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BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 010503-WU

In the Matter of

APPLICATION FOR INCREASE IN WATER
RATES FOR SEVEN SPRINGS SYSTEM IN
PASCO COUNTY BY ALOHA UTILITIES, INC.



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PROCEEDINGS: HEARING

BEFORE: CHAIRMAN BRAULIO L. BAEZ
COMMISSIONER J. TERRY DEASON
COMMISSIONER RUDOLPH "RUDY" BRADLEY
COMMISSIONER CHARLES M. DAVIDSON
COMMISSIONER LISA P. EDGAR

DATE: Tuesday, March 8, 2005

TIME: Commenced at 9:30 a.m.

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

REPORTED BY: LINDA BOLES, RPR
Official FPSC Hearings Reporter
(850) 413-6734

APPEARANCES: (As heretofore noted.)

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P R O C E E D I N G S

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CHAIRMAN BAEZ: We'll go back on the record.

Commissioners, we are following the order of witnesses that we have in the prehearing order, so our, our first witness, Mr. Beck, is Dr. Kurien?

MR. JAEGER: Chairman Baez, they may want to make prehearing statements. I mean, I'm sorry.

CHAIRMAN BAEZ: I apologize. At this point in time is there anyone that wants to make opening statements?

MR. WHARTON: I wrote one.

CHAIRMAN BAEZ: Huh?

MR. WHARTON: I wrote one.

CHAIRMAN BAEZ: Yes. But do you want to make one, Mr. Wharton? That's really the question.

MR. WHARTON: I'll make it quick.

CHAIRMAN BAEZ: All right. Very well. Please be brief, as the day is late.

MR. WHARTON: Okay. I definitely won't use more than the ten minutes that was in the prehearing order.

Commissioners, this case results from the Commission's first attempt in its history to establish a water quality parameter for a utility that it regulates. In 2002, you directed in an order that Aloha should remove 98 percent of the hydrogen sulfide from its wells. You did so without the

1 benefit in that case of expert testimony, any estimate of the
2 costs, evidence regarding the permitability of that, evidence
3 as to whether such a thing could even be accomplished and its
4 effect on rates.

5 In the summer of 2004, we filed a motion to modify
6 that order and volunteered to make improvements as needed to
7 meet a goal of 0.1 milligrams per liter of sulfides in the
8 finished water.

9 On July 20th, 2004, the Commission issued an order
10 modifying that 2002 order, which said that the 98 percent
11 removal standard should be modified because it was not
12 attainable. That was something that the Commission's order
13 indicated the Commission had come to realize with the passage
14 of time.

15 In this case, Commissioners, the protestants are
16 asking you to go down that same road that caused you to issue
17 an order in 2002 that you modified in 2004. They are asking
18 you to establish a maximum contaminant level for hydrogen
19 sulfide, something the Commission has never done before, that
20 you don't have any rules or policies or precedents to rely
21 upon, you don't have any staff that has the specific expertise
22 to, such as hydrologists or chemists that DEP does, and the
23 petitioners are asking you to accept this suggestion with
24 absolutely no testimony regarding its costs, its permitability,
25 its effect on rates or whether it is attainable. And the

1 petitioners are asking you to adopt this standard without any
2 qualified expert testimony on which you can rely. The
3 petitioners' only witness in this proceeding is a retired
4 physician who does not have the qualifications to testify
5 regarding opinions on these very technical matters. In the
6 face of that evidentiary void, for whatever reason, your staff
7 chose not to file any staff testimony.

8 I want to emphasize, Commissioners, that Aloha made
9 the offer in 2004 to accept the standard that you'll sometimes
10 hear referred to as the Tampa Bay Water Standard because they
11 were under the duress of the 2002 order, which required the
12 removal of 98 percent of the hydrogen sulfide, a standard which
13 really was not attainable financially or legally.

14 Aloha suggested a process and methodology for
15 measuring compliance which was attainable, realistic and which
16 utilized a mean which is known to this Commission and its
17 staff, and the Commission accepted Aloha's suggestion and
18 issued its proposed agency action.

19 The petitioners, on the other hand, are requesting
20 you establish this as a maximum contaminant level and that you
21 dictate removal as opposed to conversion of the hydrogen
22 sulfide to meet the goal. These little words, removal versus
23 conversion, involve large expenditures and questions of
24 chemistry, hydraulic questions and permitability questions
25 which have yet to be asked, much less answered. And those were

1 the discussions that we had earlier today.

2 If you accept what the petitioners have suggested,
3 you will be sending Aloha down the road with orders to study,
4 investigate, cost, design, permit and ultimately construct
5 facilities that may cost multiple millions of dollars, and you
6 will have done so without knowing the effect on rates and
7 perhaps more importantly without knowing how many ratepayers
8 and from what neighborhoods are going to carry that effect.

9 We believe that for you to accept the suggestion of
10 the petitioners in this case, particularly given the lack of
11 credible evidence to support it and the juxtaposition of this
12 case in the deletion docket as we talked about so much earlier,
13 would not be a wise thing for you to do.

14 We submit, Commissioners, that you should uphold your
15 proposed agency action, deny the relief requested in the
16 petition such that your proposed agency action becomes final.

17 CHAIRMAN BAEZ: Mr. Beck.

18 MR. BECK: Thank you, Mr. Chairman.

19 Commissioners, good afternoon. My name is Charlie
20 Beck with the Office of Public Counsel. You've just heard
21 about the order issued, the Commission issued in April of 2002,
22 almost three years ago. What I'd like to do to start is bring
23 a little context of what the Commission's findings were that
24 led to the adoption of the standard that that order contained.

25 In that rate proceeding the Commission heard

1 testimony from 29 customers who were dissatisfied with the
2 quality of service provided by Aloha. The testimony included
3 complaints of black or discolored water, it included complaints
4 of odor and taste problems, low pressure, sediment and sludge,
5 and the utility's response to customer complaints. Many
6 customers brought containers of discolored or black water to
7 the hearing for viewing, and I know some of you were there.

8 The Commission found in its final order that a
9 significant number of customers had been receiving black water
10 from Aloha for over six years and that it was past time for
11 Aloha to do something about it. The Commission found that
12 because of Aloha's long-term problems with black water and
13 other water quality complaints, its long-term violation of its
14 consumption use permit and its lack of proactive approach to
15 finding acceptable solutions to these problems and the customer
16 complaints about the attitude of the utility, you found that
17 the overall quality of service provided by Aloha was
18 unsatisfactory.

19 You, therefore, ordered them to, to treat their
20 water, and you gave them a time frame to remove 98 percent of
21 the hydrogen sulfide in their raw water, and you told them to
22 do that by no later than December 31st, 2003. **Now for various**
23 reasons that portion of the order requiring them to take action
24 to improve their water never became effective. At first it was
25 because Aloha had appealed that order to the 1st District Court

1 of Appeal, which affirmed it in a per curiam opinion. **Then**
2 after the order became final, because of that Aloha asked the
3 Commission to change the order, in which case you did. And
4 that was a proposed action which the customers protested and
5 that brought us here today.

6 There are three issues that the customers are asking
7 you to look at today. The first is where the measurement for
8 the sulfides should take place. Aloha maintains they want to
9 do it at the place they treat the water but before it
10 transverses their pipes to reach the customers' premises.
11 You're going to hear evidence that the Tampa Bay Water Standard
12 to which Aloha just referred is the point of connection, and
13 you're going to hear evidence that point of connection is where
14 Tampa Bay Water delivers the water to its customers, which are
15 member governments. You'll find that there's a number of ways
16 they produce water. One is by wells. There are other ways.
17 But once they produce the water, it goes through their pipes
18 and it can transverse a short distance or a long distance. **But**
19 the place where they measure the goal is at the point of
20 connection. It's not at the treatment facility, it's at the
21 point of connection to their customers. And you're going to
22 hear evidence about that.

23 What the customers are asking you to do is make a
24 standard for Aloha that's parallel to that, not where they
25 produce the water, because that's not where, where Tampa Bay

1 Water does it, but at the place where they deliver it to their
2 customers.

3 You're also going to see in the rebuttal testimony
4 some flushing reports that Aloha produces that show what
5 happens when they flush their hydrants, and this is going to
6 give you another reason why it's important that the tests be
7 conducted near the customer premises after it goes through
8 their pipes and not at the point where it's, where the water
9 is, is treated.

10 Commissioners, if you look at one thing, I would ask
11 you to look at the flushing reports, in particular Page 39.
12 This is Exhibit VAK-19 contained in the rebuttal testimony of
13 Dr. Kurien. You're going to see there's a host of flushing
14 reports that show yellow water, and you're going see some where
15 the chlorine is zero in their reports.

16 The one on Page 39 had this to say about yellow water
17 that was coming out of their hydrants. The person taking that
18 test said, "It's yellowish water from hydrant. They flushed it
19 for 20 minutes and it did not clear. They advised to go to the
20 bib at well and the water still was yellowish with small
21 particles in the water. Same at all hydrants. Tony said to
22 check Friday for next schedule to see if still discolored." So
23 you're going see this in the testimony, in the rebuttal
24 testimony that Dr. Kurien gives, and you're going to see a host
25 of them where week after week the same thing happened, they

1 have yellow water with particles coming out of their hydrants.
2 Aloha wants you to order the test at the place where they treat
3 the water before it transverses the pipes. What we maintain is
4 this is more evidence of why the test needs to be near the
5 customers where they deliver their product, not where they
6 treat it, but before it's delivered to the customers.

7 The second issue is the frequency with which such
8 tests are done. And we're going to present evidence to you
9 that Tampa Bay's standard involves quarterly tests, not annual
10 tests as the company has proposed and that was contained in the
11 proposed agency action order.

12 Exhibit VAK-26 is an exhibit from the actual
13 standards that Aloha or that Tampa Bay Water has proposed or
14 has accepted as their own. And you'll see there the test for
15 total sulfides of .1 milligram per liter. And at the end in
16 the notes on Page 3 of Exhibit VAK-26 you'll see that the test
17 of .1 milligram per liter of total sulfides is a
18 not-to-exceed-average value using a running four quarterly
19 sample average. In other words, they take it four times a year
20 at Tampa Bay Water, not annually as Aloha has proposed.

21 In fact, the last exhibit Dr. Kurien has attached to
22 his rebuttal testimony is from Aloha. It's a response to a
23 data request from Aloha to the staff. They describe the test
24 of Tampa Bay Water as the average concentration of hydrogen
25 sulfide of no more than .1 milligrams per liter based on an

1 annual average of four quarterly samples collected at the point
2 of entry to the distribution system. So you can see even Aloha
3 has admitted that the Tampa Bay test has, has four, not one as
4 they're proposing in this case. The customers are asking you
5 to do it more often than that and that's on a monthly basis,
6 and the reason there is because their water -- Tampa Bay
7 doesn't have the kind of water problems that Aloha has.
8 Therefore, until their water gets cleaned up and until the
9 water problems are fixed, it's appropriate to do tests more
10 often; and once a month is not an unreasonable one, given the
11 type of water that they deliver to customers.

12 With respect to the third issue, the removal of
13 hydrogen sulfide, Dr. Kurien's testimony will discuss
14 scientific literature and describe how chemical oxidation,
15 which is the kind of treatment that Aloha provides, doesn't
16 change the total sulfur load in the water.

17 Staff is going to sponsor a witness from the
18 Department of Environmental Protection, Witness Sowerby, and
19 we're going to review a DEP rule there, and he discusses that a
20 bit in his testimony. The DEP has a rule for new wells, which
21 doesn't apply to Aloha because they have older wells. For new
22 wells coming in service, if the sulfides exceed .3 milligrams
23 in the raw water, the rule requires removal of sulfur. You
24 can't just use chlorination like Aloha does. They actually
25 require removal in new wells. And even though the specific

1 rule doesn't apply to Aloha's wells because they're
2 grandfathered under the rule, it shows there's an accepted
3 basis for requiring removal of sulfur instead of just using
4 chemical oxidation.

5 It's been almost three years since the PSC issued its
6 order requiring Aloha to fix its water problem. And Aloha now
7 is seeking to water down the requirement so much that it won't
8 have any effect on fixing the smelly, dirty water that, that so
9 many customers receive. And the customers are going to ask you
10 to implement the more effective requirements that are proposed
11 in the customers' testimony. Thank you.

12 CHAIRMAN BAEZ: Mr. Hawcroft, do you have a statement
13 to make, sir, an opening statement?

14 MR. HAWCROFT: No, other than I fully support
15 Dr. Kurien's testimony. And we spent a lot of time at DEP and
16 all of the different locations working to put that testimony
17 together, so I'm fully supportive of, of his views. Thank you.

18 CHAIRMAN BAEZ: Thank you, sir. Mr. Wood?

19 MR. WOOD: Yes. My name is Ed Wood. I'm an Aloha
20 customer regrettably. I have been there since August the 26th,
21 1996. And I will tell you today that the water is no better
22 today than it was in 1996. If you want to see, I have a bottle
23 in the car that I can bring in here and show you just exactly
24 what we're talking about. If I took that bottle and put it in
25 Mr. Wharton's Coke bottle, he couldn't tell the difference. I

1 think it's ridiculous that I as a customer have to put up with
2 this, and I think that it is about time that Aloha does
3 something about it. If they spent as much money on research
4 and development as they have on legal fees, we wouldn't have
5 the problem today. I support Dr. Kurien's testimony.

6 CHAIRMAN BAEZ: Thank you, Mr. Wood. With that, we
7 can move on to our witnesses. Mr. Beck.

8 MR. BECK: The customers call Dr. Abraham Kurien.

9 MR. WHARTON: Chairman Baez.

10 CHAIRMAN BAEZ: Yes, Mr. Wharton.

11 MR. WHARTON: While Mr. or Dr. Kurien is going to the
12 stand, the Commission has indicated in a prior order I could
13 give you the number of and possibly more that voir dire should
14 be conducted prior to the witness's direct testimony being
15 inserted into the record of the hearing, and that at a very
16 minimum a party should have at least raised its objection upon
17 the assertion of the testimony -- insertion of the testimony
18 into the record. That order was kind of, although it did rule
19 on the motion to strike, it was kind of spanking the party
20 involved there. I just want to make sure that -- we're willing
21 to wait until cross, but we are going to have certain motions
22 which may go to the summary and will go to the prefiled
23 testimony.

24 CHAIRMAN BAEZ: Mr. Beck, I'm not, I'm not seeing the
25 unreasonableness of requesting voir dire before, before we even

1 go ahead, but --

2 MR. BECK: I'm indifferent. However you want to
3 rule.

4 CHAIRMAN BAEZ: Okay. Mr. Wharton, if you've got
5 voir dire for this witness, you can go ahead and do it now.

6 MR. WHARTON: Okay. Right now?

7 CHAIRMAN BAEZ: Sure.

8 COMMISSIONER DEASON: You need to swear him in.

9 CHAIRMAN BAEZ: I'm sorry. What would I do without
10 Commissioner Deason?

11 Dr. Kurien, would you raise your, stand up and raise
12 your right hand.

13 DR. V. ABRAHAM KURIEN

14 was called as a witness on behalf of the Office of Public
15 Counsel and the Customers of Aloha Utilities, Inc., and, having
16 been duly sworn, testified as follows:

17 VOIR DIRE EXAMINATION

18 BY MR. WHARTON:

19 Q Good afternoon, Dr. Kurien.

20 A Good afternoon.

21 Q Dr. Kurien, you are a medical doctor?

22 A Yes.

23 Q And isn't it true that you're not licensed in the
24 state of Florida?

25 A That's correct.

1 Q You don't have an active license in any state?

2 A That's correct.

3 Q You attended medical school from 1957 to 1963?

4 A 1957 to '63. That's correct.

5 Q Isn't it true that no part of your medical training
6 consisted of courses specifically about water treatment plants
7 or water treatment methods?

8 A Correct.

9 Q Isn't it true that you've never taken an engineering
10 course?

11 A That's correct.

12 Q Isn't it true that you're not familiar with the
13 standard practice where engineers analyze a problem, write
14 reports and make recommendations known as the engineering
15 method?

16 A That's correct.

17 Q You don't hold yourself out as an expert in
18 engineering, do you, sir?

19 A No.

20 Q You mention in your prefiled testimony articles, but
21 none of the articles that you've published have been about
22 engineering, have they?

23 A That's correct.

24 Q And you, sir, have not taken any courses in water
25 chemistry, have you?

1 A Not specifically in water chemistry.

2 Q And none of the articles you've published have been
3 about water chemistry.

4 A That's correct.

5 Q Have you ever engaged in a pilot study involving
6 water chemistry?

7 A No.

8 Q None of the articles that you've published have been
9 about been hydrogen sulfide in drinking water, have they?

10 A No.

11 Q You have not taken any courses with regard to water
12 hydraulics, have you?

13 A No.

14 Q Neither have you taken any courses about water
15 distribution system design, have you?

16 A No.

17 Q You've not taken any courses with regard to water
18 treatment plant design.

19 A No.

20 Q You've never taken courses with regard to water
21 treatment process.

22 A No.

23 Q And none of the articles that you've published have
24 been about water treatment.

25 A No.

1 Q None of the articles you've published have been about
2 water processing.

3 A No.

4 Q You don't hold yourself out as an expert in water
5 treatment plant design, do you, sir?

6 A No.

7 Q You don't hold yourself out as an expert in water
8 treatment plant operation.

9 A No.

10 Q You do not hold yourself out as an expert in the
11 hydraulics of water treatment systems.

12 A No.

13 Q You don't hold yourself out as an expert in DEP or
14 EPA regulations.

15 A No.

16 Q Isn't it true that you have no training or experience
17 in the development of estimating costs for water systems?

18 A That's correct.

19 Q And you have no training or experience in the
20 development of estimating the cost of the operation and
21 maintenance of water systems.

22 A No.

23 Q Isn't it true that you've never conducted any
24 design-related pilot studies for water plants or modifications
25 to water plants?

1 A That's correct.

2 Q Isn't it true that you do not consider yourself
3 sufficiently qualified to conduct the audits that were
4 conducted by Dr. Levine?

5 A That's correct.

6 Q Isn't it true that you have no specific training or
7 experience in the sampling and testing and interpretation of
8 the rules of testing and sampling of drinking water samples?

9 A That's correct.

10 Q Isn't it true that you've never personally conducted
11 water sampling testing and result interpretation of the testing
12 data generated in accordance with the methods provided for in
13 the standard methods for the examination of water and
14 wastewater?

15 A That's correct.

16 Q Isn't it true that you have not personally conducted
17 any studies regarding the efficacy of removal versus
18 conversion?

19 A That's correct.

20 Q Isn't it true that you have not had any conversations
21 with any persons you consider experts on the issues that you
22 address in your testimony other than Dr. Levine and Mr. Porter?

23 A I have talked to other people besides Dr. Levine and
24 Dr. -- Mr. Porter.

25 Q Dr. Kurien, do you recall that I took your deposition

1 on February 21st, 2005?

2 A Yes.

3 Q And on Page 4, Line 20 thereof, question, "What
4 conversations have you specifically had, say, with persons that
5 you consider experts on the issues that you address in your
6 testimony in preparation for your participation in this case?"

7 Answer, "With relation to the issues that I am
8 interested in, which is chemistry and bacteriology, I have good
9 enough training in both that I don't need to talk to experts.
10 I've talked to Dr. Levine and Mr. Porter on previous occasions,
11 and they are considered experts in the field. I have not
12 consulted anybody else on this matter."

13 Do you stand by that testimony?

14 A I have talked to other people, and I think I
15 mentioned that I talked to Troy Lyn and I talked to
16 Mr. Bob Powell in Pinellas County.

17 Q So you're amending your answer in your deposition
18 here today?

19 A As I said, I talked to Dr. Levine and to Mr. Porter.
20 But I have also talked to Mr. Troy Lyn, who found the
21 association between black water and chlorination. I mentioned
22 that in my testimony.

23 Q Dr. Kurien, I want to make sure that the record is
24 clear on something. I have asked you several questions in the
25 negative, which I'm now being told that you have answered no

1 to. Was your intent with regard to all of my prior questions
2 to indicate that you had not engaged in the activities, the
3 studies, courses or whatever that was referred to in the
4 question?

5 A I have not engaged in those studies --

6 Q Okay.

7 A -- and activities.

8 Q Isn't it true, Dr. Kurien, that the recommendation
9 that you've made in your testimony is not made on the basis of
10 your own knowledge, but rather on the basis of the concerns of
11 others who call themselves or consider themselves experts?

12 A That's not entirely true.

13 Q All right. Sir, you recall that I took your
14 deposition on February 21, 2005? And on Page 64 thereof -- and
15 I'm on Page 64, Dr. Kurien.

16 A 64. Yes, I'm there.

17 Q At Page 64, Line 11, "Dr. Kurien, you've indicated
18 you don't have any recommendation as to specifically what
19 actions Aloha should take to alleviate the concerns of some of
20 these customers because you don't feel you're qualified to do
21 so."

22 Answer, "Uh-huh," indicating affirmatively.

23 Question, "And yet you're making a recommendation as
24 to what Aloha should not do."

25 Answer, "Not on the basis of my knowledge but on the

1 basis of concerns that others who call themselves or consider
2 themselves and are considered by others as experts say that
3 that may not achieve the goal that you are setting for
4 yourself."

5 Do you stand by that testimony, sir?

6 A Yes. But I'd like to explain it by saying that I
7 have used other people's knowledge because the data was
8 collected by other people. I haven't collected any data
9 specific to that instance.

10 Q And you stand by the statement you made in the
11 deposition that your recommendations are not made on the basis
12 of your knowledge.

13 A It depends on how we interpret data that you read
14 from other people. Does that become your knowledge or does
15 that become their knowledge? It's both your knowledge and
16 their knowledge. If you read an article and you understand
17 what that article says, then it becomes part of your knowledge.
18 In that sense it is my knowledge.

19 Q And yet that's not what you told me when I asked you
20 the question in deposition, was it?

21 A Yes. I was saying that I was making my decisions on
22 the basis of the data. When you use the word "knowledge," if
23 you are making a distinction between data, information and
24 knowledge, if you're suggesting that I did not understand what
25 I was reading, then I think you are drawing the wrong

1 onclusion.

2 The knowledge base that is the data is other people's
3 data. I am interpreting that data because I think I have the
4 ability and competence to interpret data that other people have
5 gathered.

6 Q Dr. Kurien, do you have an undergraduate degree?

7 A Yes.

8 Q What is that undergraduate degree?

9 A It's a degree, bachelor of science in chemistry.

10 Q And from what university?

11 A The University of Mysore in India.

12 Q Mysore, is that the name of the university?

13 A M-Y-S-O-R-E.

14 Q Sir, are you aware that there is a Florida statute
15 that no person in Florida may claim either orally and in
16 writing to possess an academic degree, unless the person has in
17 fact been awarded a degree from an institution that is, and the
18 choice that would apply to you is a school, institute, college
19 or university chartered outside the United States, the academic
20 degree from which has been validated by an accrediting agency
21 approved by the United States Department of Education?

22 A I'm not aware of that. But there is an equal
23 opportunity rights law which says that you cannot be
24 discriminated on the basis of your education from abroad.

25 Q As we sit here today, sir, do you know whether the

1 University of Mysore is accredited by an accrediting agency
2 approved by the United States Department of Education?

3 A I don't know that.

4 Q Would it surprise you to learn that when we contacted
5 the United States Department of Education they indicated that
6 it was not?

7 MR. BECK: Objection. Counsel is, first of all,
8 referring to matters that are not in evidence. And second of
9 all, what the relevancy of this is because he's not contesting
10 the truth of the matters contained that Dr. Kurien has
11 testified to. He's testified to where his degree is and it's
12 accurate.

13 MR. WHARTON: And all I'm saying, Mr. Chairman, is
14 that if you're going to find that this individual has the
15 qualifications to be an expert in chemistry, do it
16 understanding that he cannot say he even has an undergraduate
17 degree in chemistry under Florida law.

18 CHAIRMAN BAEZ: I think --

19 MR. WHARTON: I don't have any further questions.

20 CHAIRMAN BAEZ: I was going to say, I think you made
21 your point on that.

22 MR. WHARTON: Now on the actual testimony,
23 Mr. Chairman, what's your -- should I wait until cross and move
24 to strike? If it were live, I'd object to the questions.

25 CHAIRMAN BAEZ: If you don't have, if you don't have

1 ny other questions for now on voir dire, I'm going to let
2 Mr. Beck rehabilitate.

3 MR. BECK: Thank you.

4 CHAIRMAN BAEZ: And then if you're going to -- if
5 ou're going to raise your objection, if you're going to raise
6 an objection to his testimony --

7 MR. WHARTON: I am.

8 CHAIRMAN BAEZ: -- then you can go ahead and do it at
9 hat time. But we'll let Mr. Beck rehabilitate for now.

10 EXAMINATION

11 BY MR. BECK:

12 Q Dr. Kurien, let me go back again about your
13 educational background, first of all.

14 You said you had a bachelor of science degree in
15 chemistry from the University of Mysore; is that correct?

16 A Correct.

17 Q Was that degree cum laude?

18 A Yes.

19 Q Have you ever taught analytical chemistry at the
20 college level?

21 A Yes.

22 Q Could you describe what you did there?

23 A I taught people how to identify specific substances
24 in a mixture of substances by doing analytical chemistry work.

25 MR. WHARTON: Mr. Chairman, I'm going to object at

1 his part. The problem is, is that none of this is in the
2 prefiled testimony. If he's holding himself out and giving his
3 pinions, my cross was fair game. But now we're getting in --
4 he prefiled testimony never even says he has an undergraduate
5 degree.

6 CHAIRMAN BAEZ: Well, and -- Mr. Beck, go ahead. You
7 can respond.

8 MR. BECK: First of all, counsel is incorrect as far
9 as rebuttal testimony goes because all of Dr. Kurien's -- the
10 qualifications of his educational background are contained in
11 his rebuttal testimony. Page 2, Line 19, is where it starts --
12 or 17. Second of all, I'm allowed to ask questions related to
13 his qualifications. You've just heard lengthy essentially
14 cross.

15 MR. WHARTON: I'll withdraw the objection.

16 CHAIRMAN BAEZ: Thank you, Mr. Wharton.

17 BY MR. BECK:

18 Q Dr. Kurien, you taught analytical chemistry at the
19 college level; is that correct?

20 A Correct.

21 Q And you also have a medical doctor degree; is that
22 correct?

23 A Yes.

24 Q And did you have any honors related to your medical
25 doctor degree?

1 A Yes.

2 Q What are the honors related to that?

3 A It's, it's -- I was the most distinguished graduate
4 of the University of Edinburgh in 1963 and I was awarded the
5 Gold Medal.

6 Q Okay. And you graduated summa cum laude from medical
7 school; is that correct?

8 A That's correct.

9 Q Did any of your medical training consist of
10 understanding bacteriology and therapeutics?

11 A Yes.

12 Q Okay. Have you ever done any postgraduate research?

13 A Yes.

14 Q What was that?

15 A It was into the circulation of the human body with
16 special reference to what happens during periods of heart
17 attacks.

18 Q Okay. And you were an assistant professor at the
19 University of Edinburgh from 1968 to 1970; is that correct?

20 A That's correct.

21 Q And you've practiced cardiology; is that correct?

22 A That's correct.

23 Q And how long did you practice cardiology and where?

24 A I practiced cardiology in this country for 20 years.

25 Q Do you believe that, that, that this educational

1 background gives you background in scientific investigation and
2 the principle of diagnostics and treatment?

3 A Yes, they do.

4 Q You've published articles that have appeared in
5 various peer review journals, have you not?

6 A Yes.

7 Q Have you engaged in any activities with respect to
8 Aloha Utilities to better acquaint yourself with the operations
9 of the company?

10 A Basically I have done a lot of studies of my own and
11 I have visited a number of utilities in the neighborhood. I
12 have not been given the opportunity to visit Aloha Utilities.

13 Q Okay. Is there a Consumer Advisory Committee that
14 you participated in?

15 A Yes.

16 Q Was that an elected position by members of the
17 community?

18 A That's correct.

19 Q And could you describe the activities you engaged in
20 there?

21 A The activities basically was an opportunity given to
22 us by the Public Service Commission to work with Aloha to
23 create expedient and appropriate solutions for the black water
24 problem, and we worked for close to probably 12 to 13 months on
25 that without getting too far.

1 Q Okay. Are you familiar with a, a group called the
2 Better Water Now?

3 A Yes. That is a committee that was elected by the
4 petitioners to look into all the options that the petitioners
5 have to deal with this problem, and offer those options to the
6 Public Service Commission and to Aloha, if it was willing to
7 listen.

8 Q Have you ever worked on various options for the --
9 that the company could explore?

10 A Yes. We have looked at four or five options in great
11 detail. This was done by a committee of the Citizens Advisory
12 Committee. And we filed that with the Public Service
13 Commission as the options that we had considered.

14 Q Okay. Have you ever done any surveys related to
15 Aloha's water or others' waters?

16 A Yes. I have done a survey in my own community of 115
17 homes and found that there is a slight discoloration in all the
18 homes. If you look at the water in the toilet tank, some have
19 more intense forms of it and there are variations of degree and
20 timing. And I don't know exactly why it happens, but it's
21 probably partly related to --

22 MR. WHARTON: Chairman Baez, I apologize for
23 interrupting the witness. I just don't think this is proper
24 rehabilitation. It seems to be testimony on quality of service
25 or some such.

1 CHAIRMAN BAEZ: Mr. Beck, unless you've got a really
2 ompelling response, I have to agree. I'm not -- certainly the
3 question is valid as to his experience with the system and so
4 on, but I think we've -- it seems to me we've crossed into
5 testimony of another sort.

6 MR. BECK: Let me explain, Commissioner. The Florida
7 statutes concerning testimony of experts is Florida Statute
8 90.702. And Mr. Wharton now has challenged Dr. Kurien's
9 qualifications to give expert testimony before the Commission.

10 The statute says that if scientific, technical or
11 other specialized knowledge will assist the trier of fact in
12 understanding the evidence or determining a fact in issue, a
13 witness qualified as an expert by knowledge, skill, experience,
14 training or education may testify about it in the form of an
15 opinion.

16 So what I am now doing is going over Dr. Kurien's
17 qualifications as an expert under the statute.

18 CHAIRMAN BAEZ: And I realize --

19 MR. WHARTON: Under the results of a survey.

20 CHAIRMAN BAEZ: Hold on. Hold on. And I realize,
21 and I realize that your question is, your question is accurate
22 and purposeful, and I understand that. But the witness's
23 response is crossing the line into things that, that he can --
24 and to results of surveys and so forth that can be better
25 discussed and better weighed after he's been qualified as an

expert.

MR. BECK: Okay.

CHAIRMAN BAEZ: And I think -- I hope you can see the difference of that.

MR. BECK: Okay. Would it be -- let me ask before I go do this, would it be permissible to ask him what types of surveys he's done without asking him the results?

CHAIRMAN BAEZ: Absolutely.

MR. BECK: Okay.

BY MR. BECK:

Q Dr. Kurien, have you conducted, without giving the results of the survey, have you conducted any surveys related to water in Aloha's territory?

A Yes.

Q What types of surveys have you conducted?

A We have tested for chlorine levels, we tried to test for hydrogen sulfide levels, and we did a survey on the frequency and extent of the occurrence of black water.

Q Have you ever had occasion to visit various water plants in the area?

A Yes, I have.

Q What plants have you --

A We have -- I have visited the plant in Dunedin, visited the plant in Port Richey. I talked at length to the engineers at Pasco County. I have attended a session of the

1 Tampa Bay Water Quality Conference.

2 Q Have you read any of the filings and other matters at
3 PSC related to Aloha?

4 A Yes. I have read all the filings between 1996, and
5 some of the letters and correspondence between the PSC and the
6 customers starting from 1993, to all the hearings that have
7 been conducted since that time.

8 Q Okay. Have you also done a survey of commercial
9 ctivities in the area?

10 A Yes. I did a survey of all the commercial shops and
11 nterprises in the area of Petition 1.

12 Q Okay. Have you inter -- or interviewed other persons
13 you feel are knowledgeable with relation to water quality
14 standards?

15 A Yes.

16 Q What persons have you talked to?

17 A I have talked to Mr. Powell, who is the, the director
18 of the lab of the Pinellas County. I have talked to
19 Mr. Troy Lyn, who is the person who identified the association
20 between black water and chlorination. I have talked to the
21 Tampa Bay Water Quality Conference attendees.

22 Q Okay. All told, approximately how many hours do you
23 feel that you have put into studying or doing other activities
24 related to Aloha's water?

25 A I have spent three-and-a-half years on this matter,

1 and I usually start working on it from about 8:00 in the
2 morning and I usually finish working on it about 8:00 at night,
3 and sometimes I sit up still late in the night..

4 Q Do the recommendations contained in your testimony
5 reflect your opinions?

6 A That's correct.

7 MR. BECK: That's all I have. Thank you.

8 CHAIRMAN BAEZ: Thank you, Mr. Beck. Mr. Wharton.

9 MR. WHARTON: Chairman Baez, because of the nature of
10 prefiled testimony, the motion is preemptive, but we move that
11 Dr. Kurien is not sufficiently qualified to provide opinion
12 testimony. The rules of evidence indicate that witnesses may
13 not testify in terms of either opinions or inferences other
14 than when the testimony is a proper subject of expert testimony
15 and the witness is an expert. That is the rule of evidence
16 quoted to you by Mr. Beck, and it is one that the Commission
17 has often cited in its order. This case is clearly one in
18 which all the subjects are the subject of, proper subject of
19 expert testimony.

20 Let's -- it's difficult to keep our eye on the ball,
21 given the rehabilitation. We've got three issues in this case.
22 One is are you going to set an MCL of a certain level? The
23 second is are you going to require us to remove the hydrogen
24 sulfide rather than convert it? And the third is where are you
25 going to test and how often to determine compliance?

1 What does coming to the cases, reading all the
2 filings, conducting surveys, touring other facilities, what is
3 relevant about that to the expert opinions that can support
4 these three issues? This is a very expert laden question. The
5 personal experiences of Dr. Kurien, while he may relate them as
6 a matter of fact, if you determine they're relevant, cannot
7 comment upon those three issues. It is a double motion because
8 it is not just to strike the opinions, and I am ready to go and
9 have marked those in advance, it is also a hearsay motion. And
10 that is because if he is an expert, experts are allowed to
11 utilize hearsay, if it is the kind of information on which
12 experts normally rely. That's what the Florida case law says.
13 I mean, I can't cross Mr. Powell, I can't cross Troy Lyn, these
14 people that he's talking about. But if you deem that he is not
15 an expert to testify upon these matters, a lot of his testimony
16 and a lot of his exhibits are hearsay.

17 And we believe that Dr. Kurien does not possess,
18 under the evidence rules, sufficient knowledge, skill,
19 experience, training or education to give expert opinions on
20 these very technical issues. He got his degree in chemistry
21 51 years ago at the University of Mysore. It is, it is our
22 position that it is not enough to have some knowledge of
23 chemistry. The application of, of science to solve a problem
24 is engineering. Chemists just pick apart elements in water or
25 rock or whatever. What we're really talking about here is

1 expert engineering opinions, and it is engineers that utilities
2 hire to help them with these questions and that you normally
3 rely upon. We don't believe Dr. Kurien has demonstrated that
4 he is sufficiently qualified to render the opinion testimony
5 contained in his direct and rebuttal testimony.

6 CHAIRMAN BAEZ: Mr. Beck.

7 MR. BECK: Commissioners, the issue before you is
8 whether to allow Dr. Kurien to testify about certain matters.
9 It's not about the weight that you're going to give to it,
10 because that's what you'll determine at the end of the case.

11 Dr. Kurien is a highly, highly qualified witness that
12 the Commission is lucky to have before it. He's a medical
13 doctor, the highest graduate at the University of Edinburgh.
14 He's published peer-reviewed articles and he's taught
15 analytical chemistry at the college level. **Certainly he**
16 possesses special skills related to chemistry and microbiology,
17 things that are relevant to the matters before the Commission.
18 He's also devoted selflessly an incredible amount of time to
19 studying this issue. **And as you can see from his testimony, I**
20 believe, as well as what he's testified here today -- the
21 qualification of experts, in other words, allowing a person to
22 testify as an opinion is very broad.

23 A witness's determination to express an expert
24 opinion is peculiarly within the discretion of the trial judge,
25 whose discretion or decision in that regard will not be

1 reversed absent a clear showing of error. What that says,
2 Commission, is that you have very broad discretion in allowing
3 expert testimony. The statute is whether a witness is
4 qualified by knowledge, skill, experience, training or
5 education, and I submit to you that Dr. Kurien has all of those
6 bases covered. You know, he's not an engineer, he freely
7 admits that, but he's a highly skilled analytical scientific
8 person publishing peer-reviewed articles in medical journals,
9 and I certainly believe that you should allow him to testify to
10 give his opinion here before the Commission.

11 CHAIRMAN BAEZ: Mr. -- first, let me make sure this
12 is a ruling that I make on my own or is this a, is this a -- I
13 think it is, but I just want to make sure.

14 MS. HELTON: Chairman Baez, I believe it's an
15 evidentiary ruling that you can make on your own. But if you
16 want to take input from the other Commissioners, that's within
17 your discretion whether you want to do that or not.

18 CHAIRMAN BAEZ: Well, I'll -- if anybody has input;
19 otherwise, I can handle this one on my own.

20 Mr. Wharton, I'm going to deny the motion, and I will
21 explain to you why. I think that the standard, the standard
22 for the expert's testimony is pretty broad, and in my mind I
23 think Dr. Kurien, if only for his, his level of commitment and
24 participation to this, to this matter, has, has, if not
25 starting out had the expertise, has certainly acquired it, and

1 I'm convinced that he has testimony that he will offer up that
2 could be useful to this Commission in coming to a decision.

3 Having said that, I will also note that you have two
4 experts of your own that will no doubt give testimony that is
5 perhaps contradictory in nature, and that is your opportunity
6 to try and affect the weight that this tribunal is going to
7 give to Dr. Kurien's testimony.

8 So for those reasons, I think it is in the best
9 interest of our proceeding today to accept Dr. Kurien's
10 testimony as expert testimony, and we'll go ahead and, and move
11 on to receiving that testimony.

12 Mr. Beck, I think we were in the middle of getting
13 his testimony moved into the record.

14 MR. BECK: Thank you, Mr. Chairman.

15 DIRECT EXAMINATION

16 BY MR. BECK:

17 Q Dr. Kurien, did you file direct testimony in this
18 case on November 18th, 2004?

19 A Yes, I did.

20 Q And do you have any changes or corrections to make to
21 your testimony?

22 A Except for the fact that I do not live at 1822
23 Orchard Grove Drive anymore and I'm not an Aloha customer
24 anymore.

25 Q Okay. And other than that, if I were to ask you the

1 same questions today that are contained in your prefiled
2 testimony, would your answers be the same?

3 A They will be.

4 Q Did you also cause certain exhibits to be attached to
5 your prehearing testimony?

6 A Yes, I did.

7 Q And are they marked VAK-1 through VAK-18?

8 A Yes.

9 MR. BECK: Mr. Chairman, I would ask that the
10 exhibits attached to Dr. Kurien's direct testimony be marked
11 and identified for the record.

12 CHAIRMAN BAEZ: Mr. Wharton, any problem with a
13 composite exhibit, or Mr. Beck for that matter?

14 MR. WHARTON: Only that we believe some of the
15 documents are subject to the hearsay objection that I mentioned
16 earlier.

17 CHAIRMAN BAEZ: Then it would seem to me that it
18 would be most convenient for all of us just to parcel them out.
19 So VAK-1 through VAK-18 will be renumbered as Exhibits Numbers
20 1 through 18 respectively.

21 (Exhibits 1 through 18 marked for identification.)

22 MR. BECK: I think staff had -- if I might,
23 Commissioner, staff wanted to have a map marked, but perhaps it
24 would be easier to mark that later.

25 MR. JAEGER: I was trying to get Aloha to just agree

1 to the map, and they said I could do that when Dr. Porter or
2 Dr. Kurien -- I have here copies here that I could show Dr.
3 Kurien.

4 MR. BECK: I just didn't want to get things out of
5 order.

6 COMMISSIONER JABER: If we could identify them as
7 Exhibit 19.

8 CHAIRMAN BAEZ: And what is this map that you're --

9 MR. JAEGER: It's a map of the Aloha service
10 territory showing the wells. It's just that when we talk about
11 Aloha, it might be good to have it --

12 CHAIRMAN BAEZ: It's a reference map of well
13 locations for Aloha. Did you get that? Okay. We'll mark that
14 as Number 19.

15 (Exhibit 19 marked for identification.)

16 MR. BECK: Commissioners, at this point I would move
17 Dr. Kurien's prefiled testimony be inserted into the record as
18 though read.

19 CHAIRMAN BAEZ: At this point, without objection,
20 show the testimony of Dr. Kurien -- and I'm assuming this is
21 the direct testimony only at this point.

22 MR. BECK: Yes.

23 CHAIRMAN BAEZ: The direct testimony of Dr. Kurien
24 moved into the record as though read.

25 MR. WHARTON: Chairman Baez, I guess, first of all,

1 just for the record to be clear, subject to my prior objection
2 which was denied, also there are a lot of exhibits which are
3 hearsay. Hearsay can come into these proceedings if it is
4 corroborated, and I just want to make sure that these matters
5 aren't being put in for the truth of the matter asserted in and
6 of themselves. I mean, I guess that's something we could argue
7 in the posthearing brief, that if something's not corroborated,
8 it can't support a finding of fact. I mean, there's letters in
9 here from Mr. Deterding and e-mails from Mr. Devlin. I could
10 go through these and argue, or just say that I do have hearsay
11 concerns about several of these exhibits, as long as it's
12 understood that hearsay is admissible in administrative
13 proceedings. But, and I know -- it's like Commissioner Deason
14 said earlier, you've heard that a million times, but that these
15 matters don't speak -- I can't cross these documents and they
16 don't --

17 CHAIRMAN BAEZ: And having, having said that, you
18 also by your own statements recognize that you, you do have,
19 you do have ample opportunity posthearing to be able to address
20 and make your argument that way. I don't think it would do
21 anyone here any good to be going piecemeal entertaining hearsay
22 exceptions if it's not absolutely necessary. I don't think in
23 this instance as to what you're referring to it's necessary at
24 this point.

25 Okay. Mr. Beck, where were we?

1 MR. BECK: I believe his testimony has been inserted
2 nto the record as though read.

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1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **DOCKET No. 010503-WU**

3 **PROTEST OF ORDER NO. PSC- 04-0712-PAA-WS**

4 **DIRECT TESTIMONY**

5 **OF**

6 **V. ABRAHAM KURIEN**

7
8 **Q. PLEASE STATE YOUR NAME AND ADDRESS.**

9
10 **A. My name is V. Abraham Kurien. I live at 1822 Orchardgrove Avenue, New**
11 **Port Richey, Florida 34655.**

12
13 **Q. HAVE YOU SUBMITTED A PROTEST OF PROPOSED AGENCY**
14 **ACTION PSC- 04-0712-PAA-WS AND REQUESTED A HEARING**
15 **PURSUANT TO SECTION 120.57(1), FLORIDA STATUTES?**

16 **A. Yes, I have.**

17
18 **Q. ON WHAT BASIS HAVE YOU PROTESTED THE PROPOSED**
19 **AGENCY ACTION?**

20 **A. On the basis that the Order affects my substantial interest because I believe**
21 **the Order would adversely affect the quality of potable water that I receive**
22 **from Aloha Utilities, Inc.**

1 Q. PLEASE EXPLAIN YOUR POSITION IN GREATER DETAIL.

2 A. In April, 2002, the Florida Public Service Commission in its Order No. PSC-
3 02-0593-FOF-WU, for the specific purpose of significantly reducing the
4 incidence of "black water" and related complaints, required Aloha Utilities to
5 remove 98% of hydrogen sulfide in the raw water from its underground wells
6 from which water is pumped and processed using chlorination as the sole
7 method. Aloha appealed this Order, but the First District Court of Appeals
8 upheld the Order in June 2003.

9
10 On October 18, 2002 Aloha requested modification of the Order, because it
11 was felt "that achieving the 98% removal standard was at best very expensive
12 and at worst impossible". After due consideration, Aloha Utilities' Citizens'
13 Advisory Committee forwarded to the Office of Public Counsel a no objection
14 statement (Exhibit VAK -1), concurring with Aloha in this matter and
15 recommending that performance standard of the Western Coast Regional
16 Water Supply Authority for the water it supplies to its member governments
17 be accepted instead of the 98% removal standard. On July 23, 2003, the
18 Office of Public Counsel submitted a letter stating that "the Citizens agree
19 that 98% removal should be replaced with other standards". In the same
20 letter, OPC had stated, "Additional standards may also be appropriate
21 depending on the final audit findings". (Exhibit VAK-2).

1 In his motion to the Public Service Commission on June 9th, 2004, to modify
2 requirements of Order No. PSC 02-0593-FOF-WU, Aloha Attorney Marshall
3 F. Deterding stated the Commission should simply modify the Order “to
4 eliminate the 98% removal requirement as unreasonable and/or inappropriate,
5 and that the standard provided by the Tampa Bay Water Authority (f/k/a West
6 County Regional Water Supply Authority) should be adopted in its place,
7 including the testing requirements required to maintain such compliance”.
8 Attached to the motion was Appendix D, Supplemental Water Quality
9 Parameters of the Tampa Bay Water Authority (TBWA). Aloha desired a
10 modification of the order and proposed the following language for the revision
11 of Order No. PSC-0200593-FOF-WU:

12
13 “Ordered that Aloha Utilities, Inc., shall make improvements to its wells 8 and
14 9 and then to all of its wells as needed to meet a goal of 0.1mg/l of sulfides in
15 its finished water as that water leaves the treatment facilities of the Utility.
16 Compliance with such requirement shall be determined based upon samples
17 taken annually from a point of connection just after all treatment systems and
18 before entry of such water into the transmission and distribution system of the
19 Utility. Aloha should implement this standard no later than February 12,
20 2005”.

21
22 The customers felt that the Order to remove 98% of hydrogen sulfide in raw

1 water might contribute to the attainment of the goal of significant reduction in
 2 black water and related complaints, but that it was non-attainable under
 3 certain circumstances and therefore inappropriate. The Citizens
 4 recommended the regional standard adopted by Tampa Bay Water Authority
 5 as an appropriate substitute standard. Water chemistry experts who know
 6 what is achievable and what is not were responsible for that standard.

7
 8 The language proposed by Aloha imposes a bias in its favor on a much
 9 simpler and effectively very different standard of the TBWA that states
 10 according to Exhibit D, **Water supplied from the Authority's system shall**
 11 **be sampled, annually at a minimum, at the Point(s) of Connection for the**
 12 **following parameters.** The Water Quality definition and the
 13 **supplemental parameters listed below define the water quality to be**
 14 **provided by the Authority.**

<u>Contaminant</u>	<u>Goal</u>
Sulfides	0.1 mg/l
.....	
.....	
..... etc.	

21 Q. DID YOU BRING THIS MATTER TO THE ATTENTION OF THE
 22 PUBLIC SERVICE COMMISSION?

1 A. Through the Office of the Public Counsel, I communicated with the PSC staff
2 to indicate to the Commission that, "In view of pertinent findings and
3 discussions arising from the audit reports, we need to add some qualifiers to
4 our previous statement (July 23, 2003) to ensure that any modification made
5 to the Order does not negatively affect the ability of Aloha Utilities to
6 improve water quality as demanded by the Corporation's customers". Three
7 qualifiers were proposed to the language proposed by Aloha with clear
8 explanations as to why they were necessary for the revision of the fourth
9 ordering paragraph of Order No. PSC-02-0593-FOF-WU. (Exhibit VAK-3).

10
11 "It was recommended that any modification to the rate case order should be
12 qualified to include the following language:

13
14 1. The reference to sulfide in "finished water" should be stated as a maximum
15 contaminant level for total sulfides of 0.1 mg per liter of delivered water at the
16 point of its entry into the domestic system at the domestic meter.

17
18 2. The improvements should be such that the sulfide present in raw water or
19 generated during treatment will be removed, not converted, to a level not to
20 exceed 0.1mg/l in finished water delivered at the point of entry into the
21 domestic system; and

1 3. Compliance with such requirements shall be determined based upon
2 samples taken at least once a month at a minimum of two sites at domestic
3 meters most distant from each of the multiple treatment facilities. Such sites
4 shall be rotated to provide the greatest likelihood of detecting any departure
5 from the maximum levels permitted”.

6
7 It appeared to the PSC staff that qualifiers Nos. 1 and 3 as outlined by me in
8 response to Aloha’s motion to modify the rate case order were reasonable and
9 should be included in the modification. (Exhibit VAK-4). “However,
10 qualifier No.2, the requirement that the improvements must result in removal
11 as opposed to conversion of sulfides not to exceed the 0.1mg/l standard,
12 would have the effect of eliminating any treatment process that oxidizes rather
13 than removes, hydrogen sulfide”. Therefore staff did not recommend the
14 inclusion of that qualifier in modifying the rate case order.

15
16 **Q. WILL YOU PLEASE ELABORATE ON YOUR REASONS FOR**
17 **INCLUDING THESE QUALIFIERS?**

18 A. Aloha has repeatedly claimed that according to Florida Administrative Code,
19 Section 25-30.210, the point of delivery of processed water to the customer is
20 the outlet side of the water meter and that its responsibility for the quality of
21 water ends at that point. As I understand it, the distribution system as far as
22 the outlet of the domestic meter is owned by the Aloha Utilities now, even

1 though initially the customers through the developers paid for the
2 development and installation of significant parts of that distribution system.
3 Therefore, the responsibility of the utility to maintain the quality of the
4 product it delivers to the customer, by all common sense standards and the
5 norms of commercial transactions in this country, rests squarely on the
6 shoulders of the seller of the product, and not on the back of the buyer. Any
7 responsibility to "make whole" the product and correct any defect or
8 deficiency found in the product on delivery belongs to the seller and not the
9 buyer. In fact, the concept of product liability even extends further than that
10 and may include sequential damages caused by the product, if it can be
11 established that the nature of the defect was well known to the producer and it
12 was within the power of the producer to correct the defect before delivery.
13
14 Phase II Report of the Technical Review undertaken by Dr. Audrey A. Levine
15 of the University of South Florida recognized as a major conclusion the
16 finding that sulfide re-formation occurred within the transmission system of
17 Aloha Utilities. (Exhibit VAK-5). In the present processing method of the
18 sole use of chlorination, which merely oxidizes rather than removes the
19 hydrogen sulfide present in the raw water, such re-formation of hydrogen
20 sulfide is an ever-present danger due to the presence of sulfur reducing
21 bacteria in the water. The conditions that allow the re-formation of hydrogen
22 sulfide in the distribution and transmission system of Aloha may not be

1 clearly understood at the present time, but may be related to turbidity induced
2 by colloidal sulfur which has already been identified by Mr. Porter, the
3 consulting engineer of Aloha as a possible source for lowered disinfection
4 efficiency. (Exhibit VAK-6). Dr. Levine has also indicated, "Control of
5 hydrogen sulfide in drinking water is widely practiced in groundwater systems
6 to prevent odor complaints and to help control sulfur induced corrosion and
7 associated black water problem in distribution systems". (Exhibit VAK-7).
8 Whatever the reason for the re-generation of hydrogen sulfide documented by
9 Dr. Levine, it has serious consequence when such occurrences in Aloha's
10 distribution system or in the domestic plumbing. Hence it is imperative that
11 the Utility demonstrates to the customers that the product delivered to them
12 does not exceed the performance standard that the Utility is prepared to
13 accept. What the Exhibit D of the TBWA shows is that the authority is
14 prepared to meet the goal of 0.1mg/l of total sulfide at the point(s) of
15 connection. In fact, that Exhibit does not mention the treatment facility at all,
16 the point at which Aloha wants to meet the performance standard. TBWA has
17 the same standard at the treatment facility, but samples the water at least four
18 times annually.

19
20 The conclusion that I have drawn is that TBWA has the same standard at the
21 treatment facility and at the point(s) of connection with its customers (member
22 government utilities), thereby taking responsibility for maintaining the

1 standard of quality throughout its transmission and distribution system. All
2 that I had requested in Qualifier No. 1 was that Aloha should provide the
3 same standard, if it wanted to claim that it is agreeable to meeting the TBWA
4 standard.

5
6 **Qualifier No. 3** requested a different compliance requirement than is
7 mentioned in the TBWA Exhibit D and Aloha's revision language, to take
8 into account the reality that Aloha's distribution system consists of a common
9 manifold in which water from 8 different wells and a reservoir that stores
10 water from four of its wells is co-mingled without adequate mixing and
11 appropriate blending so that the water delivered does not have uniform or
12 consistent characteristics. In fact the hydraulics of the common manifold can
13 be considered to be extremely and unpredictably variable because water
14 demands in different parts of the total service area fluctuate constantly. This
15 must result in constant variation of water chemistry. Add to this the fact that
16 Aloha in the near future will be forced to purchase water from Pasco County
17 Utilities to meet its short fall in water resources. As Aloha itself has admitted,
18 Pasco County Utility has not undertaken to provide water that meets the
19 performance standard of 0.1mg/l of total sulfides. Therefore, even if all the
20 wells of Aloha were able to meet the 0.1mg/l total sulfide standard, addition
21 of Pasco County Utility water to the common manifold will now result in
22 unpredictable fluctuations of total sulfide levels. The pH of Pasco County

1 Utility water is significantly different from that of the water that Aloha
2 produces and may have an effect on the dissolved sulfide ion content of Aloha
3 water when they mix. In the absence of a proper blending program, this
4 addition will only increase the inconsistency of water chemistry.

5 Inconsistency of water chemistry denies an opportunity for the pipes to
6 become acclimatized to a narrow range of water constituents in which the
7 likelihood of corrosion can be handled more effectively.

8
9 Such being the case, at a minimum, it is reasonable to attempt to establish that
10 the fluctuations and inconsistencies in water chemistry are manageable and
11 have been dealt with while the delivered water is within the transmission and
12 distribution system of Aloha and before it reaches the customers' domestic
13 plumbing. Since the Aloha transmission and distribution systems do not
14 contain copper, regeneration or fluctuation of hydrogen sulfide within that
15 system is of no major consequence, except in terms of consumption of the free
16 chlorine residuals with which the water leaves the treatment facility. We have
17 evidence provided by the significant difference between the free chlorine
18 residual at the treatment facility and at the remote sampling point that there is
19 significant consumption of free chlorine residual within the transmission and
20 distribution system. (Exhibit VAK-8). While Dr. Levine has not identified
21 the reason for this except to suggest that dissipation of chlorine may occur due
22 to changes in ambient temperature, especially during summer months, and

1 stagnation of water the possibility that at least part of the chlorine
2 consumption is due to the re-formation of hydrogen sulfide cannot be
3 excluded. Therefore the only method by which compliance with the standard
4 can be established is by measuring hydrogen sulfide levels at the outlet of the
5 domestic meter in the distribution area of each well and also frequently
6 enough and on a rotation basis to obtain the maximum probability of not
7 missing departures from the standard. The customer is entitled to a product
8 whose claim to meet a set standard can be demonstrated at the point of
9 delivery.

10
11 I realize that this is a time consuming, labor intensive and therefore financially
12 expensive protocol that I have included for compliance. In the absence of a
13 centralized processing and blending system which confers uniform
14 characteristics on the finished water, such unfortunately is the demand that
15 one has to make on a system which is effectively 9 different inputs (8 Aloha
16 wells and purchased Pasco County Utility water) into a common manifold
17 from which water is being drawn in a very unpredictable manner. In the
18 absence of corrosion of pipes and production of black water, wider latitude to
19 the standard might have been considered. **Otherwise it will be no different**
20 **from the present situation in which the degree of corrosion varies both**
21 **geographically and temporally in such a chaotic manner that there**
22 **appears to be no rhyme or reason behind the phenomena about which**

1 **customers have complained for over a decade.**

2

3 **Q. WHAT IS YOUR JUSTIFICATION FOR QUALIFIER NO. 2 THAT BY**
4 **ITS NON-INCLUSION IN THE PSC STAFF RECOMMENDATION OF**
5 **JUNE 17TH, 2004 MAY BE CONSIDERED TO HAVE BEEN**
6 **UNREASONABLE?**

7 **A. The PSC Staff concluded that “qualifier no. 2, the requirements for the**
8 **improvements must result in removal, as opposed to conversion, of sulfides**
9 **not to exceed the 0.1 mg/L standard, would have the effect of eliminating any**
10 **treatment process which oxidizes rather than removes, hydrogen sulfide”.**
11 **“Staff does not recommend that the Commission prescribe the treatment**
12 **methodology that Aloha should use in order to comply with the requisite**
13 **treatment standard. This is a business decision that should be made by**
14 **Aloha’s engineering experts. Therefore, Staff does not recommend the**
15 **inclusion of that qualifier in modifying the rate case order”. (Exhibit VAK-4).**

16

17 **At the time the PSC Order No. 02-0593-FOF-WU was issued in April, 2002,**
18 **the two methods that were being considered for use to significantly reduce**
19 **black water and associated complaints were packed tower aeration and the**
20 **MIEX resin method. Both were capable of removing hydrogen sulfide by**
21 **expelling it or extracting it out of the source water, thereby reducing the total**
22 **sulfur load in the finished water. The sole use of chlorination as a method of**

1 converting hydrogen sulfide to sulfate by oxidation does not reduce the total
2 sulfur load, but merely changes the form in which sulfur remains in the
3 finished water. Evidence has accumulated since 1991 that the production of
4 one form of oxidized hydrogen sulfide, namely elemental sulfur, is associated
5 with black water and hence must be removed from finished water as a
6 preventive measure towards control of black water and copper corrosion.
7 (Exhibit VAK-9).

8
9 The method that Aloha is contemplating to use, and has been feverishly
10 working to adapt to its needs in the Seven Springs Service Area to meet the
11 chloramination deadline of January, 2005, is a method for attempting to
12 convert hydrogen sulfide to sulfate by oxidation with hydrogen peroxide.
13 This oxidative process is a more complex and sophisticated oxidation method,
14 but it is still only a method for converting (not removing) hydrogen sulfide
15 from raw water into oxidized forms of sulfur. So the total sulfur load of the
16 finished water remains the same as that of the source water. One form of
17 sulfur produced by this method is elemental sulfur. While I understand that
18 efforts will be made to convert all hydrogen sulfide to sulfate by pH
19 adjustment more towards alkalinity, the likelihood that elemental sulfur will
20 be formed in the presence of variable levels of hydrogen sulfide from the
21 wells remains a real concern. Unless continuous monitoring of hydrogen
22 sulfide levels are undertaken at all wells and in the water purchased from

1 Pasco County Utility and stoichiometrically calculated doses of hydrogen
2 peroxide are injected into the source water, it would appear to be impossible
3 to reduce the concentration of elemental sulfur to minimal levels. Therefore,
4 the insertion of an extremely low level of elemental sulfur as an additional
5 standard, or the inclusion of elemental sulfur within the total sulfide goal of
6 0.1mg/l as a performance standard becomes mandatory, if Aloha ultimately
7 chooses oxidation by hydrogen peroxide as its new processing method. The
8 request for removal of elemental sulfur from finished water is not a
9 prohibition against the use of hydrogen peroxide as a processing method, but
10 recognizing its limitations also, as indeed that of the sole use of chlorination
11 the current method, and demanding that the technical implementation of the
12 new method must be fine tuned so that the amount of elemental sulfur in the
13 finished water does not exceed a specific limit. (Exhibit VAK-3). As
14 indicated already, elemental sulfur has been implicated in the lowering of
15 disinfection efficiency, increased chance for bacterial contamination and
16 growths in the distribution system (Exhibits VAK- 5 & 6), all of which needs
17 to be avoided in all drinking water carrying pipes including the domestic
18 plumbing.

19
20 **Q. WHAT HAPPENED AT THE AGENDA CONFERENCE ON JUNE 29,**
21 **2004 WHERE THIS MATTER WAS DISCUSSED?**

22 **A.** At the very last minute, the PSC Staff revised its recommendations on the

1 basis of concerns raised by Aloha's engineer and its attorney. The
2 Commissioners approved the version of the Staff recommendation that stated:
3 "The fourth ordering paragraph of the rate case order should be modified to
4 read that 'Aloha shall make improvements to its wells 8 and 9 and then to all
5 its wells as needed to meet a goal of 0.1mg/l of sulfides in the finished water
6 as the water leaves the treatment facilities of the Utility. Compliance with
7 such requirement shall be determined based upon samples taken at least
8 annually from a point of connection just after all treatment systems and before
9 entry of such water into the transmission and distribution system of the utility.
10 Aloha shall implement this standard no later than February 12, 2005. The
11 Commission should direct Aloha to use the treatment process that Aloha
12 concludes will achieve this level of treatment in the most cost effective
13 manner. Additionally Aloha should be required to file comments within
14 60days from the date of the Commission's vote on this item regarding the
15 feasibility of collecting and testing monthly samples at domestic meters as
16 proposed by Dr. Kurien. Finally, the Commission should require monthly
17 progress reports, as set forth in the staff analysis". (Exhibit VAK-10)

18
19 On July 6, I wrote to the Chairman of the Public Service Commission to
20 indicate that the Memorandum submitted by Mr. Devlin to Dr. Mary Bane,
21 Director of Economic Regulation of the PSC, while insisting that "the
22 hydrogen sulfide standard should be consistent with the TBW standard",

1 misquoted it as “involving testing at the well site”. (Exhibit VAK-11). I had
2 contacted Mr. Devlin on July 2, 2004 by e-mail and his reply stated, “As I
3 understand, TBW does not provide water to retail end use customers. TBW is
4 a wholesale provider. They test water at the point of entry (metered point of
5 connection) with the distribution systems for various public entities. Similarly
6 we recommend that Aloha test at the treatment facility as its treated water
7 enters its retail distribution system”. (Exhibit VAK-12).

8
9 I pointed out the failure of logic between the last two sentences of Mr.
10 Devlin’s reply. There is no similarity between testing at the point of metered
11 connection with its customers as TBW does and the recommendation that
12 Aloha test at the treatment facility! **The point of metered connection**
13 **between Aloha’s distribution system and its customers is the outlet of the**
14 **domestic meter. Aloha must therefore establish compliance by testing**
15 **delivered water at that point** . (Exhibit VAK-13).

16
17 Further I suggested that, “it would be more appropriate for the PSC to consult
18 Tampa Bay Water Authority rather than Aloha Utilities which is a party to
19 this disagreement. A clarification from TBWA must be sought urgently”.
20 (Exhibit AK-14). I am pleased to note that Thomas Walden, PSC Engineer
21 has contacted Dr. Christine Owen of TBWA on September 1, 2004 (Exhibit
22 VAK-15), even though no reply has apparently been received yet. In the

1 meanwhile the PSC has been informed by Aloha that it considers the
2 feasibility of measuring hydrogen sulfide levels at the domestic meter,
3 requested as part of qualifier No. 1, to be very poor. In justification of that
4 conclusion Aloha mentions that measurement at a point in the field, where
5 neither sampling nor testing conditions can be controlled would be highly
6 impractical and would lead to unacceptably low accuracy and precision
7 (Exhibit VAK-16). Yet, it may be precisely those uncontrolled and
8 uncontrollable conditions that determine the quality of water that enters the
9 customers' plumbing and creates degradation of water quality in the
10 customers' homes in the form of black water and rotten egg smell. In the
11 open market the inability of a manufacturer to meet the reasonable
12 expectations of the customer will result in the extremely fast disappearance of
13 the product from the market. The processing method used and the
14 maintenance procedures employed by a water utility, as a producer of a
15 product essential to life, must surmount these difficulties and meet the
16 standard at all points within its service area for it to stay in business, unless of
17 course it is a monopoly utility! I understand how difficult it is to produce
18 good quality drinking water from the Florida Aquifer. Approaching it the way
19 Aloha has done for many years with primitive methods, outdated equipment
20 and inadequate scientific knowledge, coupled with a legalistic attitude towards
21 technical problems is not likely to produce a good quality product. That such
22 has been allowed to persist has been totally unsatisfactory to the customers.

1 The experiences of the customers of Aloha as they have reported them to the
2 Utility, the DEP and their legislators during the last decade as well as to the
3 PSC during many hearings bear witness to this reality.

4
5 Therefore, if it is the intention of the Public Service Commission that the
6 customers of Aloha should receive water of better quality, with reduced
7 incidence of black water and related complaints like most other citizens of the
8 neighborhood do, then these qualifiers are essential for producing a product
9 that is comparable to what neighboring utilities are capable of providing to
10 their customers. That it was the goal of the PSC was my understanding of
11 why the PSC in its Order No. 02-0593-FOF-WU demanded that Aloha
12 remove 98% of hydrogen sulfide in the raw water from its wells. The First
13 District Court of Appeals upheld that Order. To water it down at this juncture
14 in such a way that it might not significantly reduce black water and related
15 complaints is to have wasted another three years in legal jousting while the
16 customers have suffered the consequences of poor quality water in their
17 domestic plumbing.

18
19 It is not surprising that the “Only logical option that the customers have”
20 (Exhibit VAK-17) is deletion and transfer to a utility that will address
21 technical problems through meticulous scientific solutions. It is time for
22 Aloha to recognize the demands the complex water chemistry of Floridian

1 Aquifer places on the Utility and recognize that it is no longer able to make
2 available to their customers the sophisticated processing that is required at
3 reasonable costs. If Aloha's desire is to remain in the water processing
4 business and provide a good quality product, the language that it has used to
5 phrase the modification to the 98% removal standard and the standard it wants
6 to embrace have to be recognized as inadequate to significantly reduce black
7 water and related complaints. It can no longer remain "a mom and pop water
8 processing shop" putting a little chlorine into water, while every other utility
9 has moved on to better options with sophisticated equipment, better scientific
10 personnel and greater co-operation with their customers. The days of horse
11 and buggy are over. One can be nostalgic about simpler days and times and
12 wonderful profits, but water processing in Florida can no longer be at a lower
13 level than it is in what are called third world countries! That some
14 entrepreneurs would like it to be so, is no justification for regulatory agencies
15 to be less than assertive about their role. Citizens today want good quality
16 water and service at comparable prices. If small monopolies cannot provide
17 that, then it is time for them to recognize that and leave the field to those who
18 have a larger customer base, greater governmental financial support and more
19 rapid access to implementation of the latest scientific knowledge.

20
21 Three customers who are Official Parties of Record in this matter filed a
22 protest of Order No. PSC-04-0712-PAA-WS on August 10, 2004 (Exhibit

1 VAK-18) and requested this hearing pursuant to Florida Statutes, Section
2 120.57 (1), to make it possible for the citizens of Seven Springs to have better
3 quality water at reasonably comparable costs, with more sensitive customer
4 service and an adequate source of water for their future needs.

5

6 Q. IS THAT THE END OF YOUR TESTIMONY?

7 A. Yes.

1 BY MR. BECK:

2 Q And, Dr. Kurien, have you prepared a summary of your
3 direct testimony?

4 A Yes, I have.

5 CHAIRMAN BAEZ: Dr. Kurien, I will -- and I only say
6 his with no prejudice to any of the witnesses, but the hour --
7 we are, we are pressed for time. So to the extent that you can
8 make your summary a true summary, I would appreciate it. Thank
9 you.

10 THE WITNESS: Yes. The 98 percent removal standard
11 was instituted in April 2002, after six years in which the
12 utility was unable to produce any improvement in water. So
13 finally the PSC decided to impose on Aloha a standard, which
14 was subsequently upheld by the DCA.

15 Aloha has accepted the Tampa Bay Water Standard which
16 is recommended by the, by the customers of .1 milligram per
17 liter of total sulfides. So we are not here arguing about the
18 standard. We are basically arguing about where the compliance
19 should be.

20 And Mr. Beck has already indicated that Tampa Bay
21 water tests four times at the treatment facility and once at
22 the point of connection; whereas, Aloha is asking for checking
23 once at the treatment facility and no time at the point of
24 connection with the customers.

25 The customers offered three amendments to the

1 language solicited by Aloha. Amendment 1 related to the fact
2 that the tests should be done at the point of connection with
3 the customers, and that was because the evidence submitted by
4 Dr. Levine in her audit in which she described as a major
5 conclusion showed that there was an increase in the hydrogen
6 sulfide level from 0.01 to 0.12 while the water was still
7 moving from the well to a storage tank.

8 My knowledge of chemistry says that when
9 circumstances are appropriate, reactions will take place and
10 there is no way of preventing those reactions. So we are
11 concerned that this might be happening in other parts of
12 Aloha's distribution system.

13 And as the flushing documents show, there has been
14 many days of discoloration of Aloha water associated with low
15 levels of chlorine in that water, even after gallons of water
16 has been expelled from the fire hydrants.

17 The second amendment that we suggested related to the
18 fact that the oxidated method which converts hydrogen sulfide
19 to sulfur or sulfate can produce large amounts of elemental
20 sulfur. This was identified in 1991 by Troy Lyn, and ten years
21 later Aloha would still not admit to the fact that there was
22 elemental sulfur in Aloha's finished water.

23 Dr. Levine's study has demonstrated that there's a
24 wide range of final products when water is processed by
25 chlorine alone in Aloha's territory. And she has shown by

1 calculations that the range can be anywhere from a chlorine
2 demand of 2.3 all the way up to 7.83. And I have provided
3 calculations in my rebuttal testimony to show that it suggests
4 that elemental sulfur is being formed in the wells of Aloha.

5 The customers are not objecting to the use of
6 hydrogen sulfide. We are saying that if hydrogen sulfide is
7 used -- hydrogen peroxide I mean, if hydrogen peroxide is being
8 used for this purpose, either the sulfur that is produced
9 should be filtered off or there should be a new standard so
10 that large amounts of elemental sulfur is not allowed to enter
11 the domestic supply because then it'll be associated with black
12 water.

13 FDEP has recently introduced a guideline that
14 oxidated methods or, in that particular instance, chlorination
15 should not be used for more than .3 hydrogen sulfide in raw
16 water, and if it is more than that, elemental sulfur forms
17 should be removed.

18 The last amendment we proposed relates specifically
19 to Aloha's sources. Aloha soon will have nine sources of
20 water -- eight sources, eight different wells which have
21 different hydrogen sulfide levels, and Pasco County, which has
22 not agreed to provide water at the standard at which Aloha
23 claims it can produce water.

24 I feel that unless there is a centralized place where
25 this water is blended and mixed properly, it is likely to cause

1 problems in the distribution system and ultimately in the
2 customers' plumbing.

3 Hence, my third amendment. I agree that once the
4 process is put in place, which the method is, and process
5 control is adequately established, that frequency can be
6 reduced.

7 When the 98 percent rule was introduced, Aloha had
8 been using an oxidated method for a long time. It did not
9 cause sufficient improvement in water, so that using that
10 method or a similar method has a risk attached to it, and,
11 therefore, we want the Commission to be aware of that fact when
12 it creates new standards. Thank you.

13 MR. BECK: Dr. Kurien is available for
14 cross-examination.

15 CHAIRMAN BAEZ: And at this point, I may have asked
16 this off-line before, but, Mr. Wood, do you intend on
17 cross-examining at any -- certainly this witness?

18 MR. WOOD: No.

19 CHAIRMAN BAEZ: No questions? Okay. Mr. Wharton.

20 CROSS EXAMINATION

21 BY MR. WHARTON:

22 Q Dr. Kurien, just so the record is clear, you're not
23 currently a customer of Aloha; is that true?

24 A That's correct.

25 Q And you don't anticipate you're going to become a

1 customer of Aloha?

2 A I hope not.

3 Q And you ceased to be a customer on February 11th?

4 A That's correct.

5 Q Sir, you talk a little bit in your testimony about
6 water quality concerns. You used the phrase "black water"
7 several times. Do you recall that?

8 A Yes.

9 Q Isn't it true that you agree, based on your own
10 experience, that there are reasonable maintenance tasks that a
11 homeowner can undertake to reduce the problems that some people
12 have reported?

13 A They can reduce it but cannot completely eliminate
14 it.

15 Q Isn't it true, sir, that you have no odor problems in
16 your home?

17 A In homes that have copper plumbing it's extremely
18 unlikely that you will get odor problems based on the
19 chemistry.

20 Q Isn't it true, sir, that you have no odor problems in
21 your home?

22 A That's correct.

23 CHAIRMAN BAEZ: Mr. Wharton, can you clarify for me
24 which home you're referring to?

25 BY MR. WHARTON:

1 Q In your home that you owned in the Aloha service
2 area.

3 A That's correct.

4 MR. WHARTON: Thank you, Mr. Chairman.

5 BY MR. WHARTON:

6 Q Dr. Kurien, do you remember testifying to the
7 Commission during the customer testimony portion of the hearing
8 that has been referred to several times today as the 2002 rate
9 proceeding?

10 A Yes.

11 Q Was that the first time you ever testified to the
12 Commission?

13 A Yes.

14 Q Do you remember testifying to the Commission that you
15 have done the experiment of putting water from every tap in
16 your house through filter papers and filtering them, and at one
17 gallon you won't see any discoloration but at 500 gallons
18 you'll see it? Do you remember that testimony?

19 A That's correct.

20 Q So you have to pour, what -- what are you using, a
21 coffee filter?

22 A No. I just used the toilet tank as my filter.

23 Q Okay. And you're pouring 500 gallons through there
24 before you're seeing any particulates?

25 A No. After I flush 400 times I see black water. And

1 00 times plus -- times 1.3 gallons each time, that's
2 00 gallons.

3 Q So you were talking about your toilet in this case?

4 A Yes.

5 Q Did you actually do this experiment?

6 A Yes.

7 Q Dr. Kurien, you do agree that the 98 percent
8 language, which all parties agreed should be modified, was not
9 an achievable standard, don't you?

10 A Just not achievable under all circumstances.

11 Q But you agree that it was not an achievable standard?

12 A I don't.

13 Q You don't what? You don't agree with my question?

14 A I said it is achievable in certain situations and not
15 achievable in other situations, depending upon what the total
16 level of hydrogen sulfide is.

17 Q And do you think -- it's your opinion, isn't it, that
18 the Commission put that unworkable standard in its order
19 because it did not have enough knowledge about chemistry?

20 A I said it was possible that that particular form of
21 the order was because it did not have enough knowledge about
22 chemistry.

23 Q You say in your testimony that the protocol you
24 recommend is time-consuming, labor-intensive and therefore
25 financially expensive. But, in fact, you haven't even

1 attempted to quantify those things, have you?

2 A I haven't tried to, but it's obvious that it's going
3 to be expensive.

4 Q But you have not attempted to quantify those things?

5 A No.

6 Q Your focus has been solely on the resulting water
7 quality as opposed to cost; correct?

8 A That's correct.

9 Q But you do agree that if the PSC accepts your
10 proposal, it would be very expensive.

11 A I didn't quite hear that.

12 Q You do agree that if the PSC accepts your
13 recommendation, it would be very expensive.

14 A That's correct, at least initially.

15 Q But in reaching your opinions you have not taken into
16 consideration matters of economics; correct?

17 A That, I haven't.

18 Q Now you were describing the sources of water for
19 Aloha. In fact, some of Aloha's water comes from eight wells;
20 correct?

21 A That's correct.

22 Q And some of it comes from Pasco County; correct?

23 A It will come from Pasco County. As far as I know, it
24 doesn't come now.

25 Q You don't understand that Aloha receives any water

1 From Pasco County now?

2 A Now that's not my understanding.

3 Q Okay. It is your opinion, isn't it, sir, and it
4 is -- let's strike that.

5 The water that comes from Pasco County is finished
6 water, correct, or will be finished water?

7 A Yes.

8 Q And yet it's your opinion, isn't it, sir, that if the
9 water being delivered by Pasco County exceeds the hydrogen
10 sulfide standard in the Tampa Bay Water goal, that you believe
11 it should be retreated by Aloha?

12 A I'm not saying that it should be retreated. But I'm
13 recognizing the fact that if you accepted it as it comes and if
14 it is more than .1 milligram, the mixed water will have higher
15 than .1 milligram which you have accepted as the standard.

16 Q Sir, do you recall that I took your deposition on
17 February 21st, 2005?

18 A Yes.

19 Q And at Page 92 thereof, question, "If, in fact, the
20 water being delivered by Pasco County to Aloha exceeds the
21 Tampa Bay Water goal, do you believe that it should be
22 retreated by Aloha or subjected to further treatment perhaps
23 would be a better way of saying that?"

24 Answer, "If the theory that hydrogen sulfide in water
25 was responsible for copper sulfide formation and it is correct,

1 and I think it is, then it should. Otherwise, we may have
2 persistence of the problem."

3 Do you stand by that testimony?

4 A If it is more than .1.

5 Q So, in other words, sir, you're not merely suggesting
6 that Aloha implement these facilities with regard to its wells,
7 but possibly also with regard to its connection with Pasco
8 County?

9 A If Aloha takes responsibility for its water to be
10 .1 milligram per liter, then as I understand Aloha's
11 responsibility, then it's responsible for providing all the
12 water it receives at that level.

13 Q Does that mean the answer to my question is yes?

14 A If it is over 0.1 milligram, yes.

15 Q Sir, I asked you earlier about your testimony in the
16 2002 rate case. Do you recall testifying that, "I will request
17 the PSC to mandate that compliance with community standards be
18 independently monitored by methods which are currently used by
19 Pasco County Utilities"?

20 A Yes.

21 Q But, in fact, Pasco County Utilities doesn't apply
22 the standard that you're recommending the Commission adopt,
23 does it?

24 A It doesn't.

25 Q Isn't it true, sir, that because you don't consider

1 yourself an expert, you've declined to make a recommendation as
2 to specifically what treatment methods Aloha should adopt?

3 A It wasn't because I wasn't considering myself an
4 expert. I think the responsibility for recommending methods
5 belong to the, to the utility.

6 Q Didn't you tell me in deposition that you think
7 you've spent 8- to 10,000 hours on this issue?

8 A That's correct.

9 Q And yet you have no recommendation as to specifically
10 what treatment method Aloha should adopt?

11 A I said I wouldn't make a recommendation. I didn't
12 say I don't know the recommendation.

13 Q And that's because you're not an expert?

14 A No. Because it's not my responsibility.

15 Q Do you recall that I took your deposition on
16 February 21st, 2005?

17 A Yes.

18 Q And on Page 63, Line 1, question, "As we sit here
19 today, do you, based on all of your involvement in these
20 matters since you moved into the Aloha service area, have a
21 recommendation as to specifically what treatment method Aloha
22 should adopt?"

23 Answer, "I'm not an expert, so I'm not going to make
24 a pronouncement on it."

25 Do you stand by that testimony?

1 A I gave a definition, my definition of being an
2 expert, which I now discover is very different from the legal
3 definition that has been read into the records. By that
4 definition I should consider myself an expert.

5 Q Sir, do you agree that it is a risk to translate the
6 experience of other utilities to Aloha -- strike that.

7 Isn't it true that you agree that it's a risk to
8 translate the experience of other utilities to Aloha because of
9 the differences in water chemistry between those utilities?

10 A If by the word "translate" you don't mean transfer.
11 If you transfer without a critique of whether it is relevant to
12 the area to which you are going to apply it, that's correct.
13 But if there are identical situations, then you can transfer
14 technology from one place to the other.

15 Q But you do agree that risk exists with regard to
16 translating experiences from other utilities to Aloha?

17 A Yes, I do.

18 Q Now you're not aware of any recognized EPA- or
19 DEP-approved direct tested method specifically for elemental
20 sulfur in drinking water, are you?

21 A There is no standard.

22 Q You can't name any water utility or water system that
23 specifically conducts testing for elemental sulfur on a routine
24 basis, can you?

25 A That's correct.

1 Q You also can't quantify how many utilities in the
2 state of Florida convert hydrogen sulfide versus remove it, can
3 you?

4 A No. I haven't done the study.

5 Q Sir, you testify -- well, I'll save that.

6 MR. WHARTON: Chairman Baez, would you rather me go
7 ahead and ask all the cross now or divide it up into rebuttal
8 and direct? The rebuttal is very similar to the direct. Let
9 me just try and see if there's an objection.

10 MR. BECK: We've only -- he's only sponsoring his
11 direct testimony at this point.

12 CHAIRMAN BAEZ: Mr. Beck's right.

13 BY MR. WHARTON:

14 Q Okay. Sir, isn't it true that you were involved in
15 the selection of Dr. Levine?

16 A Yes.

17 Q And you do agree that Dr. Levine is more qualified
18 than you are to discuss her findings?

19 A In some ways, yes.

20 Q Do you recall that I took your deposition on February
21 21st, sir?

22 A Yes.

23 Q And on Page 95, Line 3, question, "Dr. Kurien, on
24 Page 7 of your testimony on the bottom half you are talking
25 about Dr. Levine's report. You agree that Dr. Levine is more

1 qualified than you to discuss her findings?"

2 Answer, "Discuss her findings? Yes."

3 Do you stand by that testimony?

4 A Yes.

5 Q Isn't it true, sir, that you don't interpret any of
6 your suggestions and conclusions as being at odds with those of
7 Dr. Levine?

8 A They are at odds.

9 Q Do you recall I took your deposition on
10 February 21st, sir?

11 A Yes.

12 Q And on Page 55, Line 8, question, "Don't you agree
13 though that at least some of your suggestions and conclusions
14 are at odds with those of Dr. Levine?"

15 Answer, "I don't know that."

16 Question, "So really none that you can specifically
17 think of?"

18 Answer, "None that I can think of."

19 Do you stand by that testimony?

20 A I'm talking there about the recommendations that she
21 made in the audit. She has obviously made recommendations
22 after that.

23 Q Okay. So you don't disagree then with any of the
24 recommendations Dr. Levine made in the audit?

25 A That's correct.

1 Q Let's talk about Tampa Bay Water, Dr. Kurien.

2 A Yes.

3 Q You agree, don't you, that no individual domestic
4 systems draw water from Tampa Bay Water?

5 A That's correct. That's correct, at least as far as I
6 know.

7 Q And you agree that Tampa Bay Water's goal regarding
8 hydrogen sulfide requires that the water supplied to its member
9 governments is measured at the point of connection to the
10 member government's water system?

11 A That's correct.

12 Q Tampa Bay Water's goal does not extend to any
13 individual's domestic meter, but rather their responsibility
14 ends at the point of connection with the member governments;
15 isn't that true?

16 A That's correct. Each member government has its own
17 rules and standards for the water it delivers, and I presume
18 they are based on the methods that they use.

19 Q So isn't it true that Tampa Bay Water does not hold
20 itself to a goal that the water that ultimately reaches the
21 domestic meter of its member governments will meet the 0.1 mg/L
22 for hydrogen sulfide?

23 A Not to my knowledge.

24 Q Isn't it true that you are not aware of any Tampa Bay
25

1 guarantee that the water that is delivered to the domestic
2 meter will meet the Tampa Bay Water Standard?

3 A I am not aware, but that doesn't mean that they don't
4 have standards.

5 Q Isn't it true that you are not aware of any of the
6 nine member governments of Tampa Bay Water who test to see that
7 the particular goal or standard is attained at the domestic
8 meters of any of their customers?

9 A I am not personally aware.

10 Q Isn't is it true, sir, that you're not aware of any
11 utility in the state of Florida that tests at the domestic
12 meter to ensure that hydrogen sulfide is lower than 0.1 mg/L?

13 A I am not personally aware.

14 Q Isn't it true that some of Tampa Bay Water's member
15 governments have received complaints about black water?

16 A Could you repeat that question?

17 Q Isn't it true that some of Tampa Bay Water's member
18 governments have received complaints about black water?

19 A Yes, from their individual customers. Yes.

20 Q Isn't it true that Pasco County has received
21 complaints about black water?

22 A I have heard so.

23 Q Isn't it true, sir, that you have no knowledge
24 whether Pasco County has a goal, a standard, a guarantee, a
25 desire or anything else to meet this goal of 0.1 mg/L at the

1 domestic meter of its customers?

2 A That particular standard wasn't being suggested
3 because of the problems that Aloha customers have had. A lot
4 of people don't have problems and they don't particularly care
5 about standards.

6 That is the standard that they're looking for, that
7 the water is clean and remains clean and odorless and colorless
8 in their plumbing.

9 Q Isn't it true, sir, that as we sit here today, you
10 don't have any knowledge that Pasco County has a goal, a
11 standard, a guarantee, a desire or anything else to meet the
12 goal we've been talking about at the domestic meter of its
13 customers?

14 A Not that I'm personally aware of.

15 Q You're not aware of Pasco County having any such goal
16 or standard; correct?

17 A I've answered that question.

18 Q The problem is I'm asking questions in the negative
19 and you're answering them in the negative.

20 Do you agree with the statement I made? Let me put
21 it that way.

22 A Yes, I do.

23 Q Thank you. Isn't it true that as we sit here today,
24 you don't have any knowledge that Pasco County even monitors
25 for hydrogen sulfide in the systems they use to deliver water

1 o their domestic customers?

2 A Monitoring for hydrogen sulfide is necessary when
3 here is corrosion or when people complain about rotten egg
4 smell. I don't see the need to monitor hydrogen sulfide if
5 there is no corrosion and if people don't complain about bad
6 smell.

7 Q Do you agree that my question to you is a true
8 statement?

9 A You have to repeat the question again for me, please.

10 Q Isn't it true that as we sit here today, you don't
11 have any knowledge that Pasco County even monitors for hydrogen
12 sulfide in the systems that they use to deliver water to their
13 domestic customers?

14 A They may monitor it somewhere, but they don't
15 monitor, at least to my knowledge they don't monitor at the
16 individual customer's homes.

17 Q I want you to listen very carefully to the question,
18 Dr. Kurien.

19 A Okay.

20 Q Isn't it true that as we sit here today, you don't
21 have any knowledge that they engage in such monitoring?

22 A I don't have any knowledge.

23 Q Okay.

24 MR. WHARTON: That's all we have, Commissioners.

25 CHAIRMAN BAEZ: Staff.

CROSS EXAMINATION

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BY MR. JAEGER:

Q Dr. Kurien, have you had a chance to look at that exhibit 19, a map of the service territory I gave you earlier?

MR. WHARTON: Mr. Chairman, it may be that we need to put Dr. Levine on. I know that's disruptive, but it is what we contemplated.

CHAIRMAN BAEZ: I know that's what we had all contemplated. Mr. Beck, this is something that we had discussed before. If you have no objection --

MR. BECK: Certainly. If you wish to put him on.

CHAIRMAN BAEZ: Dr. Kurien, I'm sorry to do this, but we have to squeeze in Dr. Levine, if possible.

THE WITNESS: No. That's okay.

CHAIRMAN BAEZ: Thank you for your indulgence, Dr. Kurien. I appreciate it.

Witness Levine.

DR. AUDREY LEVINE

was called as a witness on behalf of Aloha Utilities, Inc., and, having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. DETERDING:

Q Dr. Levine, please state your name and employment address.

A My name is Audrey Levine, and I work at the

1 University of South Florida in the Department of Civil
2 Engineering in Tampa.

3 Q Have you been retained by Aloha Utilities to provide
4 testimony in this proceeding and expert opinions?

5 A Yes, I have.

6 Q Did you prepare in conjunction with my office a
7 document referred to as Prefiled Direct Testimony of
8 Audrey D. Levine, Ph.D.?

9 A Yes.

10 Q And that consists of five pages; correct?

11 A Probably. I don't have it in front of me.

12 Q Okay. If I asked you those same questions here
13 today, would your answers be the same?

14 A Most likely.

15 Q Okay. Do you have any corrections to make to that
16 testimony at this time?

17 A No.

18 Q Did you also prepare in conjunction with the
19 preparation of that direct testimony an exhibit that is your
20 resumé?

21 A Well, yeah. I attached it to it, but I didn't
22 prepare it just for that.

23 MR. DETERDING: Okay. Commissioners, I request that
24 Dr. Levine's testimony be inserted in the record as though
25 read.

1 CHAIRMAN BAEZ: Mr. Beck.

2 MR. BECK: Mr. Chairman, if I heard correctly, Dr.
3 Levine said it's most likely her testimony would be the same,
4 her answers would be the same today.

5 THE WITNESS: I should have just said yes. Sorry.

6 CHAIRMAN BAEZ: And based on that adjustment to her
7 response --

8 MR. BECK: I have no objection.

9 CHAIRMAN BAEZ: -- you don't have any objection?

10 Without objection, show the direct testimony of Dr.
11 Levine entered into the record as though read.

12 MR. DETERDING: Commissioners, should we make the
13 resumé a, Exhibit 20? Would that be appropriate?

14 CHAIRMAN BAEZ: I don't, I don't have a problem with,
15 with making that --

16 MR. DETERDING: I think that would be the simplest
17 way rather than trying to put it into the transcript. So if
18 you don't mind, let's mark that as Exhibit 20.

19 CHAIRMAN BAEZ: Show the resumé of Dr. Audrey Levine
20 marked as Exhibit 20.

21 (Exhibit 20 marked for identification.)

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1 BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

2 ALOHA UTILITIES, INC.

3 DOCKET NO. 010503-WU

4 TESTIMONY OF DR. AUDREY D. LEVINE, PHD5 Q. Please provide a brief resume of your training and experience as it relates to this
6 proceeding.7 A. I am an environmental engineer with extensive experience in water quality and
8 potable water systems. I hold a Ph.D. in Civil and Environmental Engineering from
9 the University of California at Davis, an M.S. degree in public health from Tulane
10 University, and an undergraduate degree from Bates College in Biological Sciences.
11 I have been teaching and conducting applied research at the University level for over
12 twenty years and have worked on a wide variety of water quality related issues
13 throughout the U.S. My resume is attached to this document.14 Q. Do you consider yourself an expert in water chemistry and water treatment
15 engineering?

16 A. Yes.

17 Q. What do you think about setting a hydrogen sulfide MCL as mentioned by Dr. Kurien
18 in his testimony?19 A. The concept of developing a method to validate the effectiveness of hydrogen sulfide
20 treatment is good, however, the currently available technology for monitoring
21 hydrogen sulfide lacks accuracy and reproducibility. If hydrogen sulfide exists in
22 water, it can volatilize to the atmosphere generating odors. It is difficult to measure
23 the concentration accurately due to the potential for volatilization. To develop an
24 enforceable standard, a reliable measurement method is needed.

25 Q. What do you think about the Hydrogen Sulfide Goal that is used by Tampa Bay

1 Water?

2 A. The Tampa Bay Water goal for hydrogen sulfide has been accepted by all of Tampa
3 Bay Water member governments. This goal provides a reasonable target level for
4 hydrogen sulfide of 0.1 mg/L for water quality entering the retail distribution system.
5 It should be noted that the detection limit for accurate measurement of hydrogen
6 sulfide is 0.1 mg/L.

7 Q. Do you think the hydrogen sulfide monitoring approach that has been proposed by
8 Aloha Utilities differs significantly from the Tampa Bay Water monitoring approach?

9 A. No, it is similar to the approach implemented by Tampa Bay Water. Aloha Utilities
10 has proposed monitoring hydrogen sulfide at the outlet from their treatment plants.
11 This approach can provide direct feedback that can be used for process control.
12 Because Aloha Utilities derives its water from several sources including Pasco
13 County, monitoring in the distribution system will not provide any direct information
14 on the effectiveness of the treatment system.

15 Q. Are there any USEPA or FDEP standards that require water systems to meet a H₂S
16 concentration goal or MCL at a customer's meter?

17 A. I am not aware of any enforceable standards for hydrogen sulfide that must be met
18 at a customer's meter.

19 Q. In your study of the Seven Springs system, did you detect sulfide re-formation within
20 the transmission system as suggested by Dr Kurien in his testimony?

21 A. My studies detected no sulfide in the finished water or the transmission or
22 distribution system. Even if I had detected sulfide in the distribution or transmission
23 system, it would be impossible to tell if it was the result of re-formation, nor was that
24 the intent of the study. Detection of sulfide re-formation would require a very
25 sophisticated sampling and analysis procedure. The Aloha Water System delivers

1 several million gallons of water per day. If sulfide is detected in the distribution
2 system, it is not possible to determine if it was in the water originally or if it resulted
3 from "re-formation" without conducting concurrent tracer studies and possibly stable
4 isotope analysis. In my study we were trying to evaluate the entire system and
5 identify potential problems with hydrogen sulfide. The only location in which
6 detectable hydrogen sulfide was observed was at the inflow to the ground storage
7 tank which is not in the transmission or distribution system. This sample site was
8 resampled several times in succession and did not have detectable hydrogen sulfide
9 upon resampling. Currently, the water at the entry to the ground storage tank is
10 chlorinated prior to entering the distribution system, thus would not be considered
11 to be finished drinking water until it exits the ground storage tanks.

12 Q. Dr. Kurien, states that he believes that turbidity in Aloha's finished water causes a
13 reduction in the effectiveness of the chlorine disinfection system resulting in
14 hydrogen sulfide generation taking place in the distribution system? Would you care
15 to comment?

16 A. Turbidity is not routinely monitored in groundwater systems because monitoring is
17 not required under the Safe Drinking Water Act. During my study I conducted
18 suspended solids tests to assess the quantity of suspended material in the Aloha
19 Distribution system, and all of the samples from the distribution system were below
20 detection limits for suspended solids. Aloha routinely monitors the bacteriological
21 quality of the water in the Seven Springs System. To date there have been no
22 violations of the bacteriological standard (total coliform) within the Seven Springs
23 System, suggesting that the disinfection process as currently practiced is adequate.
24 While the data on turbidity is limited, the wealth of data on microbiological quality
25 suggests that the disinfection process is functioning effectively.

1 Q. What is your opinion of Dr. Kurien's testimony that there is "significant consumption
2 of free chlorine residual within the transmission and distribution system" at Aloha?

3 A. Chlorine decays within distribution systems due to a variety of reactions and the
4 decay rate is influenced by temperature and other factors. The testing of chlorine
5 residuals that is routinely conducted in the Seven Springs system is intended to
6 ensure that there is an adequate chlorine residual throughout the distribution system
7 and to identify potential problem areas such as dead-ends that might require flushing.
8 The use of chlorine monitoring data to evaluate chlorine demand within the
9 distribution system is inappropriate.

10 Q. On pages 12 through 14 of his testimony, Dr. Kurien discusses his evaluation of the
11 potential merits of two hydrogen sulfide treatment technologies – conversion
12 utilizing oxidation (with hydrogen peroxide) and removal utilizing aeration or the
13 MIEX process. Do you have any comments about this testimony?

14 A. Yes. First, I believe that Dr. Kurien's testimony here is not since this topic (choice
15 of treatment technology to meet the specified goal) is not one of the matters at issue
16 according to the Commission's Consummating Order. There are several approaches
17 that are effective for treatment of hydrogen sulfide from groundwater. Selection of
18 the most appropriate method requires significant testing and evaluation. It is
19 inappropriate to judge the efficacy of a process without supporting information and
20 data.

21 Q. In his testimony, Dr. Kurien suggested that limitations on the concentration of
22 elemental sulfur should be imposed in addition to the 0.1 mg/L sulfide limits already
23 approved by the Commission. What is your opinion of the elemental sulfur limits?

24 A. Monitoring of elemental sulfur is not practiced in the drinking water industry due to
25 the lack of reliable test methods. Because of the measurement difficulties, it is also

1 not currently feasible to determine what an "appropriate" limit would be. During my
2 study of the Seven Springs System, I evaluated the characteristics of particles isolated
3 from the system. In general the particle concentration was quite low and the
4 elemental composition of the particles was highly variable.

5 Q. Do you have anything further to offer?

6 A. No.

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1 MR. DETERDING: And we'd tender the witness.

2 CHAIRMAN BAEZ: Dr. Levine, you don't have an opening
3 statement?

4 THE WITNESS: No.

5 MR. DETERDING: A summary.

6 CHAIRMAN BAEZ: A summary, I'm sorry, of your
7 testimony.

8 THE WITNESS: No.

9 CHAIRMAN BAEZ: It's okay if you don't. I don't want
10 to put you on the spot. I just wanted to make sure that -- go
11 ahead, Mr. Beck.

12 MR. BECK: Thank you, Mr. Chairman.

13 CROSS EXAMINATION

14 BY MR. BECK:

15 Q Good afternoon, Dr. Levine.

16 A Good afternoon.

17 Q You're appearing on behalf of Aloha Utilities today;
18 is that correct?

19 A That's correct.

20 Q Are they paying you to, to testify on their behalf
21 today?

22 A They are not paying me; no.

23 Q And why is that?

24 A I'm doing a project for Aloha through the university,
25 and when I work for the university, I can only get paid by the

university. So it would -- so I can't be paid by an entity who's also funding research.

Q Is that because there would be a conflict if you were to take money from the company at the same time that you're performing research for the company?

6 A That's correct.

7 Q How is there a difference between there being a
8 conflict if you were to take money from them as opposed to
9 appearing before or for them and on their behalf today before
10 the Public Service Commission?

11 A I'm not quite sure what you're --

12 Q Well, you're doing research through the university
13 for Aloha Utilities; is that correct?

14 A That's correct.

15 Q And yet today you're appearing today as an advocate
16 of their positions; isn't that right?

17 A I -- well, I'm here to -- yeah, I guess. I guess
18 that's a good way -- I don't -- I'm not sure what you're trying
19 to ask me.

20 Q Okay. Well, wouldn't appearing as an advocate on
21 behalf of the company be a conflict just the same as if you
22 were to take money from them?

23 A I'm here just to, just to present the facts. I
24 don't, you know, I don't -- I mean, I don't think it's a
25 conflict in the least. It's, you know, it's --

1 MR. DETERDING: Commissioner, I want to object. I
2 don't think Ms. Levine has said she's an advocate for anything.
3 She's an expert witness on areas related to this matter. I
4 think there's a real distinction there.

5 CHAIRMAN BAEZ: I'm not, I'm not sure what the
6 objection is. We're going to have to make -- put it in --

7 MR. DETERDING: Well, I don't believe she has stated
8 that she is an advocate for Aloha Utilities. She has stated
9 she is an expert.

10 MR. BECK: She's answering the questions. I don't
11 know what the objection is.

12 MR. DETERDING: Well, has he established that she is
13 an advocate for Aloha Utilities?

14 CHAIRMAN BAEZ: Let me, let me just, let me just
15 short circuit this, Mr. Beck. You did ask her a question if
16 she was appearing as an advocate for Aloha Utilities.

17 Dr. Levine, not to put words in your mouth, but I did
18 see you hesitate because it may be, it may be -- my impression
19 is that you don't know how to handle that, that question. So
20 if you'll just take a moment -- Mr. Beck, I'd like you to ask
21 her that question again so that she can clearly answer what
22 her -- we're going to take one more crack at this because I
23 need that cleared up. Because I -- Mr. Beck, I've got to tell
24 you I agree with Mr. Deterding. I'm not sure, I'm not sure if
25 that question is --

1 MR. BECK: I'll try to reword my question.

2 CHAIRMAN BAEZ: If you would, please.

3 BY MR. BECK:

4 Q And you are appearing on behalf of Aloha Utilities
5 today; is that right?

6 A I was asked to come here by Aloha Utilities. I, you
7 know, I'm not necessarily appearing on behalf of anybody except
8 for, I guess, the university or myself or, you know, but I'm --
9 I was asked to come here by them.

10 Q Uh-huh. And, and you are working through the
11 university for Aloha Utilities on a project for them; is that
12 correct?

13 A I'm working on a project that's being funded by Aloha
14 Utilities. I wouldn't say I'm working -- I don't work directly
15 for them. I'm working on trying to, trying to answer a
16 research question.

17 Q At one time in the past you were hired by the Office
18 of Public Counsel to do a project for the Office of Public
19 Counsel, weren't you?

20 A That's correct.

21 Q Do you recall the dates that you worked for the
22 Office of Public Counsel?

23 A Not offhand I don't.

24 MR. BECK: Mr. Chairman, I have two exhibits I
25 thought I'd hand out at the same time just to move it along.

1 Mr. Chairman, I'd like to ask that the first exhibit
2 to be marked for identification would be the bills for
3 professional services.

4 CHAIRMAN BAEZ: We'll mark that -- I have 21.

5 (Exhibit 21 marked for identification.)

6 MR. BECK: And the second exhibit would be the fixed
7 price agreement between Aloha Utilities and USF.

8 CHAIRMAN BAEZ: And we'll mark that Exhibit 22.

9 (Exhibit 22 marked for identification.)

10 BY MR. BECK:

11 Q Dr. Levine, do you have Exhibit 21 for identification
12 n front of you?

13 A Uh-huh.

14 Q And do you recognize that exhibit as consisting of
15 bills you provided to the Office of Public Counsel?

16 A That's correct.

17 Q Would you agree that you began work for the Office of
18 Public Counsel in about the beginning of the Year 2003?

19 A Uh-huh. Yes.

20 Q And on the first page of this exhibit is a bill from
21 you dated June 8th, 2004; is that correct?

22 A That's correct.

23 Q Is that the last bill that you sent to the Office of
24 Public Counsel?

25 A That is.

1 Q And do you agree that your last bill was on June 8th?
2 Maybe I didn't hear.

3 A Yes.

4 Q Okay. And had you been relieved of your duties or
5 your contract with the Office of Public Counsel at that point?

6 A That was with Steve Burgess, and actually I think
7 that was the date or right around the date when we had a
8 meeting at USF, and as far as I know I was.

9 Q Okay.

10 A There's no formal writing that says that.

11 Q Okay. When you submitted the bill on June 8th, did
12 you feel that you were still employed by their -- or under
13 contract with the Office of Public Counsel?

14 A I was under the impression that I was done with what
15 I was, had set out to do.

16 Q Okay. And the total amount that was paid to you by
17 the Office was \$24,200; would you agree?

18 A That's correct.

19 Q Now Exhibit 22 for identification, do you recognize
20 that?

21 A Uh-huh. Yes.

22 Q Okay. And that consists of a cover letter as well as
23 the Fixed Price Agreement between Aloha Utilities and the
24 University of South Florida; is that right?

25 A That's right.

1 Q Uh-huh. And under that agreement Aloha is to pay the
2 University of South Florida \$198,811; is that right?

3 A That's right.

4 Q And this agreement with Aloha Utilities was effective
5 beginning on June 1st, 2004; is that right?

6 A No, I don't think it's right. I think it's sort
7 of -- I think it began at the beginning of July.

8 Q Could you look --

9 A It says on the first line, it says it was entered
10 into on the 24th day of June, so.

11 Q Could you look at the first, what's marked Page 1 of
12 5 on the bottom, and it's deposition exhibit Page 4. Do you
13 have that?

14 A Uh-huh.

15 Q Do you see the first paragraph, period of
16 performance.

17 A Yeah. But if you look at the first line, it says,
18 "This agreement is made and entered into on this 24th day of
19 June."

20 Q And period of performance they asked you about says
21 that it begins on June 1st, 2004, does it not?

22 A It does say that, but I don't -- that contradicts the
23 first statement on the, on the sheet.

24 Q Did you inquire of the Office of Public Counsel
25 whether they thought there would be a conflict with you

1 entering into an agreement through the University of South
2 Florida to work for Aloha Utilities?

3 A I did not.

4 Q Okay. On the first page of this exhibit is a letter
5 dated June 11th, 2004, to Dr. Carnahan from Mr. Stephen
6 Watford. Do you see that?

7 A Uh-huh.

8 Q And June 11th is three days after you sent your last
9 bill to the Office of Public Counsel, isn't it?

10 A That's correct.

11 Q You see where Mr. Watford says, "There's no conflict
12 of interest in Dr. Levine helping us implement the chosen
13 recommendation"? Do you see that?

14 A Uh-huh.

15 Q Do you have any knowledge why, why Mr. Watford was
16 telling the university there's no conflict?

17 A I, you know, I didn't write this letter, so I don't

18 --

19 Q Okay. You don't know?

20 A Not off -- no, I don't really.

21 Q Okay. And you don't recall anybody at the Office of
22 Public Counsel telling you there would be a conflict of
23 interest either; is that right?

24 A That's correct. I mean, my main contact was Steve
25 Burgess, and --

1 Q Did you have a chosen recommendation, as stated by
2 Mr. Watford?

3 A In evaluating the system, I looked at various options
4 but I didn't select one particular one.

5 Q Right. You listed a whole series of possible options
6 for the company, did you not, in your --

7 A That's correct. Uh-huh.

8 Q And you didn't have any one that was chosen; is that
9 right?

10 A That's correct.

11 Q So do you have any knowledge why Mr. Watford was
12 talking about a chosen recommendation?

13 A No, I don't.

14 Q On your exhibit or, Dr. Levine, on the second to the
15 last page of the exhibit there's a list of the budget. Do you
16 see that?

17 A Uh-huh.

18 Q And there's an amount listed for you, for Dr. Audrey
19 Levine, three months, \$27,720; is that right?

20 A That's correct.

21 Q And how -- is that amount to benefit you personally?

22 A No. I get paid by the university for nine months of
23 the year, and so that money doesn't come to me directly.

24 Q How, how will that amount be used?

25 A It'll be used either to, to offset teaching time or

1 to, you know -- so sort of -- since I'm paid by the university
2 to, you know, to sort of pay back the university for time I use
3 for research versus teaching.

4 Q Uh-huh. You could also use that to pay yourself
5 during the summer when you're not on contract with the
6 university, couldn't you?

7 A I could, right.

8 Q And that's at your option how you use that?

9 A That's correct.

10 Q And this also provides a payment for graduate
11 students as well as tuition waivers and undergraduate
12 assistance; is that right?

13 A That's correct.

14 Q And is that beneficial for you to be able to bring
15 that sort of thing to the university?

16 A Well, that's my job. I do research and I bring
17 contracts in to do research. That's -- and I help students get
18 their degrees. That's what universities do.

19 Q Uh-huh. Do you expect to write any papers as a
20 result of your, this agreement between Aloha and the University
21 of South Florida?

22 A It's possible.

23 Q Do you think that's likely that you will be doing
24 that?

25 A Well, generally when you're, when you're doing

1 research, that's kind of an objective of -- well, that's how
2 you, how you -- that's how technology is transferred. When you
3 find things out, you try to disseminate the information, and so
4 you write papers or participate in conferences, that sort of
5 hing.

6 Q Have you finished, have you finished this contract
7 between USF and Aloha Utilities?

8 A No. It's an ongoing effort.

9 Q So you're engaged in that activity right now with
10 Aloha.

11 A That's correct.

12 Q Let me ask you a few questions about your testimony,
13 if I could, and shift a little bit. At Page 2 of your
14 testimony on Line 7 --

15 A I don't have it here, but.

16 Q -- you state that the hydrogen sulfide monitoring
17 approach that has been proposed by Aloha or -- is similar to
18 the approach used by Tampa Bay Water; is that right?

19 A I don't have a copy of it here, but, yeah, that's
20 what it says.

21 Q Okay. Would you agree that the Tampa -- you don't
22 have your testimony?

23 A No, I don't.

24 (Document handed to witness.)

25 Q Can you turn to Page 2, Line 7?

1 A Uh-huh.

2 Q You're essentially agreeing with Aloha's
3 interpretation of the Tampa Bay Water Standard, is that right?

4 A Yeah.

5 Q Okay. And the Tampa Bay Water Standard is applied at
6 the point of connection to the systems of the member
7 governments, is it not?

8 A Uh-huh.

9 Q Tampa Bay has a number of ways that they provide
10 water to its member governments, do they not?

11 A They derive water from a variety of different sources
12 that's treated in a variety of different ways, and -- so is
13 that what your question is?

14 Q Yes. Would wells be one of the ways that they do
15 that?

16 A Sure. Yeah. There's -- I forget, I forget the
17 breakdown, but a significant amount of the water is well water.

18 Q And then when they, they draw it from a well, they
19 treat the water near, at or near the well site, do they not?

20 A Not necessarily. Sometimes it's pumped to a
21 centralized plant, sometimes it's pumped at the well site. It
22 really varies depending on a variety of different factors.

23 Q And then after it's treated, it's transported to a
24 place where it meets the facilities of its member governments,
25 is it not?

1 A That's true.

2 Q And it could be a short length of distance through
3 pipes to get there or a long, or a longer length of pipe to get
4 there, is it not?

5 A That's true. And it can mingle with other sources of
6 water as well. So the water -- the -- as the water moves
7 through the system, its, its connection to its source is less
8 direct.

9 Q Okay. And where is the goal of .1 milligrams of
10 sulfides per liter, where is it? It's at the point of
11 connection to the member government systems; is that right?

12 A I'm not 100 percent sure how they do that, but that's
13 the, that's what's implied in the way the rule is written. I
14 don't -- you know, so I'm not sure, I don't know exactly. I've
15 never seen how they do their monitoring, so I don't, I don't
16 know exactly.

17 Q But in any event, it's not, by definition it's not
18 going to be at the treatment site. It's going to be at the
19 point of connection to the, to the member governments, is it
20 not?

21 A Well, they don't really treat the water. They're --
22 you know, they purchase water from different entities and
23 they're a wholesale provider. So it's a different -- they're a
24 different kind of facility or a different kind of an entity.

25 Q But the point of connection is where the facilities

1 of Tampa Bay Water connect to the systems of their member
2 governments, is it not?

3 A Yes.

4 Q Isn't that point of connection essentially where
5 Tampa Bay Water delivers the water to its customers which are
6 the, which are the member government systems?

7 A Well, it's where, it's where -- it's a passthrough.
8 It's where their jurisdiction ends. And so at that point the
9 water is no longer their water, it's whoever's water they've
10 sold it. So their, their, their responsibility, you know, goes
11 to that point.

12 Q And it's at that point, is it not, where the
13 .1 milligram of sulfides per liter, that's where it's being
14 measured, is it not?

15 A Well, it's not, it's not measured that frequently. I
16 mean, at the most it's measured a few times a year. But I, I
17 really don't know exactly where they measure it. I've not been
18 involved in how they, how and where they measure it, so I
19 really don't know.

20 Q You don't know where they measure it?

21 A I don't, no. Personally I do not know. I know, I
22 know a fair amount about the system, but I don't know where
23 they measure hydrogen sulfide.

24 Q Well, if you don't know where they measure it, how
25 can you be agreeing with Aloha's interpretation of where the

1 point of connection is?

2 A Well, that is the point of connection. But I don't
3 know, I don't know physically what they do at that, at that
4 point of connection. So I don't, I don't know enough about how
5 they, you know, what their, what their strategy is for
6 monitoring, when they monitor, what -- I don't know, really
7 don't know how -- I've never seen their data, I guess, is what
8 I can say.

9 Q Well, I guess my question is how do you know Aloha is
10 interpreting it correctly if you don't know how Tampa Bay Water
11 is interpreting it?

12 A I don't -- well, maybe I don't know then. I'm not
13 sure what the point of this -- I don't know what you're trying
14 to get at here.

15 Q Well, let me ask you this, Dr. Levine. Didn't you
16 just mention that they, that you thought that they measured
17 several times a year? Is that what you said?

18 A According to my knowledge of Schedule D, which is
19 where this is all derived from, it's -- the wording says that
20 it's based on an average of, I think it's quarterly
21 measurements or four -- I don't, I don't know specifically what
22 it says. But, but it's not, it's not that they measure it
23 continuously.

24 Q Okay.

25 A It's, it's -- to me, that's not -- you know, four

1 times a year is not, you know, excessive monitoring.

2 Q Is that Aloha's position that they should measure it
3 four times a year, or do you know what Aloha's position is?

4 A I don't know. That's not -- I'm really -- no, I
5 don't know what their position is.

6 Q So you're not in a position to support or oppose
7 Aloha's position in this case; is that right?

8 A Perhaps that's true. I mean, the question in my mind
9 is, is if you're going to monitor, you should have some
10 rationale for monitoring and you should be able to use that
11 information for some reason. So you either monitor water
12 because there's a potential health problem associated with it
13 or because you're trying to control the process. But to -- you
14 know, so that's -- you know, but as far as where they monitor,
15 that's, I'm not familiar with that.

16 Q Okay. And it's your belief they do it more than once
17 at year at least, although you're not sure how many times?

18 A That's correct.

19 Q At Page 2 of your testimony beginning at Line 3,
20 referring to the Tampa Bay Water goal, you state that this
21 goal provides a reasonable target level for hydrogen sulfide
22 of .1 milligrams per liter for quality entering the retail
23 distribution system. Do you see that?

24 A Uh-huh.

25 Q Do you believe that that would be a reasonable target

1 for water exiting the distribution system as well?

2 A Well, the problem is this .1 has no -- there's no
3 relationship in my mind between this number .1 and the
4 potential -- and the issues associated with, with hydrogen
5 sulfide. And so the reason why .1 is selected is because
6 that's about the level that it can be measured with, not even
7 with, with -- the accuracy of the measurement is difficult. So
8 the .1 -- I think it's useful to have some, you know, some
9 benchmark of what the hydrogen sulfide is. But what the, what
10 the number is I don't think makes a -- I don't think --

11 Q Let me --

12 A I don't think there's any relationship between that
13 number and the hydrogen sulfide in the system or the impacts of
14 the hydrogen sulfide in the system.

15 Q Dr. Levine, let me try again. In your testimony you
16 state that you believe that's a reasonable target for, for
17 water entering the retail distribution system; is that right?

18 A Correct. Right.

19 Q My question to you is, I think, simple. Do you think
20 that's a reasonable target for water exiting the distribution
21 system?

22 A Sure. If it's reasonable going in, it's reasonable
23 coming out. Right.

24 Q At Page 3 of your testimony, beginning at Line 5 --
25 would you turn to that, please? You state that the only --

1 this is referring to your study for the Office of Public
2 Counsel; is that right?

3 A Uh-huh.

4 Q You state that the only location in which detectable
5 hydrogen sulfide was observed was at the inflow to the ground
6 storage tank.

7 CHAIRMAN BAEZ: Mr. Beck, can you give us a line
8 reference, please?

9 MR. BECK: Lines 5 through 7 on Page 3.

10 CHAIRMAN BAEZ: 5 through 7 on Page 3?

11 MR. BECK: Yes.

12 CHAIRMAN BAEZ: Thank you. Sorry. Can you restate
13 your question?

14 BY MR. BECK:

15 Q Okay. First of all, I think at this point I've only
16 asked -- you state that the only location in which you detected
17 hydrogen sulfide was at the inflow to the ground storage tank.
18 That's right, is it not?

19 A Uh-huh. Right.

20 Q Okay. Now that's water coming from a well, is it
21 not?

22 A That's correct.

23 Q And it --

24 A But it's not water that's going into the
25 distribution. It gets chlorinated downstream of this point.

1 Q Okay. It's all -- the water that goes into the tank,
2 as it were, it's treated with chlorine before it goes into the
3 pipes that go into the storage tank, is it not?

4 A It's treated, but with a different end point because
5 it's not treated to the -- it doesn't have to maintain the same
6 level of chlorine as the water exiting the ground storage tank,
7 which is, I think, why that plant is there, to, to provide the
8 opportunity to, to, you know, to add chlorine.

9 Q Aloha pumps water from, what, eight different wells?

10 A Right.

11 Q And the water at each of those wells is treated with
12 chlorine, is it not?

13 A That's correct.

14 Q Okay. And is the, the treatment method at each of
15 those wells comparable?

16 A Yeah. It's more or less the same.

17 Q Okay. And in this instance you detected hydrogen
18 sulfide essentially in the pipes after it had been treated with
19 chlorine at the well, but before it enters the storage tank; is
20 that right?

21 A That's true. But it's a -- yeah. That's true.

22 Q And then it's treated with chlorine again at the
23 storage tank; is that right?

24 A Right.

25 MR. BECK: Okay. I think that's all I have. Thank

1 you.

2 CHAIRMAN BAEZ: Mr. Wood or Mr. Hawcroft?

3 MR. HAWCROFT: No.

4 CHAIRMAN BAEZ: No questions? Okay. Mr. Jaeger.

5 CROSS EXAMINATION

6 BY MR. JAEGER:

7 Q Good afternoon, Dr. Levine. Do you remember in our
8 deposition I discussed about what a field test for sulfide
9 would be like?

10 A Uh-huh.

11 Q And you described a container where you draw water up
12 the side of the container and then you suck some off after it's
13 filled; is that correct?

14 A It's a, it's a, sort of a vertical tube where the
15 water enters at the bottom and exits at the top and you pull
16 the water out somewhere between the two so there's no free
17 water, so the water doesn't contact the air.

18 Q But you get an immediate reading of the, a sulfide
19 level?

20 A Well, you get an immediate sample, and then you run a
21 test which gives you a reading.

22 Q But you do that in the field right then and there?

23 A That's correct.

24 Q I believe in your report you basically indicated that
25 there was more treatment needed, that chlorination alone was

1 not sufficient; is that correct?

2 A I don't know that I, I don't know that I said that
3 chlorination alone was not sufficient. One of the, one of the
4 things that's happening is that the type of chlorination system
5 is being converted from gaseous chlorine to liquid chlorine.
6 And so the, so the, so the, the ability to dose chlorine has
7 changed, but I don't think I exactly -- I don't remember
8 exactly saying that it was -- the problem or the problem that I
9 perceive is that the water -- there needs to be a way to ensure
10 the stability of the water. And the way the system was
11 operated, because of the lack of, of online monitoring and
12 things like that, you know, I thought it needed improvement.

13 Q I asked the question, "Okay. I believe, in your
14 report" -- this is on Page 77, Line 6, of your deposition. "I
15 believe in your report, I'm not sure if it's February or
16 January or both, but you are basically saying that, you know,
17 that there was more treatment needed; is that correct?"

18 A Right.

19 Q And you said, "Right." Is that --

20 A Yeah. But that, but that's not saying that
21 chlorination alone isn't, isn't adequate treatment.

22 Q And so what you're saying, that chlorination was not
23 adequate in and of itself, that was my next question. And you
24 say, "Well, the system as it currently exists, you know, is in
25 need of upgrading."

1 A Right.

2 Q Okay.

3 A And so by that, I mean there's lots of issues. You
4 know, the monitoring capability and the ability to respond to
5 changes in water quality are upgrades that are currently going
6 on but they weren't in place then.

7 Q Are you aware that Aloha has 30 bacteriological
8 testing sites?

9 A That's for the Total Coliform Rule; right?

10 Q Right.

11 A And I've not, I've not gone to those sites, so I
12 don't know exactly.

13 Q You're aware that they do have 30 sites?

14 A Right. Right. Every, every utility has to have
15 those.

16 Q And could you test for hydrogen sulfide at those same
17 spots?

18 A Without having seen them, it's hard to, it's hard to
19 say. But, for sure, if you can withdraw water from a location,
20 you can, you know, you could, you could set up to test for
21 whatever you choose to test.

22 Some utilities, you know, test at people's, you know,
23 hoses or taps. Testing for bacteria, you don't have to be so
24 concerned about having, contacting, having the water contact
25 air. So grabbing a bacterial sample requires, well, it

1 requires significant training and skill. It's different. If
2 you try to measure sulfide on the same sample as you're
3 measuring bacteria, you won't get an accurate reading because
4 of the, because the sulfide can be volatile.

5 Q Clearly it's a separate test, but you could still --
6 if you can draw water, then you can do the --

7 A Right. Wherever you can take water, you can test
8 whatever you choose to test at that point.

9 Q Now these 30 or these bacteriological testing sites,
10 is that sort of so you can keep an overall viewpoint of what's
11 happening out in the system, sort of keep track of what's going
12 on bacteriologically in the water system?

13 A It's the Total Coliform Rule. And what that requires
14 is that every utility monitors for bacteria because there
15 are -- because bacteria can -- you know, if the system is
16 contaminated with bacteria, people can get sick. And so every
17 utility is required to monitor -- collect a certain number of
18 samples per month for, for bacteria. And so the location of
19 those samples, of those sample sites is supposed to be
20 distributed throughout the system.

21 Q And are you aware that for Aloha's Seven Springs
22 division there was only one point of interconnection with the
23 county?

24 A I'm -- I really don't know where that -- yeah. I
25 haven't really looked into that, but.

1 Q But if the county water is not treated to the goal of
2 the .1 milligrams per liter, then there would be no way for
3 Aloha to know that if they didn't test the county water as it
4 came in?

5 A That's correct. If you don't test it, there's no way
6 you would know.

7 Q So do you think it would be wise to test at that
8 interconnect?

9 A I think so because then you know what you're getting.
10 You're -- I mean, then you know what's entering the system.
11 The problem is the sample, you know, a 100-milliliter sample is
12 only one snapshot in time as millions of gallons of water
13 moving through the pipe. So, you know, so having a measurement
14 is certainly better than none, but whether it's -- you know,
15 it's not going to reflect real-time data.

16 Q Do you know if Aloha could do anything if it tested,
17 I think it's at Little Road and State Road 54 that they have
18 this interconnect, do you know if Aloha could do anything if
19 the county water did not meet the 0.1 milligrams per liter?

20 A Unless there's some capacity to treat the water
21 there, there's not much you could do. So you're just getting a
22 measurement, but there's not much that would -- I don't know if
23 there's a plan to put any additional treatment capability there
24 or not.

25 Q But basically Aloha doesn't have any control over the

1 county water, they can only treat their own; is that correct?

2 A The county doesn't even have control of it because
3 hey get it from Tampa Bay Water. So they're, you know,
4 hey're -- the water that they don't treat on their own is
5 regional water, so.

6 Q Did you review or see the interrogatories propounded
7 by staff to Aloha?

8 A When was that?

9 Q That was the 20 interrogatories that staff sent to
10 Aloha. Let me see. That was the only set of interrogatories
11 we sent to them this past -- early this year.

12 A Early in 2005?

13 Q Yes. I'm sorry. Let me get to the -- I was looking
14 at the wrong one. The interrogatories I'm talking about are
15 the first set, it's Numbers 1 through 20. They were sent on
16 the 5th day of October, 2004.

17 A Yeah. I think I, I think I did see those.

18 Q And referring to staff interrogatory Number 4, the
19 utility estimates that to extract 30 hydrogen sulfide samples
20 per month, it would cost about \$3,200. Are you familiar with
21 that figure?

22 A Right.

23 Q So that would be about \$107 per sample, just doing
24 the math?

25 A Uh-huh. Well, I think there's some setup in there.

1 I mean, I think, because you have to have the people, you know,
2 have the people come and have all the equipment. So I don't
3 know if it's -- but I don't know exactly.

4 Q But somewhere around \$100 per sample after you get it
5 going would be about right?

6 A Uh-huh.

7 Q And you're aware that Aloha has two divisions, Aloha
8 Gardens and Seven Springs?

9 A Right.

10 Q Did you do any work in the Aloha Gardens area?

11 A A little bit of work in terms of looking at the water
12 quality and, yeah, just --

13 Q So do you know if they have a black water problem in
14 Aloha Gardens?

15 A I'm not familiar with whether they do or they don't.

16 Q And I'm not sure that -- I didn't hear your response
17 to Charlie's question, Mr. Beck's question. How often do you
18 think the test for hydrogen sulfide should be made?

19 A It depends on what the, what the purpose of the
20 testing is. Like I was saying before, for bacterial testing
21 that's important because there's a health impact. If you're
22 trying to optimize the treatment, then it's important to test
23 so you understand how the treatment is working. So I guess
24 it -- to me it depends on why you're, why you're -- what the
25 goal of the testing is.

1 Q What if you're trying to find out if it's coming back
2 out a solution somewhere out in the system, how often then?

3 A Well, I think some of those things could be better
4 tested by working with the water as opposed to just random -- I
5 mean, basically you're picking a random location and you're
6 taking a small volume of water. If you really want to
7 understand what's going on with the water, it's better to, to
8 run tests on a batch basis and see what's going on with it.

9 Q But in the beginning there might be a need to, like,
10 test more often until you get the system planed out, is the
11 word I'll use, to see if the system is working right?

12 A Well, for sure you need to see how a system is
13 working. I'm not sure hydrogen sulfide is the best tool to
14 use. I think chlorine residual and other, other parameters
15 might be more useful in terms of trying to optimize a system.
16 Hydrogen sulfide -- there's not a lot of hydrogen sulfide data
17 that's generated because it's not that accurate of a test. **And**
18 so I'm not convinced that that would give you insight into how
19 well the system is working.

20 Q Well, would you agree if they met the 0.1 milligram
21 -- say they were on monthly testing.

22 A Right.

23 Q And if they met the 0.1 milligrams per liter standard
24 on a regular basis, would you think it appropriate to, say,
25 scale it back to quarterly testing?

1 A So you -- I guess I'm not -- so you're suggesting
2 that you start with monthly testing and then scale back to
3 quarterly testing, is that what you --

4 Q If they meet the standard.

5 A Right. If you, I mean, if you -- yeah. As long
6 as -- you need to have some, you know, some rationale for, for,
7 for setting up a testing program if you want meaningful data,
8 so.

9 Q In past proceedings one OPC witness talked about the
10 overcoming of the chlorine by what he thought was hydrogen
11 sulfide spikes. Is that possible with hydrogen peroxide also,
12 that it will be overcome by hydrogen sulfide spikes?

13 A The -- when you have a chemical reaction occurring in
14 water, the, the ratio of the two reactants varies. But I guess
15 in my experience with these wells, you mainly see a gradual
16 change in, in hydrogen sulfide. You don't see it, you know,
17 jump up and down. You see it more gradually change one way or
18 another.

19 So it's not, it -- but as long as you have good
20 process control, you can run any kind of process. And so if --
21 whether you're using chlorine or hydrogen peroxide or ozone or
22 whatever, whatever you choose to use, as long as you have a
23 process control where you're running the treatment, then you
24 should be able to compensate for variations in water quality.

25 Q I believe in your deposition you used the word

1 "seasonal" or something about these spikes come on gradually
2 and it was seasonal.

3 A Right.

4 Q Now --

5 A Yeah. We see -- like this year where we've had a lot
6 of rain, we see lower levels than, than, say, a year ago. And
7 during the drought the levels seemed to creep up higher. So
8 there is some -- you know, the ground, the groundwater responds
9 to the environment.

10 Q So rain is usually good and drought is bad for
11 hydrogen sulfide -- I mean, to make you have hydrogen sulfide?

12 A Well, it's, you know, you just think about it that
13 the rain is diluting what's, what's in the ground, but it takes
14 a while to get down there.

15 Q I'm not sure if this is appropriate for you. In
16 Interrogatory Number 11 staff asked, "Will tests be conducted
17 in a sealed pipe of a type used by Aloha to supply water in its
18 distribution system to determine whether the oxidized hydrogen
19 sulfide will convert back to hydrogen sulfide?" Has that been
20 done?

21 A We're working on really a whole, a whole slew of
22 different tests to look at the stability of the water under
23 different conditions: You know, ambient temperature
24 conditions, warm water conditions. So -- but it's, you know,
25 it's -- these pipes have been there for years and you can't

1 just on a short-term really predict -- I mean, if something
2 goes wrong, you can see it right away. But if something
3 doesn't go wrong, you need to, you need to work with it, so.

4 Q So you're still doing this pilot testing, this
5 hydrogen peroxide --

6 A That's correct. Right.

7 Q And have you tested for the condition similar to what
8 you might find in hot water heaters?

9 A We're working on that.

10 Q But you still have nothing at this time?

11 A What do you mean by "have nothing"?

12 Q Well, I mean, you know, you don't have what's
13 happening, you know, in similar pipes or in the hot water
14 heater, you don't have any results?

15 A Well, the problem is the, the treatment system is
16 changing, and so you need to set up your test to, to simulate
17 what's going on in the treatment system. But, but we've been
18 working on tests for, well, since we, since last summer. So --

19 Q What do those tests show in relationship to the
20 stability of the hydrogen sulfide treatment?

21 A Well, so far we're not seeing any reversion
22 occurring, but, but we're trying to push the system. So we
23 want a -- you know, ideally the goal would be to find out what
24 causes these reactions to occur so that you can, you can figure
25 out a way to prevent them, and we haven't gotten to that point

1 yet.

2 Q Well, when do you expect to get to that point or to
3 get the results?

4 A We'll probably need a couple more months of running
5 tests, and hopefully we'll --

6 Q Is there any way it could be done as early as 30
7 days?

8 A Huh?

9 Q Could you do the test within 30 days or get some kind
10 of, you know, results within 30 days? You said a couple of
11 months. Can you shorten that at all?

12 A I guess it depends on, it depends on what, what
13 you're trying to produce. And so if -- so I guess what kind
14 of -- I'm not sure what kind of results you're looking for or
15 what you're, what you're meaning.

16 Q Dr. Kurien in his testimony talked about the
17 difference between sulfur and sulfate; basically said sulfur is
18 bad, it's ready to come right back out and start the corrosion.
19 Sulfate is safer, more stable and it takes a lot more energy.
20 Do you agree with that?

21 A To convert sulfate to sulfide versus converting
22 elemental -- or the way sulfate reacts with pipes, is that what
23 --

24 Q Yeah. Convert sulfate back to sulfide or sulfur back
25 to sulfide, sulfur is a much easier conversion process?

1 A I think it really varies. There's -- both of those
2 are mediated by bacteria. So it sort of -- it varies. I
3 don't, I don't think, I don't think -- I think you can find
4 evidence of both of those reaction pathways occurring, and I
5 don't, I don't necessarily think one is -- the rate of the
6 reaction depends on many other parameters, you know, than, than
7 just the sulfur and the, and the sulfate. So things like the
8 pH of the water, other, other, other parameters affect the
9 reactions that occur, whether there's oxygen or the presence or
10 absence of oxygen. So -- and the problem is it's, there's not
11 good methods to measure all of the intermediate species. So
12 it's -- so to really get to the bottom of that is not a trivial
13 matter. And whether that's, whether that's important in the
14 bigger picture or not, I'm not sure. I think the important
15 thing is to, is to make sure that the water is stable, and
16 whatever form the sulfur is in is that it's not reverting back
17 or reactive.

18 Q But you wouldn't agree that -- I think Dr. Kurien
19 actually quantified it, said something about it taking four
20 times the energy to convert sulfate back to sulfide as opposed
21 to converting sulfur back to sulfide?

22 A You're starting -- when your -- it depends on -- I
23 couldn't, I couldn't answer that off the top of my head. But
24 just, just qualitatively you're starting with a solid surface.
25 The bacteria would have to, I guess, colonize that solid

1 surface to then, to then accomplish that reaction. So I
2 don't -- you know, there's a difference between the amount of
3 energy it takes and the rate of the reaction. They're not
4 really -- so there's -- the thermodynamics describes the energy
5 balance and kinetics describes the rate, and they're not --
6 just because it takes four times the amount of energy doesn't
7 mean one happens faster or slower than the other one. And the
8 reality is they, they all happen together. So it's not -- the
9 bacteria don't, are not -- are -- there's a community of
10 bacteria that exists in water, and so it's not that one
11 reaction is happening and the other one is not. The whole, the
12 whole soup is reacting in whatever way -- you know, bacteria
13 are opportunistic. They take advantage of the opportunity to
14 do, to accomplish whatever the reactions are.

15 So I think it would be almost impossible to
16 differentiate what's happening. You can measure the products,
17 but I'm not sure it would be that easy or maybe, or necessarily
18 a worthwhile effort at this point to, to say, to try to
19 identify which one is causing the reaction. But we are doing
20 some tests to try to get at that, but it's, it's not as simple
21 as it might sound.

22 Q Now can you tell me what happens to chlorine in a hot
23 water heater and how the sulfur reducing bacteria reacts in the
24 hot water heater?

25 A Okay. So chlorine is a, is considered to be an

1 oxidizing chemical and it's, it's an unstable chemical. So
2 chlorine decomposes over time and, and forms chloride, which is
3 nonreactive. And so that's why people have to add chlorine to
4 swimming pools and things like that.

5 The chlorine, the function of the chlorine though is
6 to prevent bacteria from growing in the distribution system.
7 As the chlorine decomposes, then its ability to prevent
8 bacterial growth also decreases, and so bacteria can start to
9 grow.

In a hot water tank, if the temperature is not high
enough, you have warm water conditions, bacteria grow faster
12 under warmer water conditions. And so as the chlorine
13 dissipates, there's no, there's no mechanism to prevent
14 bacteria from growing, and the bacteria will use available
15 materials there for, for metabolism. So if there's
16 sulfur-reducing bacteria, then sulfur, sulfur-reducing bacteria
17 can mediate the reaction to convert sulfate to hydrogen
18 sulfide, and that can happen in a hot water tank more than
19 other places because the water sits a lot longer in a hot water
20 tank, so it doesn't turn over very quickly, the temperatures
21 are elevated and the chlorine dissipates. So all, all the
22 conditions are favoring the growth of the bacteria.

23 Q Is lack of use such as a back bathroom the same
24 result, rate of turnover causes that sulfur-reducing bacteria
25 to --

1 A The longer the water is stagnant and the higher the
2 temperature, if there are bacteria present in the system,
3 then -- so if you -- so -- then the absence of chlorine will
4 certainly promote the growth of these, of these, promote these
5 reactions.

6 Q Are you familiar with the EPA's Disinfection
7 Byproduct Rule or proposed rule, let me -- I'm sorry. Strike
8 that.

9 A The DD -- yes.

10 Q And what would the draft rule require the utility to
11 test?

12 A In that case they're testing disinfection byproducts.
13 Is that what you're asking?

14 Q Yes.

15 A So those, the byproducts that are currently regulated
16 are called trihalomethanes or haloacetic acids, and those are
17 formed from chlorine reacting with organic compounds in water.

18 Q And where and what would be the frequency of the
19 test?

20 A I'm not, I'm not 100 percent familiar with, with
21 that. I think that's actually a -- I'm not, I'm not sure.

22 Q Going back to those 30 bacteriological sites, and
23 those -- I think you said some or most of those could be used
24 for the hydrogen sulfide; is that correct?

25 A Like I said, I don't know what the sample taps are

1 like, but if you can get a sample, then you can figure out a
2 way to sample test for whatever you want, whatever is needed.

3 Q In response to staff's first set of interrogatories,
4 on Page 2, Paragraph 2, of the attachment to Mr. Deet's
5 (phonetic) letter dated June 24th, 2004, he states that, "In
6 all of the testing data collected to date by many entities,
7 hydrogen sulfide levels have never exceeded 0.1 milligrams per
8 liter at any customer meters." Are you familiar with that
9 history of Aloha?

10 A Right. I've reviewed a lot of those studies.

11 Q And how do they know that at the meter it is showing
12 this level? What kind of tests have been done?

13 A I wasn't -- I don't know, in fact, I don't think it
14 even said in the reports what, how they monitored that. But
15 like I said before, collecting the sample in a, in a, in a
16 systematic way can, can help. But I don't know what method
17 they used or -- but I do know that samples were -- the
18 distribution system was sampled, and I don't -- but I wasn't
19 part of all that.

20 Q Now Aloha is going to start using a chloramine
21 process to make its water compatible with the county's water;
22 is that correct?

23 A That's correct.

24 Q Has that been done yet?

25 A That's in the process, yeah. So part, parts of it

1 have been done and parts of it are being done.

2 Q And is the chloramine process the adding of ammonia
3 and something to do with the pH or what is that?

4 A Well, as part of the conversion, Aloha has been using
5 chlorine gas, which is an acid. And as part of the -- and
6 which is also kind of a safety risk at some of these well
7 sites. As part of the conversion, they're switching to liquid
8 chlorine, which is also known as sodium hypochlorite, which is
9 a base. So it has a high pH. When you add the liquid chlorine
10 to the water, the pH of the water goes up. The ammonia that's
11 added is ammonium hydroxide, which is also a base. And so that
12 also causes a slight increase in pH, both of which, I think,
13 are beneficial from the perspective of, of control of sulfide
14 and also odors because the higher pH has less likelihood to
15 have odors associated with it.

16 Q Going back to sulfur and sulfate, you reminded me,
17 does sulfate smell? Does it have an odor?

18 A Sulfate, no.

19 Q What about elemental sulfur?

20 A No.

21 Q Elemental sulfur doesn't have an odor either?

22 A There's only one form of the -- well, there's only
23 one form of inorganic sulfur that has an odor, and that's the,
24 it's the H₂S or the nonionized form. And that odor is more, it
25 has a higher potential to have an odor at a lower pH because

1 that's where more of the sulfur is in that, is in that
2 nonionized form. As the pH increases, the fraction that's,
3 that has odor potential decreases, I guess you could say.

4 Q And this hydrogen peroxide treatment that you're
5 recommending, that's just an additional treatment in addition
6 to the chlorine or --

7 A Exactly. That's, that provides an additional
8 oxidation step so that way there's more oxidation capacity to,
9 to stabilize the water.

10 MR. JAEGER: I have no further questions.

11 CHAIRMAN BAEZ: Commissioners, questions? Redirect?

12 MR. DETERDING: Thank you, Mr. Chairman.

13 REDIRECT EXAMINATION

14 BY MR. DETERDING:

15 Q Dr. Levine, do you recall Senator Fasano raising an
16 issue concerning a conflict in the newspaper and with the
17 administration of USF?

18 MR. BECK: Objection. This is beyond any cross-exam
19 that I recall.

20 MR. DETERDING: No. It is, it is directly related to
21 cross-examination by Mr. Beck concerning Mr. Watford's letter,
22 and it's raising an issue of a conflict. And I want to find
23 out from this witness what she knows about why Mr. Watford
24 addressed that issue.

25 CHAIRMAN BAEZ: Ask your question again.

1 BY MR. DETERDING:

2 Q Are you familiar with Senator Fasano having raised
3 the issue of conflict in the media and with the University of
4 South Florida administration?

5 CHAIRMAN BAEZ: I'll allow it.

6 THE WITNESS: I was told about that by Dr. Carnahan,
7 but I, I actually never saw the, whatever was in the media.
8 There might have been some voice messages on my phone from
9 reporters, but I don't -- but I actually never saw what was
10 said.

11 BY MR. DETERDING:

12 Q Okay. So you're not familiar with how the
13 administration dealt with that issue?

14 A I know the administration looked into it and
15 determined there was no conflict of interest.

16 Q Okay. Have you used your best judgment and expertise
17 in attempting to find a solution to the customers' concern with
18 Aloha's water?

19 A I've been trying to. The goal is to try to be able
20 to produce a water that is stable and doesn't cause water
21 quality problems in the, you know, at the point of use.

22 Q And have you done so when you were working with the
23 Office of Public Counsel?

24 A That's -- yeah. I've done, I've done that regardless
25 of, of what the -- where the, where the sources of funding are

1 coming.

2 Q Okay. Do you intend, intend to continue to do so?

3 A For sure. Yeah. I mean, to me this, this is a
4 problem that should be solved, and I think, you know, I think
5 it needs to -- so, yes.

6 Q Aren't Tampa Bay Water customers its member
7 governments?

8 A Tampa Bay Water is a wholesale provider of water, so,
9 yes, its customers would be its, would be the member
10 governments.

11 Q And only its member governments?

12 A As far as I know. I don't think they, I don't think
13 they provide direct service to any citizens.

14 Q I believe you indicated that you thought that
15 monitoring should be undertaken where you can use that
16 information for control and adjustment of the treatment
17 processes; is that --

18 A That's correct. To me, if you're monitoring, there
19 has to be some reason to monitor. And like I said before, if
20 you're -- you know, the first line of defense is you want to
21 make sure the water is safe. And hydrogen sulfide doesn't have
22 any real direct health effects. And so the point of monitoring
23 it from my perspective would be to try to make sure that the
24 treatment is working effectively, and then to have the ability
25 to respond if it isn't. So if you, if you find an elevated

1 level, you can respond directly if you monitor where you're
2 treating it.

3 Q So if you monitor or test for hydrogen sulfide at
4 some extremity of the system farthest away from the treatment
5 plant, how does that assist you in, in adjusting your process,
6 your treatment process?

7 A The problem, the problem with, not necessarily only
8 with Aloha Utilities, with all utilities, is that the water at
9 any one point in the system reflects inputs from many sources.
10 And so if you test at some random point, there's no way of
11 knowing exactly the genesis of that water, which wells it was
12 originated from. And so, therefore, a reading at that point is
13 really just a snapshot in time at that location, but it's not
14 possible to then use that information to make a change because
15 it's hard to know where that water came from.

16 Q Okay. So then the, the monitoring at the point of
17 entry into the distribution system right at the treatment
18 facility is useful in that sort of process control.

19 A Well, for sure, yeah. And then also just from a
20 sampling and accuracy point of view it's a controlled
21 environment, so it's simpler to get better results than being
22 out in some, some remote part of the system. But more
23 importantly, it's giving you useful data that you can then use
24 to make sure the process is working or to improve it, if it's
25 not.

1 MR. DETERDING: That's all I have. Thank you. May
2 his witness be excused?

3 CHAIRMAN BAEZ: I have one --

4 MR. DETERDING: Or if you questions.

5 CHAIRMAN BAEZ: I have some exhibits.

6 MR. DETERDING: Yes, sir, her resumé.

7 CHAIRMAN BAEZ: Commissioners, do you have any
8 questions second round? No.

9 MR. DETERDING: I want to move her resumé, Exhibit
10 20.

11 CHAIRMAN BAEZ: I have 20. Without objection, show
12 Exhibit 20 admitted.

13 (Exhibit 20 admitted into the record.)

14 MR. BECK: Mr. Chairman, I'd move Exhibits 21 and 22.

15 CHAIRMAN BAEZ: Exhibits 21 and 22 are admitted
16 without objection.

17 (Exhibits 21 and 22 admitted into the record.)

18 CHAIRMAN BAEZ: Very well. Dr. Levine, you're
19 excused. Thank you very much.

20 THE WITNESS: Okay. Thank you.

21 CHAIRMAN BAEZ: Commissioners, let's take five
22 minutes and we'll bring Dr. Kurien back.

23 MR. JAEGER: Chairman Baez, excuse me, I hate to do
24 this. It won't take long to finish Kurien and that would be
25 fine. But the parties had said we could take Mr. John Sowerby

1 out of turn also. He's here from DEP and has been here since
2 1:30.

3 CHAIRMAN BAEZ: If there's no objection from the
4 parties, we can take Dr. Sowerby as well. Dr. Kurien -- all
5 right. We'll break for five minutes and let Dr., Mr. Sowerby
6 get to the stand.

7 (Recess taken.)

8 (Testimony continues in sequence with Volume 3.)

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1 STATE OF FLORIDA)
2 COUNTY OF LEON)

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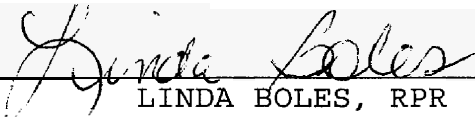
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I, LINDA BOLES, RPR, Official Commission Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorneys or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 15th DAY OF MARCH, 2005.


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