96-04227

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	:	**DOCKET NO.**
	:	
Application for a rate increase and increase in service availability charges by SOUTHERN STATES UTILITIES, INC. for Orange-Osceola Utilities, Inc. in Osceola County, and in Bradford, Brevard, Charlotte, Citrus, Clay, Collier, Duval, Highlands, Lake, Lee, Marion, Martin, Nassau, Orange, Osceola, Pasco, Putnam, Seminole, St. Johns, St. Lucie, Volusia and Washington Counties.	:	**950495-WS**

TENTH DAY - MORNING SESSION

VOLUME 39

Pages 4759 through 4830

PROCEEDINGS: **HEARING**

BEFORE: CHAIRMAN SUSAN F. CLARK
COMMISSIONER J. TERRY DEASON
COMMISSIONER JULIA L. JOHNSON
COMMISSIONER DIANE K. KIESLING
COMMISSIONER JOE GARCIA

DATE: **Friday, May 10, 1996**

TIME: Commenced at 10:00 a.m.

PLACE: Betty Easley Conference Center
Room 148
4075 Esplanade Way
Tallahassee, Florida

REPORTED BY: JOY KELLY, CSR, RPR
Chief, Bureau of Reporting
SYDNEY C. SILVA, CSR, RPR
Official Commission Reporter
ROWENA NASH HACKNEY
Official Commission Reporter

APPEARANCES:

(As heretofore noted.)

WITNESSES

NAME	PAGE NO.
Cross Examination By Mr. Reilly	4817
Redirect Examination By Mr. Feil	4821

EXHIBITS

NUMBER		ID.	ADMTD.
229	(Terrero) Hydraulic capcity versus DEP permitted capacity	4762	
231	(Terrero) Marco Island test results and related information	4785	

PROCEEDINGS

(Hearing reconvened at 10:12 a.m.)

(Transcript follows in sequence from Volume 39.)

CHAIRMAN CLARK: We'll call the hearing to order on Friday, the 10th, what I hope will be our final day of the hearing. And I understand, Mr. Terrero, we ended last night with Staff cross examination of you.

MR. PELLEGRINI: We're handing out an additional exhibit to be used in the cross examination of Mr. Terrero. It's SSU's response to Staff Interrogatory No. 99, hydraulic capacity versus DEP permitted capacity.

CHAIRMAN CLARK: We'll label that as Exhibit 229.

(Exhibit No. 229 marked for identification.)

Q (By Mr. Pellegrini) Good morning, Mr. Terrero?

A Good morning.

Q Last evening when we concluded you wished to introduce an exhibit. Is this an appropriate time for you to do that?

A Yes, sir.

MR. FEIL: Madam Chairman, last night there

was a discussion before we broke off concerning some of the ASR well proposed for the 212 acres, and that's what this exhibit pertains to.

CHAIRMAN CLARK: Thank you, Mr Feil. And we need to mark this as an exhibit.

MR. FEIL: Yes, ma'am. I believe Mr. Terrero wanted to discuss it with Mr. Pellegrini.

CHAIRMAN CLARK: This will be Exhibit 230, and give me a short title, map of --

MR. FEIL: Additional ASR wells on Marco 212 acre site.

CHAIRMAN CLARK: All right. Thank you.

Mr. Pellegrini.

Q (By Mr. Pellegrini) Mr. Terrero, let me direct your attention initially to your testimony at Page 16. I'm sorry, we struck those questions. Concerning the Marco Island -- forget that last instruction.

Concerning the Marco Island percolation ponds, is it not true, Mr. Terrero, that the capacity of those ponds is 3.5 million gallons?

A That's correct.

Q Is it not true that effluent disposal for Marco Island can be through irrigation in the first place to golf courses?

A What we do at Marco Island is, like you said, the first thing we do is irrigation to golf courses. If the golf courses cannot take effluent disposal for whatever reason, the next way to go, as we have done lately, will be the injection well. And actually the last one will be the percolation ponds. The percolation ponds were built as the backup to the golf courses, but since our costs and everything else has gone up, it is cheaper to the utility to pump it to the injection well instead of pumping all the way to the perc ponds.

Q What about Collier Boulevard irrigation, did you mention that?

A No. We are also irrigating Collier Boulevard.

Q So then, the case of the percolation ponds are, in effect, a last resort?

A Not really. Like I said, if we for any reason exceed also there, if we are going to exceed the capacity of the injection well, the permitted capacity of the injection well, we will go to the perc ponds. Also, you have to remember that the percolation ponds is a backup for the injection well.

Q Under what circumstances would you anticipate the ASR to exceed its permitted capacity?

A I'm not saying that we are expecting to exceed capacity. I'm saying if by any reason we have to exceed, by any reason, if we are -- let's say our substandard pond get's filled up and we have to get rid of the effluent in a quick way; the quick way will be go to the injection well instead of pumping all the way to the perc ponds.

Q Isn't it true that Marco Shores disposes of effluent to the Marco Island percolation ponds?

A Yes, sir.

Q Does Marco Shores have any other means of effluent disposal?

A We have perc ponds, but they don't percolate too well, and so we go to the Marco Island perc ponds.

Q So then -- well, the use of the percolation ponds by Marco Shores, that's not a -- is that an exclusive use of those ponds by Marco Shores? Are those ponds used exclusively by Marco Shores?

A No, no. The percolation ponds, I guess the purpose -- I said that the purpose of it was that the percolation ponds are backup for the irrigation system and also backup for the injection well.

Q Okay. Let me refer you to the exhibit marked 224 for identification.

MR. FEIL: Excuse me, which exhibit number

were you referring to again? Mr. Pellegrini, did you say 224?

MR. PELLEGRINI: 224, late-filed deposition Exhibit No. 6.

Q (By Mr. Pellegrini) The last column is entitled Marco Shores Perc Ponds. Isn't that somewhat misleading?

A It could be construed misleading, but what it meant there is what's going to the Marco Island perc pond from the Marco Shores.

Q Okay. Would you then refer to the exhibit marked 225 for identification, which is the Utility's' response to Staff's Interrogatory No. 305?

A Okay.

Q Isn't it true that none of the approximately $4.3 million in capital costs for constructing the Marco Island percolation ponds was allocated to Marco Shores?

A I believe what happened, Mr. Pellegrini, is that our submittal was on the uniform rates, and as uniform rates it wouldn't matter where it's at. But I leave that to Judy Kimball. I'm not the accountant that does the accounting, how we allocate the costs.

Q Yes. Is it your view that there should be an allocation under stand alone?

A If there's a stand alone, yes; but if there's uniform rate, it should not be. I think in the last rate case it was allocated, subject to check.

Q In turning your attention to your testimony at Pages -- at Page 20, concerning hydraulic analysis.

A Which lines?

Q Line 11 through 14. There you testify as to minor revisions having been necessary to the hydraulic analyses for the four plants. What did you mean by "minor revisions"?

A What I mean by minor revisions is that in order to have a more economical water distribution system at the time that it's constructed since you're not going to build a build-out of sizes in some places, we have done, like, let's say for example Citrus Springs, instead of going and installing a 16-inch line on Citrus Springs Boulevard coming out of one of the future sites, we came out, I believe, with a 6-inch line. That's what I mean by minor revisions.

Q All right.

A In other words the hydraulics of the system has not been changed, just the pipe has been rellocated.

Q Fine. Isn't it true that a transmission and distribution system including necessary pumps and

storage in the early stages of installation usually differs from that system at build-out, the transmission and distribution system at build-out?

A I would like to repeat -- you that question again, slowly.

Q Isn't it true that a transmission and distribution system, including the necessary pumps and storage, in the early stages of an installation or of a development usually differs from the transmission and distribution system at build-out?

A If we are talking about pumps into the system, as the system develops, you will be adding pumps. But it doesn't mean that the existing system that we have there is what you are going to have by just keep adding pumps. Because what's going to happen is it's going to get to the point of where you have 200 psi coming out of a site, and a velocity in the pipe of 20, 30 feet per second, which you don't want that. Then what you need is cooling fence for those pipes because the steam will be coming out of it. So the pipe has a capacity, and that's what you design for. And as you go along, you add some pumps, and in the future you add pipes, too.

Q But as a matter of yes or no, would the systems at those two stages be different?

A They will be different. And as a matter of fact, since I had a couple of days off here, I ran a couple of Cybernet models I think you'll be interested in. What I did is I used the cost that we're requesting in our used and useful, divided by the number of feet of pipe, and came up with a cost. Also, I went and evaluated the cost that Mr. Biddy is proposing by the lot count, and I would like to give you some figures, if you like. And I would like you to ask your Staff --

Q I think that might be best reserved for redirect, Mr. Terrero.

A Okay.

Q Isn't it true that if you were to add any lines, pumps or storage, that the hydraulic analysis outputs of the modified transmission and distribution system will differ from the hydraulic analysis performed on the original system?

A Yes. As a matter of fact, I also did for you, or for whoever is interested, another Cybernet by where I took all the future sites that are actually connected, and I ran a Cybernet. And I came up with a higher percentage of usage than what we have right now.

Q Moving you to Page 21, please.

A Page which?

Q Page 21, Line 13. In reference to your testimony there at Line 13, let me ask you this. Do you believe that there are differences in the goals of a developer-related utility as opposed to a nondeveloper-related utility?

A What do you mean by that?

Q Well, for example, would a developer-related utility lay more lines in hopes of selling property in the early stages of the development?

A I think that a developer is going to develop the least that he can develop.

Q The least?

A The least that he can develop because he's trying to make money on his investment, too. I have brought also some sales maps from the old Deltona Corporation so you can see there's a phasing of the project, how the lots were sold. This was not a scatter all over the place. There was, like, concentric circles going out into the system.

Now, you have to think that these lots were sold 15, 20 years ago, and people had not moved down to Florida as expected.

Q Mr. Terrero -- may I have a moment? (Pause)

Mr. Terrero, are you familiar with this

Commission's Order No. 22307?

A No, sir.

Q This was the order issued in 1989 in the matter of Topeka Groups transfer of majority control from Deltona.

A I don't know about it.

(Document handed to witness)

Q Let me direct your attention to Page 9, the third sentence under Paragraph V.

A Okay.

Q And there we have the Commission's statement as follows: We also find that the cost of all imprudent line extensions shall be borne by the Deltona Corporation. Do you see that?

A Yes.

Q Is it not clear to you that this language clearly holds to the Utility the risk for nonused and useful lines in the Deltona System?

MR. FEIL: Objection. I think Mr. Terrero already said that he wasn't familiar with the order, and I don't have the order before me so I don't even know whether or not the quote is being taken out of context or not.

It's referring to line extensions which is a little bit different than lines as they existed. And

as I recall, the Commission resolved the question of line extensions prospectively as part of that order and a subsequent order where the Commission approved the service availability policy now in place.

MR. PELLEGRINI: This order was officially recognized by the Commission in this proceeding, Chairman Clark. And I recognize that Mr. Terrero said he's not familiar with the order, but I direct his attention to specific language and asked his interpretation of that language.

CHAIRMAN CLARK: Well, Mr. Pellegrini, I think you need to give his attorney a copy of the order and also give a copy of the order to the witness. (Pause)

MR. PELLEGRINI: I believe the parties, each of the parties, has a copy of this order.

CHAIRMAN CLARK: Mr Feil, does Mr. Terrero have a copy now?

MR. FEIL: He has a copy of just one page of excerpt and what Mr. Pellegrini was reading from was a heading in the order and didn't even have the substance with it. I mean, if Mr. Pellegrini has a complete copy of the order --

CHAIRMAN CLARK: Okay.

MR. FEIL: Maybe it's something we can come

back to.

CHAIRMAN CLARK: Mr. Pellegrini, let's move on and let Staff locate sufficient copies of the order so that Mr Feil can have one and the witness can have one. Do the other parties have copies of that?

MR. TWOMEY: I don't have mine at hand, but I think the Staff's point was that the Staff -- my recollection is the Staff handed out copies of all the orders they wanted --

CHAIRMAN CLARK: I understand that. But in order for there to be questioning, we need to have it available to the witness.

MR. FEIL: I apologize for that, Mr. Pellegrini. I did get a copy of it, but I don't have it here.

MR. PELLEGRINI: We'll return to the question.

Q (By Mr. Pellegrini) Page 35 of your testimony, Mr. Terrero.

A Page?

Q 35.

A Yes, sir.

Q There you support a reduction in the total capacity of the reverse osmosis plant at Burnt Store by 10%. Is that not correct?

A That's correct.

Q And have you made a similar reduction in capacity for the Marco Island's reverse osmosis plant?

A I believe we did in the last rate case. I don't think we did it in this rate case.

Q Concerning fire flow requirements, what is the diameter difference in transmission and distribution mains between those designed to handle fire flow and those designed without handling fire flow?

A It depends. A line that -- usually the minimum size that you can have for fire flow is six inches. From there on, you can go to anything. Now, a six-inch main doesn't mean that it's only for handling fire flows. You can have a large extent of homes in an area. In order to meet your pressure requirements and to keep your system economical, you'll install six-inch lines.

Q But it's true that a six-inch diameter is the minimum necessary to carry fire flows. Is that not true?

A Like I said, it depends. You can have three four-inch mains feeding a six-inch line, and those three four-inch mains will carry as much water as a six-inch line, so then those four-inch are carrying as

much as a six-inch for fire flow.

Q On a lots connected to lots available ratio for used and useful, is the utility penalized for installing a larger diameter size of pipes based on the inclusion of fire flow in the design?

A Oh, definite. That's what I was trying to tell you a little bit ago about the cost of the pipe and comparing the cost of what we have installed.

Q Can you cite for me a specific example of where the Utility is penalized for this? I think in your deposition you were unable to recall a specific case.

A Well, let's take for example Sunny Hills, our great sample here. By the lot count that Mr. Biddy is allowing, is about 18 cents per foot. I would like that you ask your Staff engineers what pipe size? They can go to Lowe's Hardware Store and buy a pipe. What size pipe can they deliver?

Q But is it not the case that the cost differential between a six-inch and 12-inch pipe is a minimal amount?

A It depends.

Q Mr. Terrero, does the Utility have the capability of providing fire flow if there are no fire hydrants installed in the distribution system?

A I would say the system is designed --

Q Does it or does it not have that capability?

A It has the capability, but, let's say that you don't have the fire hydrants, you won't be able to have the fire flow.

Q On Page 22 of your rebuttal testimony, Lines 1 through 5.

A Which page is that?

Q 22.

A Okay.

Q Do you mean to say there --

A What line, please?

Q 1 through 5.

A Okay.

Q Do you mean to say there that the Utility's responsibility goes even further than to design a system for fire flow, that in fact the Utility has an obligation to provide fire flows?

A I think in most locations, yes. If you go, like Citrus County there's an ordinance by where you have to provide fire flows. And that's what was designed in the original design. So I assume that if you don't want to go, like I said here, install a two-inch line to handle fire flows in the future.

Q All right. On Page 15.

A We are going backwards, Mr. Pellegrini.
(Laughter)
Q No, just jumping. You mention at Line 16, proposed rules. You use the phrase "proposed rules." I assume that you have reference there to Staff's proposed rule regarding used and useful; is that correct?
A I don't have it with me, sir, no, I don't.
Q I'm sorry?
A I don't have it with me, no, sir.
Q No, I'm asking you is that your reference? Are you referring to Staff's proposed rule?
A Right, the new used and useful rules.
Q You say you don't have the rule before you, but are you familiar with the language in that draft rule concerning fire flow?
A In the draft?
Q Yes, in the proposed rule.
A I will have to take a look at it, but, yes, I read it.
Q And you are familiar with that language?
A Sort of, yes.
MR. FEIL: Mr. Pellegrini, if it will help, I'll give him a copy.
MR. PELLEGRINI: Thank you.

(Witness handed copy.)

Q (By Mr. Pellegrini) Are you looking at the specific language concerning fire flow?

MR. FEIL: Could you give him a section?

MR. PELLEGRINI: Pages 7 through 9.

WITNESS TERRERO: Okay. What do you want me to look there, fire flow?

Q (By Mr. Pellegrini) Fire flow, yes.

My question is do you agree with the concept that a utility, having the utility actually be able to provide fire flows if they are allowed fire flows in the calculation of used and useful?

A Well, like I said before, if we design as per requirements of either county or any other regulatory agency for fire flows, we should be allowed fire flows even if we don't have the fire hydrant there. The reason being is in some cases we are not responsible for installing the fire hydrants.

Q Even if you do not have hydrants installed?

A That's correct. I believe that if we are supposed to design, we are not supposed to install smaller lines than required for the service. It's a disservice to our customers.

Q Okay. Page 45, Mr. Terrero.

A My testimony?

Q Yes.

MR. FEIL: Mr. Pellegrini, were you leaving the area of the draft rules?

MR. PELLEGRINI: I'm sorry?

MR. FEIL: Were you going to ask any other questions about the draft rules?

MR. PELLEGRINI: No, not in light of Mr. Terrero's response.

MR. FEIL: Okay. Thanks.

A What's that, 45?

Q (By Mr. Pellegrini) Page 45. I'd like for you to read for me what your statement was at Lines 12 through 15, please.

A We were trying to negotiate an interconnection with the county.

Q Continue, please.

A And we'll negate a need to install additional equipment and take more analyses.

Q This interconnection is yet to be accomplished, I understand?

A Come back with that again?

Q The interconnection has not been accomplished at this point?

A I could not assure you of that.

Q After this interconnection occurs, will the

existing sources of supplies, iron filters and hydro tank still be used? Take each one in turn. First, the source of supply.

MR. FEIL: I have an objection of sorts here. I don't know what issue this goes to in terms of facilities being taken off line.

MR. PELLEGRINI: Used and useful calculations. Issue 45 particularly.

MR. FEIL: Aren't you asking a retirements question?

MR. PELLEGRINI: That's the thrust of the question, are these facilities to be retired following interconnection or not. That's what I'd like to know.

MR. FEIL: Well, that's not really a used and useful question, that's whether or not plant should be retired. And there's no issue on whether or not plant should be retired.

MR. PELLEGRINI: Well, whether they remain in service or they do not has a bearing on the used and useful calculation. It doesn't necessarily follow that they will be retired if interconnection is accomplished.

CHAIRMAN CLARK: Go ahead, Mr. Pellegrini.

MR. FEIL: Could you repeat the question for Mr. Terrero, please?

Q (By Mr. Pellegrini) After the interconnection occurs in turn, will the existing source of supply still be used?

A It might be the case. If we have more than 150 connections, I don't know the number of connections we have at this Utility.

Q What about the pumps?

A The same with the pumps. If we are going to have dual service, it means that we have to have all the service in case one fails. Let's say, for example, Citrus County goes down for any reason, we should be able to provide service to our customers.

Q And the iron filters?

A We have that there for a purpose, and the interconnection doesn't mean that if we have to pump from the existing well that the iron filters should be retired.

Q And the hydro tank?

A The same.

Q Then it would appear your intention is leave the system in service as a backup to the interconnection?

A Like I said, if it's over 150 connections, it should be left as a second source.

Q With respect to the reverse osmosis wells on

Marco Island and your discussion on Page 57 of your testimony --

A What lines?

Q I don't need to refer you to a particular line at this point, but just let me ask you this in reference to that testimony on that page. It is true, is it not, that the Utility has recently drilled five new reverse osmosis wells on Marco Island?

A Yes, sir.

Q And it's true, isn't is, that the Utility is in the process of getting the wells cleared for operation?

A Yes, sir.

Q And further, isn't it true that these five new wells have the potential of adding 3,000 gallons per minute or 4.3 million gallons per day capacity to reverse osmosis plant?

A I don't know what the total capacity, individual capacity, of the wells are.

Q Would you accept those numbers, subject to check?

A Yes. But what I'm thinking of, Mr. Pellegrini, is that the total capacity that we are going to have on well water is 8.2, and the wells are going to be rotated so we don't damage the aquifer.

Q Is it not true then that this adds enough raw water to supply the reverse osmosis plant through its build-out capacity of 6.0 million gallons?

A Yes, sir.

Q It's true, is it not, Mr. Terrero that SSU recently issued a drinking water advisory to residents of Marco Island concerning elevated lead levels?

A Yes, sir.

Q Previously you agreed to supply this Commission with a copy of the test results. Do you have those available with you this morning?

A Yes, sir.

MR. PELLEGRINI: Could we have those test results introduced as an exhibit at this time?

CHAIRMAN CLARK: Mr. Pellegrini, do I need to mark this as an exhibit, or was it marked?

MR. PELLEGRINI: Yes, Chairman Clark.

CHAIRMAN CLARK: Okay. We'll mark it as Exhibit 231 and it is -- what is the short title again?

MR. PELLEGRINI: Marco Island lead test results.

CHAIRMAN CLARK: Why is the first thing on here a customer bill? Is that what it is? Have I misread it?

WITNESS TERRERO: The reason we have that on the top is because that was the last thing I received and I was trying to get copies in a hurry. And I just wanted to make sure that I had it there.

CHAIRMAN CLARK: Mr. Terrero, I just need to know. It's a bill to Harry Gorman in -- does that need to be part of the exhibit? Is it immaterial whether it's part of the exhibit?

WITNESS TERRERO: Yes, ma'am, because it has the notice that we sent to the customer that is supposed to put on the bill and all that.

CHAIRMAN CLARK: So it's Marco Island --

MR. PELLEGRINI: Well, I was going to in the next step ask for another exhibit which may be included in this material, and that concerns information given to the Marco Island customers by way of education on the matter of -- is that material included in this packet?

WITNESS TERRERO: It's all the lead information that we have, is included in here.

MR. PELLEGRINI: Including customer education?

WITNESS TERRERO: Everything, yes.

CHAIRMAN CLARK: How about this, Marco Island test results and related information. All

right, 231.

(Exhibit No. 231 marked for identification.)

WITNESS TERRERO: And this goes back to the year 1993 -- 1992, I'm sorry.

Q (By Mr. Pellegrini) Let me ask you a question in reference to Mr. Westrick's testimony last evening concerning the 1996 Capital Project's Plan. It was your earlier testimony that you believe if stand-alone rates were to be approved by this Commission, that certain of those projects stood to be eliminated. It was Mr. Westrick's testimony that irrespective of whether the rate structure were uniform or stand alone, that the 1996 Capital Projects Plan would go forward as it presently exists. Can explain the apparent conflict in those two statements or positions?

A Yes. I think Mr. Westrick went a little bit farther than that by stating that we were going to complete the projects that were in the MFRs for 1996. That, in addition to that, we have more projects that we would have to go back and take a look at them and analyze and see what's going to be done if we don't get the rates or we have the stand-alone rates.

Q Then it's still your position that under stand-alone rates certain of those projects would be

subject to elimination?

MR. FEIL: Well, for clarification, I think we are talking about two different sets of projects, and I thought that's what Mr. Terrero said. He was referring to the projects that were included in the MFRs and other budgeted projects.

MR. PELLEGRINI: My question at all times has been limited to the 1996 Capital Projects Plan.

CHAIRMAN CLARK: Mr. Pellegrini, do you mean the ones in the MFRs?

MR. PELLEGRINI: Let me check. (Pause)

Yes, we do.

WITNESS TERRERO: The 1996, like I said, 1996 that are included in the MFRs will be completed.

Q (By Mr. Pellegrini) Will be completed?

A Right. The additional projects we will have to evaluate.

Q This next question is really a matter of housekeeping, I think. Page 48 of your testimony, Lines 15 through 23, you appear to disagree with DEP Witness Ansag concerning the Holiday Haven water facility and the requirement for auxiliary power and presence or not of a well located on the site. Isn't it true that you do agree with Mr. Ansag's testimony?

A I can't recall what Mr. Ansag's position

was, that we didn't need it?

Q Yes.

A Yes, I agree with him.

Q Let me take you backwards one more time to Page 26.

MR. FEIL: As long as we take two steps forward and one step back, we are still making progress.

WITNESS TERRERO: Have you ever watched the Colombo series? We always go back.

Q (By Mr. Pellegrini) At Line 23.

A That's Page 26?

Q Yes. Tell me as briefly as possible, Mr. Terrero, what authority you rely upon in describing the facilities which you describe there as reuse facilities, which regulatory requirement.

A I believe that when we had the deposition, I mentioned to you that there is an MCD; a manual from EPA, MCD-05 which states about the Class 1 reliability. In addition to that you are supposed to have an F-1 limitation for public access, so you have to design your plant to meet that. This equalization basin, automatic screens, dual aeration, dual filters, dual chlorine contact chambers, substandard ponds, injection well, monitoring equipment, pumping

facilities and transmission mains, booster stations, percolation ponds and standby power are part of it.

Q Would you agree with me that a holding pond is distinguishable from a percolation or evaporation pond in that its purpose is to contain substandard effluent?

A Ask your question again, please?

Q Would you agree with me that a holding pond can be distinguished from a percolation evaporation pond in that it provides containment for substandard effluent?

A What do you call substandard effluent?

Q Effluent that is not at standard.

A But up to standard of what? There's different effluents. You can have an effluent that if you are going to public access, you have five suspended solids. If you are going to go to a perc pond, you have 20 suspended solids. So if you exceed the five, you'll go to the pond, the percolation pond. But then if you exceed 20, you might go to another line pond, which could be a holding pond.

Q Would you then agree with me that a percolation/evaporation pond could be considered a holding pond, but that a holding pond could not be considered a percolation/evaporation pond?

A Yes.

Q All right. The percolation ponds on Marco Island that you talk about on Page 27 of your testimony, are they holding ponds or strictly percolation or percolation/evaporation ponds?

A They are combination percolation ponds and also holding ponds. What I mean by that is that if by any reason the water table is high and I cannot percolate for any reason the 3.5 million gallons per day and my injection well is down, the capacity of the pond is such that it will hold for at least two weeks of repairs in the injection well.

Q And we have established that those ponds are used primarily by Marco Shores, primarily by Marco Shores?

A No. We are going back around in circles here. I say that the effluent for Marco Shores is going at this time. But the percolation ponds principal purpose is to be a backup for the irrigation system, for the reuse system, and also a backup for the injection well.

Q Marco Shores is not an advanced wastewater treatment plant, is it?

A That's correct.

Q And as a result Marco Shores produces no

reclaimed water; isn't that correct?

A That's correct.

Q Are there facilities available to pump the effluent from these ponds?

A No, sir.

Q All right. At Lines 14 on the same page, 14 through 18. I don't think this is the point that you addressed earlier, but you appear to be saying there that the effluent from the Marco Island wastewater treatment facility goes either to the golf courses, to the median or to the deep well, correct?

A Are we on Page 26?

Q 27, at Lines 14 through 18.

A Could you repeat that question again, please?

Q Yes. There you appear to be saying that the effluent from the Marco Island wastewater treatment facility goes either to the golf courses or to the median or to the deep well, the ASR well; is that correct?

A Correct.

Q If a utility has a wastewater plant and only one percolation pond, will that configuration, in your opinion, cause customers to reduce their demand on the water resource?

A No, sir.

Q And if it adds a second percolation pond, will that have that effect, that is to reduce the demand on the water source -- resource?

A It could be because you are recharging the aquifer.

Q But would that cause the customers to reduce their demand on the water resource?

A On the water resource, yes, that's what I'm saying, you're recharging the aquifer so less water will be coming out of the aquifer as a recharge from your wastewater. I think Mr. York addressed that pretty well.

Q Maybe you are not understanding my question because your answer this morning appears to be in conflict with your answer in deposition.

A Okay.

Q Let me try again. If there is a two-celled system, a second percolation pond, would the effect of that configuration upon customers be to reduce their demand on the water resource, the demand of the customers on the water resource, the aquifer?

A I think what we were talking about, what we talking in the deposition was different than the questions you're asking now, or at least I understood

it differently.

Q Well, granted that this configuration would have the effect of recharging the aquifer. That's not in question.

A Right.

Q But what is in question is the effect of that upon the demand that the users would place upon that aquifer.

A If you take the aquifer out, I will tell you it won't have any effect. But if you keep going back to the aquifer, I'll tell you that will have an effect.

CHAIRMAN CLARK: Mr. Terrero, you do agree that the perc ponds will replenish the aquifer?

WITNESS TERRERO: Yes, ma'am.

CHAIRMAN CLARK: But the perc ponds don't have the effect of substituting the reuse water for water that would be taken out of the aquifer.

WITNESS TERRERO: It will recharge the aquifer. And if it recharges the aquifer, it means that you are getting less water out of the original water, natural water that you had in that aquifer, so it's recharging the aquifer. That is what is reuse. That's one of the definitions that we have for reuse.

CHAIRMAN CLARK: But it is different than

other reuse in the sense it isn't a direct substitution.

WITNESS TERRERO: That's correct.

Q (By Mr. Pellegrini) Leaving that and turning to Page 31.

A Could I address, go back just one second here since we go back and forth. Let me say this on the -- I don't think that SSU has requested that all of our percolation ponds are reuse. I think in the MFRs we have requested only the reuse facilities where we reuse the water, like Marco Island, Deltona and thinks like that.

Q No, I think the point that we were trying to establish in that line of questioning was established with Chairman Clark's last question.

Now, turning please Mr. Terrero to Page 31 at Line 11.

A 31?

Q Yes, 31, please. Page 31, Line 11.

A Yes, sir.

Q You state there that the University Shores facility has been connected to Orange County reuse; is that true?

A I corrected my testimony the first day and I took that reuse out, even though --

Q All right. I've noted the change.

A Okay.

Q And later at Line 17 you state that the Seaboard facility has connected to the city of Tampa?

A That's correct.

Q Is there a reuse facility -- do these represent -- do these interconnections represent in either case an impact on 100% used and useful calculations?

A I don't know that, sir.

Q Would parts or parts of the University Shores facility and the Seaboard facility continue to be used in a reuse mode?

A I don't follow your question.

Q Just a moment, please. (Pause)

It's my understanding at the University Shores you've asked for 100% used and useful for that facility?

A I couldn't tell you. I didn't crunch the numbers.

Q For reuse?

A I couldn't tell you.

Q All right.

A All I know is the facilities we have there could be classified reuse, but I don't think -- I

think we have there a cemetary where we go for reuse and that would be 100% used and useful, yes.

Q In your knowledge, has the Utility ever permitted a plant for construction at a given capacity and then requested a smaller capacity for the final operating permit?

A I don't recall any system that we have done that.

Q You do not?

A No, sir.

Q Mr. Terrero, in response to a question which Chairman Clark asked you earlier in this proceeding, speaking about the transfer -- speaking about the Deltona site, you said the land and service would be in service in 1996.

A Which land was that? Clarify for me, please.

Q Well, in respect to Deltona you said the land and well would be in service in 1996.

MR. FEIL: You're talking about during his direct testimony?

MR. PELLEGRINI: I refer you to the hearing transcript at Volume 5, Pages 529 and 530, if that would help.

MR. FEIL: I don't believe we have the

transcript here right now. Would you like me to show it to him?

MR. PELLEGRINI: I'm not sure where the confusion exists. The question is directed to the Deltona land.

MR. FEIL: Right.

MR. PELLEGRINI: And whether or not it would be in service in 1996. The response to Citizen's Interrogatory 167 was that it was not known when the wells would be in service.

MR. FEIL: Commissioner, what is causing the confusion here, I believe, is Mr. Pellegrini is asking some questions pertaining I believe to Mr. Terrero's direct testimony and I'm not sure at all where if at all he addresses that in his rebuttal. Perhaps it would help Mr. Pellegrini to find the location in the rebuttal or provide the transcript he's referring to.

MR. PELLEGRINI: Let me see if we can sharpen up the question and come back with it.

CHAIRMAN CLARK: Okay.

MR. PELLEGRINI: Chairman Clark, I still have a fair amount of questioning. Do you want to break at this point?

CHAIRMAN CLARK: No.

MR. PELLEGRINI: All right.

CHAIRMAN CLARK: I'll break if you'll tell me it will help you cut down the questions and do the questioning more succinctly.

MR. PELLEGRINI: I'm not sure I can. I'll promise you I'll move ahead as fast as I can.

CHAIRMAN CLARK: Okay. We'll give you ten minutes.

(Brief recess taken.)

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CHAIRMAN CLARK: Call the hearing back to order.

MR. PELLEGRINI: I need the witness.

CHAIRMAN CLARK: Okay, Mr. Pellegrini.

Q (By Mr. Pellegrini) Mr. Terrero, to begin with, the let me go that Commission Order 22307. We passed you a copy of that order.

I'm directing your attention to the first full paragraph on Page 12 of that order.

A First paragraph.

Q I'm sorry?

A Which paragraph is that?

Q First full paragraph on Page 12 I'd like you to read that to yourself as quickly as possible.

(Witness complies)

Would you agree, Mr. Terrero, that the

Commission stated in that order that the commitment to fund line extensions to Deltona lot owners was an imprudent utility decision because to install lines which can serve more than the customers that are expected to connect in a reasonable time results in a utility plant that is not used and useful.

MR. FEIL: Objection. The order says what the order says. I don't know why Mr. Terrero has to agree that that's what the order says, especially if we've already taken administrative notice of it.

CHAIRMAN CLARK: Mr. Pellegrini, what is your question?

MR. PELLEGRINI: It's rather lengthy, but I asked Mr. Terrero if he would agree that there the Commission states that in order -- that the commitment to fund line extensions to Deltona lot owners was an imprudent utility decision because to install lines which can serve more than the customers that are expected to connect in a reasonable time results in utility plant not used and useful.

CHAIRMAN CLARK: Mr. Terrero, do you agree that's what the order says?

WITNESS TERRERO: Well, what I agree on is that we also find the cost of imprudent line extensions shall be borne by the Deltona Corporation.

That's all I can read here.

Q (By Mr. Pellegrini) But yes or no, would you agree with my question?

A And your question is, is it imprudent to extend the line to lots that don't have a home on it?

Q Was it an imprudent utility decision because to install lines which can serve more than the customers that can be expected to connect in a reasonable time results in a utility plant not used and useful?

A I think at the time the lines were extended were to serve the customer and to serve the purpose of serving the customers.

Q Mr. Terrero, I want to push through these remaining questions as quickly as possible so I'd appreciate it if you'd give me a yes or no answer and constrain your remarks to as few as possible.

I'm going to ask you some questions now with reference to your testimony, rebuttal testimony, at Page 25, concerning inflow and infiltration.

A That's Page 25.

Q Yes.

A Okay.

Q Isn't it correct that wastewater treated by plants normally consists of first, sewage; second,

inflow and infiltration -- second, inflow and third, infiltration?

A Generally, yes.

Q Isn't it correct that for engineering planning purposes, actual sewage can be estimated as a percentage of the water used by customers when water usage is known?

A If you know the water usage.

Q Yes? No?

A It could be.

Q Is it not correct that many references such as EPA Handbook for Sewer Evaluation and Rehabilitation recommends an average of 70% to 90% of water sold to a residential customer should be returned as sewage?

A That is infiltration. That's not excessive infiltration.

Q No. No. Sewage?

A I'm talking about sewage, yes.

Q I'm asking --

CHAIRMAN CLARK: Mr. Pellegrini, I think sometimes there may be confusion in just what you're asking.

Is it reasonable -- according to those rules, is the estimate usually between what is it, 70

and 80% of water used in a household is returned through the sewer?

WITNESS TERRERO: Usually the system is new, yes.

Q (By Mr. Pellegrini) You have before you exhibit marked 226. The EPA Handbook excerpt. Do you have that before you?

A Yes, sir, I do.

Q Is the EPA handbook which I referred to in the previous question, is that the same as your exhibit RAT-9?

A The cover page is the same.

Q Is it the same?

A Yes, it is.

Q Then can we not say that the method of using water flows to estimate wastewater flows is accepted and endorsed by the EPA?

A Wastewater flow, yes.

Q Since then we can estimate legitimate wastewater flows with reasonable accuracy. Any additional flows, would you not agree, should be considered infiltration and inflow?

A No.

Q Please explain.

A I believe that this, what you just handed

me, it says "This method uses the water supply record for the purpose of estimating the amount of domestic wastewater discharged to any sanitary sewer system." I don't see anything about anything else. I mean, there's no allowance for any infiltration that is in the standards.

Q Only for the purposes of estimating sewage are we -- that's what we're concerned about, only the method for estimating sewage or wastewater flow.

A I agree that you can go about 80% to 90%. But this is actually an accounting way. You're not doing an engineering evaluation, really.

Q All right. The EPA Handbook on Sewer System Infrastructure Analysis and Rehabilitation recommends a method for calculating total wastewater flows as 120 gallons per capita per day. This amount being derived from 80 gallons per capita per day actual sewage and 40 gallons per capita per day as I&I. Do you agree with that?

A Where do you see that, sir?

Q From your Exhibit RAT-9.

A Is that Page 7?

Q Page 2. Page 2 of 2 of the exhibit, but Page 7 at the bottom.

A Okay.

Q Do you see that and do you agree with what I just said?

A Yes.

Q All right. Is it not true that one problem with this method is that the actual length of collection mains is disregarded?

A What do you mean by that?

Q In other words, at EPA method would allow 40 gallons per capita per day infiltration and inflow whether there was one mile or hundred miles of collection mains?

A That's correct. It's based on the population. Doesn't estimate for pipe.

Q All right.

A But what they are looking at here is excessive infiltration. And they are saying in this report --

Q I think you responded to the question adequately, Mr. Terrero.

A I'm trying to clarify for the Commission.

Q All right.

A "No further I&I analysis will be necessary if domestic wastewater plus nonexcessive infiltration does not exceed 120 gallons per capita per day." And then "Total daily flow during a storm should not

exceed 275 gallons per capita per day."

Q Infiltration is caused by leaks in the collection system, would you agree?

A By what?

Q By leaks in the collection system.

A It could be, yes.

Q Would you agree that the larger a collection system, the more the possibility of infiltration?

A It depends on how old the system is.

Q Assuming systems of the same age.

A Yes.

Q Turning your attention to Exhibit 81, there you stated that there were five service areas with understated wastewater flows and a sixth which you added, Beatrice Point. Are you with me?

A No, I'm not.

Q Exhibit 81.

A I don't have that.

MR. FEIL: Did you say Exhibit 81?

MR. PELLEGRINI: Yes.

Q (By Mr. Pelligrini) Let me bring you a copy for reference purposes. (Hands document to witness.)

A Thank you.

Q The understated flows by your explanation were a direct result of understated populations caused

by the 2.7 conversion factor; is that correct?

A That's correct.

Q This conversion factor of 2.7 was used in calculations made for all of SSU's wastewater plants for the purpose of this analysis; is that not correct?

A That's correct.

Q Also in this exhibit you made no explanations for those service areas with overstated populations; isn't that true?

A What population was overestimated?

Q I think there was no exception for that possibility that that factor may have overstated the populations?

A Could you name me which ones are the ones that are overestimated? Do you know the existing rules require us to estimate on 3.5.

Q I'm asking you if you acknowledge the possibility of both overstatement and understatement of populations by the use of this factor, that's all I'm asking?

A This was an engineering analysis.

Q Do you recognize --

A It could be.

Q Then would you not agree with this, that if population is overestimated --

A No, sir --

Q Let me state the question, please.

A Sure.

Q If the population is overestimated, the EPA I&I analysis method that has been used by SSU would tend to mask excessive infiltration and inflow; is that correct?

A That is correct. But if we go to the regular study from the EPA we could have used 3.5.

Q All right. For example, Zephyr Shores is a service area composed almost entirely of retirees and part-time residents, would you agree?

A I could say yes.

Q Then would the 2.7 factor apply accurately in that case?

A Well, if you go like in the wintertime, they might have visitors from up north, and, you know, that when people come from up north they have four people in the car, so you've got six people in the house.

Q How about Sunny Hills?

CHAIRMAN CLARK: Mr. Terrero, I took that as a no, that you couldn't --

WITNESS TERRERO: Yes. Sorry.

CHAIRMAN CLARK: People always bring four people down from the north? Can we take that as a

fact? (Laughter)

WITNESS TERRERO: I always see their car filled up. I don't know. Maybe they're trying to save gas to go to dinner.

CHAIRMAN CLARK: Or is that a Floridian's view of the influx.

COMMISSIONER GARCIA: Mr. Terrero, I bought you a Cuban sandwich, which now is in doubt of you getting that sandwich if you don't try to be a little bit more direct with these answers. (Laughter)

WITNESS TERRERO: I'll be brief.

Q (By Mr. Pellegrini) Sunny Hills, would that not be an exception to the accurate use of the 2.7?

A It could be. I haven't gone and done a census analysis.

Q Approximately 10 service areas have been identified by Staff as probably falling into the categories of which Zephyr Shores and Sunny Hills are an example. Would you accept that as a possibility?

A I believe that, you know, if the Staff had a question on this, they should have asked the question before -- I couldn't analyze this on this witness stand.

Q Let me ask you this.

CHAIRMAN CLARK: Mr. Terrero, then, I take

it your answer is no.

WITNESS TERRERO: No. Thank you.

Q (By Mr. Pellegrini) In your opinion would an analysis which yields approximately 40% questionable results indicate a need for examining other possible errors in the analysis?

A Would you repeat the question?

Q Well, in your opinion an analysis method, and I'm referring specifically to Exhibit 82, that analysis yielded approximately 40% erroneous results by your own accounting. And I'm simply asking you if an analysis with that degree -- with that degree of error, would not there be a need to examine other possibilities of error in that analysis?

A If you have an analysis that's 40% off, you should go back and reanalyze the system.

Q And given that, would it not be appropriate to consider the application -- or a different method for the calculation of infiltration and inflow results?

A There might be other methods of doing it, yes.

Q Okay. Mr. Terrero, I'd like to ask you to provide as a late-filed exhibit total lift station purchase power expenses for the following facilities:

Holiday Haven, Jungle Den, Lehigh, Palm Court, Spring Garden, Sugarmill, Venician Village. Are you able to do that?

A I'm not responsible for that part of the operations. Probably Dave Denny could address that.

Q Mr. Denny.

MR. FEIL: Commissioners, for the record, Mr. Denny will be up shortly we all hope. I'm not sure whether or not at that point in time we're going to have an objection to that request. I mean, it seems to me like that if Staff was interested in that, they could have asked for it through discovery or, alternatively, offered their own witness regarding I&I. And the only thing -- although this is my opinion -- the only thing we have on I&I on the record right now is there could be 15 to 20 different ways of calculating I&I. And Mr. Terrero has already said that what was on Exhibit 81, I believe, was a preliminary analysis. Nobody asked for a detailed analysis of any kind that I'm aware of. And it seems to me like we're going in circles here.

MR. PELLEGRINI: I'm not sure we're going to ask that question of Mr. Denny, we may. But in any case we're asking for purchased power expenses, not recalculations of I&I.

MR. FEIL: Yeah. But they were asking for purchased power expense for the purpose of making an adjustment for account of I&I and there's no testimony in the record saying there's excess I&I anywhere.

MR. PELLEGRINI: I'll consult further with Staff, Chairman Clark.

CHAIRMAN CLARK: Okay.

Q (By Mr. Pellegrini) Mr. Terrero, one question concerning the Sugarmill Woods wastewater plant, which was referred to you, I believe, Mr. Goucher, and that concerns the headworks modification.

The question was asked of Mr. Goucher whether alternative solutions to the problem of wastewater surges had been considered. He was unable to answer that question and suggested you might be able to.

A The only thing I can say is when I was back as the chief engineer, we considered several ways of doing the plant, but I don't recall the details of this plant on this utility.

Q You don't recall what the alternative considerations were at this time?

A I don't recall which one we considered.

Q Let me refer you now to the exhibit entitled

"SSU's Response to Staff Interrogatory No. 99," that was an exhibit marked 229.

A What's the name of it? I don't have numbers on mine.

Q Response to Interrogatory No. 99. In this response -- do you have that?

A Yes, sir, I do.

Q In this response you refer to differences between the design capacity and DEP permitted capacity and then you offer various explanations; isn't that true?

A Yes. This was actually prepared by Chuck Bliss and I reviewed it.

Q Let me just ask you this: Has the Utility made any attempt to reconcile the differences?

A Which differences are that?

Q If the differences between design capacity and the DEP permitted capacity. Has the Utility -- the question simply is this: Has the Utility made any attempt to reconcile?

A I don't know. I don't know what this number actually represents. Let's take Amelia Island, for example, 4,032,000, I don't know what it represents if it is projected 18 months or projected three years.

Q All I'm asking you is whether you made an

attempt to reconcile the differences. I'm not asking you to explain them at this point.

A I imagine we did. I cannot explain it, though.

Q Do you know who might have a better understanding or better knowledge of that?

A Not at this time.

Q All right. Just one last line of questioning, Mr. Terrero.

Turn please to Page 70 of your rebuttal testimony.

A Lines?

Q All right. On Line 25, beginning on Line 25 there you state that the Arlington area is high in sulfur, correct.

A Hydrogen sulfide, yes.

Q And continuing on to the next page, at Lines 4 through 7 you state that improvements have been made at the Beacon Hills plant, correct?

A Correct.

Q Has the Utility conducted tests since the improvements were accomplished?

A I don't recall. I think that after we completed the improvements -- yes, we did have testing.

Q And are you familiar with the results of that testing?

A Yes, I am.

Q And can you briefly describe those results?

A We had some exceedances in lead action level.

Q Action level exceedances in lead you say?

A Yes.

Q On Page 73, Lines 1 through 4.

A Yes.

Q There you discuss the collection of water samples and the provision of results of the lead and copper test to the Duval County Public Health Unit. Were these testss taken?

A Were they taken?

Q Yes.

A Yes, they were.

Q Do the results of these tests show SSU being in compliance with lead and copper rules?

A Yes, we're in compliance.

What I've said is probably the action level was triggered, but still in compliance since we have all of the improvements in place.

Q All right. There you also say that SSU has installed equipment to optimize treatment at Beacon

Hills and Cobblestone. Do you see that?

A Yes, sir.

Q What equipment are you talking about there?

A We had equipment installed, chlorination equipment. In Cobblestone I believe that next Wednesday will be the final for the equipment to complete the improvements.

Q All right. On the same page at Line 23 and continuing to the following page you talk about copper plumbing and its reaction with the water in the area. Do you see that?

A Yes.

Q Would you agree that this condition in the Jacksonville area is not unique to SSU?

A It's not unique to SSU and not unique to the whole state and the whole country.

Q And you would agree that other SSU service areas have copper plumbing corrosion problems?

A We don't have copper corrosion problems. The owner of the residence has. We don't have control with what type of material they use.

Q Your answer to the previous question, notwithstanding, has SSU done anything to alleviate this condition in those other service areas?

A Yes, we have.

Q And what is that?

A We have installed equipment. We have obtained permits. We have done studies; whatever we're required to do. And in some cases we've gone beyond.

Q What's the appropriate step to take to actually diminish the corrosion problem, speaking as an engineer?

A Installing the corrosion inhibitor.

Q All right. Is that something such as a chemical feed that would coat the inside of the lines for example?

A Yes.

MR. PELLEGRINI: We have no further questions, Chairman Clark.

COMMISSIONER CLARK: Thank you. Commissioners?

CHAIRMAN CLARK: Mr. Reilly.

MR. REILLY: Prior to redirect, I would like permission to ask just a few additional --

CHAIRMAN CLARK: Go ahead. Hurry up.

MR. REILLY: They handed out two additional RAT-3 exhibits. I wasn't too concerned about the second exhibit, but when the third one was published --

CHAIRMAN CLARK: Which one are you talking about?

MR. REILLY: This is RAT-3, it's map of the 212 acre.

CHAIRMAN CLARK: Which how now been marked as 230; is that correct?

MR. REILLY: Excuse me?

CHAIRMAN CLARK: I'm asking you --

MR. REILLY: That's the composite exhibit that was attached to is prefiled rebuttal testimony.

MR. FEIL: I believe the composite prefiled was 222.

MR. REILLY: 222. And I don't know that a number has been given to these two additional same maps. There was a second version and a third version. And I had a question concerning this third version, just a very few questions.

CHAIRMAN CLARK: I have one map.

MR. FEIL: Madam Chairman, there was one yesterday identified as Exhibit 228.

CHAIRMAN CLARK: Oh, okay.

MR. REILLY: The third one was handed out this morning. And do we have a number for it?

MR. FEIL: That was 230.

CHAIRMAN CLARK: There's only two. One

attached to rebuttal, is that correct?

MR. FEIL: Correct.

CHAIRMAN CLARK: Second is 228 and the third is 230.

MR. REILLY: I wasn't concerned about 228. It's merely the same thing as 222 with the exception of delineating the 212 acres. So no problem there. The surprise came with the third version, or Exhibit No. 230. I just had a few follow-up questions on that.

CHAIRMAN CLARK: Go ahead.

CROSS EXAMINATION

BY MR. REILLY:

Q And my question is, as I understood it when I studied this first exhibit that was attached to your rebuttal testimony, that these circles delineated the performance of the ASR facility.

I guess my question is, is the ASR facility a naturally formed geological formation that creates a natural impoundment or storage area? This is a natural storage areas that lies beneath this proposed ASR well; is that correct?

A It will be an artificial bubble that we'll be creating under the 212 acres.

Q What creates the ability to store water in

the ASR facility? Is it a natural geological formation that tends to cause the water to stay in a certain geographic area?

A Yes, sir.

Q And I understood these rings to mean -- and correct me if I'm wrong -- to define the location of the ASR facility.

For instance, looking at Exhibit No. 222, the first circle that says .99, what does that circumstance mean? Does that mean that 99% of the water that you would inject into this area could be expected to be available to be withdrawn at a later time?

A That's correct.

Q Likewise, the next line, it says .90. The ASR facility is continuing to perform at a very high level that you could expect 90% of the water put in there would be available to be withdrawn?

A No. What it means is 90% of the combination of the natural water and the water you injected -- 90% of the water that you injected is actually going to mix with 10% of the existing water and will be withdrawn from there.

Q Okay. And then your performance begins to fall down considerably by the third line; your ASR

facility is now performing at about 50%; mixture of existing water --

A Correct.

Q And -- okay. So that I understood. But then we come to Exhibit 230 and a lot of things seem to be changing. And the -- are they changing because you're injecting more water or you're injecting water at different locations as a result of the second and third well being put in? It seems that the performance of your ASR facility is changing both in shape and materially changing in its performance, because the 50% line in your third exhibit is 100% further out than it was in the first exhibit.

A What happened, I explained that before, is that since we have completed one of the wells that the proposed monitor well, we've seen we're going to need more than one well to inject it. So we added the additional wells in that areas, in the 212 acres. And that is the shape that it's going to take as you inject it and as you take them out.

MR. FEIL: For clarification, I'm not clear whether or not Mr. Terrero is talking about adding the wells as though they had existed already, or that SSU was considering adding those wells.

MR. REILLY: None of these wells exist

currently, correct?

WITNESS TERRERO: One well, the proposed -- the deep monitor well is drilled.

Q Is drilled. Okay.

I guess my last question is, I can see how the 50% line would extend out further as you added additional wells in a northerly direction, but why would the 50% line that's located southerly of the first well extend out so much further as a result of wells being put in in the more northerly direction. Why is this ASR facility performing materially different in this diagram as it performed first diagram?

A Because it had been reevaluated.

Q Excuse me?

A Reevaluated. What it means is, we have installed more wells in accordance with to the tests that we have had from the well that we just drilled.

Q Okay.

CHAIRMAN CLARK: Thank you. Redirect.

MR. FEIL: I don't know whether or not you want to break?

COMMISSIONER CLARK: No, I don't.

MR. FEIL: I will probably have at least a half hour.

CHAIRMAN CLARK: Go ahead.

REDIRECT EXAMINATION

BY MR. FEIL:

Q Mr. Terrero, on my questions here I'm going to be refreshing your recollection to a degree as to what was happening yesterday. I'm going to go in reverse order.

When Mr. Reilly initially asked you some cross questions yesterday evening, he mentioned the distance between the 160-acre site and the 212-acre site, and acted surprised about the distance.

Could you tell me what is the strategic significance in terms of the location of the relationship between the 168-acre site and the 212-acre site where the Collier lakes are.

A The relationship between them is about 5 miles distance, although it should be noted that that is not a great distance. Actually, we're pumping from the lakes to Marco Island is nine miles, and actually the proposed city of Naples was another nine miles, so that would have been 18 miles. So 5 miles to the 160 acres is no engineering feat.

Q And was it your testimony -- or is it your testimony that one of the advantages of the 160-acre site pumping to the 212-acre site was that SSU could

take advantage of existing pumping facilities?

A Yes, indeed. We will use all the pumping facilities we have there, most of the piping. The piping to the proposed wells will be minor compared with if we had to develop a system there.

Q Okay. Mr. Reilly also asked you a number of questions last night concerning Marion Oaks and the incremental expansion for Marion Oaks. You were discussing, in your testimony, if I could find the page,

A 7.

Q Page 7, thank you Mr. Terrero. You were discussing the phasing of that facility.

Could you explain whether or not the phasing that you mention here in your testimony concerns the phasing in accordance with a permit, or in accordance with an expansion plan or what exactly what are you referring to?

A Actually what I refer here is the permit that we have. The actual existing way that we were planning to expand is in a phasing way we go from 70,000 to 200,000 to 500,000 to a million gallons. That phasing is not as reflected in this here. That's the way we usually --

Q So was the planned phasing you are referring

to, as opposed to this permitted phasing, designed or structured so as to allow the Utility to take advantage of economies of scale?

A That's correct.

Q One of his questions Mr. Reilly asked you about whether or not this sort of scenario illustrated the dangers -- he used the term "dangers" -- of economy of scale.

Do you believe that any of SSU's used and useful proposals in this case present a situation that reflects some danger to utilizing an economy of scale?

A No, sir.

Q And why is that?

A Because five years is not even what the EPA requires you make an evaluation of. The EPA, when you do the capacity analysis report, operation and maintenance performance report, they go on a ten-year basis. That's why I keep saying that ten years is my limitation, even though we have requested five years.

Q Thank you. Mr. Reilly also asked you some questions last night concerning fire flow, and those references in your testimony were during some identified events caused pressures to go below 20 psi in some locations.

My recollection was that for the Deltona

service area, you said that the event you were describing was an emergency forest fire?

A That's correct.

Q Okay. And Mr. Biddy, in his testimony, does he address emergency storage? And if so, how does he address emergency storage?

A I believe he addresses emergency storage a as the minimal amount that you can have. And I believe the way we are proposing the storage is the way we should go at it. You're supposed to have a storage to be able to have emergency and be able to tackle the emergencies.

One other area that actually suffered when we had a fire was Marco Island. And actually we installed a booster pump to the high areas of Marco Island so that wouldn't happen again.

Q So you are saying in the situation where the pressure went below 20 psi in Marco Island, that that situation has been corrected by the addition of these booster stations?

A That's correct.

Q Okay. Now, for the Marco Island fire event that you were describing, what exactly was the circumstances of that event?

A There was a condominium under construction,

and they were working on the roof, and working with fires, they put tar on the roof and fire erupted. We were lucky that was kind of an isolated building and we were not close to other buildings. We have not been able to meet the demand and we emptied one of the tanks completely.

Q So on both of the fire flow events that you have described in your testimony, they were, the fire flow demands were met by emergency storage at least in part, if not in total?

A Definitely.

Q Do you believe that the fact that at that point in time there were portions of the distribution network that went below 20 psi should be used as justification for disallowing fire flow in this case?

A No.

Q Why is that?

A Probably we should get some money to install more lines.

Q I believe it was Mr. Twomey who asked you some questions regarding the Beacon Hills wastewater treatment plant. I think he may have even handed you a copy of a permit from the additional engineering information.

Could you tell me whether or not or what

process SSU would have to go through to expand the Beacon Hills plant from the .836 extended aeration operation to the 1.678 contact stabilization mode.

A Well, even though we have a permit, we don't have a permit to construct the facilities as of today. So what it means, we have to plan, design, get bids, construct, permit, fight any third parties, and then construct the facilities.

Q The flow figures that Mr. Twomey showed you with respect to Beacon Hills, do you know whether or not those flow figures included the five-year margin reserve?

A Yes, they did.

Q Mr. Twomey and Mr. Pellegrini now also have asked you a number of questions regarding the hydraulic analysis.

A Yes, sir.

Q And Mr. Twomey asked you to compare the results of used and useful according to the hydraulic analysis and the lot-to-lot comparison of used and useful. Do you recall those questions?

A Sort of, yes, sir.

Q As part of your answer to one of the questions -- and I believe as part of your answer to one of the questions that Mr. Pellegrini was asking,

as well -- you were describing a situation of reducing line sizes. Could you elaborate on your answer, as it was somewhat unclear?

A I guess what I was talking about, that I did a comparison of the cost that we have requested in our used and useful based on the footage that we have installed. And it came out that, for example, at Sunny Hills, what we are requesting actually looking at the real engineering way of doing this is about 54 cents per foot of pipe. Mr. Biddy, which he uses a lot count, he is allowing me about 18 cents per foot of pipe.

I think it is irrational to have a system like that which is serving the customers. I believe that if I would run a Cybernet, and I did, and I installed two-inch lines in all of Sunny Hills -- and I would be glad to share that with the Staff or whatever -- we have pressures of minus 2,000 psi.

If I would request this of somebody from my staff to analyze the system and they come to me with a minus 2,000 psi in the distribution system, I will fire them on the spot.

Q I want to make sure I understand your testimony. You said you were comparing the amount of used and useful investment that Mr. Bidly proposed for

Sunny Hills?

A That's correct.

Q What were you comparing it to again?

A To the amount that we are proposing.

Q Okay. And you said you had run a Cybernet model with what line size?

A A two-inch line.

Q And why did you use a two-inch line to run the model?

A I went ahead, with the 54 cents that I'm requesting, I went to Lowe's hardware and bought a whole bunch of pipe. And all I can afford is two-inch pipe with that amount of money.

Q So you're saying that Mr. Biddy's level of used and useful investment is such that SSU could not provide service?

A That's correct.

Q Can you tell me, Mr. Terrero, the hydraulic analysis, is the build-out condition overstated or understated when SSU uses existing supply sites for determining build-out flows?

A With existing sites, we are understating. And I had the chance also to run a Cybernet using the proposed sites and actually the used and useful went up higher than what we had. Actually went from

34%-some to 37%-some.

Q So you're saying that if SSU had included as part of the build-out condition proposed future source of supply sites, then the used and useful would have been higher?

A That's correct. And I also throw in a pipe which didn't exist or doesn't exist in order to supply the water to the facilities.

Q All right. Now, the two numbers that Mr. Twomey had you compare were the hydraulic analysis numbers and a lot-to-lot comparison which resulted in a percentage figure. Could you tell me whether or not that lot-to-lot percentage figure is an appropriate way for making such a comparison?

A No. I think this is, it is irrational to me to use the lot count method to do anything with it. I don't believe that represents a real engineering or even accounting way of doing an evaluation.

Q Does a lot-to-lot comparison take into account any master meters for large-sized customers?

A No. The lot-to-lot count doesn't account for any multifamily areas; it doesn't account when one home can occupy more than one lot; it doesn't count for the amount of unbuildible lots that you have; it doesn't account for redevelopment that can occur.

I mean, I can go on and on for three days and I want to have my sandwich.

MR. FEIL: You're going to have to wait for that.

CHAIRMAN CLARK: Mr. Feil, we are going to take a break for lunch. And we will come back at that at 12:35.

MR. FEIL: That's fine, thank you.

CHAIRMAN CLARK: I hope you will use that time to consolidate your questions.

MR. FEIL: My questions are very brief.

CHAIRMAN CLARK: Thank you.

(Thereupon, lunch recess was taken at 12:05 p.m.)

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(Transcript continues in sequence in Volume 40.)

DOCKET 950495-WS
EXHIBIT NO. 229
CASE NO. 96-04227

EXHIBIT NO. 229

WITNESS: RAFAEL TERRERO

DOCKET NO. 950495-WS

APPLICATION FOR RATE INCREASE BY

SOUTHERN STATES UTILITIES, INC.

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DESCRIPTION:

SSU RESPONSE TO STAFF INTERROGATORY NO. 99
HYDRAULIC CAPACITY VS. DEP PERMITTED CAPACITY
FOR WATER AND WASTEWATER PLANTS

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 950495 EXHIBIT NO 229
COMPANY/
WITNESS:
DATE: 4/25/96

SOUTHERN STATES UTILITIES, INC.
DOCKET NO.: 950495-WS
RESPONSE TO INTERROGATORIES

REQUESTED BY:	FPSC
SET NO:	2
INTERROGATORY NO:	99
ISSUE DATE:	10/11/95
WITNESS:	Bliss/Terrero
RESPONDENT:	Charles M. Bliss

INTERROGATORY NO: 99

For any water or wastewater plant owned by SSU and involved in this docket, is the hydraulic capacity of the facilities greater than the Department of Environmental Protection (DEP) permitted capacity of the facilities?

a) If so, list which plants are affected.

b) Explain for each plant why the hydraulic and DEP permitted capacities are different, and what improvements need to occur to increase the permitted capacity to match the hydraulic capacity.

c) For these plants, when is the expected date (month and year) of requests to changes in permitted capacities and for plant improvements that change capacity.

RESPONSE: 99

a and b) Please see Appendix 99-A which summarizes the hydraulic plant capacity vs the FDEP permitted capacity. There are separate tables for water and wastewater plants.

The FDEP does not issue an Operating Permit for water plants. FDEP does issue permits to construct water plants and for water plant modifications/interconnection/additions. We have researched our files for water plant construction permits and permits to make modifications or improvements in an effort to see what, if any, difference exists between the hydraulic water plant capacity, the reliable water plant capacity, and the "permitted plant capacity" or the "design capacity." Because SSU was not the original owner of these plants, SSU's files often do not contain all the original permits authorizing the construction of public water systems. However, our files do contain original applications to the FDEP where SSU has requested modification to a plant by the addition of new wells, upgrading of well pumps, storage tank additions, high service pump additions, etc. When the FDEP issues a permit to make such modification, it often states the rated plant capacity. Those numbers were used in the table where applicable.

In those cases where SSU's files did not contain original construction permits, SSU referred to the latest Sanitary Survey for the "design capacity" in developing the table. This data shown in the Sanitary Surveys often does not match the plant capacities shown in the F-3 Schedules . Some of the Sanitary Surveys were done some years ago and do not reflect improvements in pumps or other facilities that increase the hydraulic capacity. Additionally, it appears that some of the design capacities shown on the Sanitary Surveys are 50% of the well pump capacity with no apparent explanation. This occurs for Friendly Center, East Lake Harris, Fern Terrace, Lake Ajay, Morningview, Palisades, Sugarmill Woods, University Shores, and Venetian Village. These are all instances where the hydraulic capacity is greater than the so-called "permit capacity."

Another reason for such differences is that the assumptions used to define "design capacity" by the DEP engineers who have inspected the plants may vary from engineer to engineer. This is evident for the Grand Terrace water plant where the single well pump is rated 600 GPM or 864,000 GPD as stated in the MFRs

and on the Sanitary Survey. Yet, the engineer who prepared the Sanitary Survey also states that the design capacity is 360,000 GPD with no apparent explanation. Similar discrepancies appear for Buenaventura Lakes, Crystal River Highlands, Druid Hills, Dol Ray Manor, Hobby Hills, Holiday Haven, Lake Harriet, where the hydraulic capacity of the plant (either total or reliable) exceeds the design capacity as stated on the Sanitary Survey.

In the case of the Fox Run plant, several improvements were made under Permit No. WC43-176328 including additional new well, additional high service pump, additional iron filters, and new auxiliary generator As stated in that permit, the plant shall have a design rating of 120,000 GPD. Yet, the wells have a total capacity of 850 GPM and a reliable capacity of 350 GPM which far exceeds 120,000 GPD. The high service pumps have a capacity of 850 GPM and 500 GPM reliable capacity which also exceeds the 120,000 GPD. There is simply no explanation for this plant being "permitted" for 120,000 GPD.

The "plant capacity" is irrelevant in a used and useful analysis that examines each major plant component, with each component often having different capacities. Additionally, a different set of design criteria is used to evaluate the various components included in the used and useful determination presented in the F Schedules.

For the wastewater plants, with very few exceptions, the hydraulic capacity of the plant should equal the capacity stated on the most recent FDEP Operating Permit. The only exceptions are at plants where effluent disposal capacity is a limiting factor.

c) For those plants that have an actual hydraulic capacity that is greater than the permitted capacity, such as Fox Run for example, the Company has no plans to request changes in the permitted capacity.

APPENDIX 99-A
SUMMARY OF HYDRUALIC CAPACITY & PERMITTED CAPACITY - WATER

Line No.	(1) Plant Name	(2) County	(3) Total Hydraulic Capacity Per MFRs (Gallons)	(4) Reliable Hydraulic Capacity Per MFRs (Gallons)	(5) FDEP Permit Capacity (Gallons)	
1	Amelia Island	Nassau	4,032,000	2,016,000	3,600,000	[6]
2	Apache Shores	Citrus	216,000	72,000	370,000	[6]
3	Apple Valley	Seminole	1,584,000	720,000	1,440,000	[6]
4	Bay Lake Estates	Osceola	396,000	0	384,000	[6]
5	Beacon Hills/Cobblestone	Duval	6,544,000	3,384,000	3,384,000	
6	Beecher's Point	Putnam	All Water Purchased From Town of Welaka			
7	Buenaventura Lakes	Osceola	6,768,000	3,168,000	5,040,000	[6]
8	Burnt Store	Charlotte/Lee	240,000	240,000	240,000	[24]
9	Carlton Village	Lake	244,800	100,800	144,000	[6]
10	Chuluota	Seminole	1,152,000	432,000	429,187	[6]
11	Citrus Park	Marion	410,400	197,280	504,000	[6]
12	Citrus Springs	Citrus	2,160,000	1,440,000	2,600,000	[6]
13	Crystal River Highlands	Citrus	432,000	216,000	69,000	[12]
14	Daetwyler Shores	Orange	All Water Purchased From Orange County			
15	Deep Creek	Charlotte	All Water Purchased From Charlotte County			
16	Deltona Lakes	Volusia	17,208,000	13,608,000	22,500,000	[6]
17	Dol Ray Manor	Seminole	720,000	360,000	450,000	[6]
18	Druid Hills	Seminole	720,000	288,000	576,000	[25]
19	East Lake Harris Estates	Lake	201,600	0	144,000	[18]
20	Enterprise	Volusia	All Water Purchased From Deltona Lakes			
21	Fern Park	Seminole	360,000	0	533,000	[6]
22	Fern Terrace	Lake	259,200	0	126,000	[14]
23	Fisherman's Haven	Martin	144,000	0	N/A	
24	Fountains	Osceola	432,000	115,200	180,000	[6]
25	Fox Run	Martin	1,224,000	504,000	120,000	[16]
26	Friendly Center	Lake	144,000	0	72,000	[18]
27	Geneva Lake Estates	Bradford	403,200	144,000	N/A	
28	Gibsonia Estates	Polk	410,400	93,600	888,000	[7]
29	Golden Terrace	Citrus	All Water Purchased From City of Inverness			
30	Gospel Island	Citrus	72,000	0	57,000	[6]
31	Grand Terrace	Lake	864,000	0	360,000	[6]
32	Harmony Homes	Seminole	432,000	0	55,000	[6]
33	Hermits Cove	Putnam	158,400	0	130,000	[6]
34	Hobby Hills	Lake	468,000	216,000	126,000	[6]
35	Holiday Haven	Lake	All Water Purchased From Town of Astor			
36	Holiday Heights	Orange	316,800	0	40,000	[6]
37	Imperial Terrace	Lake	576,000	0	216,000	[6]
38	Intercession City	Osceola	468,000	108,000	214,772	[6]
39	Interlachen Lake Est/Park Manor	Putnam	489,600	230,400	432,000	[6]
40	Jungle Den	Volusia	All Water Purchased From Town of Astor			
41	Keystone Club Estates	Bradford	1,080,000	540,000	N/A	
42	Keystone Heights	Clay	1,771,200	979,200	1,483,000	[6]
43	Kingswood	Brevard	All Water Purchased From Brevard County			
44	Lake Ajay Estates	Osceola	288,000	144,000	144,000	[17]
45	Lake Brantley	Seminole	144,000	0	127,000	[19]
46	Lake Conway Park	Orange	All Water Purchased From Orange County			
47	Lake Gibson	Polk	1,584,000	576,000	878,000	[7]

APPENDIX 99-A
SUMMARY OF HYDRUALIC CAPACITY & PERMITTED CAPACITY - WATER

Line No.	(1) Plant Name	(2) County	(3) Total Hydraulic Capacity Per MFRs (Gallons)	(4) Reliable Hydraulic Capacity Per MFRs (Gallons)	(5) FDEP Permit Capacity (Gallons)	
48	Lake Harriet	Seminole	576,000	0	240,000	[6]
49	Lakeside	Citrus	2,016,000	576,000	1,300,000	[20]
50	Lakeview Villas	Clay	36,000	0	36,000	[6]
51	Lehigh	Lee	2,500,000	2,079,360	2,500,000	[6]
52	Leilani Heights	Martin	676,800	144,000	N/A	
53	Leisure Lakes	Highlands	504,000	72,000	240,000	[6]
54	Marco Island	Collier	9,000,000	7,699,680	9,000,000	[28]
55	Marco Shores	Collier	720,000	720,000	720,000	[6]
56	Marion Oaks	Marion	1,728,000	864,000	1,400,000	[6]
57	Meredith Manor	Seminole	1,656,000	432,000	447,450	[6]
58	Morningview	Lake	612,000	0	306,000	[21]
59	Oak Forest	Citrus	907,200	216,000	864,000	[11]
60	Oakwood	Brevard	All Water Purchased From Brevard County			
61	Orange Hill/ Sugar Creek	Polk	326,440	80,640	360,000	[8]
62	Palisades	Lake	1,152,000	0	576,000	[15]
63	Palm Port	Putnam	144,000	0	60,000	[6]
64	Palm Terrace	Pasco	230,400	0	N/A	
65	Palm Valley	St. Johns	All Water Purchased From Intercoastal Utilities			
66	Palms Mobile Home Park	Lake	187,200	0	62,000	[13]
67	Picciola Island	Lake	396,000	144,000	216,000	[22]
68	Pine Ridge	Citrus	1,656,000	792,000	1,461,000	[6]
69	Pine Ridge Estates	Osceola	468,000	180,000	136,530	[6]
70	Piney Woods	Lake	288,000	0	375,000	[6]
71	Point O' Woods	Citrus	1,800,000	720,000	175,000	[2]
72	Pomona Park	Putnam	136,800	50,400	158,000	[6]
73	Postmaster Village	Clay	576,000	288,000	536,000	[6]
74	Quail Ridge	Lake	936,000	0	89,775	[6]
75	Remington Forest	St. Johns	69,120	0	72,000	[6]
76	River Grove	Putnam	194,400	0	220,000	[6]
77	River Park	Putnam	259,200	129,600	225,000	[6]
78	Rosemont/Rolling Green	Citrus	1,245,600	93,600	87,900	[3]
79	Salt Springs	Marion	767,520	191,520	456,000	[6]
80	Samira Villas	Marion	122,400	0	122,000	[6]
81	Silver Lake Est/Western Shores	Lake	3,333,600	1,893,600	2,632,000	[23]
82	Silver Lake Oaks	Putnam	57,600	0	58,000	[6]
83	Skycrest	Lake	972,000	252,000	108,000	[26]
84	Spring Gardens	Citrus	259,200	129,600	170,000	[6]
85	St. John's Highlands	Putnam	108,000	0	140,000	[6]
86	Stone Mountain	Lake	144,000	0	N/A	
87	Sugar Mill	Volusia	475,200	302,400	403,000	[9]
88	Sugarmill Woods	Citrus	6,912,000	5,048,000	3,456,000	[10]
89	Sunny Hills	Washington	1,008,000	432,000	1,584,000	[6]
90	Sunshine Parkway	Lake	2,592,000	1,440,000	1,512,000	[6]
91	Tropical Park	Osceola	432,000	144,000	648,000	[6]
92	University Shores	Orange	7,344,000	5,184,000	3,580,000	[6]

APPENDIX 99-A
SUMMARY OF HYDRUALIC CAPACITY & PERMITTED CAPACITY - WATER

Line No.	(1) Plant Name	(2) County	(3) Total Hydraulic Capacity Per MFRs (Gallons)	(4) Reliable Hydraulic Capacity Per MFRs (Gallons)	(5) FDEP Permit Capacity (Gallons)	
95	Welaka/Saratoga Harbor	Putnam	267,840	109,440	426,000	[6]
96	Westmont	Orange	All Water Purchased From Orange County			
97	Windsong	Osceola	259,200	0	504,000	[6]
98	Woodmere	Duval	4,320,000	1,440,000	N/A	
99	Wootens	Putnam	36,000	0	36,000	[6]
100	Zephyr Shores	Pasco	172,800	0	[4]	

[1] However, plant capacity is limited to WUP of 340,000 GPD.
[2] Per Permit No. WC09-207585 issued 9/3/92.
[3] Based on "average raw water supply"
[4] Capacity not specified in Permit No. WC51-239848 dated 4/21/94 for major plant improvements.
[5] For WTP #1 only as outlined in Permit No. WC43-235395.
[6] Per latest Sanitary Survey "Max Day Design Capacity"
[7] Per Permit Application to Interconnect Gibsonia & Lake Gibson dated 1/18/90.
[8] Per Appl. For Construction Permit to interconnect these 2 plants dated 7/30/81.
[9] Per Appl. For Wellfield Expansion dated 3/16/90.
[10] Per Permit No. WC09-193319 issued 8/9/91
[11] Per Permit No. WC09-257787 issued 12/22/94.
[12] Per Permit No. WC09-248965 issued 11/30/94.
[13] Per Permit No. WC35-210288 issued 4/18/92.
[14] Per Permit No. WC35-192001 issued 2/22/91.
[15] Per Permit No. WC35-181725 issued 8/31/91.
[16] Per Permit No. WC43-176328 issued 2/25/91.
[17] Per Permit No. WC49-263471 issued 7/1/94.
[18] Per Permit No. WC35-257007 issued 11/4/94.
[19] Per Permit No. WC59-256854 issued 09/28/94.
[20] Per Original Appl. to modify plant dated 3/20/89.
[21] Per Permit No. WC35-229461 issued 06/15/93.
[22] Per Permit No. WC35-214487 issued 02/02/93.
[23] Per Permits No. WC35-266211 issued 04/04/95 for Silver Lk and WC35-266209 issued 03/28/95.
[24] Per Permit No. WC08-244270 issued 03/14/94.
[25] Per Permit No. WC59-225027 issued 02/25/93.
[26] Per Permit No. WC35-162398 issued 06/11/91.
[27] Per Permit No. WC35-218755 issued 09/28/92.
[28] Per Permit No. WC11-180679 issued 12/07/90 for RO plant and WC11-6022 issued 6/28/79 for lime plant.
N/A No information avilable in our Permit Records and/or no Plant Capacity filed in on Sanitary Survey.

Response To OPC Document Request No. 278

	Used & Useful Determination Test Year 1994	Lehigh	Marco Shores	Marco Island
1	Average 5 Highest Days in the Max			
2	Month - 1994	1,661,200	403,171	9,924,600
3	ERCs 1994	8,898	432	13,983
4	ERCs w/ 18 Mo. M.R.	9,159	543	14,591
5	Average 5 Highest Days in the Max	1,710,023	506,764	10,356,135
6	Month w/ M. R.(Line 2/3 x Line4)			
7	Fire Flow (GPM)	2,000	750	4,500
8	Fire Flow Storage (Gallons)	240,000	180,000	1,080,000
	Supply Wells:			
9	Total Capacity (GPM)	1,900	N/A [1]	7,431
10	Reliable Capacity (GPM)	1,444	N/A [1]	5,347
11	U&U=(Line5/1440)/Line10	82.24%	N/A [1]	134.50%
12	Requested U&U	100.00%		100.00%
	High Service Pumps:			
13	Total Capacity (GPM)	4,250	2,700	22,700
14	Reliable Capacity (GPM)	3,000	1,500	17,700
15	U&U=((Line5/1440)+Line7)/Line13	106.25%	73.46%	66.06%
16	Requested U&U	100.00%	96.92%	100.00%
	Water Treatment Equipment:			
17	Total Capacity (GPM)	1,736	500	6,250
18	Reliable Capacity (GPM)	1,736	500	6,250
19	U&U=(Line5/1440)/Line16	68.41%	70.38%	115.07%
20	Requested U&U	78.30%	70.38%	100.00%
	Finished Water Storage:			
21	Total Capacity (Gallons)	1,720,000	500,000	6,500,000
22	Reliable Capacity (Gallons)	1,108,305	404,979	3,793,850
23	U&U=((((Line5/1440)*2*240)+Line8))/Line19	73.09%	86.16%	119.46%
24	Requested U&U	81.80%	86.16%	100.00%
25	**Hydro Tanks:**	100%	100%	100%

[1] No Supply Wells. Raw Water From Marco Island Supply Lakes.

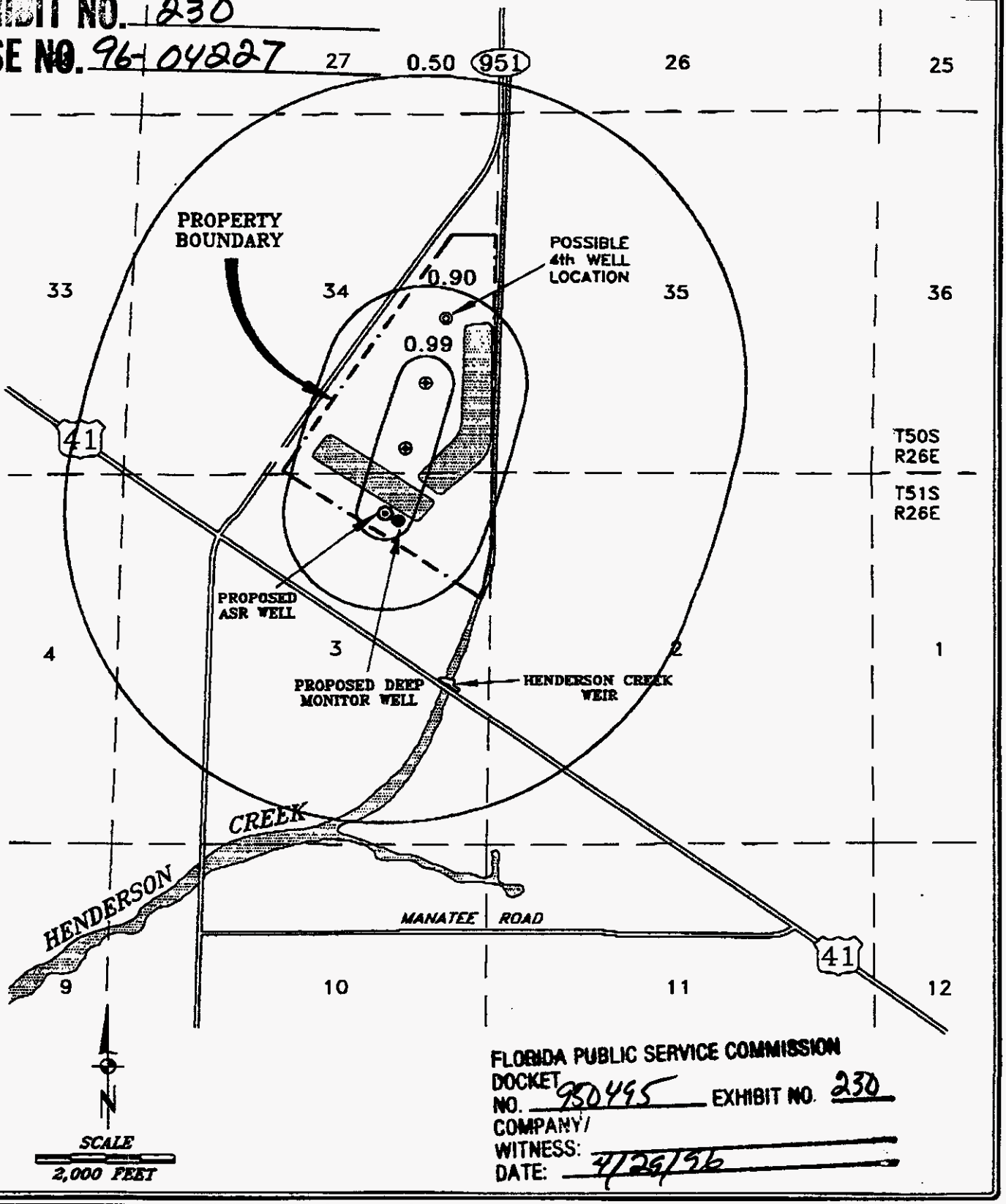
APPENDIX 99-A
SUMMARY OF HYDRUALIC CAPACITY & PERMITTED CAPACITY - WASTEWATER

Line No.	(1) Plant Name	(2) County	(3) Hydraulic Plant Capacity Per MFRs (Gallons)	(4) Effluent Disposal Capacity Per MFRs (Gallons)	(5) FDEP Permitted Plant Capacity (Gallons)
1	Amelia Island	Nassau	850,000	850,000	850,000
2	Apache Shores	Citrus	17,000	17,000	17,000
3	Apple Valley	Seminole	N/A	N/A	N/A
4	Beacon Hills	Duval	836,000	836,000	836,000
5	Beecher's Point	Putnam	15,000	15,000	15,000
6	Buena Ventura	Osceola	1,500,000	1,680,000	1,500,000
7	Burnt Store	Charlotte	250,000	250,000	250,000
8	Chuluota	Seminole	100,000	100,000	100,000
9	Citrus Park	Marion	64,000	64,000	64,000
10	Citrus Springs	Citrus	200,000	200,000	200,000
11	Deep Creek	Charlotte	N/A	N/A	N/A
12	Deltona	Volusia	1,400,000	1,400,000	1,400,000
13	Enterprise Util. Corp.	Volusia	50,000	50,000	50,000
14	Fisherman's Haven	Martin	25,000	25,000	25,000
15	Florida Central Comm Park	Seminole	95,000	95,000	95,000
16	Fox Run	Martin	N/A	N/A	N/A
17	Holiday Haven	Lake	25,000	25,000	25,000
18	Jungle Den	Volusia	25,000	25,000	25,000
19	Lake Gibson Estates	Polk	85,000	85,000	85,000
20	Lehigh	Lee	2,100,000	2,100,000	2,100,000
21	Leilani Heights	Martin	150,000	150,000	150,000
22	Leisure Lakes (Covered Bridge)	Highland	50,000	50,000	50,000
23	Marco Island	Collier	3,500,000	3,500,000	3,500,000
24	Marco Shores	Collier	110,000	110,000	110,000
25	Marion Oaks	Marion	200,000	200,000	200,000
26	Meredith Manor	Seminole	N/A	N/A	N/A
27	Morningview	Lake	20,000	20,000	20,000
28	Palm Port	Putnam	50,000	50,000	50,000
29	Palm Terrace	Pasco	130,000	130,000	130,000
30	Park Manor	Putnam	15,000	15,000	15,000
31	Point O'Woods	Citrus	58,000	58,000	58,000
32	Salt Springs	Marion	85,000	34,000	85,000
33	Seaboard	Hillsborough	N/A	N/A	N/A
34	Silver Lake Oaks	Putnam	12,000	12,000	12,000
35	South Forty	Marion	75,000	75,000	75,000
36	Spring Gardens	Citrus	20,000	20,000	20,000
37	Spring Hill	Hernando	2,000,000	2,000,000	2,000,000
38	Sugar Mill	Volusia	270,000	270,000	270,000
39	Sugar Mill Woods	Citrus	500,000	500,000	500,000
40	Sunny Hills	Washington	50,000	50,000	50,000
41	Sunshine Parkway	Lake	250,000	150,000	250,000
42	Tropical Isle	St.Lucie	50,000	50,000	50,000
43	University Shores	Orange	1,145,000	1,145,000	1,145,000
44	Valencia Terrace	Lake	99,000	99,000	99,000

APPENDIX 99-A
SUMMARY OF HYDRUALIC CAPACITY & PERMITTED CAPACITY - WASTEWATER

Line No.	(1) Plant Name	(2) County	(3) Hydraulic Plant Capacity Per MFRs (Gallons)	(4) Effluent Disposal Capacity Per MFRs (Gallons)	(5) FDEP Permitted Plant Capacity (Gallons)
45	Valrico Hills	Hillsborough	85,000	85,000	85,000
46	Venetian Village	Lake	36,000	36,000	36,000
47	Woodmere	Duval	500,000	500,000	500,000
48	Zephyr Shores	Pasco	40,000	40,000	40,000

DOCKET 950495-WS
EXHIBIT NO. 230
CASE NO. 96-04227



ViroGroup	AIR • WATER • SOIL TECHNOLOGY		
	DRN BY: CAM	DWG. NO. A-013183KB-S	DATE: 4/25/96
	PROJECT NAME: SSU - MARCO ASR		NUMBER: 01-03183.00

APPROXIMATE HORIZONTAL EXTENT OF INJECTED WATER, FOR C/Co EQUALS 0.50 PERCENT, IN THE LOWER HAWTHORN BASAL TRANSMISSIVE UNIT AFTER INJECTING AT A RATE OF 2.5 MILLION GALLONS PER DAY IN 3 WELLS FOR 1,000 DAYS. C/Co OF 0.5 INDICATES 50 PERCENT INJECTED WATER, 50 PERCENT NATIVE WATER.

Ex. No. 231

05/02/96 THU 16:17 FAX 407 884 7740 SSU 002

DOCKET 950495-WS
EXHIBIT NO. 231
CASE NO. 96-04227

SOUTHERN STATES UTILITIES, INC.
1000 COLOR PLACE
APOPKA, FL 32703
Local Office Phone 1-813-394-3168 or Call Toll Free 1-800-432-4501

CUSTOMER NUMBER
1870-5

SERVICE ADDRESS
1140 DANA CT

HARRY T GORMAN
1140 DANA CT
MARCO FL 33937-4524

CURRENT CHARGES PAST DUE AFTER
3/25/96

TOTAL AMOUNT DUE
$ 99.75

Bill Date 3/05/96
Location Number 2600000352
Plant Number 26001

WATER
Rate Code-MIR
Billing Period 1/17/96 TO 2/16/96
Days In Billing Period: 30
Meter Readings:

Present	Previous	Usage
136490	107580	28910 Gal

Meter Size: ¾" x ¾"
Meter Number 95252527 1
Deposit $ .00
Connect Date 9/10/92

WATER			
BASE FACILITY CHARGE		8.40	
GALLONAGE CHARGE	WATER CHARGES	91.35	
TOTAL WATER			99.75
TOTAL CURRENT CHARGES			99.75
TOTAL AMOUNT DUE			**$ 99.75**

* EMERGENCIES CALL 1-813-649-2809

WATER CONSERVATION REQUEST

Please reset all sprinkler timing devices to honor a voluntary irrigation schedule, by day of the week, time and odd or even house numbers:

LOCATIONS AND DAYS OF THE WEEK

Mondays and Thursdays: N of Collier Blvd., W to the Gulf and S to the end of collier Ct.
Tuesdays and Fridays: E of Collier Blvd. and N of SR92.
Wednesdays and Saturdays: S of SR92 and E of Collier.

WATERING TIMES:

Odd: 2 a.m. to 5 a.m.
Even: 10 p.m. to 2 a.m.

* Some homes in your community have elevated lead levels in their drinking water. Lead can pose a significant risk to your health. Please read the enclosed notice for further information.

---------- WATER USE ----------

Daily Average Water Use:

Current Month	964 Gal/Day
Same Month Last Yr	859 Gal/Day

Daily Average Water Cost: $ 3.33

Please bring entire bill when paying in person

Make checks payable to SSU

Please return this portion with payment

Bill Date 3/05/96

CURRENT CHARGES PAST DUE AFTER
3/25/96

Local Office Phone 1-813-394-3168 or Call Toll Free 1-800-432-4501

TOTAL AMOUNT DUE
$ 99.75
DUE UPON RECEIPT

SOUTHERN STATES UTILITIES
P.O. BOX 2047
APOPKA, FL 32704-2047

CUSTOMER NUMBER 1870-5

HARRY T GORMAN
1140 DANA CT
MARCO FL 33937-4524

PLEASE SHOW AMOUNT OF PAYMENT _____

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 950495 EXHIBIT NO 231
COMPANY/
WITNESS:
DATE: 4/23/96

1870-5 Plant 26001 W

00187052600180000997S4

SOUTHERN STATES UTILITIES, INC.
1000 COLOR PLACE
APOPKA, FL 32703
Local Office Phone 1-813-394-3168 or Call Toll Free 1-800-432-4501

CUSTOMER NUMBER
1043-9

SERVICE ADDRESS
140 SHORECREST CT

ANDREW F MALETICH
506 E FRONTAGE RD N
BOLINGBROOK IL 60440-0000

CURRENT CHARGES
PAST DUE AFTER
4/03/96

TOTAL AMOUNT DUE
$ 173.62

Bill Date 3/14/96
Location Number 2600000323
Plant Number 26001

WATER
Rate Code- MIR
Billing Period 2/02/96 TO 3/05/96
Days in Billing Period: 32
Meter Readings:

Present	Previous	Usage
2736580	2689140	47440 Gal

Meter Size: 1"
Meter Number 3175254 3
Deposit $ .00
Connect Date 6/12/92

WATER			
BASE FACILITY CHARGE			21.34
GALLONAGE CHARGE	47440 Gal @ $	.003210	152.28
TOTAL WATER			173.62
TOTAL CURRENT CHARGES			173.62
TOTAL AMOUNT DUE			**$ 173.62**

* EMERGENCIES CALL 1-813-649-2809

WATER CONSERVATION REQUEST

Please reset all sprinkler timing devices to honor a voluntary inigation schedule, by day of the week, time and odd or even house numbers:

LOCATIONS AND DAYS OF THE WEEK

Mondays and Thursdays: N of Collier Blvd., W to the Gulf and S to the end of collier Ct.
Tuesdays and Fridays: E of Collier Blvd. and N of SR92.
Wednesdays and Saturdays: S of SR92 and E of Collier.

WATERING TIMES:

Odd: 2 a.m. to 6 a.m.
Even: 10 p.m. to 2 a.m.

* Some homes in your community have elevated lead levels in their drinking water. Lead can pose a significant risk to your health. Please read the enclosed notice for further information.

---------- WATER USE ----------
Daily Average Water Use:
Current Month 1483 Gal/Day
Same Month Last Yr 1417 Gal/Day

Daily Average Water Cost: $ 5.43

Please bring entire bill when paying in person

Make checks payable to SSU

Please return this portion with payment

Bill Date 3/14/96

CURRENT CHARGES
PAST DUE AFTER
4/03/96

Local Office Phone 1-813-394-3168 or Call Toll Free 1-800-432-4501

TOTAL AMOUNT DUE
$ 173.62
DUE UPON RECEIPT

SOUTHERN STATES UTILITIES
P.O. BOX 2047
APOPKA, FL 32704-2047

CUSTOMER NUMBER 1043-9

ANDREW F MALETICH
506 E FRONTAGE RD N
BOLINGBROOK IL 60440-0000

PLEASE SHOW AMOUNT OF PAYMENT _____

1043-9 Plant 26001 W

00104392600180017362 5

Marco Island -- *Lead & Copper Chronological Correspondence*				
Date	From Agency	Too Agency	Document	Description
10/92		SSU	Sample Results	Lead and Copper Analysis for Marco Island Sample Results: Lead Copper Results: Lead - 4 / 61 samples exceeded the action level Copper - 0 / 61 samples exceeded the action level
05/06/93		SSU	Sample Results	Lead and Copper Analysis for Marco Island Sample Results: Results: Lead - 7 / 60 samples exceeded the action level Copper - 0 / 60 samples exceeded the action level
			Public Notification Requirements	Individual Customer Notification Completed-07/21/93 Inserted notices in each customer's water utility bill Submitted the information editorial departments of newspapers Delivered pamphlets & brochures-07/26/93 Submitted the public service announcement to radio and television
07/26/93	SSU	Preschool	Letter	Letter addressing public notification of the lead exceedance.
07/29/93	FDEP	SSU	Letter - Lead & Copper Monitoring	Letter addressing the Information needed to complete the monitoring report..
08/12/93	SSU	FDEP	Letter	Letter submitting the information requested in the 04/29/93 FDEP Letter to SSU.
11/23/93	Thornton Laboratories, Inc.	SSU	Sample Results	Lead and Copper Analysis for Marco Island Sample Results: Results: Lead - 8 / 59 samples exceeded the action level Copper - 0 / 59 samples exceeded the action level
12/14/93	KJELL	SSU-Ops	Information	Information regarding the STARSystem evaluation.
02/17/94	SSU-Ops	SSU-ESD-Ops-TSD	Memo	Internal memo regarding Corrosion Control Study.
06/03/94	SSU-TSD	SSU-Ops	Memo	Internal memo regarding the Desktop study.
07/24/94	SSU	Customer	Public Education Notice	Example of the customer letters addressing public notification of the lead exceedance
08/02/94	SSU	Naples Daily News	Public Education Notice	Letter addressing public notification of the lead exceedance
08/04/94	HF Scientific	SSU	Corrosion Control	Corrosion Control Treatment Recommendation from HF Scientific
08/10/94	SSU-ESD	SSU-TSD-Eng.	Memo	Internal memo regarding the Corrosion Control Study time frames.
08/10/94	FDEP	SSU	Letter	Letter requesting permit applications, fee, & Copy of the Desktop study.
09/01/94	SSU-ESD	SSU-Eng.	Memo	Memo regarding submitting the permit for corrosion control and the submittal of the desktop study.
09/09/94	SSU-ESD	FDEP	Letter	Letter submitting the permit for corrosion control and the submittal of the desktop study.

Marco Island -- *Lead & Copper Chronological Correspondence*				
Date	From Agency	Too Agency	Document	Description
09/12/94	SSU-ESD	SSU-Eng.	Memo	Memo regarding the corrosion control at Marco Island.
09/27/94	SSU-ESD	SSU-Eng.	Memo	Internal memo regarding the Corrosion Control Study
10/06/94	SSU	FDEP	Permit Application	Submittal of the Notice of intent to use a General Permit
			Permit Applications	Copies of the Applications
10/10/94	FDEP	SSU	Letter	Notification of Use of General Permit
10/11/94	SSU	FDEP	Corrosion Control Info.	Submittal of the Process flow diagrams for Marco Island lime softening plant.
11/15/94	Thornton Laboratories	SSU	Sample Results	Lead and Copper Analysis for Marco Island Results: Lead - 6 of 66 samples exceeded the action level Copper - 0 of 66 samples exceeded the action level
05/31/95	Thornton Laboratories	SSU	Sample Results	Lead and Copper Analysis for Marco Island Results: Lead - 8 of 59 samples exceeded the action level Copper - 0 of 59 samples exceeded the action level
12/22/95	SSU Lab	SSU	Sample Results	Lead and Copper Analysis for Marco Island Results: Lead - 9 of 61 samples exceeded the action level Copper - 0 of 61 samples exceeded the action level
01/09/96	SSU-Ops	SSU-ESD, Ops, Comm	Memo	Request for advice regarding Public Notification Program
02/14/96	SSU-Ops	SSU-ESD	FAX	Information regarding customer notice language
03/08/96	SSU-Ops	SSU-ESD	FAX	Information regarding customer notice Pamphlet sent out by Communications.
05/03/96	SSU	SSU	Public Notification)	02/28/96 - All participating residents that exceeded were mailed a copy of their results. 03/15/96 - A letter and public service advisory was sent to WGUF, WSGL, WNOG, WARO, WIXI, WNPL-TV Channel 46, WODX, WSRX, & WAVV broadcast stations.. 02/28/96 - A copy of the lead brochure was hand carried to Day Cares, Schools, Etc. 03/04/96 - Additional effort was made to contact those customers which had exceeded to discuss the water system with them. (Find out about water softeners, etc.) 03/96-Notices in the customers bill

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST OAKS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2660, TAMPA, FLORIDA 33601-2660
HRS# E84147 HRS# E84100
TELEPHONE (813) 223-9708
FAX (813) 223-9352

23-Nov-1992
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COPPER ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 12-30-92

CWS ✓ NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for COPPER

System's 90th percentile rank: # 54

System's 90th percentile result: .08 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 61

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
57	0.12	1	831789	ID: 541 S. Heathwood Dr.	A	10-23-92
58	0.15	1	831863	ID: 206 Majore Cir.	A	10-20-92
59	0.18	1	831787	ID: 311 Nassau Cr.	A	10-22-92
60	0.22	1	831827	ID: 346 Edgewater Ct.	A	10-24-92
61	0.24	1	831758	ID: 230 Hideaway Cir.	A	10-24-92

The action level for copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
HRS# 84147 HRS# E84100
TELEPHONE (813) 223-9702
FAX (813) 223-9332

COPPER ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: SSU Services Marco Island Utilities

PWS-ID: 5110183

DATE: 12-18-92

CWS X NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for COPPER

System's 90th percentile rank: # 54

System's 90th percentile result: .08 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 61

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
29	0	1SFR	831823	ID: 589 Hernando Dt.	A	10-25-92
30	0	1SFR	831824	ID: 662 Bamboo Ct.	A	10-23-92
31	0	1SFR	831826	ID: 474 Yellowbird St.	A	10-24-92
32	0	1SFR	831836	ID: 583 Yellowbird St.	A	10-22-92
33	0	1SFR	831840	ID: 608 Nassau Ct.	A	10-23-92
34	0	1SFR	831841	ID: 1232 Fruitland AVe.	A	10-23-92
35	0	1SFR	831842	ID: 164 Colombus Way	A	10-23-92
36	0	1SFR	831843	ID: 831 Buttonwood Ct.	A	10-23-92
37	0	1SFR	831844	ID: 2063 Dogwood Dr.	A	10-23-92
38	0	1SFR	831847	ID: 656 N. Barfield	A	10-23-92
39	0	1SFR	831850	ID: 522 Nassau Rd.	A	10-22-92
40	0	1SFR	831852	ID: 264 Shadowridge Ct.	A	10-26-92
41	0	1SFR	831865	ID: 1183 Sunbird Ave.	A	10-22-92
42	0	1SFR	831872	ID: 1160 Fourwinds Ave.	A	10-23-92
43	0.05	1SFR	831837	ID: 1211 Mimosa Ct.	A	10-26-92
44	0.06	1SFR	831757	ID: 1353 N. Collier	A	10-25-92
45	0.06	1SFR	831812	ID: 279 Marqueses Ct.	A	10-24-92
46	0.06	1SFR	831838	ID: 1186 Sunbird Ave.	A	10-22-92
47	0.06	1SFR	831849	ID: 1031 Valley Ave.	A	10-23-92
48	0.07	1SFR	831760	ID: 367 S. Heatwood	A	10-26-92
49	0.07	1SFR	831829	ID: 228 Capistrano Ct.	A	10-26-92
50	0.07	1SFR	831833	ID: 370 Edgewater Ct.	A	10-21-92
51	0.08	1SFR	831767	ID: 2030 Sheffield	A	10-23-92
52	0.08	1SFR	831777	ID: 1210 Ember Ct.	A	10-22-92
53	0.08	1SFR	831796	ID: 924 Junifer Ct.	A	10-25-92
54	0.08	1SFR	831834	ID: 646 Bamboo Ct.	A	10-22-92
55	0.08	1SFR	831846	ID: 275 Figi Ct.	A	10-23-92
56	0.10	1SFR	831751	ID: 811 Inlet Dr.	A	10-23-92

The action level for copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2660, TAMPA, FLORIDA 33601-2660
HRS# 84147 HRS# E84100

TELEPHONE (813) 223-9702
FAX (813) 223-9332

23-Nov-1[illegible]
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COPPER ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: SSU Services Marco Island Utilities

PWS-ID: 5110183

DATE: 12-18-92

CWS X NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for COPPER

System's 90th percentile rank: # 54

System's 90th percentile result: .08 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 61

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
1	0	1 SFR	831753	ID: 1211 Twin Oak Ct.	A	10-26-92
2	0	1 SFR	831756	ID: 1753 Dogwood	A	10-23-92
3	0	1 SFR	831759	ID: 172 Gulestream St.	A	10-26-92
4	0	1 SFR	831761	ID: 310 Henderson Ct.	A	10-23-92
5	0	1 SFR	831762	ID: 1050 Abbeville Ct.	A	10-22-92
6	0	1 SFR	831763	ID: 810 Arcadia	A	10-23-92
7	0	1 SFR	831765	ID: 230 Windbrook Ct.	A	10-26-92
8	0	1 SFR	831766	ID: 860 Kendall Dr.	A	10-26-92
9	0	1 SFR	831769	ID: 759 Inlet Dr.	A	10-23-92
10	0	1 SFR	831770	ID: 850 S. Barfield	A	10-23-92
11	0	1 SFR	831771	ID: 175 Leeward Ct.	A	10-23-92
12	0	1 SFR	831774	ID: 1130 San Marco Rd.	A	10-22-92
13	0	1 SFR	831775	ID: 123 Landmark St.	A	10-22-92
14	0	1 SFR	831776	ID: 818 Dandelion Ct.	A	10-23-92
15	0	1 SFR	831782	ID: 1289 Riverhead Ave.	A	10-23-92
16	0	1 SFR	831783	ID: 448 Balsam Ct.	A	10-23-92
17	0	1 SFR	831784	ID: 885 Magnolia	A	10-23-92
18	0	1 SFR	831785	ID: 698 Embassy Ct.	A	10-22-92
19	0	1 SFR	831790	ID: S. Bahama 230	A	10-22-92
20	0	1 SFR	831795	ID: 736 Fairlawn Ct.	A	10-26-92
21	0	1 SFR	831797	ID: 617 Somerset Ct.	A	10-24-92
22	0	1 SFR	831799	ID: 1356 Merrimac Ave.	A	10-24-92
23	0	1 SFR	831801	ID: 362 Bali Ct.	A	10-24-92
24	0	1 SFR	831803	ID: 459 Marquesas Ct.	A	10-23-92
25	0	1 SFR	831814	ID: 390 Waterleaf Ct.	A	10-24-92
26	0	1 SFR	831815	ID: 510 Mangrove Ct.	A	10-25-92
27	0	1 SFR	831821	ID: 1149 Strawberry Ct.	A	10-24-92
28	0	1 SFR	831822	ID: 549 Tigertail Ct.	A	10-25-92

The action level for copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2980, TAMPA, FLORIDA 33601-2980
HRS# 84147 HRS# 884100
TELEPHONE (813) 223-8702
FAX (813) 223-8332

LEAD ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 12-30-92

CWS ✓ NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for LEAD

System's 90th percentile rank: # 54

System's 90th percentile result: .005 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 61

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
57	0.012	1	831833	ID: 370 Edgewater Ct.	A	10-21-92
58	0.021	1	831790	ID: S. Bahama	A	10-22-92
59	0.034	1	831762	ID: 1050 Abbeville Ct.	A	10-22-92
60	0.036	1	831829	ID: 228 Capistrano Ct.	A	10-26-92
61	0.058	1	831787	ID: 311 Nassau Cr.	A	10-22-92

The action level for lead is 0.015 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2680, TAMPA, FLORIDA 33601-2680
HRS# 84147 HRS# E84100
TELEPHONE (813) 223-9702
FAX (813) 223-9332

23-Nov-1992
Page 2

LEAD ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 12-30-92

CWS ✓ NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for LEAD

System's 90th percentile rank: # 54

System's 90th percentile result: .005 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 61

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
29	0.002	1	831767	ID: 2030 Sheffield	A	10-23-92
30	0.002	1	831769	ID: 759 Inlet Dr.	A	10-23-92
31	0.002	1	831775	ID: 123 Landmark St.	A	10-22-92
32	0.002	1	831777	ID: 1210 Ember Ct.	A	10-22-92
33	0.002	1	831795	ID: 736 Fairlawn Ct.	A	10-26-92
34	0.002	1	831797	ID: 617 Somerset Ct.	A	10-24-92
35	0.002	1	831826	ID: 674 Yellowbird St.	A	10-24-92
36	0.002	1	831827	ID: 346 Edgewater Ct.	A	10-24-92
37	0.002	1	831834	ID: 646 Bamboo Ct.	A	10-22-92
38	0.002	1	831837	ID: 1211 Mimosa Ct.	A	10-26-92
39	0.002	1	831841	ID: 1232 Fruitland AVe.	A	10-23-92
40	0.002	1	831842	ID: 164 Colombus Way	A	10-23-92
41	0.002	1	831843	ID: 831 Buttonwood Ct.	A	10-23-92
42	0.002	1	831850	ID: 522 Nassau Rd.	A	10-22-92
43	0.003	1	831760	ID: 367 S. Heatwood	A	10-22-92
44	0.003	1	831801	ID: 362 Bali Ct.	A	10-24-92
45	0.003	1	831812	ID: 279 Marquesas Ct.	A	10-24-92
46	0.003	1	831814	ID: 390 Waterleaf Ct.	A	10-24-92
47	0.003	1	831815	ID: 510 Mangrove Ct.	A	10-23-92
48	0.003	1	831822	ID: 549 Tigertail Ct.	A	10-23-92
49	0.003	1	831844	ID: 2063 Dogwood Dr.	A	10-23-92
50	0.003	1	831863	ID: 206 Majore Cir.	A	10-20-92
51	0.004	1	831765	ID: 230 Windbrook Ct.	A	10-26-92
52	0.004	1	831783	ID: 448 Balsam Ct.	A	10-23-92
53	0.005	1	831758	ID: 230 Hideaway Cir.	A	10-24-92
54	0.005	1	831796	ID: 924 Junifer Ct.	A	10-23-92
55	0.006	1	831789	ID: 541 S. Heathwood Dr.	A	10-23-92
56	0.008	1	831751	ID: 811 Inlet Dr.	A	10-23-92

The action level for lead is 0.015 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2660, TAMPA, FLORIDA 33601-2660
HRS# 84147 HRS# E84100

TELEPHONE (813) 223-6702
FAX (813) 223-6332

23-Nov-1992
Page 1

LEAD ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 12-30-92

CWS ✓ NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for LEAD

System's 90th percentile rank: # 54

System's 90th percentile result: .005 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 61

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
1	0	1	831763	ID: 810 Arcadia	A	10-23-92
2	0	1	831766	ID: 860 Kendall Dr.	A	10-26-92
3	0	1	831770	ID: 850 S. Barfield	A	10-23-92
4	0	1	831771	ID: 175 Leeward Ct.	A	10-23-92
5	0	1	831774	ID: 1130 San Marco Rd.	A	10-22-92
6	0	1	831776	ID: 818 Dandelion Ct.	A	10-23-92
7	0	1	831782	ID: 1289 Riverhead Ave.	A	10-23-92
8	0	1	831785	ID: 698 Embassy Ct.	A	10-22-92
9	0	1	831799	1356 Merrimac Ave.	A	10-24-92
10	0	1	831821	ID: 1149 Strawberry Ct.	A	10-24-92
11	0	1	831823	ID: 589 Hernando Dt.	A	10-25-92
12	0	1	831824	ID: 662 Bamboo Ct.	A	10-23-92
13	0	1	831836	ID: 583 Yellowbird St.	A	10-22-92
14	0	1	831838	ID: 1186 Sunbird Ave.	A	10-22-92
15	0	1	831840	ID: 608 Nassau Ct.	A	10-23-92
16	0	1	831847	ID: 656 N. Barfield	A	10-23-92
17	0	1	831849	ID: 1031 Valley Ave.	A	10-23-92
18	0	1	831852	ID: 264 Shadowridge Ct.	A	10-26-92
19	0	1	831865	ID: 1183 Sunbird Ave.	A	10-22-92
20	0	1	831872	ID: 1160 Fourwinds Ave.	A	10-23-92
21	0.001	1	831759	ID: 172 Gulestream St.	A	10-26-92
22	0.001	1	831761	ID: 310 Henderson Ct.	A	10-23-92
23	0.001	1	831784	ID: 885 Magnolia	A	10-23-92
24	0.001	1	831803	ID: 459 Marqueaas Ct.	A	10-23-92
25	0.001	1	831846	ID: 275 Figi Ct.	A	10-23-92
26	0.002	1	831753	ID: 1211 Twin Oak Ct.	A	10-26-92
27	0.002	1	831756	ID: 1753 Dogwood	A	10-23-92
28	0.002	1	831757	ID: 1353 N. Collier	A	10-25-92

The action level for lead is 0.015 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2980, TAMPA, FLORIDA 33601-2980
HRS# 84147 HRS# E84100
TELEPHONE (813) 223-6702
FAX (813) 223-9332

COPPER ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 7-14-93

CWS ✓ NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for COPPER

System's 90th percentile rank: # 54

System's 90th percentile result: .14 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 60

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
57	0.16	1	856699	310 Henderson Court		5-6-93
58	0.16	1	856709	1183 Sunbird		5-6-93
59	0.21	1	856685	695 Embassy Court		5-6-93
60	0.21	1	856725	662 Bamboo Court		5-6-93

The action level for copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
HRS# 84147 HRS# E84100

TELEPHONE (813) 223-9702
FAX (813) 223-8332

2-Jun-1993
Page 1

COPPER ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 7-14-93

CWS ✓ NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for COPPER

System's 90th percentile rank: # 54

System's 90th percentile result: .14 mg/L

A ___ B ___ C ✓ D ___ E ___ F ___ G ___

Number of Samples Taken: 60

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
1	0	1	856672	390 Waterleaf Court		5-6-93
2	0	1	856673	279 Marqueese Court		5-6-93
3	0	1	856674	459 Marqueses Court		5-7-93
4	0	1	856675	362 Bali Court		5-6-93
5	0	1	856677	617 Somerset Court		5-7-93
6	0	1	856679	736 Fairlawn		5-6-93
7	0	1	856680	239 South Bahama		5-6-93
8	0	1	856682	311 Nassau Court		5-6-93
9	0	1	856684	885 Magnolia		5-6-93
10	0	1	856685	448 Balsam Court (Seasonal)		5-6-93
11	0	1	856686	1289 Riverhead		5-5-93
12	0	1	856690	818 Dandelion Court (Seasonal)		5-6-93
13	0	1	856693	199 Society		5-10-93
14	0	1	856694	850 South Barfield		5-6-93
15	0	1	856695	2030 Sheffield		5-5-93
16	0	1	856696	860 Kendall Drive		5-6-93
17	0	1	856697	230 Windbrook Court		5-7-93
18	0	1	856698	810 Arcadia Street		5-5-93
19	0	1	856700	367 South Heathwood Drive		5-7-93
20	0	1	856701	759 Inlet Drive		5-6-93
21	0	1	856703	1753 Dogwood		5-7-93
22	0	1	856704	1353 North Collier		5-5-93
23	0	1	856706	192 Gulf Stream		5-7-93
24	0	1	856708	1160 Fourwinds		5-10-93
25	0	1	856711	264 Shadowridge Court		5-7-93
26	0	1	856713	275 Fiji Court		5-6-93
27	0	1	856717	164 Columbus Way		5-7-93
28	0	1	856718	1232 Fruitland Avenue		5-8-93

The action level for copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2980, TAMPA, FLORIDA 33601-2980
HRS# 84147 HRS# E84100
TELEPHONE (813) 223-6702
FAX (813) 223-6332

LEAD ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 7-14-93

CWS ✓ NTNC ____

Population: (check one)

Number of Samples Required: 60

90% for LEAD

System's 90th percentile rank: # 54

System's 90th percentile result: .017 mg/L

A __ B __ C ✓ D __ E __ F __ G __

Number of Samples Taken: 60

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
57	0.045	1	856682	311 Nassau Court		5-6-93
58	0.050	1	856709	1183 Sunbird		5-6-93
59	0.060	1	856688	1050 Abbeville Court		5-4-93
60	0.26	1	856689	1210 Ember Court		5-7-93

The action level for lead is 0.015 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2950, TAMPA, FLORIDA 33601-2950
HRS# 84147 HRS# E84100
TELEPHONE (813) 223-8702
FAX (813) 223-9932

LEAD ACTION LEVEL COMPLIANCE REPORT

SYSTEM NAME: Marco Island Utilities

PWS-ID: 5110183

DATE: 7-14-93

CWS ✓ NTNC ____

Population: (check one)

90% for LEAD

System's 90th percentile rank: # 54

System's 90th percentile result: .017 mg/L

A __ B __ C ✓ D __ E __ F __ G __

Number of Samples Required: 60

Number of Samples Taken: 60

RANK (Lowest to Highest)	ANALYTICAL RESULT (mg/L)	TIER	LABORATORY SAMPLE ID.	SAMPLE SITE LOCATION	TYPE OF TAP SAMPLED	DATE SAMPLE TAKEN
29	0.002	1	856710	206 Majorca		5-7-93
30	0.002	1	856712	1031 Valley Avenue		5-7-93
31	0.002	1	856716	2063 Dogwood Drive		5-7-93
32	0.002	1	856726	389 Hernando Drive		5-7-93
33	0.002	1	856730	1149 Strawberry Court		5-7-93
34	0.003	1	856679	736 Fairlawn		5-6-93
35	0.003	1	856715	656 North Barfield		5-7-93
36	0.003	1	856717	164 Columbus Way		5-7-93
37	0.003	1	856728	370 Edgewater Court		5-6-93
38	0.004	1	856690	818 Dandelion Court (Seasonal)		5-6-93
39	0.004	1	856691	123 Landmark		5-5-93
40	0.004	1	856705	230 Hideaway Circle		5-5-93
41	0.004	1	856731	549 Tigertail Court		5-5-93
42	0.005	1	856692	1130 San Marco		5-6-93
43	0.005	1	856699	310 Henderson Court		5-6-93
44	0.005	1	856702	811 Inlet Drive		5-6-93
45	0.006	1	856683	695 Embassy Court		5-4-93
46	0.006	1	856687	1121 Twin Oak Court		5-5-93
47	0.006	1	856722	1211 Mimosa		5-10-93
48	0.007	1	856681	541 South Heathwood Drive		5-5-93
49	0.007	1	856698	810 Arcadia Street		5-5-93
50	0.007	1	856706	792 Gulf Stream		5-7-93
51	0.007	1	856713	275 Fiji Court		5-6-93
52	0.008	1	856723	474 Yellowbird		5-7-93
53	0.016	1	856729	228 Capistrano		5-6-93
54	0.017	1	856716	831 Buttonwood		5-7-93
55	0.019	1	856720	608 Nassau Court		5-7-93
56	0.020	1	856727	346 Edgewater Court		5-6-93

The action level for lead is 0.015 mg/L

Marco Island Office
960 N. Collier Blvd.
P.O. Box 197
Marco Island, FL 33969
Customer Service
(813) 394-3168
Business
(813) 394-3880

DATE: July 26, 1993

TO: Collier County Public Health Unit

FROM: Southern States Utilities

SUBJECT: Public Education Concerning Lead in the Drinking Water

The United States Environmental Protection Agency (USEPA) and Southern States Utilities (SSU) are concerned about lead in drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above USEPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/l). Under federal law we are required to have a program in place to minimize lead in our drinking water by November 1996. This program includes corrosion control treatment, source water treatment and public education.

As part of the public education portion of the program, we are submitting pamphlets entitled "Lead in Your Water" to your organization to be made available to the public. The pamphlet informs the public about the adverse health effects of lead and explains the steps people can take in their homes to reduce exposure to lead in drinking water (such as flushing the tap, cooking with cold water rather than hot, checking for lead solder in new plumbing and testing their water for lead).

We would appreciate your assistance in bringing public awareness of lead in drinking water. If you have any questions or would like more information, please call 813-394-3353 and ask for Marc Larson, coordinator of the Lead Education Program.

Marco Island Office
960 N. Collier Blvd.
P.O. Box 197
Marco Island, FL 33969
Customer Service
(813) 394-3168
Business
(813) 394-3880

July 21, 1993

Mr. Mark Helfgott
1150 Abbeville Ct.
Marco Island, FL 33969

Dear Mr. Helfgott:

Thank you for participating in the recent program conducted within the Marco Island water system to determine Lead and Copper concentrations in your drinking water. Samples were collected from 60 Marco Island customers and 7 of these 60 residences exceeded the EPA "action level" of 0.015 mg/l for Lead. For your information, a copy of the laboratory report for your home is enclosed which indicates that the action level for Lead was exceeded inside your particular home.

It is important for you to read and understand the enclosed pamphlet which includes excellent information on how you can reduce potential amounts of Lead in your drinking water. The Marco Island water sources and distribution system have been thoroughly analyzed and do not contain appreciable amounts of Lead. Therefore, the elevated levels of Lead in your water sample are probably coming from Lead plumbing and solder inside your home.

We would like to continue to sample your home in the future to determine any increases or decreases in Lead concentration. Since your home was in the list of the original 60 homes in the sampling program, you may remain in the program and will not be required to pay for this additional customer service.

If you have any specific questions that the enclosed pamphlet does not answer, please call 813-394-3353 or 813-394-3880. We will be glad to answer any questions you may have.

Sincerely,

Marc Larson
Lead Water Plant Operator
Marco Island Plant
Southern States Utilities, Inc.

ML/rs

TO: Mel Fuk -
FR: Rhonda

DATE: July 26, 1993

TO: Connie's Pre-school and Day Care
Connie Farris
1378 San Marco Rd.
Marco Island, FL 33937

FROM: Southern States Utilities

SUBJECT: Public Education Concerning Lead in the Drinking Water

The United States Environmental Protection Agency (USEPA) and Southern States Utilities (SSU) are concerned about lead in drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above USEPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/l). Under federal law we are required to have a program in place to minimize lead in our drinking water by November 1996. This program includes corrosion control treatment, source water treatment and public education.

As part of the public education portion of the program, we are submitting pamphlets entitled "Lead in Your Water" to your organization to be made available to the public. The pamphlet informs the public about the adverse health effects of lead and explains the steps people can take in their homes to reduce exposure to lead in drinking water (such as flushing the tap, cooking with cold water rather than hot, checking for lead solder in new plumbing and testing their water for lead).

We would appreciate your assistance in bringing public awareness of lead in drinking water. If you have any questions or would like more information, please call 813-394-3353 and ask for Marc Larson, coordinator of the Lead Education Program.

MEL FISHER

FILE

MARCO ISLAND (WATER)

Florida Department of Environmental Protection

South District
2295 Victoria Avenue
Fort Myers, Florida 33901

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

July 29, 1993

RECEIVED
AUG 02 '93
ENVIRONMENTAL SERVICES

Marc A. Larson, Lead Operator
Southern States Utilities, Inc.
Marco Island Water Plant
P.O. Box 197
Marco Island, Florida 33969

Re: Collier County - PW
Lead and Copper Monitoring
Marco Island WTP

Dear Mr. Larson:

We have reviewed the lead and copper analysis results submitted by you for the referenced drinking water system. The following deficiencies were noted in the monitoring report.

1. The report did not indicate the analytical method used, the method detection limit and the analysis date for each sample.

2. Certification of Tap Sample Collection Methods, Form 17-551.950(13) was not included in the report.

3. Form 17-551.950(1), Justification of Selection of Sites was not included in the submittal.

Please submit the above information (see enclosed forms) to complete the documentation for the monitoring period, January through June 1993. In order to comply with the rules, the water system must meet all the requirements on monitoring, reporting and public education.

Florida Administrative Code (F.A.C.) Rule 17-551.850 requires that a water system that exceeds the lead action level, provide the public education program outlined in Section 17-551.810. Please complete the public education requirements and submit your Pubic Education Program Report on Form 17-551.950(5).

Continued . . .

The sampling plan originally submitted for the water system did not include sampling locations for Water Quality Parameters. Please complete pages 7 and 8 of Form 17-551.950(1) and return to the Department for approval within ten days of receipt of this letter. The Water Quality Parameters shall be monitored in accordance with F.A.C. Rule 17-551.460 and the results submitted to the Department.

Since the water system exceeded the action level for lead during the last monitoring period, the next round of monitoring for lead and copper and water quality parameters shall commence during July through December 1993.

Should you have any questions, please call Thomas Cherukara at (813)332-6975.

Sincerely,

Philip R. Edwards
Director of
District Management

PRE/TAC/klm

cc: Rafael Terrero, P.E.

cc: Karla Teasley
Carlyn Kowalsky
Frank Sanderson
Mary Glennon
Dave Denny
Mike Quigley
Chuck Wood
John Losch

Marco Island Office
960 N. Collier Blvd.
P.O. Box 197
Marco Island, FL 33969
Customer Service
(813) 394-3168
Business
(813) 394-3880

August 12, 1993

Mr. Philip R. Edwards
Director of District Management
Fla Department of Environmental Protection
2295 Victoria Avenue
Fort Myers, Florida 33901

Re: Collier County - PW Lead and Copper Monitoring
Marco Island WTP

Dear Mr. Edwards:

Regarding your letter dated July 29, 1993, I am hereby submitting the requsted information. The sampling plan enclosed, I trust, will meet all requirements.

In accordance with my recent conversation with Tom Cherukara I am enclosing a sampling map for your approval. If the Water Quality Parameter sampling is acceptable, or if you have any questions please contact me at 813-394-3353.

Yours truly,
Southern States Utilities, Inc.

Marc A. Larson
Lead Operator

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
HRS# 84147 HRS# E84100, E84324
TELEPHONE (813) 223-9702
FAX (813) 223-9332

Public Drinking Water System

Laboratory Analysis Reporting Format

for Lead and Copper Tap Samples

CERTIFIED LABORATORY NAME: THORNTON LABORATORIES, INC.
HRS CERTIFICATION NUMBER: 84147

LABORATORY CONTACT: RICHARD LEWIS
AND PHONE NUMBER: (813) 223-9702

SUBCONTRACTORS NAME _____
CERTIFICATION NUMBER _____
AND PHONE NUMBER _____

The attached sampling analytical results were submitted by the following public water system. Each sample container contained one liter of solution (±100mL) All samples were to the best of our knowledge taken properly by the following system and analyzed in accordance with the requirements listed on page 26560 of the June 7, 1991 Federal Register. Tap sampling dates were reported for each sample received.

PUBLIC WATER SYSTEM'S DER I.D. NUMBER: _____
PUBLIC WATER SYSTEM'S NAME: SSU Service, Marco Island
(MUST BE INCLUDED WITH SAMPLE SUBMITTAL)

I do HEREBY CERTIFY that all data submitted are correct.

SIGNATURE Richard C. Lewis
NAME (PRINT) RICHARD LEWIS
DATE 11/23/93

DER/ACPHU REVIEWING OFFICIAL:

_____

DATA SUMITTAL (CHECK ONE)
SATISFACTORY ( ) UNSATISFACTORY ( )
NOT PROPERLY IDENTIFIED ( )

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
HRS# 84147 HRS# E84100, E84324
TELEPHONE (813) 223-6
FAX (813) 223-9

COPPER TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name:	Marco Island Utilities	Date Submitted to Lab:	3-Nov-19
PWS-ID:	5110183	Analysis Date:	17-Nov-19
Laboratory:	Thornton Laboratories	Lab Analysis Method:	EPA 220.1
Lab-ID:	84147	Copper Analysis	
Contact:	Richard Lewis	Method Detection Limit:	0.05 mg/L
Phone:	(813) 223-9702	90th Percentile Value:	0.10 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Copper (Cu) (mg/L)
	1	A	1SFR	881450	10/29/93	0
	2	A	1SFR	881452	10/27/93	0
	3	A	1SFR	881454	10/27/93	0
	4	A	1SFR	881460	10/30/93	0
	5	A	1SFR	881461	10/28/93	0
	6	A	1SFR	881465	10/27/93	0
	7	A	1SFR	881476	10/28/93	0
	8	A	1SFR	881484	10/29/93	0
	9	A	1SFR	881485	10/28/93	0
	10	A	1SFR	881487	10/28/93	0
	11	A	1SFR	881489	10/28/93	0
	12	A	1SFR	881490	10/29/93	0
	13	A	1SFR	881492	11/02/93	0
	14	A	1SFR	881493	10/27/93	0
	15	A	1SFR	881494	10/28/93	0
	16	A	1SFR	881501	10/29/93	0
	17	A	1SFR	881503	10/29/93	0
	18	A	1SFR	881504	10/29/93	0
	19	A	1SFR	881508	10/27/93	0
	20	A	1SFR	881509	10/27/93	0
	21	A	1SFR	881510	10/28/93	0
	22	A	1SFR	881514	11/02/93	0

The action limit for Copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

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P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
HRS# 84147 HRS# E84100, E84324

TELEPHONE (813) 223-9702
FAX (813) 223-9332

COPPER TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name: Marco Island Utilities
PWS-ID: 5110183
Laboratory: Thornton Laboratories
Lab-ID: 84147
Contact: Richard Lewis
Phone: (813) 223-9702

Date Submitted to Lab: 3-Nov-1993
Analysis Date: 19-Nov-1993
Lab Analysis Method: EPA 220.1
Copper Analysis
Method Detection Limit: 0.05 mg/L
90th Percentile Value: 0.10 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Copper (Cu) (mg/L)
	23	A	1SFR	881516	10/27/93	0
	24	A	1SFR	881518	11/01/93	0
	25	A	1SFR	881521	10/27/93	0
	26	A	1SFR	881522	10/28/93	0
	27	A	1SFR	881523	11/02/93	0
	28	A	1SFR	881526	11/02/93	0
	29	A	1SFR	881532	11/02/93	0
	30	A	1SFR	881537	11/02/93	0
	31	A	1SFR	881548	10/29/93	0
	32	A	1SFR	881550	10/28/93	0
	33	A	1SFR	881551	10/29/93	0
	34	A	1SFR	881553	10/28/93	0
	35	A	1SFR	881555	10/30/93	0
	36	A	1SFR	881558	10/29/93	0
	37	A	1SFR	881559	10/30/93	0
	38	A	1SFR	881562	10/28/93	0
	39	A	1SFR	881443	11/02/93	0.05
	40	A	1SFR	881502	10/27/93	0.06
	41	A	1SFR	881557	10/29/93	0.06
	42	A	1SFR	881505	10/29/93	0.07
	43	A	1SFR	881512	10/29/93	0.07
	44	A	1SFR	881513	10/27/93	0.07

The action limit for Copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2680, TAMPA, FLORIDA 33601-2680
HRS# 84147 HRS# E84100, E84324
TELEPHONE (813) 223-870
FAX (813) 223-833

COPPER TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name: _____ Date Submitted to Lab: 3-Nov-199

PWS-ID: _____ Analysis Date: 19-Nov-199

Laboratory: Thornton Laboratories Lab Analysis Method: EPA 220.1

Lab-ID: 84147 Copper Analysis

Contact: Richard Lewis Method Detection Limit: 0.05 mg/L

Phone: (813) 223-9702 90th Percentile Value: .10 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Copper (Cu) (mg/L)
—	45	A	ISFL	881529	11/02/93	0.07
—	46	A	ISFL	881495	10/29/93	0.08
—	47	A	ISFL	881499	10/29/93	0.08
—	48	A	ISFL	881500	11/01/93	0.08
—	49	A	ISFL	881560	10/28/93	0.08
—	50	A	ISFL	881486	10/27/93	0.09
—	51	A	ISFL	881497	10/28/93	0.09
—	52	A	ISFL	881531	11/02/93	0.09
—	53	A	ISFL	881519	10/28/93	0.10
—	54	A	ISFL	881542	10/28/93	0.10
—	55	A	ISFL	881451	10/28/93	0.12
—	56	A	ISFL	881488	10/27/93	0.17
—	57	A	ISFL	881547	11/02/93	0.20
—	58	A	ISFL	881511	10/29/93	0.28
—	59	A	ISFL	881527	11/02/93	0.33

The action limit for Copper is 1.3 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
HRS# 84147 HRS# E84100, E84324

TELEPHONE (813) 223-9702
FAX (813) 223-9332

23-Nov-1993

LEAD TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name: Marco Island Utilities
PWS-ID: 5110183
Laboratory: Thornton Laboratories
Lab-ID: 84147
Contact: Richard Lewis
Phone: (813) 223-9702

Date Submitted to Lab: 3-Nov-1993
Analysis Date: 18-Nov-1993
Lab Analysis Method: EPA 239.2
Lead Analysis
Method Detection Limit: 0.001 mg/L
90th Percentile Value: .02 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Lead (Pb) (mg/L)
	1	A	ISFR	881450	10/29/93	0
	2	A	ISFR	881476	10/28/93	0
	3	A	ISFR	881490	10/29/93	0
	4	A	ISFR	881499	10/29/93	0
	5	A	ISFR	881501	10/29/93	0
	6	A	ISFR	881502	10/27/93	0
	7	A	ISFR	881504	10/29/93	0
	8	A	ISFR	881509	10/27/93	0
	9	A	ISFR	881514	11/02/93	0
	10	A	ISFR	881516	10/27/93	0
	11	A	ISFR	881523	11/02/93	0
	12	A	ISFR	881551	10/29/93	0
	13	A	ISFR	881562	10/28/93	0
	14	A	ISFR	881488	10/27/93	0.001
	15	A	ISFR	881489	10/28/93	0.001
	16	A	ISFR	881510	10/28/93	0.001
	17	A	ISFR	881518	11/01/93	0.001
	18	A	ISFR	881451	10/28/93	0.002
	19	A	ISFR	881452	10/27/93	0.002
	20	A	ISFR	881461	10/28/93	0.002
	21	A	ISFR	881484	10/29/93	0.002
	22	A	ISFR	881503	10/29/93	0.002

The action limit for Lead is 0.015 mg/L

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HRS# 84147 HRS# E84100, E84324

TELEPHONE (813) 223-97(
FAX (813) 223-63

LEAD TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name: Myrtle Island Utilities
PWS-ID: 5110183
Laboratory: Thornton Laboratories
Lab-ID: 84147
Contact: Richard Lewis
Phone: (813) 223-9702

Date Submitted to Lab: 3-Nov-199
Analysis Date: 18-Nov-199
Lab Analysis Method: EPA 239.2
Lead Analysis
Method Detection Limit: 0.001 mg/L
90th Percentile Value: 0.020 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Lead (Pb) (mg/L)
	23	A	ISFR	881511	10/29/93	0.002
	24	A	ISFR	881513	10/27/93	0.002
	25	A	ISFR	881487	10/28/93	0.003
	26	A	ISFR	881505	10/29/93	0.003
	27	A	ISFR	881521	10/27/93	0.003
	28	A	ISFR	881532	11/02/93	0.003
	29	A	ISFR	881555	10/30/93	0.003
	30	A	ISFR	881557	10/29/93	0.003
	31	A	ISFR	881443	11/02/93	0.004
	32	A	ISFR	881460	10/30/93	0.004
	33	A	ISFR	881486	10/27/93	0.004
	34	A	ISFR	881493	10/27/93	0.004
	35	A	ISFR	881508	10/27/93	0.004
	36	A	ISFR	881560	10/28/93	0.004
	37	A	ISFR	881495	10/29/93	0.005
	38	A	ISFR	881522	10/28/93	0.005
	39	A	ISFR	881531	11/02/93	0.005
	40	A	ISFR	881537	11/02/93	0.005
	41	A	ISFR	881547	11/02/93	0.005
	42	A	ISFR	881559	10/30/93	0.005
	43	A	ISFR	881553	10/28/93	0.006
	44	A	ISFR	881494	10/28/93	0.007

The action limit for Lead is 0.015 mg/L

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HRS# 64147 HRS# E84100, E84324
TELEPHONE (813) 223-6702
FAX (813) 223-8332

LEAD TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name:	Marco Island Utilities	Date Submitted to Lab:	3-Nov-1993
PWS-ID:	5110153	Analysis Date:	19-Nov-1993
Laboratory:	Thornton Laboratories	Lab Analysis Method:	EPA 239.2
Lab-ID:	84147	Lead Analysis	
Contact:	Richard Lewis	Method Detection Limit:	0.001 mg/L
Phone:	(813) 223-9702	90th Percentile Value:	0.020 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Lead (Pb) (mg/L)
	45	A	ISFR	881558	10/29/93	0.007
	46	A	ISFR	881527	11/02/93	0.008
	47	A	ISFR	881485	10/28/93	0.009
	48	A	ISFR	881526	11/02/93	0.009
	49	A	ISFR	881500	11/01/93	0.01
	50	A	ISFR	881550	10/28/93	0.01
	51	A	ISFR	881492	11/02/93	0.010
	52	A	ISFR	881454	10/27/93	0.018
	53	A	ISFR	881497	10/28/93	0.02
	54	A	ISFR	881548	10/29/93	0.02
	55	A	ISFR	881519	10/28/93	0.068
	56	A	ISFR	881529	11/02/93	0.086
	57	A	ISFR	881512	10/29/93	0.087
	58	A	ISFR	881465	10/27/93	0.21
	59	A	ISFR	881542	10/28/93	0.95

The action limit for Lead is 0.015 mg/L

P.O. BOX 834
BELOIT, WI 53512

THE KJELL CORPORATION

(608) 755-0422
1-800-356-0422
FAX (608) 755-0538

December 14, 1993

Ron Weis
SSU Services
P.O. Box 197
Marco Island, FL 33937

Dear Mr. Weis:

Enclosed are the results of our STAR*System* desktop evaluation performed in accordance with U.S.E.P.A. guidance for corrosion control. The STAR*System* evaluates recognized corrosion indices and couples them with our twenty-five years of treatment experience to provide you with the best available treatment options.

The calculated values may be used in any presentation required by your local Health Regulatory Agency. If there are any questions regarding the report, references or perhaps further details are needed, please call either the Technical Services Department at (800) 356-0422 ext. 20 or The Kjell Corporation's Regional Manager, Buddy Humphries at (904) 584-3938.

Sincerely,

B. Hellen

Bert Hellen
Technical Services

BH/ckp

Enclosures

Corrosion Control Evaluation

for

SSU Services
Marco Island, FL

Prepared by

The Kjell Corporation
Janesville, Wisconsin
(800) 356-0422

December 14, 1993

STARSYSTEM FL03

INDEX

INTRODUCTION

The EPA Lead and Copper Rule affects every community water system and non-transient non-community water system in the United States. Public drinking water systems must demonstrate that either optimal lead and copper corrosion control has been installed or demonstrate that the first draw lead and copper levels at the consumer's tap are below the acceptable action levels. The purpose of STARSystem is to compare in a logical step by step evaluation the available corrosion control options along with the proven results of other successful water systems already in compliance with the Lead and Copper regulations. This report offers a preliminary review of the water quality data and calculations of the intermediate corrosion indices. The next step evaluates the three basic options for optimal corrosion control and the required dosage rates of each chemical additive. Benefit evaluation and consider of negative constraints provides a feasible comparison of the specific treatment and distribution system limitations. In conclusion, the evaluation considers which optional method provides the greatest overall compatibility with primary drinking water regulations while providing optimal lead and copper corrosion control.

EVALUATION OVERVIEW

The water quality data was analyzed using current available data on file, on-site data, or from recent analysis performed in part by a water testing laboratory using Standard Methods to determine the necessary water quality parameters. The following key corrosion indicates are then calculated:

pH of saturation
Langelier Index
Ryznar Index
Dissolved Inorganic Carbonate
Calcium Carbonate Precipitation Potential
Baylis Curve Analysis Plot

A detailed description of the index and recommended value is provided in the enclosed water profile report. These indicators provide a specific value relative to the conditions of the finished source water, the distribution water quality, or the consumers tap water supply at the time the water was collected. It is implied that the proper water sample location determines the greatest probability of accuracy for index calculation and represents an average water quality from the water system.

The ground water supply, according to the selected corrosion indices, indicates it is moderately corrosive.

Variations in the source water temperature, dissolved oxygen content, carbon dioxide content, dosages of free or combined chlorine disinfectant, application of fluoride, or other water treatment chemicals to the composite mix of finished water, will all affect the overall stability and corrosive nature of the supply water proceeding into the distribution system. Every attempt has been made to acknowledge and weigh the influence of these secondary factors on the corrosive tendencies of the water. These indices are actually a "snapshot" view of the water's characteristics at one moment in time, representing the dynamics in the water system.

The saturation index indicates either precipitation of calcium carbonate scale or a dissolving potential from undersaturated water in regards to calcium carbonate saturation. Very rarely will a water supply be perfectly balanced in equilibrium and maintain a neutral condition with regards to the surrounding conditions throughout the distribution system, the domestic plumbing, and eventually during the retention time in the faucet fixture tap. Considering all the available options to provide stability, equilibrium, and a non-corrosive finished water quality, which directly depend on the anticipated changes from the "snap shot" water quality analysis, our water quality review is considered as technically correct as possible.

INDEX CALCULATIONS FOR SSU Services

The following corrosion indices have been calculated for ideal standard water, to serve as benchmark comparisons for SSU Services. To design the ideal standard water quality, more than one chemical adjustment is often required. Multiple combinations of the seven parameters provides an endless supply of options. Neutral corrosion indices, optimal pH, adequate total hardness, minimal precipitation potentials, and negligible dissolved inorganic carbonate will rarely co-exist together at optimal levels.

Parameter •	Desired	SSU Services Water Profile
Alkalinity	> 40 mg/L	30 ppm
Calcium	> 40 mg/L	70 ppm
Alk/(Cl+S04)	> 5	0.3
pH	6.8 - 9.3	8.41
CCPP	4 - 10 mg/L	- 35 ppm
Langelier	> 0.00	- .18
Ryznar	< 6.0	8.76
DIC	None	59 ppm

• Please refer to Appendix B for a description of each index

OPTIONS SELECTION

The presence of high lead levels in water distribution systems have been recognized to be an ever increasing problem in public water systems across the United States.

According to the EPA guidance recommendations, there are three basic options to optimize the control of corrosion in your water system.

OPTION #1: pH/Alkalinity Adjustments

1. The addition of a pH and alkalinity adjustment chemical to elevate the finished water quality to a point of near saturation or "passivation" with regards to the calcium carbonate precipitation potential. These additives are: Sodium hydroxide (caustic soda), Sodium carbonate (soda ash), Sodium bicarbonate (baking soda), Potassium hydroxide (caustic potash).

OPTION #2: pH/Alkalinity/Hardness Adjustments

2. The addition of a pH and alkalinity adjustment chemical to elevate the finished water quality to a point of saturation or "precipitation" with regards to the calcium carbonate precipitation potential. These additives are: Calcium oxide (quicklime), Calcium hydroxide (hydrated lime).

OPTION #3: Inhibitor Additives/Film Formation

3. The addition of an inorganic phosphate inhibitor or silicate based inhibitor which does not change significantly the pH and alkalinity of the finished water quality, however will provide beneficial functions such as: film-formation, passive deposition, buffering capacity, dispersion, cathodic/anodic protection.

DOSAGE REQUIREMENTS/pH ADJUSTMENT CHEMICALS FOR OPTIONS 1 & 2

The concentration levels for pH alkalinity chemicals are based on dosages of 100% active strength. For example, 7mg/L caustic soda concentration actually will require 14 mg/L of the standard 50% caustic soda solution product. Lime, soda ash, sodium bicarbonate as dry materials are not actually 100% active strength, however 1 mg/L of product dosage will each contribute alkalinity of 1.4 mg/L, 0.9 mg/L, and 0.6 mg/L respectively. The recommended treatment options for pH, alkalinity, and inhibitor application are regulated by the following dosage requirements with the consequential resulting change or adjustment in water quality parameters:

OPTION #1 PASSIVATION ADJUSTMENT CHEMICAL/Caustic Soda

Additive	Caustic Soda
Form	Liquid
Concentration	3 ppm

Calculated Interim Quality

Alkalinity	27 ppm
Calcium	64 ppm
Alk/(Cl+S04)	.3
pH	8.67
CCPP	6 ppm
Langelier	.72
Ryznar	7.82
DIC	53 ppm

BENEFITS	CONSTRAINTS
	50% Solution freezes @ 50F •
	More expensive than lime •
• Solution convenience over dry	
	Solution may plug feed lines •
	Sensitive reactions in low hardness low alkalinity waters •
	Requires skin and eye protection •
	Heat generation with water mix •
	Corrodes/cracks certain metals •
	Full protection for handling •
	Sodium content may exceed limits •
• pH adjustment without hardness effect	
• Potassium hydroxide additive achieves pH elevation without sodium	

COMMENTS: Already using to raise pH to present level but does not improve alkalinity/calcium ratio.

OPTION #1 PASSIVATION ADJUSTMENT CHEMICAL/Soda Ash

Additive	Soda Ash
Form	Dry
Concentration	6 ppm

Calculated Interim Quality

Alkalinity	31 ppm
Calcium	65 ppm
Alk/(Cl+S04)	.3
pH	8.60
CCPP	5 ppm
Langelier	.59
Ryznar	7.92
DIC	60 ppm

BENEFITS		CONSTRAINTS
	Dry form must be liquified	•
•	Raises pH/Alkalinity	
	Low solubility @ 16%	•
	Solution Mixer required	•
	20mg/L Sodium limits	•
•	Contributes Carbonate	
	Equipment maintenance	•
	Dust control required	•
	Handling mild alkaline	•

COMMENTS:

OPTION #1 PASSIVATION ADJUSTMENT CHEMICAL/Sodium Bicarbonate

Additive	Sodium Bicarbonate
Form	Dry
Concentration	75 ppm

Calculated Interim Quality

Alkalinity	74 ppm
Calcium	69 ppm
Alk/(Cl+S04)	.6
pH	8.2
CCPP	1 ppm
Langelier	.12
Ryznar	8.07
DIC	148 ppm

BENEFITS	CONSTRAINTS
• Safe handling without protection gear	
	• Requires mixing of powder
• Increases bicarbonate alkalinity without excessive pH increase	
• Adequate solubility in solution	
	• Contributes sodium to water
	• Expense higher than other pH/ alkalinity adjustments
	• Required handling and mixing

COMMENTS: Makes the greatest improvement in alkalinity/calcium ratio, however, the amount used may be cost prohibitive.

OPTION #2 PRECIPITATION ADJUSTMENT CHEMICALS/Lime

Additive	Lime
Form	Dry
Concentration	3 ppm

Calculated Interim Quality

Alkalinity	27 ppm
Calcium	67 ppm
Alk/(Cl+S04)	.3
pH	8.65
CCPP	7 ppm
LSI	0.77
Ryznar	7.73
DIC	52 ppm

BENEFITS	CONSTRAINTS
	• Requires clean up and maintenance
	• Protective equipment to handle and mix
	• Insoluble slurry/mix may clog feed lines
	• Requires handling and mixing
• Applies to low hardness and alkalinity water	
• Elevates pH and Alkalinity	
• Contributes calcium hardness	
• Inexpensive compared to other adjustments	
	• Requires quicklime slaker or hydrated lime mixer
	• Lime is moderately insoluble, contains particulates
	• Product caking and compacting during storage
	• Additional handling and storage requirements

COMMENTS: Improves alkalinity/calcium ratio very slightly.

DOSAGE REQUIREMENTS/INHIBITOR ADDITIVES FOR OPTION 3

The concentration and residual levels of each inhibitor are based on the actual % active ingredients of the inhibitor. According to the available options or combinations of chemical additives, the following dosage requirements for inorganic phosphate or silicate compare as follows:

OPTION #3 FILM FORMING INHIBITOR CHEMICAL/Orthophosphate
Additive 36% Orthophosphate

OPTION #3 FILM FORMING INHIBITOR CHEMICAL/Sodium Silicate

Additive	40% Silicate
Form	Liquid
Concentration	12 ppm
Residual	6 ppm

BENEFITS	CONSTRAINTS
• Solution ease of handling	
	High consumption rates •
• Provides alkalinity to water	
• Anodic film forming inhibitor	
	Dosages over 10X higher than phosphate •
	Concentration solution may plug feed lines •
	Requires moderate alkaline protection •

COMMENTS:

OPTION #3 FILM FORMING INHIBITOR CHEMICAL/Orthophosphate

Additive	36% Orthophosphate
Form	Liquid
Concentration	4 ppm
Residual	1.44 ppm

BENEFITS	CONSTRAINTS
• Liquid solution ease of handling	
	Acidic solution hazard •
	Requires protective gear •
	Spill protection in storage •
• Anodic film formation	
	May elevate copper pitting •
• Reduces lead solubility	
	Corrodes non-stainless metals •
• Zinc based controls iron corrosion	

COMMENTS:

OPTION #3 FILM FORMING INHIBITOR CHEMICAL/Blended Phosphate

Additive	34% Blended phosphate
Form	Liquid
Concentration	2.21 ppm
Residual	.764 ppm

BENEFITS	CONSTRAINTS
• Easy to handle solution	
• Neutral solution pH	
	Freeze protection required •
	Higher expense than other inhibitors •
• Lower dosages required	
• Anodic orthophosphate film formation	
• Cathodic polyphosphate film	
	Excessive Polyphosphate portions may increase lead levels at the tap •
	Ortho/Poly ratio balance required •
• Blend controls rusty water stains	

COMMENTS:

The inhibitor options will to a minor extent affect the pH and alkalinity of the finished water supply. Sodium silicate an alkaline solution and orthophosphoric acid solution will typically impact only the lowest alkalinity water quality with a minor rise or decrease in pH. Blended phosphates available in various concentrations and ratios of ortho: polyphosphate are typically neutral in pH and will not affect the finished water. Blended phosphates typically contain 25%-40% orthophosphate with the remaining portion consisting of complex polyphosphates. all phosphates are either potassium or sodium salts in a granular, powder, or liquid concentrate solution.

CONSTRAINTS/BENEFITS

pH Additives: Passivation techniques
Sodium hydroxide (caustic soda) 50% solution has a freezing point near 55F and a pH of>12. The product is considered hazardous and requires HM-181 material safety handling procedures.

Soda ash, sodium bicarbonate granular powder additives are available in 50 lb, 100 lb, and bulk bags for dilution with water. Solution strength depends on solubility of the additive, however will require a solution mixer to liquefy and minimize solid sedimentation.

While effective to reduce lead and copper solubility, pH increases are known to significantly reduce the disinfection potential and available free residuals of chlorine. The resulting loss of CT value is also complicated by the increased formation potential of trihalomethanes (THMs) at increasing pH values.

pH Additives: Precipitation techniques
Lime addition in the form of hydrated lime or slaked lime requires a special commitment of lime handling equipment and designed storage facilities. The precipitation of lime calcium carbonate in the distribution system is an unpredictable process resulting in clearwell/transmission line deposition and undersaturated conditions at the consumer tap. Either allowing excess oversaturated lime after lime softening or lime addition after conventional coagulation/sedimentation/filtration will provide the desired effect of precipitation into the distribution system. The above mentioned constraints of lowered disinfection and greater THM potential are also drawbacks when operating with elevated pH guidelines.

Inhibitor additives - Film formation techniques

Silicate inhibitors have excellent film formation properties for corrosion reduction, however dosage rates for adequate corrosion control requires 10mg/L-20mg/L of product. This amount of silicate into the potable distribution system will have a beneficial effect on low alkalinity water by providing additional alkalinity. A possible constraint occurs when this insoluble silicate coating accumulates in industrial feed-water, heat exchangers, and process water supplies. In the case of silicate inhibitors, required dosage rates are at the level of pH adjustment chemicals such as caustic soda, soda ash, bicarbonate, and lime.

Sodium silicate is a clear viscous material with an alkaline pH. Silicate and phosphate inhibitor programs perform optimally at lower pH levels than the desired conditions from the pH/alkalinity adjustment chemicals.

Phosphate inhibitors also have excellent film formation properties for corrosion reduction at dosage rates of 0.5mg/L-5.0mg/L depending on water quality. Phosphates have a unique demand created by calcium scale, iron tuberculated deposits, soluble iron, manganese, calcium, and magnesium in the water quality or in the water distribution system piping. This demand requires an initial higher passivation dosage rate to meet the consumption of phosphate by the mineral scale. Once this demand is consumed then the phosphate dosages are reduced to the standard rate, significantly lower than silicate requirements. Phosphates additives are compatible with other additives in pH or alkalinity and may enhance passivation film formation.

Various types of phosphates exist for water treatment. From the (acidic solution) of orthophosphoric acid to the (neutral salts) of ortho, meta, and polyphosphates, to the (alkaline salts) of ortho, pyro, and polyphosphates. Blended phosphates of the acid, neutral, and alkaline salts appear to have a synergy which allows improved performance and lower dosage rates than the single type of phosphate. Since phosphates may nutrify biological or algae growth under ultraviolet conditions the phosphates should not be introduced into open reservoirs or distribution systems without chlorination or adequate disinfection. However, under proper conditions and disinfection the addition of a phosphate may reverse biofilm growth and thereby reduce previously existing biological corrosion. This characteristic of phosphates may benefit the attempt to minimize THM formation and improve the disinfection residual requirements.

SELECTION RATIONALE:

The purpose of the pH and alkalinity passivation OPTION #1 technique is to create chemical conditions between the water and the surface of the pipe that lower the potential solubility of the metal into the water. The minimum solubility of lead and copper is a pH> 9.0 and a DIC<5.0 mg C/L. Copper is more sensitive to pH adjustment than lead, however lead is more sensitive to pH than to DIC. Application of sodium based additives such as soda ash, caustic soda, or sodium carbonate may create undesirable levels of sodium as dosage requirements increase.

The purpose of the calcium carbonate precipitation OPTION #2 technique is to manipulate the calcium, alkalinity, pH, and DIC to promote an oversaturation equilibrium of insoluble calcium carbonate. The ultimate goal of this process is to produce a uniform and stable deposit of primarily calcium carbonate throughout the distribution system. It is possible to accomplish this either prior to filtration if currently using lime in softening and coagulation, or after filtration as the post-lime addition to achieve oversaturation.

The purpose of the film formation chemical inhibitors OPTION #3 is to create conditions of lowered solubility and form a microscopic metallic inhibitor complex as the protective coating that blocks the anodic/cathodic electrochemical reaction in lead and copper corrosion. The presence of orthophosphate and silicates primarily stop the anodic corrosion reaction. The polyphosphate portion of chemical inhibitor will slow the controlling reaction rate of the cathodic corrosion. The properly balanced application of silicates and polyphosphates or ortho/polyphosphates blends will perform individually or also enhance the effectiveness of a pH and alkalinity technique.

CONCLUSIONS:

This water is only slightly aggressive according to the indexes. Since you are already adjusting the pH and are 0.2 below the pHs, the next choice is to add a corrosion inhibitor to reduce the solubility of lead in your system. The blend of reverse osmosis and lime softened water furnished to your customers is very close to optimum and the corrosion inhibitor will help by stabilizing any fluctuations in water quality from the surface water plant.

This STARSystem Water Quality Evaluation and Corrosion Optimization Report concludes with a brief overview of the primary observations and an introduction to the next phase for consideration; the product technical specifications and corrosion control services. Operational and maintenance expenditures on each of the OPTIONS (pH passivation, alkalinity precipitation, and chemical inhibitors) are available with a request for proposal. The corrosion control model provides an estimate in cost of corrosion treatment for the specific option selected, however is not included in this report. The total treatment cost depends on the actual treatment conditions and the current market pricing of the chemical additives selected. For a service proposal and chemical quotation call your local commodity chemical distributor or water treatment chemical supplier. The Kjell Corporation Technical Services Department is available to assist you with your final selection of corrosion inhibitor additives.

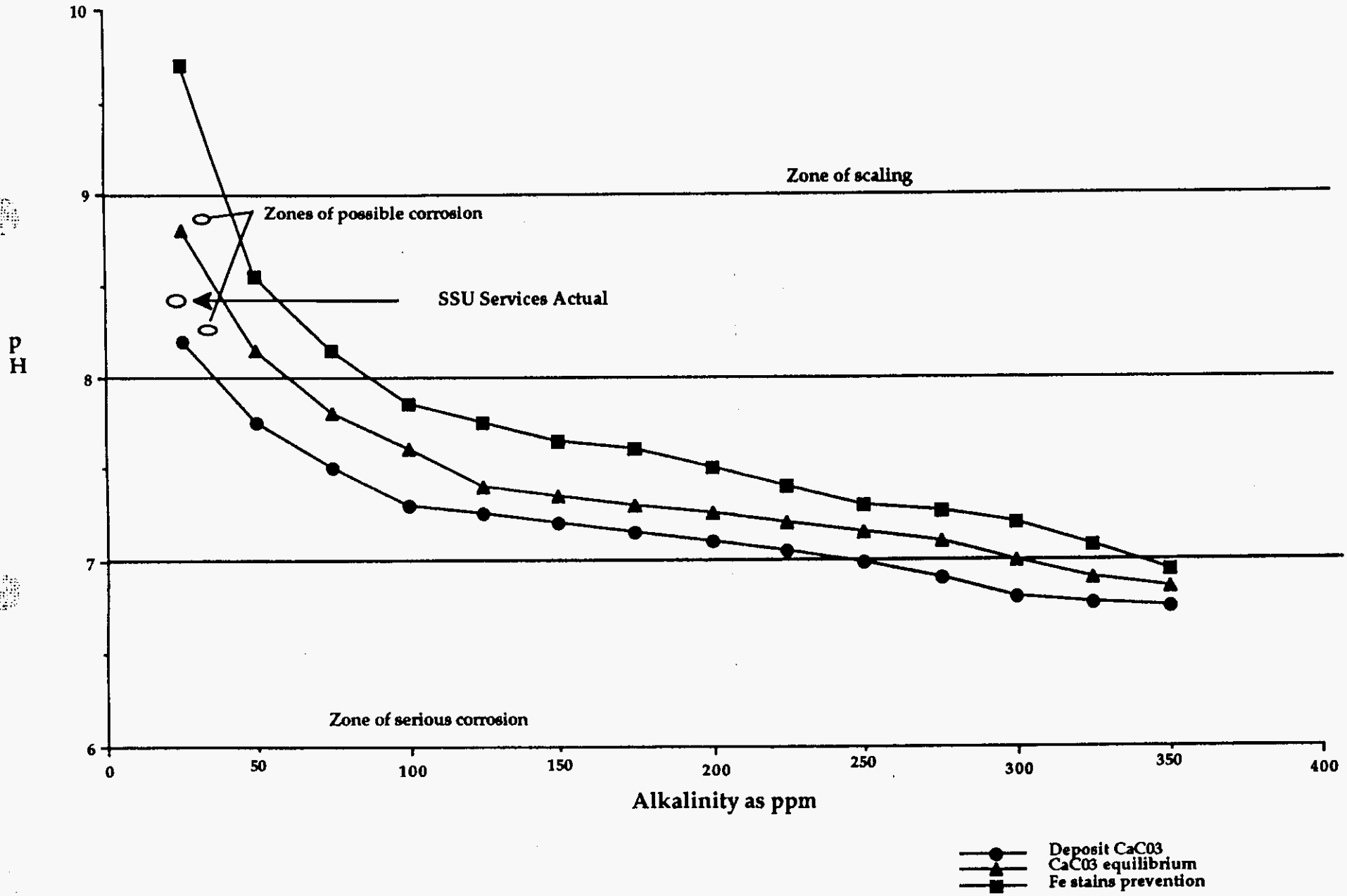
THANK YOU

We appreciate this opportunity to provide the required consultative direction in the final selection of your corrosion control treatment optimization program. The Kjell Corporation believes all information provided to be accurate and current. However, due to water quality changes, distribution system composition and domestic plumbing variations, we are unable to guarantee the treatment performance of each corrosion control option. This report may be used in it's entirety for submittal along with your EPA Guidance Manual Volume II. Desktop Form 141-C. If portions of this report require further detail or explanation, please make note of the section for future review. You may call The Kjell Corporation Technical Services Department at (800) 356-0422 for immediate response to your questions, or simply return a copy of your report for a written response.

THE KJELL CORPORATION
5043 HIGHWAY 51 SOUTH
JANESVILLE, WISCONSIN 53546
PHONE (800) 356-0422
FAX (608) 755-0538

Appendix A

Baylis Curve - SSU Services



Appendix B

WATER PROFILE

STARSYSTEM

Specialized Testing And Review

Mr. Ron Weis
SSU Services
P.O. Box 197
Marco Island, FL 33937
(813) 642-54-5

Distribution System Composition: PVC, asbestos and black iron

Domestic Plumbing Material: copper, PVC

Current Additives: Sodium Hydroxide, Chlorine and Reverse Osmosis Plant

Current Concerns: lead failure

Flow Rate (GPD): 4 mgd

Units expressed in mg/l unless noted:

pH:	8.41	**Iron:**	none detected
Alkalinity:	30 ppm *	**Manganese:**	none detected
Calcium:	70 ppm *	**Temperature:**	25 degrees Celsius
Hardness:	80 - 100 ppm *	**TDS:**	300 ppm
Chlorides:	120 ppm	**Sulfates:**	0 ppm

90th Percentile Lead (ug/l): unknown 11-92 = 0.005 mg/L, 11-93 = 0.02 mg/L

90th Percentile Copper: passed

***Expressed as calcium carbonate**

Water Profile page two
SSU Services

Based on your water quality analysis, the **STAR*System*** program has generated the following indices, pH of Saturation, Langelier Saturation Index (LSI), Alk/(Cl+S04) ratio, Calcium Carbonate Precipitation Potential (CCPP) and the Baylis Curve.

Index	*Actual Value*	*Recommended Value*	*Description*
pHs:	8.59	Same as actual	**pH of Saturation (pHs):** This is the pH at which your water quality would be saturated with calcium carbonate (CaCO3) and a protective scale should neither be deposited or dissolved.
LSI:	- .18	0 to 1	**Langelier Saturation Index (LSI):** This is a widely used numerical representation of the corrosive or scaling tendency of the water. Waters which have negative values tend to be more corrosive. **LSI>0** = Supersaturated and tends to ppt CaCO3. **LSI=0** is in equilibrium with CaCO3. Neither dissolving or corrosive. **LSI<0** = Undersaturated, tends to dissolve CaCO3.
Alkalinity (chloride + sulfate)	0.3	> 5	**Alk/(Cl+S04) ratio**: The ratio of chlorides and sulfates to alkalinity, this ratio has been useful in determining corrosive tendencies. Ratios greater than 5 are considered to exhibit corrosive tendencies.

Water Profile page three
SSU Services

Index	*Actual Value*	*Recommended Value*	*Description*
CCPP:	- 35 ppm	4-10 ppm	**Calcium Carbonate Precipitation Potential (CCPP):** The quantity of Calcium Carbonate which will either deposit or dissolve. This act value is required in USEPA Form 141C. A positive (+) CCPP value indicates oversaturation and the milligrams CaCO3/l that should precipitate. A negative (-) CCPP indicates undersaturation and how much CaCO3 should dissolve.
Bayliss Curve:			**Bayliss Curve:** This is a graphic representation showing the relationship of pH versus alkalinity and their roles of corrosion. The following page exhibits your water quality.

P.O. BOX 834
BELOIT, WI 53512

THE KJELL CORPORATION

(608) 755-0422
1-800-356-0422
FAX (608) 755-0538

Appendix C

ITEM 8: DESKTOP EVALUATION

1. AWWA 1986. *Corrosion Control for Operators.* AWWA (Denver, CO).

2. AWWARF 1990b. *Chemistry of Corrosion Inhibitors in Potable Water.* AWWA (Denver, CO).

3. AWWARF. 1990c. *Lead Control Strategies.* AWWA (Denver, CO).

4. AWWARF/DVGW- Forschungsstelle Cooperative. 1985. *Internal Corrosion of Water Distribution Systems.* AWWARF (Denver, CO).

5. Benjamin, M.M., et al. 1990. *Chemistry of Corrosion Inhibitors in Potable Water.* AWWA and AWWARF (Denver, CO).

6. Holm, T.R. and Schock, M.R. 1991a. Potential Effects of Polyphosphate Products on Lead Solubility in Plumbing Systems. *Journal AWWA.* 83(7):76-82.

7. Karalekas, P.C. et al. 1983 Control of Lead and Copper, and Iron Pipe Corrosion in Boston. *Journal AWWA.* 75(2):92-95.

8. Kirmeyer, G.J. and G.S. Logsdon. 1983. Principles of Internal Corrosion and Corrosion Monitoring. *Journal AWWA.* 75(2): 78-83.

9. Maas, R.P., et al 1991. A Multi-State Study of the Effectiveness of Various Corrosion Inhibitors in Reducing Residential Lead Levels. *Proc. 1991 AWWA Annual Conf.,* (Philadelphia, PA).

10. Neff, C.H., et al. 1987. *Relationship Between Water Quality and Corrosion of Plumbing Materials in Buildings.* EPA Rept. No. EPA/600/S2-87/036. (Cincinnati, OH).

11. Schock, M.R. 1980. Response of Lead Solubility to Dissolved Carbonate in Drinking Water. *Journal AWWA.* 72(12)-695-704.

12. Swayne, J. 1983. Corrosion Study at Carbondale, Illinois. *Journal AWWA.* 75(2):101-102.

13. Mass, R., Patch, S., Peek, B., November, 1991. *Lead Contaminations in North Carolina Drinking Water: Action Strategies for Citizens and Public Water Suppliers*.. UNC-Asheville Environmental Quality Institute, Asheville, N.C., EQI Technical Publication No. 91-003.

14. Cousino, M., Bacharach, J., Heine, J. *Getting the Lead Out- Reducing Lead Concentration in Water.* Reprinted from Public Works Magazine, November 1987.

15. Townsend, Tracy L., Pollen, Michael R. *Get the Lead Out* Presented at the 1988 Alaska Water Management Association Conference, Clarion Hotel, Anchorage, Alaska.

16. Johnson, Bruce, Project Manager CH2M Hill, Yorton, Roger, Water Chemist, CH2M Hill, Tran, Tiffany, Program Manager, Jae Kim. *Evaluation of Corrosion Control Alternatives for Low pH, Low Alkalinity Surface Waters in Eastern Massachusetts.*

Desktop Evaluation Short Form for Small and Medium PWS Treatment Recommendations

A. PWS General Information:

1. PWS Identification No. 5110185
2. Contact person:
   - Name: Ronald Weis
   - Mailing Address: S.S.U
     P.O. Box 197
     Marco FL 33937
   - Telephone 1-813-642-5405 Fax 1-813-[illegible]
3. Population served 20895
4. Person responsible for preparing this form:
   - Name: Ronald Weis
   - Signature: Ronald Weis
   - Telephone 1-813-642-5405

B. PWS Technical Information:

1. **Monitoring Results:**

   Sampling dates: From 8-24-93 To _____

   First-Flush Tap Monitoring Results:

   Lead:
   - Minimum concentration = .0 mg/L
   - Maximum concentration = .95 mg/L
   - 90th percentile = .02 mg/L

   Copper:
   - Minimum concentration = .0 mg/L
   - Maximum concentration = .33 mg/L
   - 90th percentile = .10 mg/L

   Point-of-Entry Tap Monitoring Results:

	Points of Entry 1	2	3	4	5
Lead Concentration in mg/L:	< .001				
Copper Concentration in mg/L:	< .02				
pH:	8.05				
Temperature, °C:	81F				
Alkalinity, mg/L as $CaCO_3$:	25				
Calcium, mg/L as Ca:	140				
Conductivity, µmho/cm @ 25°C:	622				
Phosphate, mg/L as P:	.03				
Silicate, mg/L as SiO_2:	12.2				

Form 141-C

1. Monitoring Results (continued):

Water Quality Parameter Distribution System Monitoring Results:

Indicate whether field or laboratory measurement.

	Field	Lab
pH: minimum = 7.06 maximum = 8.31	____	X
alkalinity:	____	X
minimum = 11 mg/L as $CaCO_3$		
maximum = 35 mg/L as $CaCO_3$		
temperature:	X	____
minimum = 81 °F		
maximum = 82 °F		
calcium:	____	X
minimum = 32 mg/L as Ca		
maximum = 164 mg/L as Ca		
conductivity:	____	X
minimum = 123 µmho/cm @ 25°C		
maximum = [illegible] µmho/cm @ 25°C		
orthophosphate:	____	X
(if phosphate-based inhibitor is used)		
minimum = .01 mg/L as P		
maximum = .08 mg/L as P		
silica:	____	X
(if silica-based inhibitor is used)		
minimum = 3.07 mg/L as SiO_2		
maximum = 12.4 mg/L as SiO_2		

2. Existing Conditions:

Is treatment used? yes X no ____

Identify water source(s):

Source No. 1 Surface Water Lake - Lime Soft...

Source No. 2 Infiltration Gallery - Lime Soft...

Source No. 3 Well field - R.O. Plant

If treatment is used, is more than one source used at a time?

yes X no ____ IT could Be

Identify treatment processes used for each source:

Process	No. 1	No. 2	No.
Presedimentation	Yes	Yes	No
Aeration	No	No	Yes
Chemical mixing	Yes	Yes	Yes
Flocculation	Yes	Yes	No
Sedimentation	Yes	No	No
Recarbonation	No	No	No

2. Existing Conditions (continued):

Identify treatment processes used for each source:

Process	No. 1	No. 2	No. 3
2nd Stage mixing	No	No	No
2nd Stage flocculation	No	No	No
2nd Stage sedimentation	No	No	No
Filtration:			
Single medium			
Dual media			
Multi-media	Yes	Yes	No
GAC cap on filters			
Disinfection:			
Chlorine			
Chlorine dioxide			
Chloramines "CN 509 Blend #3"	Yes	Yes	Yes
Ozone			
Granular Activated Carbon			

List chemicals normally fed:
Lime, Alum Hex, Soda Ash
Cl2, NH3

List chemicals sometimes fed:
R.O. Plant Sulfuric Acid, Flo-Con 100
Caustic Soda, Cl2

3. Present Corrosion Control Treatment:

None _____

Inhibitor Sodium Hexametaphosphate

Date initiated from start of plant

Present dose 1.0

Range in Residual in Distribution System:

Maximum _______ mg/L Minimum _______ mg/L

Brand name ____________________

Type ____________________

Has it been effective? Please comment on your experience.
Has been until we started R.O. Plant

pH/alkalinity adjustment _______

pH Target _______

Alkalinity Target _______ mg/L $CaCO_3$

Calcium adjustment _______

Calcium Target _______ mg/L $CaCO_3$

4. Water Quality:

Complete the table below for typical untreated and treated water quality data. Copy this form as necessary for additional sources. Include data for each raw water source, if surface supplies are used, and finished water quality information (point of entry) from each treatment plant. If wells are used, water quality information from each well is acceptable but not necessary if several wells have similar data. For groundwater supplies, include a water quality summary from each wellfield or grouping of wells with similar quality.

Include available data for the following:

Parameter	Untreated Supply	Treated Water (point of entry)
pH, units	7.8	8.4
Alkalinity, mg/L as $CaCO_3$	250	40
Conductivity, µmho/cm @ 25°C	1154	731
Total dissolved solids, mg/L	600	380
Calcium, mg/L Ca	250	120
Hardness, mg/L as $CaCO_3$	350	140
Temperature, °F	80°F	80°F
Chloride, mg/L	120	130
Sulfate, mg/L		

5. Distribution System:

Does the distribution system contain lead service lines?

yes _____ no ✓

If your system has lead service lines, mark below the approximate number of lines which can be located from existing records.

None _____ Some _____ Most _____ All _____

Is the distribution system flushed?

None _____ Some ✓ Most _____ All _____

6. Historical Information:

Is there a history of water quality complaints?

yes ✓ no ____

If yes, then answer the following:

Are the complaints documented? yes ✓ no ____

Mark the general category of complaints below. Use:

1 for some complaints in this category
2 for several complaints in this category
3 for severe complains in this category

Categories of complaints:

Taste and odor 1
Color 1
Sediment 1
Other (specify) ____

Have there been any corrosion control studies?

yes Yes no ____ See Attached

If yes, please indicate:

Date(s) of study From _____ To _____

Study conducted by PWS personnel? yes ____ no ____

Brief results of study were:

(optional) Study results attached yes ____ no ____

Were treatment changes recommended? yes ____ no ____

If yes:

Were treatment changes implemented? yes ____ no ____

Have corrosion characteristics of the treated water changed? yes ____ no ____

If yes, how has change been measured?

General observation ____
Coupons ____
Frequency of complaints ____
Other ____

See Attached

Briefly indicate, if other:

7. Treatment Constraints:

Optimal corrosion control treatment means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations. Please indicate below which constraints to treatment will apply to your PWS. Use the following code:

1 Some constraint = Potential Impact but Extent Is Uncertain
2 Significant constraint = Other Treatment Modifications Required to Operate Option
3 Severe constraint = Additional Capital Improvements Required to Operate Option
4 Very severe constraint = Renders Option Infeasible

Constraint	Treatments			
	pH/Alkalinity Adjustment	Calcium Adjustment	Inhibitor	
			PO_4	S
A. Regulatory				
SOCs/IOCs				
SWTR: Turbidity				
Total Coliforms				
SWTR/GWDR: Disinfection				
Disinfection Byproducts				
Lead and Copper Rule			3	
Radionuclides				
B. Functional				
Taste & Odor				
Wastewater Permit				
Aesthetics				
Operational				
Other				

8. Desktop Evaluation:

Briefly summarize the review of the corrosion control literature that pertains to your PWS. A report or summary can be appended to this form if preferred.

See Attached

Were other similar facilities located which are experiencing successful corrosion control? yes _____ no _____

If yes, identify their corrosion control treatment method.

None _____
pH/Alkalinity adjustment _____
Calcium adjustment _____
Inhibitor _____
Phosphate based _____
Silica based _____

9. Recommendations:

The corrosion control treatment method being proposed is: H.O.F.S.

pH/Alkalinity adjustment _____
Target pH is _____ units
Target alkalinity is _____ mg/L as $CaCO_3$
Calcium adjustment _____
Target calcium concentration is _____ mg/L Ca
Inhibitor _____
Phosphate based _____
Brand name _____
Target dose _____ mg/L
Target residual _____ mg/L orthophosphate as p
Silica based _____
Brand name _____
Target dose _____ mg/L
Target residual _____ mg/L as SiO_2

Rationale for the proposed corrosion control treatment is:

Discussed in the enclosed report _____
Briefly explained below _____

List your proposed operating guidelines:

Parameter	Operating Range
	See Attached

Briefly explain why these guidelines were selected.

10. **Please provide any additional comments that will assist in determining optima corrosion control treatment for your PWS.**

HF scientific, inc.
3170 Metro Parkway · Ft. Myers, FL 33916-7597
Phone: (813) 337-2116 · Fax: (813) 332-7643

Quality Products for Science and Industry

FAX MESSAGE

TO: Southern States Utilities
Marco Island RO plant

DATE: February 10, 1994

ATTN: Ron Weis

FROM: Bill Lazenby

FAX NO.: 813-394-8137

PAGE 1 OF 2

RE: Corrosion recommendation

Ron-

Please use the following recommendation for your application at the RO plant. Calgon C-9L fed at a rate of 3 ppm with a pH adjustment to 7.8 or lower would be the first recommendation. The potential difficulty is in the zinc level (0.22ppm at the recommended feed rate), on your OSCAR form you indicated that you could tolerate only 0.1 ppm of zinc. Please review and confirm that 0.22 ppm of zinc would overload the WWTP sludge, keep in mind that you will probably realize a substantial decrease in copper levels as the zinc increases marginally. Initial feed rate of C-9L should be 5 ppm for 6 weeks to passivate the system with reduction of 0.5 ppm per week down to maintenance dosage after initial 6 week period.

If the 0.22 ppm zinc level is unacceptable the next alternative is Calgon C-2 and an increase in pH to 8.5. The C-2 is recommended because the OSCAR report indicated you have zero tolerance for sodium and C-2 is the only non zinc product which will not add any sodium to the process. Again a 5 ppm feed for 6 weeks followed by a reduction of 0.5 ppm per week to a maintenance dosage of 3 ppm should be the treatment schedule.

I will be in the office all day Friday and will be glad to review any of the alternatives with you. Please let me know if I can be of any assistance.

Regards,

HF scientific, inc.

Bill Lazenby
Product Manager

BL/laa

cc K. Fennell

FILE
1) Pb-Cu
2) MARCO ISL. (WATER)

Southern States Utilities, Inc.
Marco Island Plant
Intra-company correspondence

DATE: February 17, 1994

TO: Mike Quigley, Ralph Terrero, Catherine Walker, Frank Sanderson

FROM: Ron ~~Weis~~ RW

SUBJECT: Corrosion Recommendation

Mel Fisher

The attached is our recommendation for corrosion control and I am in agreement with same.

HF scientific, inc.
3170 Metro Parkway · Ft. Myers, FL 33916-7597
Phone: (813) 337-2116 · Fax: (813) 332-7643

Quality Products for Science and Industry

FAX MESSAGE

TO: Southern States Utilities
Marco Island RO plant

DATE: February 10, 1994

ATTN: Ron Weis

FROM: Bill Lazenby

FAX NO.: 813-394-8137

PAGE 1 OF 2

RE: Corrosion recommendation

Ron-

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I will be in the office all day Friday and will be glad to review any of the alternatives with you. Please let me know if I can be of any assistance.

Regards,

HF scientific, inc.

Bill Lazenby
Product Manager

BL/laa

cc K. Fennell

FILE
1) MARCO ISLAND (WATER)
2) Pb · Cu

S S U

Technical Services
Intra-company correspondence

TO: Ron Weis

FROM: José F. de Pedro

DATE: June 3, 1994

Received
JUN 6 1994
Environmental Services

SUBJECT: Desktop Study(RTW) for Marco Island

Based on the Water Quality Parameters results, ran through the RTW Corrosion Control model(see below),

Temp.	**= 80°F = 26.7°C**	**Ca Hardness**	**= 58**
pH	**= 8.2**	**Alkalinity**	**= 32**
Cl_2 Res.	**= 1.6 mg/L**	**Cl^-**	**= 135**
TDS	**= 380 mg/L**	**$SO_4^=$**	**= N/A**
Total Hardness	**= 156 mg/L**		

test results indicate that the water is still corrosive(see enclosure). The intention was to run an extra set of L&C tests to see if we are below the action level .

Additional lime dosing may improve the Langelier Index but this will bring our pH over 8.6, which is over the MCL for pH. I am recommending that we desist on doing the extra tests and that we continue on our efforts to initiate corrosion control treatment with the corrosion control inhibitor. Environmental Services should continue their efforts to obtain a permit for corrosion treatment.

If you need any further assistance on this matter, please feel free to call me at ext. 445.

M94-052/dp

xc: File
Dave Denny
Mel Fisher
John Losch
Frank Sanderson
Ralph Terrero
Catherine Walker

Wake Island   Km Weis
6/3/94
Loc. POE blend of R.O. + Lime Soft

The RTW Model   Version 1.1a

STEP 1: Enter initial water characteristics.

Measured TDS	**380**	mg/L
Measured temperature	**26.7**	deg C
Measured pH	**8.2**	
Measured alk, as CaCO	**32**	mg/L
Measured Ca, as CaCO	**58**	mg/L
Measured Cl	**135**	mg/L
Measured SO4	**0**	mg/L

STEP 2: Enter amount of each chemical to be added (expressed as chemical).

Lime (slaked)	**0**	mg/L
Soda ash	**0**	mg/L
Alum *18H2O	**0**	mg/L
Chlorine gas	**1.6**	mg/L
Caustic soda	**0**	mg/L
Carbon dioxide	**0**	mg/L
Hydrochloric acid	**0**	mg/L
Sodium bicarbonate	**0**	mg/L
Calcium chloride	**0**	mg/L
Ferric sulfate *9H2O	**0**	mg/L
Ferrous sulfate *7H2O	**0**	mg/L
Ferric chloride	**0**	mg/L

STEP 3: Adjust at Step 2 until interim water characteristics meet desired criteria.

Press PAGE DOWN for additional initial, interim and final water characteristics if desired.

Theoretical interim water characteristics after chemical addition

			Desired				Desired
Interim alkalinity	30	mg/L	> 40 mg/L	Interim pH	7.40		6.8-9.3
Interim Ca, as CaCO3	58	mg/L	> 40 mg/L	Precipitation potential	-997	mg/L	4-10 mg/L
Alk/(Cl+SO4)	0.2		> 5.0	Langelier index	-1.26		>0

Calculated initial water characteristics

Initial acidity	32	mg/L
Initial Ca sat, as CaCO3	155	mg/L
Initial DIC, as CaCO3	64	mg/L

Theoretical interim water characteristics after chemical addition

Interim acidity	34	mg/L	
Interim Ca sat, as CaCO	1055	mg/L	Desired
Ryznar index	9.92		<6
Interim DIC, as CaCO3	64	mg/L	

Theoretical final water characteristics after CaCO3 precipitation

Final alkalinity	N/A	mg/L
Final Ca	N/A	mg/L
Final acidity	N/A	mg/L
Final pH	N/A	
Final DIC, as CaCO3	N/A	mg/L

Water Sand — Arizona
6/3/24
Loc. PCE Blend @ RC + Lime Softening

The RTW Model Version 1.1a

STEP 1: Enter initial water characteristics.

Measured TDS	380	mg/L
Measured temperature	26.7	deg C
Measured pH	8.2	
Measured alk, as CaCO	32	mg/L
Measured Ca, as CaCO	58	mg/L
Measured Cl	135	mg/L
Measured SO4	0	mg/L

STEP 2: Enter amount of each chemical to be added (expressed as chemical).

Lime (slaked)	4	mg/L
Soda ash	0	mg/L
Alum *18H2O	0	mg/L
Chlorine gas	1.6	mg/L
Caustic soda	0	mg/L
Carbon dioxide	0	mg/L
Hydrochloric acid	0	mg/L
Sodium bicarbonate	0	mg/L
Calcium chloride	0	mg/L
Ferric sulfate *9H2O	0	mg/L
Ferrous sulfate *7H2O	0	mg/L
Ferric chloride	0	mg/L

STEP 3: Adjust at Step 2 until interim water characteristics meet desired criteria.

Press PAGE DOWN for additional initial, interim and final water characteristics if desired.

Theoretical interim water characteristics after chemical addition

			Desired				Desired
Interim alkalinity	35	mg/L	> 40 mg/L	Interim pH	9.07		6.8-9.3
Interim Ca, as CaCO3	63	mg/L	> 40 mg/L	Precipitation potential	4	mg/L	4-10 mg/L
Alk/(Cl+SO4)	0.3		> 5.0	Langelier index	0.52		>0

Calculated initial water characteristics

Initial acidity	32	mg/L
Initial Ca sat, as CaCO3	155	mg/L
Initial DIC, as CaCO3	64	mg/L

Theoretical final water characteristics after CaCO3 precipitation

Final alkalinity	31	mg/L
Final Ca	59	mg/L
Final acidity	29	mg/L
Final pH	8.64	
Final DIC, as CaCO3	59	mg/L

Theoretical interim water characteristics after chemical addition

Interim acidity	29	mg/L	
Interim Ca sat, as CaCO	19	mg/L	Desired
Ryznar index	8.03		<6
Interim DIC, as CaCO3	64	mg/L	

Marco Shores Office
800 Windward Drive
P.O. Box 1693
Marco Island, FL 33969
(813) 394-3168

SSU SERVICES

DATE: August 2, 1994

TO: Naples Daily News
1075 Centeral Avenue
Naples, FL 33940

FROM: Southern States Utilities

SUBJECT: Public Education Concerning Lead in the Drinking Water

The United States Environmental Protection Agency (USEPA) and Southern States Utilities (SSU) are concerned about lead in drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above USEPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/l). Under federal law we are required to have a program in place to minimize lead in our drinking water by November 1996. This program includes corrosion control treatment, source water treatment and public education.

As part of the public education portion of the program, we are submitting pamphlets entitled "Lead in Your Water" to your organization to be made available to the public. The pamphlet informs the public about the adverse health effects of lead and explains the steps people can take in their homes to reduce exposure to lead in drinking water (such as flushing the tap, cooking with cold water rather than hot, checking for lead solder in new plumbing and testing their water for lead).

We would appreciate your assistance in bringing public awareness of lead in drinking water. If you have any questions or would like more information, please call 813-394-3353 and ask for Marc Larson, coordinator of the Lead Education Program.

HF scientific, inc.

CALGON CORPORATION

Corrosion Treatment Recommendation for

SSU Southern States Utilities

Marco Island Water Distribution System

Prepared by: Bill Lazenby, HF scientific, inc.
8/4/94

Phone: (813) 337-2116

HF scientific, inc.
3170 Metro Parkway
Ft. Myers, FL 33916-7597
Phone: (813) 337-2116 • Fax: (813) 332-7643

Quality Products for Science and Industry

August 1, 1994

Southern States Utilities
Marco Island Office
960 North Collier Blvd
Marco Island FL 33937
Attn: Mr. Ron Weis

RE: Calgon corrosion inhibitor program

Dear Mr. Weis,

Thank you for the opportunity to work with you on this project. The integrated treatment necessary to provide effective corrosion treatment of a system utilizing two different water treatment strategies, conventional and membrane treatment, involves an in depth evaluation of the entire system. HF scientific, inc. has made that evaluation and we are prepared to offer a comprehensive treatment program of Calgon corrosion inhibitors to reduce corrosion in the Marco Island distribution system. By correctly treating the entire distribution system "at the tap" lead and copper levels should be reduced significantly.

Enclosed is our corrosion treatment recommendation for the SSU Marco Island distribution system. It includes current OSCAR analyses of your finished water for both treatment plants, site specific product recommendations and application points, product feed rates, passivation schedules, recommendations for the Calgon products and associated feed and monitoring equipment with quotations, and available options for product packaging. I look forward to meeting with you this week to go over the recommendations and taking the next step toward getting treatment started. Please let me know if you have any questions.

Best regards,

HF scientific, inc.

William L. Lazenby
Product Manager

cc: S. Scullion
G. Kelly
B. Boffardi

Lovibond

Manufacturing and Distribution Partners

CALGON CORPORATION
SUBSIDIARY OF MERCK & CO. INC.

RO

HF scientific, inc.
Desktop Corrosion Study

Prepared for
Southern States Utilities

Re: Marco Island WTP (RO)

HF scientific, Inc.
3170 Metro Parkway
Ft. Myers, FL 33916-7597
Phone: (813) 337-2116
Fax: (813) 332-7643

HF SCIENTIFIC INC. DESKTOP CORROSION STUDY

FOR: Southern States Utilities
Marco Island WTP (RO)
Marco Island, FL

CONTACT: Ron Weis
TITLE: Water Plant Supervisor
PHONE: (813) 642-5405

SYSTEM TYPE:

RO Plant X

REPORT INCLUDES SITE SPECIFIC:

- Calgon "OSCAR" analysis with comparative effect of high pH treatment, effect on TTHM and chlorine usage. Easy to follow graphics show the effect of a high pH treatment on chlorine demand and TTHM potential.

- Indices for water quality evaluation.
  - **Water Characteristics**
    - Calcium Carbonate Precipitation Potential
    - Langelier Index
    - Ryznar Index
    - Acidity
    - Calcium Saturation (as $CaCO_3$)
    - Dissolved Inorganic Carbonate (as $CaCO_3$)

- Site specific product recommendation includes literature and MSDS.

- Dosage and system passivation schedule includes recommended dosage reduction schedule.

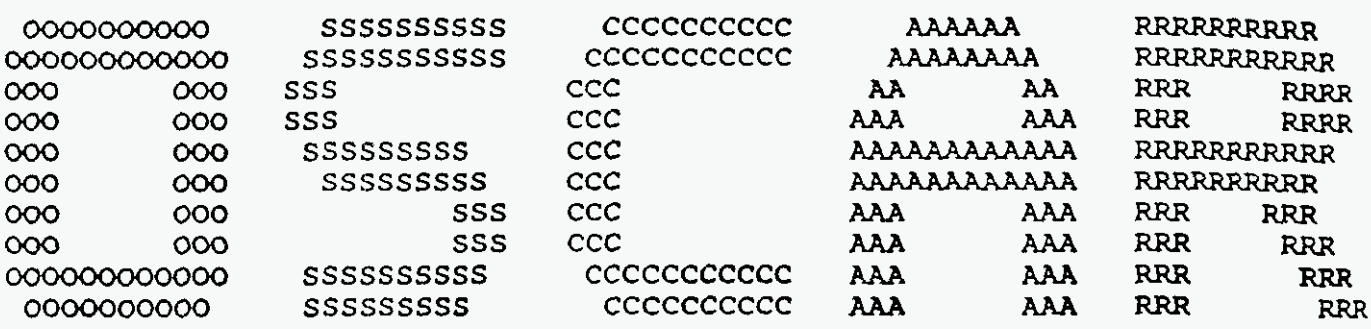
- Feed point includes rough site specific diagram.

- Feed equipment recommendation includes pump output volume sized for maximum efficiency and proposed expansion of facility.

- Corrosion monitoring equipment recommendation includes coupons (steel and copper) and optional electronic monitoring.

- Distribution water analysis schedule includes frequency and specific type of testing for best results.

TABLE OF CONTENTS



(Once-Through Scale and Corrosion Analysis Recommendation)

Calgon Corporation

Water Management Division

Municipal Water Treatment Recommendation System

Calgon Corporation

Water Management Division

Plant Name: SSU MARCO ISLAND MEMBRANE WTP

Plant Address: 415 LILY ST / MARCO ISLAND FL

Plant Contact: RON WEIS

Account Representative: BILL LAZENBY

Customer: SSU MARCO ISLAND MEMBRANE WTP **Date: 07/29/94**
Problem : Lead corrosion

Municipal Water Treatment Recommendation System

Calgon Corporation

Water Management Division

pH :	7.80	Temperature :	26.11 (C)
Alkalinity :	24.00 mg/L CaCO3	Sodium :	0.00 mg/L
Chloride :	120.00 mg/L	Iron :	0.00 mg/L
Sulfate :	0.00 mg/L	Manganese :	0.00 mg/L
Calcium :	80.00 mg/L	Soluble Aluminum :	0.00 mg/L
Magnesium :	0.00 mg/L	Dissolved Solids :	300.00 mg/L
Total Hardness :	80.00 mg/L CaCO3	Conductivity :	545.00 mmhos/cm

Customer: SSU MARCO ISLAND MEMBRANE WTP Date: 07/29/94
Problem : Lead corrosion

Municipal Water Treatment Recommendation System

Calgon Corporation

Water Management Division

The following treatment is recommended for SSU MARCO ISLAND MEMBRANE WTP. The treatment is based on your well source, the problem you indicated exists in your system and the chemical analysis of your water, preferred treatment and product form. Daily usage rates are calculated based on a flow rate of 5.00 MGD.

For control of Lead corrosion Calgon recommends:

	Recommended Treatment	Dosage mg/L	Usage lbs/day	$/lb	$/Day
Product #1 :	C-9L	3.00	124.95	0.73	91.21

The Langelier Index of your water is -0.3. The Langelier Index predicts the scaling tendency of a water. A zero Langlier Index indicates that the water is at equilibrium with calcium carbonate.

Customer: SSU MARCO ISLAND MEMBRANE WTP Date: 07/29/94
Problem : Lead corrosion

OSCAR SUMMARY REPORT 3.0
Created: 07/29/94

OSCAR 3.0 (PAGE #1) Filename = SSUMARCO

Plant Name	SSU MARCO ISLAND MEMBRANE WTP
Plant Address	415 LILY ST / MARCO ISLAND FL
Plant Contact	RON WEIS
Account Representative	BILL LAZENBY
Water Source	Well
Chlorination	Y Chlorination Level : > 1.0 mg/L
Filtration	Y
Clarification	N
Chemical Softening	N
Open Finished Resevior	N

OSCAR 3.0 (PAGE #2)

pH	7.8	Temp (C) 26.11 or Temp (F)	79.00
Alkalinity, mg/L as CaCO3	24.00	Sodium, mg/L as Na	0.00
Chloride, mg/L as Cl	120.00	Iron, mg/L as Fe	0.00
Sulfate, mg/L as SO4	0.00	Manganese, mg/L as Mn	0.00
Calcium, mg/L as Ca	80.00	Soluble Aluminum, mg/L as Al	0.00
Magnesium, mg/L as Mg	0.00	Total Dissolved Solids, mg/L	300.00
Total Hardness, mg/L as CaCO3	80.00	Conductivity, mmhos/cm	545.00

OSCAR 3.0 (PAGE #3)

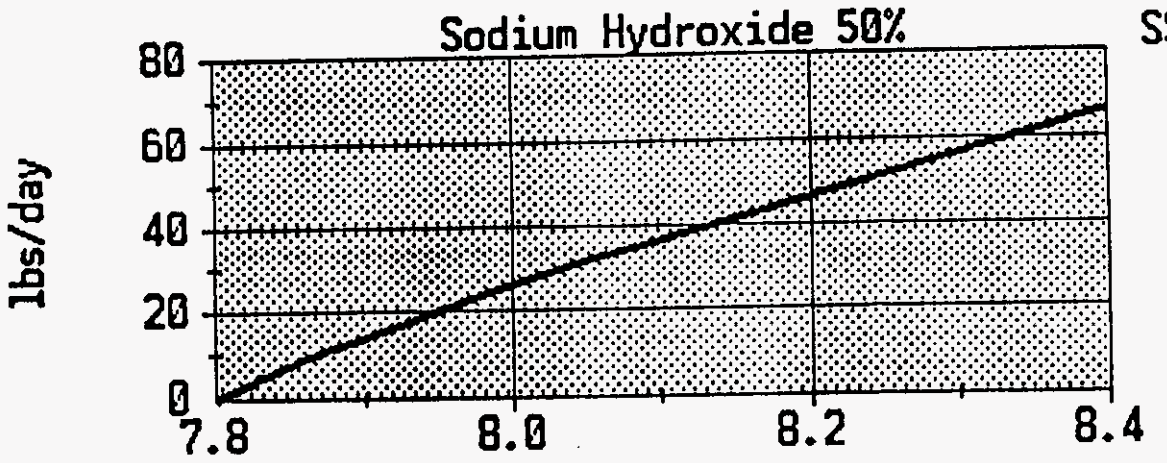
Average Flow Rate	5.00 MGD or 3472 GPM
Observed Problem	Lead corrosion
Biologic Problem	None
Limit Zinc	Y Maximum Zinc 0.24 mg/L
Limit Phosphate	N
Limit Sodium	N
Preferred Treatment Chemistry	Zinc/Orthophosphate
Desired Product Form	Liquid
Allow Two Products	N

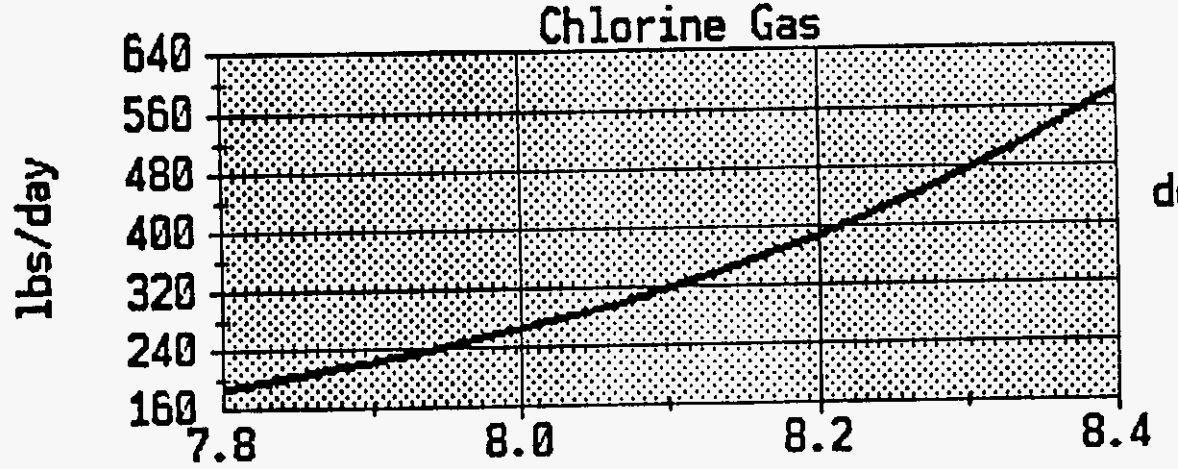
OSCAR 3.0 (pH PAGE)

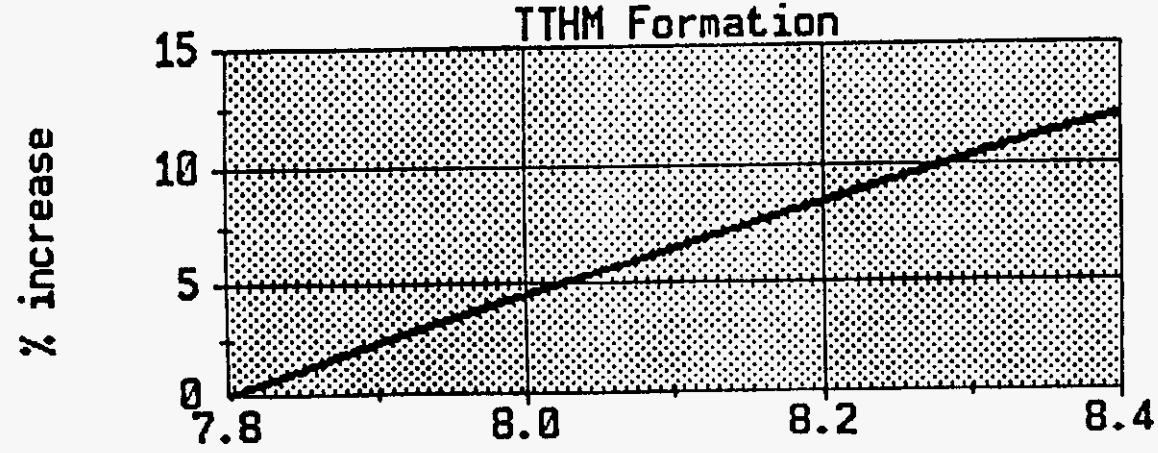
Current Finished Water pH	7.80 Current pH is 7.80
New Finished Water pH	8.40
pH Adjustment Chemical	Sodium Hydroxide
pH Adjustment Chemical Cost	0.15 $/lb
Disinfectant Type	Chlorine Gas
Disinfectant Usage	187.00 lbs/day
Disinfectant Cost	0.25 $/lb
TTHM (trihalomethane) Formation	Y

LSI = -0.3

	Recommended Treatment	Dosage mg/L	Usage lbs/day	$/lb	$/Day
Product #1 :	C-9L	3.00	124.95	0.73	91.21







SSU MARCO ISLAND MEMBRANE WTP
OSCAR COST SUMMARY
pH change 7.80 to 8.40

Sodium Hydroxide 50%
(@ 0.15 $/lb)
increase 66.6 lbs/day
increase 9.66 $/day

Chlorine Gas
(@ 187.0 lbs/day 0.25 $/lb)
decrease 67.8 % effectiveness
increase 394.2 lbs/day
increase 98.54 $/day

TTHM Formation
expected increase 12.0 %

Total Incremental Cost
108.20 $/day
39,492.11 $/year

CALGON CORPORATION
07/29/94

Municipa Water Treatment Recommenda on System

Calgon Corporation

Water Management Division

Plant Name: SSU MARCO ISLAND MEMBRANE WTP

Plant Address: 415 LILY ST / MARCO ISLAND FL

Plant Contact: RON WEIS

Account Representative: BILL LAZENBY

Water Characteristics

pH :	7.80	Temperature :	26.11 (C)
Alkalinity :	24.00 mg/L CaCO3	Sodium :	0.00 mg/L
Chloride :	120.00 mg/L	Iron :	0.00 mg/L
Sulfate :	0.00 mg/L	Manganese :	0.00 mg/L
Calcium :	80.00 mg/L	Soluble Aluminum :	0.00 mg/L
Magnesium :	0.00 mg/L	Dissolved Solids :	300.00 mg/L
Total Hardness :	80.00 mg/L CaCO3	Conductivity :	545.00 mmhos/cm

Theoretical Water Characteristics

Alkalinity	: 24 mg/L as CaCO3
Calcium	: 200 mg/L as CaCO3
Alkalinity/(Chloride + Sulfate)	: 0.2
pH	: 7.80
Calcium Carbonate Precipitation Potential	: -307
Langelier Index	: -0.40
Ryznar Index	: 8.61
Acidity	: 25
Calcium Saturation (as CaCO3)	: 507
Dissolved Inorganic Carbonate (as CaCO3)	: 49

Recommendation for:

Southern States Utilities
Marco Island WTP (RO)
Marco Island, FL

After reviewing the OSCAR data and evaluating the use of a corrosion inhibitor vs. a high pH treatment the recommended option for Marco Island WTP (RO) is to initiate treatment with a corrosion inhibitor. The factors influencing this decision include superior system protection, ease of addition, safety concerns, stability of cost for the treatment and availability of on going service assistance. This treatment is also very cost effective for the system, 91.21/day compared to 108.20/day for a high pH treatment.

Prepared by:

HF scientific, inc.
3170 Metro Parkway
Ft. Myers, FL 33916-7597

Signed: _____

III. PASSIVATION SCHEDULE

The following system passivation schedule is specifically designed for Marco Island WTP (RO) and should be followed carefully. Proper treatment will require a regular schedule of system flushing and monitoring. This schedule is a guide and may require deviation based upon ongoing system water analysis.

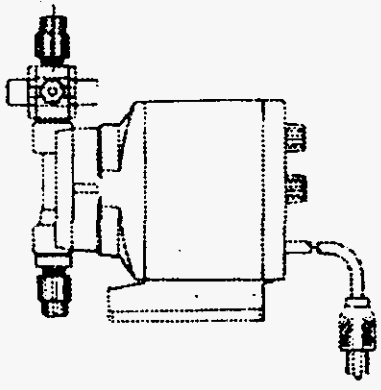
WEEK	FEED RATE (ppm)
1	5
2	5
3	5
4	5
5	5
6	5
7	4.5
8	4.0
9	3.5
10	3.0

MAINTENANCE DOSAGE

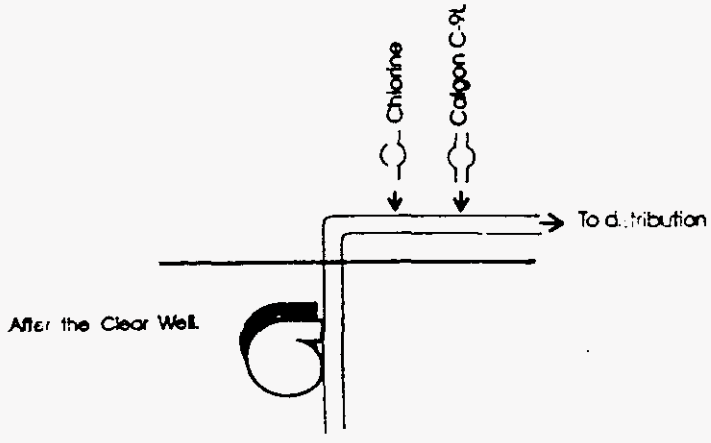
Prior to any reduction in dosage phosphate levels in the distribution system should be determined and evaluated by HF staff to confirm that treatment has progressed sufficiently to allow a reduced feed.

IV. FEED POINT AND EQUIPMENT

The RO plant feed point should be as indicated on the following diagram, prior to chlorination. Based on the plant flow rate, the recommended dosage and anticipated dosage reduction schedule we have recommended a pump with maximum output of 24 GPD (this allows for upgrade to 12 mgd). This will allow accurate chemical metering throughout the range of interest. Pump should be equivalent to LMI A75..-198S (Max. 24 GPD/110 PSI). This pump has remote adjustment capability.

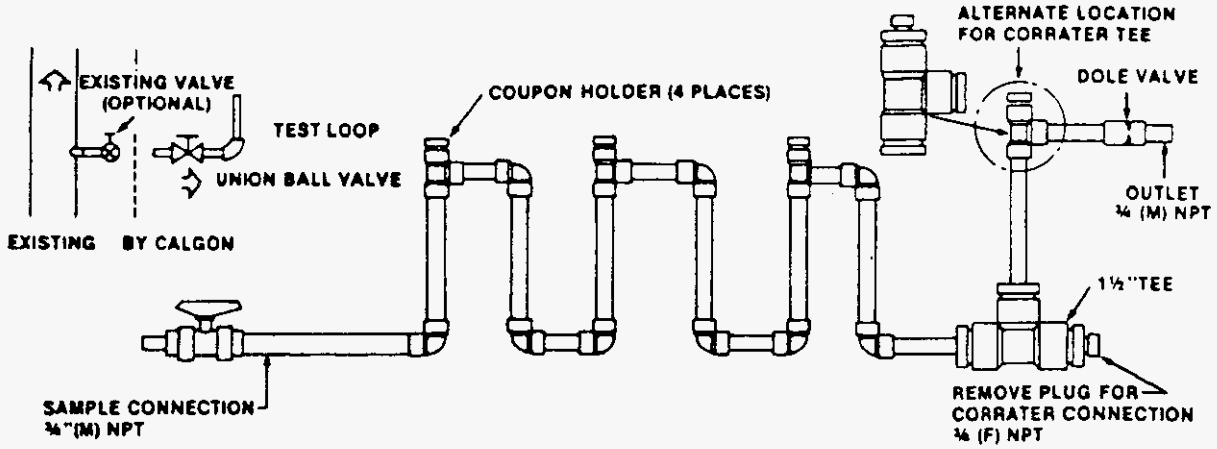


PUMP



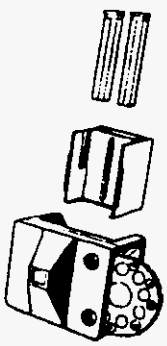
FEED POINT

Corr(ion Coupon Test Loop .ssembly



Comparator 2000 and Disc

For use with north daylight



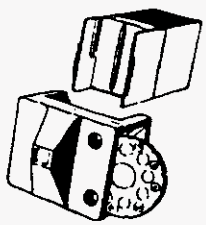
Cells (Cat. No. 354245)

Adjustable cell compartment

Comparator 2000 and disc

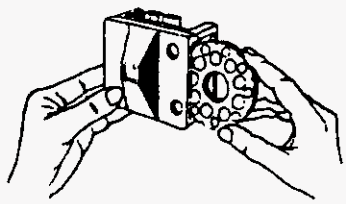
With portable daylight unit

Cells (Cat. No. 354245)



Portable daylight unit (Cat. No. 170350) incorporating cell compartment

Comparator 2000 and disc



Insert test disc into comparator with numbered standards facing user.

CALGON CORPORATION
SUBSIDIARY OF MERCK & CO., INC.

WATER MANAGEMENT DIVISION

MUNICIPAL PRODUCTS & SERVICES

CALGON® C-9L CORROSION INHIBITOR

DESCRIPTION

Calgon C-9L Corrosion Inhibitor is a specially formulated zinc orthophosphate used to control corrosion in municipal distribution systems. When added to the supply water, C-9L forms a stable, evenly distributed protective film on distribution piping and other metal surfaces. C-9L is an effective treatment for controlling lead corrosion and soluble lead in municipal drinking water systems.

REGULATORY STATUS

EPA: C-9L Corrosion Inhibitor is accepted by the Environmental Protection Agency for treating drinking water supplied at concentrations not exceeding 25 mg/L.

NSF Certification

PRODUCT FEATURES

- Rapid film formation
- Reduces the build-up of corrosion products
- Reduces corrosion products released to the system water
- Contains <1 ppm lead using Food Chemicals Codex Test Procedures
- Easy to feed liquid
- Low level of zinc in product

BENEFITS

- Effective corrosion control throughout the entire system, thus extending equipment life.
- Maintain system capacity at lower pumping costs.
- Reduces problems such as staining of finished products, caused by the presence of ferrous corrosion products.
- Eliminates the need for solution preparation and mix equipment.
- Maximum corrosion protection at lowest zinc level.

MATERIAL SAFETY DATA SHEET

Calgon Corporation
P.O. Box 1346
Pittsburgh, PA 15230-1346

24 Hour Emergency Telephone--(412)777-8000

Section 1. PRODUCT IDENTIFICATION

PRODUCT NAME: C-9L

CHEMICAL DESCRIPTION: Acidic aqueous solution
PRODUCT CLASS: Corrosion inhibitor
MSDS CODE: 0E23-12-08-93

Section 2. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

Chemical Name	CAS Number	% by Weight	OSHA PEL	ACGIH TLV
Phosphoric acid	7664-38-2	37	TWA 1 mg/m^3 STEL 3 mg/m^3	TWA 1 mg/m^3 STEL 3 mg/m^3
Zinc chloride	7646-85-7	16	TWA 1 mg/m^3 STEL 2 mg/m^3 (fume)	TWA 1 mg/m^3 STEL 2 mg/m^3 (fume)

Section 3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********

DANGER! Permanent disability can occur from overexposure. May cause severe eye and skin damage. May be harmful if swallowed. May cause respiratory tract irritation.

****

PRIMARY ROUTES OF ENTRY: Eye and skin contact, ingestion, inhalation

TARGET ORGANS: Eyes, skin, mucous membranes

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin and respiratory conditions.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: This product is expected to produce severe irritation and damage upon contact with the eyes.

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: > 200°F
This product is not flammable or combustible.

LOWER FLAMMABLE LIMIT: Not available UPPER FLAMMABLE LIMIT: Not available

AUTO-IGNITION TEMPERATURE: Not available

EXTINGUISHING MEDIA: Use extinguishing media appropriate for the surrounding fire.

FIRE-FIGHTING INSTRUCTIONS: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential. Avoid breathing corrosive vapors and keep upwind.

FIRE & EXPLOSION HAZARDS: Phosphoric acid may react with metals to release flammable hydrogen gas. Product may release zinc chloride and zinc oxide fumes and hydrogen chloride gas in a fire.

DECOMPOSITION PRODUCTS: Oxides of phosphorus, zinc oxide, hydrogen chloride.

NFPA RATINGS: Health = 3 Flammability = 0 Reactivity = 0 Special Hazard = COR

Hazard rating scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Section 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent and place into suitable container. Avoid discharge to natural waters.

Section 7. HANDLING AND STORAGE

HANDLING: Do not get in eyes, on skin or clothing.
Avoid breathing vapor, mist or fume.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep container closed when not in use.

STORAGE: Do not store near incompatible materials.

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Chemical splash goggles and face shield
SKIN PROTECTION: Chemical resistant gloves and protective clothing

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:
No information available on the formulated product.

ON INGREDIENTS:

Chemical Name	Aquatic Toxicity Data
Zinc chloride	96 hr LC_{50} (bluegill sunfish): 2.86-3.78 ppm

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: Discarded product, as sold, would be considered a RCRA Hazardous Waste based on the characteristic of corrosivity. The EPA Hazardous Waste Number is D002.

DISPOSAL: Dispose of in accordance with local, state and federal regulations.

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:
Class/Division: 8
Proper Shipping Name: Corrosive liquid, n.o.s. (contains Phosphoric acid and Zinc chloride)
Label: Corrosive
Packing Group: III
ID Number: UN 1760

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Hazardous
TSCA: The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.
CERCLA reportable quantity of EPA hazardous substances in product:

Chemical Name	RQ
Phosphoric acid	5000 lb
Zinc chloride	1000 lb

Product RQ: 6,250 lb (Notify EPA of product spills exceeding this amount.)

SARA TITLE III:

Section 302 Extremely Hazardous Substances:

Chemical Name	CAS #	RQ	TPQ
No ingredients listed in this section			

LIME SOFTENING

HF scientific, inc.
Desktop Corrosion Study

Prepared for
Southern States Utilities

Re: Marco Island Lime Softening WTP

HF scientific, inc.
3170 Metro Parkway
Ft. Myers, FL 33916-7597
Phone: (813) 337-2116
Fax: (813) 332-7643

HF SCIENTIFIC INC. DESKTOP CORROSION STUDY

FOR: Southern States Utilities
Marco Island Lime Softening WTP
Marco Island, FL 33937

CONTACT: Ron Weis
TITLE: Water Plant Supervisor
PHONE: (813) 394-3353

SYSTEM TYPE:

Lime Softening Surface Water X

REPORT INCLUDES SITE SPECIFIC:

- Calgon "OSCAR" analysis.
- Indices for water quality evaluation.
  - **Water Characteristics**
    - Calcium Carbonate Precipitation Potential
    - Langelier Index
    - Ryznar Index
    - Acidity
    - Calcium Saturation (as $CaCO_3$)
    - Dissolved Inorganic Carbonate (as $CaCO_3$)
- Site specific product recommendation includes literature and MSDS.
- Dosage and system passivation schedule includes recommended dosage reduction schedule.
- Feed point includes rough site specific diagram.
- Feed equipment recommendation includes pump output volume sized for maximum efficiency and proposed expansion of facility.
- Corrosion monitoring equipment recommendation includes coupons (steel and copper) and optional electronic monitoring.
- Distribution water analysis schedule includes frequency and specific type of testing for best results.

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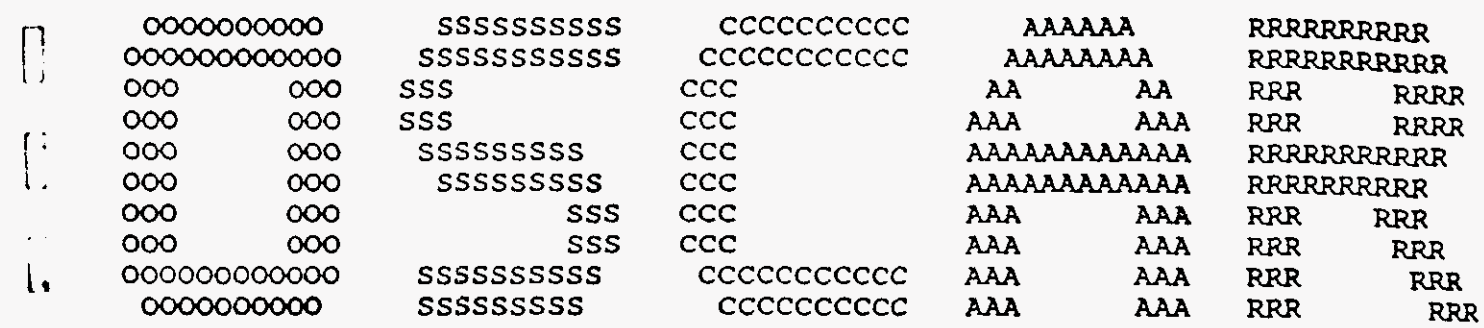


(Once-Through Scale and Corrosion Analysis Recommendation)

Calgon Corporation

Water Management Division

Municipal Water Treatment Recommendation System

Calgon Corporation

Water Management Division

Plant Name: SSU - MARCO ISLAND - LIME WTP

Plant Address: 100 WINDWARD DR/MARCO IS 33937

Plant Contact: MARC LAWSON

Account Representative: BILL LAZENBY

Customer: SSU - MARCO ISLAND - LIME WTP **Date: 08/01/94**
Problem : Lead corrosion

Municipal Water Treatment Recommendation System

Calgon Corporation

Water Management Division

pH :	8.50	Temperature :	26.67 (C)
Alkalinity :	40.00 mg/L CaCO3	Sodium :	20.00 mg/L
Chloride :	140.00 mg/L	Iron :	0.00 mg/L
Sulfate :	0.00 mg/L	Manganese :	0.00 mg/L
Calcium :	40.00 mg/L	Soluble Aluminum :	0.01 mg/L
Magnesium :	9.80 mg/L	Dissolved Solids :	360.00 mg/L
Total Hardness :	140.18 mg/L CaCO3	Conductivity :	600.00 mmhos/cm

Customer: SSU - MARCO ISLAND - LIME WTP Date: 08/01/94
Problem : Lead corrosion

Municipal Water Treatment Recommendation System

Calgon Corporation

Water Management Division

The following treatment is recommended for SSU - MARCO ISLAND - LIME WTP. The treatment is based on your surface source, the problem you indicated exists in your system and the chemical analysis of your water, preferred treatment and product form. Daily usage rates are calculated based on a flow rate of 4.50 MGD.

For control of Lead corrosion Calgon recommends:

	Recommended Treatment	Dosage mg/L	Usage lbs/day	$/lb	$/Day
Product #1 :	C-4	3.12	116.83	0.73	85.28

The Langelier Index of your water is 0.3. The Langelier Index predicts the scaling tendency of a water. A zero Langlier Index indicates that the water is at equilibrium with calcium carbonate.

OSCAR SUMMARY REPORT 3.0
Created: 08/01/94

OSCAR 3.0 (PAGE #1) Filename = SSUMARLI

Plant Name	SSU - MARCO ISLAND - LIME WTP
Plant Address	100 WINDWARD DR/MARCO IS 33937
Plant Contact	MARC LAWSON
Account Representative	BILL LAZENBY
Water Source	Surface
Chlorination	Y Chlorination Level : > 1.0 mg/L
Filtration	Y
Clarification	Y
Chemical Softening	Y
Open Finished Resevior	N

OSCAR 3.0 (PAGE #2)

pH	8.5	Temp (C) 26.67 or Temp (F)	80.01
Alkalinity, mg/L as CaCO3	40.00	Sodium, mg/L as Na	20.00
Chloride, mg/L as Cl	140.00	Iron, mg/L as Fe	0.00
Sulfate, mg/L as SO4	0.00	Manganese, mg/L as Mn	0.00
Calcium, mg/L as Ca	40.00	Soluble Aluminum, mg/L as Al	0.01
Magnesium, mg/L as Mg	9.80	Total Dissolved Solids, mg/L	360.00
Total Hardness, mg/L as CaCO3	140.18	Conductivity, mmhos/cm	600.00

OSCAR 3.0 (PAGE #3)

Average Flow Rate	4.50 MGD or 3125 GPM
Observed Problem	Lead corrosion
Biologic Problem	None
Limit Zinc	N
Limit Phosphate	N
Limit Sodium	N
Preferred Treatment Chemistry	No Preference
Desired Product Form	No Preference
Allow Two Products	Y

OSCAR 3.0 (pH PAGE)

Current Finished Water pH	0.00 Current pH is 8.50
New Finished Water pH	0.00
pH Adjustment Chemical	None
pH Adjustment Chemical Cost	0.00 $/lb
Disinfectant Type	None
Disinfectant Usage	0.00 lbs/day
Disinfectant Cost	0.00 $/lb
TTHM (trihalomethane) Formation	N

LSI = 0.3

	Recommended Treatment	Dosage mg/L	Usage lbs/day	$/lb	$/Day
Product #1 :	C-4	3.12	116.83	0.73	85.28

Municipal Water Treatment Recommendation System

Calgon Corporation

Water Management Division

Plant Name: SSU - MARCO ISLAND - LIME WTP

Plant Address: 100 WINDWARD DR/MARCO IS 33937

Plant Contact: MARC LAWSON

Account Representative: BILL LAZENBY

Water Characteristics

pH :	8.50	Temperature :	26.67 (C)
Alkalinity :	40.00 mg/L CaCO3	Sodium :	20.00 mg/L
Chloride :	140.00 mg/L	Iron :	0.00 mg/L
Sulfate :	0.00 mg/L	Manganese :	0.00 mg/L
Calcium :	40.00 mg/L	Soluble Aluminum :	0.01 mg/L
Magnesium :	9.80 mg/L	Dissolved Solids :	360.00 mg/L
Total Hardness :	140.18 mg/L CaCO3	Conductivity :	600.00 mmhos/cm

Theoretical Water Characteristics

Alkalinity	: 40 mg/L as CaCO3
Calcium	: 100 mg/L as CaCO3
Alkalinity/(Chloride + Sulfate)	: 0.3
pH	: 8.50
Calcium Carbonate Precipitation Potential	: 1
Langelier Index	: 0.21
Ryznar Index	: 8.08
Acidity	: 38
Calcium Saturation (as CaCO3)	: 62
Dissolved Inorganic Carbonate (as CaCO3)	: 78

Recommendation for:

Southern States Utilities
Marco Island Lime Softening WTP
Marco Island, FL 33937

After reviewing the OSCAR data and evaluating the use of a corrosion inhibitor the recommended option for Marco Island Lime Softening WTP is to initiate treatment with a corrosion inhibitor selected specifically for the Lime Softening Plant.

Prepared by:

HF scientific, inc.
3170 Metro Parkway
Ft. Myers, FL 33916-7597

Signed: _____

III. PASSIVATION SCHEDULE

The following system passivation schedule is specifically designed for Marco Island Lime Softening Plant and should be followed carefully. Proper treatment will require a regular schedule of system flushing and monitoring. This schedule is a guide and may require deviation based upon ongoing system water analysis.

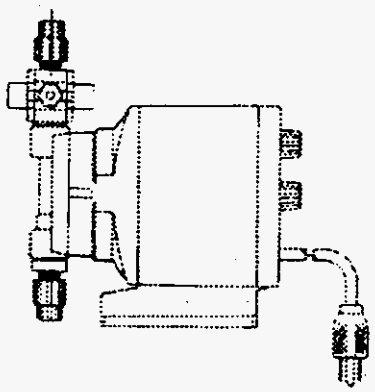
WEEK	FEED RATE (ppm)
1	5
2	5
3	5
4	5
5	5
6	5
7	4.5
8	4.0
9	3.5
10	3.12

MAINTENANCE DOSAGE

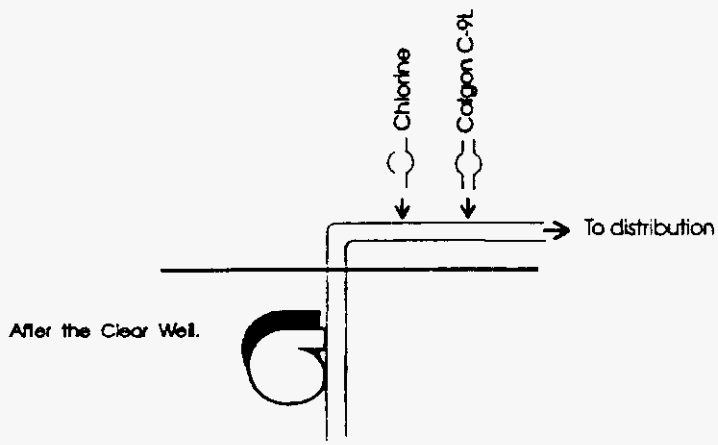
Prior to any reduction in dosage phosphate levels in the distribution system should be determined and evaluated by HF staff to confirm that treatment has progressed sufficiently to allow a reduced feed.

IV. FEED POINT AND EQUIPMENT

The Lime Softening plant feed point should be as indicated on the following diagram, prior to chlorination. Based on the plant flow rate, the recommended dosage and anticipated dosage reduction schedule we have recommended a pump with maximum output of 19 GPD. This will allow accurate chemical metering throughout the range of interest. Pump should be equivalent to LMI A151-198S. This pump has remote adjustment capability.

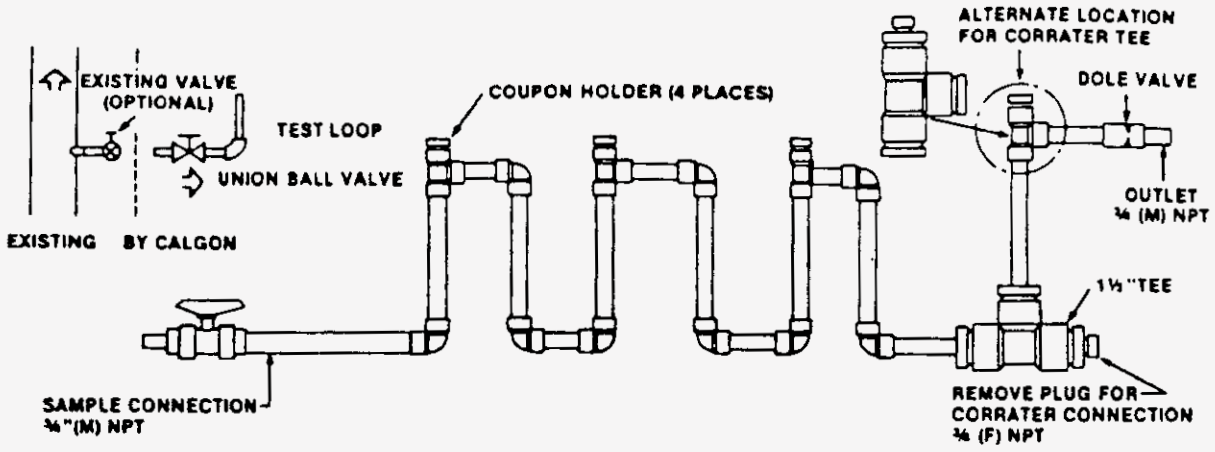


PUMP



FEED POINT

Corrosion Coupon Test Loop Assembly

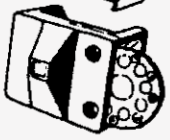


Comparator 2000 and Disc

For use with north daylight

Cells (Cat. No. 354245)

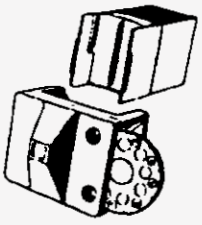
Adjustable cell compartment



Comparator 2000 and disc

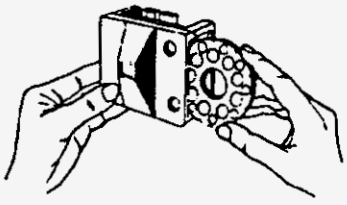
With portable daylight unit

Cells (Cat. No. 354245)



Portable daylight unit (Cat. No. 170350) incorporating cell compartment

Comparator 2000 and disc



Insert test disc into comparator with numbered standards facing user.

CALGON CORPORATION
SUBSIDIARY OF MERCK & CO., INC.

WATER MANAGEMENT DIVISION

MUNICIPAL PRODUCTS & SERVICES

Bulletin No. 4-149

CALGON C-4
CORROSION AND DEPOSIT INHIBITOR

DESCRIPTION

CALGON C-4 is a liquid blend of phosphate corrosion inhibitors formulated to control steel and lead corrosion and scale build-up in municipal water systems.

In addition to providing effective corrosion control, **C-4** also reduces build-up of deposits caused by the precipitation of water soluble calcium and magnesium salts; prevents the precipitation of water soluble calcium and magnesium salts; prevents the precipitation of dissolved iron and manganese.

PRODUCT FEATURES

- East to feed liquid formulation
- Prevents deposition of calcium and magnesium
- Reduces soluble lead in potable water systems
- Chlorine-resistant, no chlorine demand
- Stabilizes dissolved iron and manganese
- Controls corrosion of both ferric and lead piping in potable water systems.

BENEFITS

- Can be fed neat without the need of an expensive chemical feed system
- Maintain system capacity at lower pumping costs by keeping distribution lines free of deposits
- Product performance is not adversely affected by routine chlorination practices
- Eliminates "red" and "brown" water and plugging of water meters and other small orifice equipment

PRINCIPAL USES

- Corrosion and deposit control
- Iron and manganese stabilization
- Lead corrosion control

APPLICATION AREAS

- Clear well after final filters
- Intake pump discharge
- Directly to well water pump

TYPICAL PROPERTIES

Appearance	clear, colorless liquid
Density, lbs./gal.	11.4
Viscosity @ 77°F	32
pH	6.0
Freeze Point, °F	35
Odor	None

MATERIAL SAFETY DATA SHEET

CALGON CORPORATION
P.O. Box 1346
Pittsburgh, PA 15230-1346

24 Hour Emergency Telephone - - (412) 777-8000

CALGON CORPORATION
SUBSIDIARY OF MERCK & CO., INC.

I. PRODUCT IDENTIFICATION

PRODUCT NAME: C-4

CHEMICAL DESCRIPTION: Aqueous phosphate solution

PRODUCT CLASS: Multipurpose Municipal Inhibitor

II. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

Chemical Name	CAS No.	% by Weight	Oral LD50 (rat)	Dermal LD50 (rabbit)	ACGIH TLV OSHA PEL
Sodium phosphate, dibasic	7558-79-4	13	12,930 mg/kg	Not available	Not Listed
Sodium phosphate, monobasic	7558-80-7	8	8,290 mg/kg	Not available	Not Listed

III. TYPICAL PHYSICAL PROPERTIES

BOILING POINT: Not available

VAPOR PRESSURE: Similar to water

VAPOR DENSITY (air=1): Similar to water

% VOLATILE BY WEIGHT: ~ 62

APPEARANCE AND ODOR: Clear, colorless liquid.

SOLUBILITY IN WATER: Complete

SPECIFIC GRAVITY: 1.35 - 1.39

pH: 5.7 - 6.3

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: > 200°F (TCC); This product is not flammable or combustible.

EXTINGUISHING MEDIA: Any medium suitable for extinguishing the supporting fire.

SPECIAL FIREFIGHTING PROCEDURES: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

NFPA RATINGS: Health = 1 Flammability = 0 Reactivity = 0 Special Hazard = None

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

VII. APPLICABLE CONTROL MEASURES

APPROPRIATE HYGIENIC PRACTICES: Avoid contact with eyes.
As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the product and ensure prompt removal from skin and clothing.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION: Chemical splash goggles

SKIN PROTECTION: No special requirement.

RESPIRATORY PROTECTION: None required.

HANDLING AND STORAGE PRECAUTIONS: Store at temperatures above 50°F.
Wash thoroughly after handling.
Keep container closed when not in use.

VIII. FIRST AID

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water. Seek medical aid if irritation persists.

SKIN CONTACT: Not expected to require first aid measures.

INGESTION: Not an expected route of overexposure.

INHALATION: Not an expected route of overexposure.

IX. SPILL OR LEAK PROCEDURES/WASTE DISPOSAL

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent and place into suitable container.

WASTE DISPOSAL: Dispose of in accordance with local, state and federal regulations.
Do not allow to contaminate sewers and waterways.

ENVIRONMENTAL DATA: Although the principal problem of phosphates in the environment is not directly related to human health, there is considerable concern about the effects of phosphorus from various sources on water quality. Phosphate is a major cause of the eutrophication process in lakes and ponds.

X. REGULATORY STATUS

TSCA STATUS: The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

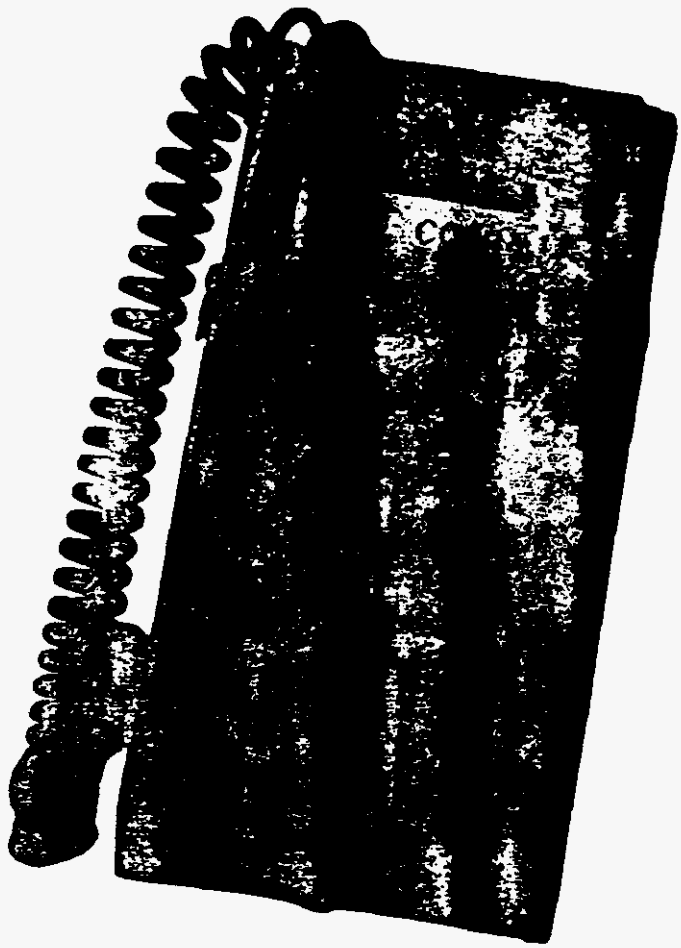
RCRA STATUS: This product as sold would not be considered a RCRA Hazardous Waste.

CERCLA reportable quantity of EPA hazardous substances in product:
Chemical = Sodium phosphate, dibasic RQ = 5000
Sodium phosphate, tribasic RQ = 5000

Notify EPA of product spills exceeding 29,840 pounds.

RECOMMENDED EQUIPMENT

Model 9000/9000HS CORRATER® Instrument



Features:

- *Portable Corrosion Rate monitoring*
- *Corrosion Rates from 0.1 to 199.9 MPY (9000)*
- *Corrosion Rates from 0.01 to 19.9 MPY (9000HS)*
- *Corrosion and pitting measurement*
- *Flush or standard probe selection*
- *2 and 3 electrode operation*
- *Large Liquid Crystal Display*

The 9000/9000HS portable CORRATER® instruments are your answer to the problem of getting corrosion rate measurement in conductive liquids, automatically. Simply plug the hand-held, light weight instrument into the probe and select the appropriate function on the front panel. After one minute, the readout will automatically display the corrosion rate in mils per year (MPY) or give the pitting index.

The 9000/9000HS are compatible with all types of CORRATER® probes. No other Linear Polarization Resistance corrosion rate instrument has as wide a range of compatibility with all CORRATER® probe types and electrode alloys.

In applications where corrosion rates are generally below 2 MPY, the Model 9000HS is recommended because it provides greater resolution than the Model 9000. This higher resolution requires a longer measurement cycle time (up to 8 minutes).

The front panel of the unit has sealed, pressure sensitive switches for protection against the environment. A replacement 9V battery powers the unit. Long battery life is assured by the instrument's automatic power shutdown feature. Included with the RCS 9000 and 9000HS is a durable vinyl carrying case, and standard test probe.

Specifications subject to change without notice.

PC 22 PHOTOMETER

NEW

The microprocessor-controlled PC 22 Photometer offers rapid and accurate testing of 40 different water parameters for both laboratory and field use. The PC 22 offers user instructions that appear directly on the display which directs the operator when and how to conduct each step of any test. The results are digitally displayed and can be stored or printed through an RS-232 interface.

PC 22 Photometer

Features:

- **EPA* Approved for Chlorine Measurement**
- **40 Different Parameters**
- **Portable**
- **Data Storage and Printout**
- **Automatic Zeroing**
- **RS-232 Printer/PC Connection**
- **Rugged Carrying Case**
- **Self Diagnostic Error Messages**

Order:

PC 22 Photometer The instrument is supplied in a rugged carrying case complete with: rechargeable 9V battery, battery charger and all glassware and accessories (without reagents)	**Cat. No. 10480**	**$995.00**

Options & Accessories:

10 ml Cell with Stoppers (5 pk.)	**Cat. No. 354245**	**$37.50**
Rechargeable battery	**Cat. No. 19487**	**$16.50**
Battery Charger/adapter	**Cat. No. 19486**	**$35.00**
Printer with cable	**Cat. No. 19490**	**$375.00**

Specifications for PC 22 Photometer:

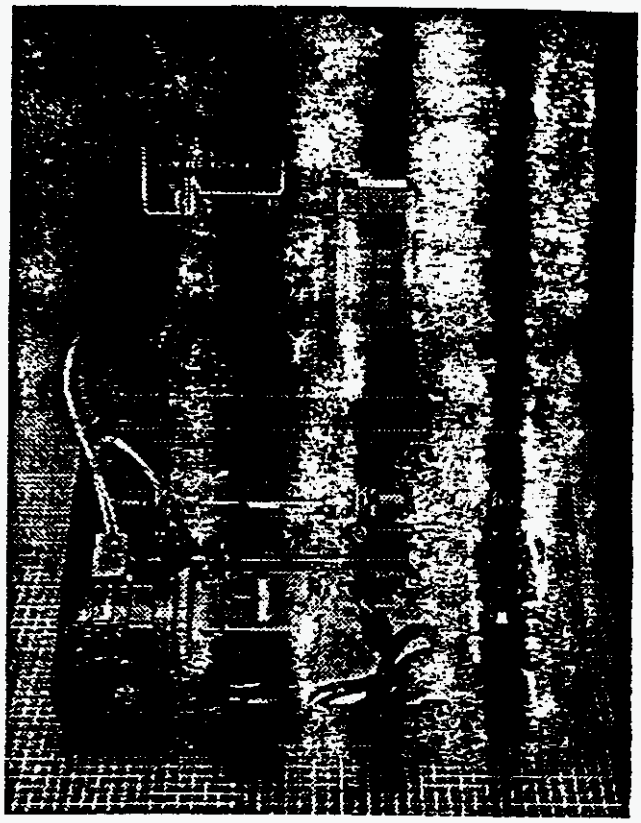
Test	Range
Aluminum	0 - 0.3 mg/L
Ammonia	0 - 1.0 mg/L
Bromine	0 - 13.0 mg/L
Calcium hardness	0 - 100 mg/L
Chlorine	0 - 1.5, 0 - 6.0 & 0 - 250 mg/L
Chlorine Dioxide	0 - 2.8 mg/L
Copper	0 - 1 mg/L
Cyanuric Acid	0 - 80 mg/L
Fluoride	0 - 1.4 mg/L
Hardness	0 - 100 mg/L
Hydrogen Peroxide	0 - 3.0 mg/L
Iodine	0 - 3.6 mg/L
Iron	0 - 1.0 mg/L
Molybdate	0 - 50 mg/L
Nitrate	0 - 1 mg/L
Nitrite	0 - 0.5 mg/L
Ozone	0 - 1 & 0 - 0.5 mg/L
Phosphate	0 - 4.0 & 0 - 100 mg/L
pH	5.2 - 6.8, 6.5 - 8.4, 8.4 - 9.6
Potassium	1 - 12 mg/L
Silica	0 - 4.0 mg/L
Sodium hypochlorite	0 - 16% w/w
Sulfate	0 - 100 mg/L
Sulfide	0 - 0.5 mg/L
Sulfite	0 - 100 mg/L
Total Alkalinity	0 - 200 mg/L
Zinc	0 - 1.0 mg/L
Power:	9V Rechargeable Nickel-cadmium Battery
Instrument Dimensions:	3.62 x 7.086 x 8.661 in. (92 x 180 x 220 mm)
Case Dimensions:	17 x 12 x 4 3/8 in. (44 x 31 x 11 cm)
Weight:	1.76 lbs. (.8 kg)
Shipping Weight:	5.2 lbs. (2.3 kg.)

*Standard Methods 4500 - Cl G. DPD Colorimetric Method.

The HF scientific, inc.
Electronic Corrosion Testing System

Features:

- Fast response
- Coupon Accuracy in mpy
- Simple Setup
- Easy to use
- Reasonable Price



Electronic Corrosion Testing System

The HF electronic corrosion testing system provides an easy to set up, accurate, small scale test for evaluating various corrosion control strategies. Completely portable, the system can be used for pilot work or for on going in-plant studies. The Corrater™ electronics have proven to be extremely accurate and compare directly to corrosion coupon weight loss results in mils per year. Not having to wait for 45-90 days for results means that you can evaluate more corrosion control methods in a short period of time.

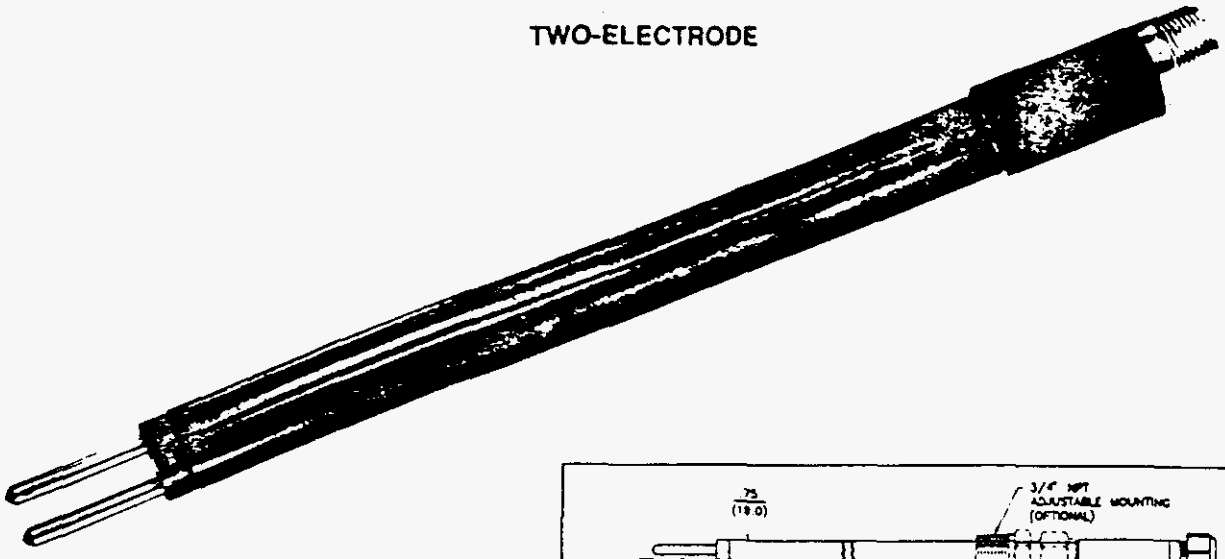
The system is completely self contained and portable, featuring built-in chemical metering pump, in-line mixer, 1 gpm flow control valve and electronic corrosion monitoring system with probe and electrode tips. Complete operation instructions and data collection sheets are provided with every system.

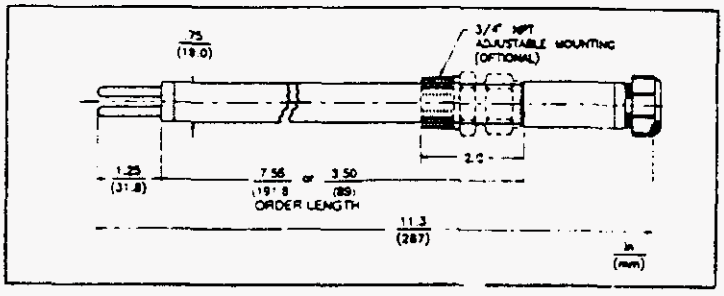
To begin testing simply supply power to the metering pump, install the appropriate electrode tips, connect the probe and start the water flow. A standard hose connection allows easy access to most water sources. Once a baseline corrosion rate has been established feed of appropriate corrosion control chemical is initiated using the chemical metering pump. Results are then recorded on the convenient electronic corrosion test assembly form.

HF scientific, inc.

Model 6112 CORRATER® Probe

TWO-ELECTRODE





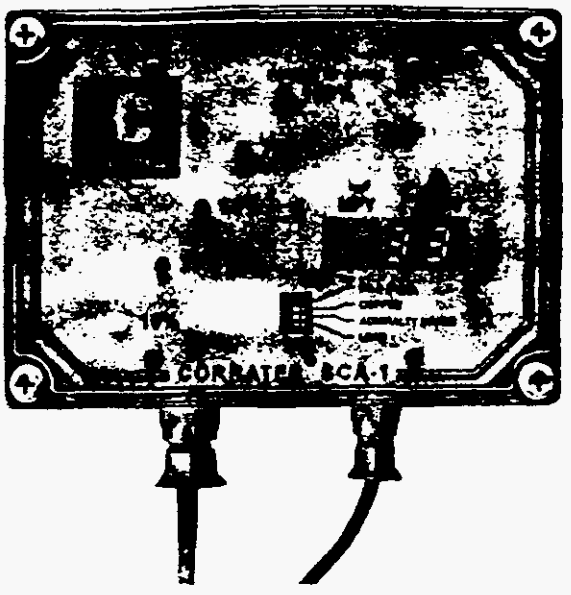
Specifications:

- *Mounting — Optional Adjustable Nylon Swage Fitting*
- *Temp. Rating — 300° F/150° C*
- *Pressure Rating — 100 PSI/690 kPa*
- *Electrode Seal Material — Epoxy*
- *Fill Material — Epoxy*
- *Body Material — Glass Epoxy*

This Model is ideally suited for laboratory testing or light duty plant operations in a bypass rack where removal under system pressure is not required. For heavier duty plant operation see Model 7012 or 7022. This probe employs two replaceable identical electrodes which are mounted at the end of the probe by threaded, insulated studs. Two electrode probes are suitable for the majority of problems where LPR techniques are applicable. When monitored by "Solution Resistance Compensating" instruments such as the Model 9030 CORRATER®, CORRDATA™ RDC - CORRATER®, or Model 9134 PIM, they may be used in low conductivity solutions. See Fig. 1 of the CORRATER® Probe Selection Guide. CORRATER® probes are used by major companies worldwide to measure corrosion in waterfloods, cooling water loops and other aqueous systems and to provide control of inhibitor addition for optimum economy and corrosion protection.

Specifications subject to change without notice.

Model SCA-1
Single Channel CORRATER® Instrument



Features:

- *Single Range, 0-2 MPY, 0-20 MPY 0-50 µmPY or 0-500 µmPY*
- *Percentage of Scale Indicators*
- *Continuous Readout of Corrosion Rate*
- *Weatherproof NEMA 4X Enclosure*
- *Selectable Multipliers for Different Metals*
- *4-20mA Output*

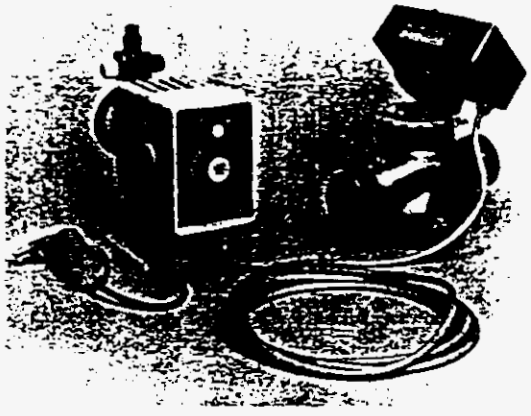
The SCA-1 is a single range field mountable CORRATER® instrument for continuous corrosion monitoring of water systems. The instrument is particularly suited to on-line monitoring applications where chemical treatment is being employed and compliance with regulatory standards is highly important.

The lower range units are particularly useful in potable water applications where the corrosion rates of lead, copper and carbon steel are low. This system will assist municipal water authorities in determining the chemical treatment effectiveness to reduce lead content according to EPA regulations. The higher range is more applicable to cooling waters where the effectiveness of chemical treatment programs are being evaluated. The SCA-1 is compatible with all CORRATER® probes and different alloys can be accommodated by selecting the multiplier on the front panel.

The SCA-1 is housed in a rugged weatherproof enclosure that permits easy viewing of the corrosion rate. The optional 4 to 20 mA output allows the corrosion rate to be recorded or sent to the plant computer system.

Specifications subject to change without notice.

SERIES A
METERING PUMPS
PRODUCT INFORMATION



- *Series A7 metering pumps are instrument responsive with outputs from .14 to 48 GPD.*

- *Series A1 metering pumps offer manual output control for applications requiring outputs from .14 to 48 GPD.*

LMI
LIQUID METRONICS DIVISION
MILTON ROY

Bulletin Sec. 1.1 pg. 0250
Replaces same of 5/87

AVAILABLE CONFIGURATIONS

MODEL NO.						
Drive Ass'y	Liquid End	Materials of Construction	Liquifram™ (Diaphragm)	Seal Rings	Connections	Accessory
A141*— A341*— A741*—	150FS	Acrylic/Polypropylene/Teflon	Teflon Face	Polyprel™	Tubing .250"	4FV
	152	PVDF/Ceramic	Teflon Face	Polyprel™	Tubing .250"	
	152S	PVDF/Ceramic	Teflon Face	Polyprel™	Tubing .250"	4FV
	155	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .250"	
	155S	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .250"	4FV
	157	316 S.S.	Teflon Face	Teflon	Pipe ¼" NPT F	
A151*— A181*— A751*— A781*—	85HV	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .5" Dischg. .938" Suct.	
	86	Acrylic/Polypropylene/316 S.S.	Teflon Face	Hypalon	Tubing .5" Dischg. .938" Suct.	
	91FS	Acrylic/Polypropylene/Teflon	Teflon Face	Hypalon	Tubing .375"	4FV
	91S	Acrylic/Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	4FV
	91T	Acrylic/Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	
	92S	PVC/PVDF/Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	4FV
	92T	PVC/PVDF/Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	
	94	PVC/PVDF/Ceramic	Teflon Face	Teflon	Pipe ¼" NPT M	
	95S	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	4FV
	95T	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	
	97	316 S.S.	Teflon Face	Teflon	Pipe ¼" NPT F	
	191	Polypropylene/Ceramic	PFA Face	Polyprel™	Tubing .375"	
	191S	Polypropylene/Ceramic	PFA Face	Polyprel™	Tubing .375"	4FV
	192	PVDF/Ceramic	PFA Face	Polyprel™	Tubing .375"	
	192S	PVDF/Ceramic	PFA Face	Polyprel™	Tubing .375"	4FV
A161*— A761*—	61	Acrylic/Polypropylene/Ceramic	PFA Face	Polyprel™	Tubing .375"	
	61S	Acrylic/Polypropylene/Ceramic	PFA Face	Polyprel™	Tubing .375"	4FV
	62	PVC/PVDF/Ceramic	PFA Face	Polyprel™	Tubing .375"	
	62S	PVC/PVDF/Ceramic	PFA Face	Polyprel™	Tubing .375"	4FV
	65	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	
	65S	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .375"	4FV
	74	PVC/PVDF/Ceramic	Teflon Face	Teflon	Pipe ¼" NPT M	
	75HV	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .5" Dischg. .938" Suct.	
	76	Acrylic/Polypropylene/316 S.S.	Teflon Face	Hypalon	Tubing .5" Dischg. .938" Suct.	
	77	316 S.S.	Teflon Face	Teflon	Pipe ¼" NPT F	
A171*— A371*— A771*—	150	Acrylic/Polypropylene/Ceramic	Teflon Face	Polyprel™	Tubing .250"	
	150FS	Acrylic/Polypropylene/Teflon	Teflon Face	Polyprel™	Tubing .250"	4FV
	150S	Acrylic/Polypropylene/Ceramic	Teflon Face	Polyprel™	Tubing .250"	4FV
	151	Polypropylene/Ceramic	PFA Face	Polyprel™	Tubing .250"	
	151S	Polypropylene/Ceramic	PFA Face	Polyprel™	Tubing .250"	4FV
	152	PVDF/Ceramic	Teflon Face	Polyprel™	Tubing .250"	
	152S	PVDF/Ceramic	Teflon Face	Polyprel™	Tubing .250"	4FV
	155	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .250"	
	155S	Polypropylene/Ceramic	Teflon Face	Teflon	Tubing .250"	4FV
	156	Acrylic/Polypropylene/316 S.S.	PFA Face	Hypalon	Tubing .5" Dischg. .938 Suct.	
	157	316 S.S.	Teflon Face	Teflon	Pipe ¼" NPT M	

*—The digit which appears just before the hyphen in each complete pump model number designates both voltage and power cord/plug type. When ordering please indicate desired option by inserting one of the following digits in the position just before the hyphen:

[1] 115V AC
[2] 230V AC
[3] 220-240V AC, DIN plug
[5] 240-250V AC, British (U.K.) plug
[6] 240-250V AC, Aust./N.Z plug
[7] 220V AC, Swiss plug

4FV—designates pump is equipped with an LMI Four Function Valve. This diaphragm type anti-syphon/pressure relief valve is installed on the pump head. It provides anti-syphon protection and aids in priming, even under pressure.

SERIES A SPECIFICATIONS

SERIES NO.	GALLONS PER DAY		GALLONS PER HOUR		LITERS PER HOUR		mL or CC PER MIN		OUTPUT PER STROKE CC or mL		MAXIMUM INJECTION PRESSURE
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
A14	.14	16.0*	.006	.66	.023	2.5	.38	41.6	.08	.42	250 PSI (17.3 Bar)
A15	.24	24.0	.01	1.0	.038	3.79	.63	63.0	.13	.63	110 PSI (7.6 Bar)
A16	.48	48.0	.02	2.0	.076	7.57	1.26	126.0	.26	1.26	50 PSI (3.4 Bar)
A17	.15	10.0	.006	.42	.023	1.57	.40	26.3	.07	.26	140 PSI (9.7 Bar)
A18	.27	18.0	.011	.75	.043	2.84	.72	47.3	.14	.47	80 PSI (5.5 Bar)
A34	.028	16.0*	.001	.66	.004	2.5	.08	41.6	.08	.42	250 PSI (17.3 Bar)
A37	.020	10.0	.001	.42	.004	1.57	.07	26.3	.07	.26	140 PSI (9.7 Bar)
A74	.14	16.0*	.006	.66	.023	2.5	.38	41.6	.08	.42	250 PSI (17.3 Bar)
A75	.24	24.0	.01	1.0	.038	3.79	.63	63.0	.13	.63	110 PSI (7.6 Bar)
A76	.48	48.0	.02	2.0	.076	7.57	1.26	126.0	.26	1.26	50 PSI (3.4 Bar)
A77	.15	10.0	.006	.42	.023	1.57	.40	26.3	.07	.26	140 PSI (9.7 Bar)
A78	.27	18.0	.011	.75	.043	2.84	.72	47.3	.14	.47	80 PSI (5.5 Bar)

* at 120 PSI, 10 GPD at 250 PSI

VOLTAGE: 120 Volts AC, 50/60 Hz, single phase
200-250 Volts AC, 50/60 Hz, single phase available
Max Current (@ 120 VAC): Series AX4, AX5, AX6: 1.8 Amps
Series AX7, AX8: 0.9 Amps
Ave. input power: Series AX4, AX5, AX6: 22 Watts @ max speed
Series AX7, AX8: 11 Watts @ max speed

STROKE LENGTH: Adjustable 0-100%
(20% minimum recommended for AX4, AX5 and AX6)
(30% minimum recommended for AX7 and AX8)

STROKE FREQUENCY: Adjustable,
5 to 100 strokes per minute Series A1, A7
1.0 to 100 strokes per minute Series A3

LENGTH: 9.25" (235mm) max

WIDTH: 4.05" (103mm) max

HEIGHT: 8" (203mm) max

SHIPPING WEIGHT: 10 lbs. (4.5 kg)

DISTRIBUTED BY:

LIQUID METRONICS DIVISION, MILTON ROY

19 Craig Road, Acton, MA 01720-5495 • TEL (508) 263-9800 • TLX 95-1781 • FAX (508) 264-9172

1
Marco Island (water)
2) Pb · Cu

S S U

ENVIRONMENTAL SERVICES COMPLIANCE

DATE: August 10, 1994

TO: Chuck Wood — Ray Gagnon
Dennis Westrick — *José de Pedro*

FROM: Mel Fisher MF
THROUGH: Ralph Terrero

RE: Lead - Copper Corrosion Control Studies

This memo is just a reminder that the Corrosion Control Study for Marco Island needs to be completed and formally submitted to FDEP no later than November 5, 1994. I believe we agreed in a recent Lead - Copper Program meeting that the Engineering Division would take an active role in reviewing and signing Corrosion Control reports in the future for all regions. Please contact me if I can provide assistance.

MF/kh

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

*** FAX COVER SHEET ***

TO: Dennis Westrick

COMPANY:

FAX NO.:

FROM: Catherine Walker

RE: Marco Island / Marco Shores Corrosion Control

TOTAL NUMBER OF PAGES (INCLUDING THIS PAGE): 5

DATE: 9/1/94

PLEASE CONTACT x187 IMMEDIATELY IN THE EVENT YOU DO NOT RECEIVE ALL PAGES.

SSU, APOPKA, FAX NOS.:

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SENDER: Please circle FAX NO. of your location.

Post-it™ Fax Note 7671 | Date 8-15-94 | # of pages ▶
To Catherine Walker | From Ron Weis
Co./Dept. | Co.
Phone # | Phone # 813-642-5905
Fax # | Fax # 813-394-8137

FLORIDA

Departm[ent of] Environmenta[l Protection]

Lawton Chiles
Governor

South Dist...
2295 Victoria Avenue, Suite 364
Fort Myers, Florida 33901

Virginia B. Wetherell
Secretary

RECEIVED
AUG 15 1994
SOUTHERN STATES UTIL.
MARCO PLANT

August 10, 1994

Dave Denny, Utilities Director
Southern States Utilities, Inc.
Post Office Box 197
Marco Island, Florida 33937

Re: Collier County - PW/LC
SSU/Marco Island Utilities
PWS I.D. Number: 5110183
Lead and Copper Corrosion Control

Dear Mr. Denny:

This letter acknowledges the receipt of your Water Quality Parameter Report for Corrosion Control of the referenced public drinking water system. The Department has reviewed the report study submitted and found it to be in general conformance with the requirements of Chapter 17-551, Florida Administrative Code (F.A.C.).

Please contact David Hutchinson of Florida Rural Water Association at (800)872-8207, to arrange for a Desk Top study of your system. He will provide technical assistance on corrosion control, and help in the completion of the General Permit required as the next step in the process, 17-551.510(7), F.A.C. form 17-551.950(7).

The fee schedule is $250.00 for systems of over 10,000 population. There is also a requirement for a Professional Engineer to sign and seal the application and it must be signed by the Owner or Authorized Representative.

Corrosion control for lead and copper, and water quality parameters shall be performed in accordance with F.A.C. Rules 17-551.460 through 17-551.550. For compliance with the rules, the following items need to be submitted by :

1. Please submit a $250.00 fee with the permit application.

2. Submit the RTW Desk Top study with the recommendations for optimum corrosion control, with the permit application.

3. Include the proposed treatment and information on chemicals, dosage, brand name or NSF, AWWA safety certification.

Continued . . .

Please provide the information for items above by as soon as possible, and not later than 30 days from the receipt of this letter. Be certain that corrosion control equipment is not placed into service prior to Department approval. If you have any questions, please call Louis LeMaire at (813) 332-6975.

Sincerely,

Ronald D. Blackburn
Acting Director of
District Management

RDB/LPL/klm

Enclosures

cc: R. Weis

FILE
1) MARCO ISLAND (WATER)
2) [illegible] CORROSION CONTROL

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

September 9, 1994

Mr. Louis MeMaire
Florida Department of Environmental Protection
South District
2295 Victoria Avenue, Suite 364
Fort Myers, Florida 33901

bc: Chris Arcand
Dave Denny
Jose DePedro
Mel Fisher
Ray Gagnon
Ralph Terrero
Dennis Westrick

RE: SSU Marco Island Utilities
PWS I.D. Number: 5110183
Lead and Copper Corrosion Control

Dear Mr. LeMaire:

In accordance with your letter dated August 10, 1994, we are forwarding the following items for your review:

1. Check No. 131983 for $250.00 for the application fee.

2. FDEP form no. 17-555.910(9), Application for Permit to Construct a Drinking Water System. Two forms are submitted, one for the lime softening plant, and one for the RO plant. The forms are submitted separately to describe the different processes.

3. One copy of the Corrosion Treatment Recommendation prepared by HF Scientific. This report provides recommendations for each plant.

Based upon the results of the evaluation performed by HF Scientific, and other evaluations prepared independent of the HF Scientific report, we are proposing the use of a corrosion inhibitor at each plant. We are proposing the use of the Calgon C-9L product for the RO plant, which is a zinc orthophosphate corrosion inhibitor. For the lime softening plant, we have chosen the Calgon C-4 product, which is a phosphate based corrosion inhibitor. The desktop studies indicate that the use of the inhibitors in these applications should be more effective, and less costly than pH adjustment for these systems.

If you have any questions or concerns after reviewing this information, please contact me at your earliest convenience.

Sincerely:
Southern States Utilities, Inc.

Catherine A. Walker

Catherine A. Walker, P.E.
Senior Permitting Engineer

cc: Bill Lazenby, HF Scientific

S U

ENVIRONMENTAL SERVICES
PERMITTING

DATE: September 1, 1994

TO: Dennis Westrick

FROM: Catherine Walker

RE: Marco Island/Marco Shores Corrosion Control Permitting

I have spoken with you several times regarding corrosion control recommendations for Marco Island. The permit application and desk top study need to be submitted to FDEP by September 9, 1994. Several evaluations have been made for Marco Island and all are recommending an inhibitor. Operations has requested a permit to install a Calgon product recommended by HF Scientific. I have reviewed the documentation and am comfortable with the recommendation, however, I have questions about the storage and handling of the product. We need your engineering recommendation for the permit application, and we need plans for installation, and storage facilities.

Additionally, we have received a letter from FDEP requesting the same information to be submitted for Marco Shores. Ron Weis is contacting HF Scientific to have a desk top study performed. I suggested to him that Engineering should be involved in the study and recommendations for both Marco Island and Marco Shores. The permit application for Marco Shores is due to FDEP on September 22, 1994.

cc: Chris Arcand
Dave Denny
Jose DePedro
Mel Fisher
Ray Gagnon
Ralph Terrero
Ron Weis
Chuck Wood

Boyle Engineering Corporation

J. Dennis Westrick, PE
Senior Engineer
SOUTHERN STATES UTILITIES, INC
1000 Color Place
Apopka, FL 32703

September 9, 1994

Review of Corrosion Control Recommendations
Marco Island Water Distribution System

Overview. Per your request, we have reviewed the information supplied by you on behalf of Southern States Utilities, Inc. (SSU), related to the *Control of Lead and Copper (FDEP Chapter 61-551)* for the Marco Island Water Distribution System. The information reviewed included the following documents:

- HF Scientific Inc., Corrosion Treatment Recommendation for Southern States Utilities Marco Island Water Distribution System;
- KJELL Corporation STARSystem Desktop Evaluation and Corrosion Control Evaluation for SSU Services, Marco Island, FL; and,
- USEPA Form 141-C Desktop Evaluation Short Form for Small and Medium PWS Treatment Recommendations.

Scope and Objectives. The purpose of this letter is to (1) describe the elements of a Desk-Top Evaluation as set forth by the United States Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP); (2) review and comment on the vendor reports and their suitability to comprise the Desk-Top Evaluation for the Marco Island Water Distribution System; (3) review the content of the USEPA Form 141-C prepared by SSU; and (4) perform a preliminary computer analysis to indicate possible treatment options for the control of lead and copper corrosion.

Elements of a Desk-Top Evaluation. The Desk-Top Evaluation is a mandatory requirement of the Lead and Copper Rule (LCR) as set forth in the Code of Federal Regulations (CFR Subpart I, 56 FR 26548, June 7, 1991) and the FDEP Control of Lead and Copper Chapter (FDEP 62-551). Specific details are presented in the USEPA's *Lead and Copper Rule Guidance Manual Volume II: Corrosion Control Treatment* (EPA 811-B-92-02, September 1992).

The Desk-Top Evaluation is an office study that compiles historical information and technical literature to assist in the determination of appropriate treatment strategies for corrosion control within a Public Water System (PWS). The seven elements of a Desk-Top Evaluation include:

1. Define existing conditions in the PWS.
2. Determine the needs for source water treatment.

3. Define regulatory and functional constraints such as secondary impacts on wastewater operations.

4. Identify corrosion control priorities.

5. Define and screen alternative strategies for corrosion control.

6. Evaluate the alternative corrosion control strategies.

7. Select treatment strategies for bench-scale, pilot-scale or full-scale demonstration testing.

These elements should include a summary of the monitoring data, a survey of analogous water systems, and a review of the technical literature. The monitoring data consists of water quality information for the raw groundwater and finished source water at the point-of-entry (POE) and in the distribution system. Results from previous studies (if applicable) and from the lead and copper monitoring programs should be included in the data base.

The survey of analogous water systems and a review of the technical literature will assist in the identification and evaluation of methods for corrosion control in the Marco Island PWS. A checklist and Short Form 141-C, that was developed by EPA, summarize the steps in a Desk-Top Evaluation and key findings.

The purpose of preparing a summary of existing conditions is to present a review of the available lead and copper monitoring data, raw water quality, source and distribution water quality, and pipe materials in the distribution system. This monitoring data should be reviewed to ascertain the location of "hot spots" for lead and copper concentrations exceeding the action level of 0.015 mg/L and 1.3 mg/L, respectively, at the consumers' taps. The data describing existing conditions serves to document background water quality in the PWS and to establish a baseline of comparison for evaluating the effectiveness of corrosion control treatment options.

The objectives of the technical literature review are to identify the following:

- causes of internal corrosion control in distribution systems;
- treatment technologies available to passivate an aggressive potable water supply;
- information on similar analogous systems;
- techniques to monitor the corrosivity of the source water; and,
- demonstration test methods to evaluate the effectiveness of available treatment technologies.

The initial component of the technical literature review is information on analogous PWSs. The experience of similar water systems is most useful in identifying effective corrosion control options and potential operating conditions, such as pH adjustment levels and inhibitor dosage quantities.

Review of Vendor Reports. It is our opinion that the reports prepared by both HF Scientific and KJELL Corporation for SSU do not contain the necessary elements of a Desk-Top Evaluation to comply with the LCR and USEPA Guidance Manual. Specifically, the elements missing from the reports include:

- Descriptions of the PWS facilities and summary of existing conditions;
- Review of the technical literature;
- Information about and review of analogous water systems;
- Complete evaluation of secondary impacts and regulatory constraints;
- Summary of available water quality monitoring data, including interpretations of system data; and,
- Recommendation for demonstration testing.

In addition, neither report adequately provides specific, detailed explanations of methods used for development of corrosion indices nor did the reports provide thorough explanations of the results determined by the evaluation. However, the KJELL Corporation report did a good job of defining alternative approaches for corrosion control, provided adequate discussion of available treatment technologies which would be expected to passivate the aggressive finished water, and provided general comments on some secondary impacts.

Review of USEPA Short Form 141-C. Although the intent of EPA's Short Form 141-C is to provide a brief overview and straightforward outline of the most important corrosion control information which small and medium systems, at a minimum, must provide to regulatory agencies, the form for Marco Island is incomplete.

It is our understanding that the Marco Island Water Distribution System currently has two distinct treatment facilities with a separate POE for each plant. Section B1 on the form portrays a combined POE. Section B3 is incomplete in its present form. Sections B7, B8 and B9 are also incomplete. Finally, the information on the entire form should be typed and sources of information should be documented.

RTW Model Preliminary Results. A preliminary computer analysis was performed using the RTW Model developed by the American Water Works Association. The preliminary results of the computer analysis are attached to this letter for reference.

The corrosion potential of the finished water was evaluated using operating data for the Reverse Osmosis facility. The RTW Model shows that the finished water is aggressive with a Langelier Saturation Index (LSI) of -1.36 and a calcium carbonate precipitation potential (CCCP) of -1107 mg/L. The finished water has very little alkalinity available for maintaining a uniform pH throughout the distribution system. Consequently, wide variations in pH would be expected to occur in the distribution system furthest from the treatment plant.

Two corrosion treatment strategies were examined with the RTW model. These included pH adjustment and alkalinity/pH adjustment. The susceptibility of the finished water to wide swings in pH is dramatically illustrated by the computer runs using sodium hydroxide, lime or soda ash for pH adjustment. A dose of less than 5 mg/L of any one of these chemicals raises the pH from 7.65 to more than 9.0. The addition of sodium hydroxide, lime or soda ash only marginally increases the alkalinity and the dissolved inorganic carbon (DIC) of the finished water.

Two chemicals are used for alkalinity/pH adjustment. Sodium bicarbonate is added to adjust the alkalinity and sodium hydroxide is used to increase the pH to the desired level. The advantages of this treatment option include a lower operating pH (8.6 vs. 9.0) and greater buffering capacity that can reduce wide pH fluctuations in the distribution system. This would provide more water quality control to SSU for the control of lead corrosion at the consumer's taps. The disadvantage of this option include higher chemical costs and elevated DIC levels in the finished water.

Inhibitors could be a viable corrosion treatment strategy. Before selecting an inhibitor, the effectiveness of different formulations should be evaluated in a short-term demonstration test. Corrosion rates can be obtained in short-term test programs using a test rack and electrochemical test methods. Coupon data should also be developed for a variety of different formualtions if time permits.

Recommended Action Plan. Services which, in our opinion, will be necessary to satisfy the FDEP Control of Lead and Copper Regulations include:

1. Meet with SSU and FDEP representatives to determine appropriate deadlines and to finalize this action plan.
2. Prepare, sign and seal a complete Desk-Top Evaluation for SSU to submit to the FDEP;
3. Based on the results of the Desk-Top Evaluation, perform short-term corrosion demonstration (rack or bench-scale) studies and prepare a letter report listing treatment recommendations and operating parameter ranges;
4. Prepare plans, speccifications and bid documents for the recommended treatment method;
5. Provide limited construction phase services;
6. Assist with subsequent monitoring activities upon initiation of corrosion control treatment.

For your reference, we have enclosed a copy of the most recent FDEP general permit application that can be used for medium systems.

If you have any questions concerning this review, please contact us as soon as possible. We will be glad to meet with you to discuss our proposed action plan.

Boyle Engineering Corporation

Steven J. Duranceau, PhD, PE
Associate Engineer

Erik L. Melear, PE
Associate Engineer

cc: Wayne A. Mather, PE, DEE

OR-S25-001-94/sjd

ssu/letters/marcopb.doc

CORROSION POTENTIAL OF THE FINISHED (POE) WATER
RTW MODEL

The RTW Model Version 1.1

STEP 1: Enter initial water characteristics.

Measured TDS	245	mg/L
Measured temperature	25	deg C
Measured pH	7.65	
Measured alk (as CaCO3)	15	mg/L
Measured Ca (as CaCO3)	50	mg/l
Measured Cl	120	mg/L
Measured SO4	25	mg/L

alculated initial water characteristics

Initial acidity	16	mg/L
Initial Ca sat (as CaCO3)	1157	mg/L
Initial DIC (as CaCO3)	31	mg/L

After entering measured values press PAGE DOWN.

STEP 2: Enter amount of each chemical to be added (expressed as chemical).

Lime (slaked)	0	mg/L
Soda ash	0	mg/L
Alum *18H2O	0	mg/L
Chlorine gas	0	mg/L
Caustic soda	0	mg/L
Carbon dioxide	0	mg/L
Hydrochloric acid	0	mg/L
Sodium bicarbonate	0	mg/L
Calcium chloride	0	mg/L
Ferric sulfate *9H2O	0	mg/L
Ferrous sulfate *7H2O	0	mg/L
Ferric chloride	0	mg/L

After entering chemical dosages press F9 and then PAGE DOWN.

STEP 3: Adjust at Step 2 until interim water characteristics meet desired criteria.

eoretical interim water characteristics after chemical addition

Interim alkalinity	15	mg/L
Interim Ca (as CaCO3)	50	mg/L
Alk/(Cl+SO4)	0.1	
Interim pH	7.65	
Precipitation potential	-1107	mg/L
Langelier index	-1.36	
Ryznar index	10.38	
Interim acidity	16	mg/L
Interim Ca sat (as CaCO3)	1157	mg/L
Interim DIC (as CaCO3)	31	mg/L

For final water quality after CaCO3 precipitation press PAGE DOWN.

heoretical final water characteristics after CaCO3 precipitation

Final alkalinity	N/A	mg/L
Final Ca	N/A	mg/L
Final acidity	N/A	mg/L
Final pH	N/A	

pH/ALKALINITY ADJUSTMENT OF THE FINISHED WATER WITH SODIUM HYDROXIDE AND SODIUM BICARBONATE RTW MODEL

The RTW Model Version 1.1

STEP 1: Enter initial water characteristics.

Measured TDS	245	mg/L
Measured temperature	25	deg C
Measured pH	7.65	
Measured alk (as CaCO3)	15	mg/L
Measured Ca (as CaCO3)	50	mg/l
Measured Cl	120	mg/L
Measured SO4	25	mg/L

alculated initial water characteristics

Initial acidity	16	mg/L
Initial Ca sat (as CaCO3)	1157	mg/L
Initial DIC (as CaCO3)	31	mg/L

After entering measured values press PAGE DOWN.

STEP 2: Enter amount of each chemical to be added (expressed as chemical).

Lime (slaked)	0	mg/L
Soda ash	0	mg/L
Alum *18H2O	0	mg/L
Chlorine gas	0	mg/L
Caustic soda	1.5	mg/L
Carbon dioxide	0	mg/L
Hydrochloric acid	0	mg/L
Sodium bicarbonate	45	mg/L
Calcium chloride	0	mg/L
Ferric sulfate *9H2O	0	mg/L
Ferrous sulfate *7H2O	0	mg/L
Ferric chloride	0	mg/L

After entering chemical dosages press F9 and then PAGE DOWN.

|::

STEP 3: Adjust at Step 2 until interim water characteristics meet desired criteria.

eoretical interim water characteristics after chemical addition

Interim alkalinity	44	mg/L
Interim Ca (as CaCO3)	50	mg/L
Alk/(Cl+SO4)	0.3	
Interim pH	8.65	
Precipitation potential	1	mg/L
Langelier index	0.10	
Ryznar index	8.45	
Interim acidity	41	mg/L
Interim Ca sat (as CaCO3)	40	mg/L
Interim DIC (as CaCO3)	85	mg/L

For final water quality after CaCO3 precipitation press PAGE DOWN.

heoretical final water characteristics after CaCO3 precipitation

Final alkalinity	43	mg/L
Final Ca	49	mg/L
Final acidity	41	mg/L
Final pH	8.56	

pH ADJUSTMENT OF THE FINISHED WATER WITH SODIUM HYDROXIDE
RTW MODEL

The RTW Model Version 1.1

STEP 1: Enter initial water characteristics.

Measured TDS	245	mg/L
Measured temperature	25	deg C
Measured pH	7.65	
Measured alk (as CaCO3)	15	mg/L
Measured Ca (as CaCO3)	50	mg/l
Measured Cl	120	mg/L
Measured SO4	25	mg/L

alculated initial water characteristics

Initial acidity	16	mg/L
Initial Ca sat (as CaCO3)	1157	mg/L
Initial DIC (as CaCO3)	31	mg/L

After entering measured values press PAGE DOWN.

STEP 2: Enter amount of each chemical to be added (expressed as chemical).

Lime (slaked)	0	mg/L
Soda ash	0	mg/L
Alum *18H2O	0	mg/L
Chlorine gas	0	mg/L
Caustic soda	1.85	mg/L
Carbon dioxide	0	mg/L
Hydrochloric acid	0	mg/L
Sodium bicarbonate	0	mg/L
Calcium chloride	0	mg/L
Ferric sulfate *9H2O	0	mg/L
Ferrous sulfate *7H2O	0	mg/L
Ferric chloride	0	mg/L

After entering chemical dosages press F9 and then PAGE DOWN.

STEP 3: Adjust at Step 2 until interim water characteristics meet desired criteria.

eoretical interim water characteristics after chemical addition

Interim alkalinity	17	mg/L
Interim Ca (as CaCO3)	50	mg/L
Alk/(Cl+SO4)	0.1	
Interim pH	9.06	
Precipitation potential	1	mg/L
Langelier index	0.11	
Ryznar index	8.84	
Interim acidity	14	mg/L
Interim Ca sat (as CaCO3)	39	mg/L
Interim DIC (as CaCO3)	31	mg/L

For final water quality after CaCO3 precipitation press PAGE DOWN.

heoretical final water characteristics after CaCO3 precipitation

Final alkalinity	17	mg/L
Final Ca	49	mg/L
Final acidity	14	mg/L
Final pH	8.97	

pH ADJUSTMENT OF THE FINISHED WATER WITH LIME
RTW MODEL

The RTW Model Version 1.1

STEP 1: Enter initial water characteristics.

Measured TDS	245	mg/L
Measured temperature	25	deg C
Measured pH	7.65	
Measured alk (as CaCO3)	15	mg/L
Measured Ca (as CaCO3)	50	mg/l
Measured Cl	120	mg/L
Measured SO4	25	mg/L

alculated initial water characteristics

Initial acidity	16	mg/L
Initial Ca sat (as CaCO3)	1157	mg/L
Initial DIC (as CaCO3)	31	mg/L

After entering measured values press PAGE DOWN.

STEP 2: Enter amount of each chemical to be added (expressed as chemical).

Lime (slaked)	1.65	mg/L
Soda ash	0	mg/L
Alum *18H2O	0	mg/L
Chlorine gas	0	mg/L
Caustic soda	0	mg/L
Carbon dioxide	0	mg/L
Hydrochloric acid	0	mg/L
Sodium bicarbonate	0	mg/L
Calcium chloride	0	mg/L
Ferric sulfate *9H2O	0	mg/L
Ferrous sulfate *7H2O	0	mg/L
Ferric chloride	0	mg/L

After entering chemical dosages press F9 and then PAGE DOWN.

STEP 3: Adjust at Step 2 until interim water characteristics meet desired criteria.

eoretical interim water characteristics after chemical addition

Interim alkalinity	17	mg/L
Interim Ca (as CaCO3)	52	mg/L
Alk/(Cl+SO4)	0.1	
Interim pH	9.04	
Precipitation potential	1	mg/L
Langelier index	0.10	
Ryznar index	8.83	
Interim acidity	14	mg/L
Interim Ca sat (as CaCO3)	41	mg/L
Interim DIC (as CaCO3)	31	mg/L

For final water quality after CaCO3 precipitation press PAGE DOWN.

heoretical final water characteristics after CaCO3 precipitation

Final alkalinity	17	mg/L
Final Ca	52	mg/L
Final acidity	14	mg/L
Final pH	8.96	

pH ADJUSTMENT OF THE FINISHED WATER WITH SODA ASH
RTW MODEL

The RTW Model Version 1.1

STEP 1: Enter initial water characteristics.

Measured TDS	245	mg/L
Measured temperature	25	deg C
Measured pH	7.65	
Measured alk (as CaCO3)	15	mg/L
Measured Ca (as CaCO3)	50	mg/l
Measured Cl	120	mg/L
Measured SO4	25	mg/L

alculated initial water characteristics

Initial acidity	16	mg/L
Initial Ca sat (as CaCO3)	1157	mg/L
Initial DIC (as CaCO3)	31	mg/L

After entering measured values press PAGE DOWN.

STEP 2: Enter amount of each chemical to be added (expressed as chemical).

Lime (slaked)	0	mg/L
Soda ash	4.75	mg/L
Alum *18H2O	0	mg/L
Chlorine gas	0	mg/L
Caustic soda	0	mg/L
Carbon dioxide	0	mg/L
Hydrochloric acid	0	mg/L
Sodium bicarbonate	0	mg/L
Calcium chloride	0	mg/L
Ferric sulfate *9H2O	0	mg/L
Ferrous sulfate *7H2O	0	mg/L
Ferric chloride	0	mg/L

After entering chemical dosages press F9 and then PAGE DOWN.

STEP 3: Adjust at Step 2 until interim water characteristics meet desired criteria.

eoretical interim water characteristics after chemical addition

Interim alkalinity	19	mg/L
Interim Ca (as CaCO3)	50	mg/L
Alk/(Cl+SO4)	0.1	
Interim pH	9.00	
Precipitation potential	1	mg/L
Langelier index	0.10	
Ryznar index	8.80	
Interim acidity	16	mg/L
Interim Ca sat (as CaCO3)	40	mg/L
Interim DIC (as CaCO3)	36	mg/L

For final water quality after CaCO3 precipitation press PAGE DOWN.

heoretical final water characteristics after CaCO3 precipitation

Final alkalinity	19	mg/L
Final Ca	49	mg/L
Final acidity	16	mg/L
Final pH	8.92	

Florida
Department of Environmental Regulation
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

DER Form # 17-551.900(7)
Form Title Notice of Intent to Use General Permit for Corrosion Control for Small and Medium Systems
Effective Date July 4, 1997
DER Application No. _____
(Filled in by DER)

NOTICE OF INTENT TO USE GENERAL PERMIT FOR CORROSION CONTROL FOR SMALL AND MEDIUM SYSTEMS

INSTRUCTIONS: Use of this form is limited to community and non-transient non-community public water systems which serve fewer than 50,000 persons. For public water systems which serve fewer than 10,000 persons, use of this form does not require the services of a registered Professional Engineer. It may be submitted signed by the owner of the water system or authorized representativre and the licensed contractor. Use of this form will be disapproved if, for the water quality data listed in Part II below, the proposed treatment selected in Part III below is inconsistent with the guidelines and recommendations published by the U.S. Environmental Protection Agency in *Lead and Copper Rule Guidance Manual, Volume II: Corrosion Control Treatment.*

PART I. GENERAL WATER SYSTEM INFORMATION

Water System Name: _____
System type (circle one): C or NTNC
Identification Number (PWS-ID): _____
Population served: _____

Contact person: _____
Contact phone number: _____
Mailing address: _____
Cty, State ZIP _____

PART II. SUMMARY OF WATER CHEMISTRY DATA. Provide data on existing levels for water quality parameters and lead and copper levels (provide additional sheets as necessary).

Water Quality Parameter - units	Entry Point	Tap
Temperature - °C		
Conductivity - μmho/cm @ 25°C		
pH		
Alkalinity - mg/L		
Total Hardness - mg/L		
Total Dissolved Solids - mg/L		
Calcium - mg/L		
Orthophosfate - mg/L		
Silicates - mg/L		

	Lead	Copper
No. of samples		
	mg/L	mg/L
Maximum Tap		
Minimum Tap		
90th percentile		
At entry point		

PART III. PROPOSED TREATMENT INFORMATION. Indicate which tratment is proposed.

☐ Modification of pH Existing pH _____ Proposed pH _____
Chemical to be Added _____ Dosage rate _____ mg/L

☐ Modification of alkalinity Existing alkalinity _____mg/L as $CaCO_3$ Proposed _____mg/L as $CaCO_3$
Chemical to be added _____ Dosage rate_____ mg/L

NOTICE OF INTENT TO USE GENERAL PERMIT FOR CORROSION CONTROL FOR SMALL AND MEDIUM SYSTEMS

DER Form # 17-551.900(7)
Form Title: Notice of Intent to Use General Permit for Corrosion Control for Small and Medium Systems
Effective Date 1994
DER Application No. _____
(Filled in by DER)

☐ Modification of calcium - Existing calcium _____mg/L as $CaCO_3$
Proposed calcium _____mg/L as $CaCO_3$
Chemical to be added _____ Dosage rate _____ mg/L

☐ Use of a corrosion inhibitor Brand Name of Proposed Inhibitor _____
Chemical Name of Proposed Inhibitor _____ Dosage rate _____ mg/L

PART IV. DESCRIPTION OF TREATMENT EQUIPMENT. Describe injector equipment proposed for use and provide a diagram of how the pumps and injector points are located with respect to other system components.

_____
_____
_____
_____

PART V. TREATMENT EVALUATION. Describe what procedures will be followed to evaluate the effectiveness of the proposed treatment. _____
_____
_____
_____

PART VI. PROJECT COST ESTIMATE. Total Cost of the Proposed Treatment is $ _____.

PART VII. STATEMENT BY APPLICANT and LICENSED CONTRACTOR. The undersigned owner or authorized representative of the above named public water system is fully aware that the statements made in this notice are true and complete to the best of his/her knowledge. The undersigned is fully aware that it is his/her responsibility to operate and maintain this facility in such a manner as to function as it was designed.

_____ _____
Signature of the Owner or Authorized Representative | Signature and number of Licensed Contractor

_____ _____
Typed or Printed Name and Date | Typed or Printed Name and Date

PART VIII STATEMENT BY ENGINEER. This is to certify that the engineering features of this system have been designed by me or by an individual(s) under my direct supervision. I further certify that to the best of my knowledge and belief they have been designed in accordance with Chapter 17-555, F.A.C., the 1987 edition of the "Recommended Standards for Water Works" and any other applicable state or local requirements. It is also stated that the undersigned has or will furnish the applicant with written instructions for the operation and maintenance of this permitted project. A completed Form 17-555.910(9) will be submitted to the Department in order to obtain prior approval to place the system in service, including a copy of the permit and bacteriological test results and "as-built" drawings or their location as required and any applicable local requirements.

_____
Company Name (please type)

_____
Company Address (please type)

_____
Signature and Date (Affix Seal)

_____ _____
Name (please type) Florida Registration No. | City, State Zip Code Phone No.

FILE

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3) Fe Cu

SSU Southern States Utilities

Engineering Department Intra-company Correspondence

Received
SEP 15 1994
Environmental Services

DATE: September 12, 1994

TO: Catherine Walker, Environmental Services

FROM: Dennis Westrick, Engineering

RE: Marco Island/Marco Shores Corrosion Control Programs

This memo serves as a written response to your memo of September 1, 1994 concerning the above referenced systems. While your memo was dated September 1, it was not received by the Engineering Department until September 6th probably due to the Labor Day holiday period. Nonetheless, I have reviewed the documents for the Marco Island RO and Lime Softening WTPs forwarded to our department on August 19, 1994. These documents include recommendations from HF Scientific, the Kjell Corporation and a RTW model prepared internally by Operations Services.

In reviewing the reports, no literature search or review was performed, no demonstration testing was conducted, no references were provided and neither vendor report was signed. A review of the reports prepared by HF Scientific for the Marco Island RO and Lime WTPs indicates no consideration was given to the blending of the finished water. Also, for the product recommended for the RO plant (C-9L), the recommended feed point in Section IV. of the text does not agree with the schematic provided. The same is true for the C-4 product recommendation for the lime plant. For the lime plant. HF Scientific is recommending the use of C-4 but Section IV. and the associated schematic shows C-9L as the recommended inhibitor.

Shortly after receiving the corrosion treatment recommendation reports, I forwarded a copy to Dr. Steven J. Duranceau, P.E., of Boyle Engineering Corporation for review. Boyle's written review comments are attached for your use.

In general, I am hesitant to agree wholly or in part with recommendations for use of any product or equipment based upon a report prepared by the vendor representing that product/equipment. This concern is regardless of whether the report was solicited/unsolicited or involved compensation by SSU. Vendors have a vested interest in recommending their products. It is also my understanding that FDEP is favoring recommendations for pH adjustment over corrosion inhibitors wherever possible.

Until very recently, the SSU Engineering Department has been "out of the loop," so to speak, with regards to the corrosion control program initiated by the Technical Services Department (now Operations Services). We have not previously seen the Water Quality Parameter Report referenced in the August 10 FDEP letter to Dave Denny and just recently a copy of the FDEP's letter. Furthermore, it was our understanding that Technical Services was coordinating the state-

wide corrosion control programs. Now, however, we are being asked to assist in the permitting process for corrosion control strategies for which we have not been an active participant.

That issue aside, the current request requires considerably more effort than the design of a simple chemical feed/storage system for a small water system. As you pointed out in your memo, consideration must be given to the type of products being proposed, spill containment and storage requirements as well as feed/control equipment. Separate spill containment facilities will be required for each inhibitor. Of primary concern is the storage/handling requirements of the product C-9L which has a pH of less than 1. For the Marco system, assuming a 30-day storage requirement, a substantial storage and spill containment system must be designed along with appropriate metering equipment, pipe materials (Kynar®), instrumentation, alarms, etc.

Note that the FDEP requires that any phosphate based inhibitor products that will have a pH value of the neat solution in excess of 2 will need to be disinfected by carrying approximately 10 mg/ℓ free chlorine and back-siphonage protection must be provided.

Due to current workload and prior commitments within the Engineering Department, including that this request falls in the middle of the 1995 budgeting cycle, plans and specifications have not been prepared to date. Also, no budget has been established for this project for 1994.

Fully recognizing the need to meet the permit submittal deadline, I am recommending that SSU's Environmental Services submit all available information along with the permit application. SSU can either notify FDEP that the plans and specifications will follow under separate cover at a later date or request an extension of the submittal date.

We wish to provide assistance to both Environmental and Operations Services as requested but due to staffing limitations and prior commitments, cannot always respond on short notice. At a minimum, we would prefer a minimum of four (4) weeks notice in order to schedule for in-house work or send the work to a private consultant if necessary. Since additional design efforts will be required in the near future for other systems, it would help our department expedite the design requests if either the vendors preparing the reports or Environmental Services would provide Engineering with a summary of requirements necessary for design of the chemical feed and storage system for each plant which will require corrosion control. As you are aware from reviewing the documents prepared by HF Scientific and others for Marco Island, there is a significant amount of data in the reports which must be deciphered. Also, these documents are subject to personal interpretation. A summary of the requirements/recommendations for storage (tank size, material) spill containment, feed equipment and monitoring would be beneficial.

In closing, I am recommending that a representative from Engineering, Environmental Services and Operations Services meet in the next week or two to discuss the state-wide corrosion control program status and develop a work plan that all parties can agree to.

DW:vs

c: Dave Denny
Jose dePedro
Mel Fisher
Ray Gagnon
John Losch
Ralph Terrero
Ron Weis
C.E. Wood

S S U
ENVIRONMENTAL SERVICES
PERMITTING

DATE: September 27, 1994

TO: Dennis Westrick

FROM: Catherine Walker

THROUGH: Rafael Terrero

RE: Marco Island/Marco Shores Corrosion Control Programs

I have reviewed your response to my September 1 memo requesting engineering input on corrosion control recommendations for Marco Island and Marco Shores.

If you will review copies of the permitting status reports, Engineering input has been requested since the inception of the permitting status report in March, 1994. Several verbal requests for engineering assistance were made in addition to the comments in the status report, and no response followed.

The role of the Environmental Services Department is to provide consistent communication between Operations, Engineering, and regulators regarding permitting and compliance matters for the Company. We could also assist in providing technical recommendations on process options as they relate to achieving compliance with regulations. Engineering studies and process designs should be performed by the Engineering Department. Regional engineers should also act as the Engineer of Record.

Please review my September 1 memo, to which you responded. We have not asked for your assistance in the "permitting process" as you have stated in your memo, rather we have asked you to perform the function of your department - **Engineering**. It is not the responsibility of Environmental Services to provide Engineering with a summary of the requirements necessary for design of the chemical feed and storage system for facilities requiring corrosion control. Attached is a copy of an earlier memo which we distributed concerning a summary of the regulatory requirements for corrosion control, however, it is the responsibility of the design engineer to determine the appropriate treatment requirements, and the related chemical feed and storage facility specifications.

We are available and eager to assist in any way possible to help the company maintain compliance with environmental regulations. Although all of us have significant workload demands, we have very little control regarding regulatory deadlines, and it is our responsibility to do everything we can to meet these deadlines. For this reason, I submitted all available information on corrosion control, along with a signed and sealed permit application for implementation of the corrosion control recommendations. Since you have expressed concern with the recommendations that have been made, I recommend that you become an active participant in the process, and direct vendors or operations staff appropriately so that you can feel comfortable with the engineering recommendations that need to be made. We will be glad to participate in a meeting to review the company's needs for corrosion control treatment, and address the appropriate permitting and regulatory requirements.

cc: Dave Denny
Jose DePedro
Mel Fisher
Ray Gagnon
John Losch
Karla Teasley
Ralph Terrero
Ron Weis
Chuck Wood

S S U

ENVIRONMENTAL SERVICES
PERMITTING

DATE: June 27, 1994

TO: Dave Denny
John Losch
Joe Mack
Bruce Paster
Jim Ragsdale
Robert Regalado
Joe Roberts
Frank Sanderson
Dennis Westrick
Billy Williams
Chuck Wood

FROM: Rafael Terrero

RE: Corrosion Control Treatment and Permitting

All systems which have exceeded lead and/or copper action levels are required, in accordance with FAC 17-551.500, to complete corrosion control studies to determine the optimal corrosion control treatment, and to complete installation of the applicable corrosion control treatment.

In accordance with FAC 17-551.510(6), *"...the system shall recommend to the Department, in a written engineering report that is certified by a professional engineer registered in the State of Florida, the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that system... "*. FAC 17-551.500(7) requires that *"All systems that have completed corrosion control studies required under Rules 17-551.500(1), and 17-551.500(2), FAC, and that recommend the installation of additional treatment facilities or modification to the existing treatment facilities shall submit an application for a permit to construct the recommended corrosion control treatment facility, to the Department in the format specified."*

Several of our facilities have exceeded the action levels. Corrosion control studies have been initiated by Operations and Technical Services. The Environmental Services Department has been requested to provide professional engineering services in order to secure the necessary permits to install treatment facilities. It has also come to my attention that corrosion control treatment facilities have been installed without the requisite permits. We have also been asked to act as Engineer of Record to apply for after the fact permits, and have been provided with no engineering data to support the applications.

The role of the Environmental Services Department is to provide consistent communication between Operations, Engineering, and regulators regarding permitting and compliance matters for the Company. We could also assist in providing technical recommendations on process options as they relate to achieving compliance with regulations. Engineering studies and process designs should be performed by the Engineering Department. Regional engineers should also act as the Engineer of Record.

Recently, a memo was issued by Technical Services recommending that Environmental Services should continue their efforts to obtain a permit for corrosion treatment. We will proceed with the permitting when we receive the required plans and Engineering Report from Engineering.

We will be looking forward to coordinating the efforts of both engineering and operations. If you have any questions or need further clarification, please feel free to call me. Thank you for your cooperation.

cc: Jose DePedro
Mel Fisher
Mary Glennon
Sandy Joiner
Catherine Walker

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PART V: CORROSION CONTROL TREATMENT

17-551.500 Description of Corrosion Control Treatment Requirements. Each system, including consecutive systems, shall complete the following applicable corrosion control study and treatment requirements. Primary systems, providing water to a consecutive system, may perform a joint study with its consecutive systems provided there is a written agreement between such systems that is approved by the Department.

(1) Large systems. All large systems shall:

(a) perform corrosion control studies which the system believes constitutes optimal corrosion control for that system, or demonstrate that the system has optimized corrosion control pursuant to Rule 17-551.540(1)(b), F.A.C.,

(b) complete the corrosion control treatment steps specified in Section 17-551.320, F.A.C., unless the Department has determined that it has optimized corrosion control under Rule 17-551.540(1)(b), F.A.C., and

(c) complete the applicable corrosion control treatment requirements by the deadlines for large systems established in Section 17-551.320, F.A.C.

(2) Small and medium systems. Any small or medium system that exceeds the lead or copper action level shall:

(a) perform corrosion control studies, under Section 17-551.510, F.A.C., to identify optimal corrosion control treatment,

(b) if it exceeds the lead or copper action level, recommend installation of one or more of the corrosion control treatments listed in Rule 17-551.510(1), F.A.C., which the system believes constitutes optimal corrosion control for that system,

(c) complete the corrosion control treatment steps specified in Section 17-551.330, F.A.C., unless it has optimized corrosion control under Rule 17-551.540(1), F.A.C., and

(d) complete applicable corrosion control treatment requirements by the deadlines in Section 17-551.330, F.A.C.

Specific Authority: 403.861(9), F.S.
Law Implemented: 403.853, F.S.
History: New 1-1-93.

PART V: CORROSION CONTROL TREATMENT

17-551.510 Performance of Corrosion Control Studies.

(1) Any system that performs corrosion control studies shall evaluate the effectiveness of each of the following treatments, and combinations of the following treatments to identify the optimal corrosion control treatment for that system and any consecutive systems it supplies:

(a) alkalinity and pH adjustment;

(b) calcium hardness adjustment; and

(c) the addition of a phosphate or silicate based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

(2) The system shall evaluate each of the corrosion control treatments using either pipe rig/loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other systems of similar size, water chemistry and distribution system configuration. Systems are advised to consult the "Lead and Copper Rule Guidance Manual, Volume II, Corrosion Control Treatment," incorporated as a guideline under Rule 17-555.335(3), F.A.C., for additional information on evaluating corrosion control treatment.

(3) The system shall measure lead, copper and the water quality parameters listed in Rule [4] 17-551.470(3)(a), F.A.C., in any tests conducted under this section before and after evaluating the corrosion control treatments listed above in Subsection (1). A consecutive system shall also measure lead, copper and applicable water quality parameters at the entry points to its distribution system during any tests it conducts under this section.

(4) The system shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:

(a) data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another system with comparable water quality characteristics; or

(b) data and documentation demonstrating that the system has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

(5) The system shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

(6) On the basis of an analysis of the data generated during each evaluation, the system shall recommend to the Department, in a written engineering report that is certified by a professional engineer registered in the State of Florida, the treatment option that the corrosion control studies indicate constitutes

optimal corrosion control treatment for that system. The system shall provide a rationale for its recommendation along with all supporting documentation. The report shall include the following information to support a system's recommendation:

(a) the results of all test samples collected for each of the water quality parameters in Rule [4] 17-551.470(3)(a), F.A.C.

(b) an explanation of the test methods used by the system to evaluate the corrosion control treatments listed in Rule 17-551.510(1), F.A.C.,

(c) the results of all tests conducted, and

(d) the basis for the system's selection of optimal corrosion control treatment.

(7) All systems that have completed the corrosion control studies required under Rules 17-551.500(1), and 17-551.500(2), F.A.C., and that recommend the installation of additional treatment facilities or modifications to existing treatment facilities shall submit an application for a permit to construct the recommended corrosion control treatment facility, to the Department in the format specified.

(8) All systems that have completed the corrosion control studies required under Rules 17-551.500(1) and (2), F.A.C., and which recommend that their existing corrosion control treatment facility be deemed optimal shall submit a report summarizing their recommendation pursuant to Subsection (6) above.

Specific Authority: 403.0877, 403.861(9), F.S.
Law Implemented: 403.853, F.S.
History: New 1-1-93.

17-551.520 Approval of Corrosion Control Treatment.

(1) When approving a system's recommendation of optimal corrosion control, the Department shall either:

(a) Issue a construction permit, for which an application was submitted pursuant to Rules 17-551.510(7) and 17-4.070, F.A.C., to construct or modify a corrosion control treatment facility, based upon consideration of available information including:

1. the permit application, submitted by the system to describe its recommended treatment alternative,

2. the supporting studies performed under Section 17-551.510, F.A.C., and

3. that the recommended corrosion control treatment option is from among those listed in Rule 17-551.510(1), F.A.C.

(b) Approve a system's recommendation in writing that it has optimized corrosion control pursuant to Rule 17-551.540(1)(c), F.A.C.

(2) Any permit issued under (1)(a) above shall constitute authority to construct a corrosion control treatment facility within a specified timeframe no later than 24 months.

Specific Authority: 403.861(9), F.S.
Law Implemented: 403.853, F.S.
History: New 1-1-93.

17-551.530 Installation and Operation of Corrosion Control.

(1) Each system shall properly install and operate throughout its distribution system the optimal corrosion control treatment approved by the Department under Section 17-551.520, F.A.C.

(2) All systems shall maintain water quality parameter values at or above minimum values or within approved ranges in each sample collected. As specified in Rule 17-551.460(4), F.A.C., the system may take a confirmation sample.

(3) If the water quality parameter value of any sample is below the minimum value or outside the approved range, then the system is out of compliance with this subsection.

(4) Within 36 months after installing corrosion control treatment, a system shall provide the Department a report explaining how corrosion control has been installed and how it is being maintained to ensure minimal lead and copper concentrations at consumers' taps. This report shall update the information submitted in the report prepared under Rule 17-551.510(6), F.A.C., to include the following additional information:

(a) an update of the results of all additional test samples collected for each of the water quality parameters,

(b) an update of any changes to the explanation of the test methods used by the system to evaluate the corrosion control treatments,

(c) the results of any other tests conducted,

(d) the basis for the system's evaluation of its corrosion control treatment as optimal,

(e) the results of tap samples collected at least once every six months for one year after corrosion control has been installed, and

(f) if warranted by the results of (d), an application for a permit to modify a corrosion control treatment facility using Form 17-555.910(1).

(c) if a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor that the system demonstrates is necessary to form a passivating film on the interior walls of the pipes of the distribution system;

(d) if alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity;

(e) if calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium.

Specific Authority: 403.861(9), F.S.
Law Implemented: 403.853, F.S.
History: New 1-1-93, Amended 1-26-93.

17-551.550 Reduction of Corrosion Control Treatment.

(1) Any small or medium system that must complete the corrosion control steps because it exceeds lead or copper action levels may stop implementing the treatment steps whenever the system meets both action levels during each of two consecutive monitoring periods conducted pursuant to Rule 17-551.450(1)(c)2., F.A.C., after it submits the results to the Department.

(2) If any such system thereafter exceeds the lead or copper action level during any monitoring period, the system shall recommence progress on the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety.

Specific Authority: 403.861(9), F.S.
Law Implemented: 403.853, F.S.
History: New 1-1-93.

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

October 6, 1994

VIA FEDERAL EXPRESS

Mr. Louis Lemaire
Florida Department of Environmental Protection
South District
2295 Victoria Avenue
Fort Myers, Florida 33901

RE: Marco Island WTP (R/O and Lime Softening)
Corrosion Control

Dear Mr. LeMaire:

Enclosed for your use is DEP Form 17-551.950(7).

Thank you.

Very truly yours,

Christine Arcand
Environmental & Permitting Specialist
Environmental Services

cc: Catherine Walker

Florida
Department of Environmental Regulation
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

DER Form # 17-551.900(7)
Form Title Notice of Intent to Use General Permit for Corrosion Control for Small and Medium Systems
Effective Date July 4, 1993
DER Application No _____ (Filled in by DER)

NOTICE OF INTENT TO USE GENERAL PERMIT FOR CORROSION CONTROL FOR SMALL AND MEDIUM SYSTEMS

INSTRUCTIONS: Use of this form is limited to community and non-transient non-community public water systems which serve fewer than 50,000 persons. For public water systems which serve fewer than 10,000 persons, use of this form does not require the services of a registered Professional Engineer. It may be submitted signed by the owner of the water system or authorized representativre and the licensed contractor. Use of this form will be disapproved if, for the water quality data listed in Part II below, the proposed treatment selected in Part III below is inconsistent with the guidelines and recommendations published by the U.S. Environmental Protection Agency in *Lead and Copper Rule Guidance Manual, Volume II: Corrosion Control Treatment.*

PART I. GENERAL WATER SYSTEM INFORMATION

Water System Name: Marco Island WTP RO & Lime Softening
Contact person: Ron Weis
System type (circle one): C or NTNC
Contact phone number: (813) 394-3353
Identification Number (PWS-ID): 5110183
Mailing address: P.O. Box 197
Population served: 26,000 (Est.) Peak Season
Cty, State ZIP Marco Island, FL 33937

PART II. SUMMARY OF WATER CHEMISTRY DATA. Provide data on existing levels for water quality parameters and lead and copper levels (provide additional sheets as necessary).

Please refer to HF Scientific Desktop Evaluation submitted 9/12/94

Water Quality Parameter - units	Entry Point	Tap		Lead	Copper
Temperature - °C			No. of samples		
Conductivity - μmho/cm @ 25°C				mg/L	mg/L
pH			Maximum Tap		
Alkalinity - mg/L			Minimum Tap		
Total Hardness - mg/L			90th percentile		
Total Dissolved Solids - mg/L			At entry point		
Calcium - mg/L					
Orthophosfate - mg/L					
Silicates - mg/L					

PART III. PROPOSED TREATMENT INFORMATION. Indicate which tratment is proposed.

Please refer to HF Scientific Desktop Evaluation submitted 9/12/94

☐ Modification of pH Existing pH _____ Proposed pH _____

Chemical to be Added _____ Dosage rate _____ mg/L

☐ Modification of alkalinity Existing alkalinity _____mg/L as $CaCO_3$ Proposed _____mg/L as $CaCO_3$

Chemical to be added _____ Dosage rate_____ mg/L

NOTICE OF INTENT TO USE GENERAL PERMIT
FOR CORROSION CONTROL FOR SMALL AND
MEDIUM SYSTEMS

DER Form # 17-551.900(7)
Form Title: Notice of Intent to Use General Permit for Corrosion Control for Small and Medium Systems
Effective Date 1994
DER Application No. _____
(Filled in by DER)

☐ Modification of calcium - Existing calcium _____ mg/L as $CaCO_3$
Proposed calcium _____ mg/L as $CaCO_3$
Chemical to be added _____ Dosage rate _____ mg/L

☒ Use of a corrosion inhibitor Brand Name of Proposed Inhibitor Calgon C-9L/Calgon C-4
Chemical Name of Proposed Inhibitor Zinc Orthophosphate Dosage rate 3.00 mg/L

PART IV. DESCRIPTION OF TREATMENT EQUIPMENT. Describe injector equipment proposed for use and provide a diagram of how the pumps and injector points are located with respect to other system components. Please refer to Desktop Evaluation prepared by HF Scientific, submitted 9/12/94.

PART V: TREATMENT EVALUATION. Describe what procedures will be followed to evaluate the effectiveness of the proposed treatment. Subsequent lead/copper monitoring in distribution system.

PART VI. PROJECT COST ESTIMATE. Total Cost of the Proposed Treatment is $ 15,000.

PART VII. STATEMENT BY APPLICANT and LICENSED CONTRACTOR. The undersigned owner or authorized representative of the above named public water system is fully aware that the statements made in this notice are true and complete to the best of his/her knowledge. The undersigned is fully aware that it is his/her responsibility to operate and maintain this facility in such a manner as to function as it was designed.

Signature of the Owner or Authorized Representative

Signature and number of Licensed Contractor

Rafael A. Terrero, P.E.
Typed or Printed Name and Date

Typed or Printed Name and Date

PART VIII STATEMENT BY ENGINEER. This is to certify that the engineering features of this system have been designed by me or by an individual(s) under my direct supervision. I further certify that to the best of my knowledge and belief they have been designed in accordance with Chapter 17-555, F.A.C., the 1987 edition of the "Recommended Standards for Water Works" and any other applicable state or local requirements. It is also stated that the undersigned has or will furnish the applicant with written instructions for the operation and maintenance of this permitted project. A completed Form 17-555.910(9) will be submitted to the Department in order to obtain prior approval to place the system in service, including a copy of the permit and bacteriological test results and "as-built" drawings or their location as required and any applicable local requirements.

Southern States Utilities, Inc.
Company Name (please type)

Catherine A. Walker 10/5/94
Signature and Date (Affix Seal)

1000 Color Place
Company Address (please type)

Catherine A. Walker 45420
Name (please type) Florida Registration No.

Apopka, FL 32703 (407) 880-0058
City, State Zip Code Phone No.

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

***** FAX COVER SHEET *****

TO: Louis LaMaire

COMPANY: FDEP - Fort Myers

FAX NO.: (813) 332 6969

FROM: Catherine Walker

RE: Marco Island Corrosion Control.

Attached are process flow schematics as we discussed. Signed/sealed copies will follow via Federal Express.

Thanks

Catherine

TOTAL NUMBER OF PAGES (INCLUDING THIS PAGE): 3/2

DATE: 10/11/94

PLEASE CONTACT X123 IMMEDIATELY IN THE EVENT YOU DO NOT RECEIVE ALL PAGES.

SSU, APOPKA, FAX NOS.:

FOR DEPARTMENTS (Kravitz Bldg):
Communications; Executive; Finance/CashMgmt/GenAccntng/ Payroll; Legal/Human Resources.....407-880-1395

AcctsPay; Administrative; Customer Service; EnvirSvc; PropAcctng; Purchasing.....407-884-7740

FOR DEPARTMENTS (Operations Bldg):
Central Reg Operations; Corporate Devel; Information Systems; Rates.....407-880-1061

ENGINEERING, OPs Adm. Support & Technical Svcs:
(Located off-site at Commerce Place).....407-884-9116

SENDER: Please circle FAX NO. of your location.

SSU
Southern States Utilities

ENVIRONMENTAL DEPARTMENT
DESIGN CALCULATIONS

1000 Color Place
Apopka, Florida 32703
(407) 880-0058

PROJECT _____ JOB NO. _____

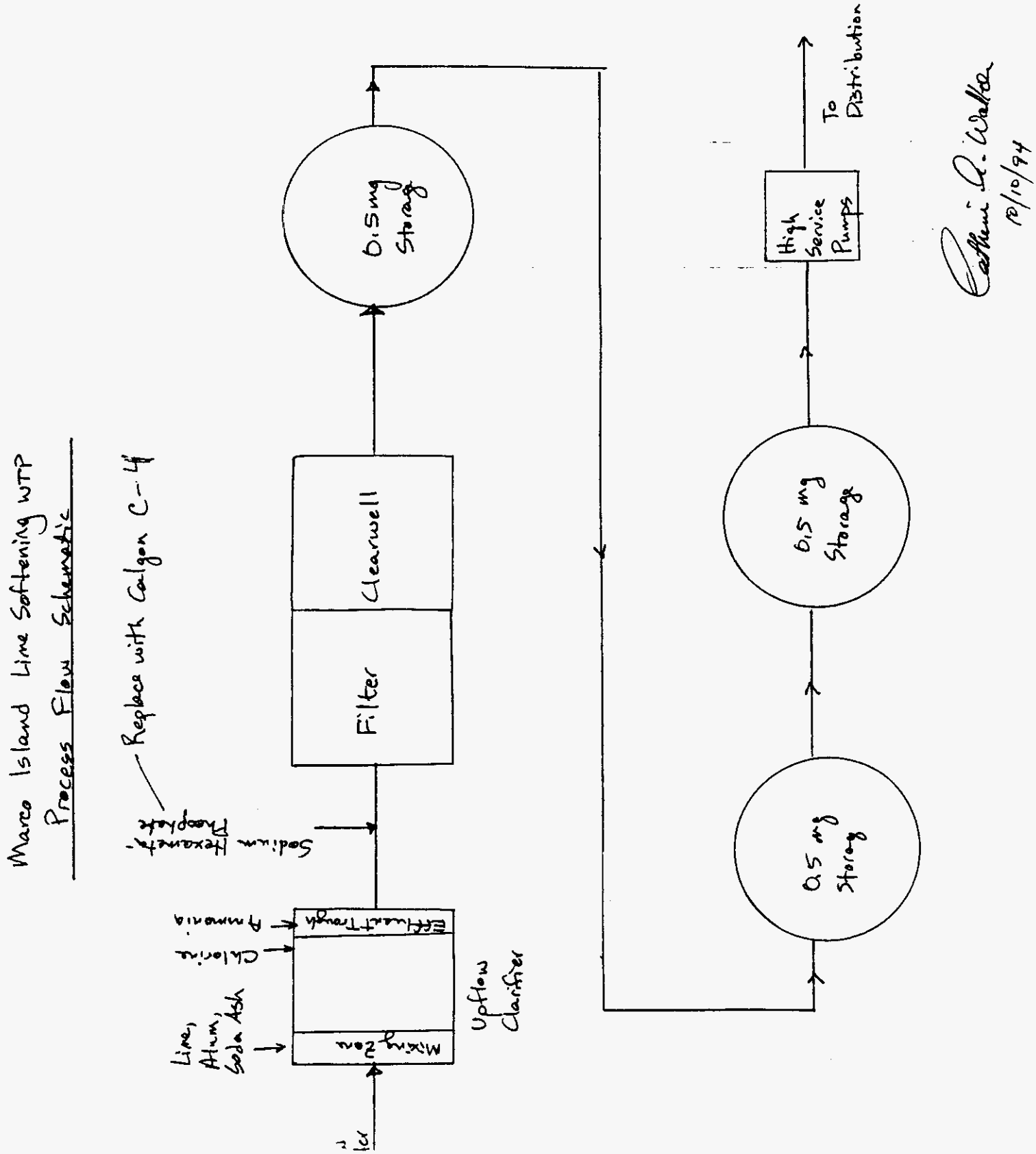
SUBJECT Marco Island Corrosion Control

SHEET No. 1 OF 2

BY Caw DATE 10/10/94

CHK'D. BY _____ DATE _____

Marco Island Lime Softening WTP
Process Flow Schematic



Catherine A. Walker
10/10/94

SSU Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

October 11, 1994

Mr. Louis Lamaire
Florida Department of Environmental Protection
South District
2295 Victoria Avenue
Fort Myers, Florida 33901

Re: Marco Island WTP Corrosion Control

Dear Mr. Lamaire:

Enclosed for your use are process flow schematic diagrams for the Marco Island lime softening plant and the reverse osmosis plant water treatment plants.

Please contact me if you have any questions or need additional information. Thank you for your continued assistance with this project.

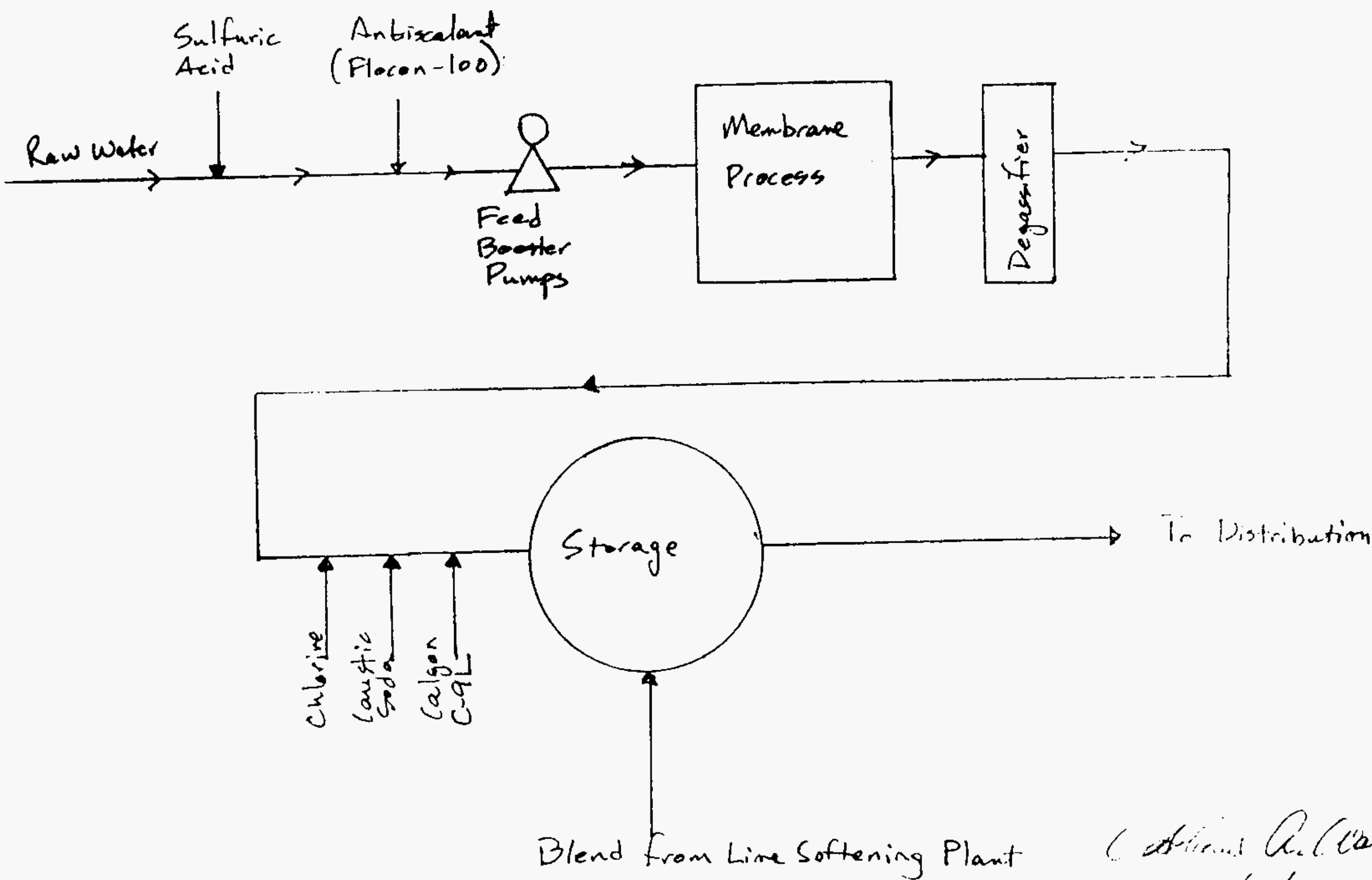
Sincerely:

Southern States Utilities, Inc.

Catherine A. Walker, P.E.
Senior Permitting Engineer

bc: Chris Arcand
Dave Denny
John Losch
Ralph Terrero
Ron Weis
Dennis Westrick

Marco Island RO WTP
Process Flow Schematic



10/10/94

SSU Southern States Utilities
ENVIRONMENTAL DEPARTMENT
DESIGN CALCULATIONS
1000 Color Place
Apopka, Florida 32703
(407) 880-0058

SHEET NO 2 OF 2

BY ______ DATE 10/10/94

CHK'D BY ______ DATE ______

SSU
Southern States Utilities

ENVIRONMENTAL DEPARTMENT
DESIGN CALCULATIONS

1000 Color Place
Apopka, Florida 32703
(407) 880-0058

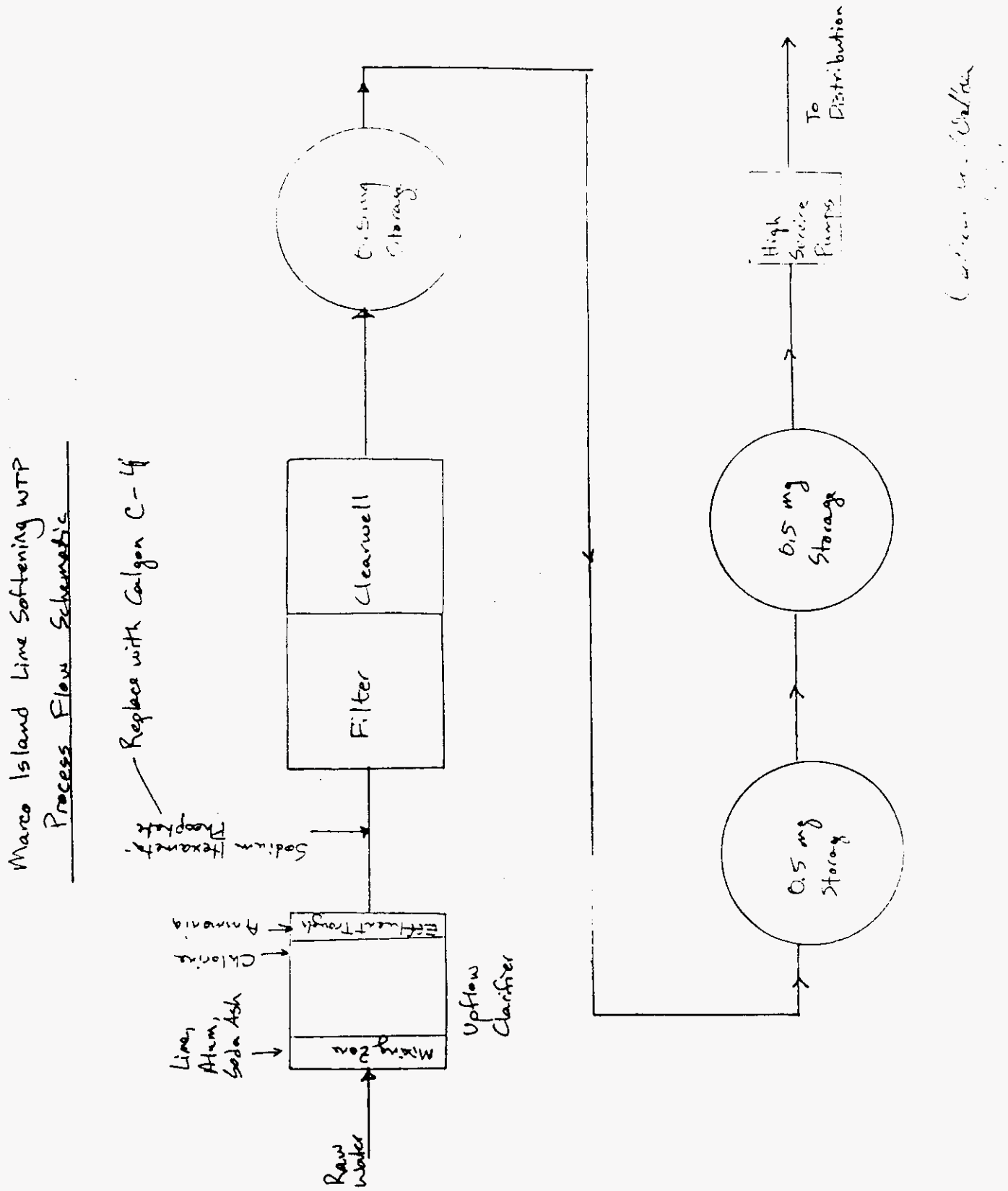
SUBJECT Marco Island Corrosion Control

SHEET No 1 OF 2

BY Caw DATE 10/10/94

CHK'D BY _____ DATE _____

Marco Island Lime Softening WTP
Process Flow Schematic



Department of Environmental Protection

Lawton Chiles
Governor

South District
2295 Victoria Avenue, Suite 364
Fort Myers, Florida 33901

Virginia B. Wetherell
Secretary

October 10, 1994

Received
OCT 13 1994
Environmental Services

Dave Denny, Utilities Director
Southern States Utilities, Inc.
Post Office Box 197
Marco Island, Florida 33937

Re: Collier County - PW/LC
Notification of Use of
General Permit
Notice No. WC11-257537
SSU/Marco Island (WTP)

Dear Mr. Denny:

In response to your request, this letter is to advise you that the Department has received your notice of intent to use a general permit as provided in Rule 62-551.330, Florida Administrative Code to modify a public water treatment system for corrosion control and does not object to your use of such general permit.

Please be advised that your recommendations for treatment must be NSF or AWWA approved and be within the recommended dosages. Since the finished waters from the R.O. plant and the lime softening plant are blended, you must ensure that the treatment recommendations for each plant are compatible with the other and that no adverse effects will result from blending. You shall monitor water quality parameters in addition to lead and copper, as provided in Rule 62-551.470 F.A.C. Corrosion control implementation must be completed within 24 months. Upon completion, a Request for Letter of Release, Form 62-555.910(9), must be submitted including final modifications (if any), chemicals, dosage and brand name with NSF or AWWA certification.

Please be advised that you are required to abide by all conditions in Rules 62-4.510 through 62-4.540, Florida Administrative Code, the general requirements for general permits; and Rule 62-551, Florida Administrative Code.

Sincerely,

Ronald D. Blackburn
Acting Director of
District Management

RDB/LPL/ish

cc: Catherine Walker, P.E.

-RECORD
KOW_I]PW FORMS

Re: Collier County - PW/LC
SSU Marco Island
WC11-257537

DRINKING WATER PROGRAM CONVERSATION RECORD

COUNTY Collier DATE Oct. 11, 1994 TIME 2:00 PM

Ms. Catherine Walker P.E. PHONE # (407) 880-0058

ADDRESS Southern States Utilities Apopka FL 32703

| | Telephoned | | Came in | X | Was Called

RE: Corrosion Control. General Permit WC11-257537. Marco Island

CONVERSATION: I called Ms. Walker to advise her that the DEP is approving SSU's application for the above reference general permit; but that since the finished waters from the R.O. plant and the lime softening plant are blended, SSU must ensure that the treatment recommendations for each plant are compatible with the other plant prior to blending. SSU must also ensure that no adverse effects will result from blending the water from the two plants. Ms. Walker informed me that SSU was aware of this issue, and plans to do compatibility testing prior to implementation.

FURTHER ACTION REQUIRED: YES ( ) NO (X)

FOLLOW-UP ACTION REQUIRED:

SUSPENSE DATE: None

Gary A. Maier

Gary A. Maier
Professional Engineer

MAC/ish (7-29-92)

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1146 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2980, TAMPA, FLORIDA 33601-2980
HRS# 84147 HRS# E84100, E84924
TELEPHONE (813) 223-870
FAX (813) 223-933

19-Dec-19
Page 1

Public Water System Report for the Analysis of Lead Tap Samples

PARAMETER-ID is: 1030 (Lead - Pb)

ANALYTICAL METHOD is EPA 239.2

DETECTION LIMIT is 0.001 mg/L **PWS ID:** _____

ANALYSIS DATE is 29-Nov-1994 **PWS NAME:** SSU SERVICES, MARCO ISLAN

Summary of Analytical Results for First Draw Lead Tap Samples

	LAB SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	881496	0.009	1250 Osprey Court
2	932028	0	1270 Osprey
3	932115	0.005	228 Chpistano
4	940671	0	510 Alamedia Court
5	940672	0.001	1220 Stone Court
6	940679	0	206 Mavorca Court
7	940684	0.11	700 Sea Grape Court
8	940687	0	811 Scott Drive
9	940688	0	1370 Auburn Pale Avenue
10	940689	0	214 Rook Hill Court
11	940690	0.008	188 Star Fish
12	940694	0.001	759 Inlet Drive
13	940695	0.003	123 Landmark
14	940696	0.013	810 Arcadia
15	940697	0.001	230 Wind Brook
16	940698	0.10	1210 Ember Court
17	940701	0	1274 Jamaica Road

** 0 = Below Detection Limit

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1148 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2690, TAMPA, FLORIDA 33601-2690
HRS# 64147 HRS# E84100, E84084
TELEPHONE (813) 223-9702
FAX (813) 223-0332

22-Nov-19
Page 1

Public Water System Report for the Analysis of Lead Tap Samples

PARAMETER-ID is: 1030 (Lead - Pb)

ANALYTICAL METHOD is EPA 239.2

DETECTION LIMIT is 0.001 mg/L PWS ID: 5110183

ANALYSIS DATE is 15-Nov-1994 PWS NAME: MARCO ISLAND UTILITIES

Summary of Analytical Results for First Draw Lead Tap Samples

	LAB SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	932029	0	225 Baled Eglo
2	932030	0	264 Shadow Ridge Court
3	932031	0.002	1166 Fourwind
4	932032	0.002	214 Tahiti Road
5	932033	0	475 Echo Circle
6	932034	0.009	990 Hyacinth Court
7	932036	0.033	421 Cottage Court
8	932040	0.002	1161 Breakwater Court
9	932045	0.009	1631 Cayambas Court
10	932046	0	1429 Collingswood Avenue
11	932047	0.006	1210 Stone Court
12	932051	0.002	698 Embassy Court
13	932052	0	199 Society Court
14	932054	0.003	1753 Dogwood Drive
15	932056	0.006	1281 Ember Court
16	932058	0.002	1264 Fruitland
17	932061	0.002	744 Fairlown Court
18	932063	0	192 Leeward Court
19	932064	0.001	1353 N. Collier Blvd.
20	932065	0.003	164 Columbus Way
21	932067	0	249 Bass Court
22	932088	0.002	459 MarQuesas Court
23	932122	0.005	646 Bamboo Court

** 0 = Below Detection Limit

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2660, TAMPA, FLORIDA 33601-2660
HRS# 84147 HRS# 884100, 884284
TELEPHONE (813) 223-670
FAX (813) 223-653

15-Nov-19
Page 1

Public Water System Report for the Analysis of Lead Tap Samples

PARAMETER-ID is: 1030 (Lead - Pb)

ANALYTICAL METHOD is EPA 239.2

DETECTION LIMIT is 0.001 mg/L PWS ID: 5110183

ANALYSIS DATE is 11-Nov-1994 PWS NAME: MARCO ISLAND UTILITIES

Summary of Analytical Results for First Draw Lead Tap Samples

LAB	SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	932059	0.003	390 Waterleaf Ct.
2	932062A	0.002	279 Marqursas
3	932068	0.011	311 Nassau Ct.
4	932070	0.002	362 Bali Ct.
5	932073	0	149 Cprus St.
6	932074	0.004	541 S. Heathwood
7	932075	0	617 Somerset Ct.
8	932082	0.002	172 Gulfstream St.
9	932083	0.004	831 Buttonwood Ct.
10	932084	0.001	1356 Merrimac Ave.
11	932085	0.002	1031 Valley Ave.
12	932087	0	695 Embassy Ct.
13	932090	0.001	885 Magnolia Ct.
14	932091	0	736 Fairlawn Ct.
15	932108	0.004	924 Juniper Ct.
16	932109	0.008	310 Henderson Ct.
17	932110	0.028	608 Nassau Rd.
18	932111	0.002	850 S. Barfield
19	932114	0	1149 Strawberry Ct.
20	932116	0.005	474 Yellow Bird St.
21	932117	0.067	346 Edgewater Ct.
22	932120	0.031	230 Hideaway Cir.
23	932121	0.003	2030 SHeffield Ave.
24	932123	0.006	370 Edgewater Ct.
25	932124	0.001	549 Tiger Tail Ct
26	932125	0.002	1211 Minosa Ct.

** 0 = Below Detection Limit

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2980, TAMPA, FLORIDA 33601-2980
HRS# 84147 HRS# 884100, 884324
TELEPHONE (813) 223-9702
FAX (813) 223-9332

15-Nov-1994
Page 1

Public Water System Report for the Analysis of
Copper Tap Samples

PARAMETER-ID is: 1022 (Copper - Cu)

ANALYTICAL METHOD is EPA 220.1

DETECTION LIMIT is 0.05 mg/L PWS ID: 5110183

ANALYSIS DATE is 9-Nov-1994 PWS NAME: MARCO ISLAND UTILITIES

Summary of Analytical Results for
First Draw Copper Tap Samples

	LAB SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	932059	0.05	390 Waterleaf Ct.
2	932062A	0.08	279 Marqursas
3	932068	0.09	311 Nassau Ct.
4	932070	0	362 Bali Ct.
5	932073	0.30	149 Cprus St.
6	932074	0.09	541 S. Heathwood
7	932075	0	617 Somerset Ct.
8	932082	0.07	172 Gulfstream St.
9	932083	0.08	831 Buttonwood Ct.
10	932084	0.12	1356 Merrimac Ave.
11	932085	0.06	1031 Valley Ave.
12	932087	0.35	695 Embassy Ct.
13	932090	0	885 Magnolia Ct.
14	932091	0	736 Fairlawn Ct.
15	932108	0.28	924 Juniper Ct.
16	932109	0.06	310 Henderson Ct.
17	932110	0.07	608 Nassau Rd.
18	932111	0	850 S. Barfield
19	932114	0	1149 Strawberry Ct.
20	932116	0	474 Yellow Bird St.
21	932117	0.18	346 Edgewater Ct.
22	932120	0.08	230 Hideaway Cir.
23	932121	0.06	2030 SHeffield Ave.
24	932123	0.07	370 Edgewater Ct.
25	932124	0	549 Tiger Tail Ct
26	932125	0	1211 Minosa Ct.

** 0 = Below Detection Limit

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1148 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
HRS# 84147 HRS# E84100, E84324

TELEPHONE (813) 228-0700
FAX (813) 223-6332

19-Dec-1994
Page 1

Public Water System Report for the Analysis of Copper Tap Samples

PARAMETER-ID is: 1022 (Copper - Cu)

ANALYTICAL METHOD is EPA 220.1

DETECTION LIMIT is 0.05 mg/L PWS ID: _____

ANALYSIS DATE is 2-Dec-1994 PWS NAME: SSU SERVICES, MARCO ISLAND

Summary of Analytical Results for First Draw Copper Tap Samples

LAB	SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	881496	0	1250 Osprey Court
2	932028	0.22	1270 Osprey
3	932115	0	228 Chplstano
4	940671	0.08	510 Alamedia Court
5	940672	0	1220 Stone Court
6	940679	0	206 Mavorca Court
7	940684	0.10	700 Sea Grape Court
8	940687	0	811 Scott Drive
9	940688	0	1370 Auburn Pale Avenue
10	940689	0	214 Rock Hill Court
11	940690	0.17	188 Star Fish
12	940694	0	759 Inlet Drive
13	940695	0	123 Landmark
14	940696	0	810 Arcadia
15	940697	0.10	230 Wind Brook
16	940698	0.11	1210 Ember Court
17	940701	0	1274 Jamaica Road

** 0 = Below Detection Limit

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1143 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
CompQAP# 880124G, HRS# 84147, E84100, E84324
TELEPHONE (813) 223-9702
FAX (813) 223-9332

31-May-1995
Page 1

LEAD TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name:	SSU SERVICES, MARCO ISL.	Date Submitted to Lab:	11-MAY-1995
PWS-ID:		Analysis Date:	24-May-1995
Laboratory:	Thornton Laboratories	Lab Analysis Method:	EPA 239.2
Lab-ID:	84147	Lead Analysis	
Contact:	Richard Lewis	Method Detection Limit:	0.001 mg/L
Phone:	(813) 223-9702	90th Percentile Value:	0.010 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Lead (Pb) (mg/L)
	1			956246	5/8/95	0
	2			956248	5/9/95	0
	3			956249	5/9/95	0
	4			956251	5/9/95	0
	5			956282	5/9/95	0
	6			956263	5/9/95	0.001
	7			956266	5/9/95	0.001
	8			956360	4/29/95	0.001
	9			956323	5/9/95	0.002
	10			956297	5/2/95	0.003
	11			956261	5/9/95	0.004
	12			956259	5/9/95	0.006
	13			956285	4/29/95	0.006
	14			956244	5/2/95	0.007
	15			956258	5/7/95	0.010
	16			932066	5/5/95	0.021
	17			956265	5/9/95	0.070

The action limit for Lead is 0.015 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

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P.O. BOX 2660, TAMPA, FLORIDA 33601-2660
CompQAP# 880124G, HRS# 84147, E84100, E84324

TELEPHONE (813) 223-9702
FAX (813) 223-9332

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18-May-1995
Page 1

LEAD TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name:	SSU SERVICES, MARCO ISL.	Date Submitted to Lab:	5-MAY-1995
PWS-ID:	_____	Analysis Date:	16-May-1995
Laboratory:	Thornton Laboratories	Lab Analysis Method:	EPA 239.2
Lab-ID:	84147	Lead Analysis	
Contact:	Richard Lewis	Method Detection Limit:	0.001 mg/L
Phone:	(813) 223-9702	90th Percentile Value:	0.008 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Lead (Pb) (mg/L)
	1			956247	4/29/95	0
	2			956284	4/26/95	0
	3			956291	4/25/95	0
	4			956245	5/4/95	0.001
	5			956273	5/4/95	0.001
	6			956358	5/4/95	0.001
	7			956252	5/1/95	0.002
	8			956260	5/4/95	0.002
	9			956289	5/1/95	0.002
	10			956292	5/2/95	0.002
	11			956301	4/27/95	0.002
	12			956347	4/27/95	0.002
	13			956264	5/3/95	0.004
	14			956278	5/3/95	0.005
	15			956340	4/28/95	0.008
	16			956351	5/3/95	0.010
	17			956357	5/2/95	0.023

The action limit for Lead is 0.015 mg/L

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2880, TAMPA, FLORIDA 33601-2880
CompQAP# 880124G, HRS# 84147, E84100, E84324

TELEPHONE (813) 223-9702
FAX (813) 223-9332

24-May-1995
Page 1

LEAD TAP SAMPLE ANALYSIS AND RESULT RANKING REPORT

System Name:	SSU SERVICES, MARCO ISL.	Date Submitted to Lab:	1-MAY-1995
PWS-ID:	______	Analysis Date:	26-Nov-1949
Laboratory:	Thornton Laboratories	Lab Analysis Method:	EPA 239.2
Lab-ID:	84147	Lead Analysis	
Contact:	Richard Lewis	Method Detection Limit:	0.001 mg/L
Phone:	(813) 223-9702	90th Percentile Value:	0.019 mg/L

A	Rank (ascending)	Location Code No.	Tier	Lab Sample ID	Date Site Sampled	Lead (Pb) (mg/L)
	1			956255	4/27/95	0
	2			956277	4/27/95	0
	3			956279	4/27/95	0
	4			956286	4/26/95	0
	5			956290	4/26/95	0
	6			956293	4/26/95	0
	7			956298	4/26/95	0
	8			956337	4/27/95	0
	9			956352	4/27/95	0
	10			956295	4/26/95	0.001
	11			956296	4/26/95	0.002
	12			956349	4/27/95	0.002
	13			956356	4/27/95	0.002
	14			956256	4/27/95	0.003
	15			956283	4/27/95	0.004
	16			956268	4/26/95	0.005
	17			956288	4/27/95	0.005
	18			956354	4/27/95	0.005
	19			956344	4/27/95	0.006
	20			956280	4/26/95	0.007
	21			956294	4/27/95	0.016
	22			956275	4/27/95	0.019
	23			956359	4/27/95	0.023
	24			956333	4/28/95	0.024
	25			956342	4/27/95	0.043

The action limit for Lead is 0.015 mg/L

SSU SERVICES

Post-it® Fax Note 7671	Date 7.29.94	# of pages ▶ 10
To Mary Glenn	From Larry L.	
Co./Dept.	Co. Marco Tel.	
Phone #	Phone #	
Fax #	Fax #	

Marco Shores Office
900 Windward Drive
P.O. Box 1693
Marco Island, FL 33969
(813) 394-3168

July 27,1994

Ms. Gema Martin
1528 Mainsail Dr. #10
Naples, FL 33940

Dear Ms. Martin

Thank you for participating in the recent program conducted within the Marco Shores water system to determine Lead and Copper concentrations in your drinking water. Samples were collected from 20 Marco Shores customers and 5 of these 20 residences exceeded the EPA "action level" of 0.015 mg/l for Lead. For your information, a copy of the laboratory report for your home is enclosed which indicates that the action level for Lead was exceeded inside your particular home.

It is important for you to read and understand the enclosed pamphlet which includes excellent information on how you can reduce potential amounts of Lead in your drinking water. The Marco Shores water sources and distribution system have been thoroughly analysed and do not contain appreciable amounts of Lead. Therefore, the elevated levels of Lead in your water sample are probably coming from Lead plumbing and solder inside your home.

We would like to continue to sample your home in the future to determine any increases or decreases in Lead concentration. Since your home was in the list of the original 20 homes in the sampling program, you may remain in the program and will not be required to pay for this additional customer service.

If you have any specific questions that the enclosed pamphlet does not answer, please call 813-394-3353 or 813-642-5405. We will be glad to answer any questions you may have.

Sincerely,

Marc Larson
Lead Water Plant Operator
Marco Island Plant
Southern States Utilities, Inc.

ML/rs

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2680, TAMPA, FLORIDA 33601-2680
CompQAP# 860124G, HRS# 84147, E84100, E84324

TELEPHONE (813) 223-8702
FAX (813) 223-8332

31-May-1995
Page 1

Public Water System Report for the Analysis of Copper Tap Samples

PARAMETER-ID is: 1022 (Copper - Cu)

ANALYTICAL METHOD is EPA 220.1

DETECTION LIMIT is 0.05 mg/L **PWS ID:** _____

ANALYSIS DATE is 25-May-1995 **PWS NAME:** SSU SERVICES, MARCO ISLAND

Summary of Analytical Results for First Draw Copper Tap Samples

LAB	SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	932066	0.33	1144 Shenandoah Court
2	956244	0.15	990 Hyacinth Court
3	956246	0.09	617 Somerset Drive
4	956248	0	1274 Jamaica Road
5	956249	0	811 Inlet Drive
6	956251	0	1031 Valley Avenue
7	956258	0	383 Beachley Lane
8	956259	0.10	1753 Dogwood
9	956261	0.27	188 Starfish Court
10	956263	0.14	2063 Dogwood Drive
11	956265	0.14	850 S. Barfield Drive
12	956266	0	2030 Sheffield Avenue
13	956282	0.08	199 Society Court
14	956285	0.24	924 Juniper Court
15	956297	0.08	510 Almadia Avenue
16	956323	0	818 Dandelon Court
17	956360	0	541 S. Heathwood

** 0 = Below Detection Limit

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2980, TAMPA, FLORIDA 33601-2980
CompQAP# 860124G, HRS# 84147, 884100, 884324
TELEPHONE (813) 228-9702
FAX (813) 223-9332

18-May-1995
Page 1

Public Water System Report for the Analysis of Copper Tap Samples

PARAMETER-ID is: 1022 (Copper - Cu)

ANALYTICAL METHOD is EPA 220.1

DETECTION LIMIT is 0.05 mg/L PWS ID: _____

ANALYSIS DATE is 16-May-1995 PWS NAME: SSU SERVICES, MARCO ISLAND

Summary of Analytical Results for First Draw Copper Tap Samples

LAB	SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	956245	0.05	522 Nassau Road
2	956247	0.07	662 Bamboo Court
3	956252	0	310 Henderson Court
4	956260	0.05	1164 Strawberry
5	956264	0.11	1370 Buburn Dale
6	956273	0	582 Yellow Bird Street
7	956278	0.06	239 Bass Court
8	956284	0	656 North Barfield Drive
9	956289	0.07	885 Magnolia Court
10	956291	0.08	214 Tahiti
11	956292	0	279 Marquecas Court
12	956301	0	362 Bali Court
13	956340	0.08	736 Fair Lawn Court
14	956347	0.06	549 Tigertial Court
15	956351	0.33	1220 Stone Court
16	956357	0.29	700 Seagrape Road
17	956358	0.13	781 Coyambas Drive

** 0 = Below Detection Limit

THORNTON LABORATORIES, INC.
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
1145 EAST CASS STREET, TAMPA, FLORIDA 33602
P.O. BOX 2680, TAMPA, FLORIDA 33601-2680
CompQAP# 890124G, HRS# 84147, E84100, E84324
TELEPHONE (813) 223-9702
FAX (813) 223-9332

24-May-1995
Page 1

Public Water System Report for the Analysis of Copper Tap Samples

PARAMETER-ID is: 1022 (Copper - Cu)

ANALYTICAL METHOD is EPA 220.1

DETECTION LIMIT is 0.05 mg/L **PWS ID:** _____

ANALYSIS DATE is 26-Nov-1949 **PWS NAME:** SSU SERVICES, MARCO ISLAND

Summary of Analytical Results for First Draw Copper Tap Samples

LAB	SAMPLE ID.	RESULTS (mg/L)	TAP SAMPLE LOCATION
1	956255	0	811 Scott Drive
2	956256	0	698 Embassy Court
3	956268	0	370 Edgewater Court
4	956275	0	1160 Fourwinds Avenue
5	956277	0	264 Shadowridge Court
6	956279	0	1186 Sunbird Avenue
7	956280	0	311 Nassau Court
8	956283	0	390 Waterleaf Court
9	956286	0	495 Marquesas Court
10	956288	0	831 Buttonwood
11	956290	0	1289 Riverhead Avenue
12	956293	0	346 Edgewater Court
13	956294	0	608 Nassau Road
14	956295	0.001	475 Echo Circle
15	956296	0	474 Yellowbird Street
16	956298	0	1149 Strawberry Court
17	956333	0.09	1356 Merrimac Avenue
18	956337	0	230 Windbrook
19	956342	0.16	1429 Collingswood Avenue
20	956344	0.14	230 Hideaway Court
21	956349	0	510 Mangrove Court
22	956352	0	123 Landmark Street
23	956354	0.07	1210 Ember Court
24	956356	0	1121 Twin Oaks Court
25	956359	0.09	1281 Ember Court

** 0 = Below Detection Limit

Sheet1

COPPER TAP SAMPLE ANALYSIS REPORT
MARCO ISLAND

Date Submitted to the Lab:	12/22/95
Analysis Date:	12-28/29-95
Lab Analysis Method:	SM3111B
Copper Action Level Concentration:	1.3 mg/L

TIER	LOCATION	LAB #	SAMPLE DATE	COPPER mg/L	LEAD mg/L
	459 Marquesas	AL00471	12/20/95	<0.02	
	1186 Sunbird Ave	AL00472	12/20/95	<0.02	
	541 Heathwood	AL00488	12/20/95	<0.02	
	1274 Jamica R	AL00495	12/20/95	<0.02	
	1149 Strawberry Ct	AL00496	12/20/95	<0.02	
	1232 Fruitland Ave	AL00534	12/22/95	<0.02	
	1160 Fourwinds Ave	AL00552	12/22/95	<0.02	
	522 Nassau Rd	AL00562	12/21/95	0.018	
	199 Society	AL00463	12/20/95	0.02	
	362 Bali Court	AL00497	12/19/95	0.02	
	275 Figi Ct	AL00532	12/21/95	0.02	
	1250 Osprey	AL00560	12/22/95	0.02	
	1270 Osprey	AL00561	12/22/95	0.02	
	370 Edgewater Ct	AL00478	12/20/95	0.03	
	390 Waterleaf Ct	AL00498	12/19/95	0.03	
	1356 Merrimac Ave	AL00547	12/21/95	0.03	
	264 Shadow Ridge	AL00462	12/20/95	0.04	
	279 Marquesas	AL00470	12/19/95	0.04	
	123 Landmark St	AL00556	12/21/95	0.04	
	1264 Fruitland	AL00473	12/20/95	0.05	
	510 Almeda Ct	AL00494	12/20/95	0.05	
	164 Colombus Way	AL00558	12/21/95	0.05	
	811 Buttonwood	AL00467	12/20/95	0.06	
	608 Nassau Rd	AL00474	12/19/95	0.06	
	646 Bambo Ct	AL00479	12/20/95	0.06	
	617 Sommerset Ct	AL00481	12/19/95	0.06	
	1211 Mimosa Ct	AL00492	12/19/95	0.06	
	549 Tigertail Ct	AL00544	12/20/95	0.06	
	810 Arcipo	AL00485	12/20/95	0.07	
	1631 Caxambec Ct	AL00490	12/20/95	0.07	
	1370 Auburn Dale Ave	AL00549	12/22/95	0.07	
	1161 Breakwater Ct	AL00554	12/21/95	0.07	
	744 Fairlawn Ct	AL00476	12/20/95	0.08	
	1429 Collingwood Ave	AL00535	12/21/95	0.08	
	736 Fairlawn Ct	AL00543	12/21/95	0.08	
	149 Cyrus St	AL00461	12/20/95	0.09	
	311 Nassau Ct	AL00477	12/19/95	0.09	
	885 Magnolia Ct	AL00528	12/19/95	0.1	
	192 Leeward Ct	AL00464	12/20/95	0.11	

Sheet1

COPPER TAP SAMPLE ANALYSIS REPORT
MARCO ISLAND

Date Submitted to the Lab:	12/22/95
Analysis Date:	12-28/29-95
Lab Analysis Method:	SM3111B
Copper Action Level Concentration:	1.3 mg/L

TIER	LOCATION	LAB #	SAMPLE DATE	COPPER mg/L	LEAD mg/L
	608 Nassau Ct	AL00537	12/22/95	0.12	
	2030 Sheffield Ave	AL00460	12/20/95	0.14	
	850 So Barfield Dr	AL00483	12/19/95	0.14	
	811 Scott Dr	AL00487	12/20/95	0.14	
	1210 Stone Ct	AL00489	12/20/95	0.14	
	214 Tahiti Rd	AL00469	12/20/95	0.15	
	990 Hyacinth Ct	AL00559	12/20/95	0.15	
	1753 Dogwood Dr	AL00539	12/20/95	0.17	
	206 Mavorca Dr	AL00541	12/21/95	0.17	
	924 Juniper Ct	AL00561	12/22/95	0.17	
	1166 Four Winds	AL00475	12/20/95	0.2	
	1210 Ember Ct	AL00491	12/20/95	0.22	
	589 Hernando Ct	AL00482	12/20/95	0.25	
	695 Embassy	AL00468	12/19/95	0.27	
	346 Edge Water Ct	AL00499	12/19/95	0.32	
	230 Hideway Cir	AL00564	12/20/95	0.34	
	188 Star Fish	AL00486	12/20/95	0.39	
	214 Rock Hill Ct	AL00466	12/20/95	0.42	
	421 Cottage	AL00480	12/20/95	0.45	
	230 Wind Brook	AL00465	12/20/95	0.59	
	310 Henderson Ct	AL00484	12/20/95	0.83	
	700 Seagrape Dr	AL00493	12/20/95	0.83	

Sheet1

LARRY

LEAD TAP SAMPLE ANALYSIS REPORT
MARCO ISLAND

Date Submitted to the Lab: 12/22/95
Analysis Date: 12-28/29-95
Lab Analysis Method: EPA200.9
Lead Action Level Concentration: 0.015 mg/L

1994

TIER	LOCATION	LAB #	SAMPLE DATE	~~SCORE~~ mg/L	LEAD mg/L
✓	149 Cyrus St	AL00461	12/20/95	0	<0.001
✓	885 Embassy	AL00468	12/19/95	0	<0.001
	1186 Sunbird Ave	AL00472	12/20/95		<0.001
✓	1284 Fruitland	AL00473	12/20/95	.002	<0.001
✓	1166 Four Winds	AL00475	12/20/95	.002	<0.001
✓	541 Heathwood	AL00488	12/20/95	.004	<0.001
	1210 Stone Ct	AL00489	12/20/95		<0.001
✓	1274 Jamica R	AL00495	12/20/95	0	<0.001
✓	390 Waterleaf Ct	AL00498	12/19/95	<.001	<0.001
	275 Figi Ct	AL00532	12/21/95		<0.001
	1232 Fruitland Ave	AL00534	12/22/95		<0.001
	1180 Fourwinds Ave	AL00552	12/22/95		<0.001
✓	1250 Osprey	AL00560	12/22/95	.009	<0.001
✓	1270 Osprey	AL00561	12/22/95	0	0.0011
✓	1631 Cascambec Ct	AL00490	12/20/95	.009	0.0014
	1210 Ember Ct	AL00491	12/20/95	.18	0.0014
✓	1148 Strawberry Ct	AL00496	12/20/95	0	0.0014
	522 Nassau Rd	AL00562	12/21/95		0.0014
✓	199 Society	AL00463	12/20/95	0	0.0015
✓	192 Leeward Ct	AL00464	12/20/95	0	0.0015
✓	510 Almeda Ct	AL00494	12/20/95	0	0.0015
✓	1211 Mimosa Ct	AL00492	12/19/95	.002	0.0017
✓	362 Ball Court	AL00497	12/19/95	.002	0.0019
✓	123 Landmark St	AL00556	12/21/95	.003	0.0019
	811 Buttonwood	AL00467	12/20/95		0.002
✓	370 Edgewater Ct	AL00478	12/20/95	.006	0.0021
✓	617 Sommerset Ct	AL00481	12/19/95	0	0.0022
	1161 Breakwater Ct	AL00554	12/21/95		0.0022
	284 Shadow Ridge	AL00462	12/20/95	0	0.0023
✓	2030 Sheffield Ave	AL00480	12/20/95	.003	0.0025
✓	1429 Collingwood Ave	AL00535	12/21/95	0	0.0027
✓	1370 Auburn Dale Ave	AL00549	12/22/95	0	0.0027
	279 Marquesas	AL00470	12/19/95		0.0028
✓	1356 Merrimac Ave	AL00547	12/21/95	.001	0.0028
✓	469 Marquesas	AL00471	12/20/95	.002	0.0031
✓	649 Tigertail Ct	AL00544	12/20/95	.001	0.0031
✓	214 Tahiti Rd	AL00469	12/20/95	.003	0.0032
✓	924 Juniper Ct	AL00551	12/22/95	.004	0.0033
✓	848 Bambo Ct	AL00479	12/20/95	.005	0.0035

1220 Stone - .001

1281 Ember .006

831 Buttonwood .004

Sheet1

LEAD TAP SAMPLE ANALYSIS REPORT
MARCO ISLAND

Date Submitted to the Lab: 12/22/95
Analysis Date: 12-28/29-95
Lab Analysis Method: EPA200.9
Lead Action Level Concentration: 0.015 mg/L 1994

TIER	LOCATION	LAB #	SAMPLE DATE	[illegible] mg/L	LEAD mg/L
✓	164 Colombus Way	AL00558	12/21/95	.003	0.0038
✓	208 Mevorca Dr	AL00541	12/21/95	0	0.0039
✓	990 Hyacinth Ct	AL00559	12/20/95	.009	0.0046
✓	811 Scott Dr	AL00487	12/20/95	0	0.0047
✓	1753 Dogwood Dr	AL00539	12/20/95	.007	0.0054
✓	421 Cottage	AL00480	12/20/95	.037	0.0062
✓	585 Magnolia Ct	AL00528	12/19/95	.001	0.0065
✓	608 Nassau Ct	AL00537	12/21/95	.020	0.0072
✓	230 Wind Brook	AL00485	12/20/95	.001	0.0085
✓	810 Aragon Bonita	AL00485	12/20/95	.013	0.0096
✓	744 Fairlawn Ct.	AL00478	12/20/95	.002	0.0099
✓	311 Nassau Ct	AL00477	12/19/95	.011	0.0107
✓	608 Nassau Rd	AL00474	12/19/95	.026	0.0134
✓	348 Edge Water Ct	AL00469	12/19/95	.0267	0.0155
✓	230 Hideway Cir	AL00584	12/20/95	.031	0.0171
✓	188 Star Fish	AL00466	12/20/95	.008	0.0211
✓	214 Rock Hill Ct	AL00466	12/20/95	0	0.0278
✓	736 Fairlawn Ct	AL00543	12/21/95	0	0.0289
✓	850 So Barfield Dr	AL00483	12/19/95	.002	0.0583
✓	310 Henderson Ct	AL00484	12/20/95	.009	0.181
✓	700 Seagrape Dr	AL00493	12/20/95	.11	0.302
	689 Hernando Ct	AL00482	12/20/95		0.325

173 Gulfstream - .003
831 Button Wood - .004
1031 Valley - .003
474 Yellow Bird .005
228 Chipstead .005
516 Alameda - 0
225 Bald Eagle - 0
1261 Ember Ct .006

Southern States Utilities, Inc.
Marco Island Plant
Intra-company correspondence

Post-it® Fax Note 7671	Date 5-1-96	# of pages ▶ 23
To Mary Glennon	From Larry L	
Co./Dept.	Co. Marco	
Phone #	Phone #	
Fax #	Fax #	

DATE: January 9, 1996

TO: Ralph Terrero
Ray Gagnon
Ida Roberts

FROM: Mel Fisher MF

SUBJECT: Lead/Copper Program - Marco Island

The following is a very brief chronology of Lead/Copper Events in our Marco Island water system since the implementation of the Pb/Cu regulations.

Date	Event	Samples Exceeding Lead Action Level
October 1992	Sampling Event	4 of 61
May 1993	Sampling Event	7 of 60
July 1993	Public Notice to all Customers, TV, Radio, etc.	
October 1993	Sampling Event	8 of 59
October 1994	Sampling Event	6 of 66
April 1995	Sampling Event	8 of 59
September 1995	Began Feeding a Blended Phosphate	
December 1995	Sampling Event	9 of 61

We plan to perform another sampling event in March 1996 which will hopefully show that the continued feeding of the blended phosphate will be effective for corrosion control. However, in the meantime, I need your advice concerning the requirements for continued public notification and its possible effects on customer relations. I am quite concerned of the possible media ramifications if this is not handled properly.

Please contact me as soon as possible, or if it would be more convenient, I will be glad to come to Apopka to discuss this in more detail with all of you.

MEF/rs

cc: Eric Teittinen
Mike Quigley
Ron Weis
Terry Lebovitz
Dennis Westrick
Catherine Walker
Karla Olson Teasley

SSU
Southern States Utilities

1000 Color Place • Apopka, FL 32703 • (407) 880-0058

FAX COVER SHEET

TO: Rhonda

COMPANY: SSU – Marco Island

FAX NO. Auto

FROM: M. Glennon

RE: Lead Notice's

Happy
" "
V "
Day

Total Number of Pages (Including This Page): 3

Date: 02/14/96

Please contact me **(Ext.** 188 **) if you do not receive all pages.**

SSU Fax Nos. :

***KRAVITZ BUILDING*: Corporate Development; Executive; Finance/Cash Management/Acctg/Payroll; Human Resources; Legal 407-880-1395**

***KRAVITZ BUILDING*: Accts Payable; Communications; Customer Services; Environmental Services; Purchasing; 407-884-7740**
Dispatch 407-880-2099

***OPERATIONS BUILDING*: Central Region Operations; Rates Department; Mail Room 407-880-1061**
Billing Department; Information Services 407-880-4908

***ENGINEERING BLDG (Commerce Place)* Property Accounting; Engineering 407-884-9116**

***FACILITIES ANALYSIS DEPARTMENT* 407-880-4114**

FYI

62-551.810 --- Delivery of a Public Education Program by Community Public Water Systems
In communities where a significant proportion of the population speaks a language other than English, public education materials shall be communicated in English and the other appropriate languages
A system shall, within 60 days of exceeding the lead action level do all of the following:
* Insert notices in each customer's water utility bill containing the information in Section 62-551.830, F.A.C., along with the following alert on the water bill itself in large print: "SOME HOMES IN THIS COMMUNITY HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICANT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION."
* Submit the information in Section 62-551.830, F.A.C., to the editorial departments of the major daily and weekly newspapers circulated throughout the community.
Deliver pamphlets or brochures that contain the public education materials in Section 62-551.830, F.A.C., to facilities and organizations, including the following: 1. public schools and their local school boards, 2. private schools and day care facilities; 3. city or county health department; 4. Women, Infants, and Children (WIC) and Head Start Program(s); 5. public and private hospitals and clinics; 6. pediatricians; 7. family planning clinics; 8. local welfare agencies; and 9. libraries.
* Submit the public service announcement in Section 62-551.840, F.A.C., to at least five of the total number of radio and television stations with the largest audiences that broadcast to the community served by the system
A system shall repeat the tasks contained in paragraphs (2)(a), (b) and (c) of this section every 12 months, and the task contained in paragraph (2)(d) of this section every 6 months for as long as the system exceeds the lead action level.
A system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

* We can assist with these Items If Needed.

CUSTOMER SERVICE ANNOUNCEMENT
LEAD AND COPPER SAMPLING RESULTS

Thank you for participating in the lead and copper sampling program recently conducted by Southern States Utilities within your neighborhood. Attached is a copy of the laboratory analysis performed on the samples you collected.

The testing program is designed to look at a "worse case" situation where contamination would most likely occur. In taking samples, for example, it was necessary for the water to be drawn the first thing in the morning after it had sat undisturbed in the plumbing for at least six hours

In the samples taken from your home, copper action levels were within the "action level" standard of 1.3 parts per million. However, lead levels were above the 0.015 parts per million standard. Reduction of lead in your water can be simply accomplished by running the cold water for only about 15 seconds, especially when it has not been used for an long period; overnight for example

The United Stated Environmental Protection Agency (EPA) sets drinking water standards and has determined that lead is a health concern at certain exposure levels. Materials that contain lead have frequently been used in the construction of water supply distribution systems and plumbing systems in private homes and buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. Lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes in contact with those materials. Lead can cause a variety of adverse health effects in humans. At relatively low levels of exposure, these effects may include interference with red blood cell chemistry, delays in normal physical and mental development in babies and young children, slight defects in the attention span, hearing, and learning abilities of children, and slight increases in the blood pressure of some adults. EPA's national primary drinking water regulation require all public water systems to install optimal corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have lead concentrations below 15 parts per billion (ppb) in more that the 90 percent of tap water samples (the EPA "action level") have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove lead in the source water is needed. Any water system that continues to exceed the action level after installation or corrosion control and/or source water treatment must eventually replace all lead service line contributing in excess of 15 ppb of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water.

Southern States Utilities will be monitoring the source water to determine whether additional treatment is needed. Nonetheless, you are still encouraged to use the recommended steps above.

To measure the effectiveness of the long term treatment alternatives, we would like to continue to have you collect water samples from your home periodically in the future. A Southern States Utilities representative will be contacting you when the next test is scheduled. Again, we appreciate your continued cooperation.

If you have any questions regarding this announcement, please call 1 (800) 432-4501 or (407) 880-0058 and request to speak to our Environmental Services Department. For specific information regarding the sampling and analysis, call the Southern States Utilities Central Laboratory at (407) 860-7946.

File: Marco Island (WTP)

PUBLIC SERVICE ANNOUNCEMENT

"Know The Facts About Lead"

Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That's why you should get your water tested -- and the cost is minimal -- about thirty dollars. Contact Southern States Utilities at 1-800-432-4501 for information on testing and on simple ways to reduce your exposure to lead in drinking water.

Copy
- Mel Fisher
Marco Island
- Craig Anderson
Deltona Lab

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WGUF
2640 Golden Gate Pkwy.
Suite 316
Naples, FL 33942

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WSGL
P.O. Box 7789
Naples, FL 33941

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WNOG & WARO
333 8th St. South
Naples, FL 33940

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WIXI
3337 Tamiami Trail, N.
Naples, FL 33940-4165

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WNPL-TV Channel 46
2150 Goodlette Rd.
Naples, FL 33940

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WODX
599 S. Collier Blvd., Suite 203
P.O. Box 1480
Marco Island, FL 33937

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WSRX
2132 Shadowlawn Dr.
Naples, FL 33962

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

SSU
Southern States Utilities • 1000 Color Place • Apopka, FL 32703 • 407/880-0058

March 15, 1996

WAVV
11800 Tamiami Trail, E.
Naples, FL 33962

Enclosed is a copy of a Public Service Announcement that we are required to submit to local broadcast media. This Lead Advisory is provided in compliance with Section 62-551.840 of the Florida Administrative Code. A copy of a local news release is also attached.

Should you have any questions, please feel free to call me at 1-407-880-0058 ext. 131. Thank you.

Ida Roberts

Marco Island Eagle
579 Elkam Circle
P.O. Box 579
Marco Island, FL 33969

Naples Daily News
1075 Central Avenue
P.O. Box 7009
Naples, FL 33940

WAVV
11800 Tamiami Trail, E.
Naples, FL 33962

WGUF
2640 Golden Gate Pkwy.
Suite 316
Naples, FL 33942

WIXI
3337 Tamiami Trail, N.
Naples, FL 33940-4165

WNOG & WARO
333 8th St. South
Naples, FL 33940

WSGL
P.O. Box 7789
Naples, FL 33941

WSRX
2132 Shadowlawn Dr.
Naples, FL 33962

WODX
599 S. Collier Blvd., Suite 203
P.O. Box 1480
Marco Island, FL 33937

WNPL-TV Channel 46
2150 Goodlette Rd.
Naples, FL 33940

Southern States Utilities

1000 Color Place, Apopka, Florida 32703
Phone 407-880-0058
Facsimile 407-884-7740

Media Release

Contacts: Tracy Smith, Ida Roberts or Eileen Ballard

Date: March 15, 1996

FOR IMMEDIATE USE

Southern States Utilities Issues Lead Advisory On Marco Island

Residents on Marco Island have been notified by Southern States Utilities that some drinking water samples taken recently have indicated elevated lead levels. The customer advisories suggest steps to reduce the exposure to lead in the home and provide other information about lead in drinking water.

Although most of the 61 random sampling locations in the community had very low levels of lead, 9 locations measured slightly higher than 15 parts per billion, or 0.015 milligrams of lead per liter of water, which is the designed "action level" set by the federal government.

Because of the health concerns related to lead exposure, especially for young children and pregnant women, the sampling is conducted under a "worst case" scenario. Generally, homes included in the sampling are constructed prior to 1986. Water samples are taken only after water sits undisturbed in plumbing for at least six hours, allowing extended contact of the water with plumbing that possibly contains some lead. Then, the first draw of water is collected and tested. Earlier sampling conducted in the same locations tested at below the action level.

By merely "flushing" the system -- allowing the water to run for a few seconds -- low level lead contaminates are generally removed. Brochures, approved by the Environmental Protection Agency (EPA), provided to home owners in Marco Island describe the health effects of lead, and recommend specific steps to reduce exposure in the home.

The EPA estimates that drinking water can make up to 20 percent or more of a person's total lead exposure. Lead seldom occurs naturally in drinking water supplies, but enters the drinking water system primarily as a result of corrosion of materials in the distribution system or household plumbing that contain lead. These materials include lead-based solder used to join copper pipe.

In 1986, Congress banned the use of lead-based solder containing greater than .2 percent lead and restricted the lead content of faucets, pipes, and other plumbing material to .8 percent. When water stands for several hours or more in lead pipes or plumbing material containing lead, the lead may dissolve into the water. Therefore customers are always advised to let the water run from the cold water faucet for 15 to 30 seconds before using it for drinking or cooking any time the water has gone unused for more than six hours.

Southern States Utilities, based in Apopka, is Florida's largest privately held water and wastewater utility serving more than 150,000 customers in 113 communities located in 24 counties.

###

SSU
Southern States Utilities

1000 Color Place • Apopka, FL 32703 • (407) 880-0058

FAX COVER SHEET

TO: Mel Fisher

COMPANY: SSU – Marco Island

FAX NO. Auto

FROM: Mary G

RE: Lead Notice

Total Number of Pages (Including This Page): 7

Date: 08/08/96

Please contact Me **(Ext.** 188 **) if you do not receive all pages.**

SSU Fax Nos. :

***KRAVITZ BUILDING*: Corporate Development; Executive; Finance/Cash Management/Acctg/Payroll; Human Resources; Legal 407-880-1395**

***KRAVITZ BUILDING*: Accts Payable; Communications; Customer Services; Environmental Services; Purchasing; 407-884-7740**
Dispatch 407-880-2099

***OPERATIONS BUILDING*: Central Region Operations; Rates Department; Mail Room 407-880-1061**
Billing Department; Information Services 407-880-4908

ENGINEERING BLDG (Commerce Place) **Property Accounting; Engineering 407-884-9116**

FACILITIES ANALYSIS DEPARTMENT **..... 407-880-4114**

Public Education Materials For The Control Of Lead And Copper

Marco Island Water System

SOME HOMES IN MARCO ISLAND HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICANT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION.

March, 1996

Department of Environmental Protection
Bureau of Drinking Water
and Ground Water Resources
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, FL 32399-2400
(904) 481-1762

Virginia B. Wetherell, Secretary
Lawton Chiles, Governor

SSU
Southern States Utilities

INTRODUCTION

The United States Environmental Protection Agency (EPA) and Southern States Utilities are concerned about lead in your drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under Federal law, we are required to have a program in place to minimize lead in your drinking water by January 1997.

This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace each lead service line that we control if the line contributes to lead concentration of 15 ppb or more after we have completed the comprehensive treatment program.

If you have any questions about how we are carrying out the requirements of the lead regulation, please give us a call at 1-800-432-4501. This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

HEALTH EFFECTS OF LEAD

Lead is a common, natural and often useful metal found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery, porcelain and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body.

Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys.

The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination like dirt and dust that rarely affect an adult.

It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

LEAD IN DRINKING WATER

Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing.

These materials include lead-based solder used to join copper pipe made of lead that connect your house to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%.

When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

STEPS YOU CAN TAKE IN THE HOME TO REDUCE EXPOSURE TO LEAD IN DRINKING WATER

Despite our best efforts mentioned earlier to control water corrosivity and remove lead from the water supply, lead levels in some homes or buildings can be high.

To find out whether you need to take action in your own home, have your drinking water tested to determine if it contains excessive concentrations of lead. Testing the water is essential because you cannot see, taste, or smell lead in drinking water.

Some local laboratories that can provide this service are listed at the end of this booklet.

or more information on having your water tested, lease call Southern States Utilities at 1-800-432-4501. a water test indicates that the drinking water drawn om a tap in your home contains lead above 15 ppb, ıen you should take the following precautions:

1. **Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours.** The longer water resides in your house's plumbing, the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. If your house has a lead service line to the water main, you may have to flush the water for a longer time, perhaps one minute, before drinking. Although toilet flushing or showering flushes water through a portion of your home's plumbing system, you will need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one or two gallons of water and costs less than 10 cents per month. The cost estimate is based on flushing two times a day for 30 days.

2. **To conserve water, fill a couple of bottles for drinking water after flushing the tap, and whenever possible, use first flush water to wash the dishes or water the plants.** If you live in a high-rise building, letting the water flow before using it may not work to lessen your risk from lead. The plumbing systems have more and sometimes larger pipes than smaller buildings. Ask your landlord to help in locating the source of the lead and for advice on reducing the lead level.

3. **Try not to cook with or drink water from the hot water tap.** Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and boil it on the stove.

4. **Remove loose lead solder and debris from the plumbing materials installed in newly constructed homes, or homes in which the plumbing has recently been replaced.** This can be done by removing the faucet strainers from all taps and running the water up to five minutes. Thereafter, periodically remove the strainers and flush out any debris that has accumulated over time.

If your copper pipes are joined with lead solder that has been installed illegally since it was banned in 1986, notify the plumber who did the work and request that he or she replace the lead solder with lead-free solder. Lead solder looks dull gray, and when scratched with a key looks shiny. **In addition, notify the Collier County Public Health Unit (941) 774-8200, about the violation.**

5. **Determine whether or not the service line that connects your home or apartment to the water main is made of lead.** The best way to determine if your service line is made of lead is by either hiring a licensed plumber to inspect the line or by contacting the plumbing contractor who installed the line.

– You can identify the plumbing contractor by checking the city's record of building permits which should be maintained in files of the Collier County Building Department. A licensed plumber can at the same time check to see if your home's plumbing contains lead solder, lead pipes or pipe fittings that contain lead.

– The public water system that delivers water to your home should also maintain records of the materials located in the distribution system. If the service line that connects your dwelling to the to the water contributes more than 15 ppb to drinking water, after our comprehensive treatment program is in place, we are required to replace the line.

– If the line is only partially controlled by Southern States Utilities, we are required to provide you with information on how to replace your portion of the service line, and offer to replace that portion of the line at your expense and take a follow-up tap water sample within 14 days of the replacement. Acceptable replacement alternatives include copper, steel, iron and plastic pipes.

6. **Have an electrician check your wiring.** If grounding wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electrical code to determine if your wiring can be grounded elsewhere. DO NOT attempt to change the wiring yourself because improper grounding can cause electrical shock and fire hazards.

The steps described above will reduce the lead concentrations in your drinking water. However, if a water test indicates that the drinking water coming from your tap contains lead concentrations in excess of 15 ppb after flushing, or after we have completed our actions to minimize lead levels, then you may want to take the following additional measures:

1. **Purchase or lease a home treatment device.** Home treatment devices are limited in that each unit treats only the water that flows from the faucet to which it is connected, and all of the devices require periodic maintenance and replacement. Devices such as reverse osmosis systems or distillers can effectively remove lead from your drinking water. Some activated carbon filters may reduce lead levels at the tap, however, all lead reduction claims should be investigated. Be sure to check the actual performance of a specific home treatment device before and after installing the unit.

2. **Purchase bottled water for drinking and cooking.**

You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

Southern States Utilities, 1-800-432-4501, can provide you with information about your community's water supply and a list of local laboratories that have been contracted by EPA for testing water quality.

The Collier County Building Department (941) 643-8400 can provide you with information about building permits records that should contain the names of plumbing contractors that plumbed your home; and

The Collier County Public Health Unit (941) 774-8200 can provide you with information about the health effects of lead and how you can have your child's blood tested.

The following is a list of some State-approved laboratories in you area that you can call to have your water tested for lead:

Culligan Operating Services, Inc.	(941) 597-6059
Englewood Water District	(941) 474-3217
Sanders Laboratory	(941) 488-8103
Thornton Laboratory	(813) 223-9702

SSU
Southern States Utilities

FAX TRANSMITTAL

DATE: 4-22-96 # OF PGS TO FOLLOW: 13

TO: Ralph Terrero

FROM: Ron Weis FAX #: 813/394-8137

SOUTHERN STATES UTILITIES
MARCO ISLAND PLANT
P.O. BOX 197
MARCO ISLAND, FL 33969
1-407-884-7740

SUBJ:

SPECIAL INSTRUCTIONS: We Did Not do Radio or T.V.. Per Mel Fisher.

We did do The Customers That exceeded and go To Day Care, schools ETC.!

Ronald Weis

If you do not receive all material being transmitted, please call (813)394-3880.

SSU
Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3168 • Business (813) 394-3880

MARCO ISLAND OFFICE

March 4, 1996

Dear Customer:

Our water plant personnel have been by your home several times to speak with you regarding our lead and copper sampling program. To date, we have arrived while no one is home.

Please call our secretary, Rhonda Smith, at 394-3880 or 394-3160, 8:00 a.m. to 5:00 p. m. We would like to set up a time and date to speak with you personally.

Thank you!!

Sincerely,

Larry Lebovitz
Marco Island Plant
Lead Operator

SSU
Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3168 • Business (813) 394-3880

MARCO ISLAND OFFICE

February 28, 1995

Francis Rillett
188 Starfish
Marco Island, FL 33937

Dear Mr. or Ms. Rillett:

Thank you for participating in the lead and copper sampling program recently conducted by Southern States Utilities within your neighborhood. Attached is a copy of the laboratory analysis performed on the samples you collected.

The testing program is designed to look at a "worse case" situation where contamination would most likely occur. In taking samples, for example, it was necessary for the water to be drawn the first thing in the morning after it sat undisturbed in the plumbing for at least six hours.

In the samples taken from your home, copper action levels were within the "action level" standard of 1.3 parts per million. However, lead levels were above the 0.015 parts per million standard. Reduction of lead in your water can be simply accomplished by running the cold water for only about 15 seconds, especially when it has not been used for a long period; overnight for example.

The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that lead is a health concern at certain exposure levels. Materials that contain lead have frequently been used in the construction of water supply distribution systems and plumbing systems in private homes and buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. Lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes in contact with those materials. Lead can cause a variety of adverse health effects in humans. At relatively low levels of exposure, these effects may include interference with red blood cell chemistry, delays in normal physical and mental development in babies and young children, slight defects in the attention span, hearing, and learning abilities of children, and slight increases in the blood

pressure of some adults. EPA's national primary drinking water regulations require all public water systems to optimize corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have lead concentrations below 15 parts per billion (ppb) in more than the 90 percent of tap water samples (the EPA "action level") have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove lead in the source water is needed. Any water system that continues to exceed the action level after installation or corrosion control and/or source water treatment must eventually replace all lead service lines contributing in excess of 15 ppb of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water.

Southern States Utilities has monitored the source water to determine whether additional treatment is needed. Those results have indicated that no detectable levels of lead or copper were found in our source water. Nonetheless, you are still encouraged to use the recommended steps above.

To measure the effectiveness of the long term treatment alternatives, we would like to continue to have you collect water samples from your home periodically in the future. A Southern States Utilities representative will be contacting you when the next test is scheduled. Again, we appreciate your continued cooperation.

If you have any questions regarding this announcement, please call 1-800-432-4501 or 407-880-0058 and request to speak to our Environmental Services Department. For specific information regarding the sampling and analysis, call the Southern States Utilities Central Laboratory at 407-860-7946.

Sincerely,
Southern States Utilities, Inc.
Marco Island Plant

LL/rs

SSU
Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3168 • Business (813) 394-3880
MARCO ISLAND OFFICE

March 4, 1996

Dear Customer:

Our water plant personnel have been by your home several times to speak with you regarding our lead and copper sampling program. To date, we have arrived while no one is home.

Please call our secretary, Rhonda Smith, at 394-3880 or 394-3160, 8:00 a.m. to 5:00 p. m. We would like to set up a time and date to speak with you personally.

Thank you!!

Sincerely,

Larry Lebovitz
Marco Island Plant
Lead Operator

SSU
Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3188 • Business (813) 394-3690
MARCO ISLAND OFFICE

February 28, 1995

Dana Lips
700 Seagrape Drive
Marco Island, FL 33937

Dear Ms. Lips:

Thank you for participating in the lead and copper sampling program recently conducted by Southern States Utilities within your neighborhood. Attached is a copy of the laboratory analysis performed on the samples you collected.

The testing program is designed to look at a "worse case" situation where contamination would most likely occur. In taking samples, for example, it was necessary for the water to be drawn the first thing in the morning after it sat undisturbed in the plumbing for at least six hours.

In the samples taken from your home, copper action levels were within the "action level" standard of 1.3 parts per million. However, lead levels were above the 0.015 parts per million standard. Reduction of lead in your water can be simply accomplished by running the cold water for only about 15 seconds, especially when it has not been used for a long period; overnight for example.

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Southern States Utilities has monitored the source water to determine whether additional treatment is needed. Those results have indicated that no detectable levels of lead or copper were found in our source water. Nonetheless, you are still encouraged to use the recommended steps above.

To measure the effectiveness of the long term treatment alternatives, we would like to continue to have you collect water samples from your home periodically in the future. A Southern States Utilities representative will be contacting you when the next test is scheduled. Again, we appreciate your continued cooperation.

If you have any questions regarding this announcement, please call 1-800-432-4501 or 407-880-0058 and request to speak to our Environmental Services Department. For specific information regarding the sampling and analysis, call the Southern States Utilities Central Laboratory at 407-860-7946.

Sincerely,
Southern States Utilities, Inc.
Marco Island Plant

LL/rs

SSU
Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3168 • Business (813) 394-3880

MARCO ISLAND OFFICE

March 4, 1996

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Please call our secretary, Rhonda Smith, at 394-3880 or 394-3160, 8:00 a.m. to 5:00 p. m. We would like to set up a time and date to speak with you personally.

Thank you!!

Sincerely,

Larry Lebovitz
Marco Island Plant
Lead Operator

Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3168 • Business (813) 394-3880

MARCO ISLAND OFFICE

February 28, 1995

Robert Mair
316 Henderson Ct.
Marco Island, FL 33937

Dear Mr. Mair:

Thank you for participating in the lead and copper sampling program recently conducted by Southern States Utilities within your neighborhood. Attached is a copy of the laboratory analysis performed on the samples you collected.

The testing program is designed to look at a "worse case" situation where contamination would most likely occur. In taking samples, for example, it was necessary for the water to be drawn the first thing in the morning after it sat undisturbed in the plumbing for at least six hours.

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Sincerely,
Southern States Utilities, Inc.
Marco Island Plant

LL/rs

SSU
Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3168 • Business (813) 394-3880

MARCO ISLAND OFFICE

March 4, 1996

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Thank you!!

Sincerely,

Larry Lebovitz
Marco Island Plant
Lead Operator

SSU
Southern States Utilities • 960 N. Collier Blvd. • P.O. Box 197 • Marco Island, FL 33969
Customer Service (813) 394-3188 • Business (813) 394-3880

MARCO ISLAND OFFICE

March 21, 1996

Nicholas Palazzo
1502 #2 Mainsail Drive
Marco Shores, FL 33962

Dear Mr. Palazzo:

Thank you for participating in the lead and copper sampling program recently conducted by Southern States Utilities within your neighborhood. Attached is a copy of the laboratory analysis performed on the samples you collected.

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Sincerely,
Southern States Utilities, Inc.
Marco Island Plant

LL/rs

This was ~~[illegible]~~
Hand Del, to
Day Cares + etc

Ronda Has Copy
of every Letter
to Customer who
exceeded!

LIVING

**WHAT YOU
SHOULD KNOW
ABOUT LEAD**