STATE OF FLORIDA

OFFICE OF THE PUBLIC COUNSEL

c/o The Florida Legislature
111 West Madison Street
Room 812
Tallahassee, Florida 32399-1400
904-488-9330

JACK SHREVE
PUBLIC COUNSEL

ORIGINAL
FILE COPY

December 20, 1996

Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Re: Case No. [redacted]-WS

Dear Ms. Bayo:

Enclosed for filing in the above-referenced docket are the original and 15 copies of the Direct Testimony and accompanying Exhibits of Ted L. Biddy, P.E./P.L.S. on Behalf of the Citizens of the State of Florida.

Please indicate the time and date of receipt on the enclosed duplicate of this letter and return it to our office.

Sincerely,

Stephen C. Reilly
Associate Public Counsel

SCR:bsr
Enclosures

DOCUMENT NUMBER-DATE
13591 DEC 20 96

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Application for Increase in rates and service availability charges in Lee County by Gulf Utility Company.	)))))	Docket No. 960329-WS Filed: December 20, 1996

TESTIMONY OF

TED L. BIDDY, P.E./P.L.S.

Respectfully submitted,
Jack Shreve
Public Counsel

Office of Public Counsel
c/o The Florida Legislature
111 West Madison Street
Room 812
Tallahassee, FL 32399-1400

(904) 488-9330

Attorney for the Citizens
Of the State of Florida

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is Ted L. Biddy. My business address is Baskerville-Donovan, Inc. (BDI), 2804 Remington Green Circle, Tallahassee, Florida 32308.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am Vice-President of Baskerville-Donovan, Inc. and Regional Manager of the Tallahassee Office.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE?

A. I graduated from the Georgia Institute of Technology with a B.S. degree in Civil Engineering in 1963. I am a registered professional engineer and land surveyor in Florida, Georgia, Mississippi and several other states. Before joining BDI in 1991, I had operated my own civil engineering firm for 21 years. My areas of expertise include civil engineering, structural engineering, sanitary engineering, soils and foundation engineering and precise surveying. During my career, I have designed and supervised the master planning, design and construction of thousands of residential, commercial and industrial properties. My work has included: water and wastewater design; roadway design; parking lot design; stormwater facilities design; structural design; land surveys; and environmental permitting.

I have served as principal and chief designer for numerous utility projects. Among my major water and wastewater facilities designs have been a 2,000 acre development in Lake County, FL; a 1,200 acre development in Ocean Springs, MS; a 4 mile water distribution system for Talquin Electric Cooperative, Inc. and a 320

lot subdivision in Leon County, FL.

Q. WHAT ARE YOUR PROFESSIONAL AFFILIATIONS?

A. I am a member of the Florida Engineering Society, National Society of Professional Engineers, and Florida Society of Professional Land Surveyors.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE A STATE OR FEDERAL COURT AS AN ENGINEERING EXPERT WITNESS?

A. Yes, I have had numerous court appearances as an expert witness for cases involving roadways, utilities, drainage, stormwater, water and wastewater facilities designs.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION (PSC OR COMMISSION) FOR USED AND USEFUL ANALYSIS AND OTHER ENGINEERING ISSUES?

A. Yes, I have testified before the PSC for Docket Nos. 950495-WS, 950378-WU and 951056-WS on engineering issues and used and useful analysis.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to provide the used and useful analysis for engineering issues and comment on Gulf Utility Company's (GUC or Utility) minimum filing requirements (MFRs). A summary of my used and useful methodology is included as Exhibit TLB-1.

Q. DID YOU PREPARE OR SUPERVISE PREPARATION OF THE EXHIBITS THAT YOU ARE SPONSORING FOR THIS PROCEEDING?

A. Yes, I did.

Q. DO YOU AGREE THAT USED AND USEFUL CALCULATIONS SHOULD INCLUDE A MARGIN RESERVE?

A. No, I do not think the margin reserve requested by GUC in its used and useful calculations is appropriate. While it may be appropriate for a utility to have reserve capacity to accommodate demands placed upon the system because of growth, it is not appropriate to make current customers pay for this reserve capacity in a margin reserve. It is more appropriate to collect these costs from the cost causers, namely the future customers. Funds to support prudently constructed reserve capacity should be collected from future customers in the form of contribution-in-aid-of-construction (CIAC), paid by customers upon connection, or prepaid, in the form of plant capacity charges, connection charges for distribution and collection mains, advances for construction collected from developers and distribution and collection lines contributed by developers.

Even the carrying charges for plant which is not needed to serve current customers may be paid for by the utility receiving guaranteed revenues from future customers. The Commission also permits utilities to collect an allowance for funds prudently invested (AFPI) which also reimburses the utility for the carrying charges for non-used and useful plant. Collection of these contributions and prepaid fees from future customers should render a margin reserve allowance, paid by current customers, to be unnecessary. GUC is an excellent example because developers are required to contribute costs for water and wastewater mains construction. That is the reason why GUC has a better financial ability to respond to future growth.

Under Florida's tightening environmental regulations, increasing water costs and water conservation concern, it is reasonable to believe that the water consumption and wastewater generation of existing customers will not increase. Therefore, the margin reserve requested by the Utility is solely for new customers. If PSC allows margin reserve in the used and useful calculations, then it will penalize existing customers by burdening them to pay extra cost for new customers. Allowing margin reserve will further increase water and wastewater rates for the existing customers. High utility rates (electric, water and wastewater) reduce customers' financial ability to obtain utility services and that will hinder future development in the service areas. Therefore, the Commission should eliminate margin reserve allowance in the used and useful calculations. The Utility should recover the costs of plant additions and main extensions through other measures from new customers or developers. No margin reserve is included in the used and useful analysis that I sponsor.

Q. DO YOU HAVE ANY COMMENTS ON THE ONE MILLION-GALLON REJECT HOLDING TANK FOR CORKSCREW WATER TREATMENT PLANT (WTP)?

A. Based on my field visit on December 4, 1996, this facility has not been constructed. Therefore, the associated costs should be eliminated from the rate base. Capital investment of the proposed concentrate holding tank is $700,000 as shown in Schedule A-1, Page 3 of 3, Line 24. Rate base should also not include the engineering, legal, and administrative costs of this facility, which are $150,000

according to Citizen's Interrogatory No. 3.

Q. DO YOU HAVE ANY COMMENTS ON THE OLD THREE OAKS WASTEWATER TREATMENT PLANT (WWTP)?

A. Currently the old Three Oaks WWTP is off line since the new 0.75 MGD plant is in service. GUC plans to use these old treatment tanks to equalize flow surges as the plant is expanded in the future. Therefore, I recommend transferring the associated costs of old treatment facilities into the account of plant held for future use. Receipt of information from pending discovery will permit us to quantify this adjustment.

Q. SHOULD THERE BE ANY ADJUSTMENTS ON THE CHLORINE CONTACT CHAMBERS OF THREE OAKS WWTP?

A. Yes. There are two chlorine contact chambers in place at Three Oaks WWTP. However, only one chamber is used for chlorination purpose and it is adequate for the existing plant capacity of 0.75 MGD. The other chamber is currently held for future use. Therefore, I recommend the same treatment on the second chlorine contact chamber, namely, that its cost be transferred to plant held for future use. Again, receipt of pending discovery will permit us to quantify this adjustment.

Q. SHOULD THE RATE BASE INCLUDE THE INVESTMENT FOR WATER AND WASTEWATER LINES TO SERVE THE FLORIDA GULF COAST UNIVERSITY?

A. No. From my field inspection, I realize that the Florida Gulf Coast University will not be in service until the summer of 1997. Since it is outside the test year 1996,

rate base should not include any of the associated costs to serve the new university. The associated costs are $1,160,207.75 according to Staff's Interrogatory No. 16. The projected demands of water and wastewater service for the university should be excluded from the used and useful calculation also.

While from mid 1997 forward these water and wastewater lines will be used mainly by the new university, it is inappropriate to conclude that these water mains and wastewater lines are 100% used and useful. Ultimately these lines will serve demands on campus as well as private developements off campus because massive development around the new university will occur as the campus grows. Without knowing the ultimate build out design, no reliable used and useful analysis can be performed for these water mains and wastewater lines.

Q. DO YOU HAVE ANY COMMENTS ON THE FIRE FLOW REQUIREMENT APPLIED IN THE UTILITY'S USED AND USEFUL CALCULATIONS?

A. Fire flow capacity should be included in the used and useful calculation only if fire flow provision is confirmed by sufficient records or supporting documents. GUC did not provide this information with its original MFRs filing. The Office of Public Counsel (OPC) has requested the Utility to prove the fire flow provision through fire flow test records. The discovery is currently pending.

The delivery of a required fire flow is dictated by many components in a water distribution system, including high service pumps, distribution storage tanks, water mains, etc. Because of economic concerns, for many systems fire flows are

provided partially by high service pumps and partially by elevated storage. It is not cost effective to use source of supply and treatment plant to meet instantaneous demands, such as peak hourly flows and fire flows. For this reason, I did not included fire flow in my used and useful calculations for source of supply or water treatment plant.

GUC currently has a total of 2.6 million gallons of storage which seems adequate for the fire flow requirement and peak hour demands. Therefore, I have included fire flow in the used and useful calculations for finished water storage. See attached Exhibit TLB-2 for details. However, I am waiting for the requested fire flow test information to further confirm the fire flow provision. Revisions to my used and useful calculations will be submitted if the actual fire flow test records reveal inadequate fire flow delivery.

Q. DO YOU HAVE ANY COMMENTS ABOUT THE LEVEL OF UNACCOUNTED FOR WATER PRESENTED BY GUC IN THE MFRS?

A. To encourage efficiency, PSC should allow no more than 10% unaccounted for water. GUC projected a 5.81% unaccounted for water in the Schedule F-1 of the MFRs which is less than 10%. Therefore, I recommend no adjustment to the unaccounted for water. However, adjustments may be necessary if the future discovery suggests high levels of unaccounted for water.

Q. DO YOU HAVE ANY COMMENTS ON THE USED AND USEFUL CALCULATIONS PREPARED BY THE UTILITY FOR WATER SUPPLY WELLS?

A. GUC did not perform a complete used and useful analysis for the water supply wells. The Utility's analysis was only based upon "activation or inactivation" for its used and useful determination, which neglects potential excess capacities of supply wells. The used and useful analysis should consider the capacity of each well and treatment demands. When calculating treatment demands for the Corkscrew Water Treatment Plant (WTP), an additional 15% of demand from the raw water supply should be considered for reject concentrate.

Customarily a water utility will use a "firm reliable capacity" in calculating the used and useful percentages for water supply wells. The firm reliable capacity excludes the largest well capacity by assuming it to be out of service. When there are more than ten wells, the largest two wells are assumed to be out of service. The combined capacity of the remaining supply wells is the "firm reliable capacity."

However, when storage or high service pumping facilities are available, the "firm reliable capacity" method is not applicable. According to Section 3.2.1.1 Source capacity of *Recommended Standards For Water Works*:

> "The total developed groundwater source capacity shall equal or exceed the design maximum day demand and equal or exceed the design average day demand with the largest producing well out of service."

This design criteria should be used to calculate used and useful percentage for supply wells. For the above reason, the "firm reliable capacity" method should not be applied to supply wells where the water system is also equipped with storage and high service pumping facilities. GUC also has a one million-gallon booster station

along the US Highway 41 to supply demands from the customers. The used and useful calculations in Exhibit TLB-2 have made proper adjustments according to the above principles.

Q. DO YOU HAVE ANY COMMENTS REGARDING THE USED AND USEFUL CALCULATIONS OF THE FINISHED WATER STORAGE?

A. The Utility did not prepare a used and useful analysis for the finished water storage because it was granted 100% used and useful in Docket No. 900718-WU. In that rate proceeding, PSC staff used one day of combined plant capacity for peak demands plus fire protection to calculate the used and useful percentage. However, I believe a half (50%) of the average daily flow (ADF) is adequate for equalization and emergency storage. This allowance is more than adequate for equalization (peak hour demand) storage, compared with the 20 to 25% ADF mentioned in the AWWA M32. The excess storage can be used as a provision for emergency storage. The one day ADF storage criteria used in "10 States Standards" was reduced to one half day because MDF design is used for supply wells and treatment plant. With this provision for excess storage, I do not believe it is justified to add more allowance for emergency storage.

No "dead storage" or "retention storage" is included in my used and useful calculations because design engineers could have raised the storage tanks two feet above the high service pumps or vis versa. Then the full volume of a storage tank can be utilized. In addition, when designing storage tanks and high service pumps, engineers have to check the available net positive suction head (NPSH) and ensure

that the available head is greater than the net required positive suction head to avoid cavitation problems. Therefore, high service pumps should be placed at a low grade to obtain the maximum NPSH. Full storage tank capacity was applied in my used and useful calculations, per Exhibit TLB-2.

Q. DO YOU AGREE WITH THE 100% USED AND USEFUL REQUEST FOR FACILITY LANDS?

A. No, PSC should not automatically grant GUC 100% used and useful on facility lands without complete analysis. Every system has different sizes of facilities and lands. The current demands and available facilities are also unique between systems. These factors all dictate the facility usage. Therefore, a used and useful assessment is necessary for every facility land because all facility lands are part of the system. Facility lands are designed and used to serve the whole system, including new and existing customers. It is unfair to burden existing customers for the whole facility land cost needed to serve total build out.

San Carlos WTP is built out in its facility site based on my filed inspection. According to GUC operation manager's explanation, San Carlos wastewater treatment plant (WWTP) can not be expanded because of the Class I reliability requirement and inadequate open space. However, facility land adjustments should be made to Corkscrew WTP and Three Oaks WWTP because there is ample space to expand for the ultimate design capacities of 3.0 MGD and 5.0 MGD respectively.

After reviewing the site plans provided in Citizens Production of Documents No. 46, I made proper adjustments my used and useful calculations in

Exhibits TLB-2 and TLB-3.

Q. DO YOU HAVE ANY COMMENTS ON THE USED AND USEFUL PERCENTAGES FOR THE WATER TRANSMISSION AND DISTRIBUTION SYSTEMS REQUESTED BY THE UTILITY?

A. The Utility did not furnish used and useful calculations for its water transmission and distribution systems because all developers are required to contribute on-site facilities to GUC. Therefore the water distribution system is considered 100% used and useful.

To assess the Utility's rationale, I compare the CIAC amount in Schedule A-1 and transmission and distribution plant accounts in Schedule A-5. It shows that CIAC is greater than the plant in service amount of transmission and distribution plant. Therefore, no used and useful analysis is necessary for the water transmission and distribution systems unless future discovery reveals a different scenario. However, this does not suggest that the water transmission mains are actually 100% used and useful.

Q. DO YOU HAVE ANY COMMENTS REGARDING THE USED AND USEFUL PERCENTAGES REQUESTED FOR THE WASTEWATER COLLECTION SYSTEM BY THE UTILITY?

A. Again, the Utility claims 100% used and useful for the wastewater collection system because the extension policy requires all developers to contribute on-site facilities. Therefore the wastewater collection system is considered 100% used and useful.

To assess the Utility's rationale, I compare the CIAC amount in Schedule A-2 and collection plant accounts in Schedule A-6. It shows that CIAC is greater than the plant in service amount of collection plant. Therefore, no used and useful analysis is necessary for the wastewater collection system unless future discovery reveals a different scenario. However, this does not suggest that the wastewater collection system is actually 100% used and useful.

Q. SHOULD THE ENGINEERING SCHEDULE F-2(S) GALLONS OF WASTEWATER TREATED INCLUDE EXCESS INFLOW AND INFILTRATION?

A. No. For used and useful analysis, the amount of wastewater treated should not include any excessive inflow and infiltration. Engineering Schedule F-2(S) filed by the Utility does not distinguish excess inflow and infiltration from its treated wastewater. The inflow/infiltration (I&I) information should be presented in Schedule F-2, though it is not required by the MFRs. Excess I&I should be deducted from the treated wastewater after considering a proper allowance.

There are many guidelines and criteria that exist for considering an inflow and infiltration allowance on gravity sewers. In the *Recommended Standards for Wastewater Facilities,* 200 gallons per inch of pipe diameter per mile per day (gpd/in pipe/mi) is the recommended guideline and that criteria is generally used by the Florida Department of Environmental Protection (FDEP) staff.

In the Environmental Protection Agency (EPA) handbook *Sewer System*

Infrastructure Analysis and Rehabilitation, it states "No further I/I analysis will be necessary if domestic wastewater plus non-excessive infiltration does not exceed 120 gallons per capita per day (gpcd) during periods of high groundwater The total daily flow during a storm should not exceed 275 gpcd, and there should be no operational problems, such as surcharges, bypasses or poor treatment performance resulting from hydraulic overloading of the treatment works during storm events. The flow rate of 120 gpcd for infiltration analysis contains two flow components: 80 gpcd of domestic base flow and 40 gpcd of non-excessive infiltration."

Water Pollution Control Federation (WPCF) *Manual No 9* also suggests a high infiltration allowance. On page 31, the *Manual No 9* mentions "For small to medium sized sewers it is common to allow 30,000 gpd/mile for the total length of main sewers, laterals, and house connections, without regard to sewer size." However, on Page 131 it states "Infiltration specification are generally in the range of 250 to 500 gpd/in. diam/mile."

I recommend 200 gpd/in. pipe/mile allowance for non-excessive I&I because EPA and WPCF guidelines are too liberal. GUC could have an infiltration allowance as high as 0.56 MGD (4,003 ERC's X 3.5 cap/ERC X 40 gpcd) under the EPA guideline, without even considering an allowance for inflow. An allowance of such a magnitude is even bigger than the combined annual average daily flow of Three Oaks and San Carlos WWTPs. Ratepayers should not be expected to pay for such a huge infiltration allowance.

EPA guidelines are normally used on grant applications for constructing municipal wastewater systems. Private utilities do not have government funding, so the Commission should not apply such a lax guideline in the used and useful calculation for regulated utilities. Private utilities have to achieve higher standards to provide rates which are comparable to municipal WWTPs.

In addition, when engineers fill out the DEP permit application, the maximum allowable leakage rate is normally specified as approximately 10 gpd/in. pipe/ mile. Therefore, I believe 200 gpd/ in. pipe/ mile allowance is adequate for both inflow and infiltration, especially now that PVC pipes with compression joints (rubber gasket) are widely used. They are much better than clay pipes in preventing excessive inflow and infiltration.

OPC is requesting more information to confirm the existance of excess inflow and infiltration, if any, in the wastewater collection system. Future adjustments may be necessary pending receipt of information from outstanding discovery.

Q. DID YOU PREPARE ANY USED AND USEFUL CALCULATIONS IN THIS TESTIMONY?

A. Yes, I have calculated the used and useful percentages for all water and wastewater systems, according to my positions on the above issues. However, some information was not provided by GUC, and I had to make certain assumptions in the calculations. For example, fire flow provision was included without confirmation. All numbers filed by GUC were used, and assumed to be genuine

and correct. A summary which explains the rationale behind my various used and useful calculations can be found in Exhibit TLB-1.

However, these used and useful numbers are subject to change pending further responses to discovery. The calculated used and useful percentages of water and wastewater systems are presented in Exhibit TLB-2 and Exhibit TLB-3, respectively. Exhibit TLB-2.1 is a summary of the historic water customers and 1996 projection in ERCs. Exhibit TLB-2.2 is a summary of fire flow test records and the allowance determination. Exhibit TLB-3.1 is a summary of the treated wastewater flow and water sold to sewer customers in 1995. Calculation of the inflow and infiltration allowance is presented in Exhibit TLB-3.2. Historic sewer customers of 1992 to 1995 are presented in Exhibit TLB-3.3, as well as projected 1996 sewer customers.

Q. DOES THIS CONCLUDE YOUR PREFILED TESTIMONY?

A Yes, that concludes my testimony filed on December 20, 1996.

KEY AND RATIONALE FOR OPC USED AND USEFUL CALCULATIONS

I. SUPPLY WELL

Used & Useful % = **MDF/Total Capacity** or **ADF/Reliable Capacity,**

Whichever is greater.

Rationale ---- ADF/Reliable Capacity is used because the percentage is greater than MDF/Total Capacity. "10 States Standards" states that "the total developed groundwater source capacity shall equal or exceed the design maximum day demand and equal or exceed the design average day demand with the largest producing well out of service."

Notes: 1. PHF = Peak Hourly Flow; MDF = Avg. 5 Max Day Flows in Max Month; ADF = Annual Avg. Day Flow; FF = Fire Flow.

2. Water flow shall be adjusted for excess unaccounted for water, if any.

3. No margin reserve was included in OPC's calculations.

II. WATER TREATMENT PLANT

Used & Useful % = **MDF/Total Capacity**

Rationale ---- It is not cost effective to size water treatment plant to meet instantaneous demands like fire flow and peak hour demands

III. FINISHED WATER STORAGE

Used & Useful % = **(1/2 ADF + FF)/Total Capacity**

Rationale ---- AWWA M32 suggests that equalization storage is about 20 to 25 percent of the average day demand. Fire storage shall be included if fire flow is provided. Emergency storage is an owner option

---- "10 States Standard" requires fire flow storage where fire protection is provided. The minimum storage capacity for systems not providing

fire protection shall be equal to the average daily consumption (ADF). This requirement may be reduced when the source and treatment facilities have sufficient capacity with stand by power to supplement peak demands of the system. Emergency storage is not mentioned in this reference.

---- OPC believes fire storage should be included when and where fire protection is provided.

When the system is furnishing fire flow, a half day ADF storage is appropriate. That volume is more than adequate for peak hour demand storage compared with 20 to 25% ADF mentioned in the AWWA M32. The excess storage can be considered as a provision for emergency storage. The one day ADF storage criteria used in "Ten-States Standards" was reduced to one half day because MDF design flow is used for supply wells, treatment plant and high service pumps.

No additional emergency storage is included because it is an owner's option. Total capacity is used. Retention storage is not applicable to elevated storage tanks.

IV. WASTEWATER TREATMENT PLANT (WWTP)

Used & Useful % = **(Max. Month ADF or Annual ADF)/Total Capacity,**

Depending upon the terms of FDEP permits.

Rationale ---- Plant capacity is permitted as annual ADF or maximum monthly ADF.

Note: Wastewater flow should be adjusted for excess inflow/infiltration, if any amount is confirmed.

V. EFFLUENT DISPOSAL AND EFFLUENT REUSE FACILITY

Used & Useful % = Same as WWTP.

OPC USED AND USEFUL CALCULATIONS

Line No	Water Treatment Plant - Schedule F-6 (W) Docket No 960329-WS Company Gulf Utility Company Schedule Year Ended 12/31/96 Historic [x], Projected [ ]	Combined Used & Useful %	San Carlos Softening WTP	Corkscrew Membrane WTP
1	MAX DAY Recorded on 4/20/96 (GPD)	3,312,000		
2	1995 AVG DAY FOR YEAR (GPD)	1,847,000		
3	1995 AVG MAX 5 DAYS IN MAX MONTH (GPD)	2,746,000		
4	**EST. 1996 AVG 5 MAX DAYS IN MAX MONTH[1] (GPD)**	**2,923,727**	2,415,000	508,727
5	ESTIMATED 1996 AVG DAY FOR YEAR (GPD)	1,935,864		
6	FIRE STORAGE ACCEPTED (GAL)[2]	360,000		
7	FIRE FLOW PROVISION (GPM)	1,500		
8	Unaccounted for Water Level (%)	5.81%		
9	Unaccounted for Water Allowed (%)	5.81%		
10				
11	**SOURCE OF SUPPLY AND PUMPING:**			
12	**Supply Wells:**			
13	Total Capacity[3] (gpd)	5,686,000	2,808,000	3,600,000
14	OPC Calculated Used & Useful[4] (%)	**82.74%**	**86.00%**	**16.25%**
15	GUC Requested U & U (%)	91.43%	100.00%	84.75%
16				
17	**Land & Land Rights:**			
18	OPC Calculated Used & Useful (%)	**78.14%**	**100.00%**	**46.46%**
19	GUC Requested U & U (%)	100.00%	100.00%	100.00%
20				
21	**WATER TREATMENT PLANT:**			
22	**Water Treatment Equipment:**			
23	Total Capacity (gpd)	4,215,000	2,415,000	1,800,000
24	OPC Calculated Used & Useful (%)	**69.36%**	**100.00%**	**28.26%**
25	GUC Requested U & U (%)	88.23%	100.00%	72.44%
26				
27	**Land & Land Rights[5]:**			
28	Total Acreage (ac)		2.33	5.04
29	Future Use Acreage (ac)		0.00	2.42
30	OPC Calculated Used & Useful (%)	**67.16%**	**100.00%**	**51.98%**
31	GUC Requested U & U (%)	100.00%	100.00%	100.00%
32				
33	**TRANSMISSION AND DISTRIBUTION:**			
34	**Finished Water Storage:**			
35	Total Capacity (gal.)	2,600,000		
36	OPC Calculated Used & Useful (%)	**70.07%**		
37	GUC Requested U & U (%)	100.00%		
38				
39	**Land & Land Rights:**			
40	OPC Calculated Used & Useful (%)	**70.07%**		
41	GUC Requested U & U (%)	100.00%		
42				
43	**REJECT HOLDING TANK:**			
44	**Holding Tank[6]:**			
45	Total Capacity (gal.)			
46	OPC Calculated Used & Useful (%)	**0.00%**		**0.00%**
47	GUC Requested U & U (%)	43.00%		43.00%
48				
49				
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58 Notes:
59 1 1995 flow plus 1995 growth in Response to PSC Inter No 17 (Exh TLB-1 1) & MDF = 2 x ADF
60 2 See Exhibit TLB-2 2
61 3 Per Citizens Inter No 53 and Citizens Production of Document (POD) Request No 46
62 4 Additional 15% raw water supply is used for Corkscrew WTP as reject concentrate
63 5 Per site plans provided in Citizens POD Request No 46 and buffer zone allowed as shown in plans
64 6 Reject holding tank is not yet constructed
65

ERC CALCULATIONS	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Schedule F-9 (Response to Staff Inter. No. 17)	Water	Growth	SRF Avg.	SRF Gallons	Gallons/SRF	Gallons/SRF	Total Gallons	Total ERCs
Year	ERC	ERC	Customer	Sold (,000)	(3)/(2)	GPD	Sold (,000)	(6)/(4)
1992	7,018		5,593	401,425	71,773	197	503,740	7,019
1993	7,530	512	5,808	417,828	71,940	197	541,741	7,530
1994	8,050	520	6,103	455,887	74,699	205	601,394	8,051
1995	8,336	286	6,438	483,622	75,120	206	626,229	8,336
1996	8,767	**431**	6,816	512,943	75,256	**206**	659,773	8,767
GPD/ERC:	**206**							

FIRE FLOW TEST RECORDS SUMMARY

OPC DOCUMENT REQUEST NO. 58

Line No	Docket No 960329-WS Company Gulf Utility Company Schedule Year Ended 12/31/96 Projected [x]	Gulf Utility
1	**FIRE STORAGE ACCEPTED (GAL.)**	**360,000**
2	**FIRE FLOW PROVISION ACCEPTED (GPM)**	**1,500**
3	**AVERAGE FIRE FLOW PROVISION (GPM)**	3,671
4	Fire Storage Requested by GUC (gal.)	360,000
5	Fire Flow Requested by GUC (gpm)	1,500
6	Duration Requested by GUC (hr)	4
7		
8	**FIRE FLOW TEST RECORDS***	

9	Location									
10	Hydrant Number									
11	Date Last Flowed									
12	Time of Day	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
13	Static Pressure	60	64	62	63	62	63	67	67	66
14	Residual Pressure	52	59	55	60	42	61	41	59	63
15	Pitot Pressure	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16	GPM at flow	1,156	1,250	1,140	1,250	960	1,245	1,000	1,205	1,260
17	**GPM at 20 psi**	2,757	4,045	3,000	5,264	1,433	6,527	1,377	3,135	5,503
18	Residual Pressure	20	20	20	20	20	20	20	20	20
19	Main Size (in)	16	10	8	16	6	12	6	8	16
20	**Average:**									
21	**GPM at 20 psi**	3,671								

22 **Note: * These are assumed numbers. When actual fire flow test record is provided, the revised schedule will be submitted.**

OPC USED AND USEFUL CALCULATIONS

Line No.	Wastewater Treatment Plant Schedule F-6 (S) Docket No. 980329-WS Company: Gulf Utility Company (GUC) Schedule Year Ended: 12/31/96 Historic [x]; Projected [x]	Combined Used & Useful %	San Carlos WWTP	Three Oaks WWTP
1	PERMITTED PLANT CAPACITY, ANNUAL ADF (GPD)		218,000	
2	PERMITTED PLANT CAPACITY, MAX. MONTH ADF (GPD)			760,000
3	EFFLUENT DISPOSAL CAPACITY, ANNUAL ADF (GPD)		218,000	750,000
4	1995 ANNUAL AVG. DAILY FLOW (GPD)[1]		200,362	
5	ESTIMATED 1996 ANNUAL AVG. DAILY FLOW (GPD)[2]		*219,151*	
6	1995 MAX. MONTH FLOW (GPD)			*428,387*
7	ESTIMATED 1996 MAX. MONTH FLOW (GPD)			*484,757*
8	Without Excess Inflow/Infiltration (GPD)		219,151	484,757
9	EXCESS Inflow/Infiltration (%), (See Exhibit TLB-3 1)		0.0%	0.0%
10	EXCESS INFLOW/INFILTRATION (GPD)		0	0
11				
12	TREATMENT PLANT AND EFFLUENT DISPOSAL:			
13	Treatment Plant:			
14	OPC Calculated Used & Useful (%)	72.60%	100.00%	64.63%
15	GUC Requested U & U (%)	100.00%	100.00%	100.00%
16				
17	Land & Land Rights[3]:			
18	Total Acreage (ac)	21.61	4.85	16.76
19	Future Use Acreage (ac)	7.14	0	7.14
20	OPC Calculated Used & Useful (%)	66.96%	100.00%	57.40%
21	GUC Requested U & U (%)	100.00%	100.00%	100.00%
22				
23	Effluent Disposal/Reuse Facilities:			
24	OPC Calculated Used & Useful (%)	72.60%	100.00%	64.63%
25	GUC Requested U & U (%)	100.00%	100.00%	100.00%
26				
27	On-Site Effluent Storage[3,4]:			
28	Tank Volume (gal.)	2,400,000	900,000	1,500,000
29	Required 3-Day Storage Volume (gal.)	2,111,724	657,454	1,454,270
30	OPC Calculated Used & Useful (%)	87.99%	73.06%	96.95%
31	GUC Requested U & U (%)	100.00%	100.00%	100.00%
32				

33 Notes:

34 1. Derived from response to PSC Inter. No. 1 and see Exh. TLB-3 1

35 2. Based on the ratio of 1996 ERCs to 1995 ERCs from response to PSC Inter. No. 17

36 3. Per site plans provided in Citizens POD Request No. 46 and buffer zone allowed as shown in plans

37 4. Per Staff Inter. No. 11, Plant Basis of Design Summary

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WATER SOLD TO WASTEWATER CUSTOMERS

AND ACTUAL WASTEWATER TREATED IN 1995

	San Carlos WWTP		Three Oaks WWTP	
Time	Water Sold Flow[1] x 10^6 gal.	Wastewater Treated[2] x 10^6 gal.	Water Sold Flow[1] x 10^6 gal.	Wastewater Treated[2] x 10^6 gal.
Jan-95	6.602	4.889	13.357	9.93
Feb-95	6.882	5.407	14.016	10.679
Mar-95	7.055	6.390	14.378	13.220
Apr-95	7.727	5.791	17.625	10.003
May-95	6.496	5.217	13.362	7.106
Jun-95	6.477	5.526	13.894	6.068
Jul-95	3.968	6.050	10.431	6.893
Aug-95	6.651	7.595	8.429	10.499
Sep-95	6.802	6.758	10.876	11.108
Oct-95	5.176	7.543	9.940	13.280
Nov-95	6.379	6.065	11.818	11.717
Dec-95	5.851	5.901	15.436	12.140
Max. Month (MG):	7.727	7.595	17.625	13.280
Max. Month (MGD):	0.258	0.245	0.588	**0.428**
Annual ADF (MGD):	***0.208***	**0.200**	***0.421***	**0.336**
Permitted Annual ADF (MGD)[3]:		**0.218**		
Permitted Max. Month (MGD)[4]:				**0.750**
Total Annual ADF Water Sold to Wastewater Customers (MGD):				***0.629***
Total Annual ADF Wastwater Treated by WWTP (MGD):				**0.536**

Notes:

1. Response to PSC Interrogatory No. 1 (Corrected Page 2)
2. Schedule F-2 of MFRs.
3. Application for a change in water and wastewater plant cpapcity charge, Page 115
4. Application for a change in water and wastewater plant cpapcity charge, Page 99

OPC INFLOW/INFILTRATION ALLOWANCE CALCULATIONS

Wastewater Treatment Plant
Inflow & Infiltration Estimate
Docket No. 960329-WS

Test Year Ended: 12/31/96
Historic [x]; Projected [x]

GULF UTILITY

Line No.				
1	**Water Sold to Wastewater Customers in 1995[1] (GPD)**	**629,000**		
2	80% Return as Domestic Wastewater (GPD)	503,200		
3	**Wastewater from Sewer Only Customers (GPD)[2]**	13,625		
4	**Total Wastewater Flow from Sewer Customers (GPD)**	**516,825**		
5	Inflow/Infiltration Allowance (GPD)	52,113		
6	**1995 ANNUAL AVG. DAILY WASTEWATER TREATED[3] (GPD)**	**536,000**		
7	**Excess Inflow and Infiltration (GPD)**	**0**		
8	**Excess Inflow and Infiltration (%)**	0.00%		
9				
10	**ALLOWANCE OF INFLOW/INFILTRATION (200 gpd/in/mi)**	GPD	FEET	IN
11	**Gravity Mains[4]:**			
12	4" PVC	141	930	4
13	6" PVC	2,392	10,525	6
14	8" PVC	47,237	155,883	8
15	10" PVC	316	834	10
16	12" PVC	1,452	3,195	12
17	15" PVC	568	1,000	15
18	16" PVC	0		16
19	18" PVC	7	10	18
20				
21	8" VCP	0		8
22	10" VCP	0		10
23	12" VCP	0		12
24	15" VCP	0		15
25	**Total Inflow/Infiltration Allowance (GPD)**	**52,113**		
26				
27	**Pressure Sewer[5]:**			
28	3" PVC/DIP		10	4
29	4" PVC/DIP		27,840	2
30	6" PVC/DIP		26,208	2.5
31	8" PVC/DIP		20,288	3
32	12" PVC/DIP		22,490	4
33	14" PVC/DIP		20	6
34				
35				

36 NOTES:
37 1. Responses to PSC Interrogatory No. 17
38 2. Citizens Interrogatory No. 53, Appendix A, 2" commercial wasetwater only customers
39 3 See Exhibit TLB-3 1
40 4 1995 Annual Report, Page S-7
41 5. Force main is a pressure sewer and generally they were laid close to surface. Therefore, no infiltration allowance is considered for force mains

ERC CALCULATIONS	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Schedule F-10 (Response to Staff Inter. No. 17)							Total	
	Wastewater	Growth	SRF Avg.	SRF Gallons	Gallons/SRF	Gallons/SRF	Gallons	Total ERCs
Year	ERC	ERC	Customer	Sold (,000)	(3)/(2)	GPD	Sold (,000)	(7)/(6)
1992			1,506					
1993	2,506		1,638	91,466	55,840	153	139,956	2,506
1994	2,994	487	1,816	103,500	56,993	156	170,623	2,994
1995	3,458	464	2,036	116,672	57,305	157	198,152	3,458
1996*	3,934	**476**	2,304	132,855	57,663	**158**	230,843	4,003
GPD/ERC:	**158**							

Note: * Growth of 1996 is the average growth of 1994 and 1995.

CERTIFICATE OF SERVICE
DOCKET NO. 960329-WS

I HEREBY CERTIFY that a correct copy of the foregoing has been furnished by U.S. Mail or *hand-delivery to the following parties on this 20th day of December, 1996.

Stephen C. Reilly

B. Kenneth Gatlin, Esquire
Gatlin, Woods & Carlson
The Mahan Station
1709-D Mahan Drive
Tallahassee, FL 32308

*Maggi O'Sullivan, Esquire
Division of Legal Services
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

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