

ORIGINAL

DOCKET NO.: 950387-SU - Florida Cities Water Company

WITNESS: Direct Testimony Of ROBERT J. CROUCH, Appearing
On Behalf Of Staff

DATE FILED: November 6, 1998

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FPCO-RECORDS/REPORTING

DIRECT TESTIMONY OF ROBERT J. CROUCH

1 |
2 | Q. Please state your name and business address.

3 | A. Robert J. Crouch. Florida Public Service Commission, 2540 Shumard
4 | Oak Boulevard, Tallahassee, FL 32399.

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

7 | A. I received a B.S. in Engineering from the Air Force Institute of
8 | Technology in 1970. I completed post graduate work in Industrial
9 | Management from the Industrial College of the Armed Forces and graduated
10 | in 1976. I was certified as a Professional Engineer in March, 1976.
11 | I retired from the U.S. Air Force in 1979 as a Lieutenant Colonel after
12 | 23 years military service, primarily as an engineer and a manager. From
13 | 1979 to 1984, I was employed by Southwestern Bell Telephone Company as
14 | a design engineer.

15 | In September, 1984, I started working for the Florida Public
16 | Service Commission (PSC) as a supervisor of an engineering section in
17 | the Division of Communications. In April, 1987, I transferred to the
18 | Division of Water and Wastewater where I supervise engineers in
19 | investigations of regulated water and wastewater utilities.

20 | I am currently, or have been in the recent past, a member of the
21 | Florida Engineering Society, the Texas Society of Professional
22 | Engineers, National Society of Professional Engineers, Society of
23 | Military Engineers, American Water Works Association, Water Environment
24 | Federation, and the Florida Pollution Control Federation.

25 | Q. By whom are you presently employed and in what capacity?

1 | A. I am employed by the PSC as the Supervisor of Engineering in the
2 | Division of Water and Wastewater. As I stated earlier, I have worked
3 | for the PSC for over fourteen years and have been in my current position
4 | for more than eleven years.

5 | Q. What are your general responsibilities at the PSC?

6 | A. As Supervisor of Engineering in the Division of Water and
7 | Wastewater, I supervise assigned engineers who conduct field evaluations
8 | and prepare recommendations pertaining to rate cases and technical
9 | complaints for Commission review. The Engineering Section inspects and
10 | evaluates regulated water and wastewater utilities and makes
11 | recommendations to the Commission regarding utility compliance with
12 | applicable PSC rules and state and federal regulatory standards. The
13 | Engineering Section is also responsible for making recommendations on
14 | what portion of a utility is "used and useful" for current customers.

15 | Q. Have you ever testified before?

16 | A. Yes. I have been accepted and testified as an expert witness in two
17 | separate hearings held by the U.S. House of Representatives, Military
18 | Appropriations sub-committee. I testified before this Commission in
19 | Docket No. 910560-WS, application for a rate increase by Tamiami Village
20 | Utility, Inc.; Dockets Nos. 920733-WS and 920734-WS, application for
21 | a rate increase by General Development Utilities, Inc.; and Docket No.
22 | 940847-WS, application for a rate increase by Ortega Utility Company.
23 | I also testified before the Division of Administrative Hearings (DOAH)
24 | in the challenge to proposed Rule 25-30.431 (Margin Reserve).

25 | Q. What is the purpose of your testimony today?

1 | A. The purpose of my testimony is to respond to the remand of the First
2 | District Court of Appeal whereby the Court stated that the Commission's
3 | use of annual average daily flow (AADF) in the numerator was not
4 | supported by competent, substantial evidence and represented an
5 | unsupported change in Commission policy. In order to respond, first,
6 | I would like to discuss the methods and procedures used by staff when
7 | calculating used and useful percentages and second, the need to use
8 | comparable periods of time for determining average wastewater flows in
9 | both the numerator and denominator of the Used and Useful (U&U)
10 | equation.

11 | Q. What information have you relied upon in preparing your testimony?

12 | A. As stated earlier, I have been a registered professional engineer
13 | for more than 22 years and have worked as an engineer evaluating water
14 | and wastewater rate cases for almost 12 years. Therefore, my testimony
15 | is based upon the evidence in the record, my knowledge and expertise on
16 | used and useful calculations, and past Commission decisions. The used
17 | and useful determinations in recent cases have been controversial and
18 | it is important to me that the Commission have all available information
19 | and facts before reaching a decision. If the facts justify 100% U&U,
20 | that will be my recommendation. Conversely, if the facts do not justify
21 | 100% U&U, I will not recommend 100%.

22 | Q. How does the Commission determine a revenue requirement for purposes
23 | of setting rates in a rate case?

24 | A. The Commission's rules contain filing requirements (MFRs) that
25 | companies have to file containing information about the operation of the

1 utility based on a test year. The purpose of this is to get
2 representative data about the utility for a year in which to determine
3 what revenues the utility is entitled to. This includes actual
4 revenues, expenses, customers and usage data. The fact that these
5 elements are all expressed in like terms (i.e., actual or average data)
6 illustrates an important concept in ratemaking, which is the matching
7 principle. This principle is not unique and is widely used by other
8 regulatory bodies throughout the country. It would be clearly erroneous
9 and unfair to the utility to determine a revenue requirement using
10 average expenses and maximum month revenues. It would be just as
11 incorrect, and unfair to the customers, if the Commission considered
12 maximum month expenses and annual average revenues in determining a
13 revenue requirement.

14 The determination of engineering used and useful is an extension
15 of the matching principle. Used and useful is determined by dividing
16 the flows during the test year by the capacity of the treatment plant.
17 The matching comes into play in that it is important to express the
18 numerator and denominator in like terms. For instance, if the numerator
19 is expressed on the basis of maximum month flow, it is imperative that
20 the denominator be expressed on the same basis. To do otherwise, would
21 be similar to matching average expenses with maximum month revenues,
22 thereby distorting the results. This concept is discussed in more
23 detail later in my testimony.

24 Q. Why does the Commission make a used and useful determination?

25 A. The purpose of making a used and useful determination is to try to

1 | balance the interests of the current customers and the utility's
2 | obligation to stand ready to provide service to future customers. The
3 | basic principle of used and useful is that current customers should pay
4 | only for the facilities needed to provide them service and that growth
5 | should pay for itself. However, since there is a time lag before
6 | capacity can be added, there is an inherent need for some amount of
7 | excess capacity to serve the growth as it occurs. The Commission's
8 | regulatory process is a balancing act among these diverse factors.

9 | Q. How does the Commission's current practice of calculating used and
10 | useful allow a utility to build for future growth?

11 | A. First of all, it is important to realize that a wastewater plant is
12 | constructed to a design capacity determined by a professional engineer.
13 | In practice, the DEP permitted capacity, based on average flows, is
14 | generally lower than actual design capacity. Therefore, even when the
15 | Commission has determined a plant to be 100% used and useful based on
16 | permitted capacity, there is a built-in cushion to allow the wastewater
17 | treatment plant to handle peak flows. Further, in determining used and
18 | useful, the Commission allows a second buffer, which is the margin
19 | reserve. Margin reserve is designed to allow for anticipated growth for
20 | some specified period of time, usually 18 months. Additionally,
21 | utilities are allowed to recover the carrying costs of the non used and
22 | useful plant through a one time charge called Allowance for Funds
23 | Prudently Invested (AFPI). AFPI is charged to all new customers to help
24 | recover the utility's cost of having plant on line and ready to serve
25 | future customers. I believe this process allows the utility to

1 | reasonably build for growth while protecting the current customers from
2 | shouldering too much of the cost of growth.

3 | Q. What does staff consider when calculating used and useful for a
4 | wastewater system?

5 | A. Historically, in calculating used and useful percentages for a
6 | wastewater plant in a rate case, staff considers the following factors:

7 | First, the capacity of the plant being evaluated is determined.
8 | This capacity becomes the denominator in the used and useful equations.
9 | Staff currently uses the capacity taken from the permit issued by DEP.

10 | Second, staff determines the customers' demand or flows placed
11 | upon the system; normally this is the average day demand as selected by
12 | the utility.

13 | Third, staff considers a Margin Reserve or projected short-term
14 | growth demand if requested and justified by the Utility in its filing.
15 | Whereas a water system must be capable of meeting customer demands at
16 | any instant, a wastewater plant with a surge (or equalization) tank has
17 | the ability to "save" peak flows or surges and treat those flows after
18 | the surge has passed. Surge (or equalization) tanks ease the peaks
19 | allowing the plant to be designed to meet an average daily flow.

20 | The permitted capacity of the plant is the denominator while the
21 | average daily flow, either Annual Average (AADF), Three Month Average
22 | (3MADF), or Maximum Month Average (MMADF) plus a margin reserve (if
23 | requested and justified) minus excess infiltration or inflow goes in the
24 | numerator. The result is the used and useful ratio.

25 | Q. Is there a rule in place now which governs how flow data is

1 | determined?

2 | A. Not at this time. However, Staff has submitted a proposed rule, 25-
3 | 30.432, which will codify a simple, logically elementary, mathematical
4 | fact. Anyone who has taken beginning Physics in school knows that an
5 | equation must always be dimensionally consistent; this means that two
6 | terms may be equated only if they have the same units. These units are
7 | treated just like algebraic symbols with respect to multiplication or
8 | division. This fact is illustrated by page 7 of University Physics,
9 | Seventh Edition, which I use as a reference and have attached to my
10 | testimony. (RJC-1). In layman's terms, "You cannot divide apples by
11 | oranges and get a valid result". This fact is basic mathematics.

12 | Q. Is the actual average flow data different from permitted flow data?

13 | A. Yes, the permitted flow is just what is permitted by DEP. The
14 | actual flow is what is measured and treated at the plant. While the
15 | quantities may differ, the basis for determining average flows should
16 | be the same basis used to permit the plant capacity. I give several
17 | mathematical examples:

18	12 feet		12 feet
19	----- equals 3	<u>BUT</u>	----- does <u>NOT</u> equal 3
20	4 feet		4 yards
21	\$4000 expenses in maximum month		
22	-----		does NOT equal 400%
23	\$1000 average monthly revenue earned		

24 | Likewise, you cannot divide the average daily flows treated by a
25 | wastewater treatment plant in the maximum month by the permitted annual

1 | average daily flows and get a valid percentage of used and useful
2 | capacity. It is imperative that terms or time periods under
3 | consideration be the same for both the numerator and the denominator of
4 | a legitimate equation. That is only logical.

5 | Q. What procedure was used by staff in past cases?

6 | A. For many years, the PSC staff has relied upon the permits issued by
7 | DEP to determine the permitted capacity of a wastewater treatment plant.
8 | That permitted capacity went in the denominator of the equation. Prior
9 | to 1992, the DEP issued permit did not indicate the basis which the
10 | utility specified. Since the basis was not shown on the permit, the PSC
11 | staff had no way of knowing what that basis was; consequently, staff
12 | selected the Maximum Month Average Daily Flow, or MMADF, as the flow to
13 | be used in the numerator. While use of the MMADF gave the benefit of
14 | any doubt to the Utility, it must be emphasized that there was no basis
15 | shown for the denominator; therefore, staff had no way of knowing if a
16 | mismatch existed.

17 | Q. When and why did staff change its method or practice for setting up
18 | the Used and Useful equation?

19 | A. Starting approximately 1992, DEP began to show the basis for
20 | determining permitted flow (AADF, MMADF, 3MADF) which was selected by
21 | the utility in its permit application (RJC-2). When DEP started listing
22 | the flow basis in the permits (the denominator), it became imperative
23 | that the same basis be used in the numerator flow data. I want to
24 | emphasize that there has never been an established rule or commission
25 | policy stating how the used and useful equation had to be configured.

1 | It has been staff's practice to treat each docket on a case by case
2 | basis using the data and justification presented by the utility in its
3 | minimum filing requirements (MFRs). For the past 12 years, since I have
4 | been engineering supervisor, staff has always used flow data provided
5 | by the utility in the numerator and permitted capacity issued by DEP in
6 | the denominator. The flow data may have been taken from monthly
7 | operating reports (MOR) if flow data was not available in the MFRs, but
8 | in either case, the data was provided by the utility. As pointed out
9 | earlier, the data submitted to DEP for the permit is also provided by
10 | the utility. It, the utility, selects the time frame for the permit and
11 | when DEP started listing that time frame or basis on the permit, staff
12 | was obligated to use the same basis or time frame in the numerator.

13 | Although staff should have been aware of DEP's permitting change,
14 | several cases were processed where staff continued to give the utility
15 | the benefit of any doubt and use MMADF in the numerator despite the
16 | permit being based on AADF. This was in error and resulted in a
17 | mismatch. (See, Dockets Nos. 951027-WS, 951258-WS, and 951591) In Docket
18 | No. 951591-WS the mismatch did not matter, as the system was 100 percent
19 | used and useful no matter what was used in the numerator. In Docket No.
20 | 951258-WS, the hearing was held on April 1-2, 1996, and the
21 | recommendation was considered at the August 13, 1996 Agenda Conference.
22 | The original hearing in this current case was on April 24-25, 1996, and
23 | staff's final recommendation was also considered at the August 13, 1996
24 | Agenda Conference. It was not until the second day of this latter
25 | hearing that staff realized the significance of the fact that DEP was

1 | now permitting its plants on the basis of either AADF, MMADF, or 3MADF.
2 | Therefore, at the August 13, 1996 Agenda Conference, staff assigned to
3 | this docket recommended that the matching concept be employed.
4 | Unfortunately, the staff assigned to Docket No. 951258-WS continued to
5 | give the utility the benefit of the doubt (even though there was no
6 | longer any doubt on which the permit was based), and used MMADF in the
7 | numerator even though the permit was based on AADF. In Docket No.
8 | 950828-WS, Rainbow Springs Utilities, the wastewater plant was permitted
9 | based on the three maximum month average daily flow (3MADF) and staff
10 | accordingly used the 3MADF actual flows in the numerator of the used and
11 | useful equation to match flows. Also, in Docket No. 951056-WS, Palm
12 | Coast Utility Company (Palm Coast), the plant was permitted based on
13 | AADF and staff accordingly used AADF in the numerator. Likewise, staff
14 | attempted to match flows in the numerator of the used and useful
15 | equation pursuant to how each system of Florida Water Services
16 | Corporation (Florida Water) in Docket No. 950495-WS was permitted by
17 | DEP. Both the Florida Water and Palm Coast cases were appealed. Based
18 | on the above, staff does not believe that it changed its practice, but
19 | merely adapted to the change in DEP's permitting practice.

20 | Q. Did the DEP advise the PSC staff of its change in permitting
21 | procedures?

22 | A. By letter dated July 30, 1992, Richard Harvey, Director, Division
23 | of Water Facilities (DEP), commented on our then pending Used and Useful
24 | rule (RJC-3). In that letter, Mr. Harvey suggested that the number [in
25 | the numerator] be defined as the same time period as that used [in the

1 | denominator] for the capacity of the plant. Based on this intimation,
2 | staff investigated and found that DEP had started showing on the permit
3 | the basis or time period selected by the utility for average flows.
4 | However, because the proposed used and useful rule was withdrawn, the
5 | significance of this letter was not noted at the time. It was not until
6 | 1995 that staff started seeing new permits listing the timeframes for
7 | the permitted capacity.

8 | Q. Who is responsible for selecting the permitted flow basis?

9 | A. As stated earlier, the utility selects the basis for its permitted
10 | flows. The Utility decides which basis is most advantageous to them
11 | (RJC-2). In this case, the utility chose to have its plant permitted
12 | on the basis of AADF, and DEP decided that this basis was appropriate.

13 | Q. What is the difference between an "AADF" flow basis and a "MMADF"
14 | flow basis?

15 | A. The AADF results in the lowest average daily flow; consequently, the
16 | utility may not have to "man" its plant with as many personnel as they
17 | might had they selected the MMADF (which results in the highest average
18 | daily flow). In many instances the actual hydraulic capacity of the
19 | plant as constructed is larger than the permitted capacity. (It is
20 | curious to note that the Capacity Analysis Report used by DEP to
21 | determine when a utility must expand its plant is based upon the Three
22 | Month Average Daily Flow [3MADF] which is more than the AADF but less
23 | than the MMADF.) On the other hand, this same utility wants to obtain
24 | the highest possible Used and Useful percentage so that the maximum
25 | amount of the plant they have constructed will be placed in rate base

1 and rates collected from existing customers to pay for that plant. If
2 the utility had its way, the MMADF (largest average flow) would be used
3 in the numerator while the AADF (smallest average flow) would be used
4 in the denominator. It is easy to see that this would result in a much
5 larger Used and Useful percentage, a larger rate base, and higher rates.
6 In other words, the utility would enjoy the best of both worlds: It
7 would not have to hire personnel to support a "larger permitted plant",
8 while at the same time, it would enjoy higher rates since a larger U&U
9 percentage would result if the MMADF was divided by the AADF. The
10 existing customer gets the short-end of the stick both ways.

11 Q. What is the solution?

12 A. The solution is simple: The Utility must decide whether it wants a
13 smaller permitted capacity (AADF) or a larger permitted capacity based
14 upon the MMADF. At the same time, the utility should consider which
15 flow basis will result in the larger U&U percentage. I must reemphasize
16 that it is the utility's choice. The utility selects the basis it
17 thinks is appropriate when it applies for a permit from DEP.

18 Q. Will AADF/AADF be larger or smaller than MMADF/MMADF?

19 A. Normally, the results will be very close. The mismatch comes when
20 the utility attempts to divide the MMADF by the AADF. Under no
21 circumstances should the utility be allowed to get an abnormally large
22 U&U percentage by calculating $MMADF/AADF$. . . this is a mathematical
23 mismatch that is not ethical, and should not be valid or authorized.

24 Q. Then what do you propose in this specific case?

25 A. In this particular case, Florida Cities submitted an application to

1 | DEP for renewal of its wastewater treatment plant permit. Florida
2 | Cities, or its designated representative, selected AADF as the basis for
3 | its flows upon which it wanted the permit issued. In order for staff,
4 | and the Commission, to remain consistent with the "matching principle"
5 | as well as comply with the basic mathematical rule that an equation must
6 | be "dimensionally consistent", it is imperative that the flow data in
7 | the numerator must match the flow data in the denominator of the
8 | equation. As stated above, the Commission must match flows just the
9 | same as it matches revenues with expenses. While this may not result
10 | in a used and useful percentage desired by Florida Cities, the results
11 | were dictated by Florida Cities' choice of AADF and not a change in
12 | either staff practice or Commission policy.

13 | Q. Does this conclude your testimony?

14 | A. Yes.

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For exhibit,
See Hrng Exh. 38.