MEMORANDUM

September 24, 1997

TO: DIVISION OF RECORDS AND REPORTING

FROM: DIVISION OF LEGAL SERVICES (JAEGER)

RE: DOCKET NO. 960545-WS - Investigation of utility rates of Aloha Utilities, Inc. in Pasco County

Please file the attached letters dated August 21st, August 29th and September 11, in the above referenced docket.

RRJ/dp

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Attachment

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DOCUMENT NUMBER-DATE 0.9652 SEP 235 FPSC-RECORDS/REPORTING 0133307033

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## Department of Environmental Protection

Lawton Chiles Governor

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Southwest District 3804 Coconut Palm Drive Tampa, Florida 33619

Virginia B. Wetherell Secretary

August 29, 1997

Mr. Jim Goldberg Water Committee Chairman Wyndtree Master Association 1251 Trafalgar Drive New Port Richey, FL 34655

Re: Letter of July 28, 1997 to The Honorable Virginia B. Wetherell

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Dear Mr. Goldberg:

- \* - \* \*

I have been asked by Secretary Wetherell to respond to your recent letter.

We are continuing to investigate the black water issue with the intention to bring it to resolution. Our investigation has included both water reactions in the public water supply system and the private plumbing systems including home treatment devices.

Specifically, the well water is essentially copper free, lead free and passes through non-metallic (PVC) water mains, thus there is copper and lead free water being served to the customers. The water quality standards for copper and lead are 1.0 and 0.015 mg/l respectively. Only the lead standard is health related.

Also, the <u>Manual of Small Public Water Supply Systems</u>, EPA 570/9-91-003 has a section on Household Water Treatment. It states, "... softening may add sodium to the drinking water. Softening only the hot water, leaving the cold drinking water untreated, will avoid this problem. Softening may also make the water more corrosive, and possibly increase the levels of metals like lead and copper in the water. Occasional "flushing" of water at the tap will help solve the second problem."

The October 29, 1996 informational sampling referred to in our letter of July 10, 1997 is consistent with the above EPA statement. The "cold" untreated water sample collected at 7633 Albocor Drive showed a copper content of 0.418 milligrams per liter (mg/l). The "cold" homeowner treated (softener) water sample collected at 1251 Trafalgar Drive was 8.810 mg/l.

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Mr. Jim Goldberg Letter of July 28, 1997 Page Two

Our letter of July 10, 1997 referred to these samples and the associated two "hot" water samples exceeding the water quality standard of 1.0 mg/l for copper. By regulation this standard <u>only</u> applies to the finished water provided to the distribution system. As stated earlier the finished water is essentially copper and lead free and thus fully meets the standard.

As part of our investigation we are reviewing the article "Water Discoloration, Cause and Fix" in detail. This week we are conferring with professionals from two major counties, our headquarters and our local district office. All have extensive experience with public water supplies. The county officials have addressed copper corrosion problems for their entire service areas and the others have implemented the lead and copper rule statewide.

We are also participating on a statewide panel which is addressing copper corrosion on a statewide basis. We are there to contribute from our experience and to learn from the experience of others.

We will follow your recommendation for unannounced visits as practical. Scheduling visits to witness flushing and getting access to secured water utility facilities needs some degree of coordination.

For further clarification or voicing of concerns please feel free to contact WIC. Dunn at the above listed address or by phone at 813/744-6100, ext. 314.

Lubard

Richard D. Garrity, Ph.D. Director of District Management Southwest District

RDG/wdr

cc: Virginia B. Wetherell

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August 21, 1997

#### VIA HAND DELIVERY

Mr. John M. Starling Division of Water and Wastewater Florida Public Service Commission 2540 Shumard Oak Boulevard Tallahassee, FL 32399-0850

Re: Aloha Utilities, Inc. Docket No. 960545-WS; Investigation of Rates of Aloha Utilities, Inc. in Pasco County Our File No. 26038.17

Dear John:

I have been asked to put into writing, information that Mr. Watford and Mr. Porter previously relayed to you in response to one portion of your July 29th letter. Your letter indicates a desire to have some information concerning the construction of one separate water treatment facility to service the Wyndtree area. As Mr. Watford indicated to you, it would be impossible for the Utility to calculate separate rates and charges for any such treatment facility within the short period outlined in your letter. I believe the inability to meet this deadline was previously conveyed to you, but I wanted to make sure that it was in writing.

In addition, in his letter of today's date speaking to the remainder of your July 29th letter, I understand that Mr. Porter specifically outlines concerns which have also previously been noted which make the construction of one such treatment plant inherently ineffective from an engineering standpoint to resolve any water quality concerns.

Finally, it is my understanding that the Commission Staff will present its recommendation on the issues raised in this docket in approximately one week. Since the Utility is unable to provide you with the detailed information on this issue on short notice; because the Commission will make at least a proposed final decision Mr. John M. Starling August 21, 1997 Page 2

in this case within the coming weeks; and because of the engineering problems of even conducting any detailed analysis on this issue, we will forego any further work in that regard until such time as the Commission's further directive in this case are made apparent through the PAA or if that is protested through final order.

Should you have any further questions in this regard, please let me know.

Sincerely,

-SUNDSTROM & BENTLEY, LLP ROSE. F. Marshall Deterding For The Firm

FMD/lts

cc: Ralph Jaeger, Esquire Mr. Charles H. Hill Ms. Blanca Bayo

### David W. Porter, P.E., C.O. Water/Wastewater System Consultant

September 11, 1997

Florida Public Service Commission 2540 Shumard Oak Boulevard Tallahassee, Florida 32399-0873 Attn: John M. Starling

Re: Aloha Utilities, Inc. Seven Springs Water System FPSC Docket Number 960545-WS

Regulatory Assistance, Troubleshooting, Permitting, Contract **Operation**, Rehabilitation and System Design



Dear John,

Enclosed please find a copy of a letter I prepared in response to Doug Bramlett's letter in which he presented certain opinions regarding issues of importance to the above referenced Docket.

It is my opinion that Doug's opinions are totally without merit and that there is no scientific basis for his statements. My letter addresses these major items:

- 1. The concentration of hydrogen sulfide found in Aloha's source water is not abnormally high as compared to other waters found in the surrounding area. In fact, Aloha's source water contains less hydrogen sulfide than the County's according to the available data which is attached.
- 2. The oxidation of hydrogen sulfide, utilizing chlorine as the oxidant, does not create appreciable quantities of elemental sulfur...sulfate is produced.
- 3. Partially aerating hydrogen sulfide bearing waters allows the remaining hydrogen sulfide to be oxidized with oxygen as the electron acceptor which creates elemental sulfur.
- 4. Sulfur reducing bacteria require a source of electrons to facilitate the sulfate to sulfide reduction reaction.
- 5. The concentration of sulfate in Aloha's finished water is approximately 10 mg/L. Pasco County's reported sulfate concentration for the finished water produced at its Little Road Water Treatment Plant is 24.49 mg/L.
- 6. In accordance with their corrosion control plan, Aloha recently completed a first draw customer tap sampling event. This event was the first completed after installation of Aloha's corrosion inhibitor system. The 90<sup>th</sup> percentile copper concentration observed was 1.55 mg/L. Pasco County also recently completed a similar sampling event. It was also their first such event after the installation of their pH control system. Pasco County's 90<sup>th</sup> percentile copper concentration observed was 1.99 mg/L. Therefore, Aloha's corrosion control program is more effective than the Pasco County's in reducing the concentration of copper found in the water of customer's homes, which is the goal of the corrosion control programs.

As you know, Aloha Utilities, Inc. is Pasco County's largest competitor. I can only speculate as to the motives that led Mr. Bramlett to offer his opinions which are clearly unsupported by the facts and have no scientific basis.

PCHD// Starling\_Bramlett//proj/via hand

Mr. John Starling September 11, 1997 Page 2

John, I know that I have not told you anything new here. The facts haven't changed. However, I had no choice but to respond to yet another attempt by someone to offer incorrect opinions in this matter that could become part of the record.

If you have any questions, please call me.

Sincerely, En RE, Lo David W. Porter, P.E., C.O.

cc: Mr. Steve Watford, Pres./AUI Mr. Marty Deterding, Esq./RS&B Mr. John Jenkins, Esq./RS&B

David W. Porter, P.E., C.O. Water/Wastewater System Consultant

# David W. Porter, P.E., C.O. Water/Wastewater System Consultant

September 11, 1997

Pasco County Utilities Services Branch Public Works/Utilities Building, S-205 New Port Richey, FL 34654 Attn: Mr. Douglas S. Bramlett, Assistant County Administrator

Re: Aloha Utilities, Inc./Seven Springs Water System

Dear Mr. Bramlett:

Last Friday I received a copy of a letter that you wrote to Representative Mike Fasano in which you gave your opinion regarding the cause of "black water" problems that are being experienced by a small number of Aloha's customers located in an isolated section of Aloha's south western service area. Because you expressed opinions concerning Aloha's water system and provided a comparison between Aloha's corrosion control program and that of Pasco County, I believe your letter requires a response. There has been considerable debate and on-going litigation concerning this issue to date. To the extent that you have chosen to express your opinion on these volatile issues I must, on behalf of my client Aloha Utilities, Inc. point out that your letter is wrought with inaccuracies. We therefore request that you immediately issue a retraction, or at the very least a statement that your opinions were in error.

I must start out by telling you that when I read your letter I was astounded. Many of your statements contradicted not only my understanding of water process engineering and water chemistry, but also the specific findings of the numerous treatises and articles which I have researched on this subject over the last several years. I have prepared this letter in hopes that you can clarify your comments to show me the basis, if any, for the specific points your raised which I otherwise believe to be without foundation.

First of all, you state that the source of black water is the "high concentration of naturally occurring hydrogen sulfide (H<sub>2</sub>S) in the source water." The source water in question does not contain "high" concentrations of hydrogen sulfide. Since we, like all water utilities (including Pasco County) are not required to submit hydrogen sulfide monitoring data for our source water to FDEP. I would like to know how you concluded that Aloha's source water contains "high" levels of hydrogen sulfide. In fact, the information we have concerning sulfate concentrations in Pasco County's finished water, shown later in this letter, leads us to believe that the County's source water may be higher in hydrogen sulfide then that of Aloha.

Aloha provides proper, and generally accepted, treatment for the control of hydrogen sulfide at its well sites. Chlorine oxidation of hydrogen sulfide is provided at each well site. This method is very successful as the water entering the distribution system does not contain any measurable quantity of hydrogen sulfide. All hydrogen sulfide is oxidized to sulfate. The chemical equation related to this reaction is well know and well understood. This process has been utilized at countless numbers of water facilities for controlling hydrogen sulfide for decades. The equation follows:

$$H_2S + 4Cl_2 + 4H_2O = H_2SO_4 + 8HCl$$

Please note that no elemental sulfur is produced in this reaction...only the sulfate form of sulfur remains.

Regulatory Assistance, Troubleshooting, Permitting, Contract Operation, Rehabilitation and System Desian

sRoad • Suite 226 • Orange Park, FL 32073 • Phone: 904-269-6773 • Fax: 904-269-3667 • Pager: 904-645-2048 • E-Mail: porterpe@southeast.net

You state that in your system, you utilize air stripping to remove a portion of the hydrogen sulfide. Air stripping at the pH normally found in raw waters is not very efficient in removing hydrogen sulfide. A large portion of the sulfide is not in the gaseous state at pH 7 or above and can not, therefore, be removed by air stripping. In fact only 64% of the total hydrogen sulfide is in the gaseous state at this pH. Therefore, even if your air stripper was 100% efficient in removing the hydrogen sulfide that is in the gaseous state (which it is not), over 35% of the hydrogen sulfide would not be removed and would pass though the air stripping unit. Your water would still contain a substantial portion of the of hydrogen sulfide originally present. What you may not be aware of is the fact that air stripping adds substantial quantities of oxygen to the water which causes the water to become very corrosive. In addition, the elevated oxygen levels can cause the oxidation of the remaining hydrogen sulfide to elemental sulfur as shown in the following reaction:

$$2 H_2 S + O_2 = 2 H_2 O + 2 S_{(S)}$$

Therefore, it is more likely that facilities utilizing simple air stripping will produce elemental sulfur than will facilities utilizing chemical oxidation. The main problems associated with converting hydrogen sulfide to elemental sulfur are related to finished water turbidity increases and the negative effects that increased water turbidity produce (like lower disinfection efficiency, increased chance for bacterial contamination and growths in the distribution system, etc.).

One of the statements that you made is plainly contrary to all literature on the subject of black water development of which I am aware. Did you really mean to say that "the addition of chlorine disinfection produces elemental sulfur which, combined with the presence of the orthopolyphosphate and the addition of heat in the water heaters causes chemical reduction and results in the development of "black water" (copper sulfate) conditions." There are a number of inaccuracies in this statement. First, chemical oxidation of hydrogen sulfide with chlorine does not produce any appreciable quantities of elemental sulfur as shown in the chemical equation presented on page one of this letter. Next, it is not possible to combine sulfur and orthopolyphospate under any conditions to get copper sulfate... a source of copper is required. Please see the attached letter from the manufacturer of the orthopolyphosphate inhibitor Aloha utilizes confirming this fact.

After Aloha's water is treated at its well sites, there is no appreciable quantity of hydrogen sulfide present in the finished water...it has been converted to sulfate. The level of sulfate in Aloha's water meets all state and federal standards... as you may know the federal standard is presently 250 mg/L for sulfate. Aloha's water typically has a sulfate concentration of about 10 mg/L. Interestingly, Aloha's sulfate concentration is less than half of that produced at the County's treatment system. In fact your 1996 water quality testing data, as submitted to the FDEP and attached here, shows that your West Pasco Water System produces water with sulfates that range from a low of 12.44 mg/L to a high of 47.8 mg/L. Your main facility, the Little Road Water Treatment Plant, which is I believe the facility with the air stripping units, produces water with a sulfate concentration of 24.49 mg/L which is approximately two and one half times greater than that shown for the Aloha system.

After the water enters the homes of our customer's, in most cases, this sulfate causes no problems. However, in a small number of homes, the sulfate is converted back to sulfide in the homeowners hot water system by sulfate reducing bacteria as shown in the following equation:

 $SO_4^{2-}+8H^++6e^- \rightarrow H_2S+2H_2O+2OH^-$ 

The equation shows several important facts. First, free electrons are required for this reaction to proceed. The source of these elections has frequently been found to be from the placement of a sacrificial anode in the hot water tank. The anode's purpose is to extend the life of the tank by corroding before the tank. However, corrosion, which is the loss of electrons, provides the free electrons needed to allow the reduction reaction to proceed. Frequently, changing out the anode will correct this problem (as recommended in American Water Works Association publications). Secondly, the quantity of hydrogen sulfide produced in this reaction, assuming that there are a sufficient number of organisms and time so as not to rate limit the reaction, is directly proportional to the quantity of sulfate present in the water. Since the water produced by the County contains far greater quantities of sulfate than that produced by Aloha, one would speculate that your customer's should be experiencing a much higher incidence of the black water problem if your analysis of the source of the problem is correct. There are many other sources of electrons that could cause this problem. One of these is the improper grounding of home electrical systems to the water. This reaction is very complicated and a great number of papers and books have been written on the subject.

Are you also aware that FDEP has determined that the black substance you talk about is largely composed of copper sulfide not copper sulfate? There is quite a large difference between the two. We believe that since the black particles found in the water have been shown to be copper sulfide, the more likely mechanism for the development of the particles is that, in certain homes, sulfate is reduced to sulfide by sulfur reducing bacteria. This sulfide then combines with copper, leached from the customer's piping as part of the natural process of copper pipe corrosion. This combination of copper and sulfide yields copper sulfide.

The source of the copper needed to form copper sulfide comes from the customer's home copper water piping system. Copper pipe corrodes with time under all water conditions, however, recent research has shown that water containing naturally occurring sulfides accelerates this process. Copper water piping corrosion is a major problem in Florida, so much so that a panel of experts has been assembled (of which I am a member) by State of Florida Department of Community Affairs working with the University of Florida to address this problem and to make recommendations to building officials and others state-wide that may lessen this problem. Due to information gained from this group to date, Mr. Watford, President of Aloha Utilities, Inc. sent a letter to Mr. Gallagher recommending that he look into the problem and suggested that the County may want to develop an information sheet to be provided to builders that would instruct the builder's that they should carefully consider all the facts before they chose the material of construction to be used in water piping system. It has come to our attention that a number of Florida communities have considered banning the use of copper piping for residential water system use. In fact, Duval county banned its use two years ago. If copper piping were not used, it would be impossible for copper sulfide to form.

Your statement that the orthopolyphosphate in some way enhances the generation of the black water particles is totally false. In fact, the opposite is true. Orthopolyphosphate corrosion inhibitor blend addition to water systems is a recognized effective technology to control copper corrosion. The great majority of water systems in Florida with raw water characteristics similar to Aloha's are using this technology successfully. In fact nearby Pinellas and Hillsborough Counties are utilizing the same inhibitor chemical that Aloha uses. Pinellas County and Aloha share the same water source as Pasco County. Again I refer you to the inhibitor manufacturer's letter attached for additional information on this matter.

Since Aloha began adding the inhibitor, the concentration of copper found in first-draw tap samples has fallen dramatically to 1.55 mg/L at the 90<sup>th</sup> percentile level. Aloha expects to find that with their second round of post treatment sampling, scheduled for later this year, that Aloha's first-draw tap sample test results will yield a copper concentration below the 1.3 mg/L action level. Pasco County has chosen to utilize pH adjustment as your corrosion control method. According to my telephone discussion with Gerald Foster of the FDEP, the County's first round, post treatment, first-draw tap sample test results showed 1.99 mg/L copper at the 90<sup>th</sup> percentile. Therefore, your copper concentration value is 28% higher than Aloha's. Your chosen corrosion control method is not performing as well as that chosen by Aloha. Your statement indicating that your use of pH control rather than inhibitor addition was a factor that explained why your customer's do not experience this black water problem is contrary to your own reported test results. In fact, since the concentration of copper in the water is directly related to the formation of copper sulfide, the incidence of black water must logically be more pronounced in your system than Aloha's.

The fact that the County's water contains more sulfate and that the tap samples of water at your customer's homes contains more copper leads me to believe that there is a good chance that there are customer's in your system that are experiencing the black water problem and that either they have not spoken out or you are not reporting this fact in your letter. I would think that it would be a good idea for the County to survey its customers to determine if the problem is being experienced so that the appropriate action can be taken.

What sets Aloha's problem off from the other systems that are experiencing this problem across the State (and there are many such systems) is that Aloha is receiving a great deal of attention from Representative Fasano that the others are not. Aloha is making every effort to assist its customers that are experiencing this problem through its corrosion control program.

Doug, I hope that this letter provides you with the data needed for you to determine that your letter to Representative Fasano needs to be retracted or substantially clarified and corrected.

Thank you in advance for whatever information you can provide me to explain the discrepancies I have indicated. If you have any questions, please call me.

Sincerely, (-0,

David W. Porter, P.E., C.O. Water/Wastewater System Consultant

Cc: Steve Watford, President/AUI Marty Deterding, Esq./RS&B John Jenkins, Esq./RS&B Representative Mike Fasano Ralph Jaeger/FPSC John J. Gallagher/Pasco County Administrator Pasco County Board of County Commissioners



1570 LAKESIDE DRIVE - WALIKEGAN, IL 60085-8309 - (847) 689-1100 - FAX (847) 689-9289

David W. Porter, P.E., C.O. 1857 Wells Road, Suite 210 Orange Park, Fl. 32073 September 8, 1997

Dear Dave:

In reference to our discussion this morning regarding the issue of "black water", I feel that it is essential that everyone understand the chemistry we apply through the use of our *blended phosphate treatment programs*. We have always explained our technology to all interested parties hoping that a better understanding of this technology will continue to provide for the great success we have enjoyed throughout the country for over 40 years.

Our discussion centered on the use of phosphates (specifically orthophosphate) in Florida waters. As you are well aware, we treat a significant number of communities throughout the State of Florida. "Black water" problems have never been linked to the use of phosphates, rather it is often understood that the use of blended phosphates can alleviate these types of problems.

<u>Phosphate + hydrogen sulfide + heat</u> does not cause "black water" (copper sulfate). You as well as several other colleagues, have studied this "black water" phenomena for some period of time. In our previous discussions, I feel that you have a good solid understanding of our treatment approach and can appreciate the fact that our programs deal with lowering lead/copper levels as well as sequestering iron, manganese and hardness within supply waters. This has been demonstrated at Aloha Utilities, Pinellas County and Hillsborough County.

Our reputation throughout the country as well as within the water treatment community remains excellent. We pride ourselves on the method of application of these treatment programs and the benefits we provide to the people across the country. If anyone is interested in learning more about our treatment programs, please have them contact us directly.

As always, we thank you for your interest in maintaining high drinking water standards. Feel free to contact us if the need arises.

Sincerely:

William Je musch

William F. Mersch

cc: Mr. Keith Chance



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Date Sample(s) Received: [] Nitrate Only Inorganicy [] All 17 [] Partial droup I Unregulateds [] All 13 [] Partial [] Other I,GARY J. MET Signature:GARY J. MET	C Nitrite Only (Volatile Organics All 21 C Partial Group II Unregulatede All 25 Partial YERdo HEI Muy TORY DIRECTOR to be completed by State)	Group(s) Analyzed & Results  Asbestos Only  Setundaries  All 14 Partial  Provide radiochemical  REBY CERTIFY that all attack  Data:  Data:  Data:  Data Notified:	Drihalomethance / EA Pesticides/PCBe- All 30 Partial Redischemicales: KNL S4252; Otrly Composite* sample dates & locations for each quarter. hod analytical data are correct. 8/13/9/10
Date Sample(s) Received: [] Nitrate Only Inorganicy [] All 17 [] Partial droup I Unregulateds [] All 13 [] Partial [] Other I,GARY J. MET Signature:GARY J. MET	C Nitrite Only Volatile Organics All 21 Partial Group II Unregulated (Group II Unregulated) (All 23 Partial YER do HEI Mary TORY DIRECTOR to be completed by State) Market for labs performed	Group(s) Analyzed & Results  Asbestos Only  Setundaries  All 14 Partial  Group III Unregulateda  All 11 Partial  Provide radiochemical  REBY CERTIFY that all attack  Data: Data: Data: Data Notified: Date Notified: Date stacked water weaks	Tribalomethance  Pesticidas/PCBs  All 30 Partial  Radiochamicales: KNL S4252;  Stingle Gample  Qtrly Composite*  sample dates & locations for each quarter.  hod analytical data are correct.  S[13]4[0_1 ]  es must be provided. Failure to do so will  r failure to sample.
Date Sample(s) Received: Date Sample(s) Received: Nitrate Only Sagranics All 17 DPartial Group: I Unregulateds DAII 13 DPartial Cother I, GARY J. MET Signature: Signature: Title: LABORATION ( mple Collection Satisfactory: memple Requested for: recan actified to resample: PHRS Reviewing Official: All HRS lab #s and their HRS Ans	C Nitrite Only Volatile Organice All 21 Partial Group II Unregulated All 25 Partial YERdo HEI  YERdo HEI  TORY DIRECTOR to be completed by State)  to be completed by State)  to be completed by State)  to be completed by State)	Group(s) Analyzed & Results  Asbestos Only  Setundaries  All 14 Partial  Group III Unregulateda  All 11 Partial  Provide radiochemical  REBY CERTIFY that all attack  Data: Data: Data: Data Notified: Date Notified: Date stacked water weaks	Drihalomethance / EA Pesticides/PCBe- All 30 Partial Redischemicales: KNL S4252; Otrly Composite* sample dates & locations for each quarter. hod analytical data are correct. 8/13/9/e 
Date Sample(s) Received: [] Nitrate Only [] All 17 [] Partial Group I Unregulateds [] All 13 [] Partial [] Other I	C Nitrite Only Volatile Organice All 21 Partial Group II Unregulated All 25 Partial YERdo HEI  YERdo HEI  TORY DIRECTOR to be completed by State)  to be completed by State)  to be completed by State)  to be completed by State)	Group(s) Analyzed & Results  Asbestos Only  Secondaries  All 14 Partial  Group III Unregulateda  All 11 Partial  Provide radiochemical  REBY CERTIFY that all attack  Data: Data: Data Bample Analyzis Satisfactory Resson: Date Notified:	Tribalomethance  Pesticidas/PCBs  All 30 Partial  Radiochamicales: KNL S4252;  Stingle Gample  Qtrly Composite*  sample dates & locations for each quarter.  hod analytical data are correct.  S[13]4[0_1 ]  es must be provided. Failure to do so will  r failure to sample.
Date Sample(s) Received: [] Nitrate Only [] All 17 [] Partial Group I Unregulateds [] All 13 [] Partial [] Other I	C Nitrite Only Volatile Organice All 21 Partial Group II Unregulated All 25 Partial YERdo HEI  YERdo HEI  TORY DIRECTOR to be completed by State)  to be completed by State)  to be completed by State)  to be completed by State)	Group(s) Analyzed & Results  Asbestos Only  Secondaries  All 14 Partial  Group III Unregulateda  All 11 Partial  Provide radiochemical  REBY CERTIFY that all attack  Data: Data: Data Bample Analyzis Satisfactory Resson: Date Notified:	Tribalomethance  Pesticidas/PCBs  All 30 Partial  Radiochamicales: KNL S4252;  Stingle Gample  Qtrly Composite*  sample dates & locations for each quarter.  hod analytical data are correct.  S[13]4[0_1 ]  es must be provided. Failure to do so will  r failure to sample.

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BROWAH TESTING LABORATOR

4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334



	Date: 08	3/14/96	Report #: 7070241	Laboratory ID #: 86418	
1		PASCO CUUN ATIN:CANDY 8864 GUVIN NEW PORT R	NMENT DR.	Date Collected: 07/16/96 ; Time Collected: 10:35 SOURCE: LITTLE ROAD WIF DISTRIBUTION ENTRY POINT	

07/17/96 bate received at lab;

fime received at lab: 11:15

PWS 10: 6511361

Collected by : GLMHILIKEN

PLEASE NOTE: GRUSS ALPHA WAS SUBCONTRACTED TO KNL LABS, SEE ATTACHED. The MCE (Maximum Contaminant Level) or an established NO LE : "\*" guidetine has been exceeded for this contaminant.

This contaminant was not deheated at or above our stated "ND" dependion limit.

L074 Anti L005 Arse L010 Bari L015 Cada L015 Cada L020 Chro L020 Chro L030 Lead L035 Mere L035 Mere L035 Sele L035 Thai L045 Sele L035 Thai L045 Sele L035 Thai L040 Nita L040 N	alysis rformed	MCL (MG/L)	Sample . Number	Analysis Result	Method	MDL	
1005 Anse 1010 Bari 1075 Bery 1015 Cada 1020 Chro 1030 Lead 1035 Mere 1035 Mere 1035 Nere 1035 Sele 1035 Thai 1045 Sele 1052 Sodi 1052 Thai 1040 Nita 1040 Nita 1050 Cole 1057 Mang 1055 Zind 1055 Cole 2909 Load 1995 Dole 2909 Load 1995 Dole	Inorganic (	Analysis 62	2-550.310	(1) (PWS03	;0)		- under some fager gaber benn abern atte ficter atter
1005 Anse 1010 Bari 1075 Bery 1015 Cada 1020 Chro 1030 Lead 1035 Mere 1035 Mere 1035 Nere 1035 Sele 1035 Thai 1045 Sele 1052 Sodi 1052 Thai 1040 Nita 1040 Nita 1050 Cole 1057 Mang 1055 Zind 1055 Cole 2909 Load 1995 Dole 2909 Load 1995 Dole	timonv	0.006	7070241	ND :	3113B	0.002	07/24/96
1010 Bard 1075 Bery 1015 Cada 1020 Chro 1030 Lead 1035 Mere 1035 Mere 1035 Mere 1035 Sele 1035 Thai 1045 Sele 1035 Thai 1045 Sele 1052 Sodi 1052 Thai 1040 Nita 1040 Nita 1057 Con 1057 Con 1057 Silv 1055 Zind 1055 Col 2909 Load 1925 DH	•	0.05	7070241	NÐ	31.138	0.003	07/25/96
1015 Cadi 1020 Chro 1030 Lead 1035 Merc 1035 Merc 1035 Nich 1045 Sele 1045 Sele 1045 Sele 1045 Chro 1024 Cyat 1024 Cyat 1025 Fluc 1025 Fluc 1040 Nith 1041 Nith 1041 Nith 1052 Copt 1052 Alum 1052 Silv 1055 Zinc 1055 Cole 2909 Load 1925 pH		2	7070241	0.069	3113B	0.002	07/25/96
1015 Cadi 1020 Chro 1030 Lead 1035 Merc 1035 Merc 1035 Nich 1045 Sele 1045 Sele 1045 Sele 1045 Chro 1024 Cyat 1024 Cyat 1025 Fluc 1025 Fluc 1040 Nith 1041 Nith 1041 Nith 1052 Copt 1052 Alum 1052 Silv 1055 Zinc 1055 Cole 2909 Load 1925 pH	nvlljum	0,004	7070241	ND	31138	0.0001	07/26/96
1020 Chro 1030 Lead 1035 Merc 1035 Merc 1035 Nich 1045 Sele 1052 Sodi 1052 Sodi 1052 That 1024 Cyat 1025 Flue 1025 Flue 1040 Nith 1041 Nith Secondary 1052 Flue 1052 Flue 1052 Alum 1055 Silw 1055 Silw 1055 Silw 1055 Cole 2909 Load 1925 pH		0.005	2070241	NO	3113B	0.0004	07/25/96
1030 Lead 1035 Merci 1035 Merci 1045 Sele 1045 Sele 1052 Sodi 1085 Thai 1024 Cyar 1024 Cyar 1025 Flue 1025 Flue 1040 Nitri 1041 Nitri Secondary 1025 Flue 1027 Cont 1050 Silw 1055 Zinc 1050 Silw 1055 Zinc 1055 Cole 2909 Load 1220 Octor 1925 pH		0.1	7070241	0.0005	3113B	0.001	07/24/96
1035 Mere 1036 Nick 1045 Sele 1052 Sodi 1085 That 1024 Cyar 1024 Cyar 1025 Flue 1040 Nitr 1040 Nitr 1041 Nitr Secondary 1025 Flue 1025 Flue 1027 Cop 1050 Silw 1050 Silw 1055 Zine 1050 Cole 2909 Load 1220 Oder 1225 pH		0.015	7070241	0.10058	3113B	01,0004	07/22/96
1036 Nick 1045 Sele 1052 Sodi 1085 Thai 1024 Cyar 1025 Flue 1040 Nitr 1040 Nitr 1041 Nitr Secondary 1025 Flue 1022 Cop 1028 Tron 1052 Man 1050 Silw 1055 Zine 1055 Zine 1055 Cole 2909 Load 1220 Oder 1225 pH		0.002	7020241	ND OK	245.1	0.0002	07/19/96
1045 Sele 1052 Sodi 1085 Thai 1024 Cyaa 1025 Flue 1040 Nita 1040 Nita 1041 Nita Secondary 1025 Flue 1025 Flue 1022 Copy 1028 Tron 1052 Silv 1055 Silv 1055 Silv 1055 Cole 2909 Focu 1220 Octor 1925 pH	-	0.1	7070241	ыр	3113B	0.002	07/25/96
1052 Sodi 1085 Thai 1024 Cyar 1025 Flue 1040 Nitr 1041 Nitr Secondary 1025 Flue 1022 Cop 1028 Tro 1052 Man 1050 Sliv 1055 Zine 1055 Cole 2909 Load 1220 Oder 1925 pH		0.05	7070241	ND	3113B	0.001	07/26/96
1085 Thai 1024 Cyai 1025 Fluc 1040 Niti 1041 Niti Secondary 1025 Fluc 1025 Fluc 1022 Copj 1028 Tron 1052 Mang 1052 Mang 1055 Zinc 1055 Zinc 1055 Colc 2909 Local 1920 Octor 1925 pH		160	/070241	6.21	3111B	0.1	07/18/96
1024 Cyar 1025 Fluc 1040 Nita 1041 Nita 1041 Nita Secondary 1025 Fluc 1022 Cop 1022 Cop 1022 Cop 1022 Cop 1022 Cop 1025 Sinc 1095 Zinc 1095 Zinc 1095 Col 2909 Loca 1920 Octor 1925 pH		0.005	7070243	ND	200.9	0.001	07/26/96
1025 Flue 1040 Nita 1041 Nita 1041 Nita 1041 Nita 1025 Flue 1022 Copy 1028 Tron 1052 Many 1050 SLIM 1055 Zine 1055 Zine 1055 Cole 2909 Focu 1920 Oder 1925 pH		0.2	7070241	ND	4500cm	fo.015	07/17/96
1040 Nita 1041 Nita Secondary 1025 File 1002 Alua 1022 Copy 1028 Tron 1052 Mang 1055 Sine 1055 Sine 1055 Sine 1055 Cole 1905 Cole 2909 Focus 1925 pH		4	7070241	0.18	300.0	0.10	07/17/96
1041 Nitr Secondary 1025 File 1002 Alue 1022 Copy 1028 From 1052 Mang 1055 Sine 1055 Sine 1055 Sine 1017 Child 1905 Colle 2909 Focus 1920 Octor 1925 pH		10	7070241	0.24	300.0	0.34	07/17/96
Secondary 1025 File 1002 Alue 1022 Copy 1028 From 1032 Mang 1050 SLIM 1095 Zind 1095 Zind 1095 Cold 1905 Cold 2909 Focus 1920 Octor 1925 pH		10	7970241	ND	300.0	0.14	07/17/96
1002 Alum 1022 Copy 1028 From 1052 Many 1050 Silw 1095 Zind 1095 Zind 1095 Cole 1905 Cole 2909 Foat 1920 Octor 1925 pH	ury Inorgani	c Analysis	62~550.32	0 (PWS031)		na sa sa na magama	s on the contract of the second second second
1022 Copy 1028 1 ( or 1032 Many 1050 Silw 1095 Z ind 1095 Cold 1905 Cold 2909 Load 1920 Octor 1925 pH	uoride	2	7070243	0.18	300.0	0.10	07/17/96
1028 1/0 1032 Mang 1050 Silw 1095 Zind 1095 Zind 1017 Chic 1905 Cole 2909 Focu 1920 Octor 1925 pH	uncinum	0.2	7070241	0.006	3113B	0.003	07/22/96
1032 Mang 1055 Silw 1095 Zinc 1017 Chte 1905 Cole 2909 Loea 1920 Octor 1925 pH	phier.	)	7070241	ND	311.18	0.02	07/18/96
1050 SLM 1095 Zind 1017 Chic 1905 Dole 2909 Load 1920 Odea 1925 pH	<b>o</b> n '	0.3	70705.41	ND	31118	O., LO	07/18/96
1095 Zind 1017 Chite 1905 Dole 2909 Load 1920 Odea 1925 pH	เกิฐสกครอ	0.05	7070241	0.0038	31138	0.0001	07/23/96
1017 Chite 1905 Dole 2909 Loan 1920 Oder 1925 pH	J Versbort	NO-, 1 - V	7070241	<u>9-</u> 0003	31.138	00003	07/23/96
1905 (tol) 2909 Eloan 1920 (tol) 1925 (pH	nc	5	7070241	ND	31118	0.02	07/19/96
2909 Eoza 1920 Odor 1925 pH	itori de	250	7070241	13.55	300.0	0.29	07/17/96
1920 - <mark>O</mark> dea 1925 - pH	dor	15	7076241	5	21.20B	•	07/17/96
1925 pH	saming Agents	s 0,5	7070241	ND	55400	0.1	07/17/96
		3 Lon	2020241	J_	24 50B	4	07/17/96
	1	6.5 8.5	7070241	8.14	150. L		07/17/96
1031 0011	d fad e	250	7070241	24.42	300.0	3.35	07/17/96
1930, Ind.	тен	EPHONE 1-BOC	70,0004 L	501 FAX: (216) 4	25-10C 49-8585	1.0	01/23/96
• d		EC6 E18		ssA .rgn		*0:T	I 26-II-da

•'			
LAB FORMAT FOR REP	ORTING DRINKIN	WATER ANALYSES	FOR TY USE ONLY
PUBLIC WATER SYSTEM INF	ORMATION (to be complete	ed by system or lab	A DISSEMPLIE-NUMBER
System Name: PCUO		651-13644	AUG 22 1990 MPLIE NUMBER DATE PATERING PROMIPROLACIANTIME 12-40
Address 7536 67	ate st.	N.P.R. Depa	SOUTHATESTOPS THICT
		BY_	CHECK /
Type (check one ) Community			SPECIAL INSTRUCTIONS 1044862 - 999
Order for Analysis Placed By (if di		-	C.Y.O PRI/Sec/Al
SAMPLE INFORMATION (to be		1070	COMMENTS
Sample Date (MOCDDYY):	<u>. 20 96 Ber</u>		Pri/Sec/Alpha/no bac
Bample Location (he specific):		Construction of the local division of the lo	ti, dioxin, asbestos
Sampler Name and Phone: 1/9	Va Figne 2	139-3255 Title:	a to
Sempler's Signature:	the the		
Check Type(a): Distribution	C Recheck of C TEM Max I		eample of Lab Invelidated Sample ast Tap
Distribution	Entry Point 🔘 Rew	Composite of Multiple	Stee - Attach a format for each site
LABORATORY CERTIFICATIO	N INFORMATION (to be o	ompleted by lab) - ATTACH I	irs analyte sheet
Lab Name:BROWARD TES	TING LABORATORY	HRS #:	Expiration Date: _ <u>6/96</u>
Address 4416 NE 11th A	venue. Ft. Lauderdale. J	TL 33334 Phone #;	305 776 7238
Subcontracted Lab Name & HRS #			HEFT FOR SUBCONTRACTED LAB
ANALYEIS INFORMATION ( to)			70306589211
			•
Data Sample(a) Received:			ttached for compliance with 69-550, F.A.C.
I Mitrate Only	Nitrite Only	Anbestos Only	C Tribelomethemes
All 17 Partial	Volatile Organics	Secondaries	Penticides/PCBs [] All 30 [] Partial
Group I Unregulateds Q All 13 Q Partial	Group II Unregulateds	Group III Unregulateds (] All 11 (] Partial	Radiochemicals El Single Sample KNL
			Quriy Composite" SY252
	,		
LGARY J'ME	YER AD HER	EBY CERTIFY that all attach	ed analytical data are correct.
Signature:		~~	Illada
Title: LABORA	TORY DIRECTOR	Date:	4/25/9/0
COMPLIANCE INFORMATION	(to be completed by State)		
Sample Collection Satisfactory:		Sample Analysis Satisfactory:	
Resemple Requested for:			
Person Botified to recomple:	A_/	Date Notified:	
DEP/ERS Reviewing Official:			
<ul> <li>All HRS lab #s and their HRS As result in rejection of the analyses ar</li> </ul>	alyte Sheet for labs performi al possible enforcement agai	ng the attached water enalym ast the public water system fo	n must be provided. Failure to do so will r failure to essa pla. Effective January 1995
TL PW8795	PLORIDA PUB	LIC WATER SUPPLY	

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#### BROWARD TESTING LABORATOR, INC.



4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334

Date: 04/10/96Report #: 7030658Laboratory ID #: 86418Client: PASCO COUNTY UTILITIESDate Collected: 03/20/96ATTN:CANDY MULHERNTime Collected: 10:308864 GOVERNMENT DR.<br/>NEW PORT RICHEY, FL 34654-SOURCE: PCUD<br/>AUTUMN DAKS WELL<br/>DISTRIBUTION ENTRY POINTDate received at lab:03/21/96

PWS ID: 651-1361

Collected by : D.FLYNN

PLEASE NOTE: SODIUM WAS ANALYZED BY N.T.L. #0055. ALPHA WAS ANALYZED BY KNL AND RESULTS ARE ATTACHED.

NOTE: "\*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant. "ND" This contaminant was not detected at or above our state

D" This contaminant was not detected at or above our stated detection limit.

Fed Analysis Id # Performed	MCL (MG/L)	Sample Number	Analysis Result	Method	MDL	Anal Date'
Primary Inorganic	Analysis 6	2-550.310	(1) (PWS03	0)		
1074 Antimony	0.006	7030658	ND	31138	0.002	04/01/96
1005 Arsenic	0.05	7030658	ND 🗹	3113B	0.003	03/29/96
1010 Barium	2.0	7030658	0.003	31138	0.002	03/22/96
1075 Beryllium	0.004	7030658	ND	31138	0.0001	03/25/56
1015 Cadmium	0.005	7030658	ND	3113B	0.0004	03/22/96
1020 Chromium	0.1	7030658	ND	31138	0.001	03/25/96
1030 Lead	0.015	7030658	ND	3113B	0.0004	03/22/96
1035 Mercury	0.002	7030658	ND	245.1	0.0002	03/28/96
1036 Nickel	0.1	7030658	ND	3113B	0.002	03/27/96
1045 Selenium	0.05	7030658	ND	3113B	0.001	04/02/96
1052 Sodium	160	7030658	3.0	31118	0.1	04/05/96
1085 Thallium	0.002	7030658	ND	200.9	0.001	03/22/96
1024 Cyanide	0.2	7030658	ND	4500cnf	0.015	03/25/96
1025 Fluoride	4.Ó	7030658	ND	300.0	0.10	03/21/96
1040 Nitrate-N	10.0	7030658	ND	300.0	0.34	03/21/96
1041 Nitrite	1.0	7030658	ND	300.0	0.14	03/21/96
Secondary Inorgan	c Analysis	62-550.32	0 (PWS031)			
1025 Fluoride	2.0	7030658	ND	300.0	0.10	03/21/96
1002 Aluminum	0.2	7030658	0.006	3113B	0.003	04/03/96
1022 Copper	1.0	7030658	ND	31118	0.02	03/27/96
1028 Iron	0.3	7030658	ND	3111B	0.10	03/26/96
1032 Manganese	0.05	7030658	0.0012	3113B	0.0001	04/03/96
1050 Silver	0.1	7030658	ND	3113B (	0.0003	04/02/96
1095 Zinc	5.0	7030658	ND	31118	0.02	03/26/96
1017 Chloride	250	7030658	7.60	300.0	0.29	03/21/96
1905 Color	15	7030658	ND	21208	5.0	03/21/96
2909 Foaming Agent	s 0.5	7030658	ND	5128 (	0.1	03/21/96
1920 Odor	3 ton	7030658	1	2150B	1.0	03/21/96
1925 pH	6.5-8.5	7030658	7.61	150.1	0.01	03/21/96
1055 Sulfate	250	7030658	14.42		3.35	03/21/96
1930 TDS	500	7030658	186		10	03/22/96

TELEPHONE: 1 800-458-3330 / FAX (2)61 A40 8585 TO:II ZG-II-das

		56	SOR LABORATORY USE ONLY
	FOR REPORTING DRINKING	WATER ANALYSES	
	SYSTEM INFORMATION (to be completed	by system or lab)	AUC STANKLE NOMER
	PC-UD ID	* 651-1361 Den	1235
	536 STATE ST.	N.P.R.	TIME 12-35
Address:		BY	
Type (check one)	Community O Nontransient Noncommu	nity 🔲 Noncommunity	CHECK SPECIAL INSTRUCTIONS
Contact:	MARVIN Phone #:	34.3255	1044862 - 999
	Placed By (if different from above):		C.Y.O PRI/Sec/Al
Ordet for whicher a			
SAMPLE INFORM	ATION (to be completed by sampler)		
Sample Date (NM	DDYY: 3120196 Samp	ple Time: 1.40	COMMENTS Pri/Sec/Alpha/no bac
Sample Location (be	01	$\geq$	ti, dioxin, asbestos
Sampler Name and	The La	834-3255	
Sampler's Signatur		Title: Old	LATOR
		ACT. C. Rosa	nple of Lab Invalidated Sample
	Clearance I THM Max R	an Time I Plant	Tap
0	Distribution Entry Point GRaw	Composite of Multiple Si	tes - Attach a format for each site
	ERTIFICATION INFORMATION (to be a	mpleted by lab) - ATTACH HR	s analyte sheet
	IOWARD TESTING LABORATORY		
	16 NE 11th Avenue, Ft. Lauderdale, F		
Subcontracted Lab	Name & HRS #:	- ATTACH HRS ANALYTE SH	eet for subcontracted lab
		CALIFORNIA IN NOT THE PROPERTY.	7030655371
ANALTSIS INFOR	RMATION ( to be completed by lab)		
Date Sample(s) Rec	sived: G	Sroup(s) Analyzed & Results atto	sched for companye with 62-850, F.A.C.
I Nitrate	Only 🗋 Nitrita Only	Asbestos Only	🗋 Trihelomethanes
Inorganic All 17	Volatile Organice	Secondaries	Pesticides/PCBs
Group I U	nregulateds Group II Unregulateds	Group III Unregalateds	Rediochemicals
🗋 AU 13	C Partial All 23 C Partial	All 11 Partial	Single Sample     Qtriy Composite*
C Other		* Provide radiochemical sag	uple dates & locations for each quarter.
		EBY CERTIFY that all attached	
	CARY J. MEYER March	EBI CERTIFI that all attached	
ι			
I, Signature	Day J. M.		Ilashi
I, Signature Title:	LABORATORY DIRECTOR	Date:	#25/9le
Title:	LABORATORY DIRECTOR	Date:	#25/96
Title:			H2596
Title:	FORMATION (to be completed by State)	Date:	#25/91e
Title:	LABORATORY DIRECTOR		H25/96
Title: COMPLIANCE IN Semple Collection 8	LABORATORY DIRECTOR FORMATION (to be completed by State) Satisfactory:		H25/91e
Title: COMPLIANCE IN Sample Collection & Resample Requeste	LABORATORY DIRECTOR FORMATION (to be completed by State) Setisfactory d for Ad • 226	Semple Analysis Satisfactory: Reason:	H25/9Le
Title: COMPLIANCE IN Sample Collection S Resample Requests Parson notified to re DEP/HRS Roviewin 4 All HPS lab for an	LABORATORY DIRECTOR FORMATION (to be completed by State) Satisfactory: d for A d · 2 2 6 sample: y Official: d their HDG Analyse Chast for labs perform	Bample Analysis Satisfactory: Reason:S Date Notified: ing the attached water analyses	H2591e
Title: COMPLIANCE IN Sample Collection S Resample Requests Parson notified to re DEP/HIRS Reviewin 4 All HES lab for an	LABORATORY DIRECTOR FORMATION (to be completed by State) Setisfactory d for Ad • 226	Bample Analysis Satisfactory: Reason:S Date Notified: ing the attached water analyses	H2594 <u>50 Cill Grossfils</u> must be provided. Failure to do so will failure to sample. Effective January 1995
Title: COMPLIANCE IN Sample Collection S Resample Requeste Parson notified to re DEP/HRS Reviewin * All HRS lab #s an result in rejection of	LABORATORY DIRECTOR FORMATION (to be completed by State) Setisfactory: d for A d · 2 Z C seample: ag Official: ad their HRS Analyte Sheet for labs perform (the analyzes and possible enforcement against	Bample Analysis Satisfactory: Reason:S Date Notified: Ing the attached water analyses inst the public water system for	
Title: COMPLIANCE IN Sample Collection S Resample Requests Parson notified to re DEP/HRS Roviewin 4 All HPS lab for an	LABORATORY DIRECTOR FORMATION (to be completed by State) Setisfactory: d for A d · 2 Z C seample: ag Official: ad their HRS Analyte Sheet for labs perform (the analyzes and possible enforcement against	Bample Analysis Satisfactory: Reason:S Date Notified: ing the attached water analyses	
Title: COMPLIANCE IN Sample Collection S Resample Requeste Parson notified to re DEP/HIRS Reviewin * All HIRS lab #s an result in rejection of	LABORATORY DIRECTOR FORMATION (to be completed by State) Setisfactory: d for A d · 2 Z C seample: ag Official: ad their HRS Analyte Sheet for labs perform (the analyzes and possible enforcement against	Sample Analysis Satisfactory: Reason: Date Notified: ing the attached water snalyses inst the public water system for BLIC WATER SUPPLY	Effective January 1995
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Date: 04/18/96	Report 4:	7030655	Labonatory	7 ID #:	86418	
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			DISTRIBUT	ION ENTR	Y POINT	
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1074 Antimony	0.006	7030655	ND	31138	0.002	04/01/96
1005 Arsenic	0.05		ND	31138		
1010 Ranium	2 0	7070/55	0.004	71170		07/00/04

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1005	Arsenic	0.05	7030655	ND	31.1.3B	0.003	03/29/96
1010	Barium	2.0	7030655	0.024	3113B	0.002	03/22/96
1075	Beryllium	0.004	7030655	ND	3113B	0.0001	03/25/96
1015	Cadmium	0.005	7030655	ND	31138	0.0004	03/22/96
1020	Chromium	0.1	7030655	ND	31138	0.001	03/25/96
	Lead	0.015	7030655	ND	31.13B	0.0004	03/22/96
	Mercury	0.002	7030655	ND	245.1	0.0002	03/28/96
1036	Nickel	0.1	7030655	ND	3113B	0.002	03/27/96
1045		0.05	7030655	ND	3113B	0.001	04/02/96
	Sadium	160	7030655	25.l	3111B	0.1	04/05/96
	Thallium	0.002	7030655	ND	200.9	0.001	03/22/96
	Cyanide	0.2	7030655	ND	4500cn1	°0.015	03/25/96
	Fluoride	4.0	7030655	0.22	300.0	0.10	03/21/96
	Nitrate-N	1.0 . 0	7030655	1.01	300.0	0.34	03/21/96
1041	Nitrite	1.0	7030655	ND	300.0	0.14	03/21/96
Seco	ndary Inorganic	Analysis	62-550.320	(PWS031)	na ana amin' aon- na ingin' ang a	اير سوي المحد وليه ميوه محد المح السر. ولي ا	
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	Fluoride	2.0	7030655	0.22	300.0	0.10	03/21/96
	Aluminum	013	7030655	0.006	31138	0.003	04/03/96
	Copper	1.0	7030655	ND	3111B	0.02	03/27/96
	Iron	0.3	7030655	ΝΩ	3111B	0.10	03/26/96
	Manganese	0.05	7030655	0.0034	31138	0.0001	04/03/96
	Silver	0.1	7030655	ND	31138	0.0003	04/02/96
	Zinc	5.0	7030655	ND	31118	0.02	03/26/96
	Chloride	250	7030655	21,02	300.0	0.29	03/21/96
	Color	15	7030655	ND	2120B	5.0	03/21/96
2909	Foaming Agents	15 015					
1920	Foaming Agents Odor	-	7030655	ND	2120B	5.0	03/21/96
1920 1925	Foaming Agents Odor pH	0.5	7030655 7030655	ND ND	2120B 512B	5.0 0.1	03/21/96 03/21/96
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P.04

Sep-II-97 II:02 Civil Engr. Assoc. Inc. 813 903-0809



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### BROWARD TESTING LABORATORY, INC.

4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334



P.08

Sample Date: 3-22-93 Report #: 951-1612 Laboratory ID #:86137

Client: PASCO COUNTY UTILITIES 8864 GOVERNMENT DR. NEW PORT RICHEY, FL 34654

PWS ID NO: 651-1361

Date Received at Lab: 3-23-93

Analytical Series: Florida Safe Drinking Water Compliance, Secondary Chemical Analysis 17-550.320. (PWS031)

All values in mg/l unless otherwise noted.

			ANALYSIS	ANALYTICAL	DETEC.	ANALYSIS
ID	PARAMETER	SAMPLE#	RESULT	METHOD	LT.	DATE
1002	ALUMINUM	1617	ND	200.7	0.05	4-11-93
1017	CHLORIDE	1617	40.1	407A	1.0	3-27-93
1022	COPPER	1617	ND	220.1	0.10	3-25-93
1025	FLUORIDE	1617	0.109	340.2	0.05	3-23-93
1028	IRON	1617	ND	236.1	0.10	3-31-93
1032	MANGANESE	1617	ND	243,1	0.001	3-29-93
1050	SILVER	1617	ND	272.2	0.002	4-11-93
1055	SULFATE	1617	19.8	4260	5.0	3-31-93
1095	ZINC	1617	-01	289.1	0.10	4-1-93
1095	COLOR	1617	5	110.3	5.0	3-23-63
1920	ODOR (TON)	1617	1	140.1	1.0	3 23 73
1925	LAB PH (UNITS)	1617	7.74	150.1	0.01	3-23-93
1930	TDS	1617	252	160.1	20	4-8-93
2909	FOAMING AGENTS	1617	ND	5128	0.1	3-23-93

Meyer

Gary J. Meyer Lab Director, Broward Testing Laboratory

**'UNN** 0 4 1995

TELEPHONE: 1-800-458-3330

FAX: (216) 449-8585

 $\Box$ 



BROWARD TESTING LABORATORY, INC.

4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334



P.09

Sample Date: 3-22-93 Report #: 951-1612 Laboratory ID #:86137

Client: PASCO COUNTY UTILITIES 8864 GOVERNMENT DR. NEW PORT RICHEY, FL 34654

Location Code: PCUD WEST EMBASSY WELL POINT OF ENTRY Time Received at Lab: 9:45

PWS ID NO: 651-1361

Date Received at Lab: 3-23-93

Analytical Series: Florida Safe Drinking Water Compliance, Secondary Chemical Analysis 17-550.320. (PWS031)

All values in mg/l unless otherwise noted.

ID	PARAMETER	SAMPLE#	ANALYSIS RESULT	ANALYTICAL METHOD	DETEC.	ANALYSIS DATE
1002	ALUMINUM	1612	ND	200.7	0.05	4-11-93
1017	CHLORIDE	1612	32.8	407A	1.0	3-27-93
1022	COPPER	1612	ND	220.1	0.10	3-25-93
1025	FLUORIDE	1612	0.11	340.2	0.05	3-23-93
1028	IRON	1612	ND	236.1	0.10	3-31-93
1032	MANGANESE	1612	0.003	243.1	0.001	3-29-93
1050	SILVER	1612	ND	272.2	0.002	4-11-93
1055	SULFATE	1612	15.6	1 426C	5.0	3-31-93
1095	ZINC	1612	ND	289.1	0.10	4-1-93
1095	COLOR	1612	5 -	110.3	5.0	<b>3123</b> -93
1920	ODOR (TON)	1612	. 2	140.1	1.0	3-23-93
1925	LAB PH (UNITS)	1612	8,11	150.1	0.01	3-23-93
1930	TDS	1612	206	160.1	20	4-8-93
2909	FOAMING AGENTS	1612	ND	5128	0.1	3-23-93

Meyes Gary J. Meyer

Lab Director, Broward Testing Laboratory

JUN 0 4 1993

TELEPHONE: 1-800 8-3330

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# David W. Porter, P.E., C.O. Water/Wastewater System Consultant

**Regulatory Assistance**, Troubleshooting, Permitting, Contract **Operation**, Rehabilitation and System Design

September 11, 1997

Florida Public Service Commission 2540 Shumard Oak Boulevard Tallahassee, Florida 32399-0873 Attn: John M. Starling

Re: Aloha Utilities, Inc. Seven Springs Water System FPSC Docket Number 960545-WS

Dear John,

Per our telephone conversation yesterday I am hereby enclosing a copy of the flow records for the WWTP and reuse system for the month of January 1997 as you requested.

If you have any questions, please call me.

Sincerely,

76, 60

David W. Porter, P.E., C.O. Water/Wastewater System Consultant

Mr. Steve Watford, Pres./AUI cc:

PCHD// Starling\_Flows//proj/via US

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1045540	1.046						<u>├</u> ────┤				ERR	
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1057450	1.527	3640000	3640000	4110000	4110000	-470000			3210000	170000	ERR	
1029300	1.029	3640000		4110000					3120000	110000	ERR	
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1088780	0.989	4680000	1040000	5050000	940000	10000	<u> </u> +		3390000		ERR	
1044930	1.045	4580000		5050000			<u> </u>		3390000		ERR	
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ALOHA UTILITIES

PAGE 02

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## Department of Environmental Protection

Lawton Chiles Governor

Aditaice .

Southwest District 3804 Coconut Palm Drive Tampa, Florida 33619

Virginia B. Wetherell Secretary

August 29, 1997

Mr. Jim Goldberg Water Committee Chairman Wyndtree Master Association 1251 Trafalgar Drive New Port Richey, FL 34655

Re: Letter of July 28, 1997 to The Honorable Virginia B. Wetherell

Dear Mr. Goldberg:

I have been asked by Secretary Wetherell to respond to your recent letter.

We are continuing to investigate the black water issue with the intention to bring it to resolution. Our investigation has included both water reactions in the public water supply system and the private plumbing systems including home treatment devices.

Specifically, the well water is essentially copper free, lead free and passes through non-metallic (PVC) water mains, thus there is copper and lead free water being served to the customers. The water quality standards for copper and lead are 1.0 and 0.015 mg/l respectively. Only the lead standard is health related.

Also, the <u>Manual of Small Public Water Supply Systems</u>, EPA 570/9-91-003 has a section on Household Water Treatment. It states, "... softening may add sodium to the drinking water. Softening only the hot water, leaving the cold drinking water untreated, will avoid this problem. Softening may also make the water more corrosive, and possibly increase the levels of metals like lead and copper in the water. Occasional "flushing" of water at the tap will help solve the second problem."

The October 29, 1996 informational sampling referred to in our letter of July 10, 1997 is consistent with the above EPA statement. The "cold" untreated water sample collected at 7633 Albocor Drive showed a copper content of 0.418 milligrams per liter (mg/l). The "cold" homeowner treated (softener) water sample collected at 1251 Trafalgar Drive was 8.810 mg/l.

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled poper.

Mr. Jim Goldberg Letter of July 28, 1997 Page Two

Our letter of July 10, 1997 referred to these samples and the associated two "hot" water samples exceeding the water quality standard of 1.0 mg/l for copper. By regulation this standard <u>only</u> applies to the finished water provided to the distribution system. As stated earlier the finished water is essentially copper and lead free and thus fully meets the standard.

As part of our investigation we are reviewing the article "Water Discoloration, Cause and Fix" in detail. This week we are conferring with professionals from two major counties, our headquarters and our local district office. All have extensive experience with public water supplies. The county officials have addressed copper corrosion problems for their entire service areas and the others have implemented the lead and copper rule statewide.

We are also participating on a statewide panel which is addressing copper corrosion on a statewide basis. We are there to contribute from our experience and to learn from the experience of others.

We will follow your recommendation for unannounced visits as practical. Scheduling visits to witness flushing and getting access to secured water utility facilities needs some degree of coordination.

For further clarification or voicing of concerns please feel free to contact WIC. Dunn at the above listed address or by phone at 813/744-6100, ext. 314.

Very tryly yours

Richard D. Garrity, Ph.D. Director of District Management Southwest District

RDG/wdr

cc: Virginia B. Wetherell

LAW OFFICES

ROSE, SUNDSTROM & BENTLEY, LLP

2548 BLAIRSTONE PINES DRIVE

TALLAHASSEE. FLORIDA 32301

(850) 877-8555

CHRIS H BENTLEY, PA. F. MARSHALL DETERDING BRIAN L. DOSTER MARTIN S. FRIEDMAN, PA. JOHN R. JENKINS, PA. STEVEN T. MINDLIN, PA. ROBERT M. C. ROSE DAREN L. SHIPPY WILLIAM E. SUNDSTROM, PA. DIANE D. TREMOR, PA. JOHN L. WHARTON MAILING ADDRESS POST OFFICE BOX 1567 TALLAHASSEE, FLORIDA 32302-1567

TELECOPIER (850) 656-4029

August 21, 1997

#### VIA HAND DELIVERY

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Mr. John M. Starling Division of Water and Wastewater Florida Public Service Commission 2540 Shumard Oak Boulevard Tallahassee, FL 32399-0850

Re: Aloha Utilities, Inc. Docket No. 960545-WS; Investigation of Rates of Aloha Utilities, Inc. in Pasco County Our File No. 26038.17

Dear John:

I have been asked to put into writing, information that Mr. Watford and Mr. Porter previously relayed to you in response to one portion of your July 29th letter. Your letter indicates a desire to have some information concerning the construction of one separate water treatment facility to service the Wyndtree area. As Mr. Watford indicated to you, it would be impossible for the Utility to calculate separate rates and charges for any such treatment facility within the short period outlined in your letter. I believe the inability to meet this deadline was previously conveyed to you, but I wanted to make sure that it was in writing.

In addition, in his letter of today's date speaking to the remainder of your July 29th letter, I understand that Mr. Porter specifically outlines concerns which have also previously been noted which make the construction of one such treatment plant inherently ineffective from an engineering standpoint to resolve any water quality concerns.

Finally, it is my understanding that the Commission Staff will present its recommendation on the issues raised in this docket in approximately one week. Since the Utility is unable to provide you with the detailed information on this issue on short notice; because the Commission will make at least a proposed final decision Mr. John M. Starling August 21, 1997 Page 2

in this case within the coming weeks; and because of the engineering problems of even conducting any detailed analysis on this issue, we will forego any further work in that regard until such time as the Commission's further directive in this case are made apparent through the PAA or if that is protested through final order.

Should you have any further questions in this regard, please let me know.

Sincerely,

ROSE SUNDSTROM & BENTLEY, LLP F. Marshall Deterding For The Firm

FMD/lts

cc: Ralph Jaeger, Esquire Mr. Charles H. Hill Ms. Blanca Bayo

## David W. Porter, P.E., C.O.

### Water/Wastewater System Consultant

September 11, 1997

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Florida Public Service Commission 2540 Shumard Oak Boulevard Tallahassee, Florida 32399-0873 Attn: John M. Starling

Re: Aloha Utilities, Inc. Seven Springs Water System FPSC Docket Number 960545-WS

**Regulatory Assistance**, Troubleshooting, Permitting, Contract **Operation**, Rehabilitation and System Design

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Dear John,

Enclosed please find a copy of a letter I prepared in response to Doug Bramlett's letter in which he presented certain opinions regarding issues of importance to the above referenced Docket.

It is my opinion that Doug's opinions are totally without merit and that there is no scientific basis for his statements. My letter addresses these major items:

- 1. The concentration of hydrogen sulfide found in Aloha's source water is not abnormally high as compared to other waters found in the surrounding area. In fact, Aloha's source water contains less hydrogen sulfide than the County's according to the available data which is attached.
- 2. The oxidation of hydrogen sulfide, utilizing chlorine as the oxidant, does not create appreciable quantities of elemental sulfur...sulfate is produced.
- 3. Partially aerating hydrogen sulfide bearing waters allows the remaining hydrogen sulfide to be oxidized with oxygen as the electron acceptor which creates elemental sulfur.
- 4. Sulfur reducing bacteria require a source of electrons to facilitate the sulfate to sulfide reduction reaction.
- 5. The concentration of sulfate in Aloha's finished water is approximately 10 mg/L. Pasco County's reported sulfate concentration for the finished water produced at its Little Road Water Treatment Plant is 24.49 mg/L.
- 6. In accordance with their corrosion control plan, Aloha recently completed a first draw customer tap sampling event. This event was the first completed after installation of Aloha's corrosion inhibitor system. The 90<sup>th</sup> percentile copper concentration observed was 1.55 mg/L. Pasco County also recently completed a similar sampling event. It was also their first such event after the installation of their pH control system. Pasco County's 90<sup>th</sup> percentile copper concentration observed was 1.99 mg/L. Therefore, Aloha's corrosion control program is more effective than the Pasco County's in reducing the concentration of copper found in the water of customer's homes, which is the goal of the corrosion control programs.

As you know, Aloha Utilities, Inc. is Pasco County's largest competitor. I can only speculate as to the motives that led Mr. Bramlett to offer his opinions which are clearly unsupported by the facts and have no scientific basis.

PCHD// Starling\_Bramlett//proj/via hand

Mr. John Starling September 11, 1997 Page 2

John, I know that I have not told you anything new here. The facts haven't changed. However, I had no choice but to respond to yet another attempt by someone to offer incorrect opinions in this matter that could become part of the record.

If you have any questions, please call me.

Sincerely,

Zo RE, 1.0

cc: Mr. Steve Watford, Pres./AUI Mr. Marty Deterding, Esq./RS&B Mr. John Jenkins, Esq./RS&B

David W. Porter, P.E., C.O. Water/Wastewater System Consultant

# David W. Porter, P.E., C.O.

#### Water/Wastewater System Consultant

September 11, 1997

Pasco County Utilities Services Branch Public Works/Utilities Building, S-205 New Port Richey, FL 34654 Attn: Mr. Douglas S. Bramlett, Assistant County Administrator

Re: Aloha Utilities, Inc./Seven Springs Water System

Dear Mr. Bramlett:

Last Friday I received a copy of a letter that you wrote to Representative Mike Fasano in which you gave your opinion regarding the cause of "black water" problems that are being experienced by a small number of Aloha's customers located in an isolated section of Aloha's south western service area. Because you expressed opinions concerning Aloha's water system and provided a comparison between Aloha's corrosion control program and that of Pasco County, I believe your letter requires a response. There has been considerable debate and on-going litigation concerning this issue to date. To the extent that you have chosen to express your opinion on these volatile issues I must, on behalf of my client Aloha Utilities, Inc. point out that your letter is wrought with inaccuracies. We therefore request that you immediately issue a retraction, or at the very least a statement that your opinions were in error.

I must start out by telling you that when I read your letter I was astounded. Many of your statements contradicted not only my understanding of water process engineering and water chemistry, but also the specific findings of the numerous treatises and articles which I have researched on this subject over the last several years. I have prepared this letter in hopes that you can clarify your comments to show me the basis, if any, for the specific points your raised which I otherwise believe to be without foundation.

First of all, you state that the source of black water is the "high concentration of naturally occurring hydrogen sulfide (H<sub>2</sub>S) in the source water." The source water in question does not contain "high" concentrations of hydrogen sulfide. Since we, like all water utilities ( including Pasco County) are not required to submit hydrogen sulfide monitoring data for our source water to FDEP, I would like to know how you concluded that Aloha's source water contains "high" levels of hydrogen sulfide. In fact, the information we have concerning sulfate concentrations in Pasco County's finished water, shown later in this letter, leads us to believe that the County's source water may be higher in hydrogen sulfide then that of Aloha.

Aloha provides proper, and generally accepted, treatment for the control of hydrogen sulfide at its well sites. Chlorine oxidation of hydrogen sulfide is provided at each well site. This method is very successful as the water entering the distribution system does not contain any measurable quantity of hydrogen sulfide. All hydrogen sulfide is oxidized to sulfate. The chemical equation related to this reaction is well know and well understood. This process has been utilized at countless numbers of water facilities for controlling hydrogen sulfide for decades. The equation follows:

$$H_2S + 4Cl_2 + 4H_2O = H_2SO_4 + 8HCl$$

Please note that no elemental sulfur is produced in this reaction...only the sulfate form of sulfur remains.

Regulatory Assistance, Troubleshooting, Permitting, Contract Operation, Rehabilitation and System Design

ells Road • Suite 226 • Orange Park, FL. 32073 • Phone: 904-269-6773 • Fax: 904-269-3667 • Pager: 904-645-2048 • E-Mail: porterpe@southeast.net

You state that in your system, you utilize air stripping to remove a portion of the hydrogen sulfide. Air stripping at the pH normally found in raw waters is not very efficient in removing hydrogen sulfide. A large portion of the sulfide is not in the gaseous state at pH 7 or above and can not, therefore, be removed by air stripping. In fact only 64% of the total hydrogen sulfide is in the gaseous state at this pH. Therefore, even if your air stripper was 100% efficient in removing the hydrogen sulfide that is in the gaseous state (which it is not), over 35% of the hydrogen sulfide would not be removed and would pass though the air stripping unit. Your water would still contain a substantial portion of the of hydrogen sulfide originally present. What you may not be aware of is the fact that air stripping adds substantial quantities of oxygen to the water which causes the water to become very corrosive. In addition, the elevated oxygen levels can cause the oxidation of the remaining hydrogen sulfide to elemental sulfur as shown in the following reaction:

$$2 H_2 S + O_2 = 2 H_2 O + 2 S_{(S)}$$

Therefore, it is more likely that facilities utilizing simple air stripping will produce elemental sulfur than will facilities utilizing chemical oxidation. The main problems associated with converting hydrogen sulfide to elemental sulfur are related to finished water turbidity increases and the negative effects that increased water turbidity produce (like lower disinfection efficiency, increased chance for bacterial contamination and growths in the distribution system, etc.).

One of the statements that you made is plainly contrary to all literature on the subject of black water development of which I am aware. Did you really mean to say that "the addition of chlorine disinfection produces elemental sulfur which, combined with the presence of the orthopolyphosphate and the addition of heat in the water heaters causes chemical reduction and results in the development of "black water" (copper sulfate) conditions." There are a number of inaccuracies in this statement. First, chemical oxidation of hydrogen sulfide with chlorine does not produce any appreciable quantities of elemental sulfur as shown in the chemical equation presented on page one of this letter. Next, it is not possible to combine sulfur and orthopolyphospate under any conditions to get copper sulfate... a source of copper is required. Please see the attached letter from the manufacturer of the orthopolyphosphate inhibitor Aloha utilizes confirming this fact.

After Aloha's water is treated at its well sites, there is no appreciable quantity of hydrogen sulfide present in the finished water...it has been converted to sulfate. The level of sulfate in Aloha's water meets all state and federal standards...as you may know the federal standard is presently 250 mg/L for sulfate. Aloha's water typically has a sulfate concentration of about 10 mg/L. Interestingly, Aloha's sulfate concentration is less than half of that produced at the County's treatment system. In fact your 1996 water quality testing data, as submitted to the FDEP and attached here, shows that your West Pasco Water System produces water with sulfates that range from a low of 12.44 mg/L to a high of 47.8 mg/L. Your main facility, the Little Road Water Treatment Plant, which is I believe the facility with the air stripping units, produces water with a sulfate concentration of 24.49 mg/L which is approximately two and one half times greater than that shown for the Aloha system.

After the water enters the homes of our customer's, in most cases, this sulfate causes no problems. However, in a small number of homes, the sulfate is converted back to sulfide in the homeowners hot water system by sulfate reducing bacteria as shown in the following equation:

#### $SO_4^{2-}+8H^++6e^- \rightarrow H_2S+2H_2O+2OH^-$

The equation shows several important facts. First, free electrons are required for this reaction to proceed. The source of these elections has frequently been found to be from the placement of a sacrificial anode in the hot water tank. The anode's purpose is to extend the life of the tank by corroding before the tank. However, corrosion, which is the loss of electrons, provides the free electrons needed to allow the reduction reaction to proceed. Frequently, changing out the anode will correct this problem (as recommended in American Water Works Association publications). Secondly, the quantity of hydrogen sulfide produced in this reaction, assuming that there are a sufficient number of organisms and time so as not to rate limit the reaction, is directly proportional to the quantity of sulfate present in the water. Since the water produced by the County contains far greater quantities of sulfate than that produced by Aloha, one would speculate that your customer's should be experiencing a much higher incidence of the black water problem if your analysis of the source of the problem is correct. There are many other sources of electrons that could cause this problem. One of these is the improper grounding of home electrical systems to the water. This reaction is very complicated and a great number of papers and books have been written on the subject.

Are you also aware that FDEP has determined that the black substance you talk about is largely composed of copper sulfide not copper sulfate? There is quite a large difference between the two. We believe that since the black particles found in the water have been shown to be copper sulfide, the more likely mechanism for the development of the particles is that, in certain homes, sulfate is reduced to sulfide by sulfur reducing bacteria. This sulfide then combines with copper, leached from the customer's piping as part of the natural process of copper pipe corrosion. This combination of copper and sulfide yields copper sulfide.

The source of the copper needed to form copper sulfide comes from the customer's home copper water piping system. Copper pipe corrodes with time under all water conditions, however, recent research has shown that water containing naturally occurring sulfides accelerates this process. Copper water piping corrosion is a major problem in Florida, so much so that a panel of experts has been assembled (of which I am a member) by State of Florida Department of Community Affairs working with the University of Florida to address this problem and to make recommendations to building officials and others state-wide that may lessen this problem. Due to information gained from this group to date, Mr. Watford, President of Aloha Utilities, Inc. sent a letter to Mr. Gallagher recommending that he look into the problem and suggested that the County may want to develop an information sheet to be provided to builders that would instruct the builder's that they should carefully consider all the facts before they chose the material of construction to be used in water piping system. It has come to our attention that a number of Florida communities have considered banning the use of copper piping for residential water system use. In fact, Duval county banned its use two years ago. If copper piping were not used, it would be impossible for copper sulfide to form.

Your statement that the orthopolyphosphate in some way enhances the generation of the black water particles is totally false. In fact, the opposite is true. Orthopolyphosphate corrosion inhibitor blend addition to water systems is a recognized effective technology to control copper corrosion. The great majority of water systems in Florida with raw water characteristics similar to Aloha's are using this technology successfully. In fact nearby Pinellas and Hillsborough Counties are utilizing the same inhibitor chemical that Aloha uses. Pinellas County and Aloha share the same water source as Pasco County. Again I refer you to the inhibitor manufacturer's letter attached for additional information on this matter.

Since Aloha began adding the inhibitor, the concentration of copper found in first-draw tap samples has fallen dramatically to 1.55 mg/L at the 90<sup>th</sup> percentile level. Aloha expects to find that with their second round of post treatment sampling, scheduled for later this year, that Aloha's first-draw tap sample test results will yield a copper concentration below the 1.3 mg/L action level. Pasco County has chosen to utilize pH adjustment as your corrosion control method. According to my telephone discussion with Gerald Foster of the FDEP, the County's first round, post treatment, first-draw tap sample test results showed 1.99 mg/L copper at the 90<sup>th</sup> percentile. Therefore, your copper concentration value is 28% higher than Aloha's. Your chosen corrosion control method is not performing as well as that chosen by Aloha. Your statement indicating that your use of pH control rather than inhibitor addition was a factor that explained why your customer's do not experience this black water problem is contrary to your own reported test results. In fact, since the concentration of copper in the water is directly related to the formation of copper sulfide, the incidence of black water must logically be more pronounced in your system than Aloha's.

The fact that the County's water contains more sulfate and that the tap samples of water at your customer's homes contains more copper leads me to believe that there is a good chance that there are customer's in your system that are experiencing the black water problem and that either they have not spoken out or you are not reporting this fact in your letter. I would think that it would be a good idea for the County to survey its customers to determine if the problem is being experienced so that the appropriate action can be taken.

What sets Aloha's problem off from the other systems that are experiencing this problem across the State (and there are many such systems) is that Aloha is receiving a great deal of attention from Representative Fasano that the others are not. Aloha is making every effort to assist its customers that are experiencing this problem through its corrosion control program.

Doug, I hope that this letter provides you with the data needed for you to determine that your letter to Representative Fasano needs to be retracted or substantially clarified and corrected.

Thank you in advance for whatever information you can provide me to explain the discrepancies I have indicated. If you have any questions, please call me.

Sincerely, -0.

David W. Porter, P.E., C.O. Water/Wastewater System Consultant

Cc: Steve Watford, President/AUI Marty Deterding, Esq./RS&B John Jenkins, Esq./RS&B Representative Mike Fasano Ralph Jaeger/FPSC John J. Gallagher/Pasco County Administrator Pasco County Board of County Commissioners

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# **Stiles-Kem Division**

1570 LAKESIDE DRIVE • WAUKEGAN, IL 60085-8309 • (847) 689-1100 • FAX (847) 689-9289

David W. Porter, P.E., C.O. 1857 Wells Road, Suite 210 Orange Park, Fl. 32073 September 8, 1997

Dear Dave:

In reference to our discussion this morning regarding the issue of "black water", I feel that it is essential that everyone understand the chemistry we apply through the use of our *blended phosphate treatment programs*. We have always explained our technology to all interested parties hoping that a better understanding of this technology will continue to provide for the great success we have enjoyed throughout the country for over 40 years.

Our discussion centered on the use of phosphates (specifically orthophosphate) in Florida waters. As you are well aware, we treat a significant number of communities throughout the State of Florida. "Black water" problems have never been linked to the use of phosphates, rather it is often understood that the use of blended phosphates can alleviate these types of problems.

<u>Phosphate + hydrogen sulfide + beat</u> does not cause "black water" (copper sulfate). You as well as several other colleagues, have studied this "black water" phenomena for some period of time. In our previous discussions, I feel that you have a good solid understanding of our treatment approach and can appreciate the fact that our programs deal with lowering lead/copper levels as well as sequestering iron, manganese and hardness within supply waters. This has been demonstrated at Aloha Utilities, Pinellas County and Hillsborough County.

Our reputation throughout the country as well as within the water treatment community remains excellent. We pride ourselves on the method of application of these treatment programs and the benefits we provide to the people across the country. If anyone is interested in learning more about our treatment programs, please have them contact us directly.

As always, we thank you for your interest in maintaining high drinking water standards. Feel free to contact us if the need arises.

Sincerely:

William Je Mursch

William F. Mersch

cc: Mr. Keith Chance



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Client:	PASCO COUR ATTN:CANDY 8864 GOVEN NEW PORT R	NMENT DR.	Date Collected: 07/16/96 Time Collected: 10:35 SOURCE: LITTLE ROAD WIF DISTRIBUTION ENTRY POINT

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1015 0	Cadmium	0.005	2070241	ND	3113B	0.0004	07/25/96
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#### BROWARD TESTING LABORATOR, INC.



4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334

Date: 04/10/96Report #: 7030658Laboratory ID #: 86418Client: PASCO COUNTY UTILITIESDate Collected: 03/20/96ATTN:CANDY MULHERNTime Collected: 10:308864 GOVERNMENT DR.SDURCE: PCUDNEW PORT RICHEY, FL34654-NEW PORT RICHEY, FL34654-DISTRIBUTION ENTRY POINT

Date received at lab: 03/21/96 Time received at lab: 12:40 PWS ID: 651-1361 Collected by : D.FLYNN PLEASE NOTE: SODIUM WAS ANALYZED BY N.T.L. #0055. ALPHA WAS ANALYZED BY KNL AND RESULTS ARE ATTACHED. NOTE: "\*" The MCL (Maximum Contaminant Level) or an established

"\*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant. "ND" This contaminant was not detected at or above our stated detection limit.

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	Cadmium	0.005	7030658	ND	31138	0.0004	03/22/96
	Chromium	0.1	7030658	ND	31138	0.001	03/25/96
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Group I Unregulatads Group II Unregula Q Ali 13 Q Partial Q Ali 23 Q Part		Badiochemicals () Single Sample
		Qtriy Composite* Se dates & locations for each guarter.
	FLOANS INDICCUSED SEE	N's crives & locations lot each duritat.
I. GARY J. MEYER A A	HEREBY CERTIFY that all attached	unalviical data are correct.
Similary Dang . Thu	ign	
	/	125/201
Tille LABORATORY DIRECTOR	Date:	
COMPLIANCE INFORMATION (to be completed by Sta	kte)	•
Sample Collection Satisfactory	Sample Analysis Satisfactory:	
Recample Requested for A of . 226	Basan AV abis	D . C. / C GROSS Alels
		papa Junt yas
Parson notified to resample:	Date Notified:	
DEP/HRS Reviewing Official:	<u></u>	
<ul> <li>All HRS lab #s and their HRS Analyse Shoot for labs per result in rejection of the analyses and possible enforcement</li> </ul>	forming the attached water analyzes m	ast be provided. Failure to de so will
	a af anna an lamine a stor bhiann in 197	Effective January 1995
FLORIDA FLORIDA	PUBLIC WATER SUPPLY	

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BROWARD TESTING LABORATORY, MC. 4416 N.E. 11TH AVE , FORT LAUDERDALE, FLORIDA 33334



Date: 04/18/96

Report #: 7030655 Laboratory ID #: 86418

CLIGHL: PASCO COUNTY UTILITIES ATTN:CANDY MULHERN 8864 GOVERNMENT DR. NEW PORT RICHEY: FL 34654 -

Date Collected: 03/20/96 Fime Collected: 13:40 SOURCE: POUD WEST MODG J.LA DISTRIBUTION ENTRY POINT

Date received at lab: 03/21/96 PWS ID: 651-1361

Time received at lab: 12:25

Collected by : D.FLYNN Alpha was subcontracted to KNL lab, attached. Please note:Sodium was analyzed by National festing Lab #0055 NOTE: "\*" The MCL (Maximum Contaminant Level) or an established

" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.

"ND" This contaminant was not detected at or above our stated detection limit.

Fed Id #	Analysis Performed	MCL (MG/F)	Sample Number	Analysis Result	Method	MDL	Anal D <b>ate</b>
Prim	ary Inorganic A	nalysis (	62-550.310	(1) (PWS03	0)		
	Antimony	0.006	7030655	ND	31138	0.002	04/01/96
1005	Arsenic	0.05	7030655	ND	3113B	0.003	03/29/96
	Barium	2.0	7030655	0.024	3113B	0.002	03/22/96
1075	Beryllium -	0.004	7030655	ND	3113B	0.0001	03/25/96
	Cadmium	0.005	7030655	ND	31138	0.0004	03/22/96
1020	Chromium	0.1	7030655	ND	31138	0.001	03/25/96
	Lead	0.015	7030655	ND	31.13B	0.0004	03/22/96
	Mercury	0.002	7030655	ND	245.1	0.0002	03/28/96
	Nickel	0.1	7030655	ND	3113B	0.002	03/27/96
1045	Selenium	0.05	7030655	ND	3113B	0.001	04/02/96
1052	Sodium	160	7030655	25.l	3111B	0.1	04/05/96
1085	Thallium	0.002	7030655	ND	200.9	0.001	03/22/96
1024	Cyanide	0.2	7030655	ND	4500cn	f0.015	03/25/96
	Fluoride	4.0	7030655	0.22	300.0	0.10	03/21/96
1040	Nitrate-N	1.0 . 0	7030655	1.01	300.0	0.34	03/21/96
1041	Nitrite	1.0	7030655	ND	300.0	0.14	03/21/96
Seco	ndary Inorganic	Analysis	\$ 62-550.32	0 (PWS031)	449 649 666 676 746 747 947 946 1		
-1025	Fluoride	2.0	7030655	0.22	300.0	0.10	03/21/96
1005	Aluminum	0.2	7030655	0.005	3113B	0.003	04/03/96
1022	Copper	1.0	7030655	ND	3111B	0.02	03/27/96
1028	Tron	0.3	7030655	ND	3111B	0.10	03/26/96
1032	Mariganese	0.05	7030655	0.0034	3113B	0.0001	04/03/96
	Silver	0.1	7030655	ND	3113B	0.0003	04/02/96
1095	Zinc	5.0	7030655	ND	3111B	0.02	03/26/96
	Chloride	250	7030655	21.02	300.0	0.29	03/21/96
	Color	15	7030655	ND	2120B	5.0	03/21/96
	Foaming Agents		7030655	ND	512B	0.1	03/21/96
	Odor	3 ton	7030655	2	21508	1.0	03/21/96
1925		6.5-8.5	7030655	7.36 _	150.1	0.01	03/21/96
	Sulfate	250	7030655	24.39	300.0	3.35	03/21/96
1930		500	7030655	340	25400	10	03/22/96
		IONE: 1-800	1.3330 [1]				
<u> </u>		813 30		FAX: (216) 449	J LIAIS	) ZO:II	79-11-qs



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## BROWARD TESTING LABORATORY, INC.

4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334



P.08

Report #: 951-1617 Laboratory ID #:86137 Sample Date: 3-22-93 يتواجو مطرحا

Client: PASCO COUNTY UTILITIES 8864 GOVERNMENT DR . NEW PORT RICHEY, FL 34654 Location Code: PCUD WEST

PWS ID NO: 651-1361

PARKWOOD ACRES WELL #2 POINT OF ENTRY - ---Time Received at Lab: 10:55

Date Received at Lab: 3-23-93

Analytical Series: Florida Safe Drinking Water Compliance, Secondary Chemical Analysis 17-550.320. (PWS031)

All values in mg/l unless otherwise noted.

ID	PARAMETER	SAMPLE	ANALYSIS RESULT	ANALYTICAL METHOD	DETEC. LT.	ANALYSIS DATE
1002	ALUMINUM	1617	ND	200.7	0.05	4-11-93
1017	CHLORIDE	1617	40.1	407A	1.0	3-27-93
1022	COPPER	1617	ND	220.1	0.10	3-25-93
1025	FLUORIDE	1617	0.109	340.2	0.05	3-23-93
1028	IRCN	1617	ND	236.1	0.10	3-31-93
1032	MANGANESE	1617	ND	243,1	0.001	3-29-93
1050	SILVER	1617	ND	272.2	0.002	4-11-93
1055	SULFATE	1617	19.8	4260	5.0	3-31-93
1095	ZINC	1617	- UN	289.1	0.10	4-1-93
1095	COLOR	1617	5	110.3	5.0	3728 93
1920	ODOR (TON)	1617	1	140.1	1.0	3-23-93
1925	LAB PH (UNITS)	1617	7.74	150.1	0.01	3-23-93
1930	TDS	1617	252	160.1	20	4-8-93
2909	FOAMING AGENTS	1617	ND	5126	0.1	3-23-93

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Gary J. Lab Director. Broward Testing Laboratory

SHN 04 1995

FAX: (216) 449-8585



BROWARD TESTING LABORATORY, INC. 4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334



P.09

Sample Date: 3-22-93 Report #: 951-1612 Laboratory ID #:86137

Client: PASCO COUNTY UTILITIES 8864 GOVERNMENT DR. NEW PORT RICHEY, FL 34654 PWS ID NO: 651-1361

Location Code: PCUD WEST EMBASSY WELL POINT OF ENTRY Time Received at Lab: 9:45

Date Received at Lab: 3-23-93

Analytical Series: Florida Safe Drinking Water Compliance, Secondary Chemical Analysis 17-550.320. (PWS031)

All values in mg/l unless otherwise noted.

ID	PARAMETER	SAMPLE#	NALYSIS RESULT	ANALYTICAL METHOD	DETEC. LT.	ANALYSIS DATE
1002	ALUMINUM	1612	ND	200.7	0.05	4-11-93
1017	CHLORIDE	1612	32.8	407A	1.0	3-27-93
1022	COPPER	1612	ND	220.1	0.10	3-25-93
1025	FLUORIDE	1612	0.11	340.2	0.05	3-23-93
1028	TRON	1612	ND	236.1	0.10	3-31-93
1032	MANGANESE	1612	0.003	243.1	0.001	3-29-93
1050	SILVER	1612	ND	272.2	0.002	4-11-93
1055	SULFATE	1612	15.6	· 426C	5.0	3-31-93
1095	ZINC	1612	ND	289.1	0.10	4-1-93
1095	COLOR	1612	5	110.3	5.0	38,29,-93
1920	ODOR (TON)	1612	2	140.1	1.0	3-23-93
1925	LAB PH (UNITS)	1612	8.11	150.1	0.01	3-23-93
1930	TDS	1612	206	160.1	20	4-8-93
2909	FOAMING AGENTS	1612	ND .	5128	0.1	3-23-93

Mey Gary J. Meyel

Lab Director, Broward Testing Laboratory

JUN 0 4 1993

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# David W. Porter, P.E., C.O. Water/Wastewater System Consultant

**Regulatory Assistance**, Troubleshooting, Permitting, Contract **Operation**, Rehabilitation and System Design

September 11, 1997

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Florida Public Service Commission 2540 Shumard Oak Boulevard Tallahassee, Florida 32399-0873 Attn: John M. Starling

Re: Aloha Utilities, Inc. Seven Springs Water System FPSC Docket Number 960545-WS

Dear John,

Per our telephone conversation yesterday I am hereby enclosing a copy of the flow records for the WWTP and reuse system for the month of January 1997 as you requested.

If you have any questions, please call me.

Sincerely,

Pi, 60

David W. Porter, P.E., C.O. Water/Wastewater System Consultant

cc: Mr. Steve Watford, Pres /AUI

PCHD// Starling\_Flows//proj/via US

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#### SEVEN SPRINGS WATP OFFLUENT 1 Main FLow Mai Date Meter 1047291.60 1--.... . L93847840 ... -----------

Total Plant Flow 'Total to Ponds Total to Reuse

30,

Percentage of Plant

ROBE SYSTEM FLOW RECORD			Month:	onth: January		1997		1997				
Flou	Main Flow -Nudwell (NGD)	TPS ELOW Meter	LPS Flow	Filter Flow Neter	Filter Flow	MUD Flow	Raft ELaw Heter	Raft Flow	Reuse Flow Neter	Reuse Flow	Nudwell Return 3	Raid At Plant
03300	1.003											
45540	1.046							····			ERR	
06240	1.086						++				ERR	
574501	1.527	3640000	3640000	4110000	4110000	-470000	┢╾─────		2840000		ERK	
29300	1.029	3640000		4110000					3210000	2840000	-12.911	
48320	0.848	3640000		4110000	·· ·· ·· ·· ·· ·· ·· ··		t		3320000	370000	ERR	
88780	0.989	4680000	1040000	5050000	940000	100000			3390000	110000	ERR	
14930	1.045	1680000		5050000					3390000	70000	9.621	
50150	1.050	4680000	····	5050000			+=		3390000	· · · ·	ERR ERR	
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33310	0.753	5590000	410000	5840000	330000	80000			3670000	280000	8.00%	0.7
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61630	1.052	7470000	990000	7510000	880000	110000	373000	373000	4580000	420000	11.248	
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12920	1.083	13030000	770000	12530000	720000	50000		1709000	7420000	590000	9.241	- ·· · · · · · · ·
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8030	1.078	16800000	970000	16010000	9(10000	70000	6073000	587800	9750000	640000	0.335	
12000	2.022	17690000	890000	16940000	830000	60000	6642000	569000	10310000	560000	7.22%	
				1001000		00000	7149000	507000	10910000	600001	6.741	
, 950	29.734		17, 690, 000		16,840,000	950 000						
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			10,023,950									
			10,910,000									
Dr auine	j Lu Heuse		36.691									

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ALOHA UTILITIES

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