haul*	896	CY	$8.50	$7,616	$10	$8,572
7	Temporary Patch	57	Ton	$45	$2,565	$51	$2,887
8	AC Paving Class A*	57	Ton	$38	$2,166	$43	$2,438
9	Controlled Density Fill*	894	CY	$65	$58,110	$73	$65,403
10	Storm Sewer Pipe (21-inch)*	0	LF	$30	$0	$34	$0
11	Storm Sewer Pipe (24-inch)*	0	LF	$40	$0	$45	$0
12	Storm Sewer Pipe (27-inch)	0	LF	$48	$0	$54	$0
13	Storm Sewer Pipe (30-inch)*	0	LF	$52	$0	$59	$0
14	Storm Sewer Pipe (36-inch)*	0	LF	$50	$0	$56	$0
15	Storm Sewer Pipe (48-inch)	550	LF	$85	$46,750	$96	$52,618
16	Reconnect Existing Catch Basins	2	EA	$500	$1,000	$563	$1,126
17	Type 2 - 54" Catch Basins*	5	EA	$2,500	$12,500	$2,814	$14,069
18	Type 2 - 60" Catch Basins*	0	EA	$3,200	$0	$3,602	$0
19	Type 2 - 72" Catch Basins*	2	EA	$3,800	$7,600	$4,277	$8,554
20	Type 2 - 96" Catch Basins	0	EA	$7,500	$0	$8,441	$0
21	Relocate Existing Utilities	1	LS	$2,500	$2,500	$2,814	$2,814
22	Trench Safety	550	LF	$2	$1,100	$2	$1,238
New Items							
23	SPCC Plan, Silt Fence, & TESC Measures	550	LF	$5	$2,750	$6	$3,095
24	Traffic Control Labor	200	Hours	$35	$7,000	$39	$7,879
	Subtotal				**$171,033**		**$192,499**
25	Mobilization/Demob/Overhead & Profit	1	LS	10%	$17,103	10%	$19,250
26	Contingency	1	LS	30%	$56,441	30%	$63,525
27	Sales Tax	1	LS	8.5%	$20,789	8.5%	$23,398
	Estimated Construction Cost				**$265,366**		**$298,672**
28	Eng'r, Permitting, Legal, Admin (25%)	1	LS	25%	$66,342	25%	$74,668
29	Surveying (Design, Const. & As-built)	1	LS	4%	$10,615	4%	$11,947
30	Construction Management (4%)	1	LS	4%	$10,615	4%	$11,947
	CITY'S ESTIMATE (2004)				**$290,000**		
	TOTAL 2002 DOLLARS				**$352,937**		
	TOTAL 2006 DOLLARS						**$397,234**

Notes:
1 Quantities based on previous take-off in 1995 Comprehensive Plan with New Items.
2 (*) Indicates Unit Prices from 67th Ave. NE Bid Tab opened March 15, 2001.
3 (RSM) Indicates Unit Prices from RS Means.
4 Assumes a single contractor to perform all projects in the area under one contract.
5 See accompanying text for more detailed description.

Upper Mainstem Stillaguamish Basin

Problem Identified:
The storm drain system experiences surcharging in several locations during intense rainfall, resulting in localized flooding, where flows surface from catchbasins to flow down slope across roads and properties.
Proposed Project:
The project will upgrade pipe size and slopes trough the basin.

ITEM NO.	ITEM	Quantity	Units	Unit Price	Total Price	2006 Unit Price	2006 Total Price
201	**Downtown Storm Drain Facility (E Maple St, E 1st St, N Lenore Ave, N French Ave, E Division St)**						
1	Traffic Safety Control Devices	12	LS	$20,000	$240,000	$22,510	$270,122
2	Remove Manhole	5	EA	$500	$2,500	$563	$2,814
3	Remove Drainage Pipe	200	LF	$10	$2,000	$11	$2,251
4	Sawcut Existing Pavement (RSM)	2750	LF	$2.00	$5,500	$2	$6,190
5	Remove & Dispose of AC Paving*	900	SY	$3.50	$3,150	$4	$3,545
6	Roadway Excavation, w/ Haul*	4000	CY	$8.50	$34,000	$10	$38,267
7	Temporary Patch	180	Ton	$45	$8,100	$51	$9,117
8	AC Paving Class A*	180	Ton	$38	$6,840	$43	$7,698
9	Controlled Density Fill*	1500	CY	$65	$97,500	$73	$109,737
10	Storm Sewer Pipe (21-inch)*	0	LF	$30	$0	$34	$0
11	Storm Sewer Pipe (24-inch)*	0	LF	$40	$0	$45	$0
12	Storm Sewer Pipe (27-inch)	2250	LF	$48	$108,000	$54	$121,555
13	Storm Sewer Pipe (30-inch)*	0	LF	$52	$0	$59	$0
14	Storm Sewer Pipe (36-inch)*	500	LF	$50	$25,000	$56	$28,138
15	Storm Sewer Pipe (48-inch)	0	LF	$85	$0	$96	$0
16	Reconnect Existing Catch Basins	9	EA	$500	$4,500	$563	$5,065
17	Type 2 - 54" Catch Basins*	0	EA	$2,500	$0	$2,814	$0
18	Type 2 - 60" Catch Basins*	0	EA	$3,200	$0	$3,602	$0
19	Type 2 - 72" Catch Basins*	0	EA	$3,800	$0	$4,277	$0
20	Type 2 - 96" Catch Basins	0	EA	$7,500	$0	$8,441	$0
21	Relocate Existing Utilities	1	LS	$10,000	$10,000	$11,255	$11,255
22	Trench Safety	2,750	LF	$2	$5,500	$2	$6,190
23	SPCC Plan, Silt Fence, & TESC Measures	3,000	LF	$5	$15,000	$6	$16,883
24	Traffic Control Labor	350	Hours	$35	$12,250	$39	$13,787
	Subtotal				**$579,840**		**$652,615**
25	Mobilization/Demob/Overhead & Profit	1	LS	10%	$57,984	10%	$65,262
26	Contingency	1	LS	30%	$191,347	30%	$215,363
27	Sales Tax	1	LS	8.5%	$70,480	8.5%	$79,325
	Estimated Construction Cost				**$899,651**		**$1,012,565**
28	Eng'r, Permitting, Legal, Admin (15%)	1	LS	15%	$134,948	15%	$151,885
29	Surveying (Property, Design & Const.)	1	LS	4%	$35,986	4%	$40,503
30	Construction Management (4%)	1	LS	4%	$35,986	4%	$40,503
	CITY'S ESTIMATE (2003)						
	TOTAL 2002 DOLLARS				**$1,106,570**		
	TOTAL 2006 DOLLARS						**$1,245,455**

Notes:
1 Quantities based on discussions with City of Arlington staff 12/10/2002.
2 (*) Indicates Unit Prices from 67th Ave. NE Bid Tab opened March 15, 2001.
3 (RSM) Indicates Unit Prices from RS Means.
4 Assumes a single contractor to perform all projects in the area under one contract.
5 See accompanying text for more detailed description.