

H₂O Engineering Consulting Associates, Inc.

223 Middlesex Turnpike Burlington, MA 01803
Telephone (617) 270-6611, 270-7046 Fax 270-6828

December 20, 1994

Mr. John W. Boland
Director
Department of Public Works
114 Cordaville Road
Southborough, MA 01772

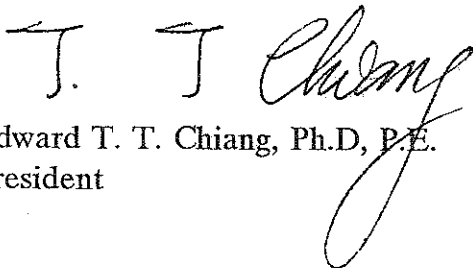
Dear Mr. Boland:

In accordance with our agreement, H₂O Engineering Consulting Associates, Inc., is pleased to submit the following report on the Water Distribution System Analysis for the Town of Southborough. The purpose of the report is to study the impact of the increased demand on the Water Distribution System due to the proposed Affordable Housing Project, and to recommend possible improvements to the system.

The report includes three possible alternatives for increasing the water supply to meet the new demand of the proposed housing project. Along with the alternatives, we also estimate the costs of each alternative for your consideration. The alternatives have been optimized so that the cost of each alternative would be minimal.

We thank you for offering H₂O Engineering Consulting Associates, Inc., the opportunity to serve the Town of Southborough. We would also thank to Mr. Donald Buzzell, who has greatly assisted H₂O with the gathering of data to complete this report in a timely manner.

Very truly yours,



Edward T. T. Chiang, Ph.D., P.E.
President

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I. INTRODUCTION

This report is an engineering study to evaluate the capacity of Southborough's Water Distribution System for meeting the required demand due to the proposed Brentwood Housing Project, along with recommendations of necessary improvements to the Water Distribution System of the Town of Southborough. The proposed Brentwood Housing Project in the Southwest section of the Town will increase the water demand to the system dramatically.

Recently, an affordable housing project (known as "Brentwood") was proposed to be built in the Southwest of the Town of Southborough, between the intersection of the Massachusetts Turnpike and the Parkerville Road. This housing project will have about 170 units of town house style apartment.

Once the housing project is built and occupied by its residents, it will increase the domestic water usage and the required fire flow. The existing system must supply both water quantity and pressure at the site of the project. This need has led to the evaluation of the system's ability and upgrading, if necessary, to satisfy these additional demands.

This report consists of three parts. The first part describes the general condition of the existing system and facilities including piping system, carrying capacity, water storages and pump stations. The second part, the effect of the proposed project's demand on the existing system is evaluated through a digital computer model. Due to the limitation of the system capacity to meet this new demand, modifications are added for improving the system. Finally, the cost estimations of these improvement alternatives are provided to the Water Division for further considerations.

II. GENERAL CONDITIONS OF THE EXISTING SYSTEM

1. Water Supply Sources:

The Town currently obtains water from the Metropolitan District Commission's Pressure Aqueduct off two pump stations. The first pump station is Boland Pump Station, located Northwesterly of the town, off Northborough Road. This pump station's capacity is about 1,100 gallons per minute. Basically, this pump station supplies the West and Southwest sections of the Town and the Tara Storage Tank.

The second pump station, Hosmer Pump Station, is located in the Northeast section of the Town. This pump station can withdraw 1,000 gallons per minute from Shaft No. 3 of the Metropolitan District Commission's Hulman Pressure Aqueduct. The Hosmer Pump Station serves the residents and fills all stand pipes in the East section of the Town.

Some areas in the Town use private wells for water supply. In those areas, watermains have not been installed. Therefore, the water division does not supply water for the complete population of the Town; thus, the water demand of the private well areas is not consider in this report.

2. Water Storages:

Presently, the Town has three water storage tanks. Total storage of these tanks is 2.01 million gallons. The dimensions and technical data of the storage tanks are listed in table I - Water Storage Facilities.

The Tara Reservoir is located on Tara Road in the Northwest section of the town. It is about 7,500 feet south of the Boland Pump Station. All watermain connecting from the Boland Pump Station to the Tara Reservoir are 12 inch pipes.

The Clear Hill Stand Pipe is about 4,700 feet Northwest of Hosmer Pump Station, and it is connected to the pump station by 10 inch and 12 inch pipes.

The Oak Hill Stand Pipe is about 8000 feet south of Hosmer Pump Station. This stand pipe is basically filled up by the Hosmer Pump Station through three 12 inch, 8 inch and 12 inch pipe sections. Due to the limited storage, this stand pipe could assist the water demand in the local area only.

Previously, the system also had a small elevated tank at Atwood Street. The tank had storage of 150,000 gallons. Since the tank was so small and old, the maintenance cost is not effective. The Water Division removed this tank in 1990.

Table I - Water Storage Facilities

Name	Tara Reservoir	Clear Hill Stand pipe	Oak Hill Stand pipe
Diameter (ft)	67	40	25
Height (ft)	48	42.5	75
Capacity (gallon)	1,300,000	4600,000	275,000
Overflow Elev.	515	493	493
Base Elev.	467	451	418
High Water Elev.	489	489.5	480
High water level capacity (gallon)	595,000	362,000	264,000
Telemeter Gradient Maintained Avail.	486.7 ft 515,000 gallons	486.6 ft 334,000 gallons	487 ft 253,000 gallons
Normal daily Min.	12 ft. 325,000 gallons	28.5 ft 268,000 gallons	62 ft 227,000 gallons

3. Water Distribution System Associated with the Proposed Project:

In general, the Town's water distribution system was built in the 1960's with some additional improvements to the system in the 1970's through 1990's. Presently, the system can satisfy the water demand in the town. Furthermore, the fireflow is in good condition in most areas of the town. However, some areas still do not have adequate fire flow (see attached Hydrant Flow Data Summary, Test No. 4b, 5 and 8).

Based on the system map obtained from the Southborough Water Division, the water supply for the portion south of the Massachusetts Turnpike is by two watermains. The first main is an 8 inch watermain in Parkerville Road. This watermain is closed to the Tara Reservoir and Boland Pump Station. These facilities feed the Parkerville watermain by 12 inch diameter pipes with more looping; therefore, it would provide the major portion of the water supply to the proposed area. The second water main is the 8 inch watermain on Highland Street. This watermain is supplied by the Hosmer Pump Station and Oak Hill Stand Pipe through the long 8 inch water main along Woodland Road. However, due to the sizes and the long distances of piping from both the Hosmer Pump Station and Oak Hill Sand Pipe, the pressure and flow in this Woodland watermain to supply the proposed housing project area is limited.

The proposed project will be located in the area where most piping is old 8 inch or 6 inch diameter pipes. A proposed service connection will be, approximately, at the Parkerville Road between Prentis Street and Richards Road. Due to the lack of proposed development site plan, it is estimated that the distance between the project site and the Parkerville Road would be about 1,600 feet.

According to the previous flow tests (done in March 1990), the maximum available fireflow around the Parkerville Road area is about 3,000 gallon per minute in steady state (see Hydrant Flow Data Summary Table, test No.12 and No. 11). At that time, the Atwood Elevated Tank was still in service. It should be noted that the fireflow test was done in a very short time. With the limited storage capacity of the Atwood Elevated Tank, the fireflow could empty this tank in less than 1 hour. As for the proposed housing project, the required fire flow is 3,500 gallons per minute with a pressure of 20 psi for 3 hours, and followed by 2,000 gallons per minute for the next 3 hours. This demand is much higher than the existing system can provide. This would be critical for the existing system.

ISO COMMERCIAL RISK SERVICES, INC.

HYDRANT FLOW DATA SUMMARY

City Southborough State MA Zip 01772 Witnessed by A. Lagadinos Date 3-9-90

TEST NO.	TYPE DIST.	TEST LOCATION	SERVICE	FLOW-GPM			PRESSURE PSI		FLOW AT 20 PSI		REMARKS
				INDIVIDUAL HYDRANTS	TOTAL		STATIC	RESID.	NEEDED	AVAIL.	
1	Res	Presidential & Sears	Main	1140	1140		48	30	500	1400	
2	Res	5 Maple Crest Dr.	"	1570	1570		80	42	750	2000	
3	Comm	Main St. at Fay School	"	2050	2050		76	55	3000	3500	
4	Comm	150 Cordaville Rd	"	1380	1380		94	73	3000	2700	
5	Comm	Cor. Rte 9 & Willow St	"	1200	1200		90	22	3500	1200	
6	Comm	337 Turnpike Rd-Rt 9	"	2060	2060		66	55	2500	4500	
7	Res	Lynnbrook at QUL DE SAC	"	2820	2820		86	75	500	7400	
8	Comm	Neary School-Front Yard	"	1690	1690		90	34	3000	1900	
9	Comm	21 Boston Rd.	"	2150	2150		78	48	1500	3100	
10	Comm	17 Oregon Rd.	"	1280	1280		60	8	1250	1100	
11	Comm	Parkerville Rd.near Gilmore	"	1160	1160		80	62	2250	2200	
12	Res	151 Southville Rd	"	1980	1980		92	58	750	3000	
13	Comm	Southville Rd.at North St	"	1950	1950		102	50	2250	2500	
14	Comm	10 Southville Rd.	"	2220	2220		105	48	1250	2800	

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR INSURANCE RATING PURPOSES ONLY AND ARE NOT INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION. THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

* Comm = Commercial; Res = Residential.

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

III. MODEL AND EVALUATION OF THE EXISTING SYSTEM

1. Study and Computer Modeling:

Based on the information provided by Southborough Water Division, a computer model was developed to study the impact of the new project in the water distribution system. The first step, a schematic of nodes and pipe networks were developed for representing the system in the year of 1990 condition. Then, a computer model was developed based on the system schematic. Once the model had been developed for the 1990 condition, it was calibrated by using the information of the flow test in March, 1990. All system improvements after March 1990 were added to update the model to the existing condition.

To study the effect of the new project's demand on the existing system, an estimated demand of the proposed project was entered into the model along with an increased 5% projected water demand of the Town. The increasing 5% in demand is credit for the future condition at the time of proposed project completion and the water consumption increases due to the population increase. The results of the computer simulation indicates hydraulic gradient, flows, and pressures at the designated location.

The model was simulated at the steady state with input of maximum daily demand for the domestic usage to the system. At the end of model simulation, the result would show the pressure in the system with assigned water demand.

Following the steady state simulation, the dynamic state was simulated. The dynamic simulation analyzed the system behavior with the varied demand (fireflow requirement) versus time. The dynamic state presents the system adequacy under the effect of the varied demand hour by hour, and the water elevations in the tanks fluctuating throughout the simulation period. As a result, the storages ability can be evaluated carefully.

2. Impact of the Proposed Project on the Water Distribution System:

Based on the result of simulation with maximum day demand, the existing system is capable to provide the domestic demand of the 170 units which is estimated at 50 gallons per minute. However, it lowers the pressure in the Atwood Street, Harris and Richard Road area, due to it's high elevation. Similarly, the pressure in the High Ridge Street and Fairview Drive reduces significantly because of the same reason. It is fed only by the watermain in Parkeville Road.

From the result of the dynamic simulation with a demand at 3 hours of 3,500 gpm followed by 2,500 gpm for the nest 3 hours at the project site, it shows that the existing system can not provide both pressure and fireflow at this proposed site. In addition, when the fireflow is activated at the proposed project location, the higher elevation areas, as previously mentioned, will have no water supply, e.g., end of the Fairview Drive and the intersection of Atwood Street and Harris Drive.

3. Modification for Improving the System:

To meet the required fireflow at the project site, it is necessary to improve the existing water supply system. To find the optimum improvement, many computer runs must be made. It should be noted that this study is focussed on the necessary improvements to alleviate the impacts to the system due to the proposed housing project. Therefore, some of the proposed improvements may need to be upgraded for overall system consideration.

Proposed improvements are added to the system until all of the below requirements are satisfied:

- a. The system must satisfy the fireflow requirements, and meet the normal demand of all residents in the Town. Meanwhile, it is thought as allowable for some area with less pressure during this emergency condition.
- b. Modification is added to the system so that the cost of improvements would be minimum.

For minimizing the cost of improvements, proposed modifications are added to the model in the locations where improvements are needed. These modifications may be installing a new pipe or replacing the existing watermain. The piping is added to the system section by section so that the number of modifications and the costs would be minimal. Another alternative system improvement is installing a new storage tank. The proposed tank should have a minimum storage which may store enough water for the fire protection purposes.

The improved model is, again, simulated in both steady state and dynamic state. The proposed improvements are completed only if the system satisfies all of the above requirements. In an emergency situation, the number of areas having low pressure for a short period of time is as less as possible.

A separated pressure zone has also been considered. Due to the increase of pressure in the possible high service zone is only about 9 psi (from elevation 493 to Elev. 515), the increase of supply for fire fighting is limited. However, it does help to improve supply pressure during the maximum domestic demand condition.

4. Proposed Alternatives

After study the model , the following are three alternative system improvements:

a. **Alternative A:** New tank at Skylar Drive with new piping (see plate No.1)

- A water storage tank with a minimum volume required of 750,000 gallon at the end of the Skylar Drive.
- 1,600 feet of 12 inch pipe watermain from Parkerville road to the proposed housing project
- 1,200 feet of 12 inch pipe on the Peach Tree Lane from the Flagg Road to Paper Street.
- 200 feet of 16 inch pipe from the proposed water tank to the end of Skylar Drive
- Replace 900 feet of 12 inch pipe along Skylar Drive from Parkerville Road to Summit Road
- Replace 1,350 feet of existing 8 inch by new 12 inch watermain along Saren Stone Way.
- Replacing 5520feet of existing 8 inch watermain by new 12 inch water main on Parkerville Road from Skylar Drive to the proposed project connection.

b. **Alternative B:** New piping along Parkerville Road and others (see plate No. 2)

- New 1,360 feet of 12 inch pipe on the Flagg Road from Lovers Lane to Peach Tree Lane.
 - New 1,200 feet of 12 inch pipe on the Peach Tree Lane from the Flagg Road to Paper Street.
 - New 1,700 feet of 12 inch pipe on the Deerfoot Drive from Clifford Street to Worcester Turnpike.
 - New 2,100 feet of 12 inch watermain from the end of Deerfoot Drive to the end of High Ridge Street. Easement is necessary for this pipe (*).
 - New 500 feet of 12 inch watermain along Fairview Drive from Parkerville Road to Summit Road.
 - New 3,720 feet of 12 inch water main on the Parkerville Road from Fairview Drive to the proposed connection near Richard Street.
 - New 1,600 feet of 12 inch pipe from the proposed connection on Parkerville Road to the proposed housing project.
- (*) If easement could not be obtained, the proposed 12 inch pipe would have to follow Saren Stone Way, Skylar Drive and Parkerville Road. This new layout would increase the length by 2,180 ft.

c. **Alternative C : Replacing pipe along Parkerville Road and other new pipe**
(see plate No. 3)

- New 3,900 feet of 12 inch pipe from the end of the Gilmore Road to the end of the Coslin Drive. Easement is necessary for this pipe (*).
- New 1,600 feet of 12 inch pipe from the proposed connection on Parkerville road to the proposed housing project.
- New 1,200 feet of 12 inch pipe on the Peach Tree Lane from Flagg Road to Paper Street.
- Replace 3,720 feet of existing 8 inch pipe by new 12 inch watermain along the Parkerville Road from Fairview Drive to the proposed connection near Richard Road.
- Replace 1,600 feet of existing 6 inch pipe by new 12 inch watermain on Gilmore Road from Parkerville Road intersection to existing 12 inch watermain.

(*) Easement for this pipeline would be a lengthy process.

The above alternatives are the optimized alternatives. They will improve the system and delivery to the proposed housing project with both maximum daily water demand and the required fireflow. However, each alternatives will work only if they are done completely. If only a portion of the alternative is done, the alternative may not work nor improve the system.

V. COST ESTIMATION

The cost estimates for all alternatives is based on the 1994 cost estimation. This does not include the cost of land acquisition, right of way, appraisal and survey or site preparation, new access road in case of the new purchase land required. This is a preliminary estimation for alternative comparison only.

a. Alternative A: New Water Storage Tank at the end of Skylar Drive (see plate No.1)

Total length of 12" pipe:	10570 ft	\$ 610,500
Total length of 16" pipe:	200 ft	\$ 13,700
New Tank*:	0.75 million gal.	\$ 313,000

Site Preparation for Tank and access road and control valves		\$ 200,000
	Total	\$1,137,200

(*): The cost estimate for the tank was quoted by the New England Tank System for Aquastore(R) Glass-fused-to-Steel Tank. The Cost did not include land purchase and permits.

b. Alternative B: Adding new pipes along Parkerville Road and Others

Total length of 12" pipe:	12,180 ft	\$ 704,000
	Total	\$ 704,000

(*): 2,100 feet of 12 inch pipe will required new right of way, the cost of easement taken is not included in the above estimate.

c. Alternative C: Replacing Existing Pipes along the Parkerville Road

Total length of 12" pipe:	12,050 ft	\$ 695,900
	Total	\$ 695,200

(*): 3900 feet of 12 inch pipe will require new right of way, cost of easement taken, access road and site preparation is not included in the above estimate.

APPENDIX A

LEGEND

8" ——— EXISTING PIPE
8 INCH DIAMETER

12" ——— PROPOSED NEW PIPE
12 INCH DIAMETER

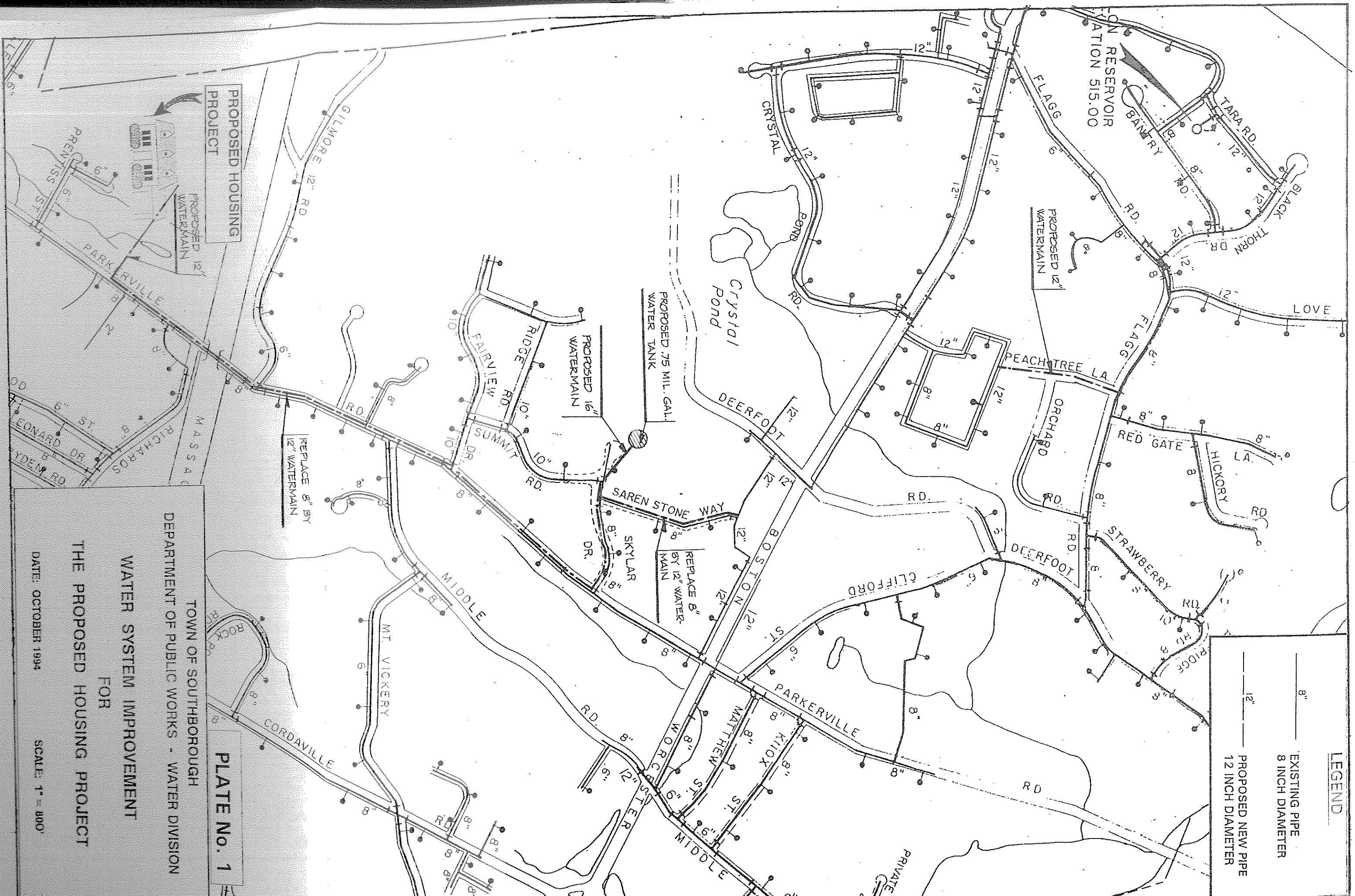


PLATE NO. 1

TOWN OF SOUTHBOROUGH
DEPARTMENT OF PUBLIC WORKS - WATER DIVISION

WATER SYSTEM IMPROVEMENT
FOR
THE PROPOSED HOUSING PROJECT

DATE: OCTOBER 1994 SCALE: 1" = 400'

LEGEND

8" ——— EXISTING PIPE
8 INCH DIAMETER

12" ——— PROPOSED NEW PIPE
12 INCH DIAMETER



PLATE No. 2

TOWN OF SOUTHBOROUGH
DEPARTMENT OF PUBLIC WORKS - WATER DIVISION

WATER SYSTEM IMPROVEMENT
FOR
THE PROPOSED HOUSING PROJECT

DATE: OCTOBER 1994 SCALE: 1" = 800'

LEGEND

8" ——— EXISTING PIPE
8 INCH DIAMETER

12" ——— PROPOSED NEW PIPE
12 INCH DIAMETER



PLATE No. 3

TOWN OF SOUTHBOROUGH
DEPARTMENT OF PUBLIC WORKS - WATER DIVISION

**WATER SYSTEM IMPROVEMENT
FOR
THE PROPOSED HOUSING PROJECT**

DATE: OCTOBER 1994

SCALE: 1" = 800'

APPENDIX B

COMPUTER OUTPUT
FOR
ALTERNATIVE NO.1:
PROPOSED NEW TANK

PIPE	FROM	TO	L(FT) D(IN) C			Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
1	2	1	975	8	100	10.80	0.01	0.01	0.07
2	3	2	1100	12	100	15.24	0.00	0.00	0.04
3	4	3	1900	12	100	26.04	0.01	0.00	0.07
4	4	5	1200	12	100	35.77	0.01	0.01	0.10
5	5	2	1500	12	100	6.37	0.00	0.00	0.02
6	6	4	430	12	100	67.16	0.01	0.03	0.19
7	7	6	1750	12	110	1087.12	7.06	4.03	3.08
8	500	7	800	12	110	1095.35	3.27	4.09	3.11
9	500	8	850	12	110	34.65	0.01	0.01	0.10
10	8	9	400	12	100	5.25	0.00	0.00	0.01
11	9	10	300	12	100	5.25	0.00	0.00	0.01
12	6	11	1950	12	110	1014.61	6.92	3.55	2.88
13	11	12	2200	12	110	378.34	1.26	0.57	1.07
14	12	13	750	12	110	372.99	0.42	0.56	1.06
15	13	14	2000	12	110	367.64	1.08	0.54	1.04
16	14	15	1950	10	100	5.35	0.00	0.00	0.02
17	14	30	1400	10	100	354.77	2.06	1.47	1.45
18	34	156	800	6	120	44.56	0.22	0.27	0.51
30	30	31	1500	10	90	220.26	1.11	0.74	0.90
31	31	32	520	8	100	45.22	0.05	0.10	0.29
32	32	33	800	8	100	16.86	0.01	0.02	0.11
33	32	33	450	8	100	23.01	0.01	0.03	0.15
34	31	34	500	10	90	169.68	0.23	0.46	0.69
35	33	34	700	6	100	34.52	0.17	0.24	0.39
36	34	35	500	10	90	148.84	0.18	0.36	0.61
37	35	36	320	10	90	141.33	0.10	0.33	0.58
38	36	37	550	10	90	160.74	0.23	0.41	0.66
39	156	36	1800	8	100	26.92	0.07	0.04	0.17
40	37	38	1350	10	110	157.23	0.37	0.27	0.64
41	38	39	400	10	110	171.15	0.13	0.32	0.70
42	72	38 CV	1000	8	110	24.32	0.03	0.03	0.16 Open
43	39	40	1650	10	110	140.69	0.37	0.22	0.57
44	39	73	850	8	110	9.88	0.00	0.00	0.06
45	40	41	1350	12	110	143.98	0.13	0.10	0.41
46	51	40	350	6	90	9.52	0.01	0.03	0.11
47	41	42	450	12	110	134.65	0.04	0.08	0.38
48	42	43	1100	12	110	81.29	0.04	0.03	0.23
49	43	44	250	12	110	18.37	0.00	0.00	0.05
50	43	46	2200	8	110	11.80	0.01	0.01	0.08
51	44	45	750	12	110	6.94	0.00	0.00	0.02
52	44	45	2500	10	110	2.24	0.00	0.00	0.01
53	46	47	1650	8	110	2.61	0.00	0.00	0.02
54	48	47	3300	12	110	6.58	0.00	0.00	0.02
55	43	48	1500	12	110	41.79	0.01	0.01	0.12
56	48	49	500	12	110	26.02	0.00	0.00	0.07
57	49	50	1050	12	110	16.43	0.00	0.00	0.05
58	49	50	1350	8	110	4.94	0.00	0.00	0.03
59	51	52	1200	6	100	15.56	0.06	0.05	0.18
60	42	62	600	8	120	35.72	0.03	0.04	0.23
61	62	49	2100	8	120	18.08	0.03	0.01	0.12
64	49	50	1500	8	120	5.09	0.00	0.00	0.03
70	70	37	500	10	90	1.84	0.00	0.00	0.01

PIPE	FROM	TO	L(FT) D(IN) C			Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
71	71	70	600	10	90	9.54	0.00	0.00	0.04
72	71	72	1950	8	90	56.55	0.34	0.18	0.36
73	75	71	600	10	90	285.44	0.72	1.19	1.17
74	72	73	750	6	90	29.12	0.16	0.21	0.33
75	73	74	600	6	90	35.89	0.19	0.31	0.41
76	74	51	700	6	90	31.30	0.17	0.24	0.36
77	78	75	2900	10	100	44.99	0.09	0.03	0.18
78	76	75	150	10	90	166.74	0.07	0.44	0.68
79	76	77	900	6	100	15.56	0.05	0.05	0.18
80	90	76	650	12	120	130.58	0.04	0.07	0.37
81	78	79	2160	8	100	11.97	0.02	0.01	0.08
82	600	78	800	10	90	88.08	0.11	0.14	0.36
83	79	84	450	6	90	12.70	0.02	0.05	0.14
84	79	83	300	8	100	24.34	0.01	0.03	0.16
85	84	80	650	12	110	5.00	0.00	0.00	0.01
86	83	80	650	8	100	18.12	0.01	0.02	0.12
87	80	81	750	8	100	15.41	0.01	0.01	0.10
88	81	82	1600	6	100	7.71	0.02	0.01	0.09
89	85	79	550	8	100	32.78	0.03	0.05	0.21
90	86	85	2050	10	100	50.42	0.08	0.04	0.21
91	86	88	250	8	90	40.45	0.02	0.10	0.26
92	88	87	1300	8	90	14.37	0.02	0.01	0.09
93	88	89	2400	8	90	10.53	0.02	0.01	0.07
94	87	89	250	8	90	5.03	0.00	0.00	0.03
95	93	86	3500	10	100	106.43	0.55	0.16	0.43
96	600	91	1200	10	110	39.87	0.03	0.02	0.16
97	92	90	600	12	120	132.75	0.04	0.07	0.38
98	91	92	1950	10	110	29.07	0.02	0.01	0.12
99	93	92	900	8	90	114.48	0.59	0.65	0.73
100	93	95	400	8	110	5.35	0.00	0.00	0.03
101	94	93	1080	10	110	231.61	0.60	0.56	0.95
102	96	94	1800	12	110	514.55	1.82	1.01	1.46
103	501	96	2560	12	110	1000.00	8.85	3.46	2.84
104	96	97	450	6	110	50.58	0.18	0.40	0.57
105	97	98	900	6	110	44.10	0.28	0.31	0.50
106	96	94	1800	8	90	144.93	1.82	1.01	0.93
119	123	601	100	12	100	263.43	0.03	0.35	0.75
120	121	120	2200	12	100	127.00	0.20	0.09	0.36
121	123	121	1200	12	110	52.28	0.02	0.01	0.15
122	124	123	800	12	110	321.06	0.34	0.42	0.91
123	122	121	500	8	120	80.07	0.10	0.20	0.51
124	124	122	1150	8	120	85.42	0.26	0.22	0.55
125	125	124	600	12	110	411.83	0.40	0.67	1.17
126	125	142	1100	8	100	61.94	0.19	0.17	0.40
127	120	126	550	12	100	124.84	0.05	0.09	0.35
128	127	125	350	12	100	352.44	0.21	0.60	1.00
129	128	127	1800	12	110	625.57	2.61	1.45	1.77
130	11	128	1800	12	110	630.92	2.65	1.47	1.79
131	127	129	1360	8	100	143.15	1.10	0.81	0.91
132	129	130	800	8	100	16.16	0.01	0.01	0.10
133	131	129	1200	8	100	14.34	0.01	0.01	0.09
134	131	132	1250	8	120	7.51	0.00	0.00	0.05

PIPE	FROM	TO	L(FT) D(IN) C			Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
135	133	131	1200	8	100	39.29	0.09	0.07	0.25
136	134	133	800	8	100	50.10	0.09	0.12	0.32
137	134	135	400	8	100	71.56	0.09	0.22	0.46
138	135	136	500	8	100	66.20	0.10	0.19	0.42
139	30	134	2080	8	100	127.00	1.35	0.65	0.81
140	131	136	650	8	100	12.09	0.01	0.01	0.08
141	136	137	1120	8	100	72.94	0.26	0.23	0.47
142	138	139	1870	12	120	87.66	0.06	0.03	0.25
143	138	139	1350	8	120	35.98	0.06	0.04	0.23
144	139	140	300	12	120	111.08	0.02	0.05	0.32
145	126	141	600	12	100	69.85	0.02	0.03	0.20
146	141	157	1600	12	100	43.32	0.02	0.01	0.12
147	141	140	2100	12	110	47.65	0.03	0.01	0.14
148	143	141	400	12	100	26.27	0.00	0.00	0.07
149	126	143	280	12	100	99.05	0.02	0.06	0.28
150	140	145	1750	12	110	219.02	0.36	0.21	0.62
151	147	146	250	8	100	14.32	0.00	0.01	0.09
152	147	148	1400	8	100	10.55	0.01	0.01	0.07
153	149	148	350	6	100	3.02	0.00	0.00	0.03
154	146	149	1250	8	100	8.37	0.01	0.00	0.05
155	150	147	500	8	100	12.77	0.00	0.01	0.08
156	155	147	1700	6	100	20.84	0.16	0.09	0.24
157	137	155	1100	6	100	67.59	0.90	0.82	0.77
158	155	158	850	8	120	41.60	0.05	0.06	0.27
159	154	150	950	8	100	33.89	0.05	0.06	0.22
160	150	151	1450	8	100	13.40	0.01	0.01	0.09
161	151	152	500	6	100	5.35	0.00	0.01	0.06
162	152	153	1000	6	100	2.16	0.00	0.00	0.02
163	148	151	400	6	100	2.76	0.00	0.00	0.03
164	142	126	1400	6	100	56.06	0.81	0.58	0.64
165	157	140	500	12	100	43.32	0.01	0.01	0.12
166	127	125	350	8	100	121.33	0.21	0.60	0.77
167	158	154	850	8	120	41.60	0.05	0.06	0.27
170	171	170	2180	8	120	350.97	6.65	3.05	2.24
171	171	172	300	8	100	6.48	0.00	0.00	0.04
172	173	171	1250	8	100	361.77	5.65	4.52	2.31
173	94	173	2600	8	120	233.85	3.74	1.44	1.49
174	174	173	900	8	100	133.28	0.64	0.71	0.85
175	175	174	600	8	100	61.04	0.10	0.17	0.39
176	178	174	800	8	100	76.56	0.20	0.25	0.49
177	176	175	550	8	100	66.39	0.11	0.20	0.42
178	176	177	220	8	100	15.27	0.00	0.01	0.10
179	180	176	550	8	100	87.01	0.18	0.32	0.56
180	71	178	1650	8	100	110.74	0.83	0.50	0.71
181	177	178	250	8	100	9.92	0.00	0.01	0.06
183	71	179	1450	8	110	100.91	0.52	0.36	0.64
184	179	180	350	8	100	95.55	0.13	0.38	0.61
185	180	181	400	8	100	3.19	0.00	0.00	0.02
186	183	182	250	8	110	85.82	0.07	0.26	0.55
187	182	184	500	8	110	83.65	0.13	0.25	0.53
188	94	183	280	8	90	190.83	0.47	1.68	1.22
189	183	184	380	8	90	99.66	0.19	0.50	0.64

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
190	184	185	250	8	90	177.97	0.37	1.48	1.14
191	185	75	1100	8	110	89.27	0.31	0.28	0.57
192	185	186	600	8	100	83.35	0.18	0.30	0.53
193	186	76	400	8	100	61.06	0.07	0.17	0.39
194	186	187	450	6	100	13.65	0.02	0.04	0.15
195	187	90	300	6	100	7.16	0.00	0.01	0.08
196	190	279	700	8	110	26.45	0.02	0.03	0.17
198	190	170	1300	8	100	115.72	0.71	0.55	0.74
199	191	190	2400	8	100	145.36	2.00	0.84	0.93
200	192	191	800	8	60	240.59	4.38	5.47	1.54
201	196	191	650	8	60	424.62	10.18	15.66	2.71
202	193	192	250	6	60	245.94	5.78	23.13	2.79
203	194	193	150	12	120	58.88	0.00	0.02	0.17
204	193	204	2560	10	100	57.59	0.13	0.05	0.24
205	194	195	1280	8	60	10.42	0.02	0.02	0.07
206	196	194	850	12	120	74.64	0.02	0.02	0.21
207	196	195	550	6	60	11.15	0.04	0.08	0.13
208	280	196	1000	12	120	515.77	0.86	0.86	1.46
209	197	193	650	12	120	251.14	0.15	0.23	0.71
210	198	197	1100	8	90	257.62	3.22	2.93	1.64
212	96	198	450	8	90	286.74	1.61	3.57	1.83
213	198	199	800	8	100	5.35	0.00	0.00	0.03
214	198	200	200	8	100	12.97	0.00	0.01	0.08
215	200	201	1050	10	100	2.16	0.00	0.00	0.01
216	195	202	1250	6	60	17.25	0.21	0.17	0.20
217	202	203	200	6	60	9.94	0.01	0.06	0.11
218	202	206	450	12	110	2.16	0.00	0.00	0.01
219	204	203	350	6	60	24.33	0.11	0.32	0.28
220	203	205	450	12	110	3.19	0.00	0.00	0.01
222	204	207	450	6	60	33.27	0.26	0.57	0.38
223	207	208	2100	8	110	17.11	0.03	0.01	0.11
224	208	209	1800	8	110	11.76	0.01	0.01	0.08
250	126	230	500	12	100	6.65	0.00	0.00	0.02
251	230	231	500	12	110	3.36	0.00	0.00	0.01
252	143	233	500	12	100	56.63	0.01	0.02	0.16
253	233	232	350	12	120	46.29	0.00	0.01	0.13
254	232	234	1200	12	120	32.66	0.01	0.01	0.09
255	232	235	200	8	120	10.34	0.00	0.00	0.07
256	234	140	3100	12	120	22.32	0.01	0.00	0.06
257	145	236	450	12	110	215.93	0.09	0.20	0.61
258	236	237	700	12	110	212.51	0.14	0.20	0.60
259	237	146	1400	12	110	316.21	0.57	0.41	0.90
260	238	237	1350	12	130	109.24	0.06	0.04	0.31
261	238	239	900	12	130	1577.93	5.31	5.90	4.48
262	146	239	1300	8	100	320.01	4.68	3.60	2.04
263	239	240	1800	12	130	1892.34	14.88	8.26	5.37
264	238	241	1150	10	100	1047.63	12.56	10.92	4.28
265	245	240	500	10	100	1033.93	5.33	10.66	4.22
266	240	246	650	12	130	2922.84	12.02	18.49	8.29
267	241	242	1100	10	110	282.89	0.89	0.81	1.16
268	241	245	380	10	100	761.32	2.30	6.05	3.11
269	242	243	700	10	110	279.46	0.55	0.79	1.14

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
270	243	245	1100	10	110	276.04	0.85	0.77	1.13
271	246	247	1520	12	130	2842.83	26.69	17.56	8.07
272	246	250	1440	8	100	65.90	0.28	0.19	0.42
273	247	300	1050	12	130	2829.92	18.28	17.41	8.03
274	247	248	1600	6	100	8.30	0.03	0.02	0.09
275	248	249	1250	12	110	4.15	0.00	0.00	0.01
276	250	251	2560	6	100	60.37	1.71	0.67	0.69
277	251	252	550	8	100	12.05	0.00	0.01	0.08
278	251	255	1900	8	100	494.88	15.34	8.07	3.16
279	252	253	750	8	110	4.61	0.00	0.00	0.03
280	252	254	200	8	100	3.36	0.00	0.00	0.02
282	255	256	600	8	100	326.60	2.24	3.74	2.08
283	255	257	1000	8	100	164.92	1.06	1.06	1.05
284	257	256	1200	8	100	159.39	1.19	0.99	1.02
285	256	320	1650	8	100	482.63	12.72	7.71	3.08
300	270	251	2350	8	100	450.64	15.95	6.79	2.88
301	170	270	650	8	100	463.50	4.65	7.15	2.96
302	270	271	950	6	100	7.51	0.01	0.01	0.09
303	273	272	1350	8	110	0.58	0.00	0.00	0.00
304	274	272	950	8	110	4.77	0.00	0.00	0.03
305	274	273	550	8	110	5.93	0.00	0.00	0.04
306	275	274	450	8	110	16.05	0.01	0.01	0.10
307	276	275	800	8	110	21.40	0.02	0.02	0.14
308	276	354	300	8	100	478.08	2.27	7.57	3.05
309	277	276	1360	8	100	504.83	11.39	8.38	3.22
310	278	277	3000	8	120	510.18	18.29	6.10	3.26
311	191	278	1200	8	120	514.51	7.43	6.19	3.28
312	282	280	1050	12	120	521.94	0.93	0.88	1.48
313	282	283	550	6	100	16.05	0.03	0.06	0.18
314	283	284	1100	6	100	5.25	0.01	0.01	0.06
315	282	285	950	8	90	17.64	0.02	0.02	0.11
316	602	282	700	12	120	560.99	0.71	1.01	1.59
350	300	301	500	12	130	3143.15	10.57	21.15	8.92
351	302	301	850	8	100	361.99	3.85	4.53	2.31
352	302	303	700	6	100	5.29	0.01	0.01	0.06
353	304	302	1000	8	100	372.58	4.77	4.77	2.38
354	304	305	500	8	100	11.60	0.00	0.01	0.07
355	304	307	500	6	100	15.48	0.03	0.05	0.18
356	309	304	950	8	100	180.64	1.19	1.25	1.15
357	305	306	305	6	100	6.30	0.00	0.01	0.07
358	307	308	600	6	100	7.66	0.01	0.01	0.09
359	310	304	1100	8	120	223.41	1.45	1.32	1.43
360	310	309	200	8	100	186.99	0.27	1.33	1.19
361	311	310	950	8	100	415.69	5.55	5.85	2.65
362	312	311	1200	8	100	55.27	0.17	0.14	0.35
364	312	313	1000	6	100	69.36	0.86	0.86	0.79
365	315	312	300	8	100	136.97	0.22	0.75	0.87
366	314	313	300	8	100	298.45	0.95	3.17	1.91
367	315	314	1000	8	100	54.64	0.14	0.14	0.35
368	317	314	300	8	100	246.93	0.67	2.23	1.58
369	316	315	300	8	100	194.74	0.43	1.44	1.24
370	317	316	950	8	100	47.85	0.10	0.11	0.31

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
371	318	316	300	8	100	150.02	0.27	0.89	0.96
372	319	317	300	8	100	297.90	0.95	3.15	1.90
373	319	318	850	8	100	153.15	0.78	0.92	0.98
374	320	319	1000	8	110	453.67	5.76	5.76	2.90
375	320	321	1400	8	100	85.21	0.43	0.31	0.54
376	321	322	800	8	100	266.76	2.06	2.57	1.70
377	322	323	400	8	110	173.63	0.39	0.97	1.11
378	322	325	250	8	100	88.90	0.08	0.34	0.57
379	323	324	280	8	100	171.01	0.32	1.13	1.09
380	325	324	400	8	100	203.18	0.62	1.55	1.30
381	324	326	300	8	100	371.01	1.42	4.74	2.37
382	327	325	210	8	100	118.52	0.12	0.57	0.76
385	313	300	950	8	100	364.68	4.36	4.59	2.33
386	326	311	650	8	100	366.78	3.01	4.64	2.34
392	361	391	50	8	100	28.66	0.00	0.04	0.18
394	391	374	1000	12	120	28.66	0.00	0.00	0.08
400	350	320	1250	8	100	59.94	0.20	0.16	0.38
401	356	321	1250	12	110	185.79	0.19	0.15	0.53
402	351	350	510	8	100	451.86	3.48	6.82	2.88
403	350	356	750	12	110	386.63	0.45	0.59	1.10
404	353	351	350	8	100	338.08	1.40	3.99	2.16
405	352	351	900	8	100	119.07	0.52	0.58	0.76
406	353	352	1400	8	100	124.37	0.88	0.63	0.79
407	354	353	1260	8	100	467.74	9.17	7.27	2.99
408	354	355	960	8	90	10.34	0.01	0.01	0.07
409	356	357	1050	8	110	195.55	1.27	1.21	1.25
410	357	358	200	8	110	136.20	0.12	0.62	0.87
411	357	364	1250	8	110	55.12	0.15	0.12	0.35
412	358	359	1650	8	110	74.86	0.34	0.20	0.48
413	359	327	800	8	100	121.14	0.48	0.60	0.77
414	358	360	750	8	100	61.34	0.13	0.17	0.39
415	361	359	800	8	100	54.52	0.11	0.14	0.35
416	360	361	250	8	90	89.10	0.10	0.41	0.57
417	362	360	1050	8	120	33.06	0.04	0.04	0.21
418	361	374	1800	6	90	3.15	0.01	0.00	0.04
419	363	362	750	8	120	39.23	0.04	0.05	0.25
420	364	365	500	8	120	21.59	0.01	0.02	0.14
421	364	363	900	8	120	28.24	0.03	0.03	0.18
422	365	363	1650	8	120	16.29	0.02	0.01	0.10
423	367	366	750	12	120	4.13	0.00	0.00	0.01
424	370	367	600	12	120	8.69	0.00	0.00	0.02
425	367	368	1350	12	120	0.37	0.00	0.00	0.00
426	369	368	500	12	120	3.31	0.00	0.00	0.01
427	370	369	1450	8	120	1.34	0.00	0.00	0.01
428	372	369	450	12	120	5.10	0.00	0.00	0.01
429	371	370	500	12	120	13.20	0.00	0.00	0.04
430	374	371	600	12	120	16.33	0.00	0.00	0.05
431	373	372	850	12	120	9.24	0.00	0.00	0.03
432	374	373	1250	12	120	12.36	0.00	0.00	0.04
701	301	900	1600	12	130	3500.00	41.30	25.81	9.93
702	719	238	200	16	130	2740.39	0.81	4.04	4.37
703	129	138	1200	12	130	135.99	0.08	0.06	0.39

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC.		TYPE		
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)	Q(GPM)				
1	0	0	375	499.14	124.14	53.74	10.80	BQ		10.80	0.00
2	0	0	341	499.14	158.14	68.46	10.80	BQ		10.80	0.00
3	0	0	272	499.15	227.15	98.33	10.80	BQ		10.80	0.00
4	0	0	270	499.15	229.15	99.20	5.35	BQ		5.35	0.00
5	0	0	285	499.14	214.14	92.70	29.40	BQ		29.40	0.00
6	0	0	275	499.17	224.17	97.04	5.35	BQ		5.35	0.00
7	0	0	272	506.23	234.23	101.40	8.23	BQ		8.23	0.00
8	0	0	270	509.49	239.49	103.68	29.40	BQ		29.40	0.00
9	0	0	270	509.49	239.49	103.68					0.00
10	0	0	270	509.49	239.49	103.68	5.25	BQ		5.25	0.00
11	0	0	290	492.24	202.24	87.55	5.35	BQ		5.35	0.00
12	0	0	275	490.99	215.99	93.50	5.35	BQ		5.35	0.00
13	0	0	295	490.57	195.57	84.66	5.35	BQ		5.35	0.00
14	0	0	295	489.49	194.49	84.19	7.51	BQ		7.51	0.00
15	0	0	277	489.48	212.48	91.98	5.35	BQ		5.35	0.00
30	0	0	270	487.43	217.43	94.12	7.51	BQ		7.51	0.00
31	0	0	310	486.32	176.32	76.33	5.35	BQ		5.35	0.00
32	0	0	340	486.27	146.27	63.32	5.35	BQ		5.35	0.00
33	0	0	335	486.26	151.26	65.48	5.35	BQ		5.35	0.00
34	0	0	315	486.09	171.09	74.06	10.80	BQ		10.80	0.00
35	0	0	315	485.91	170.91	73.99	7.51	BQ		7.51	0.00
36	0	0	310	485.81	175.81	76.11	7.51	BQ		7.51	0.00
37	0	0	306	485.58	179.58	77.74	5.35	BQ		5.35	0.00
38	0	0	325	485.21	160.21	69.36	10.39	BQ	CV Open	10.39	0.00
39	0	0	328	485.08	157.08	68.00	20.58	BQ		20.58	0.00
40	0	0	335	484.72	149.72	64.81	6.22	BQ		6.22	0.00
41	0	0	410	484.59	74.59	32.29	9.34	BQ		9.34	0.00
42	0	0	410	484.55	74.55	32.27	17.64	BQ		17.64	0.00
43	0	0	370	484.51	114.51	49.57	9.34	BQ		9.34	0.00
44	0	0	385	484.51	99.51	43.08	9.19	BQ		9.19	0.00
45	0	0	375	484.51	109.51	47.41	9.19	BQ		9.19	0.00
46	0	0	300	484.50	184.50	79.87	9.19	BQ		9.19	0.00
47	0	0	300	484.50	184.50	79.87	9.19	BQ		9.19	0.00
48	0	0	310	484.50	174.50	75.54	9.19	BQ		9.19	0.00
49	0	0	295	484.50	189.50	82.03	17.64	BQ		17.64	0.00
50	0	0	275	484.50	209.50	90.69	26.46	BQ		26.46	0.00
51	0	0	335	484.73	149.73	64.82	6.22	BQ		6.22	0.00
52	0	0	270	484.66	214.66	92.93	15.56	BQ		15.56	0.00
62	0	0	350	484.52	134.52	58.24	17.64	BQ		17.64	0.00
70	0	0	315	485.58	170.58	73.84	7.71	BQ		7.71	0.00
71	0	0	315	485.58	170.58	73.84	7.71	BQ		7.71	0.00
72	0	0	320	485.24	165.24	71.53	3.11	BQ	CV Open	3.11	0.00
73	0	0	325	485.08	160.08	69.30	3.11	BQ		3.11	0.00
74	0	0	330	484.89	154.89	67.05	4.59	BQ		4.59	0.00
75	0	0	300	486.30	186.30	80.65	15.56	BQ		15.56	0.00
76	0	0	300	486.36	186.36	80.68	9.34	BQ		9.34	0.00
77	0	0	330	486.32	156.32	67.67	15.56	BQ		15.56	0.00
78	0	0	330	486.39	156.39	67.70	31.12	BQ		31.12	0.00
79	0	0	285	486.37	201.37	87.17	7.71	BQ		7.71	0.00
80	0	0	275	486.35	211.35	91.49	7.71	BQ		7.71	0.00
81	0	0	265	486.34	221.34	95.82	7.71	BQ		7.71	0.00
82	0	0	265	486.32	221.32	95.81	7.71	BQ		7.71	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC			
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)	Q(GPM)	TYPE		
83	0	0	275	486.36	211.36	91.50	6.22	BQ	6.22	0.00
84	0	0	295	486.35	191.35	82.84	7.71	BQ	7.71	0.00
85	0	0	270	486.40	216.40	93.68	17.64	BQ	17.64	0.00
86	0	0	295	486.48	191.48	82.89	15.56	BQ	15.56	0.00
87	0	0	290	486.44	196.44	85.04	9.34	BQ	9.34	0.00
88	0	0	295	486.46	191.46	82.88	15.56	BQ	15.56	0.00
89	0	0	260	486.44	226.44	98.03	15.56	BQ	15.56	0.00
90	0	0	325	486.41	161.41	69.87	9.34	BQ	9.34	0.00
91	0	0	350	486.47	136.47	59.08	10.80	BQ	10.80	0.00
92	0	0	287	486.45	199.45	86.34	10.80	BQ	10.80	0.00
93	0	0	282	487.04	205.04	88.76	5.35	BQ	5.35	0.00
94	0	0	335	487.64	152.64	66.08	3.19	BQ	3.19	0.00
95	0	0	320	487.04	167.04	72.31	5.35	BQ	5.35	0.00
96	0	0	260	489.46	229.46	99.33	3.19	BQ	3.19	0.00
97	0	0	270	489.28	219.28	94.93	6.48	BQ	6.48	0.00
98	0	0	285	489.00	204.00	88.31	44.10	BQ	44.10	0.00
120	0	0	390	485.82	95.82	41.48	2.16	BQ	2.16	0.00
121	0	0	450	486.02	36.02	15.59	5.35	BQ	5.35	0.00
122	0	0	450	486.12	36.12	15.63	5.35	BQ	5.35	0.00
123	0	0	410	486.03	76.03	32.92	5.35	BQ	5.35	0.00
124	0	0	385	486.37	101.37	43.88	5.35	BQ	5.35	0.00
125	0	0	337	486.77	149.77	64.84				0.00
126	0	0	355	485.77	130.77	56.61	5.35	BQ	5.35	0.00
127	0	0	335	486.98	151.98	65.79	8.64	BQ	8.64	0.00
128	0	0	335	489.59	154.59	66.92	5.35	BQ	5.35	0.00
129	0	0	270	485.88	215.88	93.45	5.35	BQ	5.35	0.00
130	0	0	285	485.87	200.87	86.96	16.16	BQ	16.16	0.00
131	0	0	325	485.89	160.89	69.65	5.35	BQ	5.35	0.00
132	0	0	330	485.89	155.89	67.48	7.51	BQ	7.51	0.00
133	0	0	350	485.98	135.98	58.87	10.80	BQ	10.80	0.00
134	0	0	312	486.07	174.07	75.36	5.35	BQ	5.35	0.00
135	0	0	310	485.98	175.98	76.18	5.35	BQ	5.35	0.00
136	0	0	305	485.89	180.89	78.31	5.35	BQ	5.35	0.00
137	0	0	295	485.63	190.63	82.52	5.35	BQ	5.35	0.00
138	0	0	320	485.80	165.80	71.78	12.35	BQ	12.35	0.00
139	0	0	320	485.74	165.74	71.75	12.55	BQ	12.55	0.00
140	0	0	320	485.73	165.73	71.74	5.35	BQ	5.35	0.00
141	0	0	340	485.75	145.75	63.10	5.15	BQ	5.14	0.00
142	0	0	345	486.58	141.58	61.29	5.88	BQ	5.88	0.00
143	0	0	355	485.75	130.75	56.60	16.16	BQ	16.16	0.00
145	0	0	345	485.36	140.36	60.76	3.09	BQ	3.09	0.00
146	0	0	296	484.56	188.56	81.63	2.16	BQ	2.16	0.00
147	0	0	290	484.56	194.56	84.23	8.75	BQ	8.75	0.00
148	0	0	266	484.55	218.56	94.61	10.80	BQ	10.80	0.00
149	0	0	262	484.56	222.56	96.34	5.35	BQ	5.35	0.00
150	0	0	285	484.57	199.57	86.39	7.72	BQ	7.72	0.00
151	0	0	295	484.55	189.55	82.06	10.80	BQ	10.80	0.00
152	0	0	285	484.55	199.55	86.39	3.19	BQ	3.19	0.00
153	0	0	260	484.55	224.55	97.21	2.16	BQ	2.16	0.00
154	0	0	290	484.62	194.62	84.25	7.72	BQ	7.72	0.00
155	0	0	295	484.72	189.72	82.13	5.14	BQ	5.14	0.00
156	0	0	265	485.87	220.87	95.62	17.64	BQ	17.64	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC	
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)	Q(GPM)	TYPE
157	0	0	325	485.73	160.73	69.58		0.00
158	0	0	275	484.67	209.67	90.77		0.00
170	0	0	259	471.61	212.61	92.04	3.19 BQ	3.19 0.00
171	0	0	265	478.25	213.25	92.32	4.32 BQ	4.32 0.00
172	0	0	305	478.25	173.25	75.00	6.48 BQ	6.48 0.00
173	0	0	265	483.90	218.90	94.76	5.35 BQ	5.35 0.00
174	0	0	280	484.54	204.54	88.55	4.32 BQ	4.32 0.00
175	0	0	270	484.65	214.65	92.92	5.35 BQ	5.35 0.00
176	0	0	275	484.75	209.75	90.80	5.35 BQ	5.35 0.00
177	0	0	285	484.75	199.75	86.47	5.35 BQ	5.35 0.00
178	0	0	305	484.75	179.75	77.81	44.10 BQ	44.10 0.00
179	0	0	280	485.07	205.07	88.77	5.35 BQ	5.35 0.00
180	0	0	280	484.93	204.93	88.71	5.35 BQ	5.35 0.00
181	0	0	290	484.93	194.93	84.39	3.19 BQ	3.19 0.00
182	0	0	280	487.11	207.11	89.66	2.16 BQ	2.16 0.00
183	0	0	290	487.17	197.17	85.36	5.35 BQ	5.35 0.00
184	0	0	305	486.98	181.98	78.78	5.35 BQ	5.35 0.00
185	0	0	305	486.61	181.61	78.62	5.35 BQ	5.35 0.00
186	0	0	325	486.43	161.43	69.88	8.64 BQ	8.64 0.00
187	0	0	325	486.41	161.41	69.88	6.48 BQ	6.48 0.00
190	0	0	365	472.32	107.32	46.46	3.19 BQ	3.19 0.00
191	0	0	275	474.32	199.32	86.29	5.35 BQ	5.35 0.00
192	0	0	265	478.70	213.70	92.51	5.35 BQ	5.35 0.00
193	0	0	285	484.48	199.48	86.36	6.48 BQ	6.48 0.00
194	0	0	295	484.48	189.48	82.03	5.35 BQ	5.35 0.00
195	0	0	295	484.46	189.46	82.02	4.32 BQ	4.32 0.00
196	0	0	285	484.50	199.50	86.37	5.35 BQ	5.35 0.00
197	0	0	265	484.63	219.63	95.08	6.48 BQ	6.48 0.00
198	0	0	280	487.85	207.85	89.98	10.80 BQ	10.80 0.00
199	0	0	265	487.85	222.85	96.47	5.35 BQ	5.35 0.00
200	0	0	280	487.85	207.85	89.98	10.80 BQ	10.80 0.00
201	0	0	360	487.85	127.85	55.35	2.16 BQ	2.16 0.00
202	0	0	280	484.25	204.25	88.42	5.15 BQ	5.14 0.00
203	0	0	275	484.24	209.24	90.58	31.08 BQ	31.08 0.00
204	0	0	249	484.35	235.35	101.88		0.00
205	0	0	280	484.24	204.24	88.42	3.19 BQ	3.19 0.00
206	0	0	280	484.25	204.25	88.42	2.16 BQ	2.16 0.00
207	0	0	230	484.10	254.10	110.00	16.16 BQ	16.16 0.00
208	0	0	215	484.07	269.07	116.48	5.35 BQ	5.35 0.00
209	0	0	200	484.06	284.06	122.97	11.76 BQ	11.76 0.00
230	0	0	377	485.77	108.77	47.09	3.29 BQ	3.29 0.00
231	0	0	380	485.77	105.77	45.79	3.36 BQ	3.36 0.00
232	0	0	320	485.74	165.74	71.75	3.29 BQ	3.29 0.00
233	0	0	325	485.74	160.74	69.59	10.34 BQ	10.34 0.00
234	0	0	380	485.73	105.73	45.77	10.34 BQ	10.34 0.00
235	0	0	360	485.74	125.74	54.43	10.34 BQ	10.34 0.00
236	0	0	350	485.27	135.27	58.56	3.42 BQ	3.42 0.00
237	0	0	270	485.14	215.14	93.13	5.53 BQ	5.53 0.00
238	0	0	400	485.19	85.19	36.88	5.60 BQ	5.60 0.00
239	0	0	325	479.88	154.88	67.05	5.60 BQ	5.60 0.00
240	0	0	325	465.00	140.00	60.61	3.42 BQ	3.42 0.00
241	0	0	370	472.63	102.63	44.43	3.42 BQ	3.42 0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC		Q(GPM)	TYPE
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)				
242	0	0	415	471.74	56.74	24.56	3.42	BQ	3.42	0.00
243	0	0	420	471.18	51.18	22.16	3.42	BQ	3.42	0.00
245	0	0	355	470.33	115.33	49.93	3.42	BQ	3.42	0.00
246	0	0	324	452.99	128.99	55.84	14.11	BQ	14.11	0.00
247	0	0	305	426.30	121.30	52.51	4.61	BQ	4.61	0.00
248	0	0	330	426.27	96.27	41.67	4.15	BQ	4.15	0.00
249	0	0	330	426.27	96.27	41.67	4.15	BQ	4.15	0.00
250	0	0	306	452.71	146.71	63.51	5.53	BQ	5.53	0.00
251	0	0	293	451.00	158.00	68.40	4.08	BQ	4.08	0.00
252	0	0	275	451.00	176.00	76.19	4.08	BQ	4.08	0.00
253	0	0	285	451.00	166.00	71.86	4.61	BQ	4.61	0.00
254	0	0	270	451.00	181.00	78.35	3.36	BQ	3.36	0.00
255	0	0	295	435.66	140.66	60.89	3.36	BQ	3.36	0.00
256	0	0	295	433.42	138.42	59.92	3.36	BQ	3.36	0.00
257	0	0	290	434.61	144.61	62.60	5.53	BQ	5.53	0.00
270	0	0	276	466.96	190.96	82.67	5.35	BQ	5.35	0.00
271	0	0	320	466.95	146.95	63.61	7.51	BQ	7.51	0.00
272	0	0	350	437.19	87.19	37.74	5.35	BQ	5.35	0.00
273	0	0	370	437.19	67.19	29.09	5.35	BQ	5.35	0.00
274	0	0	350	437.19	87.19	37.75	5.35	BQ	5.35	0.00
275	0	0	330	437.20	107.20	46.41	5.35	BQ	5.35	0.00
276	0	0	320	437.21	117.21	50.74	5.35	BQ	5.35	0.00
277	0	0	340	448.61	108.61	47.02	5.35	BQ	5.35	0.00
278	0	0	315	466.89	151.89	65.76	4.32	BQ	4.32	0.00
279	0	0	270	472.30	202.30	87.58	26.45	BQ	26.45	0.00
280	0	0	280	485.37	205.37	88.90	6.17	BQ	6.17	0.00
282	0	0	410	486.29	76.29	33.03	5.35	BQ	5.35	0.00
283	0	0	415	486.26	71.26	30.85	10.80	BQ	10.80	0.00
284	0	0	400	486.25	86.25	37.34	5.25	BQ	5.25	0.00
285	0	0	400	486.27	86.27	37.35	17.64	BQ	17.64	0.00
300	0	0	285	408.01	123.01	53.25	51.45	BQ	51.45	0.00
301	0	0	285	397.44	112.44	48.67	5.14	BQ	5.14	0.00
302	0	0	275	401.28	126.28	54.67	5.29	BQ	5.29	0.00
303	0	0	280	401.28	121.28	52.50	5.29	BQ	5.29	0.00
304	0	0	264	406.06	142.06	61.50	4.39	BQ	4.39	0.00
305	0	0	265	406.05	141.05	61.06	5.29	BQ	5.29	0.00
306	0	0	280	406.05	126.05	54.57	6.30	BQ	6.30	0.00
307	0	0	260	406.03	146.03	63.22	7.82	BQ	7.82	0.00
308	0	0	255	406.02	151.02	65.38	7.66	BQ	7.66	0.00
309	0	0	280	407.25	127.25	55.08	6.35	BQ	6.35	0.00
310	0	0	280	407.51	127.51	55.20	5.29	BQ	5.29	0.00
311	0	0	300	413.07	113.07	48.95	6.35	BQ	6.35	0.00
312	0	0	370	413.23	43.23	18.72	12.35	BQ	12.35	0.00
313	0	0	318	412.37	94.37	40.85	3.13	BQ	3.13	0.00
314	0	0	315	413.32	98.32	42.56	3.13	BQ	3.13	0.00
315	0	0	368	413.46	45.46	19.68	3.13	BQ	3.13	0.00
316	0	0	340	413.89	73.89	31.99	3.13	BQ	3.13	0.00
317	0	0	300	413.99	113.99	49.35	3.13	BQ	3.13	0.00
318	0	0	310	414.15	104.15	45.09	3.13	BQ	3.13	0.00
319	0	0	287	414.94	127.94	55.38	2.62	BQ	2.62	0.00
320	0	0	271	420.70	149.70	64.80	3.68	BQ	3.68	0.00
321	0	0	262	420.26	158.26	68.51	4.24	BQ	4.24	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC			
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)	Q(GPM)	TYPE		
322	0	0	255	418.21	163.21	70.65	4.24	BQ	4.24	0.00
323	0	0	265	417.82	152.82	66.15	2.62	BQ	2.62	0.00
324	0	0	265	417.50	152.50	66.02	3.18	BQ	3.18	0.00
325	0	0	255	418.12	163.12	70.62	4.24	BQ	4.24	0.00
326	0	0	265	416.08	151.08	65.40	4.24	BQ	4.24	0.00
327	0	0	255	418.24	163.24	70.67	2.62	BQ	2.62	0.00
350	0	0	305	420.90	115.90	50.17	5.29	BQ	5.29	0.00
351	0	0	315	424.38	109.38	47.35	5.29	BQ	5.29	0.00
352	0	0	300	424.90	124.90	54.07	5.29	BQ	5.29	0.00
353	0	0	320	425.78	105.78	45.79	5.29	BQ	5.29	0.00
354	0	0	320	434.94	114.94	49.76				0.00
355	0	0	345	434.93	89.93	38.93	10.34	BQ	10.34	0.00
356	0	0	285	420.45	135.45	58.64	5.29	BQ	5.29	0.00
357	0	0	295	419.18	124.18	53.76	4.24	BQ	4.24	0.00
358	0	0	297	419.06	122.06	52.84				0.00
359	0	0	260	418.72	158.72	68.71	8.23	BQ	8.23	0.00
360	0	0	270	418.93	148.93	64.47	5.29	BQ	5.29	0.00
361	0	0	250	418.83	168.83	73.09	2.77	BQ	2.77	0.00
362	0	0	250	418.97	168.97	73.15	6.17	BQ	6.17	0.00
363	0	0	280	419.01	139.01	60.18	5.29	BQ	5.29	0.00
364	0	0	300	419.04	119.04	51.53	5.29	BQ	5.29	0.00
365	0	0	295	419.03	124.03	53.69	5.29	BQ	5.29	0.00
366	0	0	320	418.82	98.82	42.78	4.13	BQ	4.13	0.00
367	0	0	285	418.82	133.82	57.93	4.18	BQ	4.18	0.00
368	0	0	320	418.82	98.82	42.78	3.68	BQ	3.68	0.00
369	0	0	285	418.82	133.82	57.93	3.13	BQ	3.13	0.00
370	0	0	250	418.82	168.82	73.08	3.18	BQ	3.18	0.00
371	0	0	245	418.82	173.82	75.25	3.13	BQ	3.13	0.00
372	0	0	260	418.82	158.82	68.75	4.13	BQ	4.13	0.00
373	0	0	240	418.82	178.82	77.41	3.13	BQ	3.13	0.00
374	0	0	245	418.82	173.82	75.25	3.13	BQ	3.13	0.00
391	0	0	250	418.83	168.83	73.08				0.00
500	0	0	290	509.50	219.50	95.02	-1130.00	BQ	-1130.00	0.00
501	0	0	260	498.31	238.31	103.16	-1000.00	BQ	-1000.00	0.00
600	0	0	451	486.50	35.50	15.37	-127.95	BEL		
601	0	0	467	486.00	19.00	8.23	263.43	BEL		
602	0	0	418	487.00	69.00	29.87	-560.99	BEL		
719	0	0	465	486.00	21.00	9.09	-2740.39	BEL		
900	0	0	280	356.14	76.14	32.96	3500.00	BQ	3500.00	0.00

TOTAL SYSTEM Q = 5559.33 Total BQ (pos) = 5295.90 Total BQ (neg) = -2130.00 0.00 0.00										

COMPUTER OUTPUT
FOR
ALTERNATIVE NO.2:
PROPOSED NEW PIPES ALONG
THE PARKERVILLE ROAD

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
1	2	1	975	8	100	10.80	0.01	0.01	0.07
2	3	2	1100	12	100	15.24	0.00	0.00	0.04
3	4	3	1900	12	100	26.04	0.01	0.00	0.07
4	4	5	1200	12	100	35.77	0.01	0.01	0.10
5	5	2	1500	12	100	6.37	0.00	0.00	0.02
6	6	4	430	12	100	67.16	0.01	0.03	0.19
7	7	6	1750	12	110	1087.12	7.06	4.03	3.08
8	500	7	800	12	110	1095.35	3.27	4.09	3.11
9	500	8	850	12	110	34.65	0.01	0.01	0.10
10	8	9	400	12	100	5.25	0.00	0.00	0.01
11	9	10	300	12	100	5.25	0.00	0.00	0.01
12	6	11	1950	12	110	1014.61	6.92	3.55	2.88
13	11	12	2200	12	110	365.36	1.18	0.54	1.04
14	12	13	750	12	110	360.01	0.39	0.52	1.02
15	13	14	2000	12	110	354.66	1.01	0.51	1.01
16	14	15	1950	10	100	5.35	0.00	0.00	0.02
17	14	30	1400	10	100	341.80	1.92	1.37	1.40
18	156	34	800	6	120	9.58	0.01	0.02	0.11
30	31	30	1500	10	90	53.56	0.08	0.05	0.22
31	32	31	520	8	100	2.60	0.00	0.00	0.02
32	33	32	800	8	100	3.36	0.00	0.00	0.02
33	33	32	450	8	100	4.59	0.00	0.00	0.03
34	34	31	500	10	90	56.31	0.03	0.06	0.23
35	34	33	700	6	100	13.30	0.03	0.04	0.15
36	35	34	500	10	90	70.84	0.05	0.09	0.29
37	36	35	320	10	90	78.35	0.03	0.11	0.32
38	37	36	550	10	90	113.08	0.12	0.22	0.46
39	36	156	1800	8	100	27.22	0.07	0.04	0.17
40	37	38	1350	10	110	113.60	0.20	0.15	0.46
41	38	39	400	10	110	162.80	0.12	0.29	0.67
42	72	38 CV	1000	8	110	59.59	0.13	0.13	0.38 Open
43	39	40	1650	10	110	140.55	0.37	0.22	0.57
44	39	73	850	8	110	1.67	0.00	0.00	0.01
45	40	41	1350	12	110	143.98	0.13	0.10	0.41
46	51	40	350	6	90	9.66	0.01	0.03	0.11
47	41	42	450	12	110	134.65	0.04	0.08	0.38
48	42	43	1100	12	110	81.29	0.04	0.03	0.23
49	43	44	250	12	110	18.37	0.00	0.00	0.05
50	43	46	2200	8	110	11.80	0.01	0.01	0.08
51	44	45	750	12	110	6.94	0.00	0.00	0.02
52	44	45	2500	10	110	2.24	0.00	0.00	0.01
53	46	47	1650	8	110	2.61	0.00	0.00	0.02
54	48	47	3300	12	110	6.58	0.00	0.00	0.02
55	43	48	1500	12	110	41.79	0.01	0.01	0.12
56	48	49	500	12	110	26.02	0.00	0.00	0.07
57	49	50	1050	12	110	16.43	0.00	0.00	0.05
58	49	50	1350	8	110	4.94	0.00	0.00	0.03
59	51	52	1200	6	100	15.56	0.06	0.05	0.18
60	42	62	600	8	120	35.72	0.03	0.04	0.23
61	62	49	2100	8	120	18.08	0.03	0.01	0.12
64	49	50	1500	8	120	5.09	0.00	0.00	0.03
70	70	37	500	10	90	232.03	0.41	0.81	0.95

JOB : SOUTHBORO WATER DISTRIBUTION ANALYSIS

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
71	71	70	600	10	90	239.73	0.52	0.86	0.98
72	71	72	1950	8	90	100.18	0.99	0.51	0.64
73	75	71	600	10	90	587.47	2.73	4.55	2.40
74	72	73	750	6	90	37.48	0.25	0.33	0.43
75	73	74	600	6	90	36.04	0.19	0.31	0.41
76	74	51	700	6	90	31.44	0.17	0.24	0.36
77	78	75	2900	10	100	184.22	1.27	0.44	0.75
78	76	75	150	10	90	315.84	0.22	1.44	1.29
79	76	77	900	6	100	15.56	0.05	0.05	0.18
80	90	76	650	12	120	269.06	0.17	0.26	0.76
81	78	79	2160	8	100	63.54	0.39	0.18	0.41
82	600	78	800	10	90	278.88	0.92	1.14	1.14
83	79	84	450	6	90	12.70	0.02	0.05	0.14
84	79	83	300	8	100	24.34	0.01	0.03	0.16
85	84	80	650	12	110	5.00	0.00	0.00	0.01
86	83	80	650	8	100	18.12	0.01	0.02	0.12
87	80	81	750	8	100	15.41	0.01	0.01	0.10
88	81	82	1600	6	100	7.71	0.02	0.01	0.09
89	79	85	550	8	100	18.79	0.01	0.02	0.12
90	85	86	2050	10	100	1.15	0.00	0.00	0.00
91	86	88	250	8	90	40.45	0.02	0.10	0.26
92	88	87	1300	8	90	14.37	0.02	0.01	0.09
93	88	89	2400	8	90	10.53	0.02	0.01	0.07
94	87	89	250	8	90	5.03	0.00	0.00	0.03
95	93	86	3500	10	100	54.86	0.16	0.05	0.22
96	600	91	1200	10	110	226.71	0.65	0.54	0.93
97	92	90	600	12	120	304.23	0.19	0.32	0.86
98	91	92	1950	10	110	215.90	0.96	0.49	0.88
99	93	92	900	8	90	99.13	0.45	0.50	0.63
100	93	95	400	8	110	5.35	0.00	0.00	0.03
101	94	93	1080	10	110	164.69	0.32	0.30	0.67
102	96	94	1800	12	110	515.69	1.82	1.01	1.46
103	501	96	2560	12	110	1000.00	8.85	3.46	2.84
104	96	97	450	6	110	50.58	0.18	0.40	0.57
105	97	98	900	6	110	44.10	0.28	0.31	0.50
106	96	94	1800	8	90	145.25	1.82	1.01	0.93
119	601	123	100	12	100	1912.87	1.37	13.71	5.43
120	121	120	2200	12	100	954.35	8.32	3.78	2.71
121	123	121	1200	12	110	879.31	3.27	2.72	2.49
122	123	124	800	12	110	1028.21	2.91	3.64	2.92
123	122	121	500	8	120	80.39	0.10	0.20	0.51
124	124	122	1150	8	120	85.74	0.26	0.22	0.55
125	124	125	600	12	110	937.12	1.84	3.06	2.66
126	125	142	1100	8	100	190.51	1.52	1.38	1.22
127	120	126	550	12	100	952.19	2.07	3.77	2.70
128	125	127	350	12	100	555.41	0.49	1.39	1.58
129	128	127	1800	12	110	638.54	2.71	1.51	1.81
130	11	128	1800	12	110	643.89	2.75	1.53	1.83
131	127	129	1360	8	100	288.20	4.04	2.97	1.84
132	129	130	800	8	100	16.16	0.01	0.01	0.10
133	129	131	1200	8	100	376.02	5.83	4.86	2.40
134	131	132	1250	8	120	7.51	0.00	0.00	0.05

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
135	133	131	1200	8	100	31.33	0.06	0.05	0.20
136	134	133	800	8	100	42.14	0.07	0.08	0.27
137	134	135	400	8	100	340.35	1.61	4.04	2.17
138	135	136	500	8	100	335.00	1.96	3.92	2.14
139	30	134	2080	8	100	387.84	10.70	5.14	2.48
140	131	136	650	8	100	394.49	3.45	5.31	2.52
141	136	137	1120	8	100	724.15	18.30	16.34	4.62
142	138	139	1870	12	120	685.32	2.73	1.46	1.94
143	138	139	1350	8	120	281.31	2.73	2.02	1.80
144	139	140	300	12	120	954.08	0.81	2.70	2.71
145	126	141	600	12	100	493.65	0.67	1.12	1.40
146	141	157	1600	12	100	375.29	1.07	0.67	1.06
147	141	140	2100	12	110	412.82	1.41	0.67	1.17
148	143	141	400	12	100	299.60	0.18	0.44	0.85
149	126	143	280	12	100	631.16	0.49	1.76	1.79
150	140	145	1750	12	110	2017.93	22.20	12.68	5.72
151	147	146	250	8	100	147.70	0.22	0.86	0.94
152	147	148	1400	8	100	21.09	0.03	0.02	0.13
153	148	149	350	6	100	40.02	0.11	0.31	0.45
154	149	146	1250	8	100	34.67	0.07	0.06	0.22
155	150	147	500	8	100	92.89	0.18	0.36	0.59
156	155	147	1700	6	100	84.64	2.12	1.25	0.96
157	137	155	1100	6	100	244.01	9.73	8.85	2.77
158	155	158	850	8	120	154.22	0.57	0.66	0.98
159	154	150	950	8	100	146.50	0.81	0.85	0.94
160	150	151	1450	8	100	45.89	0.14	0.10	0.29
161	151	152	500	6	100	5.35	0.00	0.01	0.06
162	152	153	1000	6	100	2.16	0.00	0.00	0.02
163	151	148	400	6	100	29.74	0.07	0.18	0.34
164	142	126	1400	6	100	184.63	7.39	5.28	2.10
165	157	140	500	12	100	375.29	0.34	0.67	1.06
166	125	127	350	8	100	191.20	0.49	1.39	1.22
167	158	154	850	8	120	154.22	0.57	0.66	0.98
170	171	170	2180	8	120	456.23	10.80	4.96	2.91
171	171	172	300	8	100	6.48	0.00	0.00	0.04
172	173	171	1250	8	100	467.04	9.07	7.25	2.98
173	94	173	2600	8	120	310.91	6.33	2.44	1.98
174	174	173	900	8	100	161.48	0.91	1.01	1.03
175	175	174	600	8	100	73.74	0.14	0.24	0.47
176	178	174	800	8	100	92.07	0.29	0.36	0.59
177	176	175	550	8	100	79.09	0.15	0.27	0.50
178	176	177	220	8	100	15.75	0.00	0.01	0.10
179	180	176	550	8	100	100.19	0.23	0.42	0.64
180	71	178	1650	8	100	125.77	1.05	0.64	0.80
181	177	178	250	8	100	10.40	0.00	0.01	0.07
183	71	179	1450	8	110	114.08	0.65	0.45	0.73
184	179	180	350	8	100	108.73	0.17	0.49	0.69
185	180	181	400	8	100	3.19	0.00	0.00	0.02
186	183	182	250	8	110	81.83	0.06	0.24	0.52
187	182	184	500	8	110	79.67	0.11	0.23	0.51
188	94	183	280	8	90	182.15	0.43	1.54	1.16
189	183	184	380	8	90	94.96	0.18	0.46	0.61

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
190	184	185	250	8	90	169.29	0.34	1.35	1.08
191	185	75	1100	8	110	102.96	0.41	0.37	0.66
192	185	186	600	8	100	60.97	0.10	0.17	0.39
193	186	76	400	8	100	71.68	0.09	0.23	0.46
194	187	186	450	6	100	19.35	0.04	0.08	0.22
195	90	187	300	6	100	25.83	0.04	0.14	0.29
196	190	279	700	8	110	26.45	0.02	0.03	0.17
198	190	170	1300	8	100	209.12	2.13	1.64	1.33
199	191	190	2400	8	100	238.75	5.03	2.09	1.52
200	192	191	800	8	60	307.78	6.90	8.63	1.96
201	196	191	650	8	60	542.45	16.02	24.65	3.46
202	193	192	250	6	60	313.13	9.04	36.17	3.55
203	194	193	150	12	120	127.02	0.01	0.06	0.36
204	193	204	2560	10	100	57.09	0.13	0.05	0.23
205	194	195	1280	8	60	6.77	0.01	0.01	0.04
206	196	194	850	12	120	139.14	0.06	0.08	0.39
207	196	195	550	6	60	15.30	0.07	0.13	0.17
208	280	196	1000	12	120	702.23	1.53	1.53	1.99
209	197	193	650	12	120	249.69	0.15	0.23	0.71
210	198	197	1100	8	90	256.17	3.19	2.90	1.64
212	96	198	450	8	90	285.29	1.59	3.54	1.82
213	198	199	800	8	100	5.35	0.00	0.00	0.03
214	198	200	200	8	100	12.97	0.00	0.01	0.08
215	200	201	1050	10	100	2.16	0.00	0.00	0.01
216	195	202	1250	6	60	17.74	0.22	0.18	0.20
217	202	203	200	6	60	10.44	0.01	0.07	0.12
218	202	206	450	12	110	2.16	0.00	0.00	0.01
219	204	203	350	6	60	23.83	0.11	0.31	0.27
220	203	205	450	12	110	3.19	0.00	0.00	0.01
222	204	207	450	6	60	33.27	0.26	0.57	0.38
223	207	208	2100	8	110	17.11	0.03	0.01	0.11
224	208	209	1800	8	110	11.76	0.01	0.01	0.08
250	126	230	500	12	100	6.65	0.00	0.00	0.02
251	230	231	500	12	110	3.36	0.00	0.00	0.01
252	143	233	500	12	100	315.40	0.24	0.49	0.89
253	233	232	350	12	120	305.07	0.11	0.33	0.87
254	232	234	1200	12	120	291.43	0.36	0.30	0.83
255	232	235	200	8	120	10.34	0.00	0.00	0.07
256	234	140	3100	12	120	281.09	0.87	0.28	0.80
257	145	236	450	12	110	2489.63	8.42	18.71	7.06
258	236	237	700	12	110	891.87	1.96	2.80	2.53
259	237	146	1400	12	110	324.93	0.60	0.43	0.92
260	237	238	1350	8	110	561.41	11.54	8.55	3.58
261	239	238	900	8	110	30.03	0.03	0.04	0.19
262	146	239	1300	8	100	505.14	10.90	8.39	3.22
263	239	240	1800	8	100	469.51	13.19	7.33	3.00
264	238	241	1150	10	100	585.84	4.28	3.72	2.39
265	245	240	500	10	100	698.90	2.58	5.16	2.86
266	240	246	650	8	100	551.18	6.41	9.86	3.52
267	242	241	1100	10	110	728.86	5.14	4.68	2.98
268	241	245	380	10	100	1311.28	6.29	16.55	5.36
269	242	243	700	10	110	862.05	4.47	6.38	3.52

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
270	243	245	1100	10	110	858.63	6.97	6.33	3.51
271	246	247	1520	8	100	583.75	16.67	10.96	3.73
272	250	246	1440	8	100	169.67	1.60	1.11	1.08
273	247	300	1050	8	100	581.04	11.41	10.87	3.71
274	247	248	1600	6	100	8.30	0.03	0.02	0.09
275	248	249	1250	12	110	4.15	0.00	0.00	0.01
276	251	250	2560	6	100	175.20	12.27	4.79	1.99
277	251	252	550	8	100	12.05	0.00	0.01	0.08
278	251	255	1900	8	100	457.96	13.29	7.00	2.92
279	252	253	750	8	110	4.61	0.00	0.00	0.03
280	252	254	200	8	100	3.36	0.00	0.00	0.02
282	255	256	600	8	100	301.92	1.94	3.23	1.93
283	255	257	1000	8	100	152.68	0.91	0.91	0.97
284	257	256	1200	8	100	147.15	1.03	0.85	0.94
285	256	320	1650	8	100	445.71	10.98	6.65	2.85
300	270	251	2350	8	100	649.30	31.38	13.35	4.14
301	170	270	650	8	100	662.16	9.00	13.85	4.23
302	270	271	950	6	100	7.51	0.01	0.01	0.09
303	273	272	1350	8	110	0.58	0.00	0.00	0.00
304	274	272	950	8	110	4.77	0.00	0.00	0.03
305	274	273	550	8	110	5.93	0.00	0.00	0.04
306	275	274	450	8	110	16.05	0.01	0.01	0.10
307	276	275	800	8	110	21.40	0.02	0.02	0.14
308	276	354	300	8	100	569.70	3.14	10.48	3.64
309	277	276	1360	8	100	596.45	15.52	11.41	3.81
310	278	277	3000	8	120	601.80	24.83	8.28	3.84
311	191	278	1200	8	120	606.12	10.06	8.39	3.87
312	282	280	1050	12	120	708.41	1.63	1.55	2.01
313	282	283	550	6	100	16.05	0.03	0.06	0.18
314	283	284	1100	6	100	5.25	0.01	0.01	0.06
315	282	285	950	8	90	17.64	0.02	0.02	0.11
316	602	282	700	12	120	747.45	1.20	1.72	2.12
350	300	301	500	8	100	661.67	6.91	13.83	4.22
351	302	301	850	8	100	344.83	3.52	4.14	2.20
352	302	303	700	6	100	5.29	0.01	0.01	0.06
353	304	302	1000	8	100	355.42	4.37	4.37	2.27
354	304	305	500	8	100	11.60	0.00	0.01	0.07
355	304	307	500	6	100	15.48	0.03	0.05	0.18
356	309	304	950	8	100	172.94	1.09	1.15	1.10
357	305	306	305	6	100	6.30	0.00	0.01	0.07
358	307	308	600	6	100	7.66	0.01	0.01	0.09
359	310	304	1100	8	120	213.94	1.34	1.22	1.37
360	310	309	200	8	100	179.29	0.25	1.23	1.14
361	311	310	950	8	100	398.53	5.14	5.41	2.54
362	312	311	1200	8	100	13.87	0.01	0.01	0.09
364	312	313	1000	6	100	89.67	1.39	1.39	1.02
365	315	312	300	8	100	115.88	0.16	0.55	0.74
366	314	313	300	8	100	350.01	1.28	4.25	2.23
367	315	314	1000	8	100	79.83	0.28	0.28	0.51
368	317	314	300	8	100	273.31	0.81	2.69	1.74
369	316	315	300	8	100	198.84	0.45	1.49	1.27
370	317	316	950	8	100	43.19	0.08	0.09	0.28

JOB : SOUTHBORO WATER DISTRIBUTION ANALYSIS

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
371	318	316	300	8	100	158.77	0.30	0.98	1.01
372	319	317	300	8	100	319.62	1.08	3.59	2.04
373	319	318	850	8	100	161.90	0.87	1.02	1.03
374	320	319	1000	8	110	484.14	6.50	6.50	3.09
375	320	321	1400	8	100	62.76	0.25	0.18	0.40
376	321	322	800	8	100	280.64	2.26	2.82	1.79
377	322	323	400	8	110	184.41	0.44	1.09	1.18
378	322	325	250	8	100	92.00	0.09	0.36	0.59
379	323	324	280	8	100	181.79	0.35	1.26	1.16
380	325	324	400	8	100	216.63	0.70	1.75	1.38
381	324	326	300	8	100	395.25	1.60	5.33	2.52
382	327	325	210	8	100	128.87	0.14	0.67	0.82
385	313	300	950	8	100	436.55	6.08	6.40	2.79
386	326	311	650	8	100	391.01	3.39	5.22	2.50
392	361	391	50	8	100	28.66	0.00	0.04	0.18
394	391	374	1000	12	120	28.66	0.00	0.00	0.08
400	350	320	1250	8	100	104.87	0.57	0.46	0.67
401	356	321	1250	12	110	222.12	0.27	0.21	0.63
402	351	350	510	8	100	543.48	4.90	9.60	3.47
403	350	356	750	12	110	433.31	0.55	0.73	1.23
404	353	351	350	8	100	405.36	1.95	5.58	2.59
405	352	351	900	8	100	143.41	0.73	0.81	0.92
406	353	352	1400	8	100	148.71	1.22	0.87	0.95
407	354	353	1260	8	100	559.36	12.76	10.13	3.57
408	354	355	960	8	90	10.34	0.01	0.01	0.07
409	356	357	1050	8	110	205.90	1.40	1.33	1.31
410	357	358	200	8	110	144.12	0.14	0.69	0.92
411	357	364	1250	8	110	57.55	0.16	0.13	0.37
412	358	359	1650	8	110	79.89	0.38	0.23	0.51
413	359	327	800	8	100	131.49	0.56	0.69	0.84
414	358	360	750	8	100	64.23	0.14	0.18	0.41
415	361	359	800	8	100	59.83	0.13	0.16	0.38
416	360	361	250	8	90	94.42	0.11	0.46	0.60
417	362	360	1050	8	120	35.49	0.05	0.04	0.23
418	361	374	1800	6	90	3.15	0.01	0.00	0.04
419	363	362	750	8	120	41.66	0.04	0.06	0.27
420	364	365	500	8	120	22.52	0.01	0.02	0.14
421	364	363	900	8	120	29.73	0.03	0.03	0.19
422	365	363	1650	8	120	17.23	0.02	0.01	0.11
423	367	366	750	12	120	4.13	0.00	0.00	0.01
424	370	367	600	12	120	8.69	0.00	0.00	0.02
425	367	368	1350	12	120	0.37	0.00	0.00	0.00
426	369	368	500	12	120	3.31	0.00	0.00	0.01
427	370	369	1450	8	120	1.34	0.00	0.00	0.01
428	372	369	450	12	120	5.10	0.00	0.00	0.01
429	371	370	500	12	120	13.20	0.00	0.00	0.04
430	374	371	600	12	120	16.33	0.00	0.00	0.05
431	373	372	850	12	120	9.24	0.00	0.00	0.03
432	374	373	1250	12	120	12.36	0.00	0.00	0.04
701	127	129	1360	12	130	1088.31	4.04	2.97	3.09
702	129	138	1200	12	130	978.98	2.93	2.44	2.78
703	245	240	500	12	130	1467.58	2.58	5.16	4.16

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
704	240	246	650	12	130	2081.39	6.41	9.86	5.90
705	246	247	1520	12	130	2204.38	16.67	10.96	6.25
706	247	300	1050	12	130	2194.18	11.41	10.87	6.22
707	300	301	500	12	130	2498.65	6.91	13.83	7.09
708	236	242	2100	12	130	1594.34	12.64	6.02	4.52
709	301	900	1600	12	130	3500.00	41.30	25.81	9.93
710	137	145	1700	12	130	474.79	1.09	0.64	1.35

JOB : SOUTHBORO WATER DISTRIBUTION ANALYSIS

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC		Q(GPM)	TYPE
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)				
1	0	0	375	491.75	116.75	50.54	10.80	BQ	10.80	0.00
2	0	0	341	491.76	150.76	65.26	10.80	BQ	10.80	0.00
3	0	0	272	491.76	219.76	95.13	10.80	BQ	10.80	0.00
4	0	0	270	491.77	221.77	96.00	5.35	BQ	5.35	0.00
5	0	0	285	491.76	206.76	89.51	29.40	BQ	29.40	0.00
6	0	0	275	491.78	216.78	93.84	5.35	BQ	5.35	0.00
7	0	0	272	498.84	226.84	98.20	8.23	BQ	8.23	0.00
8	0	0	270	502.11	232.11	100.48	29.40	BQ	29.40	0.00
9	0	0	270	502.11	232.11	100.48				0.00
10	0	0	270	502.11	232.11	100.48	5.25	BQ	5.25	0.00
11	0	0	290	484.86	194.86	84.35	5.35	BQ	5.35	0.00
12	0	0	275	483.68	208.68	90.34	5.35	BQ	5.35	0.00
13	0	0	295	483.29	188.29	81.51	5.35	BQ	5.35	0.00
14	0	0	295	482.27	187.27	81.07	7.51	BQ	7.51	0.00
15	0	0	277	482.27	205.27	88.86	5.35	BQ	5.35	0.00
30	0	0	270	480.35	210.35	91.06	7.51	BQ	7.51	0.00
31	0	0	310	480.43	170.43	73.78	5.35	BQ	5.35	0.00
32	0	0	340	480.43	140.43	60.79	5.35	BQ	5.35	0.00
33	0	0	335	480.44	145.44	62.96	5.35	BQ	5.35	0.00
34	0	0	315	480.46	165.46	71.63	10.81	BQ	10.80	0.00
35	0	0	315	480.51	165.51	71.65	7.51	BQ	7.51	0.00
36	0	0	310	480.54	170.54	73.83	7.51	BQ	7.51	0.00
37	0	0	306	480.66	174.66	75.61	5.35	BQ	5.35	0.00
38	0	0	325	480.46	155.46	67.30	10.39	BQ	10.39	0.00
39	0	0	328	480.34	152.34	65.95	20.58	BQ	20.58	0.00
40	0	0	335	479.98	144.98	62.76	6.22	BQ	6.22	0.00
41	0	0	410	479.85	69.85	30.24	9.34	BQ	9.34	0.00
42	0	0	410	479.81	69.81	30.22	17.64	BQ	17.64	0.00
43	0	0	370	479.77	109.77	47.52	9.34	BQ	9.34	0.00
44	0	0	385	479.77	94.77	41.03	9.19	BQ	9.19	0.00
45	0	0	375	479.77	104.77	45.36	9.19	BQ	9.19	0.00
46	0	0	300	479.76	179.76	77.82	9.19	BQ	9.19	0.00
47	0	0	300	479.76	179.76	77.82	9.19	BQ	9.19	0.00
48	0	0	310	479.76	169.76	73.49	9.19	BQ	9.19	0.00
49	0	0	295	479.76	184.76	79.98	17.64	BQ	17.64	0.00
50	0	0	275	479.76	204.76	88.64	26.46	BQ	26.46	0.00
51	0	0	335	479.99	144.99	62.77	6.22	BQ	6.22	0.00
52	0	0	270	479.92	209.92	90.88	15.56	BQ	15.56	0.00
62	0	0	350	479.78	129.78	56.18	17.64	BQ	17.64	0.00
70	0	0	315	481.07	166.07	71.89	7.71	BQ	7.71	0.00
71	0	0	315	481.59	166.59	72.12	7.71	BQ	7.71	0.00
72	0	0	320	480.59	160.59	69.52	3.11	BQ	3.11	0.00
73	0	0	325	480.34	155.34	67.25	3.11	BQ	3.11	0.00
74	0	0	330	480.16	150.16	65.00	4.59	BQ	4.59	0.00
75	0	0	300	484.32	184.32	79.79	15.56	BQ	15.56	0.00
76	0	0	300	484.53	184.53	79.88	9.33	BQ	9.34	0.00
77	0	0	330	484.48	154.48	66.88	15.56	BQ	15.56	0.00
78	0	0	330	485.58	155.58	67.35	31.12	BQ	31.12	0.00
79	0	0	285	485.19	200.19	86.66	7.71	BQ	7.71	0.00
80	0	0	275	485.17	210.17	90.98	7.71	BQ	7.71	0.00
81	0	0	265	485.16	220.16	95.31	7.71	BQ	7.71	0.00
82	0	0	265	485.14	220.14	95.30	7.71	BQ	7.71	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC			
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(Psi)	Q(GPM)	TYPE		
83	0	0	275	485.19	210.19	90.99	6.22	BQ	6.22	0.00
84	0	0	295	485.17	190.17	82.33	7.71	BQ	7.71	0.00
85	0	0	270	485.18	215.18	93.15	17.64	BQ	17.64	0.00
86	0	0	295	485.18	190.18	82.33	15.56	BQ	15.56	0.00
87	0	0	290	485.14	195.14	84.48	9.34	BQ	9.34	0.00
88	0	0	295	485.16	190.16	82.32	15.56	BQ	15.56	0.00
89	0	0	260	485.14	225.14	97.46	15.56	BQ	15.56	0.00
90	0	0	325	484.70	159.70	69.13	9.34	BQ	9.34	0.00
91	0	0	350	485.85	135.85	58.81	10.80	BQ	10.80	0.00
92	0	0	287	484.90	197.90	85.67	10.80	BQ	10.80	0.00
93	0	0	282	485.35	203.35	88.03	5.35	BQ	5.35	0.00
94	0	0	335	485.67	150.67	65.22	3.19	BQ	3.19	0.00
95	0	0	320	485.35	165.35	71.58	5.35	BQ	5.35	0.00
96	0	0	260	487.49	227.49	98.48	3.19	BQ	3.19	0.00
97	0	0	270	487.31	217.31	94.07	6.48	BQ	6.48	0.00
98	0	0	285	487.03	202.03	87.46	44.10	BQ	44.10	0.00
120	0	0	390	473.04	83.04	35.95	2.16	BQ	2.16	0.00
121	0	0	450	481.36	31.36	13.58	5.35	BQ	5.35	0.00
122	0	0	450	481.46	31.46	13.62	5.35	BQ	5.35	0.00
123	0	0	410	484.63	74.63	32.31	5.35	BQ	5.35	0.00
124	0	0	385	481.72	96.72	41.87	5.35	BQ	5.35	0.00
125	0	0	337	479.88	142.88	61.85				0.00
126	0	0	355	470.97	115.97	50.20	5.35	BQ	5.35	0.00
127	0	0	335	479.39	144.39	62.51	8.64	BQ	8.64	0.00
128	0	0	335	482.10	147.10	63.68	5.35	BQ	5.35	0.00
129	0	0	270	475.36	205.36	88.90	5.35	BQ	5.35	0.00
130	0	0	285	475.35	190.35	82.40	16.16	BQ	16.16	0.00
131	0	0	325	469.53	144.53	62.57	5.35	BQ	5.35	0.00
132	0	0	330	469.53	139.53	60.40	7.51	BQ	7.51	0.00
133	0	0	350	469.59	119.59	51.77	10.80	BQ	10.80	0.00
134	0	0	312	469.66	157.66	68.25	5.35	BQ	5.35	0.00
135	0	0	310	468.04	158.04	68.42	5.35	BQ	5.35	0.00
136	0	0	305	466.08	161.08	69.73	5.35	BQ	5.35	0.00
137	0	0	295	447.78	152.78	66.14	5.35	BQ	5.35	0.00
138	0	0	320	472.43	152.43	65.99	12.35	BQ	12.35	0.00
139	0	0	320	469.70	149.70	64.81	12.55	BQ	12.55	0.00
140	0	0	320	468.89	148.89	64.45	5.35	BQ	5.35	0.00
141	0	0	340	470.30	130.30	56.41	5.14	BQ	5.14	0.00
142	0	0	345	478.36	133.36	57.73	5.88	BQ	5.88	0.00
143	0	0	355	470.48	115.48	49.99	16.16	BQ	16.16	0.00
145	0	0	345	446.69	101.69	44.02	3.09	BQ	3.09	0.00
146	0	0	296	435.71	139.71	60.48	2.16	BQ	2.16	0.00
147	0	0	290	435.93	145.93	63.17	8.75	BQ	8.75	0.00
148	0	0	266	435.89	169.89	73.55	10.80	BQ	10.80	0.00
149	0	0	262	435.79	173.79	75.23	5.35	BQ	5.35	0.00
150	0	0	285	436.11	151.11	65.42	7.72	BQ	7.72	0.00
151	0	0	295	435.97	140.97	61.02	10.80	BQ	10.80	0.00
152	0	0	285	435.96	150.96	65.35	3.19	BQ	3.19	0.00
153	0	0	260	435.96	175.96	76.17	2.16	BQ	2.16	0.00
154	0	0	290	436.91	146.91	63.60	7.72	BQ	7.72	0.00
155	0	0	295	438.05	143.05	61.92	5.14	BQ	5.14	0.00
156	0	0	265	480.48	215.48	93.28	17.64	BQ	17.64	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC		
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(Psi)	Q(GPM)	TYPE	
157	0	0	325	469.23	144.23	62.44			0.00
158	0	0	275	437.48	162.48	70.34			0.00
170	0	0	259	459.46	200.46	86.78	3.19	BQ	0.00
171	0	0	265	470.27	205.27	88.86	4.32	BQ	0.00
172	0	0	305	470.27	165.27	71.54	6.48	BQ	0.00
173	0	0	265	479.33	214.33	92.79	5.35	BQ	0.00
174	0	0	280	480.25	200.25	86.69	4.32	BQ	0.00
175	0	0	270	480.39	210.39	91.08	5.35	BQ	0.00
176	0	0	275	480.54	205.54	88.98	5.35	BQ	0.00
177	0	0	285	480.54	195.54	84.65	5.35	BQ	0.00
178	0	0	305	480.53	175.53	75.99	44.10	BQ	0.00
179	0	0	280	480.94	200.94	86.99	5.35	BQ	0.00
180	0	0	280	480.77	200.77	86.91	5.35	BQ	0.00
181	0	0	290	480.77	190.77	82.58	3.19	BQ	0.00
182	0	0	280	485.18	205.18	88.82	2.16	BQ	0.00
183	0	0	290	485.24	195.24	84.52	5.35	BQ	0.00
184	0	0	305	485.06	180.06	77.95	5.35	BQ	0.00
185	0	0	305	484.72	179.72	77.80	5.35	BQ	0.00
186	0	0	325	484.62	159.62	69.10	8.64	BQ	0.00
187	0	0	325	484.66	159.66	69.12	6.48	BQ	0.00
190	0	0	365	461.59	96.59	41.81	3.19	BQ	0.00
191	0	0	275	466.62	191.62	82.95	5.35	BQ	0.00
192	0	0	265	473.52	208.52	90.27	5.35	BQ	0.00
193	0	0	285	482.56	197.56	85.53	6.48	BQ	0.00
194	0	0	295	482.57	187.57	81.20	5.35	BQ	0.00
195	0	0	295	482.56	187.56	81.20	4.32	BQ	0.00
196	0	0	285	482.64	197.64	85.56	5.35	BQ	0.00
197	0	0	265	482.71	217.71	94.25	6.48	BQ	0.00
198	0	0	280	485.90	205.90	89.13	10.80	BQ	0.00
199	0	0	265	485.90	220.90	95.63	5.35	BQ	0.00
200	0	0	280	485.90	205.90	89.13	10.80	BQ	0.00
201	0	0	360	485.90	125.90	54.50	2.16	BQ	0.00
202	0	0	280	482.34	202.34	87.59	5.14	BQ	0.00
203	0	0	275	482.33	207.33	89.75	31.08	BQ	0.00
204	0	0	249	482.44	233.44	101.05			0.00
205	0	0	280	482.33	202.33	87.59	3.19	BQ	0.00
206	0	0	280	482.34	202.34	87.59	2.16	BQ	0.00
207	0	0	230	482.18	252.18	109.17	16.16	BQ	0.00
208	0	0	215	482.15	267.15	115.65	5.35	BQ	0.00
209	0	0	200	482.14	282.14	122.14	11.76	BQ	0.00
230	0	0	377	470.97	93.97	40.68	3.29	BQ	0.00
231	0	0	380	470.97	90.97	39.38	3.36	BQ	0.00
232	0	0	320	470.12	150.12	64.99	3.29	BQ	0.00
233	0	0	325	470.23	145.23	62.87	10.34	BQ	0.00
234	0	0	380	469.76	89.76	38.86	10.34	BQ	0.00
235	0	0	360	470.12	110.12	47.67	10.34	BQ	0.00
236	0	0	350	438.27	88.27	38.21	3.42	BQ	0.00
237	0	0	270	436.32	166.32	72.00	5.53	BQ	0.00
238	0	0	400	424.77	24.77	10.72	5.60	BQ	0.00
239	0	0	325	424.81	99.81	43.21	5.60	BQ	0.00
240	0	0	325	411.62	86.62	37.50	3.42	BQ	0.00
241	0	0	370	420.49	50.49	21.86	3.42	BQ	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC			
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)	Q(GPM)	TYPE		
242	0	0	415	425.64	10.64	4.60	3.42	BQ	3.42	0.00
243	0	0	420	421.17	1.17	0.51	3.42	BQ	3.42	0.00
245	0	0	355	414.20	59.20	25.63	3.42	BQ	3.42	0.00
246	0	0	324	405.22	81.22	35.16	14.11	BQ	14.11	0.00
247	0	0	305	388.55	83.55	36.17	4.61	BQ	4.61	0.00
248	0	0	330	388.52	58.52	25.33	4.15	BQ	4.15	0.00
249	0	0	330	388.52	58.52	25.33	4.15	BQ	4.15	0.00
250	0	0	306	406.82	100.82	43.64	5.53	BQ	5.53	0.00
251	0	0	293	419.08	126.08	54.58	4.08	BQ	4.08	0.00
252	0	0	275	419.08	144.08	62.37	4.08	BQ	4.08	0.00
253	0	0	285	419.08	134.08	58.04	4.61	BQ	4.61	0.00
254	0	0	270	419.08	149.08	64.54	3.36	BQ	3.36	0.00
255	0	0	295	405.79	110.79	47.96	3.36	BQ	3.36	0.00
256	0	0	295	403.85	108.85	47.12	3.36	BQ	3.36	0.00
257	0	0	290	404.88	114.88	49.73	5.53	BQ	5.53	0.00
270	0	0	276	450.46	174.46	75.52	5.35	BQ	5.35	0.00
271	0	0	320	450.45	130.45	56.47	7.51	BQ	7.51	0.00
272	0	0	350	416.19	66.19	28.65	5.35	BQ	5.35	0.00
273	0	0	370	416.19	46.19	19.99	5.35	BQ	5.35	0.00
274	0	0	350	416.19	66.19	28.65	5.35	BQ	5.35	0.00
275	0	0	330	416.19	86.19	37.31	5.35	BQ	5.35	0.00
276	0	0	320	416.21	96.21	41.65	5.35	BQ	5.35	0.00
277	0	0	340	431.73	91.73	39.71	5.35	BQ	5.35	0.00
278	0	0	315	456.55	141.55	61.28	4.32	BQ	4.32	0.00
279	0	0	270	461.57	191.57	82.93	26.45	BQ	26.45	0.00
280	0	0	280	484.17	204.17	88.38	6.17	BQ	6.17	0.00
282	0	0	410	485.80	75.80	32.81	5.35	BQ	5.35	0.00
283	0	0	415	485.77	70.77	30.64	10.80	BQ	10.80	0.00
284	0	0	400	485.76	85.76	37.13	5.25	BQ	5.25	0.00
285	0	0	400	485.78	85.78	37.13	17.64	BQ	17.64	0.00
300	0	0	285	377.14	92.14	39.89	51.45	BQ	51.45	0.00
301	0	0	285	370.22	85.22	36.89	5.14	BQ	5.14	0.00
302	0	0	275	373.74	98.74	42.74	5.29	BQ	5.29	0.00
303	0	0	280	373.73	93.73	40.58	5.29	BQ	5.29	0.00
304	0	0	264	378.11	114.11	49.40	4.39	BQ	4.39	0.00
305	0	0	265	378.11	113.11	48.96	5.29	BQ	5.29	0.00
306	0	0	280	378.11	98.11	42.47	6.30	BQ	6.30	0.00
307	0	0	260	378.09	118.09	51.12	7.82	BQ	7.82	0.00
308	0	0	255	378.08	123.08	53.28	7.66	BQ	7.66	0.00
309	0	0	280	379.21	99.21	42.95	6.35	BQ	6.35	0.00
310	0	0	280	379.45	99.45	43.05	5.29	BQ	5.29	0.00
311	0	0	300	384.59	84.59	36.62	6.35	BQ	6.35	0.00
312	0	0	370	384.60	14.60	6.32	12.35	BQ	12.35	0.00
313	0	0	318	383.22	65.22	28.23	3.13	BQ	3.13	0.00
314	0	0	315	384.49	69.49	30.08	3.13	BQ	3.13	0.00
315	0	0	368	384.77	16.77	7.26	3.13	BQ	3.13	0.00
316	0	0	340	385.22	45.22	19.57	3.13	BQ	3.13	0.00
317	0	0	300	385.30	85.30	36.93	3.13	BQ	3.13	0.00
318	0	0	310	385.51	75.51	32.69	3.13	BQ	3.13	0.00
319	0	0	287	386.38	99.38	43.02	2.62	BQ	2.62	0.00
320	0	0	271	392.88	121.88	52.76	3.68	BQ	3.68	0.00
321	0	0	262	392.63	130.63	56.55	4.24	BQ	4.24	0.00

[illegible]

COMPUTER OUTPUT

FOR

ALTERNATIVE NO.3:

REPLACING 8 INCH PIPES ALONG
THE PARKERVILLE ROAD

JOB : SOUTHBORO WATER DISTRIBUTION ANALYSIS

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
1	2	1	975	8	100	10.80	0.01	0.01	0.07
2	3	2	1100	12	100	15.24	0.00	0.00	0.04
3	4	3	1900	12	100	26.04	0.01	0.00	0.07
4	4	5	1200	12	100	35.77	0.01	0.01	0.10
5	5	2	1500	12	100	6.37	0.00	0.00	0.02
6	6	4	430	12	100	67.16	0.01	0.03	0.19
7	7	6	1750	12	110	1087.12	7.06	4.03	3.08
8	500	7	800	12	110	1095.35	3.27	4.09	3.11
9	500	8	850	12	110	34.65	0.01	0.01	0.10
10	8	9	400	12	100	5.25	0.00	0.00	0.01
11	9	10	300	12	100	5.25	0.00	0.00	0.01
12	6	11	1950	12	110	1014.60	6.92	3.55	2.88
13	11	12	2200	12	110	439.91	1.66	0.76	1.25
14	12	13	750	12	110	434.56	0.55	0.74	1.23
15	13	14	2000	12	110	429.21	1.44	0.72	1.22
16	14	15	1950	10	100	5.35	0.00	0.00	0.02
17	14	30	1400	10	100	416.35	2.77	1.98	1.70
18	156	34	800	6	120	15.54	0.03	0.04	0.18
30	31	30	1500	10	90	80.90	0.17	0.12	0.33
31	32	31	520	8	100	7.69	0.00	0.00	0.05
32	33	32	800	8	100	5.50	0.00	0.00	0.04
33	33	32	450	8	100	7.50	0.00	0.00	0.05
34	34	31	500	10	90	78.60	0.05	0.11	0.32
35	34	33	700	6	100	18.35	0.05	0.07	0.21
36	35	34	500	10	90	92.22	0.07	0.15	0.38
37	36	35	320	10	90	99.74	0.05	0.17	0.41
38	37	36	550	10	90	140.42	0.18	0.32	0.57
39	36	156	1800	8	100	33.18	0.10	0.05	0.21
40	37	38	1350	10	110	107.34	0.18	0.13	0.44
41	38	39	400	10	110	161.34	0.11	0.29	0.66
42	72	38 CV	1000	8	110	64.39	0.16	0.16	0.41 Open
43	39	40	1650	10	110	140.54	0.37	0.22	0.57
44	39	73	850	8	110	0.10	0.00	0.00	0.00
45	40	41	1350	12	110	143.98	0.13	0.10	0.41
46	51	40	350	6	90	9.69	0.01	0.03	0.11
47	41	42	450	12	110	134.65	0.04	0.08	0.38
48	42	43	1100	12	110	81.29	0.04	0.03	0.23
49	43	44	250	12	110	18.37	0.00	0.00	0.05
50	43	46	2200	8	110	11.80	0.01	0.01	0.08
51	44	45	750	12	110	6.94	0.00	0.00	0.02
52	44	45	2500	10	110	2.24	0.00	0.00	0.01
53	46	47	1650	8	110	2.61	0.00	0.00	0.02
54	48	47	3300	12	110	6.58	0.00	0.00	0.02
55	43	48	1500	12	110	41.79	0.01	0.01	0.12
56	48	49	500	12	110	26.02	0.00	0.00	0.07
57	49	50	1050	12	110	16.43	0.00	0.00	0.05
58	49	50	1350	8	110	4.94	0.00	0.00	0.03
59	51	52	1200	6	100	15.56	0.06	0.05	0.18
60	42	62	600	8	120	35.72	0.03	0.04	0.23
61	62	49	2100	8	120	18.08	0.03	0.01	0.12
64	49	50	1500	8	120	5.09	0.00	0.00	0.03
70	70	37	500	10	90	253.11	0.48	0.96	1.03

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
71	71	70	600	10	90	260.82	0.61	1.01	1.07
72	71	72	1950	8	90	106.44	1.11	0.57	0.68
73	75	71	600	10	90	592.16	2.77	4.62	2.42
74	72	73	750	6	90	38.94	0.27	0.36	0.44
75	73	74	600	6	90	36.05	0.19	0.31	0.41
76	74	51	700	6	90	31.45	0.17	0.24	0.36
77	78	75	2900	10	100	182.02	1.24	0.43	0.74
78	76	75	150	10	90	319.60	0.22	1.47	1.31
79	76	77	900	6	100	15.56	0.05	0.05	0.18
80	90	76	650	12	120	270.01	0.17	0.26	0.77
81	78	79	2160	8	100	58.91	0.34	0.16	0.38
82	600	78	800	10	90	272.04	0.87	1.09	1.11
83	79	84	450	6	90	12.70	0.02	0.05	0.14
84	79	83	300	8	100	24.34	0.01	0.03	0.16
85	84	80	650	12	110	5.00	0.00	0.00	0.01
86	83	80	650	8	100	18.12	0.01	0.02	0.12
87	80	81	750	8	100	15.41	0.01	0.01	0.10
88	81	82	1600	6	100	7.71	0.02	0.01	0.09
89	79	85	550	8	100	14.16	0.01	0.01	0.09
90	86	85	2050	10	100	2.88	0.00	0.00	0.01
91	86	88	250	8	90	40.45	0.02	0.10	0.26
92	88	87	1300	8	90	14.37	0.02	0.01	0.09
93	88	89	2400	8	90	10.53	0.02	0.01	0.07
94	87	89	250	8	90	5.03	0.00	0.00	0.03
95	93	86	3500	10	100	59.48	0.19	0.05	0.24
96	600	91	1200	10	110	221.09	0.62	0.51	0.90
97	92	90	600	12	120	304.25	0.19	0.32	0.86
98	91	92	1950	10	110	210.28	0.91	0.47	0.86
99	93	92	900	8	90	104.77	0.50	0.55	0.67
100	93	95	400	8	110	5.35	0.00	0.00	0.03
101	94	93	1080	10	110	174.96	0.36	0.33	0.71
102	96	94	1800	12	110	522.00	1.87	1.04	1.48
103	501	96	2560	12	110	1000.00	8.85	3.46	2.84
104	96	97	450	6	110	50.59	0.18	0.40	0.57
105	97	98	900	6	110	44.10	0.28	0.31	0.50
106	96	94	1800	8	90	147.03	1.87	1.04	0.94
119	601	123	100	12	100	1968.01	1.44	14.45	5.58
120	121	120	2200	12	100	1440.03	17.82	8.10	4.09
121	123	121	1200	12	110	1157.03	5.43	4.53	3.28
122	123	124	800	12	110	805.62	1.85	2.32	2.29
123	122	121	500	8	120	288.36	1.06	2.12	1.84
124	124	122	1150	8	120	293.71	2.52	2.19	1.87
125	124	125	600	12	110	506.57	0.59	0.98	1.44
126	125	142	1100	8	100	330.71	4.21	3.83	2.11
127	120	126	550	12	100	1437.87	4.44	8.08	4.08
128	125	127	350	12	100	130.82	0.03	0.10	0.37
129	128	127	1800	12	110	563.99	2.15	1.20	1.60
130	11	128	1800	12	110	569.34	2.19	1.22	1.62
131	127	129	1360	8	100	731.20	22.63	16.64	4.67
132	129	130	800	8	100	16.16	0.01	0.01	0.10
133	131	129	1200	8	100	174.48	1.41	1.17	1.11
134	131	132	1250	8	120	7.51	0.00	0.00	0.05

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
135	133	131	1200	8	100	182.71	1.53	1.28	1.17
136	134	133	800	8	100	193.52	1.14	1.42	1.24
137	134	135	400	8	100	290.87	1.21	3.02	1.86
138	135	136	500	8	100	285.52	1.46	2.92	1.82
139	30	134	2080	8	100	489.74	16.47	7.92	3.13
140	136	131	650	8	100	4.41	0.00	0.00	0.03
141	136	137	1120	8	100	275.54	3.06	2.73	1.76
142	138	139	1870	12	120	618.11	2.26	1.21	1.75
143	138	139	1350	8	120	253.72	2.26	1.67	1.62
144	139	140	300	12	120	859.27	0.67	2.22	2.44
145	126	141	600	12	100	702.42	1.29	2.14	1.99
146	141	157	1600	12	100	383.02	1.12	0.70	1.09
147	141	140	2100	12	110	421.32	1.46	0.70	1.20
148	143	141	400	12	100	107.07	0.03	0.07	0.30
149	126	143	280	12	100	1048.29	1.26	4.50	2.97
150	140	145	1750	12	110	1010.75	6.17	3.53	2.87
151	147	146	250	8	100	168.13	0.27	1.09	1.07
152	147	148	1400	8	100	22.24	0.04	0.03	0.14
153	148	149	350	6	100	45.77	0.14	0.40	0.52
154	149	146	1250	8	100	40.42	0.10	0.08	0.26
155	150	147	500	8	100	104.97	0.23	0.46	0.67
156	155	147	1700	6	100	94.14	2.58	1.52	1.07
157	137	155	1100	6	100	270.19	11.76	10.69	3.07
158	155	158	850	8	120	170.90	0.68	0.80	1.09
159	154	150	950	8	100	163.18	0.98	1.03	1.04
160	150	151	1450	8	100	50.50	0.17	0.12	0.32
161	151	152	500	6	100	5.35	0.00	0.01	0.06
162	152	153	1000	6	100	2.16	0.00	0.00	0.02
163	151	148	400	6	100	34.34	0.09	0.23	0.39
164	142	126	1400	6	100	324.83	21.05	15.03	3.69
165	157	140	500	12	100	383.02	0.35	0.70	1.09
166	125	127	350	8	100	45.03	0.03	0.10	0.29
167	158	154	850	8	120	170.90	0.68	0.80	1.09
170	171	170	2180	8	120	424.53	9.45	4.34	2.71
171	171	172	300	8	100	6.48	0.00	0.00	0.04
172	173	171	1250	8	100	435.33	7.96	6.37	2.78
173	94	173	2600	8	120	301.85	6.00	2.31	1.93
174	174	173	900	8	100	138.83	0.69	0.77	0.89
175	175	174	600	8	100	63.54	0.11	0.18	0.41
176	178	174	800	8	100	79.61	0.22	0.27	0.51
177	176	175	550	8	100	68.89	0.12	0.21	0.44
178	176	177	220	8	100	15.37	0.00	0.01	0.10
179	180	176	550	8	100	89.61	0.19	0.34	0.57
180	71	178	1650	8	100	113.70	0.87	0.53	0.73
181	177	178	250	8	100	10.02	0.00	0.01	0.06
183	71	179	1450	8	110	103.50	0.54	0.37	0.66
184	179	180	350	8	100	98.15	0.14	0.40	0.63
185	180	181	400	8	100	3.19	0.00	0.00	0.02
186	183	182	250	8	110	84.98	0.06	0.26	0.54
187	182	184	500	8	110	82.82	0.12	0.25	0.53
188	94	183	280	8	90	189.03	0.46	1.65	1.21
189	183	184	380	8	90	98.68	0.19	0.50	0.63

PIPE	FROM	TO	L(FT) D(IN) C			Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
190	184	185	250	8	90	176.16	0.36	1.45	1.12
191	185	75	1100	8	110	106.10	0.43	0.39	0.68
192	185	186	600	8	100	64.71	0.11	0.19	0.41
193	186	76	400	8	100	74.52	0.10	0.24	0.48
194	187	186	450	6	100	18.45	0.03	0.07	0.21
195	90	187	300	6	100	24.95	0.04	0.13	0.28
196	190	279	700	8	110	26.45	0.02	0.03	0.17
198	190	170	1300	8	100	195.55	1.88	1.45	1.25
199	191	190	2400	8	100	225.18	4.51	1.88	1.44
200	192	191	800	8	60	289.29	6.16	7.69	1.85
201	196	191	650	8	60	510.16	14.30	22.00	3.26
202	193	192	250	6	60	294.65	8.08	32.32	3.34
203	194	193	150	12	120	116.70	0.01	0.06	0.33
204	193	204	2560	10	100	57.18	0.13	0.05	0.23
205	194	195	1280	8	60	7.41	0.01	0.01	0.05
206	196	194	850	12	120	129.47	0.06	0.07	0.37
207	196	195	550	6	60	14.57	0.07	0.12	0.17
208	280	196	1000	12	120	659.55	1.36	1.36	1.87
209	197	193	650	12	120	241.60	0.14	0.21	0.69
210	198	197	1100	8	90	248.08	3.01	2.73	1.58
212	96	198	450	8	90	277.20	1.51	3.36	1.77
213	198	199	800	8	100	5.35	0.00	0.00	0.03
214	198	200	200	8	100	12.97	0.00	0.01	0.08
215	200	201	1050	10	100	2.16	0.00	0.00	0.01
216	195	202	1250	6	60	17.66	0.22	0.18	0.20
217	202	203	200	6	60	10.36	0.01	0.07	0.12
218	202	206	450	12	110	2.16	0.00	0.00	0.01
219	204	203	350	6	60	23.91	0.11	0.31	0.27
220	203	205	450	12	110	3.19	0.00	0.00	0.01
222	204	207	450	6	60	33.27	0.26	0.57	0.38
223	207	208	2100	8	110	17.11	0.03	0.01	0.11
224	208	209	1800	8	110	11.76	0.01	0.01	0.08
250	126	230	500	12	100	6.65	0.00	0.00	0.02
251	230	231	500	12	110	3.36	0.00	0.00	0.01
252	143	233	500	12	100	925.06	1.78	3.57	2.62
253	233	232	350	12	120	914.72	0.87	2.49	2.60
254	232	234	1200	12	120	901.09	2.91	2.43	2.56
255	232	235	200	8	120	10.34	0.00	0.00	0.07
256	140	234	3100	12	120	647.51	4.08	1.32	1.84
257	145	236	450	12	110	1007.67	1.58	3.51	2.86
258	236	237	700	12	110	1004.24	2.44	3.48	2.85
259	237	146	1400	12	110	359.75	0.73	0.52	1.02
260	237	238	1350	8	110	638.96	14.67	10.86	4.08
261	239	238	900	8	110	124.19	0.47	0.52	0.79
262	146	239	1300	8	100	566.14	13.47	10.36	3.61
263	239	240	1800	8	100	436.36	11.51	6.40	2.79
264	238	241	1150	10	100	757.55	6.89	5.99	3.09
265	245	240	500	10	100	743.85	2.90	5.79	3.04
266	240	246	650	12	130	1176.78	2.23	3.43	3.34
267	241	242	1100	10	110	204.99	0.49	0.45	0.84
268	241	245	380	10	100	549.13	1.25	3.30	2.24
269	242	243	700	10	110	201.57	0.30	0.43	0.82

PIPE	FROM	TO	L(FT)	D(IN)	C	Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
270	243	245	1100	10	110	198.14	0.46	0.42	0.81
271	246	247	1520	12	130	1312.51	6.38	4.20	3.72
272	250	246	1440	8	100	149.84	1.27	0.88	0.96
273	247	300	1050	12	130	2837.87	18.38	17.50	8.05
274	248	247	1600	12	130	1529.96	8.92	5.58	4.34
275	249	248	1250	12	110	1534.11	9.54	7.63	4.35
276	251	250	2560	6	100	155.37	9.82	3.84	1.76
277	251	252	550	8	100	12.05	0.00	0.01	0.08
278	251	255	1900	8	100	432.52	11.96	6.29	2.76
279	252	253	750	8	110	4.61	0.00	0.00	0.03
280	252	254	200	8	100	3.36	0.00	0.00	0.02
282	255	256	600	8	100	284.91	1.74	2.90	1.82
283	255	257	1000	8	100	144.25	0.82	0.82	0.92
284	257	256	1200	8	100	138.72	0.92	0.77	0.89
285	256	320	1650	8	100	420.27	9.84	5.97	2.68
300	270	251	2350	8	100	604.02	27.45	11.68	3.86
301	170	270	650	8	100	616.89	7.89	12.14	3.94
302	270	271	950	6	100	7.51	0.01	0.01	0.09
303	273	272	1350	8	110	0.58	0.00	0.00	0.00
304	274	272	950	8	110	4.77	0.00	0.00	0.03
305	274	273	550	8	110	5.93	0.00	0.00	0.04
306	275	274	450	8	110	16.05	0.01	0.01	0.10
307	276	275	800	8	110	21.40	0.02	0.02	0.14
308	276	354	300	8	100	532.49	2.77	9.25	3.40
309	277	276	1360	8	100	559.25	13.77	10.13	3.57
310	278	277	3000	8	120	564.60	22.06	7.35	3.60
311	191	278	1200	8	120	568.92	8.95	7.46	3.63
312	282	280	1050	12	120	665.72	1.45	1.38	1.89
313	282	283	550	6	100	16.05	0.03	0.06	0.18
314	283	284	1100	6	100	5.25	0.01	0.01	0.06
315	282	285	950	8	90	17.64	0.02	0.02	0.11
316	602	282	700	12	120	704.77	1.08	1.54	2.00
350	300	301	500	12	130	3145.05	10.59	21.17	8.92
351	302	301	850	8	100	360.10	3.81	4.48	2.30
352	302	303	700	6	100	5.29	0.01	0.01	0.06
353	304	302	1000	8	100	370.68	4.73	4.73	2.37
354	304	305	500	8	100	11.60	0.00	0.01	0.07
355	304	307	500	6	100	15.48	0.03	0.05	0.18
356	309	304	950	8	100	179.79	1.18	1.24	1.15
357	305	306	305	6	100	6.30	0.00	0.01	0.07
358	307	308	600	6	100	7.66	0.01	0.01	0.09
359	310	304	1100	8	120	222.36	1.44	1.31	1.42
360	310	309	200	8	100	186.14	0.26	1.32	1.19
361	311	310	950	8	100	413.79	5.51	5.80	2.64
362	312	311	1200	8	100	54.20	0.16	0.13	0.35
364	312	313	1000	6	100	68.21	0.84	0.84	0.77
365	315	312	300	8	100	134.76	0.22	0.73	0.86
366	314	313	300	8	100	293.54	0.92	3.07	1.87
367	315	314	1000	8	100	53.72	0.13	0.13	0.34
368	317	314	300	8	100	242.95	0.65	2.16	1.55
369	316	315	300	8	100	191.61	0.42	1.39	1.22
370	317	316	950	8	100	47.12	0.10	0.10	0.30

PIPE	FROM	TO	L(FT) D(IN) C			Q(GPM)	H1-H2(FT)	HL/1000L	V,FPS
371	318	316	300	8	100	147.62	0.26	0.86	0.94
372	319	317	300	8	100	293.19	0.92	3.06	1.87
373	319	318	850	8	100	150.74	0.76	0.89	0.96
374	320	319	1000	8	110	446.56	5.60	5.60	2.85
375	320	321	1400	8	100	63.99	0.26	0.18	0.41
376	321	322	800	8	100	265.30	2.04	2.55	1.69
377	322	323	400	8	110	173.15	0.39	0.97	1.11
378	322	325	250	8	100	87.92	0.08	0.33	0.56
379	323	324	280	8	100	170.52	0.31	1.12	1.09
380	325	324	400	8	100	202.83	0.62	1.55	1.29
381	324	326	300	8	100	370.18	1.42	4.72	2.36
382	327	325	210	8	100	119.15	0.12	0.58	0.76
385	313	300	950	8	100	358.63	4.23	4.45	2.29
386	326	311	650	8	100	365.95	3.00	4.62	2.34
392	361	391	50	8	100	28.66	0.00	0.04	0.18
394	391	374	1000	12	120	28.66	0.00	0.00	0.08
400	350	320	1250	8	100	93.96	0.47	0.37	0.60
401	356	321	1250	12	110	205.55	0.23	0.18	0.58
402	351	350	510	8	100	506.27	4.30	8.42	3.23
403	350	356	750	12	110	407.02	0.49	0.65	1.15
404	353	351	350	8	100	378.04	1.72	4.90	2.41
405	352	351	900	8	100	133.53	0.64	0.71	0.85
406	353	352	1400	8	100	138.82	1.07	0.77	0.89
407	354	353	1260	8	100	522.16	11.24	8.92	3.33
408	354	355	960	8	90	10.34	0.01	0.01	0.07
409	356	357	1050	8	110	196.18	1.28	1.22	1.25
410	357	358	200	8	110	136.68	0.12	0.62	0.87
411	357	364	1250	8	110	55.26	0.15	0.12	0.35
412	358	359	1650	8	110	75.16	0.34	0.21	0.48
413	359	327	800	8	100	121.77	0.48	0.60	0.78
414	358	360	750	8	100	61.52	0.13	0.17	0.39
415	361	359	800	8	100	54.84	0.11	0.14	0.35
416	360	361	250	8	90	89.43	0.10	0.41	0.57
417	362	360	1050	8	120	33.21	0.04	0.04	0.21
418	361	374	1800	6	90	3.15	0.01	0.00	0.04
419	363	362	750	8	120	39.38	0.04	0.05	0.25
420	364	365	500	8	120	21.64	0.01	0.02	0.14
421	364	363	900	8	120	28.33	0.03	0.03	0.18
422	365	363	1650	8	120	16.35	0.02	0.01	0.10
423	367	366	750	12	120	4.13	0.00	0.00	0.01
424	370	367	600	12	120	8.69	0.00	0.00	0.02
425	367	368	1350	12	120	0.37	0.00	0.00	0.00
426	369	368	500	12	120	3.31	0.00	0.00	0.01
427	370	369	1450	8	120	1.34	0.00	0.00	0.01
428	372	369	450	12	120	5.10	0.00	0.00	0.01
429	371	370	500	12	120	13.20	0.00	0.00	0.04
430	374	371	600	12	120	16.33	0.00	0.00	0.05
431	373	372	850	12	120	9.24	0.00	0.00	0.03
432	374	373	1250	12	120	12.36	0.00	0.00	0.04
802	301	900	1600	12	130	3500.00	41.30	25.81	9.93
803	129	138	1200	12	130	884.17	2.42	2.02	2.51
804	234	249	3900	12	130	1538.26	21.96	5.63	4.36

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC			
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)	Q(GPM)	TYPE		
1	0	0	375	493.32	118.32	51.22	10.80	BQ	10.80	0.00
2	0	0	341	493.33	152.33	65.94	10.80	BQ	10.80	0.00
3	0	0	272	493.33	221.33	95.81	10.80	BQ	10.80	0.00
4	0	0	270	493.34	223.34	96.68	5.35	BQ	5.35	0.00
5	0	0	285	493.33	208.33	90.18	29.40	BQ	29.40	0.00
6	0	0	275	493.35	218.35	94.52	5.35	BQ	5.35	0.00
7	0	0	272	500.41	228.41	98.88	8.23	BQ	8.23	0.00
8	0	0	270	503.68	233.68	101.16	29.40	BQ	29.40	0.00
9	0	0	270	503.68	233.68	101.16				0.00
10	0	0	270	503.68	233.68	101.16	5.25	BQ	5.25	0.00
11	0	0	290	486.43	196.43	85.03	5.35	BQ	5.35	0.00
12	0	0	275	484.76	209.76	90.81	5.35	BQ	5.35	0.00
13	0	0	295	484.21	189.21	81.91	5.35	BQ	5.35	0.00
14	0	0	295	482.77	187.77	81.28	7.51	BQ	7.51	0.00
15	0	0	277	482.77	205.77	89.08	5.35	BQ	5.35	0.00
30	0	0	270	480.00	210.00	90.91	7.51	BQ	7.51	0.00
31	0	0	310	480.17	170.17	73.67	5.39	BQ	5.35	0.04
32	0	0	340	480.17	140.17	60.68	5.31	BQ	5.35	-0.04
33	0	0	335	480.18	145.18	62.85	5.35	BQ	5.35	0.00
34	0	0	315	480.23	165.23	71.53	10.81	BQ	10.80	0.01
35	0	0	315	480.30	165.30	71.56	7.51	BQ	7.51	0.00
36	0	0	310	480.36	170.36	73.75	7.51	BQ	7.51	0.00
37	0	0	306	480.53	174.53	75.55	5.35	BQ	5.35	0.00
38	0	0	325	480.35	155.35	67.25	10.40	BQ	10.39	0.01
39	0	0	328	480.24	152.24	65.90	20.70	BQ	20.58	0.12
40	0	0	335	479.87	144.87	62.71	6.24	BQ	6.22	0.01
41	0	0	410	479.74	69.74	30.19	9.34	BQ	9.34	0.00
42	0	0	410	479.70	69.70	30.17	17.64	BQ	17.64	0.00
43	0	0	370	479.67	109.67	47.47	9.34	BQ	9.34	0.00
44	0	0	385	479.67	94.67	40.98	9.19	BQ	9.19	0.00
45	0	0	375	479.67	104.67	45.31	9.19	BQ	9.19	0.00
46	0	0	300	479.65	179.65	77.77	9.19	BQ	9.19	0.00
47	0	0	300	479.65	179.65	77.77	9.19	BQ	9.19	0.00
48	0	0	310	479.65	169.65	73.44	9.19	BQ	9.19	0.00
49	0	0	295	479.65	184.65	79.93	17.64	BQ	17.64	0.00
50	0	0	275	479.65	204.65	88.59	26.46	BQ	26.46	0.00
51	0	0	335	479.88	144.88	62.72	6.21	BQ	6.22	-0.01
52	0	0	270	479.81	209.81	90.83	15.56	BQ	15.56	0.00
62	0	0	350	479.68	129.68	56.14	17.64	BQ	17.64	0.00
70	0	0	315	481.01	166.01	71.87	7.71	BQ	7.71	0.00
71	0	0	315	481.62	166.62	72.13	7.71	BQ	7.71	0.00
72	0	0	320	480.51	160.51	69.48	3.10	BQ	3.11	-0.01
73	0	0	325	480.24	155.24	67.20	2.99	BQ	3.11	-0.12
74	0	0	330	480.05	150.05	64.96	4.59	BQ	4.59	0.00
75	0	0	300	484.39	184.39	79.82	15.56	BQ	15.56	0.00
76	0	0	300	484.61	184.61	79.92	9.36	BQ	9.34	0.03
77	0	0	330	484.56	154.56	66.91	15.56	BQ	15.56	0.00
78	0	0	330	485.63	155.63	67.37	31.12	BQ	31.12	0.00
79	0	0	285	485.29	200.29	86.70	7.71	BQ	7.71	0.00
80	0	0	275	485.27	210.27	91.02	7.71	BQ	7.71	0.00
81	0	0	265	485.26	220.26	95.35	7.71	BQ	7.71	0.00
82	0	0	265	485.23	220.23	95.34	7.71	BQ	7.71	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC			
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(Psi)	Q(GPM)	TYPE		
83	0	0	275	485.28	210.28	91.03	6.22	BQ	6.22	0.00
84	0	0	295	485.27	190.27	82.37	7.71	BQ	7.71	0.00
85	0	0	270	485.28	215.28	93.19	17.03	BQ	17.64	-0.61
86	0	0	295	485.28	190.28	82.37	16.16	BQ	15.56	0.60
87	0	0	290	485.24	195.24	84.52	9.34	BQ	9.34	0.00
88	0	0	295	485.26	190.26	82.36	15.56	BQ	15.56	0.00
89	0	0	260	485.24	225.24	97.51	15.56	BQ	15.56	0.00
90	0	0	325	484.78	159.78	69.17	9.30	BQ	9.34	-0.04
91	0	0	350	485.88	135.88	58.82	10.80	BQ	10.80	0.00
92	0	0	287	484.97	197.97	85.70	10.80	BQ	10.80	0.00
93	0	0	282	485.47	203.47	88.08	5.35	BQ	5.35	0.00
94	0	0	335	485.83	150.83	65.29	3.18	BQ	3.19	-0.01
95	0	0	320	485.47	165.47	71.63	5.35	BQ	5.35	0.00
96	0	0	260	487.70	227.70	98.57	3.18	BQ	3.19	-0.01
97	0	0	270	487.51	217.51	94.16	6.49	BQ	6.48	0.01
98	0	0	285	487.23	202.23	87.55	44.10	BQ	44.10	0.00
120	0	0	390	461.30	71.30	30.87	2.16	BQ	2.16	0.00
121	0	0	450	479.12	29.12	12.61	5.35	BQ	5.35	0.00
122	0	0	450	480.18	30.18	13.07	5.35	BQ	5.35	0.00
123	0	0	410	484.56	74.56	32.28	5.35	BQ	5.35	0.00
124	0	0	385	482.70	97.70	42.30	5.35	BQ	5.35	0.00
125	0	0	337	482.11	145.11	62.82				0.00
126	0	0	355	456.86	101.86	44.09	5.35	BQ	5.35	0.00
127	0	0	335	482.08	147.08	63.67	8.64	BQ	8.64	0.00
128	0	0	335	484.23	149.23	64.60	5.35	BQ	5.35	0.00
129	0	0	270	459.45	189.45	82.01	5.35	BQ	5.35	0.00
130	0	0	285	459.44	174.44	75.52	16.16	BQ	16.16	0.00
131	0	0	325	460.86	135.86	58.81	5.13	BQ	5.35	-0.22
132	0	0	330	460.86	130.86	56.65	7.51	BQ	7.51	0.00
133	0	0	350	462.39	112.39	48.65	10.81	BQ	10.80	0.00
134	0	0	312	463.52	151.52	65.60	5.35	BQ	5.35	0.00
135	0	0	310	462.32	152.32	65.94	5.35	BQ	5.35	0.00
136	0	0	305	460.86	155.86	67.47	5.57	BQ	5.35	0.22
137	0	0	295	457.80	162.80	70.48	5.35	BQ	5.35	0.00
138	0	0	320	457.03	137.03	59.32	12.35	BQ	12.35	0.00
139	0	0	320	454.77	134.77	58.34	12.55	BQ	12.55	0.00
140	0	0	320	454.11	134.11	58.05	5.35	BQ	5.35	0.00
141	0	0	340	455.57	115.57	50.03	5.15	BQ	5.14	0.00
142	0	0	345	477.90	132.90	57.53	5.88	BQ	5.88	0.00
143	0	0	355	455.60	100.60	43.55	16.16	BQ	16.16	0.00
145	0	0	345	447.94	102.94	44.56	3.09	BQ	3.09	0.00
146	0	0	296	443.19	147.19	63.72	2.16	BQ	2.16	0.00
147	0	0	290	443.47	153.47	66.44	8.75	BQ	8.75	0.00
148	0	0	266	443.43	177.43	76.81	10.80	BQ	10.80	0.00
149	0	0	262	443.29	181.29	78.48	5.35	BQ	5.35	0.00
150	0	0	285	443.69	158.69	68.70	7.72	BQ	7.72	0.00
151	0	0	295	443.52	148.52	64.30	10.80	BQ	10.80	0.00
152	0	0	285	443.52	158.52	68.62	3.19	BQ	3.19	0.00
153	0	0	260	443.52	183.52	79.44	2.16	BQ	2.16	0.00
154	0	0	290	444.68	154.68	66.96	7.72	BQ	7.72	0.00
155	0	0	295	446.04	151.04	65.39	5.14	BQ	5.14	0.00
156	0	0	265	480.26	215.26	93.19	17.64	BQ	17.64	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC		
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)	Q(GPM)	TYPE	
157	0	0	325	454.45	129.45	56.04			0.00
158	0	0	275	445.36	170.36	73.75			0.00
170	0	0	259	462.42	203.42	88.06	3.19	BQ	0.00
171	0	0	265	471.87	206.87	89.56	4.32	BQ	0.00
172	0	0	305	471.87	166.87	72.24	6.48	BQ	0.00
173	0	0	265	479.83	214.83	93.00	5.35	BQ	0.00
174	0	0	280	480.52	200.52	86.81	4.32	BQ	0.00
175	0	0	270	480.63	210.63	91.18	5.35	BQ	0.00
176	0	0	275	480.75	205.75	89.07	5.35	BQ	0.00
177	0	0	285	480.74	195.74	84.74	5.35	BQ	0.00
178	0	0	305	480.74	175.74	76.08	44.10	BQ	0.00
179	0	0	280	481.08	201.08	87.05	5.35	BQ	0.00
180	0	0	280	480.93	200.93	86.98	5.35	BQ	0.00
181	0	0	290	480.93	190.93	82.66	3.19	BQ	0.00
182	0	0	280	485.30	205.30	88.88	2.16	BQ	0.00
183	0	0	290	485.37	195.37	84.57	5.36	BQ	0.01
184	0	0	305	485.18	180.18	78.00	5.35	BQ	0.00
185	0	0	305	484.82	179.82	77.84	5.35	BQ	0.00
186	0	0	325	484.70	159.70	69.14	8.64	BQ	0.00
187	0	0	325	484.74	159.74	69.15	6.49	BQ	0.01
190	0	0	365	464.30	99.30	42.99	3.19	BQ	0.00
191	0	0	275	468.81	193.81	83.90	5.35	BQ	0.00
192	0	0	265	474.96	209.96	90.89	5.35	BQ	0.00
193	0	0	285	483.04	198.04	85.73	6.48	BQ	0.00
194	0	0	295	483.05	188.05	81.41	5.35	BQ	0.00
195	0	0	295	483.04	188.04	81.40	4.32	BQ	0.00
196	0	0	285	483.11	198.11	85.76	5.35	BQ	0.00
197	0	0	265	483.18	218.18	94.45	6.48	BQ	0.00
198	0	0	280	486.19	206.19	89.26	10.80	BQ	0.00
199	0	0	265	486.18	221.18	95.75	5.35	BQ	0.00
200	0	0	280	486.18	206.18	89.26	10.80	BQ	0.00
201	0	0	360	486.18	126.18	54.62	2.16	BQ	0.00
202	0	0	280	482.82	202.82	87.80	5.14	BQ	0.00
203	0	0	275	482.81	207.81	89.96	31.08	BQ	0.00
204	0	0	249	482.91	233.91	101.26			0.00
205	0	0	280	482.81	202.81	87.79	3.19	BQ	0.00
206	0	0	280	482.82	202.82	87.80	2.16	BQ	0.00
207	0	0	230	482.66	252.66	109.38	16.16	BQ	0.00
208	0	0	215	482.63	267.63	115.86	5.35	BQ	0.00
209	0	0	200	482.62	282.62	122.35	11.76	BQ	0.00
230	0	0	377	456.86	79.86	34.57	3.29	BQ	0.00
231	0	0	380	456.86	76.86	33.27	3.36	BQ	0.00
232	0	0	320	452.94	132.94	57.55	3.29	BQ	0.00
233	0	0	325	453.81	128.81	55.76	10.34	BQ	0.00
234	0	0	380	450.03	70.03	30.32	10.34	BQ	0.00
235	0	0	360	452.94	92.94	40.23	10.34	BQ	0.00
236	0	0	350	446.36	96.36	41.71	3.42	BQ	0.00
237	0	0	270	443.92	173.92	75.29	5.54	BQ	0.00
238	0	0	400	429.25	29.25	12.66	5.60	BQ	0.00
239	0	0	325	429.72	104.72	45.34	5.60	BQ	0.00
240	0	0	325	418.21	93.21	40.35	3.42	BQ	0.00
241	0	0	370	422.36	52.36	22.67	3.42	BQ	0.00

JOB : SOUTHBORO WATER DISTRIBUTION ANALYSIS

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC		Q(GPM)	TYPE
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)				
242	0	0	415	421.87	6.87	2.97	3.42	BQ	3.42	0.00
243	0	0	420	421.57	1.57	0.68	3.42	BQ	3.42	0.00
245	0	0	355	421.11	66.11	28.62	3.42	BQ	3.42	0.00
246	0	0	324	415.98	91.98	39.82	14.11	BQ	14.11	0.00
247	0	0	305	409.60	104.60	45.28	4.61	BQ	4.61	0.00
248	0	0	330	418.52	88.52	38.32	4.15	BQ	4.15	0.00
249	0	0	330	428.07	98.07	42.45	4.15	BQ	4.15	0.00
250	0	0	306	417.26	111.26	48.16	5.53	BQ	5.53	0.00
251	0	0	293	427.08	134.08	58.04	4.08	BQ	4.08	0.00
252	0	0	275	427.07	152.07	65.83	4.08	BQ	4.08	0.00
253	0	0	285	427.07	142.07	61.50	4.61	BQ	4.61	0.00
254	0	0	270	427.07	157.07	68.00	3.36	BQ	3.36	0.00
255	0	0	295	415.12	120.12	52.00	3.36	BQ	3.36	0.00
256	0	0	295	413.38	118.38	51.25	3.36	BQ	3.36	0.00
257	0	0	290	414.30	124.30	53.81	5.53	BQ	5.53	0.00
270	0	0	276	454.52	178.52	77.28	5.35	BQ	5.35	0.00
271	0	0	320	454.51	134.51	58.23	7.51	BQ	7.51	0.00
272	0	0	350	424.00	74.00	32.03	5.35	BQ	5.35	0.00
273	0	0	370	424.00	54.00	23.38	5.35	BQ	5.35	0.00
274	0	0	350	424.00	74.00	32.04	5.35	BQ	5.35	0.00
275	0	0	330	424.01	94.01	40.70	5.35	BQ	5.35	0.00
276	0	0	320	424.02	104.02	45.03	5.35	BQ	5.35	0.00
277	0	0	340	437.80	97.80	42.34	5.35	BQ	5.35	0.00
278	0	0	315	459.86	144.86	62.71	4.32	BQ	4.32	0.00
279	0	0	270	464.28	194.28	84.10	26.45	BQ	26.45	0.00
280	0	0	280	484.47	204.47	88.51	6.17	BQ	6.17	0.00
282	0	0	410	485.92	75.92	32.87	5.35	BQ	5.35	0.00
283	0	0	415	485.89	70.89	30.69	10.80	BQ	10.80	0.00
284	0	0	400	485.88	85.88	37.18	5.25	BQ	5.25	0.00
285	0	0	400	485.90	85.90	37.19	17.64	BQ	17.64	0.00
300	0	0	285	391.22	106.22	45.98	51.45	BQ	51.45	0.00
301	0	0	285	380.64	95.64	41.40	5.14	BQ	5.14	0.00
302	0	0	275	384.45	109.45	47.38	5.29	BQ	5.29	0.00
303	0	0	280	384.44	104.44	45.21	5.29	BQ	5.29	0.00
304	0	0	264	389.18	125.18	54.19	4.39	BQ	4.39	0.00
305	0	0	265	389.17	124.17	53.75	5.29	BQ	5.29	0.00
306	0	0	280	389.17	109.17	47.26	6.30	BQ	6.30	0.00
307	0	0	260	389.15	129.15	55.91	7.82	BQ	7.82	0.00
308	0	0	255	389.14	134.14	58.07	7.66	BQ	7.66	0.00
309	0	0	280	390.35	110.35	47.77	6.35	BQ	6.35	0.00
310	0	0	280	390.62	110.62	47.89	5.29	BQ	5.29	0.00
311	0	0	300	396.12	96.12	41.61	6.35	BQ	6.35	0.00
312	0	0	370	396.29	26.29	11.38	12.35	BQ	12.35	0.00
313	0	0	318	395.45	77.45	33.53	3.13	BQ	3.13	0.00
314	0	0	315	396.37	81.37	35.23	3.13	BQ	3.13	0.00
315	0	0	368	396.50	28.50	12.34	3.13	BQ	3.13	0.00
316	0	0	340	396.92	56.92	24.64	3.13	BQ	3.13	0.00
317	0	0	300	397.02	97.02	42.00	3.13	BQ	3.13	0.00
318	0	0	310	397.18	87.18	37.74	3.13	BQ	3.13	0.00
319	0	0	287	397.94	110.94	48.03	2.62	BQ	2.62	0.00
320	0	0	271	403.53	132.53	57.37	3.68	BQ	3.68	0.00
321	0	0	262	403.28	141.28	61.16	4.24	BQ	4.24	0.00

NODE NO	COORDINATES			GRADIENT RESULTS			BOUNDARY SPEC		Q(GPM)	TYPE
	X(FT)	Y(FT)	Z(FT)	HG(FT)	P(FT)	P(PSI)				
322	0	0	255	401.24	146.24	63.31	4.24	BQ	4.24	0.00
323	0	0	265	400.86	135.86	58.81	2.62	BQ	2.62	0.00
324	0	0	265	400.54	135.54	58.68	3.18	BQ	3.18	0.00
325	0	0	255	401.16	146.16	63.27	4.24	BQ	4.24	0.00
326	0	0	265	399.13	134.13	58.06	4.24	BQ	4.24	0.00
327	0	0	255	401.28	146.28	63.33	2.62	BQ	2.62	0.00
350	0	0	305	404.00	99.00	42.86	5.29	BQ	5.29	0.00
351	0	0	315	408.30	93.30	40.39	5.29	BQ	5.29	0.00
352	0	0	300	408.94	108.94	47.16	5.29	BQ	5.29	0.00
353	0	0	320	410.01	90.01	38.97	5.29	BQ	5.29	0.00
354	0	0	320	421.25	101.25	43.83				0.00
355	0	0	345	421.24	76.24	33.01	10.34	BQ	10.34	0.00
356	0	0	285	403.51	118.51	51.30	5.29	BQ	5.29	0.00
357	0	0	295	402.23	107.23	46.42	4.24	BQ	4.24	0.00
358	0	0	297	402.10	105.10	45.50				0.00
359	0	0	260	401.76	141.76	61.37	8.23	BQ	8.23	0.00
360	0	0	270	401.98	131.98	57.13	5.29	BQ	5.29	0.00
361	0	0	250	401.87	151.87	65.75	2.77	BQ	2.77	0.00
362	0	0	250	402.02	152.02	65.81	6.17	BQ	6.17	0.00
363	0	0	280	402.06	122.06	52.84	5.29	BQ	5.29	0.00
364	0	0	300	402.08	102.08	44.19	5.29	BQ	5.29	0.00
365	0	0	295	402.07	107.07	46.35	5.29	BQ	5.29	0.00
366	0	0	320	401.86	81.86	35.44	4.13	BQ	4.13	0.00
367	0	0	285	401.86	116.86	50.59	4.18	BQ	4.18	0.00
368	0	0	320	401.86	81.86	35.44	3.68	BQ	3.68	0.00
369	0	0	285	401.86	116.86	50.59	3.13	BQ	3.13	0.00
370	0	0	250	401.86	151.86	65.74	3.18	BQ	3.18	0.00
371	0	0	245	401.87	156.87	67.91	3.13	BQ	3.13	0.00
372	0	0	260	401.86	141.86	61.41	4.13	BQ	4.13	0.00
373	0	0	240	401.87	161.87	70.07	3.13	BQ	3.13	0.00
374	0	0	245	401.87	156.87	67.91	3.13	BQ	3.13	0.00
391	0	0	250	401.87	151.87	65.74				0.00
500	0	0	290	503.68	213.68	92.50	-1130.00	BQ	-1130.00	0.00
501	0	0	260	496.54	236.54	102.40	-1000.00	BQ	-1000.00	0.00
600	0	0	451	486.50	35.50	15.37	-493.13	BEL		
601	0	0	467	486.00	19.00	8.23	-1968.01	BEL		
602	0	0	418	487.00	69.00	29.87	-704.77	BEL		
900	0	0	280	339.34	59.34	25.69	3500.00	BQ	3500.00	0.00

TOTAL SYSTEM Q = 5295.90 Total BQ (pos) = 5295.90 Total BQ (neg) = -2130.00

0.00 -0.61