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PREFILED REBUTTAL TESTIMONY

OF

GERALD C. HARTMAN, P.E.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

ON BEHALF OF SOUTHERN STATES UTILITIES, INC.

DOCKET NO. 920199-WS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Gerald C. Hartman. My business address is Hartman & Associates, Inc., 201 East Pine Street, Suite 1000, Orlando, Florida 32801.

Q. ARE YOU THE SAME GERALD C. HARTMAN WHO SUBMITTED PREFILED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THE PROCEEDING?

A. The purpose of my rebuttal testimony is to rebut certain points of the prefiled direct testimonies of Kimberly H. Dismukes, Legislative Analyst III with the Office of the Public Counsel, Jerrold E. Chapdelaine, a Utilities Systems/Communications Engineer with the Staff of the Florida Public Service Commission, Gregory L. Shafer, Bureau Chief in the Special Assistance Bureau of the Staff of the Florida Public Service Commission and Harry C. Jones, President of the Cypress and Oak Villages Association in Sugar Mill Woods. In addition, I will be addressing several other issues that have been raised via the interrogatories, request for production of documents and the depositions that have taken place thus far in this proceeding.

Q. WHAT DO YOU WISH TO REBUT CONCERNING MS. DISMUKES'

PREFILED DIRECT TESTIMONY?

A. I wish to discuss Ms. Dismukes' comments concerning SSU's method of calculating margin reserve and her proposed alternative methods. SSU calculated the margin reserve based upon the historical average annual growth in ERC's generally over the last 5 years. This growth projection methodology has been the generally accepted method that the Florida Public Service Commission has been utilizing for a number of years. Only recently have they applied an alternative methodology in certain circumstances. I will be discussing this alternative methodology further in my rebuttal to the testimony of Gregory L. Shafer.

Ms. Dismukes states in her prefiled direct testimony on pages 27 and 28, starting with lines 23 and continuing through line 2 of the following page, that "in reviewing the information supplied by the Company in the MFRs, it appeared that in several instances, the historical growth in ERC's may not be reflective of the growth that would occur during the next year and a half. Under these circumstances, the Company's requested margin reserve would be excessive." First, I would like to state that the MFRs were prepared using the

standard methodology historically utilized by the Florida Public Service Commission.

Second, there are numerous industry-wide accepted methodologies for projecting growth, both in the long term and in the short term. Short term growth is investigated for purposes of determining the margin reserve. Certainly, if you will review some of the percentages of growth in ERC's indicated on the F-9 and F-10 schedules of the Engineering MFRs, it appears that growth has decreased over the last couple of years in some systems and increased in others. One factor driving a declining growth is the current state of the economy -- while in other systems, the availability of desirous housing may increase growth. Certain systems that SSU provides service to are seasonal in nature and with the current condition of the economy, people may defer the purchase of a second home or the rental of vacation dwelling units, thus possibly creating higher levels of growth when economic conditions do improve.

Third, most of the systems in this proceeding are relatively small systems, and due to that fact growth can vary dramatically from year to year, based upon the development trends in the service

area. Most of the systems have a current customer base of less than 1,000 ERC's. Thus, a system may appear to be at build-out currently, however, if a new development appears within the service area, for example, a 100 unit single family residential home development, growth can quickly increase. The purpose of the margin reserve is to assist the utility in being able to provide service to customers in a timely manner as required by both the Florida Public Service Commission and DER. Therefore, historical trends in growth for small systems do not necessarily indicate what the near future will bring. Certainly, a very large system, say 100,000 customers, would have a very steady growth rate which would not fluctuate as dramatically as growth may occur on small systems. For example, most large county and municipal systems in the State of Florida have growth in the range of 2-3% per year and generally budget based upon those growth rates. For a large system, the hypothetical 100 unit single family residential development would have a very small impact upon the growth of the system as a whole. Typically, the driving factor behind a declining growth rate, whether it be a large or small system, is the build-out condition

of the service area where no opportunities to expand that service area are available. With the exception of just a few systems, this condition does not apply to most of the SSU systems. Therefore, an average of the past five (5) year period statewide is the most reasonable method in my opinion.

Q. WHAT IS THE METHOD THAT MS. DISMUKES HAS PROPOSED FOR DETERMINING MARGIN RESERVE?

A. Ms. Dismukes has reviewed the information provided by Southern States in response to OPC Interrogatory No. 210. In that response, the Company provided a summary of projected growth for the years 1992, 1993, and 1994 for all of the water and wastewater systems in this application. The source of this data was a report prepared by the Engineering Department at SSU in March of 1992 to plan for capital improvements in the next 5 years. This report was intended for internal Company use only in preparation for the annual meeting of the Board of Directors of the parent company. As indicated in the assumptions section of the report, it states: "This report takes a macro view of the SSU system and makes general assumptions for the overall growth projections." The primary purpose of the projections was to provide a very conservative

estimate of revenues for the purposes of obtaining capital financing. As described in Mr. Scott W. Vierima's prefiled direct testimony, the Company had a difficult time obtaining financing in 1991 due to the outcome of the 1990 rate application in Docket No. 900329-WS. Thus, in the Company's current ongoing efforts to obtain long term capital financing, it wanted to be very conservative in its revenue projections in order to not overestimate its ability to make the debt payments. That is the source of the information to which Ms. Dismukes is referring on page 28, lines 5 through 9 of her testimony. Schedule 5 of Ms. Dismukes Exhibit KHD-1, page 1 of 1, provides a comparison of 30 selected water systems and 22 selected wastewater systems of the 127 systems included in Southern States' application. She has compared the projected number of ERC's through the margin reserve period as filed in the Company's rate application as compared to the projected number of ERC's based upon the growth projections indicated in Interrogatory response No. 210R.

Ms. Dismukes has selected only 30 of the 90 water systems that are contained in this rate application. It appears that Ms. Dismukes' criteria

for determining which systems to include on her summary Schedule 5 was that if the margin reserve projection in the MFRs was greater than the projection made for the capital improvements report, it was included in her summary. This is true with the exception of 3 systems listed in her schedule 5 for which the projected ERC's of the capital improvement plan are greater than the projected ERC's in the margin reserve request. Likewise for the wastewater systems, Ms. Dismukes selected 22 of the 37 wastewater systems contained in this application and the same criteria appears to have been used for selecting those systems. Thus, it appears that Ms. Dismukes is one-sided in her approach to calculating margin reserves.

Ms. Dismukes provides a detailed discussion utilizing the Beacon Hill's water system as an example. The average of the 5 years of historical growth for the Beacon Hills water system is 12.25% with the highest growth rate being in 1988 of 22.8% and declining in 1989 to 13.01%, in 1990 to 6.72% and in 1991 to 6.48%. I believe that the dramatic decline between 1989 and 1990 just proves my point that the economy is certainly a factor in the decline of growth of systems such as Beacon Hills.

The recessionary nature of the economy certainly began to appear in 1990 and has continued through to 1992. For the first 9 months of 1992, the Company's records indicate that there were an additional 96 ERC's added to the Beacon Hills water system which equates to 3.5% growth, indicating that growth is still off. It should be noted that there is still substantial vacant land within the Beacon Hills water system service area in which to grow, thus, the system has not approached build-out at this time. The capital improvements projection of growth in 1992 was only 4.7% for the Beacon Hills water system. Based upon this information, Ms. Dismukes states that the used and useful percentage of the supply wells would decline from 69% to 64% with the use of the lower growth factor. She states that a similar analysis of the wastewater treatment used and useful capacity equates to a 5% decline from 64% to 59%. Of course, I do not agree with either of these adjustments for the reasons previously given.

Ms. Dismukes pursues a similar analysis for the Spring Hill water and wastewater systems. In summary, she proposes that the margin reserve for 19 of the 90 water systems and 9 of the 37

wastewater systems included in this proceeding should be based upon the Company's capital improvements projections and not the 5 year historical average growth rates. As I indicated previously, this is not correct in light of the size of the systems and also the current conditions of the economy which should hopefully improve in the near future. The whole purpose of margin reserve is to assure that capacity is available so when customers request service, service can be provided immediately. Certainly, if a conservative growth projection is utilized for the margin reserve and then growth substantially increases, the Company will not be able to meet its responsibility to provide this immediate service and thus will be providing a reduced level of service to all of its customers, including existing customers.

Q. MR. HARTMAN, HAVE YOU REVIEWED THE PREFILED DIRECT TESTIMONY OF MR. JERROLD E. CHAPDELAINE FROM THE STAFF OF THE FLORIDA PUBLIC SERVICE COMMISSION AND DO YOU HAVE ANY PRELIMINARY COMMENTS?

A. Yes, I have reviewed Mr. Chapdelaine's testimony and yes I do have comments concerning it. First, I do not agree with Mr. Chapdelaine's rationale for used and useful adjustments as discussed on the top

of page 3 of his prefiled direct testimony. I believe that if the condition discussed in Mr. Chapdelaine's statement is of a no growth, moratorium, build-out or aberrational service condition, then there should be no used and useful adjustment. In the general circumstances cited, he alleges that even though the service area may be built-out (or in any of the above stated conditions) and even where the design capacity of the system has not been reached, the Company should be penalized even though the capacity of the system and facilities constructed were based upon sound engineering estimates of design loads and spatial configurations prior to actual connections occurring. I am aware that in at least one of the prior cases in which Mr. Chapdelaine testified as an expert witness (Docket No. 870981-WS, Miles Grant Water and Sewer Company), the Commission found that the utility facilities were 100% used and useful because the service area was at or near build-out and there was no room for expansion (due to the system being surrounded by other systems). Thus, in that case, the "connected load" was less than the expected build-out or "design load" yet the Commission found that the facilities were 100% used

and useful. I have been informed that there are numerous instances of similar findings by the Commission.

A utility must stand ready to provide service and to make prudent decisions regarding investment in plant necessary to serve its territory in the context of effective long-range planning as well as least cost design and construction. I agree that the used and useful analysis must consider the factors of least cost design, economies of scale, long range planning, etc. and these factors should be reflected in a proper determination.

Q. HAVE YOU REVIEWED FS 367.081(2)(a) REGARDING USED AND USEFUL CALCULATIONS AND THE REQUIREMENT FOR THE COMMISSION TO CONSIDER A REASONABLE TIME FROM THE END OF THE HISTORICAL TEST PERIOD FOR USE OF FACILITIES OR LAND?

A. Yes, I have. The end of the second sentence in section 367.081(2)(a) merely reflects "property used and useful in the public service." This statute does not prescribe a methodology for the used and useful determination. The final sentence of this statute states: "The Commission shall also consider the investment of the utility in land acquired or facilities constructed or to be constructed in the

public interest within a reasonable time in the future, not to exceed, unless extended by the Commission, 24 months from the end of the historical test period used to set final rates" (emphasis added).

Q. WHY WAS THE MARGIN OF RESERVE REQUESTED IN THIS CASE LIMITED TO 18 MONTHS FOR WATER AND WASTEWATER PLANTS AND 12 MONTHS FOR UTILITY LINES?

A. I limited the margin of reserve to these time periods due to the Company's direction not to create an issue on this point as a result of the combination of the Commission's adverse ruling in Docket 900329-WS and the critical need for rate relief. It should be noted that (1) the 24 month convention indicated in section 367.081(2)(a) was not used, (2) no extensions of that period were requested despite the existence of DER Rule 17-600.405, F.A.C., which confirms that for wastewater plants, a period in excess of 48 months would be appropriate, and (3) the period for designing, permitting, constructing, and placing water and wastewater plant facilities into service far exceed the 18 month period commonly used to establish the margin reserve for water and wastewater treatment plants.

Q. HAVE YOU REVIEWED THE COMMISSION'S RULES REGARDING USED AND USEFUL METHODOLOGY AND MARGIN RESERVE?

A. Yes, I have. To my knowledge, there are no prescribed methodologies for used and useful or margin reserve determinations stated in the Commission's rules. However, Rule 25-30.255, F.A.C., entitled "Plant and Facilities," sections (1) and (2) state, respectively, that the utility "shall design, construct and install its plant in accordance with accepted engineering practices to ensure reasonably adequate and safe service to its customers" (emphasis added) and "shall maintain and operate its plant and facilities . . . in accordance with the rules of the Department of Environmental Regulation" (emphasis added). It is accepted engineering practice to design and construct water facilities utilizing the average flow on the maximum day when sufficient storage is incorporated or the peaking needs of the water system when sufficient storage is not incorporated in the system.

Q. ON PAGE 4 OF MR. CHAPDELAINE'S PREFILED DIRECT TESTIMONY, HE SPEAKS BRIEFLY OF "ECONOMIES OF SCALE" AND THEIR EFFECT ON THE USED AND USEFUL ANALYSIS. WOULD YOU PLEASE COMMENT ON THESE EFFECTS?

A. Economies of scale are an important criteria in the

design of water and wastewater facilities. In April of this year, Hartman and Associates performed a brief industry-wide evaluation of capital planning costs and their effects on economies of scale.

Q. I SHOW YOU EXHIBIT ___ (GCH-3) UNDER THE COVER PAGE ENTITLED "CAPITAL COST CURVES." WAS THIS EXHIBIT PREPARED BY YOU OR UNDER YOUR DIRECTION?

A. Yes, it was.

Q. COULD YOU BRIEFLY DESCRIBE THIS EXHIBIT?

A. Yes, Exhibit ___ (GCH-3) indicates the results of this brief industry-wide evaluation of capital planning costs. As can be seen, there are large economies of scale to be achieved in the construction of water and wastewater facilities. As a result of dealings with Southern States, I can attest to the fact that Southern States capitalizes on these economies of scale whenever possible. However, it also should be noted that the Commission Staff's apparently preferred methodology for computing the used and useful portion of utility facilities (as advocated in Mr. Chapdelaine's testimony) adversely effects Southern States' ability to capture the benefits of such economies for its customers in some circumstances.

Q. HOW DOES MR. CHAPDELAINE PROPOSE THAT THE USED AND

USEFUL FACILITIES BE DETERMINED?

A. Mr. Chapdelaine proposes the use of the "hydraulic share of the plant used and useful in service to the customers in test year for the rate application." He goes on to say that other considerations should be taken into account over and above the hydraulic share. He cites Chapter 17-555, F.A.C., and Chapter 17-600, F.A.C., along with "sound engineering, standard industrial practices and regulatory requirements." In fact, on lines 1 and 2 of page 5 of Mr. Chapdelaine's direct testimony, it appears that he is agreeing with the Company's approach to used and useful in reviewing and analyzing the water and wastewater systems on a major component basis. Yet, the methodology that he discusses does not review these major components independently in relation to their standard engineering design criteria. As Mr. Chapdelaine states on lines 5 and 6 of page 5 of his prefiled direct testimony, "various maximum flows may be taken into account based on peak month, peak day, and peak hour demands to determine the highest level of capacity which is indicated for the system based on the test year data which may be adjusted for natural occurrences, line breaks and fire

fighting." This is certainly true. Yet, in his testimony he uses the average of the five maximum days to determine the used and useful capacity of all of the various water supply, treatment, storage, and pumping facilities when, in actuality, standard engineering design criteria requires that different components use different flow or demand considerations.

Q. DO YOU AGREE WITH MR. CHAPDELAINE'S APPROACH USING A 5-DAY MAXIMUM DAILY PRODUCTION OF WATER TO DETERMINE THE USED AND USEFUL PERCENTAGE?

A. No. I have reviewed the references cited in 17-555.330, F.A.C., entitled "Engineering References for Public Water Systems" along with several standard engineering design text books for water facilities and I have not been able to find any cite to substantiate Mr. Chapdelaine's statement that "maximum daily production water flow based upon the average of the 5 highest pumping rate days in the highest pumping rate month should be utilized." For example, Part 3 entitled "Source Development" of the "Recommended Standards for Water Works" - 1987, states under Section 3.2 - Groundwater, subsection 3.2.1 - Quantity, sub-subsection 3.2.1.1 - Source Capacity that "[t]he total developed groundwater

source capacity shall equal or exceed the design maximum day demand."

In addition, as discussed in Chapter 2 of "Water Treatment Plant Design", Second Edition, by the AWWA (page 17) under "Plant Capacity":

> We then plot water use trends for average 24 hour, maximum 24 hour and peak hour demands. The peak hourly demands are met from distribution storage and therefore do not have to pass through the treatment facility. The treatment facility is normally designed for maximum 24 hour demand, so that an adequate amount of water will be treated and transmitted to distribution storage system throughout the year including days when usage is maximum (emphasis added).

Thus, as clearly stated by these two standard references which are cited in Rule 17-555.330, F.A.C., the maximum day must be considered in the design of the treatment facility and supply sources. Moreover, it is my professional engineering opinion that the above is true (I have been qualified as a technical expert in water treatment design in numerous Florida DOAH cases). Further, as is discussed in the AWWA "Water

Treatment Plant Design" manual, different components of the water system facilities are utilized for different purposes and thus have different demands, i.e., storage and pumping needed to meet peak hour demands while treatment and supply sources must meet only maximum day demands.

At this point, I would like to state that even though in this rate application our used and useful analysis utilized only the data from the historical test year period, standard engineering design would require you to review as much of the record available, and no less than 5 years of historical data, to determine maximum day demands due to variations in climactic conditions, economic conditions, and seasonal population fluctuations. I would agree with Mr. Chapdelaine's statement that these maximum day demands should be adjusted for "natural occurrences, line breaks and fire fighting" only to the point that the source of supply or treatment facilities should not have to meet these requirements but that storage should.

It should be noted that these are "natural occurrences" and that they do occur and they are real world operational requirements that a utility must consider and thus must be considered in plant

design. Typically, occurrences such as line breaks and fire flows are absorbed by the storage requirements or peaking facilities of the system as I will discuss later. I would like to emphasize that what is being discussed is standard engineering design criteria. Certainly, if a system has little or no storage, the source of supply must be able to meet the peak hour demands of the system as was utilized in our used and useful analysis in this rate application. It should also be noted that the distribution system for very small systems generally consists of small pipes and is not very extensive in size. In addition, there generally is no storage, so that the source of supply must meet the instantaneous demands of the customers (i.e., there is little buffering volume within the distribution system to attenuate those instantaneous demands). In summary, I cannot agree with Mr. Chapdelaine's suggestion that the use of the 5 day average maximum day demand is appropriate. I believe the methodology, as explained in the Introduction section of Volume 2, Book 11 of 11 of the MFRs, details the appropriate used and useful methodology, which is substantiated by sound

engineering practice. It should be noted that the same methodology was used in the 1990 rate application and Staff did not propose the adjustment now advocated by Mr. Chapdelaine.

In addition, in the last SSU rate case, FPSC Docket No. 900329-WS, the Staff utilized the maximum day in its used and useful analysis for the Staff Recommendation. For this rate application, the major components selected for the water systems, if they applied, were the source of supply, water treatment equipment, finished water storage, high service pumping and hydropneumatic tanks. As explained in the introduction section of Volume 2, Book 11 of 11, source of supply facilities must meet maximum day or peak hour conditions depending on the quantities of storage available. In most instances, water treatment equipment is designed around the maximum day demand. Finished water storage capacity is made up of three criteria: equalization storage, fire flow requirements and emergency storage. High service pumping capacity is typically based upon peak hour demand conditions and hydropneumatic tanks are based upon the size of the pumping units pumping through them and the chlorine contact time

necessary for adequate disinfection.

Q. DO YOU AGREE WITH MR. CHAPDELAINE'S COMMENTS CONCERNING THE USE OF AVERAGE DAILY FLOW FROM THE PEAK FLOW MONTH FOR DETERMINATION OF THE USED AND USEFUL PORTION OF WASTEWATER FACILITIES?

A. Yes. It should be noted that all wastewater capacity determinations discussed have been based on a hydraulic flow basis. However, solids loading in the form of organic matter, i.e., BOD, total suspended solids and other factors, must be considered when designing the treatment facility and these solids loading have an impact on the capacity of the facility. With many utilities going to alternative reclaimed water disposal techniques, the effluent limitations leaving the treatment facilities have become more strict, and hence, more difficult to attain than the previous standard secondary treatment requirements. Thus, today engineers must be more conservative when determining appropriate hydraulic and solids loading rates when designing facilities. As a result of these phenomena, even though a facility has had capital improvements, the permitted capacity of the system actually could be reduced after such improvements due to the required

decreased loading rates to attain a more stringent effluent quality.

Q. DO YOU AGREE WITH MR. CHAPDELAINE'S COMMENTS CONCERNING THE TIME PERIOD FOR MARGIN RESERVE?

A. No. Although we did use 12 and 18 months for determining margin reserve with respect to this rate application, these periods are not adequate to plan, design, permit and construct additional facilities to meet customer demands. Thus, if the Commission intends to deviate at all from the heretofore preferred method of determining margin reserve (as advocated by Staff witness Shafer), the Commission should modify the margin reserve period to reflect this reality.

In most instances today, if a utility must construct additional capacity to keep ahead of customer demands, it needs more than eighteen months to complete the process. For a relatively "clean" process in which there are no permitting, financing or construction delays (which indeed would constitute an aberration from reality), two years is about the minimum time period in which additional capacity can be provided. Below, I have briefly outlined a step by step process for the addition of water treatment capacity:

1. In house review of records, capacity, customer commitments, etc. and the determination of the abilities and manpower needed to complete the work.
2. Request for a proposal, review of qualifications and selection of an outside consultant to perform the work.
3. Determination of the needed capacity increase to meet the demands of the current and future customers via a planning document.
4. Study of the various raw water supply alternatives and the required treatment facilities necessary to produce potable water.
5. Selection of the raw water supply and treatment alternative that provides the highest quality product for the lowest customer price.
6. Determination of the source of supply and the sizing of treatment facilities taking into account economies of scale and used and useful analysis.
7. Preliminary planning level engineering estimate of planning, financing, design, permit, construction and startup costs including overhead expenses, capitalized

interest, etc.

8. Study of complete financing alternatives and determination of lowest cost financing alternative considering all aspects.
9. Preliminary approval of selected financing alternative by financial institution, local government, etc.
10. Water Use Permit (WUP) application preparation with supporting documentation.
11. Water Management District (WMD) review and request for additional information.
12. Complete request for additional information.
13. WMD review and staff report.
14. WMD Board approval, noticing and WUP issuance.
15. Design wells and local government approval.
16. Bidding evaluation and award well drilling contract.
17. Finalization of financing for the well drilling contract.
18. Well construction and testing.
19. Water sampling and analysis.
20. Determination of water quality and its applicability to the treatment process. At this point, project redesign may be necessary causing significant delays.

21. Water treatment facilities design completion.

22. Application for FDER construction permit.

23. FDER review and request of additional information.

24. Complete request for additional information.

25. FDER review and notice of intent.

26. FDER construction permit noticing and permit issuance if no objections.

27. Local government review and permitting.

28. Final design completion and preparation of bidding documents.

29. Bidding, evaluation and award of construction contract.

30. Finalization of financing for the water plant construction contract.

31. Water treatment plant construction and disinfection.

32. Substantial completion inspection and certification.

33. Punch list determination and completion of items.

34. Start up, operator training and operation and maintenance manual review.

35. Final walk through and inspection and completion of final punch list items.

36. Final payment to contractor and project close-out.

37. Final FDER certification and preparation of as built drawings.

38. Begin preparing rate application to include costs of new facilities.

It should be noted that the above 38 steps for constructing new facilities are not all inclusive and constitute only the major activities required to add water system capacity. Also, the 38 steps assume construction of a relatively simple water treatment facility with no major delays in the permitting, design or construction processes. If this were a more complex facility, for example an R.O. facility with an injection well, the permitting and construction time would more than likely be extended by at least one additional year. Hartman & Associates recently completed an R.O. facility which utilized an existing injection well and which was on an extremely fast track, and the permitting and construction alone took more than two years. A similar result also is occurring in the wastewater industry. A fast tracked wastewater treatment facility expansion currently in progress is expected to take over two years to design,

permit and construct. Both of these projects were relatively straightforward since there were no treatment alternatives available, which eliminated the first five steps previously outlined.

Recent DER rule revisions concerning planning for wastewater facilities expansion also now require the extension of the margin reserve period beyond eighteen months for wastewater treatment facilities. DER Rule 17-600.405, F.A.C., requires a utility to provide timely planning, design and construction of plant expansions based on a schedule delineated by DER. This rule requires a utility providing wastewater service to submit annual capacity analysis reports to the DER. These reports must analyze existing facilities and their capacity to provide service. Basically, the rule has established four triggers to determine when certain activities need to be commenced concerning the design, permitting and construction of additional wastewater treatment facilities. If the projected flows of the facility exceed the permitted capacity of the facility within 5 years of the date of the report, then the report must include a statement by a registered engineer that planning and preliminary design of a plant

expansion has been initiated. When the projected flows are expected to exceed the capacity within 4 years, the report must include a statement from the registered engineer that plans and specifications for the expansion are being prepared. If the engineer determines that projected flows are going to exceed the capacity within 3 years, then a construction permit application must be submitted to the DER within 30 days of such a determination. The final trigger is that if the capacity analysis report indicates that the projected flows are going to exceed the permitted capacity of the treatment facilities within 6 months, an operating permit application must be submitted by the utility along with the capacity analysis report.

The clear intent of the DER's rule is that capacity must be maintained for a minimum 4 year window if the utility does not wish to perpetually be in a permitting and expansion mode for every wastewater treatment plant it operates. Hence, pursuant to this rule, a minimum 4 year margin reserve time period is required for wastewater treatment facilities.

This DER rule has been acknowledged by the Florida Public Service Commission in a recently

adopted Memorandum of Understanding between the DER and the Commission. Page 5 of the proposed Memorandum of Understanding, under the heading, "PSC Responsibilities - Wastewater Management", states as follows:

> The DER has adopted rules requiring utilities to perform timely planning, design and construction of expanded facilities to ensure that sufficient wastewater treatment, disposal and reuse capacity is available. In light of DER rules, the PSC agrees to evaluate capacity constraints imposed by statutes and rules on private utilities within PSC jurisdiction by PSC's application of the used and useful concept. If justified, this evaluation shall include the assessment of the possible need for statutory rule or revisions.

Thus, based upon DER's new rule requirements and this Memorandum of Understanding, a four year margin reserve requirement is necessary and justified for all of the Company's wastewater treatment facilities in order to be in compliance with current rules and regulations.

Q. I SHOW YOU EXHIBIT ____ (GCH-4) UNDER COVER PAGE ENTITLED, "MEMORANDUM OF UNDERSTANDING BETWEEN THE

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION AND THE FLORIDA PUBLIC SERVICE COMMISSION". ARE YOU FAMILIAR WITH THIS EXHIBIT?

A. Yes.

Q. COULD YOU BRIEFLY DESCRIBE THIS EXHIBIT?

A. This exhibit contains a copy of the Memorandum of Understanding between the Commission and the DER which I just referred to.

Q. DO YOU HAVE ANY FURTHER COMMENTS REGARDING MR. CHAPDELAINE'S PROPOSAL?

A. Yes. Mr. Chapdelaine refers to the Commission "policy" of capping the margin reserve at 20%, even where the historical growth rate is higher than 20%. I do not believe this cap is justified. If the customer base of a water or wastewater system is increasing at a growth rate higher than 20% per year, the utility must be able to provide service to those customers no matter how rapidly the requests for service are coming. This is particularly true of Southern States' small systems which are experiencing growth at a rate in excess of 20%, including Grand Terrace (117.1%), Lake Ajay (37.3%), Pine Ridge Estates (25.3%), Pine Ridge (20.5%) and Rolling Green (34.0%). Also, new systems such as Palisades, Quail Ridge, and

Fountains can be expected to exceed an annual growth rate of 20%. Land developers often project a 5 year build-out for their projects which translates into an average of 20% growth per year. However, typically a development starts out slow and finishes slow in reaching build-out, but the years in between, which say would be years 2, 3, and 4, would greatly exceed 20% and reach levels of perhaps 30% or even higher. The Commission should not limit the margin reserve to 20% for these SSU systems, but rather should establish the margin reserves based on the actual average rates of growth.

Q. DO YOU AGREE WITH MR. CHAPDELAINE'S COMMENTS CONCERNING REDUNDANCY?

A. Yes. As Mr. Chapdelaine discusses on page 5, lines 21 through 23, there are specific regulatory requirements for redundancy of the facilities. Typically, any mechanical component must have a back-up in order to adequately provide service if the primary unit should be out of service. The redundancy requirements are based upon a probability that a particular component of a system is going to be out of service and the reliability of that component. The theory of reliability for

water systems is described in Chapter 18 of AWWA's "Water Treatment Plant Design" manual, pages 537 through 539. In addition, the USEPA has established specific criteria concerning redundancy and reliability of wastewater treatment facilities. This is discussed in "Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability" - MCD-05, published by the USEPA. In that manual, it discusses three levels of reliability for wastewater treatment facilities, Class I, Class II and Class III. The DER requires facilities providing reclaimed water to sites accessible to the general public to maintain Class I reliability. This is an important concept to understand when evaluating the capacity of existing wastewater treatment facilities that must now be in compliance with Class I reliability.

Typically, the minimum standard for reliability assumes the largest unit out of service for maintenance or due to a mechanical failure. As I explained earlier, reliability is a function of the probability that a particular piece of equipment is going to be out of service. Certainly, the greater the number of pieces of the same type of equipment that are necessary to

operate a system, the greater the likelihood that more than one unit could be out of service at the same time. For example, in multiple well systems such as Deltona Lakes (23), Spring Hill (21) or Sugar Mill Woods (9), it is not uncommon to assume that at least the two largest units will be out of service. Certainly one well could be down for routine maintenance, such as bearing replacement, impeller replacement, thrust bearing replacement or numerous other things. While maintenance is occurring on that particular unit, another unit could fail due to a mechanical problem (i.e., motor burning up, being struck by lightning, shaft breaking), thus redundancy requirements are not strictly a function of a single unit being out of service, but in some instances, multiple units must be considered out of service. It must be remembered that we are not dealing with hypotheticals here but rather the realistic assumptions which must be made to insure the utility's ability to meet its obligation to provide water to its customers.

Q. DO YOU AGREE WITH MR. CHAPDELAINE'S COMMENTS CONCERNING FIRE FLOW REQUIREMENTS?

A. Yes, with the following qualifications:

Fire flow requirements typically come from the storage units within the system. Of course, if no storage or inadequate capacity is available, the source of supply must be able to meet the average demand conditions during the maximum day plus the fire flow requirement. Thus, for example, if a utility had a maximum day demand of 1 million gallons, the average demand condition during that day would be approximately 700 gallons per minute, if that system had a 500 gallon per minute fire flow requirement, the source of supply would need to have a capacity of approximately 1,200 gallons per minute to meet the conditions of the fire flow plus the maximum average day demand condition.

Q. ARE YOU AWARE OF ANY PROPOSED RULES REGARDING USED AND USEFUL METHODOLOGY AND MARGIN RESERVE DETERMINATION?

A. Yes, I participated in discussions with FPSC staff, Mr. Charles Hill, and the Florida Waterworks Association and provided information regarding the need to develop appropriate rules. The work product from these efforts were incorporated in the Commission staff's latest rulemaking proceeding. I have included this information as Exhibit ____ (GCH - 5). These proposed rules reflect the

methodology used by me in this proceeding.

Q. IS THE HISTORICAL TEST YEAR PERIOD ADEQUATE TO ASSESS THE EXTENT OF USED AND USEFUL FACILITIES IN WATER AND WASTEWATER SYSTEMS?

A. No. Even though for the purposes of this rate case we constrained these analyses to the historical test year, professional engineers are bound by Florida Statutes Chapter 471 to, in part, protect the "public health, safety and welfare." It is not generally accepted engineering practice or proper utility planning to consider only one year of historical data. For example, the Sugar Mill Woods water system in 1989 had five maximum days ranging from 2.788 MGD to 4.581 MGD and averaged 3.335 MGD. In 1991, the water system ranged from 1.833 MGD to 1.869 MGD averaging 1.854 MGD. Facilities were constructed to meet the needs in 1989 and the associated investments were prudently made at that time. Yet, in 1991, those same facilities were used less and the utility is penalized with a lower used and useful percentage. The Company cannot just arbitrarily reduce its investment simply due to a low usage year and thereafter increase the investment again when demands increase later. Rather, the Company has the obligation of having

adequate facilities for service. Therefore, the used and useful percentages calculated are below the appropriate level due to the restriction of a single historic test year convention. Absent plant additions, I can think of no situation which would justify a reduction in used and useful levels associated with the same plant assets from one year to the next. For example, if the investment in Plant A was prudent when made, the construction costs were reasonable and Plant A's used and useful character is determined in Year 1, the Company should not be penalized subsequently when events occur, particularly those beyond the Company's control such as inordinate rainfall levels or a devastating economic slowdown, which reduce water consumption and thus the usefulness of Plant A.

Q. WHAT IS AN APPROPRIATE AMOUNT OF UNACCOUNTED FOR WATER?

A. Unaccounted for water is an ambiguous term and a precise determination of what are excessive unaccounted for water levels is no less difficult to decipher. Mr. Chapdelaine states that the Commission "policy" is that anything greater than 10% is considered to <u>possibly</u> be excessive and should be investigated for possible adjustment. If

the system is having a problem with leaking transmission and distribution pipes, which is typically considered unaccounted for water, the true test of whether the amount of lost water is excessive should be determined by a cost/benefit analysis (examining the cost of repairing the lines versus paying the additional costs of pumping and treating the lost water). In some situations, it is more cost effective to improve the leakage situation, and in other situations, it is better to continue to pump water. Replacement of transmission and distribution lines and the follow-up restoration of pavements, landscaping, etc., is capital intensive and in many situations it is not practical to correct the problem. In these situations, the Company should not be penalized for unaccounted for water levels above 10%.

Q. DO YOU AGREE THAT AN ACCEPTABLE LEVEL OF UNACCOUNTED FOR WATER IS 10% OF THE WATER PUMPED?

A. No. This may be an acceptable level of unaccounted for water but to determine that anything above 10% is to be considered excessive is incorrect. As I previously mentioned in this testimony, a cost/benefit analysis must be done to determine whether it is worth the cost of resolving the

unaccounted for water problems. Replacement and restoration of water distribution lines can be very expensive.

Q. DO YOU BELIEVE ANY OF THE WATER SYSTEMS IN THIS RATE CASE APPLICATION HAVE EXCESSIVE UNACCOUNTED FOR WATER?

A. No. In Staff's Prehearing Statement, Staff raised the issue whether the Beechers Point, Interlachen Lakes Estates, Keystone Heights, River Grove, Saratoga Harbor-Weelacha, Kingswood, Oakwood, Palisades, and Stone Mountain systems have excessive unaccounted for water levels. As I have stated previously, excessive unaccounted for water levels cannot be determined solely on the fact that such levels may exceed 10% of the water pumped and sold to customers. Cost/benefit analyses must be performed to determine whether quantities of unaccounted for water are excessive to the point where extensive capital projects are necessary to correct the problem. It should be noted that each of the systems identified by Staff are very small and more than likely it would not even be prudent to cause customers served by these systems to pay for a cost/benefit analysis.

Q. WHAT IS INFILTRATION AND IN-FLOW?

A. Infiltration is typically considered the passing of groundwater into the gravity sewer system due to gaps in joints, cracks in pipes, etc. This occurs most in areas which have high groundwater levels (which is quite common in the State of Florida). Typically, in-flow is considered the passing of surface water into the collection system via manhole lids, illegal connections, stormwater connections into the collection system, etc. In-flow problems are more easily identified and resolved than infiltration problems. Infiltration can be difficult to both identify and locate within the system. The correction of the problem, which typically either calls for replacement of the pipe or lining the pipe with a suitable material, can be very costly, sometimes up to 3 times the cost of the original installation. As Mr. Chapdelaine states, the Commission policy is to allow 10% inflow and infiltration and anything beyond that is considered excessive and may affect the determination of used and useful plant absent justification. Again, as with unaccounted for water, the true test of whether the level of infiltration and in-flow is excessive should be determined by a cost/benefit analysis which

determines whether it is less costly to correct the problem or to continue to treat the existing amounts of wastewater. Therefore, I would not agree with Mr. Chapdelaine's comments that unaccounted for water and infiltration and in-flow should be limited to 10%.

Q. DO YOU BELIEVE INFILTRATION AT THE JUNGLE DEN WASTEWATER SYSTEM IS EXCESSIVE?

A. No. The Company provided Staff with an interrogatory response which included facts that confirm that based on the design of the collection system at Jungle Den, the amount of infiltration is not excessive. Moreover, based on the small size of the system, it is probably not even prudent to perform an analysis to determine where the infiltration may be occurring much less invest in capital improvements to correct problems which may exist.

Q. DO YOU BELIEVE THE PALM PORT SYSTEM HAS EXCESSIVE INFILTRATION?

A. No. We have compared the amount of wastewater treated in this system to the amount of water pumped and do not believe that there is excessive infiltration.

Q. DO YOU AGREE WITH MR. CHAPDELAINE'S ALLEGATION THAT

SSU'S USED AND USEFUL ADJUSTMENTS WERE "NOT BASED UPON STANDARD COMMISSION PRACTICE"?

A. First, I'm not sure that the Commission has a "standard practice" concerning used and useful adjustments. To the best of my knowledge, Chapter 367, Florida Statutes, and Chapter 25-30, F.A.C. do not address any "standard practices" for used and useful adjustment. Second, Mr. Chapdelaine states that "no explanation or justification was found as to why deviations occurred." I strongly disagree with this statement. As I discussed previously, the F schedules in the MFRs contain an introduction that describes the used and useful methodologies we used. Volume 2, Book 11 of 11, in the Introduction to Water Engineering Schedules under Schedules F-5 "Used and Useful Determination for Water Systems", contains a detailed explanation of the methodologies used to determine the used and usefulness of water supply wells, water treatment equipment, finished water storage, high service pumps, auxiliary power, chlorination equipment, hydropneumatic tanks, water transmission and distribution systems and fire flow requirements. I believe this introduction provides a more than adequate explanation and justification of the used

and useful methodologies we utilized. According to Mr. Chapdelaine, one of the Company's alleged deviations from alleged "standard practices" was our use of the single peak day rather than the average of the peak 5 days to determine used and useful plant levels. Our analysis is explained in the introduction section of the MFRs and I also thoroughly discussed this point previously in this rebuttal testimony.

Mr. Chapdelaine cites a second alleged deviation regarding our "calculation of hydropneumatic tank used and usefulness based upon a factor of 15 rather than a factor of 10 relative to well capacity as called for in the Ten State Standards (Recommended Standards for Water Works)." First, the standards indicated in the Ten State Standards manual are minimum standards only. The standard that Mr. Chapdelaine is referring to is in Part 7 of the Ten State Standards and it is entitled "Finished Water Storage". In Section 7.2 - Hydropneumatic Tanks, under subsection 7.2.2 - Sizing, it states:

> The capacity of the wells and pumps in a hydropneumatic system should be at least 10 times the average daily consumption rate. The

gross volume of the hydropneumatic tank, in gallons, should be least ten times the capacity of the largest pump, rated in gallons per minute. For example, a 250 gallon per minute pump should have a 2,500 gallon pressure tank.

The Company's use of 15 times the capacity of the largest pump is done for two reasons. First and foremost, for most of these water systems, the only storage that is available is the hydropneumatic tank and it is the only place that chlorine has adequate time to contact the water and properly disinfect it. It should be noted that in Part b of subsection 7.2.2, of the Ten State Standards, it states: "Sizing of hydropneumatic storage tanks must consider the need for chlorine detention time, as applicable, independent of the requirements in 7.2.2.a above." Industry standards require a minimum of 15 minutes chlorine contact time at peak flow rates. Moreover, section 4.3.1.2, page 56 of the Ten State Standards states "free chlorine residual . . . maintained in the water after contact time of at least 30 minutes when maximum flow rate coincides with anticipated maximum chlorine demand." Thus, with a simple well and

hydropneumatic tank system, which exist on the majority of the SSU systems, the hydropneumatic tank must have a capacity of at least 15 times the well pump capacity so that there is approximately 15 minutes of detention (at peak hour versus maximum day) within the hydropneumatic tank prior to delivery to the distribution system.

Another reason for using 15 times the largest pump capacity is that you want to minimize the number of starts that an electrical motor has in a one hour period. Typically, the number of starts varies with the size of the motor, but a maximum of 4 to 5 starts per hour would require the hydropneumatic tank to have a capacity of at least 15 times the largest pump capacity.

To conclude, based on my foregoing responses to these two apparent "deviations", the Company's used and useful methodology certainly did not deviate from standard engineering practice. I know that in many instances the Commission practice would not even have considered the capacity of the hydropneumatic tanks in a separate analysis. It would have been included in the overall used and useful percentage of all the water treatment facilities.

Another "deviation" alleged by Mr. Chapdelaine is that Southern States "included fill-in lots in the distribution and collection systems used and useful adjustment rather than only the lots which were or would be developed as is the basis pursuant to Commission practice." It is true that we believe that some of the water distribution and wastewater collection systems included in this proceeding are 100% used and useful despite lower results when the total lots occupied are divided by the total number of lots where service is available. I know that in Docket No. 900329-WS, the Staff recommended 100% used and useful levels on numerous SSU water distribution and wastewater collection systems that still had lots that were vacant and thus were without active connections. I am also aware of several other dockets in which the Commission has determined the water distribution or wastewater collection system to be either 100% used and useful or used and useful in amounts greater than the result achieved by dividing the total active lots by the total number of lots with service available. If the application of this calculation is standard Commission practice (and I do not believe it is), the Commission

deviates quite often from this "practice" and should do so in this proceeding.

In addition, the Commission's own rules provide for the inclusion of "fill-in" lots. Rule 25-30.231 - Extent of System which Utility shall Maintain (emphasis added), requires "delivery of water service to the customer up to and including the point of delivery into the piping." Also, Rule 25-30.225 - Plant and Facilities, states in paragraph (7) that "each utility which provides both water and sewer service shall operate and maintain in safe, efficient, and proper condition, all of its facilities to the point of delivery" (emphasis added).

The utility strongly believes that fill-in lots are used and useful purely from a required service and an economy of scale approach. If the utility were to only install lines to one customer at a time, the cost would be exorbitant.

Q. DO YOU HAVE ANY COMMENTS REGARDING MR. CHAPDELAINE'S STATEMENTS CONCERNING THE USED AND USEFUL CHARACTER OF WATER DISTRIBUTION AND SEWER COLLECTION LINES?

A. On page 6, line 25 and continuing on through lines 1 and 2 of page 7, Mr. Chapdelaine states that

"Commission policy with regard to contributions in aid of construction (CIAC) calls for 100% of the distribution and collection system to be contributed." He continues by stating, "compliance with CIAC policy obviates used and useful determinations involving distribution and collection systems." I do not agree with Mr. Chapdelaine that Commission policy is that water distribution and wastewater collection systems are to be considered 100% contributed. Mr. Chapdelaine does not identify where this alleged "Commission policy" is established. To my knowledge, no such policy exists. Perhaps Mr. Chapdelaine is thinking that at the time the service availability charges are developed it is assumed that a minimum level of CIAC to be collected will cover the cost of at least the installation of the distribution and collection systems. However, in reality, it is more than likely that construction costs will have increased or some other factor would have occurred such that 100% recovery is not received from the service availability charges established at some prior time by the Commission. In addition, it should be noted that since SSU acquires most of its utilities long after the service availability

charges have been established and CIAC has been collected, it takes the system "as is" and has no control over the of CIAC levels. In addition, in each rate case that I have participated in before the Commission, the Commission has made a determination of the used and usefulness of the water distribution and wastewater collection lines independent of the level of CIAC associated with them.

Also, if Mr. Chapdelaine's statements were truly "Commission policy," why did Staff raise Issue 38 in their pre-hearing statement, which states, "What are the used and useful percentages for the water distribution systems?" and Issue 40, which states, "What are the used and useful percentages for the wastewater collection systems?" To conclude, I believe Mr. Chapdelaine's assertion regarding "Commission policy" is not accurate and the portion of his testimony concerning such alleged policy should be disregarded. The used and usefulness of the water and wastewater lines should be established at the levels indicated in the MFRs.

Q. DO YOU HAVE ANY COMMENTS CONCERNING MR. CHAPDELAINE'S STATEMENT THAT NON-USED AND USEFUL PLANT SHOULD BE ACCOMMODATED THROUGH RECOGNITION OF

AN ALLOWANCE FOR FUNDS PRUDENTLY INVESTED (AFPI)?

A. The Company does not disagree with this statement, and the MFRs confirm that the Company has applied for AFPI charges for all non-used and useful facilities. However, it should be noted that AFPI charges do not accrue to the Company's benefit until (and if) they are actually collected and these charges are only accrued up to a 5 year period. Thus, the Company's ability to recover a return on its prudent investments in utility plant is tied to growth projections over which the Company has no control and which may or may not be achieved.

Mr. Chapdelaine further indicates that "the used and useful determination should be made based upon Commission practice and MFR requirements all of which are known to utilities such as Southern States." First, I do not believe (as I have stated previously) that the Commission has an established practice for making used and useful determinations. Indeed, Commission Staff is only now working on a rule that will spell out used and useful methodologies and even this rule is to be used only in situations where the utility does not present an alternative method of determining the

used and usefulness of utility plant. Second, the MFRs do not specify a methodology for making used and useful determinations.

Q. DO YOU AGREE WITH MR. CHAPDELAINE'S STATEMENT THAT "IT IS INCUMBENT UPON THE UTILITY TO JUSTIFY ITS FILING, PROVE ITS CASE AND INDICATE WHY IT CHOSE TO DEVIATE FROM COMMISSION PRACTICE"?

A. Yes. But I believe Mr. Chapdelaine has ignored, perhaps inadvertently, the introductory sections to the F Schedules in both volumes of the Company's MFRs in which our used and useful methodologies are identified and explained. In addition, it must be noted that the Company responded to numerous Staff interrogatories concerning certain aspects of our methods for determining the used and useful levels. Therefore, Mr. Chapdelaine's expressed lack of knowledge of our methods is surprising to the Company.

Finally, if the Company has deviated from "Commission practice" (which practice either does not exist or is routinely deviated from), it is solely because the Company wanted to provide a methodology that appropriately tracked the engineering design criteria utilized in building these facilities.

Q. HAVE YOU REVIEWED THE TESTIMONY OF STAFF WITNESS GREGORY L. SHAFER?

A. Yes, I have.

Q. WHAT COMMENTS DO YOU WISH TO MAKE CONCERNING MR. SHAFER'S TESTIMONY?

A. Mr. Shafer discusses the methodology for determining margin reserve. He believes the margin reserve should be calculated using a linear regression model analysis.

Q. DO YOU AGREE WITH MR. SHAFER'S UNDERSTANDING OF THE CONCEPT OF MARGIN RESERVE IN THE REGULATION OF WATER AND WASTEWATER UTILITIES?

A. Yes I do. Mr. Shafer states that "a margin reserve allowance is recognition in rate base of that portion of plant needed to serve short term growth." As I stated earlier, a utility must have the next increment of capacity ready to serve customers at a moments notice. If the utility did not have this margin reserve capacity available, it would either have to continuously be constructing small increments of plant capacity, which would be very uneconomical to construct, or the utility would more than likely not be able to complete the facilities in a timely manner to be able to serve such customers. In addition, without a margin

reserve, the utility more than likely would be unable to comply with DER rules and regulations perhaps at some point in the not too distant future for certain systems.

Q. DO YOU AGREE WITH MR. SHAFER'S STATEMENTS CONCERNING THE COMMISSION'S CURRENT METHOD OF CALCULATING THE MARGIN RESERVE?

A. Not entirely. I do not agree with his statement that "the construction time factors represent the average amount of time needed for construction of additional treatment plant or distribution or collection facilities." As I have stated previously in this testimony, I do not believe the margin reserve time factor of 18 months is adequate time to design, permit and construct additional water or wastewater treatment facilities.

Mr. Shafer states that he does not have any particular problem with the simple average method other than that it is the most basic approach possible and there are perhaps other methods, i.e., the linear regression method, that may more accurately relate to the actual historical data in certain situations. This is true -- but if you are going to use linear regression, why stop there. You could project growth based on a second, third,

fourth or fifth order equation or even a more elaborate equation that would probably match the historical data exactly. But the pertinent question is, does this reflect an accurate projection of growth in the future? Mr. Shafer states that "as a strictly mathematical extrapolation, [the simple average method] totally ignores the fact that there may be a relationship between the two pertinent factors, time and rate of growth." It is true that there certainly is always some sort of relationship between time and rate of growth, but as I discussed earlier in this testimony, for small systems such as many of the systems included in this rate proceeding, any historical relationship between time and rate of growth could be greatly modified in the near future due to a new residential or commercial development or some other condition that may occur within the service area. Mr. Shafer believes the statistical linear regression is a relatively easy and superior method upon which to base growth projections. With the advent of PC computer based statistical methods, any other multiple regression analysis technique could also be easily used. Models require only that you input the data and the

computer determines which type of equation best fits the data.

Another problem I see with any statistical approach to growth projections is that we are looking at only 5 observations, which typically is not sufficient to provide accurate results. In addition, you must be able to interpret the accuracy of these results to determine whether the statistical methodology is appropriate. In reviewing two of the three examples provided in Exhibit _____ (GLS-1), Sanlando Utilities Corporation's Wastewater Treatment - Wekiva facility and SSU's Marco Island - Wastewater facility, there appears to be a poor correlation between the growth and ERCs in any historical trend. This poor correlation is confirmed by the R squared value of 0.29 for Sanlando and 0 for the Marco Island facility and can be observed in the graphs presenting both of these results. I believe these results also confirm that Mr. Shafer's linear regression approach is not appropriate for this rate case. While I believe the linear regression method is one possibility for projecting growth, when it appears that it accurately depicts the historical data, I believe that ten (10) years of

historical data would better suit future projections. This is supported by DER's requirement to provide 10-years of historical data as part of all capacity analysis reports conducted for wastewater facility planning. Given the data, systems and circumstances in this proceeding, I believe that the average of the past 5-years of data is the most appropriate method for determining margin reserve in this case.

Q. MR. HARTMAN HAVE YOU REVIEWED THE TESTIMONY OF MR. HARRY C. JONES?

A. Yes I have, and I wish to rebut several points raised by Mr. Jones.

First, I would like to address Mr. Jones' statements that Southern States needs to "change their usage from meter sizes to residential units to determine ERC's" and that "previous Public Service Commission decisions used residential units." Mr. Jones is referring to the fact that the single family residential customer in Sugar Mill Woods utilizes a 1 inch water meter, which based on American Water Works Association meter equivalency standards is equivalent to 2.5 ERC's. In Docket No. 900329-WS, the Company agreed with the Cypress Village Homeowners Association (COVA)

that the potential of the water distribution and wastewater collection system was 9,054 ERC's based on an exhibit provided by COVA's witness in that case, Mr. Bud L. Hanson. In order to compare apples to apples, we converted the number of connections based upon meter size and AWWA meter equivalents into ERC's. This calculation results in 4,291 ERC's for the historic test year. This equates to approximately 47% used and useful. With the inclusion of the margin reserve, the used and useful capacity for the water distribution system increased to 50%. Now Mr. Jones argues that the 9,054 is *not* ERC's but lots and that we should either multiply the 9,054 lots by 2.5 to come up with the denominator in ERC's or convert the numerator back to lots. If we were to multiply the 9,054 ERC's by 2.5, it would require us to assume that all residential connections in the future would contain a 1 inch meter. This may not be true as time goes on in the Sugar Mill Woods development.

To analyze the water distribution and wastewater collection system strictly on a lot by lot approach provides no credit for fill-in lots. As discussed previously in this testimony, from an

analysis of the distribution and collection system maps provided with the rate application, it appears that there are two discrete areas within Sugar Mill Woods -- an area that has a relatively high density of customers and an area that has a very low density of active connections. In analyzing this situation, we were able to draw a line on these maps indicating a delineation between these high and low density areas. If an assumption is made that all the lots within the high density area (whether they were occupied by an active connection or not) are 100% used and useful, and all vacant lots in the low density area are 0% used and useful, the used and usefulness of the water distribution and wastewater collection systems, including the margin reserve, would be approximately 40%. This analysis assumes that no less of a water distribution and wastewater collection system could have been installed in the high density area to serve the existing number of customers. This appears to be a reasonable assumption based on the type of distribution and collection system in service in Sugar Mill Woods and the above average water usage of the Sugar Mill Woods customers. It could conceivably be argued

that even the people in the remote areas of the water distribution system are required to have fire protection service and hence the main sizes provided to serve them are required to provide that fire protection service. In any event, we think that the "two area" approach represents a reasonable check confirming the validity of our analysis.

Q. DO YOU AGREE WITH MR. JONES' DETERMINATION OF THE USED AND USEFUL PERCENTAGES FOR SUGAR MILL WOODS?

A. No. Mr. Jones has incorrectly calculated the used and useful percentage of the water plant. He states that it is 73% used and useful. The Sugar Mill Woods water system consists of simple well and hydropneumatic tank arrays in which each water treatment facility has two or more wells pumping water through hydropneumatic tanks, which water is chlorinated and pumped directly into the distribution system utilizing the energy of the well pump only. As I previously indicated, a system such as Sugar Mill Woods must be able to meet the maximum hour demands plus the fire flow requirements. In the case of Sugar Mill Woods, it is believed that the reliable capacity of the water system should be considered with the two largest

wells out of service. As I also discussed previously, mechanical equipment can be out of service for many different reasons, but they primarily fall into two categories, either maintenance or mechanical failure. For instance, if one of Sugar Mill Woods' nine wells is down for bearing replacement, impeller replacement, thrust bearing wear or any other routine maintenance item, it is conceivable that a second well could be out of service due to a mechanical failure (i.e., struck by lightning, broken shaft, motor failure, starter failure or any other problem). The total capacity of Sugar Mill Woods' 9 wells is 4,800 gallons per minute. The 2 largest wells have capacities of 600 gallons per minute each, thus the total reliable well capacity for Sugar Mill Woods would be 3,600 gallons per minute. The average daily demand during the maximum day equates to 1,298 gallons per minute. If you multiply 1,298 gpm by two to approximate the peak hour demands (which probably exceed that figure on the Sugar Mill Woods system), you arrive at a peak hour demand rate of 2,596 gallons per minute. Adding the 2,500 gallon per minute fire flow requirement based on Citrus County Ordinance 86-10, brings the

required well capacity to 5,096 gallons per minute. With a reliable well capacity of only 3,600 gallons per minute, the facilities are considered 100% used and useful.

Mr. Jones does not identify how he arrived at his 73% percent used and useful determination, but I believe it was based upon the average daily flow during the maximum day (1,298 gallons per minute) plus a fire flow requirement of 1,500 gallons per minute. Summing these two factors provides a required well capacity of 2,798 gallons per minute. I believe Mr. Jones assumed the source of supply with the single largest well out of service or a reliable capacity of 4,200 gallons per minute. Thus, dividing the 2,798 gallons per minute by the 4,200 gallons per minute, you arrive at a 67% used and useful. With the inclusion of a margin reserve, this would increase to approximately 73% as Mr. Jones indicates.

Mr. Jones' methodology is in error in that he has only allowed well capacity to meet the average daily demand conditions during the maximum day, yet a system of this type must meet peak hour demand. Thus, even if we stipulate to Mr. Jones' 1,500 gallons per minute fire flow requirement and only

one well out of service, total required capacity is still 1,298 x 2 + 1,500 = 4,096. Utilizing Mr. Jones' criteria of only one well out of service, the reliable well capacity is 4,200 gallons per minute and the facilities are 97.5% used and useful or, for all intents and purposes, 100% used and useful.

Q. DO YOU AGREE WITH MR. JONES' CONTENTION THAT THE "FIRE PROTECTION RESERVE" SHOULD BE ONLY 1,500 GALLONS PER MINUTE AND NOT 2,500 GALLONS PER MINUTE?

A. No. Citrus County Ordinance 86-10 requires a utility to provide 2,500 gallons per minute of fire flow based on the criteria established in the Ordinance. The letter dated October 28, 1991 from John Reeves, Citrus County Deputy Fire Marshall to Andy Woodcock of my firm, Hartman & Associates, Inc., states that "for Sugar Mill Woods as per Citrus County Ordinance 86-10 and NFPA 1231, the required fire flow for this project is 1,500 gallons per minute." A letter from the Deputy Fire Marshall does not relieve the Company of its obligation to comply with Citrus County Ordinance 86-10 which requires 2,500 gallons per minute. Moreover, even if Southern States were to be

notified today that the Citrus County Board of County Commissioners has amended the ordinance to reduce Sugar Mill Woods' fire flow requirement to 1,500 gallons per minute, the Company still would have been required in the past to have built facilities meeting the then-existing requirements of the ordinance. Therefore, the reduction of the fire flow requirement to 1,500 gallons per minute has no affect upon the used and useful percentage of the water source of supply facility. I still believe that the reliable capacity of the source of supply should be evaluated with the two largest wells out of service based upon my previous discussion concerning maintenance requirements and mechanical failures. But, even assuming only the largest well out of service, the source of supply facilities are still considered 100% used and useful, so the outcome is the same with or without Mr. Jones' proposed changes in applicable criteria.

Q. DO YOU AGREE WITH MR. JONES' STATEMENT THAT THE THREE NEW WELLS DID NOT BECOME ACTIVE UNTIL APRIL OF 1992 YET THE COSTS WERE INCLUDED IN THE HISTORICAL 1991 TEST YEAR?

A. Based upon Company records, the water treatment facility was placed into service in December 1991.

At that time, they had reached substantial completion on all phases of the project except the 3 wells and the chlorination system. Thus, all the improvements located at the existing water treatment plant no. 2 site were in service and being utilized. The construction of the wells had been completed, however, there were difficulties acquiring the necessary bacteriological clearance prior to placing the wells into service. After several rounds of sampling, the wells were cleared for service in 1992. Even though the wells were not cleared, the construction had been completed and Southern States had booked all of the plant in service.

Q. **MR. HARTMAN, DO YOU HAVE ANY ADDITIONAL ISSUES YOU WISH TO DISCUSS?**

A. Yes. I do not believe that, from an engineering standpoint, CIAC should be imputed on any of the margin reserve capacity. The Company has a duty to provide service to the customers when they apply. The imputation of CIAC is inappropriate because whether customers will actually hook onto the system is beyond the Company's control and they may never do so. Also, there is no guarantee that the CIAC levels which exist today, and thus would be

utilized to compute the imputation, will not be decreased by the Commission in the future. Under either scenario, Southern States would never be able to recover a portion of its prudently invested funds. Therefore, the imputation would be premised on two totally speculative events whereas the Company's duty to stand ready to serve is real and remains a regulatory requirement imposed on the Company under Chapter 367, Florida Statutes, and DER Rules and Regulations. Second, I have reviewed the fire flow requirements for the Deltona Lakes system and they appear to have been overstated in the original application. The original application stated fire flow requirements to be 2,500 gallons per minute for 4 hours. The appropriate fire flow requirement is 2,500 gallons per minute for 2 hours, not 4 hours.

Q. DO YOU AGREE WITH THE CONTENTION THAT NO MARGIN RESERVE SHOULD BE ALLOWED FOR THE SALT SPRINGS WASTEWATER SYSTEM SINCE IT HAS EXPERIENCED NO GROWTH IN THE PAST 3 YEARS AND IS ESSENTIALLY BUILT-OUT?

A. No. The Salt Springs system is not built-out and although it may not have experienced any growth in the past 3 years, there are still vacant lots to be

occupied and Adventure Resorts of America is considering an expansion of their RV park at this time which would provide a substantial increase in the number of connected ERC's for both the water and wastewater systems.

Q. DO YOU AGREE THAT THE WOODMERE WATER AND WASTEWATER SYSTEMS SHOULD RECEIVE NO MARGIN RESERVE DUE TO LOW GROWTH RATE?

A. No. The SSU commitment report indicates that there are four current developments that either are in process or are beginning to connect to the Woodmere system. Thus, the service area does not appear to be built-out and as soon as the economy picks up, it is expected that growth will once again occur for the Woodmere system and it more than likely would exceed the 3.9% historical 5 year average indicated in the MFRs.

Q. DO YOU HAVE ANY USED AND USEFUL PERCENTAGES WHICH YOU WISH TO REVISE AT THIS TIME?

A. Yes. Through the discovery process, it became apparent that on the maximum day utilized in the determination of the used and usefulness of the Marion Oaks water system, there was a main break occurrence, and this unusual event should have been ignored. However, it is certainly a fact that

these things do occur and the utility must have sufficient capacity in order to continue to provide sufficient service and also manage these situations. If the May 14, 1991 maximum day is ignored, the next highest maximum day was June 16, 1991 in which 1,032,000 gallons of water were pumped to the Marion Oaks customers. For systems such as Marion Oaks, which have adequate storage, the source of supply must be able to meet the average daily demand during the maximum day. Thus, the average daily demand using the June 16, 1991 maximum day is 717 gallons per minute. The reliable well capacity with the largest well out of service is 1,000 gallons per minute, thus the revised used and useful capacity of the historical test year is 72% for the supply wells without the margin reserve. The finished water storage and high service pumps remain 100% used and useful, the hydropneumatic tanks' used and useful percentages remain the same, and the distribution system remains 31% used and useful excluding the margin reserve.

Q. DO YOU AGREE THAT THE DELTONA LAKES, SUGAR MILL, JUNGLE DEN, FOX RUN, PALMS MOBILE HOME PARK, SUNSHINE PARKWAY AND VENETIAN VILLAGE WATER

DISTRIBUTION SYSTEMS ARE LESS THAN 100% USED AND USEFUL?

A. No. These systems, like most of the other water systems in this rate application, could not provide service to existing customers with any less of a water transmission and distribution system. There may remain some vacant lots within these systems but they must be considered fill-in lots. Many developments never reach 100% occupancy and if the methodology that is being proposed by Staff is utilized, the utility would never receive a return on its prudent investment. In addition, I do not understand why these systems have been singled out as being something less than 100% used and useful when they have similar characteristics as many other systems that are included in this rate application and that have been considered by Staff in previous cases to be 100% used and useful. For example, in the 1990 rate case (Docket No. 900329-WS), the Staff recommendation indicated that the Fox Run system was 100% used and useful. I also question whether electric or telephone utilities are subjected to the disallowance for used and useful purposes of "fill-in lots." I do not believe they are and I do not see how such an

adjustment could be considered proper.

Q. DO YOU AGREE THAT THE SOUTH FORTY WASTEWATER TREATMENT FACILITY USED AND USEFUL DETERMINATION IS OVERSTATED SINCE THE CAPACITY OF THE SOUTH FORTY PLANT AND NOT THE SPRAY FIELD SHOULD BE USED TO CALCULATE THE CAPACITY?

A. No. The permitted condition of the South Forty treatment facility is limited to the capacity of the spray field site and hence that should be used as the denominator in the determination of the used and useful facilities. In addition, it should be noted that at one time this system had substantially higher flows due to one single customer that was lost in 1990, namely, Gold Bond Ice Cream. A refurbished treatment facility was brought in (the 75,000 gallon per day treatment plant), when the old facility was being overloaded due to the Gold Bond Ice Cream customer. However, not long after the refurbished 75,000 gallon per day plant was brought in, Gold Bond Ice Cream closed its doors, resulting in a dramatic decrease in flows. It should also be noted that this refurbished 75,000 gallon per day plant was probably acquired at a cost much less than it would have cost to construct say a 30,000 gallon per day

plant which otherwise would have been required to serve the existing customers besides Gold Bond Ice Cream. For these reasons, and as I indicated previously, the Company should not be penalized by a reduction to the prior use of its plant due to circumstances beyond its control.

Q. DO YOU AGREE THAT THE DELTONA LAKES, SUGAR MILL, JUNGLE DEN, FOX RUN, SUNSHINE PARKWAY, AND VENETIAN VILLAGE WASTEWATER COLLECTION SYSTEMS ARE LESS THAN 100% USED AND USEFUL?

A. No. As stated previously, these systems may have some vacant lots spread throughout their service area but essentially no less of a system could provide service to the existing customers, hence they should be considered 100% used and useful.

Q. DOES THAT CONCLUDE YOUR PREFILED REBUTTAL TESTIMONY?

A. Yes, it does at this time.

Exhibit ___ (GCH-3)
Cover Page

CAPITAL COST CURVES

HARTMAN & ASSOCIATES, INC.

engineers, hydrogeologists, surveyors & management consultants

April 30, 1992 HAI #91-230.00

Hand Delivered

Lowell W. Hendricks
Construction Project Manager
Southern States Utilities, Inc.
1000 Color Place
Apopka, Florida 32703

Subject: Industry Standard Capital Planning Costs

Dear Mr. Hendricks:

Enclosed are five draft figures indicating Hartman & Associates, Inc.'s best effort in compiling water and wastewater industry standard capital planning costs. The information presented in these four figures represents the knowledge of HAI employees with over $500 million in constructed facilities experience. These facilities represent an appropriate mixture of public and private utility project costs. Since every capital project is unique, it should be understood that these costs represent an industry average and should be used for early planning stage cost estimates only. As the specific project becomes more definitive, a planning or preliminary construction cost estimate should be determined.

The cost per gallon axis should be interpreted as 1992 costs. I would recommend using the Engineering News Record (ENR) Construction Cost Index to trend these costs. Attached is the ENR summary for 1971 through 1992. The four figures for water represent the four most common water systems utilized by the industry today. The cost per gallon is indicated on a function of both the system size in annual average daily flow (AADF) and peaking factor. The peaking factor is the ratio of the peak hour demand during the year or an instantaneous demand for small systems, divided by the annual average daily flow. Typically, the larger the system, the less the peaking factor. It should be noted that these costs do not include the transmission and distribution system. The range indicated by the band width is the result of various appurtenances being included or not included in the project.

The wastewater figure does not include the costs of effluent disposal or collection systems. Effluent disposal costs were not included due to the great range of variability of the costs associated with the various disposal alternatives. The width of the band indicates the differences in cost from a simple activated sludge process to a EPA Class I reliable or advanced level treatment facilities.

If you desire any additional information or further refinement of these figures, please do not hesitate to call.

Very truly yours,

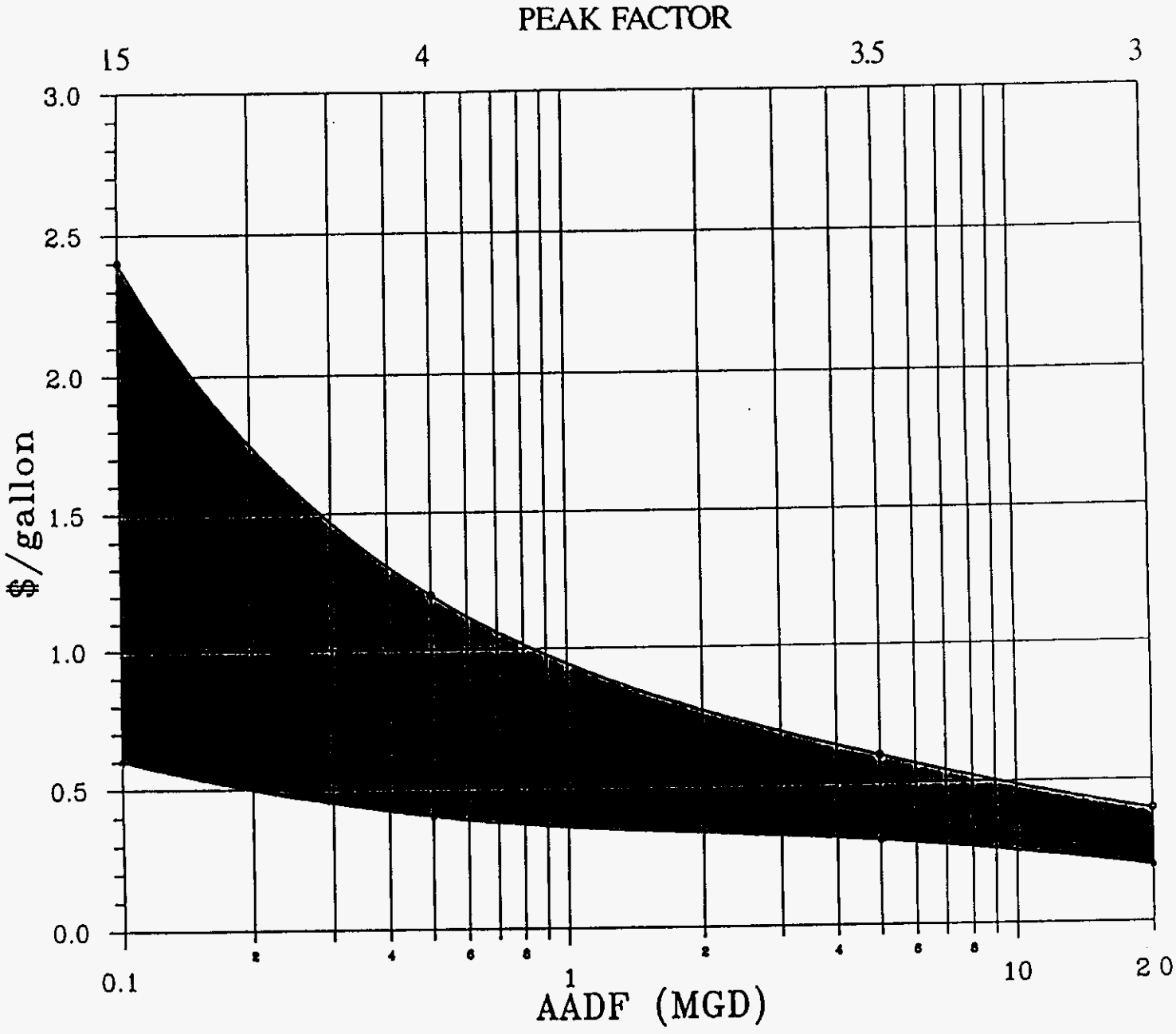
Hartman & Associates, Inc.

Chuck Bliss

Charles M. Bliss, E.I.
Project Engineer

CMB/ll/C-7/hend.cmb
Enclosures - 5 Figures and 1 Table

cc: Charles E. Wood, V.P.-Planning and Engineering, SSU
Charles K. Lewis, Rate Director, SSU
Gary S. Morse, Senior Rate Engineer, SSU
Gerald C. Hartman, President, HAI

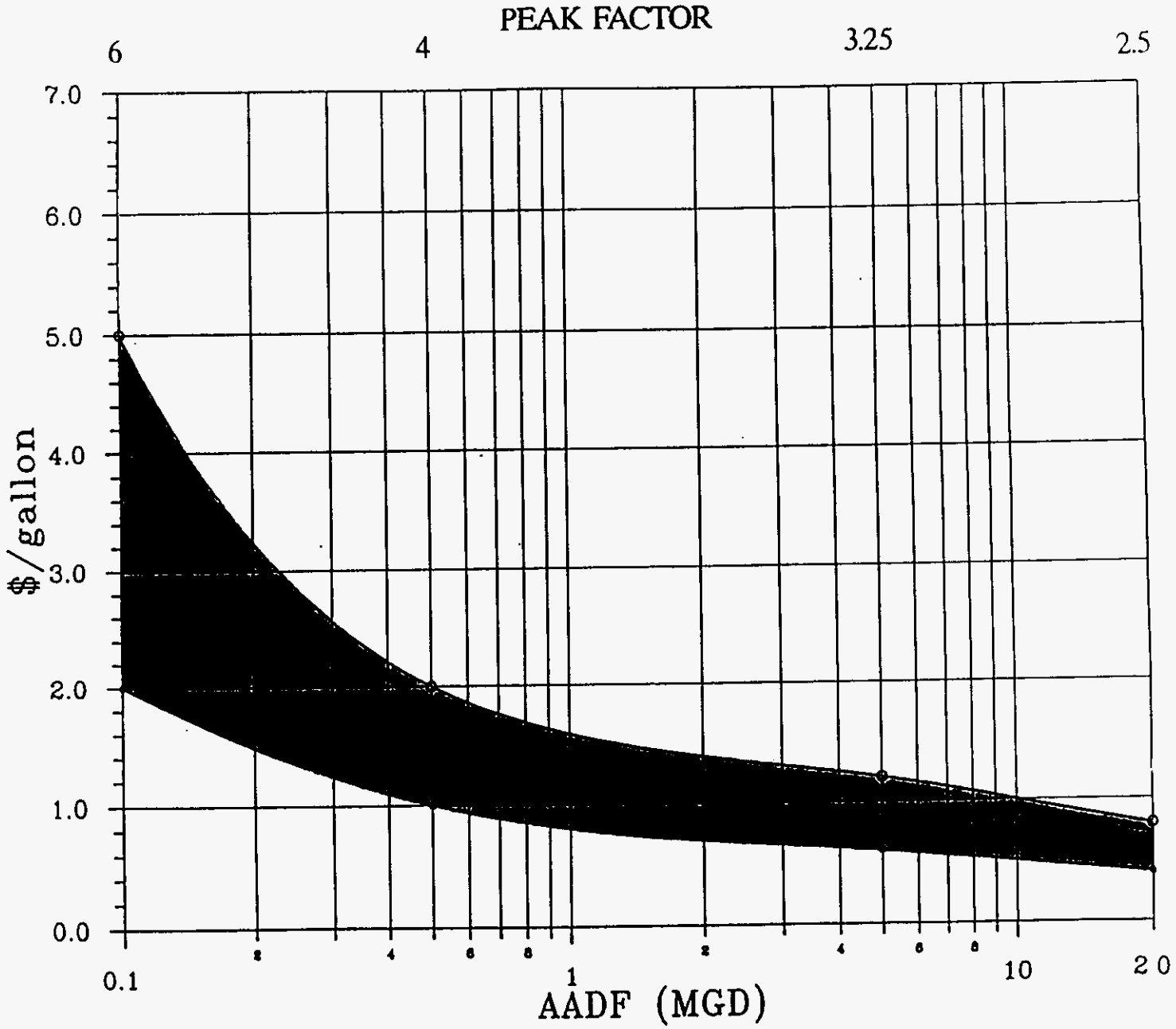


FIGURE

HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
TELEPHONE (407) 839-3855 - FAX (407) 839-3790

WATER CAPITAL PLANNING COSTS
WELLS, CHLORINATION AND HYDROPNEUMATIC TANKS

Exhibit ___ (GCH-3)
Page 3 of 8

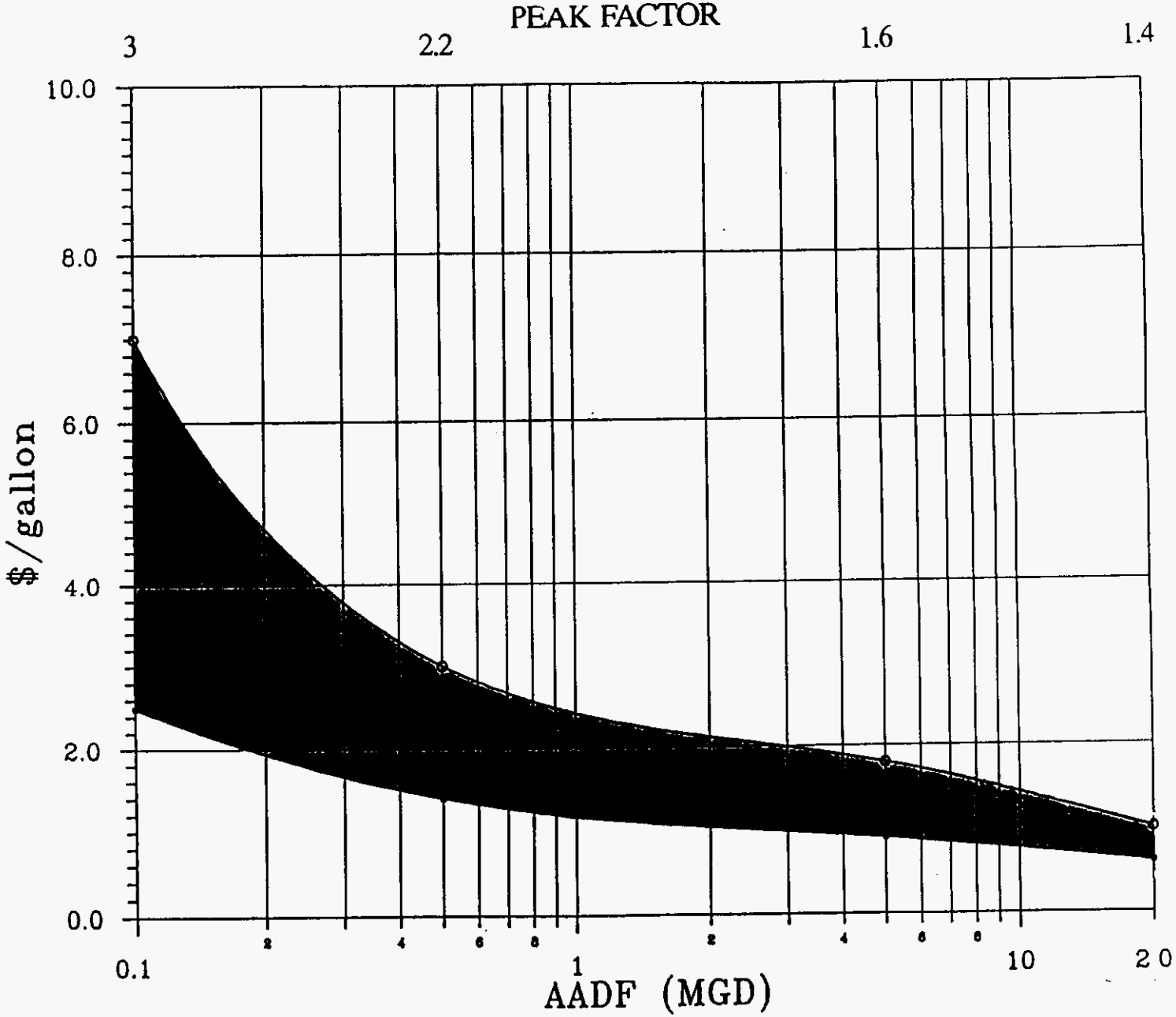


FIGURE

HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

WATER CAPITAL PLANNING COSTS
WELLS, AERATION, GROUND STORAGE, CHLORINATION AND PUMPING

Exhibit ___ (DCH-3)
Page 4 of 8

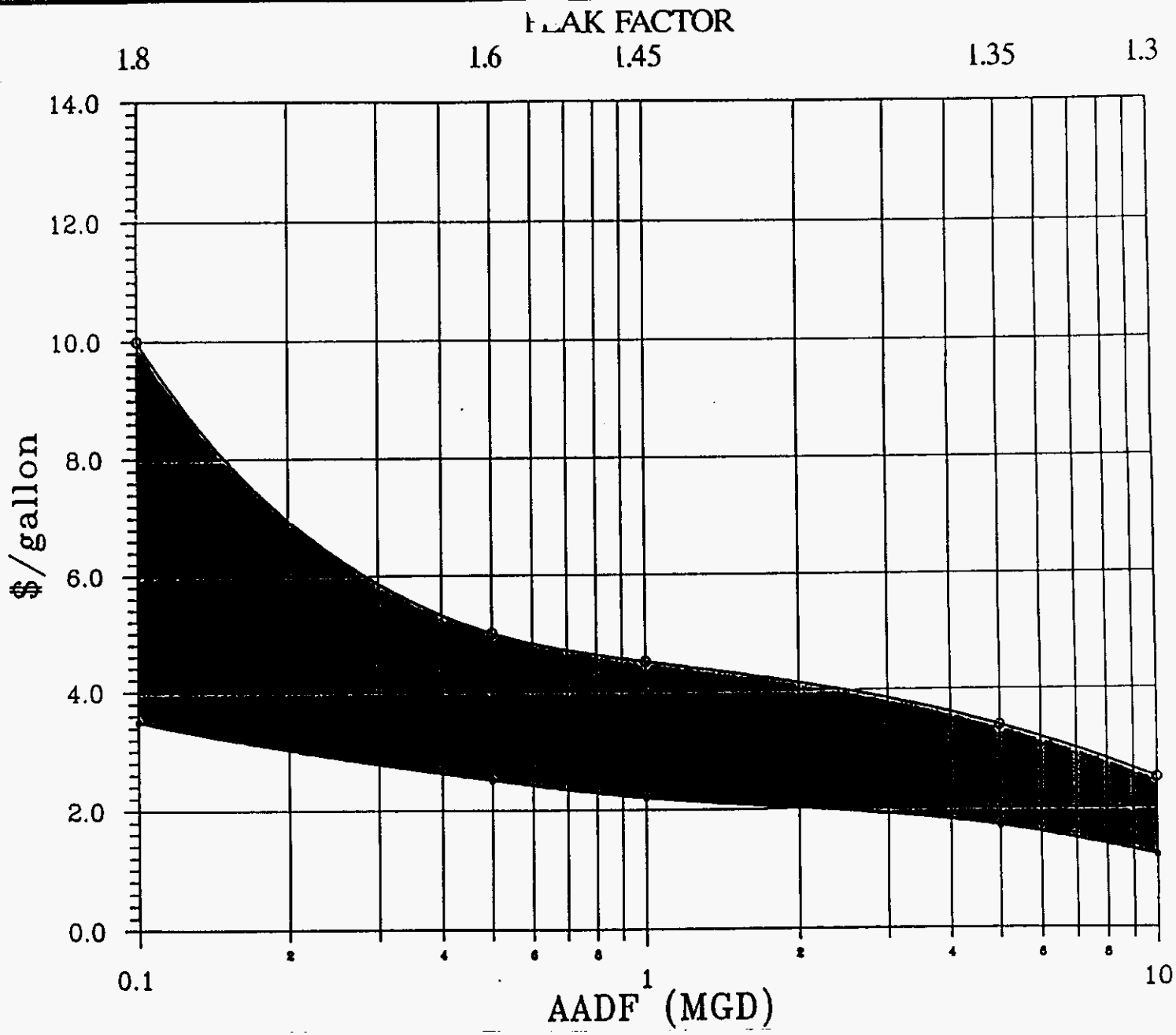


FIGURE

HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

WATER CAPITAL PLANNING COSTS
WELLS, AERATION, LIME SOFTENING, GROUND WATER, CHLORINATION AND PUMPING

Exhibit ___ (DCH-3)
Page 5 of 8



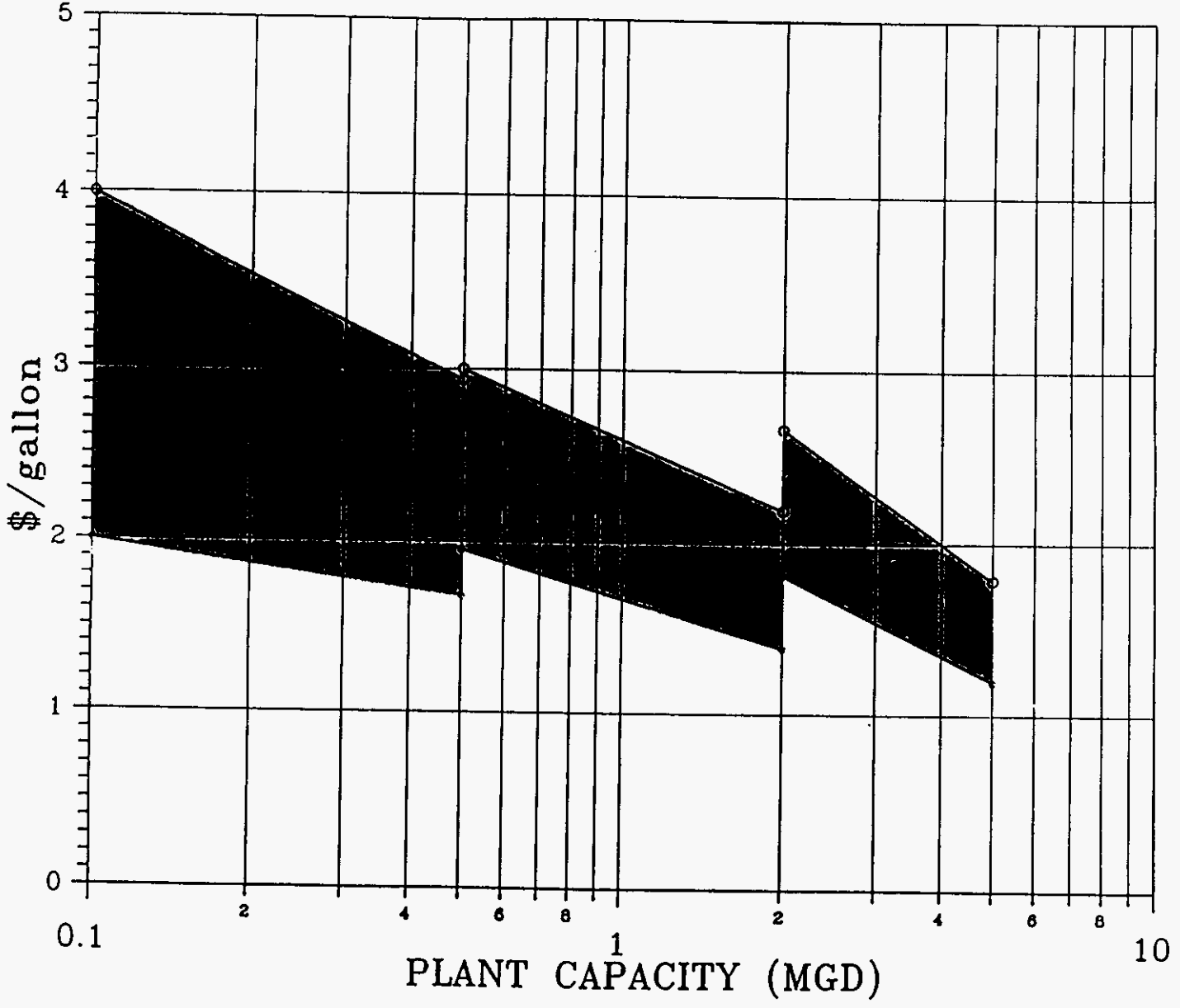
NOTE: COSTS DO NOT INCLUDE BRINE DISPOSAL.

FIGURE

HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
TELEPHONE (407) 839-3955 - FAX (407) 839-3780

WATER CAPITAL PLANNING COSTS
WELLS, REVERSE OSMOSIS, DEGASIFICATION,
GROUND STORAGE, CHLORINATION AND PUMPING

Exhibit ___ (GCH-3)
Page 6 of 8



NOTE: COST DOES NOT INCLUDE EFFLUENT DISPOSAL OR THE COLLECTION SYSTEM.

FIGURE

HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

WASTEWATER CAPITAL PLANNING COSTS
ACTIVATED SLUDGE TREATMENT

Year	Month												Annual Average
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1971	1465	1467	1496	1513	1551	1589	1618	1629	1654	1657	1665	1672	1581
1972	1686	1691	1697	1707	1735	1761	1772	1777	1786	1794	1808	1816	1753
1973	1838	1850	1859	1874	1880	1896	1901	1902	1929	1933	1935	1939	1895
1974	1940	1940	1940	1961	1961	1993	2040	2076	2089	2100	2094	2101	2020
1975	2103	2128	2128	2135	2164	2205	2248	2274	2275	2293	2292	2297	2212
1976	2305	2314	2322	2327	2357	2410	2414	2445	2465	2478	2486	2490	2401
1977	2494	2505	2513	2514	2515	2541	2579	2611	2644	2675	2659	2660	2576
1978	2672	2681	2693	2698	2733	2753	2821	2829	2851	2851	2861	2869	2776
1979	2872	2877	2886	2886	2889	2984	3052	3071	3120	3122	3131	3140	3003
1980	3132	3134	3159	3143	3139	3198	3260	3304	3319	3327	3355	3376	3237
1981	3372	3373	3384	3450	3471	3496	3548	3616	3657	3660	3697	3695	3535
1982	3704	3728	3721	3731	3734	3815	3899	3899	3902	3901	3917	3950	3825
1983	3960	4001	4006	4001	4003	4073	4108	4132	4142	4127	4133	4110	4066
1984	4109	4113	4118	4132	4142	4161	4166	4169	4176	4161	4158	4144	4146
1985	4145	4153	4151	4150	4171	4201	4220	4230	4229	4228	4231	4228	4195
1986	4218	4230	4231	4242	4275	4303	4332	4334	4335	4344	4342	4351	4295
1987	4354	4352	4359	4363	4369	4387	4404	4443	4456	4459	4453	4478	4406
1988	4470	4473	4484	4489	4493	4525	4532	4542	4535	4555	4567	4568	4519
1989	4574	4567	4568	4571	4572	4593	4598	4606	4647	4646	4655	4679	4606
1990	4673	4674	4701	4702	4696	4734	4734	4751	4755	4758	4780	4769	4727
1991	4770	4773	4772	4766	4801	4818	4854	4892	4891	4892	4896	4889	4835
1992	4885	4884											

FIGURE

HARTMAN & ASSOCIATES, INC.
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201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

ENGINEERING NEWS RECORD
CONSTRUCTION COST INDEX HISTORY 1971-1992
MONTHLY INDEX

Exhibit ___ (GCH-4)
Cover Page

MEMORANDUM OF UNDERSTANDING
BETWEEN
FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
AND
FLORIDA PUBLIC SERVICE COMMISSION

State of Florida

DOCKET NO. 920655-WS
EXHIBIT (GCH-)
PAGE 1 OF 11

Public Service Commission

-M-E-M-O-R-A-N-D-U-M-

DATE: August 25, 1992
TO: David Swafford, Executive Director
FROM: Charles Hill, Division of Water and Wastewater
Noreen Davis, Division of Legal Services
RE: Memorandum of Understanding with the Department of Environmental Regulation and Proposed Legislation on Water Conservation

PLEASE PLACE ON THE NEXT INTERNAL AFFAIRS

Attached to this recommendation is the final draft Memorandum of Understanding (MOU) with the Department of Environmental Regulation. The MOU spells out each of our agency's roles in developing a statewide water conservation plan. A similar MOU with the Water Management Districts was completed and signed on June 27, 1991.

Commission staff has been working informally with both DER and the WMDs over the last several years in various certification and rate cases. DER provides testimony in rate cases where quality of service is a controversial issue. DER has recently updated its internal procedures to officially recognize the Commission staff's interpretation of Section 367.031, Florida Statutes. That section requires that a utility must obtain a certificate of authorization from the Commission prior to being issued a permit by the DER for the construction of a new water or wastewater facility or prior to being issued a consumptive use or drilling permit by a water management district. The section also requires each jurisdictional utility to obtain a certificate of authorization or an exemption order from the Commission. The Commission staff believes that these provisions must be read together to accomplish the legislative intent. DER's General Counsel concurs in this interpretation. The result is that DER now requires an applicant to submit documentation as to its exempt status with the PSC. This change in DER's procedures will help to close a gap by prohibiting proposed new water and wastewater utilities which are subject to the Commission's jurisdiction from being constructed without the appropriate Commission action.

The Commission staff has provided assistance to DER by reviewing the financial portion of feasibility studies submitted by utilities related to the projected cost of providing reclaimed water for reuse. Our staff is also participating in the monthly meetings of the Reuse Coordinating Committee. This committee is one of eighteen committees formed to develop and coordinate the statewide water conservation program. DER, the WMDs and the PSC staff hope to have a jointly supported package of legislation designed to implement conservation and reuse. A copy of two proposed additions to Chapter 367, F. S. are attached. The first addition would give the Commission statewide rate structure and territorial dispute jurisdiction over water, wastewater, and reuse systems owned by governmental authorities and cooperatives. The second addition would eliminate master metering on new construction of mobile home parks, apartments, condominiums, etc. These two proposals are preliminary drafts.

The MOU outlines the respective objectives and responsibilies of DER and the PSC and provides for coordination of our agencies through project managers who will meet on a regular basis. In particular, the PSC will continue to review rate structures for the utilities

within the Commission's jurisdiction to determine whether the structure encourag.. conservation. DER has expressed some concern over its acceptance of our interpretation of Section 367.031, F. S., as discussed above. The MOU states that the PSC agrees to provide legal and technical support to DER in any related administrative hearings or legal proceedings. The PSC agrees to consider DER rules related to capacity requirements for wastewater systems in our application of the "used and useful" concept. In addition, when a utility regulated by the PSC files a reuse feasibility study with DER, the DER will provide a copy of the study to the PSC. The PSC staff will review the study for completeness and advise DER as to whether or not the staff will be able to conduct a complete review and provide comments.

Staff recommends that the Commission adopt the attached Memorandum of Understanding. The attached draft of proposed legislation is for your review. It will be presented to you formally at a later date.

MEMORANDUM OF UNDERSTANDING

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

AND

FLORIDA PUBLIC SERVICE COMMISSION

The Florida Department of Environmental Regulation (DER) and the Florida Public Service Commission (PSC) recognize that water conservation and reuse of reclaimed water are key elements of Florida's long-term water management strategy. It is our joint goal and high priority to ensure that Florida water and wastewater utilities provide safe and efficient treatment and use of water and wastewater. This memorandum of understanding (MOU) formally establishes the policies and procedures to be followed by the DER and PSC to promote and encourage water conservation and reuse, and safe and efficient water supply and wastewater management services.

BACKGROUND

Water Supply

The Federal Safe Drinking Water Act requires certain monitoring, testing, treatment, and reporting to ensure the quality of potable waters. The Florida Safe Drinking Water Act, contained in Chapter 403, Florida Statute (F.S.), outlines the basic requirements for Florida's water supply program. Chapters 17-550, 17-551, 17-555, and 17-560, Florida Administrative Code (F.A.C.), contain specific requirements governing water supply in Florida. The PSC's responsibilities for regulation of private water supply utilities are outlined in Chapter 367, F.S.

Wastewater Management

The Federal Clean Water Act requires effective treatment and management of wastewater in order to protect the nation's ground water and surface water resources. Florida's wastewater management and environmental control programs are contained in Chapter 403, F.S. Specific regulations governing domestic wastewater management are contained in Chapters 17-600, 17-601, 17-602, 17-604, 17-610, 17-611, 17-640, and 17-650, F.A.C. The PSC's responsibilities for regulation of private wastewater utilities are outlined in Chapter 367, F.S.

Reuse of Reclaimed Water

The encouragement and promotion of water conservation and reuse of reclaimed water are established as state objectives in Section 403.064(1), F.S.

The DER has developed and implemented a comprehensive reuse program designed to meet those objectives. This reuse program includes:

1. Comprehensive rules governing the reuse of reclaimed water (Chapter 17-610, F.A.C);

2. A mandatory reuse program;

3. An Antidegradation Policy;

4. The Indian River Lagoon System and Basin Act; and

5. Requirements for evaluation of reuse feasibility.

Section 403.064, F.S., requires that after January 1, 1992, all applicants for permits to construct or operate a domestic wastewater treatment facility in a critical water supply problem area evaluate the cost and benefits of reusing reclaimed water as part of their application for the permit.

The Antidegradation Policy is contained in Chapter 17-4, F.A.C., "Permits," and Chapter 17-302, F.A.C., "Surface Water Quality Standards." These rules require an applicant for a new or expanded discharge to surface waters to demonstrate that the discharge is clearly in the public interest. As part of this public interest test, the applicant must evaluate the feasibility of reuse of reclaimed water. If reuse is economically and technologically reasonable, it will be preferred over the surface water discharge.

The Indian River Lagoon System and Basin Act, which is contained in Chapter 90-262, Laws of Florida, provides increased protection to the Indian River Lagoon System. Section 3 of the Act requires the owner of an existing sewage treatment facility within the Indian River Lagoon Basin to investigate the feasibility of using reclaimed water for beneficial purposes. These reuse feasibility studies were to be completed before July 1, 1992.

OBJECTIVES

The common objectives, as they relate to domestic water supply and wastewater management facilities subject to regulation by the DER and the PSC, are as follows:

1. To monitor water supply systems to ensure that safe and reliable water is produced and delivered in accordance with applicable rules and drinking water standards;

2. To monitor domestic wastewater systems to ensure the safe and efficient collection, treatment, and reuse or disposal of wastewater and residuals;

3. To encourage and promote water conservation and reuse of reclaimed water;

4. To foster conservation and to reduce the withdrawal of ground and surface water through employment of conservation-promoting rate structures, reuse of reclaimed water, and consumer education programs.

PSC RESPONSIBILITIES

The following presents the general description of the roles and responsibilities of the PSC related to water supply, water conservation, wastewater management, and reuse of reclaimed water. The PSC's jurisdiction is limited to economic regulation of investor-owned utilities and is effective in only some of the counties in Florida. The PSC will offer assistance to the extent provided by law and agency priority and workload. The PSC agrees to adopt and implement policies and procedures necessary to administer these duties.

Water Supply

1. When appropriate, arrange for joint public meetings with customers to ensure that customers are aware of the need for water supply system improvement projects, and the potential impacts the projects will have on service rates.

2. Inform the DER of the PSC public meetings with customers and hearings in which water supply projects will be discussed.

3. Review proposed rate structures for private utilities within PSC jurisdiction.

4. Provide assistance in review of water conservation rate structures within PSC jurisdiction.

5. Monitor abandonment and bankruptcy proceedings for private water utilities within PSC jurisdiction. Inform the DER of pending abandonment and bankruptcy cases.

6. If an applicant for a DER permit challenges the interpretation of Section 367.031, F.S., the PSC agrees to provide legal and technical support to the DER in any related administrative hearings or legal proceedings.

Wastewater Management

1. When appropriate, arrange for joint public meetings with customers to ensure that customers are aware of the need for wastewater management system improvement projects, and the potential impacts the projects will have on service rates.

2. Inform the DER of the PSC public meetings with customers and hearings in which wastewater management projects will be discussed.

3. Review proposed rate structures for private wastewater management utilities within PSC jurisdiction.

4. Monitor abandonment and bankruptcy proceedings for private wastewater utilities within PSC jurisdiction. Inform the DER of pending abandonment and bankruptcy cases.

5. If an applicant for a DER permit challenges the interpretation of Section 367.031, F.S., the PSC agrees to provide legal and technical support to the DER in any related administrative hearings or legal proceedings.

6. The DER has adopted rules requiring utilities to perform timely planning, design, and construction of expanded facilities to ensure that sufficient wastewater treatment, disposal, and reuse capacity is available. In light of DER rules, the PSC agrees to evaluate capacity constraints imposed by statute and rules on private utilities within PSC jurisdiction, by PSC's application of the "used and useful" concept. If justified, this evaluation shall include assessment of possible need for statutory or rule revisions.

Reuse

1. When appropriate, arrange for joint public meetings with customers to ensure that customers are made aware of the need for reuse system improvement projects, and the potential impacts the projects will have on service rates.

2. Inform the DER of the PSC public meetings with customers and hearings in which reuse of reclaimed water will be discussed.

3. Provide feasibility analyses of the financial impacts, if any, of reuse system projects on both the customers and the wastewater utilities within PSC jurisdiction.

4. Within 10 days of receipt of a reuse feasibility study, the PSC staff shall review the document for completeness of the financial aspects and shall notify the DER whether or not the document is complete and whether or not the PSC will be able to conduct a complete review. If the PSC staff determines that it will be able to review the document, the PSC staff shall provide comments and recommendations to the DER within 30 days of receipt of the complete document.

5. Participate in appropriate DER hearings in which the feasibility of reuse will be discussed.

6. Review proposed rate structures for reuse projects for private utilities within PSC jurisdiction. As noted in Section 403.064(6), F.S., and pursuant to Chapter 367, F.S., the PSC shall allow utilities which implement reuse projects to recover the full cost of such facilities through their rate structures.

7. Assist the water management districts in review of reuse feasibility studies associated with the mandatory reuse program in Chapter 17-40, F.A.C., and other reuse-related activities of the water management districts in the counties within PSC jurisdiction. A separate MOU between the water management districts and the PSC governs these activities.

DER RESPONSIBILITIES

The following is a general description of the roles and responsibilities of the DER related to potable water supply, water conservation, wastewater management, and reuse of reclaimed water. The DER agrees to adopt and implement policies and procedures necessary to administer these duties.

Water Supply

1. Review applications for construction of potable water supply systems.

2. Monitor compliance of potable water supply systems with applicable rules and drinking water standards.

3. Notify the PSC of impending abandonment or bankruptcy cases involving water utilities and assist the PSC in such cases, as needed.

4. For utilities subject to Chapter 367, F.S., the DER shall verify the existence of a certificate of authorization or order indicating exempt status from the PSC before issuance of a construction permit for a new water system.

Wastewater Management

1. Review applications for construction and operation of domestic wastewater facilities.

2. Monitor compliance of domestic wastewater management facilities with applicable rules and effluent discharge limitations.

3. Monitor water quality in the State's ground waters and surface waters.

4. Notify the PSC of impending abandonment or bankruptcy cases involving wastewater utilities and assist the PSC in such cases, as needed.

5. For utilities subject to Chapter 367, F.S., the DER shall verify the existence of a certificate of authorization or order indicating exempt status from the PSC before issuance of a construction permit for a new wastewater facility.

Reuse

1. Administer the State's reuse program.

2. Review reuse feasibility studies required by Section 403.064, F.S., the Antidegradation Policy, or the Indian River Lagoon System and Basin Act.

3. Within five working days after receipt of a reuse feasibility study required by Section 403.064, F.S., the Antidegradation Policy, or the Indian River Lagoon System and Basin Act, the DER shall provide a copy of the reuse feasibility study to the PSC. This applies only to feasibility studies produced by private utilities located within counties regulated by the PSC.

4. Final determinations on the adequacy of reuse feasibility studies will be made by the DER. Comments and recommendations made by the PSC on the financial aspects of these reuse feasibility studies will be considered by the DER.

5. Participate in appropriate PSC public meetings with customers and hearings in which reuse issues raised by the DER are to be discussed. This may include, but is not limited to, expert witness testimony.

PROJECT COORDINATION

Water Supply

1. The PSC will designate a Water Supply Project Manager.

2. The DER's Drinking Water Section Administrator will serve as the DER's Water Supply Project Manager.

3. Exchange of information between the DER and the PSC shall be through the designated Water Supply Project Managers. Copies of pertinent correspondence related to water supply and water conservation issues shall be sent to the appropriate agency's Water Supply Project Manager.

Wastewater Management

1. The PSC will designate a Wastewater Management Project Manager.

2. The DER's Domestic Wastewater Section Administrator will serve as the DER's Wastewater Management Project Manager.

3. Exchange of information between the DER and the PSC shall be through the designated Wastewater Management Project Managers. Copies of pertinent correspondence related to wastewater management issues shall be sent to the appropriate agency's Wastewater Management Project Manager.

Reuse

1. The PSC will designate a Reuse Project Manager. All reuse feasibility studies provided to the PSC by the DER will be directed to this Project Manager.

2. The DER's Reuse Coordinator will serve as the DER's Reuse Project Manager for purposes of this agreement.

3. Reuse feasibility studies to be submitted to the PSC will be submitted over the signature of the DER Reuse Coordinator or over the signature of one of the six Water Facilities Administrators located in the DER district offices.

4. The DER Reuse Coordinator shall be copied on any correspondence between the PSC's Project Manager and the DER's Water Facilities Administrators regarding reuse feasibility studies.

5. Whenever a potential conflict regarding a specific project is identified, each agency will examine the alternative solutions available and then meet to discuss the issues involved and attempt to reach an agreement before announcing a position. If an agreement cannot be reached after due deliberations, several positions may be advocated. Such disagreements, if any, will not obviate this MOU.

6. Exchange of information between the DER and the PSC shall be through the designated Reuse Project Managers. Copies of pertinent correspondence between an agency and other parties concerning a reuse project shall be sent to the Reuse Project Manager of each agency until project completion.

Overall Coordination

The designated Water Supply, Wastewater Management, and Reuse Project Managers from the DER and the PSC shall meet as necessary, but at least annually, with the Director of the Water and Wastewater Division of the PSC and the Director of the Division of Water Facilities of the DER. The meetings will address and review progress on the water supply, wastewater management, and reuse programs in Florida and attempt to resolve any issues which may be identified by the staffs.

AMENDMENTS

This MOU may be amended by mutual agreement of the DER and PSC. It shall remain in effect until it is dissolved by mutual agreement among the agencies or terminated by an agency after giving written notice 30 days in advance to the other agency.

EFFECTIVE DATE AND SIGNATURES

This MOU will become effective after being signed by both parties.

Thomas M. Beard, Chairman Florida Public Service Commission	Carol M. Browner, Secretary Department of Environmental Regulation
Date	Date

Exhibit ___ (GCH-5)
Cover Page

COMMISSION STAFF CURRENT DRAFT OF USED AND USEFUL RULES

25-30.432 Used and Useful in rate case proceedings.

(1) The Commission shall allow a utility to recover, through authorized rates, charges and fees, the costs incurred in meeting its statutory obligations to provide safe, efficient and sufficient service. The utility's investment, prudently incurred, in meeting its statutory obligations shall be considered used and useful.

(2) It is the policy of this Commission to encourage utility planning that recognizes conservation, environmental protection, economies of scale, and which is economically beneficial to its customers over the long term.

(3) In determining those portions of water and wastewater systems that are used and useful in serving the public, the Commission shall consider:

(a) the design and construction requirements set forth in Chapter 17-555, F.A.C., Permitting and Construction of Public Water Systems and Chapter 17-600, F.A.C., Domestic Wastewater Facilities;

(b) the investment in land acquired or facilities constructed or to be constructed in the public interest within a reasonable time in the future;

(c) the prudence of the investment, taking into consideration such factors as (i) the treatment process, (ii) water storage capacity, (iii) economies of scale, (iv) the historical and projected rate of growth in customers and demand, (v) seasonal demand characteristics, (vi) residential and commercial mix, and (vii) the configuration of the service area.

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(4) In order to encourage long-term planning and least cost system design, the Commission, at a minimum, shall consider as used and useful the level of investment that would have been required had the utility designed and constructed the system to serve only its existing customer base.

(5) For the purpose of calculating used and useful, the following specific factors shall apply. When applying these factors, references to customer demand shall mean the demand per ERC used for design or permitting and/or the actual historical demand per ERC, whichever is greater.

(a) Margin Reserve

1. The Commission recognizes, that in order for a utility to be able to meet its statutory responsibility, it must have sufficient capacity and investment to meet the existing and changing demands of present customers, and the demands of potential customers within a reasonable time. The investment needed to meet the demands of potential customers and the changing demands of existing customers, is defined as margin reserve. As a matter of policy, the Commission recognizes margin reserve as a component of used and useful rate base.

2. In determining the allowable investment in margin reserve, the Commission shall consider, but not be limited to (i) the functions of each component of plant (treatment, transmission, distribution, etc.), (ii) the treatment

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process, (iii) regulatory requirements, including those requiring plant redundancies, (iv) regulatory lag, (v) the rate of growth in customers and demand, (vi) seasonal demand characteristics, (vii) the economies of scale, and (viii) the construction time frame.

3. As a part of its rate filing, the utility shall submit historical data for a minimum of five years preceding the test year for (i) the number of customers by class and meter size, (ii) annual sales by class, (iii) annual treated or pumped flows for the system, (iv) and monthly system peak day flows.

4. Unless otherwise justified, the following margin reserve allowances shall be used:

i. Water source and treatment facilities and wastewater treatment and disposal facilities: 20% of the permitted or actual ERC capacity, whichever is greater;

ii. Prudently constructed water transmission mains and off-site wastewater force and gravity collector mains and pumping stations shall be considered 100% used and useful, and margin reserve shall therefore not be a factor.

iii. Non-contributed on-site water distribution mains and services and on-site wastewater collection mains, pumping stations and laterals: 20% of the ERCs capable of being served. However, where the utility

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demonstrates that such portions of the system will likely reach build-out within 36 months after the test year, such portions of the system shall be considered 100% used and useful, and margin reserve shall therefore not be a factor.

(b) Fire Flow

1. Fire flow shall be considered in used and useful calculations for any utility that requests that fire flow be a consideration it its system requirements.

2. Insufficient capacity to provide adequate fire flows shall not be grounds to exclude fire flows as a factor in determining used and useful; however the Commission may require the utility to take the steps necessary to provide adequate fire flow capacity. In so doing, the Commission shall set a reasonable time table for compliance and may withhold that portion of the rates associated with the required additions and fire flow capacity allowed, until the requirements set by the Commission are met.

3. When fire flow requirements are set by a governmental authority, those requirements shall be the basis for determining the fire flow component of used and useful. in such cases, as part of its rate filing, the utility shall identify and file with the Commission a copy of the applicable governmental fire flow requirements. In all other cases, unless specific support is provided, the

Commission shall consider a minimum fire flow demand to be 500 gpm for single family and 1,500 gpm for multiple family and commercial areas for a duration of two (2) hours for needed fire flows up to 2500 gpm, and three (3) hours for needed fire flows of 3000 and 3500 gpm. Such requirements shall be satisfied without causing deterioration of water pressure below 20 psi.

(c) Unaccounted for Water

1. It is the policy of this Commission to recognize conservation of water as a fundamental and proper concern of water system operation. The Commission encourages water utilities to exercise good operational and economic management toward preventing depletion and wasteful use of this important natural resource. Good modern water utility practice dictates that, wherever possible, all customer services and plant output and plant uses be metered and reasonable records be kept.

2. Unaccounted for water is all water produced or purchased by a water utility that is neither sold, metered nor accounted for in the records of the utility. Water, other than that sold, which can and should be accounted for includes, but is not limited to, water for plant operations, line flushing, hydrant testing, hydrant use, sewer cleaning, street cleaning, line breaks, leakage, theft, unauthorized use, malfunctions and meter errors.

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3. The Commission recognizes that some uses of water are readily measurable and others are not. The Commission encourages each utility to establish procedures to measure or estimate the quantity of water used but not sold, by cause, and to maintain documentation for those measurements and estimates.

4. The Commission shall consider the amount of unaccounted-for water in determining used an useful expenses and shall allow the AWWA Standards' design level of leakage (2-3% plus the standard 10% for a maximum of 12.5%) without further explanation. Imputation of revenues or reductions to purchased power and chemical expenses may be made where inadequate explanation is given for unaccounted for water in excess of this amount.

(d) Infiltration and Inflow

1. It is the policy of the Commission to consider the impact of infiltration and inflow on wastewater treatment and collection systems in determining the appropriate level of operation and maintenance expenses. Infiltration refers to those extraneous flows (usually from groundwater sources) that enter the wastewater system through openings in pipes that may be caused by normal deterioration, corrosion,or damage from ground movement or structural overload. Inflow refers to extraneous flows from sources other than infiltration, such as surface water run-off into

manholes or from unauthorized connections to surface water sources. Although a utility has little control over the amount of inflow, it should provide an estimate, with support, of the annual flows in its system due to inflow. Without specific support allowable inflow will be 10% of treated flows. Infiltration should be kept at an economically acceptable level.

2. The Commission recognizes as reasonable the Infiltration Specification Allowances set forth in Water Environment Federation Manual of Practice No. 9. Absent sufficient justification to the contrary, excess infiltration is defined as flows in excess of 500 gpd/in. diam/mile. for all lines, including service laterals.

(e) Cost/benefit Analysis - The Commission may order a utility to perform a cost/benefit analysis to determine the amount of water losses or wastewater infiltration that may be economically eliminated. The actual or estimated prudent cost of any cost/benefit analysis ordered by the Commission shall be recoverable through rates in the rate proceeding pending at the time of such order. If the analysis is ordered by the Commission in the course of evaluating a rate application, the cost shall be recovered through the revenues authorized in that rate proceeding, and the cost shall be amortized over three years. If the analysis is ordered outside of a formal rate proceeding, the utility may request the cost be recovered through a limited proceeding,

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pursuant to Section 367.0822, Florida Statutes.

(f) Used and useful Analysis -

1. As a part of its rate filing, each utility shall provide a determination of the used and useful percentage for each primary plant account along with the supporting formulas and documentation.

2. In lieu of presenting evidence in support of used and useful percentages, the utility may elect to use the default formulas in Rule 25-30.432(6), F.A.C. for calculating used and useful percentages for water supply, treatment, pumping and storage equipment, water transmission and distribution systems, wastewater treatment and effluent disposal equipment and wastewater pumping and collection systems. The terms used in the default formulas are defined in Rule 25-30.432(7).

(6) Used and useful default formulas

(a) Small water systems (less than 1 MGD capacity)

1. Small water systems (less than 1 MGD capacity) with adequate reliable finished water storage capacity to meet the local fire flow ordinances and to meet the peak hour demand of its customers:

i. Water source of supply:

(Maximum Day Demand + Margin Reserve) / Firm Reliable Capacity

ii. Water treatment equipment:

(Maximum Day Demand + Margin Reserve) / Firm Reliable Capacity

iii. Finished water storage:

(Equalization Volume + Fire Flow + Emergency Storage + Margin Reserve) / Firm Reliable Capacity

iv. Water high service pumping:

(Instantaneous Demand + Margin Reserve) / Firm Reliable Capacity

or

(Peak Hour Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

v. Other water facilities:100% used and useful

vi. Water transmission system:100% used and useful

vii. Water distribution system - non-developer related:100% used and useful

viii. Water distribution system - developer related, single family developments:

((Lots Served + Fill-in Lots + Margin Reserve) / Lots with Service Available) + Fire Flow Allowance

ix. Water distribution system - developer related, mixed developments (e.g., single family, multi-family and commercial):

((Connected ERCs + Fill-in ERCs + Margin Reserve) / ERC Capacity) + Fire Flow Allowance

2. Small water systems (less than 1 MGD capacity) with no

storage facilities other than hydropneumatic tanks or with insufficient storage to buffer the instantaneous demands of its customers:

i. Water source of supply:

(Instantaneous Demand + Margin Reserve) / Firm Reliable Capacity

or

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

ii. Water treatment equipment:

(Instantaneous Demand + Margin Reserve) / Firm Reliable Capacity

or

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

iii. Finished water storage:100% used and useful

iv. Water high service pumping:

(Instantaneous Demand + Margin Reserve) / Firm Reliable Capacity

or

(Peak Hour Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

v. Other water facilities:100% used and useful

vi. Water transmission system:100% used and useful

vii. Water distribution system - non-developer

related:100% used and useful

viii. Water distribution system - developer related, single family developments:

((Lots Served + Fill-in Lots + Margin Reserve) / Lots with Service Available) + Fire Flow Allowance

ix. Water distribution system - developer related, mixed developments (e.g., single family, multi-family and commercial):

((Connected ERCs + Fill-in ERCs + Margin Reserve) / ERC Capacity) + Fire Flow Allowance

(b) Medium water systems (1 MGD to 5 MGD Capacity):

1. Medium water systems (1 MGD to 5 MGD capacity) with adequate reliable finished water storage capacity to meet the local fire flow ordinances and to meet the peak hour demand of its customers:

i. Water source of supply:

(Maximum Day Demand + Margin Reserve) / Firm Reliable Capacity

ii. Water Treatment Equipment:

(Maximum Day Demand + Margin Reserve) / Firm Reliable Capacity

iii. Finished water storage:

(Equalization Volume + Fire Flow + Emergency Storage + Margin Reserve) / Firm Reliable Capacity

iv. Water high service pumping:

(Peak Hour Demand + Margin Reserve) / Firm Reliable Capacity

or

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

v. Other water facilities:100% used and useful

vi. Water transmission system:100% used and useful

vii. Water distribution system - non-developer related:100% used and useful

viii. Water distribution system - developer related, single family developments:

((Lots Served + Fill-in Lots + Margin Reserve) / Lots with Service Available) + Fire Flow Allowance

ix. Water distribution system - developer related, mixed developments (e.g., single family, multi-family and commercial):

((Connected ERCs + Fill-in ERCs + Margin Reserve) / ERC Capacity) + Fire Flow Allowance

2. Medium water systems (1 MGD to 5 MGD capacity) with no storage facilities other than hydropneumatic tanks or with insufficient storage to buffer the instantaneous demands of its customers:

i. Water source of supply:

(Peak Hour Demand + Margin Reserve) / Firm Reliable Capacity

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or

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

ii. Water treatment equipment:

(Peak Hour Demand + Margin Reserve) / Firm Reliable Capacity

or

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

iii. Finished water storage:100% used and useful

iv. Water high service pumping:

(Peak Hour Demand + Margin Reserve) / Firm Reliable Capacity

or

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

v. Other water facilities:100% used and useful

vi. Water transmission system:100% used and useful

vii. Water distribution system - non-developer related:100% used and useful

viii. Water distribution system - developer related, single family developments:

((Lots Served + Fill-in Lots + Margin Reserve) / Lots with Service Available) + Fire Flow Allowance

ix. Water distribution system - developer related,

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mixed developments (e.g., single family, multi-family and commercial):

((Connected ERCs + Fill-in ERCs + Margin Reserve) / ERC Capacity) + Fire Flow Allowance

(c) Large water systems (over 5 MGD Capacity):

1. Large water systems (over 5 MGD capacity) with adequate reliable finished water storage capacity to meet the local fire flow ordinances and to meet the peak hour demand of its customers:

i. Water source of supply:

(Average 5 Maximum Days Demand + Margin Reserve) / Firm Reliable Capacity

ii. Water treatment equipment:

(Average 5 Maximum Days Demand + Margin Reserve) / Firm Reliable Capacity

iii. Finished water storage:

(Equalization Volume + Fire Flow + Emergency Storage + Margin Reserve) / Firm Reliable Capacity

iv. Water high service pumping:

(Peak Hour Demand + Margin Reserve) / Firm Reliable Capacity

or

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

v. Other water facilities:100% used and useful

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vi. Water transmission system:100% used and useful

vii. Water distribution system - non-developer related:100% used and useful

viii. Water distribution system - developer related, single family developments:

((Lots Served + Fill-in Lots + Margin Reserve) / Lots with Service Available) + Fire Flow Allowance

ix. Water distribution system - developer related, mixed developments (e.g., single family, multi-family and commercial):

((Connected ERCs + Fill-in ERCs + Margin Reserve) / ERC Capacity) + Fire Flow Allowance

2. Large water systems (over 5 MGD capacity) with no storage facilities other than hydropneumatic tanks or with insufficient storage to buffer the instantaneous demands of its customers:

i. Water source of supply:

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

ii. Water treatment equipment:

(Maximum Day Demand + Fire Flow + Margin Reserve) / Firm Reliable Capacity

iii. Finished water storage:100% used and useful

iv. Water high service pumping:

(Peak Hour Demand + Fire Flow + Margin Reserve) /

Firm Reliable Capacity

v. Other water facilities:100% used and useful

vi. Water transmission system:100% used and useful

vii. Water distribution system - non-developer related:100% used and useful

viii. Water distribution system - developer related, single family developments:

((Lots Served + Fill-in Lots + Margin Reserve) / Lots with Service Available) + Fire Flow Allowance

ix. Water distribution system - developer related, mixed developments (e.g., single family, multi-family and commercial):

((Connected ERCs + Fill-in ERCs + Margin Reserve) / ERC Capacity) + Fire Flow Allowance

(d) Wastewater systems:

1. Wastewater collection system and pumping stations - non-developer related:100% used and useful

2. Wastewater collection system and pumping stations - developer related, single family developments:

(Lots Served + Fill-in Lots + Margin Reserve) / Lots with Service Available

3. Wastewater collection system and pumping stations - developer related, mixed developments (e.g., single family, multi-family and commercial):

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(Connected ERCs + Fill-in ERCs + Margin Reserve) / ERC Capacity

4. Wastewater force mains:100% used and useful

5. Wastewater treatment equipment:

(Maximum Month Flow + Margin Reserve) / Firm Reliable Capacity

6. Effluent disposal facilities:

(Maximum Month Flow + Margin Reserve) / Firm Reliable Capacity

7. Other wastewater facilities:100% used and useful

(7) Definitions - the following definitions apply to the default formulas in Rule 25-30.432(6), F.A.C., for purposes of determination of used and useful water and wastewater facilities.

(a) Average 5 Maximum Days Demand - the average of the five greatest days demand attained by a water system during the past five years, exclusive of emergency or fire flow events.

(b) Effluent Disposal Facilities - this includes the transmission lines, percolation and evaporation ponds, sprayfields, irrigation systems, deep wells, etc., utilized in the disposal of effluent or reclaimed water.

(c) Emergency Storage - that storage required by a water system to meet the emergency-like demands of the customers. Typically, Emergency Storage is made available when it is more cost effective to provide the storage and pumping facilities than to add redundancy to the system for emergency conditions. The quantity of

Emergency Storage need is a function of the duration of the emergency condition and is typically assumed to be approximately one half of the average annual daily demand.

(d) Equalization Volume - the quantity of storage in a water system necessary to meet the customers' greatest demands which are beyond the throughput capacity of the source of supply and/or water treatment equipment. Typical design criteria allows for four hours storage at the 16 hour demand.

(e) Fill-in Lots - The total number of unoccupied residential lots on isolatable sections of the distribution system in which no less than 25% of the lots are currently, or in the past have been provided active water or wastewater service, as applicable.

(f) Fire Flow Allowance - an allowance for the capacity of a water distribution system, calculated using the following formula:

Fire Flow Allowance = (Fire Flow Requirement / (Fire Flow Requirement + Maximum Day Demand)) X (1 -((Average number of ERCs connected to the distribution system + Margin Reserve in ERCs) / Capacity of the distribution system in ERCs))

(g) Fire Flow Requirement - as defined in 25-30.432(5)(b), F.A.C.

(h) Firm Reliable Capacity - the capacity of a particular component of a water or wastewater facility in which at least the largest unit is assumed to be out of service. If the used and useful category contains several components, the Firm Reliable

Capacity is assumed to be the limiting component in that category with the largest unit out of service. For finished water storage, the Firm Reliable Capacity excludes any unusable or dead storage.

(i) Instantaneous Demand - the greatest demand that a water system attains. It is typically used only as a design criteria on small water systems with no storage and a small distribution system that does not have the ability to absorb these instantaneous demands through depressurization of the distributions system. Rule 25-30.432(8), F.A.C., should be used to determine the instantaneous demand unless specific quantitative information indicates greater demands.

(j) Large Water System - a system that has a reliable capacity of more than five millions gallons per day. Based upon Rule 17-602.370(4), F.A.C., operation requirements, a Large Water System would require at least on shift per day of operations for a Category IV or V system (aeration or chlorination) and at least a double shift of operations for Category I, II, or III (filtration, softening or reverse osmosis).

(k) Lots Served - the total number of residential lots that are currently, or in the past have been, provided active water or wastewater service, as applicable, plus lots occupied but never connected to the system that are capable of being provided service by the existing distribution or collection system.

(l) Lots with Service Available - the total number of residential lots that currently have the water distribution or

wastewater collection system, as applicable, immediately available.

(m) Margin Reserve - as defined in 25-30.432(5)(a), F.A.C.

(n) Maximum Day Demand - the maximum daily demand that a water system attained during the past five years of time, exclusive of emergency or fire flow events. Typical design criteria allow .55 gpm per ERC.

(o) Maximum Month Flow - the average daily flow through a wastewater treatment facility for the month with the highest total flow during the past five years.

(p) Medium Water System - a system that has a reliable capacity of between one million gallons per day and five million gallons per day. Based upon Rule 17-602.370(4), F.A.C., operation requirements, a Medium Water System would require less than 24 hours per day operation but greater operational requirements than a small system.

(q) Other Wastewater Facilities - this includes disinfection units, emergency generators, auxiliary engines, customer service laterals, laboratory equipment, utility office and other general plant and equipment used in the operation of a wastewater system.

(r) Other Water Facilities - this includes disinfection facilities, emergency generators, auxiliary engines, customer service lines and meters, laboratory equipment, utility office and other general plant used in the operation of a water system.

(s) Peak Hour Demand - the greatest demand attained by a water system over a sustained period of sixty minutes. Typical design

criteria allows for a Peak Hour Demand of two times the maximum day demand or 1.1 gpm per ERC.

(t) Small Water System - a system that has a reliable capacity of less than one million gallons per day. Based upon Rule 17-603.370(4), F.A.C., operation requirements, a Small Water System would require less than one hour per day visit for a Category IV or V system (aeration and chlorination) and less than eight hours of operation for a Category I, II or III system (filtration, softening or reverse osmosis).

(u) Wastewater Collection System and Pumping Stations - this includes all the gravity collection lines form the customer sewer lateral to and including the wastewater pumping stations.

(v) Wastewater Force Mains - this includes the force mains from the discharge of the pumping stations to the influent structure at the wastewater treatment facilities.

(w) Wastewater Treatment Equipment - this includes the influent structure, pretreatment facilities, pumping, aeration, clarification, filtration, chlorine contact and effluent pumping equipment.

(8) Unless specific quantitative information indicates greater demands, a water system's Instantaneous Demand, for purposes of determining used and useful, will be calculated from the following table:

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INSTANTANEOUS DEMANDS PER ERC(1)

No. of ERCs	Instantaneous Demand (GPM)	No. of ERCs	Instantaneous Demand (GPM)	No. of ERCs	Instantaneous Demand (GPM)	No. of ERCs	Instantaneous Demand (GPM)
1	15	26	124	51	203	76	279
2	20	27	128	52	206	77	282
3	25	28	132	53	209	78	285
4	30	29	136	54	212	79	288
5	35	30	140	55	215	80	291
6	40	31	143	56	218	81	294
7	45	32	146	57	221	82	297
8	50	33	149	58	224	83	300
9	55	34	152	59	227	84	303
10	60	35	155	60	230	85	306
11	64	36	158	61	233	86	309
12	68	37	161	62	237	87	312
13	72	38	164	63	240	88	315
14	76	39	167	64	243	89	318
15	80	40	170	65	246	90	321
16	84	41	173	66	249	91	324
17	88	42	176	67	252	92	327
18	92	43	179	68	255	93	330
19	96	44	182	69	258	94	333
20	100	45	185	70	261	95	336
21	104	46	188	71	264	96	339
22	108	47	191	72	267	97	342
23	112	48	194	73	270	98	345
24	116	49	197	74	273	98	348
25	120	50	200	75	276	100(2)	351

Notes:

(1) Source: Community Water Systems Source Book, 5th Edition, 1971, by Joseph S. Ameen, Page 62.

(2) For Systems greater than 100 ERCs, ID = 351 x $\frac{\text{ERCs}}{100}$ in GPM

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Specific Authority: 367.121, F.S.

Law Implemented: 367.081, F.S.

History: New.

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