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DOCKET NO. **360329-WS** - GULF UTILITY COMPANY

WITNESS: **Direct Testimony of Thomas M. Beard**, San Carlos
Park Fire Protection and Rescue Service District,
Appearing on behalf of the Staff of the Florida
Public Service Commission

DATE FILED: January 6, 1997

DOCUMENT FILED
00121 JAN-06
FPSC-REC/OPS/REPORTING

1 DIRECT TESTIMONY OF THOMAS M. BEARD

2 Q Please state your name and business address.

3 A Thomas M. Beard My business address is 8617 Sambel Boulevard Ft
4 Myers, Florida, 33912

5 Q Please state a brief description of your educational background and
6 experience.

7 A I graduated from high school I am currently enrolled at Edison
8 Community College and working toward an A.S. degree in Fire Science I have
9 over 13 years in the fire service as a certified firefighter, fire inspector,
10 and instructor

11 Q By whom are you presently employed?

12 A The San Carlos Park Fire and Rescue Service District

13 Q How long have you been employed with the district and in what capacity?

14 A I have been employed by the district for over 13 years I have been a
15 fire inspector for the past five years

16 Q What are your general responsibilities?

17 A I am responsible for inspecting all new buildings during construction
18 phases for code compliance I also conduct annual inspections of existing
19 buildings, public education, and fire flow tests

20 Q Does Gulf Utilities, Inc. (Gulf) provide fire flow to the San Carlos
21 Park Area?

22 A Yes

23 Q Are you familiar with Gulf Utilities, Inc.'s fire hydrant system?

24 A Yes, in the context of my duties.

25 Q How many of the hydrants in your fire district are on Gulf's water line?

1 A. Of the 619 fire hydrants in the district, 397 are served by Gulf. The
2 hydrants are in commercial areas, and 341 are located in residential areas.

3 Q. Are Gulf's fire flow capabilities adequate?

4 A. No, as detailed below, the fire flow in some areas is low.

5 Q. Who is responsible for the fire flows?

6 A. It is my understanding the utility company would be.

7 Q. Who is responsible for the maintenance of the hydrants?

8 A. There is a maintenance agreement between the utility company and the
9 department.

10 Q. Who is responsible for testing the fire hydrants?

11 A. As the local fire official, I am responsible.

12 Q. Is there a minimum fire flow requirement?

13 A. In residential areas the minimum requirement would be 750 gallons per
14 minute (gpm). In commercial areas the fire flow depends on the size of the
15 building, but a minimum flow of 1500 gpm would be a good standard. We use a
16 formula to calculate the fire flow for a building using the area of the
17 building, the type of construction, and the occupancy hazard.

18 Q: Are these requirements specified by county ordinance or other
19 governmental body?

20 A: Yes, Section 12 of the Lee County Development Order. The order is
21 attached to my testimony as TMB-1.

22 Q. Does Gulf meet all of these requirements in its service area?

23 A. No. There are some residential areas that do not produce 750 gpm, and
24 there are commercial areas that do not produce that either.

25 Q. How many hydrants in commercial areas do not meet fire flow needs?

1 A. 35 of the 56 fire hydrants in commercial areas served by Gulf
2 Q. How many hydrants do not meet the fire flow needs in residential areas?
3 A. 75 of the 341 fire hydrants in residential areas served by Gulf
4 Q. Where are the problem areas?
5 A. All of Gulf Utility's Island Park area and the commercial area on
6 Rockefeller Circle both have areas of reduced fire flows.
7 Q. What are the causes of the low fire flow?
8 A. The problem is caused by reduced pumping pressure in the water lines.
9 Reduced fire flow capacity can also be caused by small diameter lines, and
10 build up in the water lines, or scaling, which reduces the diameter of the
11 line.
12 Q. What could be done to correct this problem?
13 A. The pressure could be increased in the lines, or, if the lines are
14 blocked, they could be cleaned out.
15 Q. Has the Gulf Utility Company reduced pressure in the water lines over
16 the years?
17 A. Yes, fire flow tests that have been done in the past have had higher
18 pressures.
19 Q. How does reduced pressure effect existing buildings that are fire
20 sprinkled and designed at higher pressures?
21 A. The system may not work the way it was designed if it was calculated at
22 higher pressures.
23 Q. Does a lower fire flow cause difficulty for the construction industry?
24 A. Yes. Low fire flow results in extra costs to the builder from having
25 to fire sprinkler the building, or having to build four hour fire walls, to

1 | reduce building size. It limits the development of areas. In some areas,
2 | drafting ports into lakes had to be built to compensate water supply.

3 | Q. How does this affect the fire department?

4 | A. It reduces the fire flow available for fighting fires and it creates a
5 | limited water supply for fire fighting.

6 | Q. Have you ever discussed this with any Gulf Utility representative?

7 | A. Yes. Utility representatives said that Gulf is not responsible for fire
8 | flows, only potable water.

9 | Q. Do you know of anyone who has built a building that has been impacted
10 | by this reduced fire flow?

11 | A. Yes, in the Constitution Boulevard and Rockefeller Circle area. The
12 | Domino's Pizza building (a 8000 sq ft business office complex) had to build
13 | three four-hour walls. Peppermint Tree day-care (8000 sq ft) had to add a
14 | fire sprinkler system. Wogoman Tile a 2,500 sq ft storage building had to
15 | build a four-hour wall, and All County Insulation a 2500 sq ft storage
16 | building, had to build a four-hour wall, all because of reduced fire flow in
17 | this area. In the Island Park area the quality of water is so bad that a fire-
18 | flow test can not be done without the Gulf Utility Company pre-flushing the
19 | hydrants the day before the fire flow test. There are also drafting hydrants
20 | in apartment complexes for additional water supply.

21 | Q. What is the fire flow in that area?

22 | A. The fire flow is around 750 gpm or less.

23 | Q. Are there any commercial areas in the Gulf Utility tariff district for
24 | which Gulf does not provide water service?

25 | A. Yes, the Jean Street area is in their service area and there are no

1 hydrant lines on half of the street. The water lines from Gulf Utility are
2 over 1000 feet away, which is a 6" or 8" line in a residential area. The
3 other half of Jean Street is serviced by Florida Cities Water Company (Florida
4 Cities) with a 10" line off of a 16" line. The fire flows on these lines are
5 in excess of 2000 gpm. The fire flows from the Gulf Utility side are around
6 750 gpm.

7 Q. What are the location requirements pertaining to fire hydrants in the
8 San Carlos district?

9 A. Commercial buildings require a hydrant within 400 feet.

10 Q. Is there another utility company in your area that provides fire flow?

11 A. Yes, Florida Cities.

12 Q. Does Florida Cities experience similar fire flow problems?

13 A. No.

14 Q. Please explain the differences between the utility companies as far as
15 the fire related issues that you deal with.

16 A. There is not a fire flow problem with any the Florida Cities fire
17 hydrants. Florida Cities does not have to be present during the fire flow
18 tests. Florida Cities will make repairs to broken public fire hydrants with
19 no cost to the fire department. Any broken fire hydrants in the Gulf utility
20 area must be repaired by the fire department at our expense.

21 Q. Is your department responsible for the fire and safety protection of the
22 Florida Gulf Coast University?

23 A. Yes.

24 Q. Is the pressure and flow provided to the University sufficient to
25 provide adequate fire protection to the University?

1 A No. The water lines to the University are dead end lines which provide

2 1348 gpm

3 Q Does this conclude your testimony?

4 A Yes.

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EXHIBIT NO.: TMB-1

WITNESS: THOMAS M. BEARD

DOCKET NO.: 960451-WS

Application for rate increase by

GULF UTILITY COMPANY

BEFORE THE
FLORIDA PUBLIC SERVICE
COMMISSION

DESCRIPTION:

SECTION 12 OF THE LEE COUNTY
DEVELOPMENT ORDER

DOCUMENT NO. 111

00121 JAN-65

FPSC RECORDS/REPORTING

12.A

SECTION 12

FIRE SAFETY DESIGN STANDARDS AND REQUIREMENTS

- A. **GENERAL.** Fire Protection Systems shall be designed and constructed in accordance with County, State, and Federal standards, including the requirements established by the Uniform Lee County Fire Code, as may be amended from time to time.
- B. **APPLICABILITY.** These provisions apply to all developments that occur within existing public water systems, outside of existing public water systems, and inside or outside of an established fire district or taxing unit.
- C. **INTERPRETATION OF THESE REGULATIONS AND CONFLICT WITH OTHER REGULATIONS.**
1. These regulations shall be construed to be the minimum regulations necessary for the purpose of meeting the general and specific requirements named herein.
 2. Where any provision of these regulations impose a restriction different from that imposed by any other provision of these regulations or any other ordinance, regulation, or law, the provision which is more restrictive shall apply.
 3. Formal interpretations on water supplies and fire department access shall be made by the County Fire Official.
- D. **GENERAL PROVISIONS FOR ALL DEVELOPMENTS.**
1. **Building Class:**
 - a. One and two dwelling unit developments.
 - b. Multi-family developments with three (3) to six (6) dwelling units per building and not exceeding two stories in height.
 - c. Multi-family developments with more than six (6) dwelling units per building, or more than two stories in height, and all commercial areas.

**Section 12, Fire Safety Design
Standards and Requirements**

12.D.1.d

- d. All industrial areas.
 - e. Hazardous storage areas (as defined in the Standard Building Code).
2. **Fire Department Access.** Except as noted below, buildings that fall into Class 1.c through 1.e as set forth above, and any unusual and potentially hazardous circumstances as determined by the Fire Official, shall provide a 20 foot wide fire department access lane(s) in the rear of such building(s). This shall be an identified stabilized surface adequate to carry the load of fire apparatus.

Exception #1: Buildings provided with a complete automatic fire sprinkler system.

Exception #2: Where in opinion of the County Fire Official and the District Fire Official that due to the size, construction, location or occupancy of a building, the access width may be reduced or omitted.

3. **Required Fire Flows.** Fire flows for all developments shall be determined according to this section before the issuance of a Development Order.

The engineer, contractor, or installer of water supply systems in new developments shall demonstrate by actual test, that the capacity of the water supply system will meet fire protection design requirements. A fire flow of the existing public water system shall be made before the issuance of a Development Order for all developments in or within one-quarter (1/4) mile of an existing public water system. Fire flow tests shall be witnessed by the fire department and other authorities having jurisdiction who desire to do so.

E. DESIGN STANDARDS FOR PUBLIC WATER SYSTEMS AND FIRE PROTECTION.

1. **General.** Fire protection and public water systems shall be designed by an engineer and constructed in accordance with County, State, and Federal standards, including the domestic requirements established by the appropriate state agency and the fire protection requirements established by the Uniform Lee County Fire Code, as they may be amended from time to time.

**Section 12, Fire Safety Design
Standards and Requirements**

12.E.2

2. **Required Fire Flows.** The water distribution system shall be capable of delivering fire flows as follows:

- a. One and two family developments:

<u>Distance Between Buildings</u>	<u>Needed Fire Flow</u>
Over 30 feet	500 GPM
0 to 30 feet	750 GPM

Developments not capable of delivering the required fire flow shall provide automatic sprinkler systems in accordance with NFPA #13D 1987 edition or shall provide an additional source of water for fire protection in accordance with Section 12.F.

- b. All other building shall calculate required fire flows in accordance with the formula shown in Section 12.E.2.c.

This formula establishes a base flow from which the degree of hazard and credit for sprinkler protection will result in a final needed fire flow. NFPA #13 1987 Edition shall be used for the purpose of determining hazard classification.

<u>Classification</u>	<u>Application</u>
Light	Light
Ordinary I & II	Ordinary
Ordinary III & Higher	High

- c. Fire flow based on the Formula. $F=18$ multiplied by C multiplied by A.

F = GPM Flow @ 20 PSI residual

C = Constant based on type of building construction

Coefficients based on construction type:

- 1.5 = Wood (Type VI)
- 1.0 = Ordinary (Type V)
- 0.8 = Noncombustible (Type III & IV)
- 0.6 = Fire-Resistive (Type I & II)

**Section 12, Fire Safety Design
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12.E.2.c

A = the square root of the gross floor area (as defined in the 1988 Standard Building Code) of all floors. Buildings without walls shall be calculated using building area as defined in the 1988 Standard Building Code.

*Fire resistive construction needed only be calculated on the three largest successive floors.

A four-hour fire resistive wall may be used to reduce total square footage of a building providing the wall intersects each successive floor of the building.

BF = Base Flow established from the formula $F = 18 C$ multiplied by A

FF = BF multiplied by .75 (Light Hazard Occupancy)

FF = BF multiplied by 1. (Ordinary Hazard Occupancy)

If the building is protected by an automatic sprinkler system installed in accordance with all state and local codes, a 50% reduction of the final fire flow (FF) will be allowed.

- d. A minimum flow in all cases will be 500 GPM with a 20 PSI Residual.
- e. In areas that cannot meet 500 GPM, alternate sources of water may be acceptable, subject to County Fire Official approval.

3. Water Main Installation.

- a. One and two dwelling unit developments: no less than eight (8) inches in diameter, constructed in an external loop connected to intersecting water mains at a maximum of 1,500 feet.
- b. Multi-family developments with three to six dwelling units per building and not exceeding two stories in height: no less than eight (8) inches in diameter constructed in an external loop, connected to intersecting water mains at a maximum distance of 1,500 feet.

**Section 12, Fire Safety Design
Standards and Requirements****12.E.3.c**

- c. Multi-family developments composed of buildings with more than six (6) units per building or more than two stories in height, and all commercial areas: no less than ten (10) inches in diameter constructed in an external loop system with intersecting water mains installed every 2,000 feet.
 - e. All industrial areas, and all hazardous storage areas: no less than twelve (12) inches in diameter constructed in an external loop system with intersecting water mains installed every 2,000 feet. (Fire hydrants shall be installed on intersecting water mains.)
 - f. Fire hydrants shall be installed so that the four and one-half (4-1/2) inch streamer connection is no less than eighteen (18) inches and no more than twenty-four (24) inches above finished grade.
 - g. The maximum allowed dead-end waterline shall be no longer than one-half (1/2) the distance required between intersecting water mains. Contingent on the approval of the County Fire Official, alternatives to dead-end and intersecting watermain criteria may be acceptable if they embody sound engineering practices including, but not limited to, upgraded line sizes, valving, fire flow considerations, additional sources of water for fire protection, etc.
 - h. Any water main along an arterial road or considered by the utility company to be a main transmission line shall be sized to accommodate future growth, but in no case, less than specified in this section. A letter of approval from the utility company will be acceptable evidence of conformance with this requirement.
 - i. Fire hydrants shall be located within 10 feet of the curb line of fire lanes, streets, or private streets, when installed along such accessways.
4. Hydrant Spacing.
- a. Fire Hydrant spacing shall be determined using the last available hydrant on the public water system as the P.C.P.

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12.E.4.b

b. Hydrant spacing for all developments shall be measured along the centerline of the street. For the purpose of this standard, the term "street" shall include all road frontage, roadway, drive, avenue, or any other road designation. Also, included shall be any private drive designated as required fire department access.

c. Fire hydrants shall be spaced as follows:

One to two dwelling unit developments: eight hundred (800) feet apart as measured along the centerline of the street.

Multi-family developments with three to six dwelling units per building and not exceeding two stories in height: six hundred (600) feet apart measured along the centerline of the street.

Multi-family developments with more than six (6) dwelling units per building or more than two (2) stories in height and commercial areas four hundred (400) feet apart as measured along the centerline of the street.

All industrial and hazardous storage areas (as defined in the Standard Building Code): three hundred (300) feet apart as measured along the centerline of the street.

d. Where fire flows are provided by a public water system, on-site fire hydrants shall be provided so that in no case shall there be a fire hydrant located more than 400 feet from all portions of the ground floor of any building. This shall be in addition to any other hydrant spacing requirement. This shall not apply to one and two family developments.

F. DEVELOPMENTS NOT PROVIDED WITH A PUBLIC WATER SYSTEM.

1. Developments not provided with a public water system shall have a fire protection system designed by a Florida Registered Engineer in accordance with NFPA (National Fire Protection Association) pamphlet #1231 Standard on Water Supplies for Suburban and Rural Fire Fighting, as modified by this section.

**Section 12, Fire Safety Design
Standards and Requirements****12.F.2**

2. Water for fire protection shall be made available on the fireground at a rate not less than the required fire flow.
3. When bodies of surface water are available, drafting points consisting of a dry hydrant assembly with eight (8) inch pipe and fire department connections shall be provided.
4. Drafting points shall be spaced at the same intervals of length as required for fire hydrant spacing.
5. Extreme care shall be taken to insure that the water supply required by this section will always be available year round. Means of maintaining the water supply shall be provided prior to issuance of a development order. Means of maintenance shall include the supply of water, the means of storage of the water, and the associated piping arrangements necessary to deliver the water to the fire department.

G. DEVELOPMENTS LOCATED OUTSIDE OF AN ESTABLISHED FIRE DISTRICT OR TAXING UNIT.

1. All new development (excluding individual, single family, mobile home, duplex, two-family, and agricultural structures) located outside of an established fire district or taxing unit shall arrange for the extension of the service area of an existing district, obtain a charter for a new district, petition for a new district (MSTU) or Community Development District (CDD) as provided for in Chapter 190 F.S., or shall have a fire protection system designed by a Florida Registered Engineer in accordance with NFPA (National Fire Protection Association) pamphlet #1231 - Standards on Water Supplies for Suburban and Rural Fire Fighting, current edition as modified in Section V A-E: and also in accordance with Lee County Ordinance 85-20.
2. Developments may provide a private water system meeting all the requirements of Section 12.F.