

APPENDIX C
1320 ZONE WATER SYSTEM ANALYSIS

COMPUTER RUN #3

MODEL OF ULTIMATE 1320 ZONE
(SHOWN IN EXHIBIT C)

THREE CONDITIONS:

- 1) MAXIMUM DAY DEMANDS PLUS A 1,500 GPM
FIRE FLOW AT NODE 813
- 2) PEAK HOUR DEMANDS (1.8 X MAX. DAY)
- 3) AVERAGE DAY DEMANDS (0.5 X MAX. DAY)

FLOWRATE IS EXPRESSED IN GPM AND PRESSURE IN PSIG

A SUMMARY OF THE ORIGINAL DATA FOLLOWS

PIPE NO.	NODE NOS.	LENGTH (FEET)	DIAMETER (INCHES)	ROUGHNESS	MINOR LOSS K	FIXED GRADE
800	925 800	1250.0	16.0	125.0	.00	
801	800 810	400.0	16.0	125.0	.00	
803	810 813	400.0	16.0	125.0	.00	
806	820 840	750.0	16.0	125.0	.00	
807	813 814	800.0	16.0	125.0	.00	
808	814 820	475.0	16.0	125.0	.00	
900	0 905	100.0	14.0	125.0	.00	1320.00
901	905 910	1400.0	12.0	125.0	.00	
902	905 915	2900.0	16.0	125.0	.00	
903	915 920	2200.0	16.0	125.0	.00	
904	920 925	1400.0	16.0	125.0	.00	
906	910 912	2100.0	16.0	125.0	.00	

JUNCTION NUMBER	DEMAND	ELEVATION	CONNECTING PIPES
800	13.00	1020.00	800 801
810	28.00	1060.00	801 803
813	1543.00	1095.00	803 807
814	50.00	1055.00	807 808
820	31.00	1020.00	806 808
840	744.00	1100.00	806
905	.00	883.00	900 901 902
910	342.00	966.00	901 906
912	102.00	1100.00	906
915	102.00	950.00	902 903
920	.00	980.00	903 904
925	.00	903.00	800 904

OUTPUT SELECTION: ALL RESULTS ARE OUTPUT EACH PERIOD
 6 VALUES ARE OUTPUT FOR MAXIMUM AND MINIMUM PRESSURES

THIS SYSTEM HAS 12 PIPES WITH 12 JUNCTIONS , 0 LOOPS AND 1 FGNS

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .00000

THE SUMMIT

1320 ZONE

605-006

MAXIMUM DAY DEMANDS PLUS 1500 GPM FIRE FLOW AT NODE 813

BASED ON LATEST TENTATIVE MAPS FOR THE SUMMIT;

SUM1320

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/100
800	925 800	2409.00	4.28	.00	.00	3.84	3.42
801	800 810	2396.00	1.36	.00	.00	3.82	3.39
803	810 813	2368.00	1.33	.00	.00	3.78	3.32
806	820 840	744.00	.29	.00	.00	1.19	.39
807	813 814	825.00	.38	.00	.00	1.32	.47
808	814 820	775.00	.20	.00	.00	1.24	.42
900	0 905	2955.00	.96	.00	.00	6.16	9.57
901	905 910	444.00	.85	.00	.00	1.26	.61
902	905 915	2511.00	10.72	.00	.00	4.01	3.70
903	915 920	2409.00	7.53	.00	.00	3.84	3.42
904	920 925	2409.00	4.79	.00	.00	3.84	3.42
906	910 912	102.00	.02	.00	.00	.16	.01

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
800	13.00	1291.72	1020.00	117.75
810	28.00	1290.37	1060.00	99.83
813	1543.00	1289.04	1095.00	84.08
814	50.00	1288.67	1055.00	101.25
820	31.00	1288.47	1020.00	116.34
840	744.00	1288.17	1100.00	81.54
905	.00	1319.04	883.00	188.95
910	342.00	1318.19	966.00	152.62
912	102.00	1318.17	1100.00	94.54
915	102.00	1308.32	950.00	155.27
920	.00	1300.79	980.00	139.01
925	.00	1296.00	903.00	170.30

MAXIMUM PRESSURES

905	.00	1319.04	883.00	188.95
925	.00	1296.00	903.00	170.30
915	102.00	1308.32	950.00	155.27
910	342.00	1318.19	966.00	152.62
920	.00	1300.79	980.00	139.01
800	13.00	1291.72	1020.00	117.75

MINIMUM PRESSURES

840	744.00	1288.17	1100.00	81.54
813	1543.00	1289.04	1095.00	84.08
912	102.00	1318.17	1100.00	94.54
810	28.00	1290.37	1060.00	99.83
814	50.00	1288.67	1055.00	101.25
820	31.00	1288.47	1020.00	116.34

THE NET SYSTEM DEMAND = 2955.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
900	2955.00

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 2955.00
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE DEMANDS ARE CHANGED FROM ORIGINAL VALUES BY A FACTOR = 1.80

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
813	77.40
900	-2628.00

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .000000

PEAK HOUR DEMANDS

1.8 X MAX. DAY

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/10
800	925 800	1636.20	2.09	.00	.00	2.61	1.6
801	800 810	1612.80	.65	.00	.00	2.57	1.6
803	810 813	1562.40	.61	.00	.00	2.49	1.5
806	820 840	1339.20	.87	.00	.00	2.14	1.1
807	813 814	1485.00	1.12	.00	.00	2.37	1.4
808	814 820	1395.00	.59	.00	.00	2.23	1.2
900	0 905	2619.00	.77	.00	.00	5.46	7.6
901	905 910	799.20	2.52	.00	.00	2.27	1.8
902	905 915	1819.80	5.90	.00	.00	2.90	2.0
903	915 920	1636.20	3.68	.00	.00	2.61	1.8
904	920 925	1636.20	2.34	.00	.00	2.61	1.6
906	910 912	183.60	.06	.00	.00	.29	.0

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
800	23.40	1305.22	1020.00	123.60
810	50.40	1304.57	1060.00	105.98
813	77.40	1303.96	1095.00	90.55
814	90.00	1302.84	1055.00	107.40
820	55.80	1302.25	1020.00	122.31
840	1339.20	1301.38	1100.00	87.27
905	.00	1319.23	883.00	189.03

910	615.60	1316.71	966.00	151.98
912	183.60	1316.65	1100.00	93.88
915	183.60	1313.33	950.00	157.44
920	.00	1309.65	980.00	142.85
925	.00	1307.31	903.00	175.20

MAXIMUM PRESSURES

905	.00	1319.23	883.00	189.03
925	.00	1307.31	903.00	175.20
915	183.60	1313.33	950.00	157.44
910	615.60	1316.71	966.00	151.98
920	.00	1309.65	980.00	142.85
800	23.40	1305.22	1020.00	123.60

MINIMUM PRESSURES

840	1339.20	1301.38	1100.00	87.27
813	77.40	1303.96	1095.00	90.55
912	183.60	1316.65	1100.00	93.88
810	50.40	1304.57	1060.00	105.98
814	90.00	1302.84	1055.00	107.40
820	55.80	1302.25	1020.00	122.31

THE NET SYSTEM DEMAND = 2619.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
900	2619.00

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 2619.00

THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE DEMANDS ARE CHANGED FROM ORIGINAL VALUES BY A FACTOR = .50

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
813	21.50
900	-730.00

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .00000

AVERAGE DAY DEMANDS (0.5 X MAX. DAY)

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/100'
800	925 800	454.50	.19	.00	.00	.73	.19
801	800 810	446.00	.06	.00	.00	.71	.18
803	810 813	434.00	.06	.00	.00	.69	.18
806	820 840	372.00	.08	.00	.00	.59	.17
807	813 814	412.50	.10	.00	.00	.66	.18
808	814 820	387.50	.06	.00	.00	.62	.17
900	0 905	727.50	.07	.00	.00	1.52	.71
901	905 910	222.00	.24	.00	.00	.63	.17
902	905 915	505.50	.55	.00	.00	.81	.19
903	915 920	454.50	.34	.00	.00	.73	.18
904	920 925	454.50	.22	.00	.00	.73	.18
906	910 912	51.00	.01	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
800	6.50	1318.62	1020.00	129.40
810	14.00	1318.56	1060.00	112.04
813	21.50	1318.50	1095.00	96.85
814	25.00	1318.40	1055.00	114.14
820	15.50	1318.34	1020.00	129.28
840	372.00	1318.26	1100.00	94.58
905	.00	1319.93	883.00	189.34
910	171.00	1319.69	966.00	153.27
912	51.00	1319.69	1100.00	95.20
915	51.00	1319.38	950.00	160.06
920	.00	1319.03	980.00	146.92
925	.00	1318.82	903.00	180.19

MAXIMUM PRESSURES

905	.00	1319.93	883.00	189.34
925	.00	1318.82	903.00	180.19
915	51.00	1319.38	950.00	160.06
910	171.00	1319.69	966.00	153.27
920	.00	1319.03	980.00	146.92
800	6.50	1318.62	1020.00	129.40

MINIMUM PRESSURES

840	372.00	1318.26	1100.00	94.58
912	51.00	1319.69	1100.00	95.20
813	21.50	1318.50	1095.00	96.85
810	14.00	1318.56	1060.00	112.04
814	25.00	1318.40	1055.00	114.14
820	15.50	1318.34	1020.00	129.28

THE NET SYSTEM DEMAND = 727.50

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
900	727.50

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 727.50

THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00