

M E M O R A N D U M

September 24, 1997

TO: DIVISION OF RECORDS AND REPORTING
FROM: DIVISION OF LEGAL SERVICES (JAEGER) *RRJ*
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

Attachment

ACK _____
AFA _____
APP _____
CAF _____
CMU _____
CTR _____
EAG _____
LEG _____
LIN _____
OPD _____
RCH _____
SC 1 _____
WAS _____
OTH _____

DOCUMENT NUMBER-DATE

09652 SEP 23 97

FPSC-RECORDS/REPORTING



Department of Environmental Protection

Steve Wafford

Lawton Chiles
Governor

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 Manual of Small Public Water Supply Systems, 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"

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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 only 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.

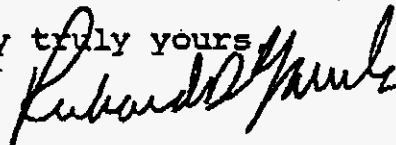
As part of our investigation we are reviewing the article "Water Discoloration, Cause and Fix" in detail. This week we are conferring with professionals from two major counties, our headquarters and our local district office. All have extensive experience with public water supplies. The county officials 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 truly yours,



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

RDG/wdr

cc: Virginia B. Wetherell

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TELECOPIER (850) 656-4029

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

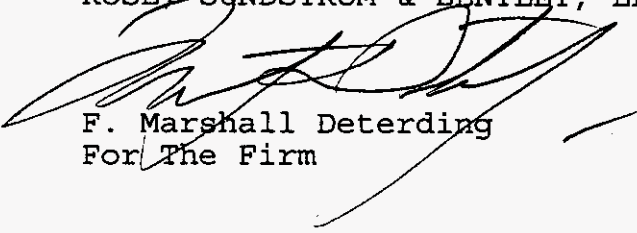
Mr. John M. Starling
August 21, 1997
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in this case within the coming weeks; and because of the engineering problems of even conducting any detailed analysis on this issue, we will forego any further work in that regard until such time as the Commission's 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

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

SEARCHED
SERIALIZED
INDEXED
SEP 11 1997
LEGAL DIVISION

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 90th 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 90th 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
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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,

A handwritten signature in black ink, appearing to read "D. W. Porter, P.E., C.O.", with a large, stylized flourish at the end.

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

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

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

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

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

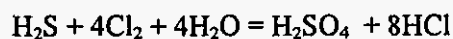
Dear Mr. Bramlett:

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 (H₂S) 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.

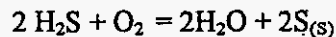
Aloha provides proper, and generally accepted, treatment for the control of hydrogen sulfide at its well sites. Chlorine oxidation of hydrogen sulfide is provided at each well site. This method is very successful as the water entering the distribution system does not contain any measurable quantity of 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:



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

Mr. Douglas Bramlett
September 11, 1997
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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 through 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:



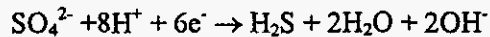
Therefore, it is more likely that facilities utilizing simple air stripping will produce elemental sulfur than will facilities utilizing chemical oxidation. The main problems associated with converting hydrogen sulfide to elemental sulfur are related to finished water turbidity increases and the negative 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 orthopolyphosphate 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.

Mr. Douglas Bramlett
September 11, 1997
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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:



The equation shows several important facts. First, free electrons are required for this reaction to proceed. The source of these electrons 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 piping, causing current to flow through the copper piping, which causes the release of electrons into 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.

Mr. Douglas Bramlett
September 11, 1997
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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 90th 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 90th 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.

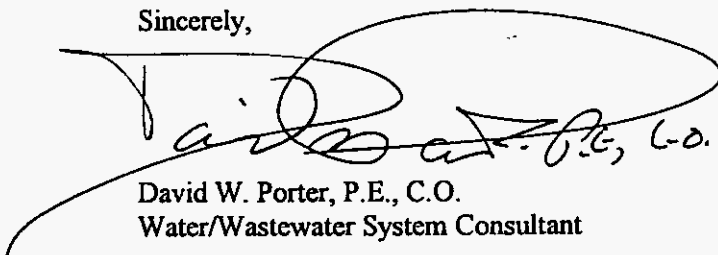
What sets Aloha's problem off from the other systems that are experiencing this problem across the State (and there are many such systems) is that Aloha is receiving a great deal of attention from Representative Fasano that the others are not. Aloha is making every effort to assist its customers that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

Mr. Douglas Bramlett
September 11, 1997
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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,



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



Stiles-Kem Division

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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.

Phosphate + hydrogen sulfide + heat 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:

A handwritten signature in cursive script that reads "William F. Mersch".

William F. Mersch

cc: Mr. Keith Chance



LAB FORMAT FOR REPORT: DRINKING WATER ANALYSES

PUBLIC WATER SYSTEM INFORMATION (to be completed by system or lab)
 System Name: PASCO COUNTY UTILITIES ID #: 6511361
 Address: 7536 STATE STREET
NPR, FLORIDA
 Type (check one): Community Nontransient Noncommunity Noncommunity
 Contact: CANDI MULNERA Phone #: 847-8144
 Order for Analysis Placed By (if different from above): _____

SAMPLE INFORMATION (to be completed by sampler)
 Sample Date (MMDDYY): 7/16/96 Sample Time: 1055
 Sample Location (be specific): LITTLE ROAD WTE POE
 Sampler Name and Phone: Greg Miltiken (813) 834-3255
 Sampler's Signature: Greg Miltiken Title: Operator
 Check Type(s): Distribution Recheck of MCL Resample of Lab Invalidated Sample
 Clearance THM Max Res Time Plant Tap
 Distribution Entry Point Raw Composite of Multiple Sites - Attach a format for each site

LABORATORY CERTIFICATION INFORMATION (to be completed by lab) - ATTACH HRS ANALYTE SHEET*
 Lab Name: BROWARD TESTING LABORATORY HRS #: 86418 Expiration Date: 6/97
 Address: 4416 NE 11th Avenue, Ft. Lauderdale, FL 33334 Phone #: 307-XXXXXX
 Subcontracted Lab Name & HRS #: _____ - ATTACH HRS ANALYTE SHEET 7070241#17 CONTRACTED LAB*

ANALYSIS INFORMATION (to be completed by lab) - SAMPLE NUMBER: _____
 Date Sample(s) Received: _____ Group(s) Analyzed & Results attached for compliance with 82-550, F.A.C.
 Nitrate Only Nitrite Only Asbestos Only Trihalomethanes 1 EA
 Inorganics Volatile Organics Secondarys Pesticides/PCBs
 All 17 Partial All 21 Partial All 14 Partial All 30 Partial
 Group I Unregulated Group II Unregulated Group III Unregulated Radiochemicals KNL 84252
 All 18 Partial All 25 Partial All 11 Partial Single Sample
 Other Qtrly Composite*
 * Provide radiochemical sample dates & locations for each quarter.

I, GARY J. MEYER do HEREBY CERTIFY that all attached analytical data are correct.
 Signature: Gary J. Meyer
 Title: LABORATORY DIRECTOR Date: 8/13/96

COMPLIANCE INFORMATION (to be completed by State)
 Sample Collection Satisfactory: _____ Sample Analysis Satisfactory: _____
 Resample Requested for: _____ Reason: _____
 Person notified to resample: _____ Date Notified: _____
 DEPHRS Reviewing Official: [Signature]

* All HRS lab #'s and their HRS Analyte Sheet for labs performing the attached water analyses must be provided. Failure to do so will result in rejection of the analyses and possible enforcement against the public water system for failure to sample.
 Effective January 1995

FL PWS/706

FLORIDA PUBLIC WATER SUPPLY

RESERVED

FOR LABORATORY USE ONLY

7070241#17 MBER CJE
 DATE RCD _____ TIME 11:30
 PAYMENT \$ _____
 CHECK # _____
SPECIAL INSTRUCTIONS
 1048599
 FL 62-550
 502,504,547,548,1/0
 TSP
RECEIVED
COMMENTS
 NO ALUM, NO DIOX
 NO BACTI, NO ASBESTOS
 Department of Environmental Protection
 SOUTHWEST DISTRICT
 BV-B



BROWARD TESTING LABORATORY, INC.

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



Date: 08/14/96 Report #: 7070241 Laboratory ID #: 86418
 Client: PASCO COUNTY UTILITIES Date Collected: 07/16/96
 ATTN: CANDY MULHERN Time Collected: 10:35
 8864 GOVERNMENT DR. SOURCE: LITTLE ROAD W/F
 NEW PORT RICHEY, FL 34654 DISTRIBUTION ENTRY POINT

Date received at lab: 07/17/96 Time received at lab: 11:15
 PWS ID: 651136J

Collected by: G. MILLIKEN

PLEASE NOTE: GROSS ALPHA WAS SUBCONTRACTED TO KNL LABS, SEE 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 stated detection limit.

Fed Analysis Id #	Analysis Performed	MCL (MG/L)	Sample Number	Analysis Result	Method	MDL	Date
Primary Inorganic Analysis 62-550.310 (1) (PWS030)							
1074	Antimony	0.006	7070241	ND	3113B	0.002	07/24/96
1005	Arsenic	0.05	7070241	ND	3113B	0.003	07/25/96
1010	Barium	2	7070241	0.069	3113B	0.002	07/25/96
1075	Beryllium	0.004	7070241	ND	3113B	0.0001	07/26/96
1015	Cadmium	0.005	7070241	ND	3113B	0.0004	07/25/96
1020	Chromium	0.1	7070241	0.0005	3113B	0.001	07/24/96
1030	Lead	0.015	7070241	0.0028	3113B	0.0004	07/22/96
1035	Mercury	0.002	7070241	ND	245.1	0.0002	07/19/96
1036	Nickel	0.1	7070241	ND	3113B	0.002	07/25/96
1045	Selenium	0.05	7070241	ND	3113B	0.001	07/26/96
1052	Sodium	160	7070241	6.27	3111B	0.1	07/18/96
1085	Thallium	0.002	7070241	ND	200.9	0.001	07/26/96
1024	Cyanide	0.2	7070241	ND	4500enf	0.015	07/17/96
1025	Fluoride	4	7070241	0.18	300.0	0.10	07/17/96
1040	Nitrate-N	10	7070241	0.24	300.0	0.34	07/17/96
1041	Nitrite-N	1	7070241	ND	300.0	0.14	07/17/96

Secondary Inorganic Analysis 62-550.320 (PWS031)

1025	Fluoride	2	7070241	0.18	300.0	0.10	07/17/96
1002	Aluminum	0.2	7070241	0.006	3113B	0.003	07/22/96
1022	Copper	1	7070241	ND	3111B	0.02	07/18/96
1028	Iron	0.3	7070241	ND	3111B	0.10	07/18/96
1032	Manganese	0.05	7070241	0.0038	3113B	0.0001	07/23/96
1050	Silver	0.1	7070241	0.0003	3113B	0.0003	07/23/96
1095	Zinc	5	7070241	ND	3111B	0.02	07/19/96
1017	Chloride	250	7070241	13.55	300.0	0.29	07/17/96
1905	Color	15	7070241	5	2120R		07/17/96
2909	Foaming Agents	0.5	7070241	ND	5540C	0.1	07/17/96
1220	Odor	3 Len	7070241	1	2150B	1	07/17/96
1225	pH	6.5-8.5	7070241	8.44	150.1		07/17/96
1055	Sulfate	250	7070241	24.49	300.0	3.35	07/17/96
1230	Turbidity	5.00	7070241	3.01	2540C	10	07/23/96

TELEPHONE 1-800-848-3330

FAX (216) 449-6505

LAB FORMAT FOR REPORTING DRINKING WATER ANALYSES

FOR USE ONLY

RECEIVED

PUBLIC WATER SYSTEM INFORMATION (to be completed by system or lab)

System Name: PCUD ID #: 651-1361
Address: 7536 STATE ST. N.P.R. Department of ENVIRONMENTAL PROTECTION

DATE: AUG 22 1996 SAMPLE NUMBER: 1240
TIME: 12:40

Type (check one): Community Nontransient Noncommunity Noncommunity
Contact: MARVIN Phone #: 834-3255
Order for Analysis Placed By (if different from above): _____

CHECK # _____
SPECIAL INSTRUCTIONS
1044862 - 999
C.Y.O. - PRI/Sec/Al
COMMENTS
Pri/Sec/Alpha/no bac
ti, dioxin, asbestos

SAMPLE INFORMATION (to be completed by sampler)

Sample Date (MMDDYY): 3-120-96 Sample Time: 1030
Sample Location (be specific): Autumn Oaks well P.O.E.
Sampler Name and Phone: DAVID FINE 834-3255
Sampler's Signature: _____ Title: Operator

Check Type(s): Distribution Recheck of MCL Resample of Lab Invalidated Sample
 Clearance TQM Max Res Time Plant Tap
 Distribution Entry Point Raw Composite of Multiple Sites - Attach a format for each site

LABORATORY CERTIFICATION INFORMATION (to be completed by lab) - ATTACH HRS ANALYTE SHEET*

Lab Name: BROWARD TESTING LABORATORY HRS #: 86418 Expiration Date: 8/98
Address: 4416 NE 11th Avenue, Ft. Lauderdale, FL 33334 Phone #: 305 776 7288

Subcontracted Lab Name & HRS #: _____ - ATTACH HRS ANALYTE SHEET FOR SUBCONTRACTED LAB*

ANALYSIS INFORMATION (to be completed by lab)

SAMPLE NUMBER: 7030658211

Date Sample(s) Received: _____ Group(s) Analyzed & Results attached for compliance with 69-660, F.A.C.

- Nitrate Only Nitrite Only Asbestos Only Trihalomethanes
- Inorganics Volatile Organics Secondarys Pesticides/PCBs
- All 17 Partial All 21 Partial All 14 Partial All 80 Partial
- Group I Unregulateds Group II Unregulateds Group III Unregulateds Radiochemicals
- All 13 Partial All 23 Partial All 11 Partial Single Sample Qtrly Composite*
- Other _____

KNL 84252

I, GARY J. MEYER do HEREBY CERTIFY that all attached analytical data are correct.
Signature: _____ Title: LABORATORY DIRECTOR Date: 4/25/96

COMPLIANCE INFORMATION (to be completed by State)

Sample Collection Satisfactory: _____ Sample Analysis Satisfactory: _____
Resample Requested for: _____ Reason: _____
Person notified to resample: _____ Date Notified: _____
DEP/HRS Reviewing Official: _____

* All HRS lab #s and their HRS Analyte Sheet for labs performing the attached water analyses must be provided. Failure to do so will result in rejection of the analyses and possible enforcement against the public water system for failure to sample.

Effective January 1996



BROWARD TESTING LABORATORY, INC.

44:6 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334



Date: 04/10/96 Report #: 7030658 Laboratory ID #: 86418

Client: PASCO COUNTY UTILITIES Date Collected: 03/20/96
 ATTN: CANDY MULHERN Time Collected: 10:30
 8864 GOVERNMENT DR. SOURCE: PCUD
 NEW PORT RICHEY, FL. 34654- AUTUMN OAKS WELL
 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 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/L)	Sample Number	Analysis Result	Method	MDL	Anal Date
Primary Inorganic Analysis 62-550.310 (1) (PWS030)							
1074	Antimony	0.006	7030658	ND	3113B	0.002	04/01/96
1005	Arsenic	0.05	7030658	ND ✓	3113B	0.003	03/29/96
1010	Barium	2.0	7030658	0.003	3113B	0.002	03/22/96
1075	Beryllium	0.004	7030658	ND	3113B	0.0001	03/25/96
1015	Cadmium	0.005	7030658	ND	3113B	0.0004	03/22/96
1020	Chromium	0.1	7030658	ND	3113B	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	4500cnf0	0.015	03/25/96
1025	Fluoride	4.0	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 Inorganic Analysis 62-550.320 (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	31118	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	2120B	5.0	03/21/96
2909	Foaming Agents	0.5	7030658	ND	512B	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	300.0	3.35	03/21/96
1930	TDS	500	7030658	186	2540C	10	03/22/96

LAB FORMAT FOR REPORTING DRINKING WATER ANALYSES

FOR LABORATORY USE ONLY

RECEIVED

703065521

AUG 22 1996

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHWEST DISTRICT

CHEK #

SPECIAL INSTRUCTIONS
1044862 - 999
C.Y.O. - PRI/Sec/Al

COMMENTS
Pri/Sec/Alpha/no bac
ti, dioxin, asbestos

PUBLIC WATER SYSTEM INFORMATION (to be completed by system or lab)

System Name: PCUD ID #: 651-1361

Address: 7536 STATE ST. N.P.R.

Type (check one): Community Nontransient Noncommunity Noncommunity

Contact: MARVIN Phone #: 834-3255

Order for Analysis Placed By (if different from above): _____

SAMPLE INFORMATION (to be completed by sampler)

Sample Date (MM/DD/YY): 3/20/96 Sample Time: 1:40

Sample Location (be specific): North LA

Sampler Name and Phone: David Flynn 834-3255

Sampler's Signature: [Signature] Title: OPERATOR

- Check Types:
- Distribution
 - Clearance
 - Distribution Entry Point
 - Recheck of MCL
 - THM Max Res Time
 - Raw
 - Resample of Lab Invalidated Sample
 - Plant Tap
 - Composite of Multiple Sites - Attach a format for each site

LABORATORY CERTIFICATION INFORMATION (to be completed by lab) - ATTACH HRS ANALYTE SHEET*

Lab Name: BROWARD TESTING LABORATORY HRS #: 86418 Expiration Date: 6/98

Address: 4416 NE 11th Avenue, Ft. Lauderdale, FL 33334 Phone #: 305 776 7238

Subcontracted Lab Name & HRS #: _____ - ATTACH HRS ANALYTE SHEET FOR SUBCONTRACTED LAB*

ANALYSIS INFORMATION (to be completed by lab) -- SAMPLE NUMBER: 703065521

Date Sample(s) Received: _____ Group(s) Analyzed & Results attached for compliance with 62-550, F.A.C.

- Nitrate Only
 - Nitrite Only
 - Asbestos Only
 - Trihalomethanes
 - Inorganics
 - Volatile Organics
 - Secondaries
 - Pesticides/PCBs
 - All 17 Partial
 - All 21 Partial
 - All 14 Partial
 - All 30 Partial
 - Group I Unregulateds
 - Group II Unregulateds
 - Group III Unregulateds
 - Radiochemicals
 - All 13 Partial
 - All 23 Partial
 - All 11 Partial
 - Single Sample
 - Qtrly Composite*
 - Other
- * Provide radiochemical sample dates & locations for each quarter.

I, GARY J. MEYER do HEREBY CERTIFY that all attached analytical data are correct.

Signature: [Signature]

Title: LABORATORY DIRECTOR

Date: 4/25/96

COMPLIANCE INFORMATION (to be completed by State)

Sample Collection Satisfactory: _____

Sample Analysis Satisfactory: _____

Resample Requested for: Ad. 226

Reason: exceed SID pCi/L gross alpha

Person notified to resample: _____

Date Notified: _____

DEP/HRS Reviewing Official: [Signature]

* All HRS lab #s and their HRS Analyte Sheet for labs performing the attached water analyses must be provided. Failure to do so will result in rejection of the analyses and possible enforcement against the public water system for failure to sample.

Effective January 1995



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



Date: 04/18/96 Report #: 7030655 Laboratory ID #: S6418
 Client: PASCO COUNTY UTILITIES Date Collected: 03/20/96
 ATTN: CANDY MULHERRN Time Collected: 13:40
 8864 GOVERNMENT DR. SOURCE: POND WEST
 NEW PORT RICHEY, FL 34654 MOOG 1,1A
 DISTRIBUTION ENTRY POINT

Date received at lab: 03/21/96 Time received at lab: 12:25
 PWS ID: 651-136J

Collected by : D.FLYNN Alpha was subcontracted to KNL lab, attached.

Please note: Sodium was analyzed by National Testing Lab #0055

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 stated detection limit.

Fed Id #	Analysis Performed	MCL (MG/L)	Sample Number	Analysis Result	Method	MDL	Anal Date
Primary Inorganic Analysis 62-550.310 (1) (PWS030)							
1074	Antimony	0.006	7030655	ND	3113B	0.002	04/01/96
1005	Arsenic	0.05	7030655	ND	3113B	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	3113B	0.0004	03/22/96
1020	Chromium	0.1	7030655	ND	3113B	0.001	03/25/96
1030	Lead	0.015	7030655	ND	3113B	0.0004	03/22/96
1035	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	Selenium	0.05	7030655	ND	3113B	0.001	04/02/96
1052	Sodium	160	7030655	25.1	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	4500cnf	0.015	03/25/96
1025	Fluoride	4.0	7030655	0.22	300.0	0.10	03/21/96
1040	Nitrate-N	10.0	7030655	1.01	300.0	0.34	03/21/96
1041	Nitrite	1.0	7030655	ND	300.0	0.14	03/21/96

Secondary Inorganic Analysis 62-550.320 (PWS031)

1025	Fluoride	2.0	7030655	0.22	300.0	0.10	03/21/96
1002	Aluminum	0.2	7030655	0.006	3113B	0.003	04/03/96
1022	Copper	1.0	7030655	ND	3111B	0.02	03/27/96
1028	Iron	0.3	7030655	ND	3111B	0.10	03/26/96
1032	Manganese	0.05	7030655	0.0034	3113B	0.0001	04/03/96
1050	Silver	0.1	7030655	ND	3113B	0.0003	04/02/96
1095	Zinc	5.0	7030655	ND	3111B	0.02	03/26/96
1017	Chloride	250	7030655	21.02	300.0	0.29	03/21/96
1905	Color	15	7030655	ND	2120B	5.0	03/21/96
2909	Foaming Agents	0.5	7030655	ND	512B	0.1	03/21/96
1920	Odor	3 ton	7030655	2	2150B	1.0	03/21/96
1925	pH	6.5-8.5	7030655	7.36	150.1	0.01	03/21/96
1055	Sulfate	250	7030655	24.39	300.0	3.35	03/21/96
1930	TDS	500	7030655	340	2540C	10	03/22/96



BROWARD TESTING LABORATORY, INC.

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



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

Client: PASCO COUNTY UTILITIES PWS ID NO: 651-1361
 8864 GOVERNMENT DR.
 NEW PORT RICHEY, FL 34654 Location Code: PCUD WEST
 PARKWOOD ACRES WELL #2
 POINT OF ENTRY

Date Received at Lab: 3-23-93 Time Received at Lab: 10:55

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	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	426C	5.0	3-31-93
1095	ZINC	1617	ND	289.1	0.10	4-1-93
1095	COLOR	1617	5	110.3	5.0	3-23-93
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	512B	0.1	3-23-93

Gary J. Meyer
 Gary J. Meyer
 Lab Director, Broward Testing Laboratory

JUN 04 1993



BROWARD TESTING LABORATORY, INC.

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



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

Date Received at Lab: 3-23-93

Time Received at Lab: 9:45

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	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	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	3-23-93
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	512B	0.1	3-23-93

Gary J. Meyer

 Gary J. Meyer
 Lab Director, Broward Testing Laboratory

JUN 04 1993

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,



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

cc: Mr. Steve Watford, Pres./AUI

PCHD// Starling_Flows//proj/via US

SEVEN SPRINGS WWTP EFFLUENT I

Date	Main Flow Meter	Ma
31	182680320	
1	1836803620	
2	184729160	
3	185815400	
4	186872850	
5	187902150	
6	188750470	
7	189839250	
8	190884180	
9	191934330	
10	193014530	
11	193847840	
12	194975330	
13	196136960	
14	197288330	
15	198426410	
16	199540220	
17	200639460	
18	201853670	
19	202999290	
20	204209830	
21	205342650	
22	206433620	
23	207596210	
24	208729310	
25	209886210	
26	211034240	
27	212182270	
28	213264270	
29		
30		
31		
TOTALS:		30.

<p>Total Plant Flow</p> <p>Total to Ponds</p> <p>Total to Reuse</p> <p>Percentage of Plant</p>

WINE SYSTEM FLOW RECORD

Month: January Year: 1997

Flow	Main Flow -Mudwell {NGD}	IPS Flow Meter	IPS Flow	Filter Flow Meter	Filter FLOW	MUD FLOW	RAFT FLOW Meter	Raft Flow	Reuse Flow Meter	Reuse FLOW	Mudwell Return %	Rain At Plant
1003300	1.003										ERR	
1045540	1.046										ERR	
1090240	1.086										ERR	
1057450	1.527	3640000	3640000	4110000	4110000	-470000			2840000	2840000	-12.91%	
1029300	1.029	3640000		4110000					3210000	170000	ERR	
848320	0.848	3640000		4110000					3320000	110000	ERR	
1088780	0.989	4680000	1040000	5850000	940000	100000			3390000	70000	9.62%	
1044930	1.045	4680000		5050000					3390000		ERR	
1050150	1.050	4680000		5050000					3390000		ERR	
1080200	1.040	5180000	500000	5510000	460000	40000			3670000	280000	8.00%	0.7
833310	0.753	5590000	410000	5840000	330000	80000			4090000	420000	11.24%	
1127490	1.027	6480000	890000	6630000	790000	100000			4580000	490000	11.11%	
1161630	1.052	7470000	990000	7510000	880000	110000	373000	373000	5180000	600000	8.43%	
1151330	1.081	8300000	830000	8270000	760000	70000	949000	576000	5180000		ERR	
1138080	1.138	8300000		8270000			949000		5180000		ERR	
1113810	1.114	8300000		8270000			949000		5180000		ERR	
1099240	0.979	9190000	890000	9040000	770000	120000	1581000	552000	5630000	450000	13.48%	
1214210	1.104	10210000	1020000	9950000	910000	110000	1772000	271000	6230000	600000	10.78%	
1145620	1.086	11050000	840000	10730000	780000	60000	2285000	513000	6830000	600000	7.14%	0.5
1210540	1.101	12240000	1198000	11810000	1080000	110000	3994000	1709000	7420000	590000	9.24%	
1132820	1.083	13010000	778000	12530000	720000	50000	4476000	482000	7900000	480000	6.49%	
1090970	1.091	13010000		12530000			4476000		7900000		ERR	
1162590	1.163	13010000		12530000			4476000		7900000		ERR	
1133100	1.053	13900000	890000	13340000	810000	80000	4983000	507000	8510000	610000	8.99%	
1156900	1.077	14870000	970000	14230000	890000	80000	5486000	583000	9110000	600000	8.25%	
1248030	1.060	15830000	960000	15110000	880000	80000	6073000	587000	9750000	640000	8.33%	
1148030	1.078	16800000	970000	16030000	900000	70000	6642000	569000	10310000	560000	7.22%	
1082000	1.022	17690000	890000	16840000	830000	60000	7149000	507000	10910000	600000	6.74%	

803,950	29.734		17,690,000	16,840,000	850,000		7,149,000		10,910,000	4.80%	1.2
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29,731,950
18,823,950
10,910,000

Flow going to Reuse 36.69%



Department of Environmental Protection

Lawton Chiles
Governor

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 Manual of Small Public Water Supply Systems, 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.

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 only 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 truly yours



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

RDG/wdr

cc: Virginia B. Wetherell

LAW OFFICES

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MAILING ADDRESS
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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

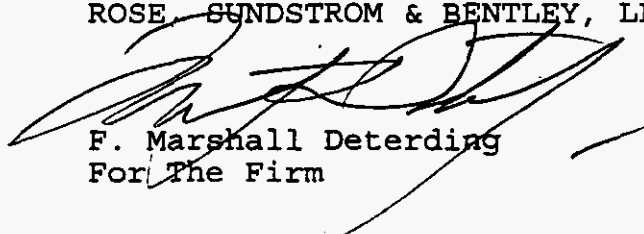
Mr. John M. Starling
August 21, 1997
Page 2

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,

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.

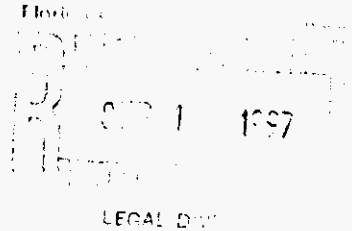
Water/Wastewater System Consultant

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,

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 90th 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 90th 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,

A large, stylized handwritten signature in black ink, appearing to read 'D. W. Porter'. To the right of the signature, the initials 'DWP, L.O.' are written in a smaller, more legible hand.

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

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

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

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

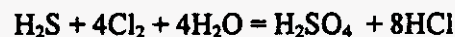
Dear Mr. Bramlett:

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 (H₂S) 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.

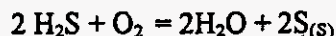
Aloha provides proper, and generally accepted, treatment for the control of hydrogen sulfide at its well sites. Chlorine oxidation of hydrogen sulfide is provided at each well site. This method is very successful as the water entering the distribution system does not contain any measurable quantity of 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:



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

Mr. Douglas Bramlett
September 11, 1997
Page 2

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 through 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:



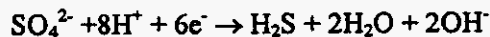
Therefore, it is more likely that facilities utilizing simple air stripping will produce elemental sulfur than will facilities utilizing chemical oxidation. The main problems associated with converting hydrogen sulfide to elemental sulfur are related to finished water turbidity increases and the negative 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 orthopolyphosphate 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.

Mr. Douglas Bramlett
September 11, 1997
Page 3

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:



The equation shows several important facts. First, free electrons are required for this reaction to proceed. The source of these electrons 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 piping, causing current to flow through the copper piping, which causes the release of electrons into 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.

Mr. Douglas Bramlett
September 11, 1997
Page 4

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 90th 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 90th 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.

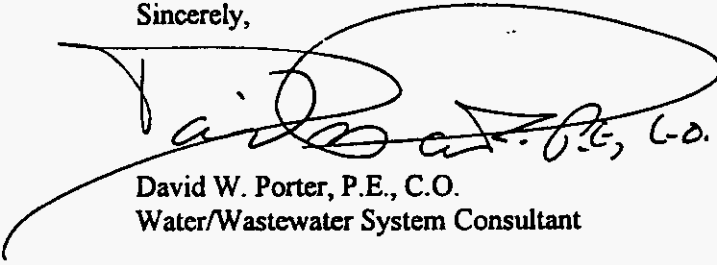
What sets Aloha's problem off from the other systems that are experiencing this problem across the State (and there are many such systems) is that Aloha is receiving a great deal of attention from Representative Fasano that the others are not. Aloha is making every effort to assist its customers that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

Mr. Douglas Bramlett
September 11, 1997
Page 5

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,



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



Stiles-Kem Division

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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.

Phosphate + hydrogen sulfide + heat 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:

A handwritten signature in cursive script that reads "William F. Mersch".

William F. Mersch

cc: Mr. Keith Chance



LAB FORMAT FOR REPORT DRINKING WATER ANALYSES

FOR LABORATORY USE ONLY

PUBLIC WATER SYSTEM INFORMATION (to be completed by system or lab)

System Name: PASCO COUNTY UTILITIES ID# 6511361

Address: 7536 STATE STREET

NPR, FLORIDA

Type (check one): Community Nontransient Noncommunity Noncommunity

Contact: CANDI MULHERA Phone #: 847-8144

Order for Analysis Placed By (if different from above): _____

SAMPLE INFORMATION (to be completed by sampler)

Sample Date (MM/DD/YY): 7/16/96 Sample Time: 1055

Sample Location (be specific): LITTLE ROAD WTF POE

Sampler Name and Phone: Greg Hinkley (813) 834-3255

Sampler's Signature: [Signature] Title: OPERATOR

- Check Type(s):
- Distribution
 - Clearance
 - Distribution Entry Point
 - Recheck of MCL
 - THM Max Res Time
 - Raw
 - Resample of Lab Invalidated Sample
 - Plant Tap
 - Composite of Multiple Sites - Attach a format for each site

LABORATORY CERTIFICATION INFORMATION (to be completed by lab) - ATTACH HRS ANALYTE SHEET*

Lab Name: BROWARD TESTING LABORATORY HRS #: 86418 Expiration Date: 6/97

Address: 4416 NE 11th Avenue, Ft. Lauderdale, FL 33334 Phone #: 30

Subcontracted Lab Name & HRS #: _____ - ATTACH HRS ANALYTE SHEET 7070241#17 CONTRACTED LAB*

ANALYSIS INFORMATION (to be completed by lab) - SAMPLE NUMBER: _____

Date Sample(s) Received: _____

Group(s) Analyzed & Results attached for compliance with 82-550, F.A.C.

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> Nitrate Only | <input type="checkbox"/> Nitrite Only | <input type="checkbox"/> Asbestos Only | <input type="checkbox"/> Trihalomethanes |
| <input checked="" type="checkbox"/> Inorganics | <input type="checkbox"/> Volatile Organics | <input checked="" type="checkbox"/> Secondarys | <input type="checkbox"/> Pesticides/PCBs |
| <input type="checkbox"/> All 17 <input type="checkbox"/> Partial | <input type="checkbox"/> All 21 <input type="checkbox"/> Partial | <input type="checkbox"/> All 14 <input type="checkbox"/> Partial | <input type="checkbox"/> All 30 <input type="checkbox"/> Partial |
| <input type="checkbox"/> Group I Unregulateds | <input checked="" type="checkbox"/> Group II Unregulateds | <input type="checkbox"/> Group III Unregulateds | <input type="checkbox"/> Radiochemicals |
| <input type="checkbox"/> All 13 <input type="checkbox"/> Partial | <input type="checkbox"/> All 25 <input type="checkbox"/> Partial | <input type="checkbox"/> All 11 <input type="checkbox"/> Partial | <input type="checkbox"/> Single Sample |
| <input type="checkbox"/> Other | | | <input type="checkbox"/> Qtrly Composite* |

* Provide radiochemical sample dates & locations for each quarter.

I, GARY J. MEYER do HEREBY CERTIFY that all attached analytical data are correct.

Signature: [Signature]

Title: LABORATORY DIRECTOR

Date: 8/13/96

COMPLIANCE INFORMATION (to be completed by State)

Sample Collection Satisfactory: [check] Sample Analysis Satisfactory: [check]

Resample Requested for: _____ Reason: _____

Person notified to resample: _____ Date Notified: _____

DEP/HRS Reviewing Official: [Signature]

* All HRS Lab #s and their HRS Analyte Sheet for labs performing the attached water analyses must be provided. Failure to do so will result in rejection of the analyses and possible enforcement against the public water system for failure to sample.

Effective January 1995

FL PWB/706

FLORIDA PUBLIC WATER SUPPLY

RESERVED



BROWARD TESTING LABORATORY, INC.

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



Date: 08/14/96 Report #: 7070241 Laboratory ID #: 86418

Client: PASCO COUNTY UTILITIES Date Collected: 07/16/96
ATTN: CANDY MULHORN Time Collected: 10:35
8864 GOVERNMENT DR. SOURCE: LITTLE ROAD W/F
NEW PORT RICHEY, FL 34654 DISTRIBUTION ENTRY POINT

Date received at lab: 07/17/96 Time received at lab: 11:15
PWS ID: 651136J

Collected by: G. MILLIKEN

PLEASE NOTE: GROSS ALPHA WAS SUBCONTRACTED TO KNL LABS, SEE 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 stated detection limit.

Fed Analysis Id #	Analysis Performed	MCL (MG/L)	Sample Number	Analysis Result	Method	MDL	Analysis Date
-------------------	--------------------	------------	---------------	-----------------	--------	-----	---------------

Primary Inorganic Analysis 62-550.310 (1) (PWS030)

1074	Antimony	0.006	7070241	ND	3113B	0.002	07/24/96
1005	Arsenic	0.05	7070241	ND	3113B	0.003	07/25/96
1010	Barium	2	7070241	0.069	3113B	0.002	07/25/96
1075	Beryllium	0.004	7070241	ND	3113B	0.0001	07/26/96
1015	Cadmium	0.005	7070241	ND	3113B	0.0004	07/25/96
1020	Chromium	0.1	7070241	0.0005	3113B	0.001	07/24/96
1030	Lead	0.015	7070241	0.0028	3113B	0.0004	07/22/96
1035	Mercury	0.002	7070241	ND	245.1	0.0002	07/19/96
1036	Nickel	0.1	7070241	ND	3113B	0.002	07/25/96
1045	Selenium	0.05	7070241	ND	3113B	0.001	07/26/96
1052	Sodium	160	7070241	6.27	3111B	0.1	07/18/96
1085	Thallium	0.002	7070241	ND	200.9	0.001	07/26/96
1024	Cyanide	0.2	7070241	ND	4500cncf	0.015	07/17/96
1025	Fluoride	4	7070241	0.18	300.0	0.10	07/17/96
1040	Nitrate-N	10	7070241	0.24	300.0	0.34	07/17/96
1041	Nitrite-N	1	7070241	ND	300.0	0.14	07/17/96

Secondary Inorganic Analysis 62-550.320 (PWS031)

1025	Fluoride	2	7070241	0.18	300.0	0.10	07/17/96
1002	Aluminum	0.2	7070241	0.006	3113B	0.003	07/22/96
1027	Copper	1	7070241	ND	3111B	0.02	07/18/96
1028	Iron	0.3	7070241	ND	3111B	0.10	07/18/96
1057	Manganese	0.05	7070241	0.0038	3113B	0.0001	07/23/96
1050	Silver	0.1	7070241	0.0003	3113B	0.0003	07/23/96
1025	Zinc	5	7070241	ND	3111B	0.02	07/19/96
1017	Chloride	250	7070241	13.55	300.0	0.29	07/17/96
1905	Color	15	7070241	5	2120R	-	07/17/96
2909	Foaming Agents	0.5	7070241	ND	5540C	0.1	07/17/96
1920	Chlor	3.0m	7070241	1	2150B	1	07/17/96
1925	pH	6.5-8.5	7070241	8.44	150.1	-	07/17/96
1055	Sulfate	250	7070241	24.47	300.0	3.35	07/17/96
1250	TDS	500	7070241	301	2500C	10	07/23/96

TELEPHONE 1-800-583-3330

FAX (216) 449-8505

LAB FORMAT FOR REPORTING DRINKING WATER ANALYSES

FOR USE ONLY

RECEIVED

CLE

PUBLIC WATER SYSTEM INFORMATION (to be completed by system or lab)

System Name: PCUD ID #: 651-1361

Address: 7536 STATE ST. N.P.R.

Type (check one): Community Nontransient Noncommunity Noncommunity

Contact: MARVIN Phone #: 834-3255

Order for Analysis Placed By (if different from above): _____

DATE REC'D: AUG 22 1996
Department of Environmental Protection
SOUTH FLORIDA DISTRICT

CHECK # _____
SPECIAL INSTRUCTIONS
1044862 - 999
C.Y.O. - PRI/Sec/Al
COMMENTS
Pri/Sec/Alpha/no bac
ti, dioxin, asbestos

SAMPLE INFORMATION (to be completed by sampler)

Sample Date (MM/DD/YY): 3-1201-96 Sample Time: 1030

Sample Location (be specific): ATLANTA OAKS well P.O.E.

Sampler Name and Phone: DAVID FLYNN 834-3255

Sampler's Signature: _____ Title: OPERATOR

- Check Type(s):
- Distribution
 - Clearance
 - Distribution Entry Point
 - Recheck of MCL
 - THM Max Res Time
 - Raw
 - Resample of Lab Invalidated Sample
 - Plant Tap
 - Composite of Multiple Sites - Attach a form for each site

LABORATORY CERTIFICATION INFORMATION (to be completed by lab) - ATTACH HRS ANALYTE SHEET*

Lab Name: BROWARD TESTING LABORATORY HRS #: 88418 Expiration Date: 5/98

Address: 4416 NE 11th Avenue, Ft. Lauderdale, FL 33334 Phone #: 305 778 7298

Subcontracted Lab Name & HRS #: _____ - ATTACH HRS ANALYTE SHEET FOR SUBCONTRACTED LAB*

ANALYSIS INFORMATION (to be completed by lab)

SAMPLE NUMBER: 7030658211

Date Sample(s) Received: _____

Group(s) Analyzed & Results attached for compliance with 62-560, F.A.C.

- Nitrate Only
- Nitrite Only
- Asbestos Only
- Trihalomethanes
- Inorganics**
- All 17 Partial
- All 21 Partial
- All 14 Partial
- All 30 Partial
- Group I Unregulated**
- All 13 Partial
- All 33 Partial
- All 11 Partial
- Radiochemicals**
- Single Sample
- Qrty Composite*

KNL 84252

* Provide radiochemical sample dates & locations for each quarter.

I, GARY J MEYER HEREBY CERTIFY that all attached analytical data are correct.

Signature: _____

Title: LABORATORY DIRECTOR

Date: 4/25/96

COMPLIANCE INFORMATION (to be completed by State)

Sample Collection Satisfactory: _____ Sample Analysis Satisfactory: _____

Resample Requested for: _____ Reason: _____

Person notified to resample: _____ Date Notified: _____

DEP/ERS Reviewing Official: _____

* All HRS Lab #s and their HRS Analyte Sheet for labs performing the attached water analyses must be provided. Failure to do so will result in rejection of the analyses and possible enforcement against the public water system for failure to sample.

Effective January 1996

BROWARD TESTING LABORATORY, INC.

4416 NE 11TH AVE., FORT LAUDERDALE, FLORIDA 33334

Date: 04/10/96 Report #: 7030658 Laboratory ID #: 86418

Client: PASCO COUNTY UTILITIES ATTN: CANDY MULHERN 8864 GOVERNMENT DR. NEW PORT RICHEY, FL. 34654-	Date Collected: 03/20/96 Time Collected: 10:30 SOURCE: PCUD AUTUMN OAKS WELL 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 guideline has been exceeded for this contaminant.

"ND" 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 62-550.310 (1) (PWS030)						
1074 Antimony	0.006	7030658	ND	3113B	0.002	04/01/96
1005 Arsenic	0.05	7030658	ND ✓	3113B	0.003	03/29/96
1010 Barium	2.0	7030658	0.003	3113B	0.002	03/22/96
1075 Beryllium	0.004	7030658	ND	3113B	0.0001	03/25/96
1015 Cadmium	0.005	7030658	ND	3113B	0.0004	03/22/96
1020 Chromium	0.1	7030658	ND	3113B	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	3111B	0.1	04/05/96
1085 Thallium	0.002	7030658	ND	200.9	0.001	03/22/96
1024 Cyanide	0.2	7030658	ND	4500cnf0	0.015	03/25/96
1025 Fluoride	4.0	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 Inorganic Analysis 62-550.320 (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	3111B	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	3111B	0.02	03/26/96
1017 Chloride	250	7030658	7.60	300.0	0.29	03/21/96
1905 Color	15	7030658	ND	2120B	5.0	03/21/96
2909 Foaming Agents	0.5	7030658	ND	512B	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	300.0	3.35	03/21/96
1930 TDS	500	7030658	186	2540C	10	03/22/96

LAB FORMAT FOR REPORTING DRINKING WATER ANALYSES

FOR LABORATORY USE ONLY

RECEIVED

703065521

AUG 27 1996

DEPT. OF ENVIRONMENTAL PROTECTION
SOUTHWEST DISTRICT

CHECK #

SPECIAL INSTRUCTIONS
1044862 - 999
C.Y.O. - PRI/Sec/Al

COMMENTS
Pri/Sec/Alpha/no bac
ti, dioxin, asbestos

PUBLIC WATER SYSTEM INFORMATION (to be completed by system or lab)

System Name: PCUD ID #: 651-1361

Address: 7536 STATE ST. N.P.R.

Type (check one): Community Nontransient Noncommunity Noncommunity

Contact: MARVIN Phone #: 834-3255

Order for Analysis Placed By (if different from above): _____

Deposited BY: _____

DATE: _____ TIME: 12:25

SAMPLE INFORMATION (to be completed by sampler)

Sample Date (MMDDYY): 3/20/96 Sample Time: 1:40

Sample Location (be specific): MOCK 1A

Sampler Name and Phone: DAVID FLYNN 834-3255

Sampler's Signature: _____ Title: OPERATOR

- Check Type(s):
- Distribution
 - Clearance
 - Distribution Entry Point
 - Recheck of MCL
 - THM Max Res Time
 - Raw
 - Resample of Lab Invalidated Sample
 - Plant Tap
 - Composite of Multiple Sites - Attach a format for each site

LABORATORY CERTIFICATION INFORMATION (to be completed by lab) - ATTACH HRS ANALYTE SHEET*

Lab Name: BROWARD TESTING LABORATORY HRS #: 86418 Expiration Date: 6/96

Address: 4416 NE 11th Avenue, Ft. Lauderdale, FL 33334 Phone #: 305 776 7238

Subcontracted Lab Name & HRS #: _____ - ATTACH HRS ANALYTE SHEET FOR SUBCONTRACTED LAB*

ANALYSIS INFORMATION (to be completed by lab)

SAMPLE NUMBER: 703065521

Group(s) Analyzed & Results attached for compliance with 62-550, F.A.C.

- Date Sample(s) Received: _____
- Nitrate Only
 - Nitrite Only
 - Asbestos Only
 - Trihalomethanes
 - Inorganics
 - Volatile Organics
 - Secondaries
 - Pesticides/PCBs
 - All 17 Partial
 - All 21 Partial
 - All 14 Partial
 - All 30 Partial
 - Group I Unregulated
 - Group II Unregulated
 - Group III Unregulated
 - Radiochemicals
 - All 15 Partial
 - All 23 Partial
 - All 11 Partial
 - Single Sample
 - Qtrly Composite*
 - Other
- * Provide radiochemical sample dates & locations for each quarter.

I, GARY J. MEYER do HEREBY CERTIFY that all attached analytical data are correct.

Signature: _____

Title: LABORATORY DIRECTOR Date: 4/25/96

COMPLIANCE INFORMATION (to be completed by State)

Sample Collection Satisfactory: _____ Sample Analysis Satisfactory: _____

Resample Requested for: Ad. 226 Reason: CYANO SID pCl/2 gross alpha

Person notified to resample: _____ Date Notified: _____

DEP/HRS Reviewing Official: [Signature]

* All HRS Lab #s and their HRS Analyte Sheet for labs performing the attached water analyses must be provided. Failure to do so will result in rejection of the analyses and possible enforcement against the public water system for failure to sample.

Effective January 1995



BROWARD TESTING LABORATORY, INC.

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



Date: 04/18/96 Report #: 7030655 Laboratory ID #: 86418

Client: PASCO COUNTY UTILITIES Date Collected: 03/20/96
ATTN: CANDY MULHERRN Time Collected: 13:40
8864 GOVERNMENT DR. SOURCE: PCUD WEST
NEW PORT RICHEY, FL 34654 MOOG 1,1A
DISTRIBUTION ENTRY POINT

Date received at lab: 03/21/96 Time received at lab: 12:25

PWS ID: 651-136J

Collected by: D.FLYNN Alpha was subcontracted to KNL lab, attached.

Please note: Sodium was analyzed by National Testing Lab #0055

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 stated detection limit.

Fed Id #	Analysis Performed	MCL (MG/L)	Sample Number	Analysis Result	Method	MDL	Anal Date
Primary Inorganic Analysis 62-550.310 (1) (PWS030)							
1074	Antimony	0.006	7030655	ND	3113B	0.002	04/01/96
1005	Arsenic	0.05	7030655	ND	3113B	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	3113B	0.0004	03/22/96
1020	Chromium	0.1	7030655	ND	3113B	0.001	03/25/96
1030	Lead	0.015	7030655	ND	3113B	0.0004	03/22/96
1035	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	Selenium	0.05	7030655	ND	3113B	0.001	04/02/96
1052	Sodium	160	7030655	25.1	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	4500cnf	0.015	03/25/96
1025	Fluoride	4.0	7030655	0.22	300.0	0.10	03/21/96
1040	Nitrate-N	10.0	7030655	1.01	300.0	0.34	03/21/96
1041	Nitrite	1.0	7030655	ND	300.0	0.14	03/21/96

Secondary Inorganic Analysis 62-550.320 (PWS031)

1025	Fluoride	2.0	7030655	0.22	300.0	0.10	03/21/96
1002	Aluminum	0.2	7030655	0.006	3113B	0.003	04/03/96
1027	Copper	1.0	7030655	ND	3111B	0.02	03/27/96
1028	Iron	0.3	7030655	ND	3111B	0.10	03/26/96
1032	Manganese	0.05	7030655	0.0034	3113B	0.0001	04/03/96
1050	Silver	0.1	7030655	ND	3113B	0.0003	04/02/96
1095	Zinc	5.0	7030655	ND	3111B	0.02	03/26/96
1017	Chloride	250	7030655	21.02	300.0	0.29	03/21/96
1905	Color	15	7030655	ND	2120B	5.0	03/21/96
2909	Foaming Agents	0.5	7030655	ND	512B	0.1	03/21/96
1920	Odor	3 Torr	7030655	2	2150B	1.0	03/21/96
1925	pH	6.5-8.5	7030655	7.36	150.1	0.01	03/21/96
1055	Sulfate	250	7030655	24.39	300.0	3.35	03/21/96
1930	TDS	500	7030655	340	2540C	10	03/22/96

TELEPHONE: 1-800-3330-3330
813 903-0809

FAX: (216) 449-8585



BROWARD TESTING LABORATORY, INC.

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



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

Client: PASCO COUNTY UTILITIES PWS ID NO: 651-1361
 8864 GOVERNMENT DR.
 NEW PORT RICHEY, FL 34654 Location Code: PCUD WEST
 PARKWOOD ACRES WELL #2
 POINT OF ENTRY

Date Received at Lab: 3-23-93 Time Received at Lab: 10:55

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	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	426C	5.0	3-31-93
1095	ZINC	1617	ND	289.1	0.10	4-1-93
1095	COLOR	1617	5	110.3	5.0	3-23-93
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	512B	0.1	3-23-93

Gary J. Meyer

 Gary J. Meyer
 Lab Director, Broward Testing Laboratory

JUN 04 1993



BROWARD TESTING LABORATORY, INC.

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



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

Client: PASCO COUNTY UTILITIES PWS ID NO: 651-1361
 8864 GOVERNMENT DR.
 NEW PORT RICHEY, FL 34654 Location Code: PCUD WEST
 EMBASSY WELL
 POINT OF ENTRY

Date Received at Lab: 3-23-93 Time Received at Lab: 9:45

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	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	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	3-23-93
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	512B	0.1	3-23-93

Gary J. Meyer
 Gary J. Meyer
 Lab Director, Broward Testing Laboratory

JUN 04 1993

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,



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

cc: Mr. Steve Watford, Pres./AUI

PCHD// Starling_Flows//proj/via US

SEVEN SPRINGS WWTFF EFFLUENT 1

Date	Main Flow Meter	Main Flow Meter
31	182680320	
1	183603620	
2	1104729160	
3	185815400	
4	186872850	
5	187902150	
6	188750470	
7	189839250	
8	190884180	
9	191934330	
10	193014530	
11	193847840	
12	194975330	
13	196136960	
14	197288330	
15	198426410	
16	199540220	
17	200639460	
18	201853670	
19	202999290	
20	204209830	
21	205342650	
22	206433620	
23	207596210	
24	208729310	
25	209886210	
26	211034240	
27	212182270	
28	213264270	
29		
30		
31		
TOTALS:		30.

Total Plant Flow
Total to Ponds
Total to Reuse
Percentage of Plant

MINE SYSTEM FLOW RECORD

Month: January Year: 1997

Flow	Main Flow -Mudwell (MGD)	IPS Flow Meter	IPS Flow	Filter Flow Meter	Filter Flow	MUD FLOW	Raft FLOW Meter	Raft Flow	Reuse Flow Meter	Reuse Flow	Mudwell Return %	Raid At Plant
1003300	1.003											ERR
1045540	1.046											ERR
1006240	1.086											ERR
1057450	1.527	3640000	3640000	4110000	4110000	-470000						
1029300	1.029	3640000		4110000					2840000	2840000	-12.91%	
848320	0.848	3640000		4110000					3320000	370000		ERR
1088780	0.989	4680000	1040000	5050000	940000	180000			3390000	70000		ERR
1044930	1.045	4680000		5050000					3390000			ERR
1050150	1.050	4680000		5050000					3390000			ERR
1080200	1.040	5180000	500000	5510000	460000	40000			3670000	280000		ERR
833310	0.753	5590000	410000	5840000	330000	80000			3670000			ERR
1127490	1.827	6480000	890000	6630000	790000	108000			4090000	420000		ERR
1161630	1.052	7470000	990000	7510000	880000	110000	373000	373000	4580000	490000		ERR
1151370	1.081	8300000	830000	8270000	760000	70000	949000	576000	5180000	600000		ERR
1138080	1.138	8300000		8270000			949000		5180000			ERR
1113810	1.114	8300000		8270000			949000		5180000			ERR
1099240	0.979	9190000	890000	9040000	770000	120000	1501000	552000	5630000	450000		ERR
1214210	1.104	10210000	1020000	9950000	910000	110000	1772000	271000	6230000	600000		ERR
1145620	1.086	11050000	840000	10730000	780000	60000	2285000	513000	6830000	600000		ERR
1210540	1.101	12240000	1190000	11810000	1080000	110000	3994000	1709000	7420000	590000		ERR
1132820	1.083	13010000	770000	12530000	720000	50000	4476000	482000	7900000	480000		ERR
1090970	1.091	13010000		12530000			4476000		7900000			ERR
162590	1.163	13010000		12530000			4476000		7900000			ERR
133160	1.053	13900000	890000	13340000	810000	80000	4983000	507000	8510000	610000		ERR
156980	1.071	14870000	970000	14230000	890000	80000	5486000	503000	9110000	600000		ERR
148030	1.068	15830000	960000	15110000	880000	80000	6073000	587000	9750000	640000		ERR
148030	1.078	16800000	970000	16010000	900000	70000	6642000	569000	10310000	560000		ERR
082000	1.022	17690000	890000	16840000	830000	60000	7149000	507000	10910000	600000		ERR

83,950	29.734		17,890,000	16,840,000	850,000		7,149,000		10,910,000	4.80%	1.2
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29,733,950
18,823,950
10,910,000

Flow going to Reuse 36.69%