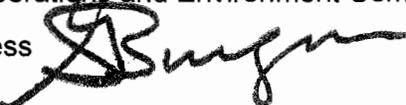


# Memorandum



**Date:** April 15, 2008

**To:** Honorable Chairperson Natacha Seijas and Members,  
Governmental Operations and Environment Committee

**From:** George M. Burgess  
County Manager 

**Subject:** South Florida Water Management District Status Reports on the Public  
Water Supply Water Use Permit No. 13-00017-W and a Communications  
Plan

GOE  
Agenda Item No.  
7(C)

At the March 11, 2008 Governmental Operations and Environment Committee (GOE) meeting, Chairperson Natacha Seijas requested that the Miami-Dade Water and Sewer Department (WASD) provide the GOE committee with the status reports submitted to the South Florida Water Management District (District) as a requirement of the County's Water Use Permit No. 13-00017-W (WUP). Attached are the following reports which show that Miami-Dade County is on target and has met the District's requirements.

1. Alternative Water Supply Plan and Reuse Feasibility Plan Annual Progress Report – March 14, 2008
2. Miami-Dade Water and Sewer Department - Water Loss Accounting Report – March 13, 2008
3. Interim Report on the Plan for Raw Water Flow Measuring Adjustments (FY 2008) – March 14, 2008

Also, GOE Chairperson Seijas requested that WASD prepare a communications plan to keep the public informed as the County meets the conditions of the WUP. The details of this communications plan are provided below.

On November 15, 2007, the District approved a 20-Year WUP for Miami-Dade County. In order to ensure the successful implementation of the WUP projects, it is critical to establish a plan to educate County residents on the benefits of these projects. Attached is a Communications Plan, prepared by the Department for the WUP outreach efforts. The plan serves as a blueprint for effective public notification and education to County residents regarding the WUP and its associated projects.

The Communications Plan includes outreach through radio, print, television and other tools such as the Internet, the e-mail system and the County's community periodical program which provides publications in English, Spanish and Creole. Stories will be written for the County's community periodicals program and submitted to mainstream papers. WASD will augment its radio/TV programming efforts and brief the community on the myriad of projects associated with the WUP.

In addition to the Communications Plan, WASD has created "WUP Central" at [www.miamidade.gov/wasd/wup.asp](http://www.miamidade.gov/wasd/wup.asp) where the most up-to-date information will be posted. A steady stream of news releases will keep the public abreast of WASD's ongoing efforts in complying with the WUP and County residents will be updated as each of the 58 WUP requirements and milestones are achieved through multi-language news release. These releases will be posted on WUP Central where they will stay indefinitely, allowing County residents and others to refer to them as needed. WUP Central includes the background and history of the WUP, relevant news items, media coverage and press releases, reports and other WUP-related documents of interest, and access to related links. WASD is working closely with the Government Information Center (GIC) to

post important WUP items and news on the Miami-Dade County portal. Updates will be provided in WASD's quarterly bi-lingual newsletter, The Pipeline, which is mailed out with water and sewer bills, beginning with the Spring 2008 issue.

Some of WASD's media efforts are already visible. The Miami Herald published two stories regarding the County's WUP and related projects; the story was released in the Winter 2008 issue of WASD's newsletter that was mailed out with the water and sewer bills in January 2008 to WASD's customers. The story was also published on the County's website and in the South Florida Business Journal on November 15, 2007. An article on the United States water supply which mentioned the City of Hialeah's Reverse Osmosis Water Treatment Plant was published in The Seattle Times on October 28, 2007, and the local CBS affiliate, WFOR, Channel 4's website, includes a water restrictions page at <http://cbs4.com/local/fast.facts.FAST.2.630099.html> that discusses how Miami-Dade County is developing alternative water supplies as a long-term solution to the current water supply situation and water conservation.

Although a great deal of public outreach needs to be done during this long-term project, WASD is currently on track with its public notification efforts and is keeping Miami-Dade County residents informed on the availability of water over the next 20 years.

We will continue to provide the GOE committee and Board of County Commissioners with updates as milestones of the WUP are met.



Assistant County Manager

# WASD WUP Media Outreach RADIO

Station	Show/Host Name	Time/Format Details	Contact	Number	Objective*	Notes
SPANISH	WQBA - 1140 AM	"Noticias" - Nelson Rubio 5:00 a.m. - 7:00 a.m. M-F	Connie Koukourini	305.569.3131	Interview	WASD currently has contract with Univision radio
		"Ahorá" - Oscar Haza 7:00 a.m. - 9:00 a.m. M-F	Connie Koukourini	305.569.3131	Interview	
		"El Show de Bernadette y Almora" - "B. Pardo y Jose Alfonso Almora" 9:00 a.m. - 10:30 a.m. M-F	Connie Koukourini	305.569.3131	Interview	
		Commercial spots 9:00 a.m. - Midnight	Connie Koukourini	305.569.3131	spots	
		"Al Ritmo de Miami" - Humberto Cortina 5:00 p.m. - 6:00 p.m. M-F	Humberto Cortina	305.569.3131	Interview	
		"La Noticia y Ud." - A. Perez-Roura 8:30 a.m. - 9:00 a.m. M-F	Connie Koukourini	305.569.3131	live read	
		"En Callejón" - Ninoska Perez-Castellon 10:00 a.m. - 11:00 a.m. M-F	Connie Koukourini	305.569.3131	Interview	
		"La Mesa Redonda" - A. Perez-Roura 6:00 p.m. - 8:00 p.m. M-F	Connie Koukourini	305.569.3131	Interview	
		"La Noche y Usted" - Martha Flores 9:00 p.m. - 12 Midnight M-F	Connie Koukourini	305.569.3131	Interview	
		Commercial spots throughout the day	Connie Koukourini	305.569.3131	spots	
		"Amanecer" - Jose Francisco Nunez 6:00 a.m. - 8:00 a.m. M-F	Bernardo Soto	305.638-9729	live read	WASD currently has contract with WACC
		"Al Dia" - Isaul Gonzalez 8:00 a.m. - 9:00 a.m. M-F	Isaul Gonzalez	305.638-9729	live read	
		"A las 9:00" 9:00 a.m. - 10:00 a.m. M-F	Marite Alfonso	305.638-9729	Interview	
		Commercial spots throughout the day	Bernardo Soto	305.638-9729	spots	
	"Entre Profesionales" every Fri. @ 2:45 p.m. 8:00 a.m. - 9:00 a.m. M-F	Bernardo Soto	305.638-9729	Interview		
	"A Primera Hora" 8:00 a.m. - 9:00 a.m. M-F	Jorge Rodriguez	305.541.3300	Interview	WASD currently has contract with WWFE	
	"El Primero de la Tarde" 9:00 a.m. - 10:00 a.m. M-F	Jorge Rodriguez	305.541-3300	Interview		
	Commercial spots throughout the day	Jorge Rodriguez	305.541.3300	spots		
	Commercial spots throughout the day	Jorge Rodriguez	305.541.3300	spots	WASD currently has contract with WRHC	
	"Mediodía" Noon M-F	Jorge Rodriguez	305.541.3300	Interview		
	"Descarga Deportiva" 6:00 p.m. - 9:00 a.m. M-F	Jerry del Castillo	305-642-8417	spot/Interview		
ENGLISH	WINZ - 940 AM	The Jim DeFede Show 7:00 a.m. - 9:00 a.m. M-F	Jim DeFede	954.862.3185	Interview	WASD currently has contract with WINZ
		Commercial spots 6:00 a.m. - 6:00 p.m.	Katerina Perez	305.769.1100	spots	
	WLRN - Local NPR	Miami Herald News 6:00 am - 10:00 a.m. M-F	Michael Peyton	305-357978	live read	WASD currently has contract with WLRN radio
		"Topical Currents" 1:00 p.m. - 2:00 p.m. Mon - Thur.	Michael Peyton	305-350-7978	Interview	
		Commercial spots 6:00 a.m. - 6:00 p.m.	Michael Peyton	305-350-7978	live	
		Commercial spots 6:00 a.m. - 9:00 a.m. M-F	Michael Peyton	305-350-7978	read/Interview	
		Morning News 6:00 a.m. - 9:00 a.m. M-F	Katerina Perez	305.769.1100	live read	WASD currently has contract with WIOD
		Commercial spots 6:00 a.m. - 6:00 pm	Katerina Perez	305.769.1100	spots	
		Community Voices 6:00 a.m. - 7:00 a.m. Sat	Cheryl Myzell	305.567.5753	Interview	WASD currently has contract with WLRN radio
		Piment Bouk (Radio Pepia) hosted by Nelson Voltaire 7:00 a.m. M-F	Rick Santos	Rick Santos	Interview	WASD currently has contract with WLQY
CREOLE	Commercial Spots 7:00 a.m. - 7:00 pm	Rick Santos	Rick Santos	spots		

# WASD WUP - Media Outreach PRINT

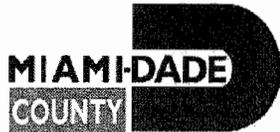
Paper	Section	Contact	Email	Number	Objective	Notes	Agreements
Miami Herald	Community Calendar	Gary Jenkins	<a href="mailto:gjenkins@miamiherald.com">gjenkins@miamiherald.com</a>	305.376.3680	Media Advisory		
Miami Herald	Calendar Sections	Sue Mullin	<a href="mailto:smullin@miamiherald.com">smullin@miamiherald.com</a>	305.376.3430	Media Advisory		
El Nuevo Herald	Calendar	Viviana Muñoz	<a href="mailto:vnunoz@elnuevoherald.com">vnunoz@elnuevoherald.com</a>	305.376.2160	Media Advisory		
Miami New Times	Calendar	Lyssa Oberkreser	<a href="mailto:lyssa.oberkreser@miamiherald.com">lyssa.oberkreser@miamiherald.com</a>	305.571.7574	Media Advisory		
The Miami Times	Coverage	Brandyss Howard	<a href="mailto:bhoward@miamitimesonline.com">bhoward@miamitimesonline.com</a>		Reporting Article		
Diario Las Americas	Coverage	Gustavo Pena	<a href="mailto:gustavopena@diariolasamericas.com">gustavopena@diariolasamericas.com</a>	305.633.3341 ext 2281	Reporting Article		
Community Periodical Program	Monthly Column	300 word article in about 60 community newspapers (English, Spanish and Creole)	Sonia Winters	305.375.1204	Article		WASD will write and submit articles

# WASD WUP Media Outreach Television

Station		Show/Host Name		Time/Format Details		Contact	Contact Info	Objective	Notes
WPBT PBS - Channel 2	"Issues" - Helen Aguirre Ferré	Friday Evenings/Sunday Afternoon	Helen Aguirre Ferré	issues@channel2.org	Interview				
Miami-Dade TV	"County Connection" - Kim Anthony	N/A	Kevin Wynn	305-375-3334	Interview				
City of Miami - 77	Request to replay County Connection/air announcements	Channel 77 (Comcast)	Kelly Penton	305-416-1444	Replay Show		<a href="http://www.miamigov.com/cms/comm/1725_1970.asp">http://www.miamigov.com/cms/comm/1725_1970.asp</a>		
City of Miami - 77	Talk Show	Channel 77 (Comcast)	Kelly Penton	305-416-1444	Interview				
City of Miami Beach - 77	Request to replay County Connection/air announcements	Channel 77 (Atlantic Broadband)	Hilda Fernandez	305.673.7575	Replay show				
City of Coral Gables	Request to replay County Connection/air announcements	Online Broadcast	Joseph Keefe	305.460.5521	Replay show				
WJAN America TeVe/Channel 41	"A Mano Limpia" - Oscar Haza	8:00 - 9:00 P.M. Mon - Fri	Oscar Haza	305-592-4141	Interview				
WJAN America TeVe/Channel 41	"El Show de Fernando"	7:00 - 8:00 P.M. Mon - Fri	Fernando Hidalgo	305-592-4141	Interview				
WJAN America TeVe/Channel 41	"Quiereme Descalzi"	4:00 - 5:00 P.M. Mon - Fri	Soledad Cedro	305-592-4141	Interview		WASD projects have featured prominently in this program		
WJAN America TeVe/Channel 41	Noticias	10:00:00 P.M.	Soledad Cedro	305-592-4141	Interview				
WSCV-Telemundo/Channel 51	"Enfoque Comunitario"	10:00 A.M. Sundays	Carlos Catire	954.622.7825	Interview				
WSCV-Telemundo/Channel 51	"Buenos Dias"	5:00 - 7:00 A.M. Mon - Fri	Paola Reyes	954-622-7825	Interview				
WSCV-Telemundo/Channel 51	"Cuidado Verde"	ongoing reports	Carlos Catire	954-622-7825	Interview		WASD projects have featured prominently in this segment		
WSCV-Telemundo/Channel 51	Noticiero Telemundo	11:00 P.M.	Ambrosio Hernandez	954-622-7825	Interview				
WLTU Univision/Channel 23	"Miami Ahora"	10:00 A.M. Saturdays	Rosemary Barrera	305-471-4007	Interview				
WLTU Univision/Channel 23	"Al Amanecer"	6:00 -7:00 A.M. Mon - Fri	Rosemary Barrera	305-471-4007	Interview				
WLTU Univision/Channel 23	Noticias 23	6:00 and 11: 00 P.M. M-F	Rosemary Barrera	305-471-4007	Interview				
WSBS Mega TV/Channel 22	"Polos Opuesto" - Ma Elvira Salazar	9:00 p.m. - 10:00 P.M. 10:00 P.M. Mon-Fri	Maria Valdes	polosopuestos@me ga.tv	Interview		WASD projects have been featured prominently in this station		
WSBS Mega TV/Channel 22	"Noticias 22"		Maria Valdes	meganews@mea tv	News				
WFOR - CBS - Channel 4	"4 Sunday Morning" with Elliot Rodriguez	11:00 A.M. Sundays		305-235-6677	Interview				
WTVJ - NBC - Channel 6	"Going Green"	Ongoing reports	Patricia Andreu	954-622-7626	Interview		WASD projects have featured prominently in this segment		
WFLG - ABC - 10	"This Week in South Florida" with Michael Putney	10:00 A.M. Sundays	Michael Putney	305-670-9980	Interview				

**WASD WUP Media Outreach  
Other (WEB, Email, Community Meetings)**

Station	Show/Host Name	Time/Format Details	Contact	Number	Objective	Notes	Agreements
Miami-Dade County	On-Demand	ONLINE (Major WUP Accomplishments)	Carol Higgins	305-375-2543			
City of Miami		Website	Kelly Penton	305-416-1444			
City of Miami Beach		Website	Hilda Fernandez	305-673-7575			
City of Coral Gables		Website	Joseph Keefe	305-460-5521			
Blogs	Eye on Miami	www.eyonmiami.com	Frank Calderon	786-552-8251			
	Miami Vision Blogorama	http://miamivisionblogorama.blogspot.com/	Miamihttp://www.critical				
Email Mailing Lists	Sayfie Review	Blast Newsletter Email	Justin	justin@blossersavfie.com			
Time & Temperature	12-second messages	Messages repeat 500,000 monthly	Dave Ryder	305-324-8811			
Miami-Dade Email Newsletter	What's New For County Employees	Press Release, Update Articles on WUP Projects	Ruth Kimbrough-Bent	305-375-1308			
WASD/GIC	WUP "Central"	Website	Frank Calderon	786-552-8251			
WASD/GIC	Water Conservation Portal	Website	Maribel Balbin	786-552-8149			
Blogs	Greener Miami	http://www.greenermiami.com/greenermiami/					
M-D County League of Cities	N/A	Monthly Meeting	Richard Kuper	305) 416 - 4155			
Greater Miami Chamber of Commerce	N/A	Monthly Meeting	Marina Foglia	305-374-6902			



①

**Miami-Dade Water and Sewer Department**  
 P. O. Box 330316 • 3071 SW 38th Avenue  
 Miami, Florida 33233-0316  
 T 305-665-7471

miamidade.gov

**Electronic Correspondence/**  
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- Safe Neighborhood Parks
- Seaport
- Solid Waste Management
- Strategic Business Management
- Team Metro
- Transit
- Task Force on Urban Economic Revitalization
- Vizcaya Museum And Gardens
- Water & Sewer**

**March 14, 2008**

**Mr. Curt Thompson, Senior Regulatory Professional**  
**Environmental Resource Regulation Division**  
**South Florida Water Management District**  
**P.O. Box 24680**  
**West Palm Beach, FL 33416-4680**  
**Email: cthomps@sfwmd.gov**

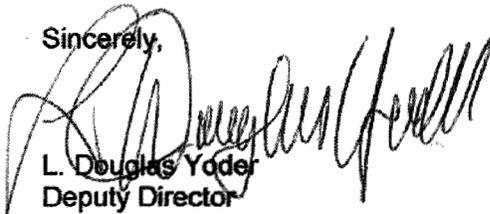
**Re: Miami-Dade County Consolidated PWS**  
**Water Use Permit No. 13-00017-W**  
**Alternative Water Supply Plan Annual Report, Limiting Condition 37**  
**And Reuse Feasibility Annual Report, Limiting Condition 50**

**Dear Mr. Thompson:**

**In accordance with Limiting Conditions 37 and 50, of the Miami-Dade County Water Use Permit No. 13-00017-W, please find enclosed the Alternative Water Supply (AWS) Plan and Reuse Feasibility Plan Annual Report, detailing progress from November 15, 2007 through December 31, 2007. Although the AWS Plan Annual Report is not due until March 15, 2009, Miami-Dade Water and Sewer Department is submitting this informational update to the District on the status of the AWS projects.**

**If you have any questions concerning this submittal, please contact me at 786-552-8979, or Ms. Bertha Goldenberg, P.E. at 786-552-8120.**

**Sincerely,**



**L. Douglas Yoder**  
**Deputy Director**

**Enclosure**

**cc: M. Elsner melsner@sfwmd.gov**

*Delivering Excellence Every Day*



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Miami-Dade  
Water and Sewer Department

**Miami-Dade Consolidated PWS  
Water Use Permit No. 13-00017-W**

**Alternative Water Supply Plan  
and Reuse Feasibility Plan  
Annual Progress Report**

**Progress November 15, 2007  
Through December 31, 2007**

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**Miami-Dade  
Water and Sewer Department  
P.O. Box 33-0316, Miami, FL 33233-0316**

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QA

## SECTION I EXECUTIVE SUMMARY

On November 15, 2007, the South Florida Governing Board (SFWMD) approved the Miami-Dade Consolidated PWS Water Use Permit (WUP).

Limiting Condition 37 of the WUP requires that the permittee provide annual updates per limiting condition 47 of the status of all alternative water supply (AWS) projects. The status report shall include work completed to date, expenditures and any anticipated changes in the timelines. Although the annual update is not required until March 15, 2009, MDWASD is herein providing an update to the SFWMD on the status of AWS projects.

Limiting Condition 50 of the WUP requires that the Miami-Dade Water & Sewer Department (MDWASD) provide the District with annual updates by March 15th of each year, describing the activities associated with the implementation of the approved reuse feasibility plan including the following information: (1) the status of distribution system construction, including location and capacity of a) existing reuse lines b) proposed reuse lines to be constructed in the next five years; (2) a summary of uncommitted supplies for the next five years; (3) the status of reuse plan implementation including status of pilot projects, plan design construction, volume of reuse available, volume of wastewater disposed of ; and (4) the status/copies of any ordinances related to reuse (5) any proposed changes to the reuse plan set forth in Exhibit 30.

MDWASD hereby submits the first Alternative Water Supply Plan and Reuse Feasibility Plan Annual Progress Report summarizing the County's actions and efforts to comply with Limiting Conditions 37 and 50 of the WUP.

## SECTION II STATUS OF REUSE DISTRIBUTION SYSTEM CONSTRUCTION

**The status of distribution system construction, including location and capacity of a) existing reuse lines b) proposed reuse lines to be constructed in the next five years:**

Currently MDWASD has a distribution line to Florida International University's (FIU) Biscayne Bay Campus located at 3000 N.E. 151st Street, North Miami, Florida. The capacity of the existing reuse system for FIU irrigation is 1.5 MGD. MDWASD currently delivers an annual average flow of 0.09 MGD for irrigating 40 acres of landscape.

MDWASD is in the process of selecting a consultant that will design the reclaimed water distribution piping from the Central District Water Reclamation Plant to the northern boundary of the Village of Key Biscayne. It is estimated that the consultant will be on-board in May 2008. The final location and capacity of the pipeline will be determined during the design process. Construction of the pipeline will be completed by January 2012.

Installation of reclaimed water piping was initiated on June 29, 2007 in the Village of Key Biscayne. The Village of Key Biscayne is in the process of preparing bid documents for the selection of a contractor to finalize the purple pipe, which will be installed within the Village limits. Installation of the Key Biscayne purple pipe is scheduled to be completed by August 2008.

The Department is also in the process of selecting a consultant for the design of a 36" diameter reclaimed water distribution pipeline from the South District Water Reclamation Plant to the Metro Zoo. It is estimated that the consultant will be hired in May 2008 and the pipeline will be installed by December 2013.

MDWASD's Engineering Division is designing the North District reclaimed water pipeline. The pipeline design is scheduled for completion at the end of 2008. The pipeline will run from the south entrance gate of the North District Wastewater Treatment Plant (NDWWTP), heading south along the FIU Stadium Road, turning west along NE 151<sup>st</sup> Street and continuing west along NE 151<sup>st</sup> Street to just west of the railroad tracks near NE 21<sup>st</sup> Avenue. The capacity of the pipeline has not yet been determined, pending confirmation from the cities of North Miami and North Miami Beach of the amount of reclaimed water they are committed to take.

## SECTION III SUMMARY OF UNCOMMITTED REUSE SUPPLIES

### **Summary of uncommitted supplies for the next five years:**

MDWASD has met with representatives from the cities of North Miami and North Miami Beach to establish the amount of reclaimed water that each city will utilize. A draft reclaimed water service agreements has been drafted and provided to the cities.

Additionally, MDWASD has met with retail customers including Biscayne Landings, Miami-Dade Parks and Recreation Department, Fisher Island, and the Village of Key Biscayne to discuss the use of reclaimed water.

The consultant selected to design the Central District Water Reclamation Plant will evaluate the feasibility of adding reclaimed water users along the pipeline from the Plant to the Village of Key Biscayne, as well as Fisher Island.

It is not anticipated that MDWASD will have any uncommitted supplies in the next five years.

## **SECTION IV STATUS OF ALTERNATIVE WATER SUPPLY AND REUSE PLAN IMPLEMENTATION**

**The status of both the alternative water supply plan, and the reuse plan implementation including status of pilot projects, plan design construction, volume of reuse available, volume of wastewater disposed of, is described below:**

On July 14, 2005, MDWASD issued a Notice to Proceed to Ecology & Environment, Inc. to update the Reuse Feasibility Study (RFS). On June 13, 2006, the MDWASD received joint comments from the Florida Department of Environmental Protection (FDEP) and the South Florida Water Management District (SFWMD) on the draft RFS Update. On September 18, 2006, the MDWASD held a workshop with the regulatory agencies to further discuss their comments. On May 3, 2007, the MDWASD submitted the Final RFS Update to the FDEP. On June 13, 2007, MDWASD received comments from the FDEP on the Update. On July 13, 2007 MDWASD sent a request for a 30-day time extension to reply to FDEP's letter. On August 13, 2007, MDWASD responded to the FDEP's comments regarding the RFS Update. On September 24, 2007, FDEP sent comments on MDWASD's response. On October 5, 2007, MDWASD responded to FDEP's comments, indicating that MDWASD has committed to 170 MGD of water reclamation by 2026. A meeting to discuss the Reuse Feasibility Study was held on November 28, 2007 in Tallahassee with FDEP and MDWASD. On December 19, 2007 MDWASD submitted an updated Project Implementation Schedule for MDWASD's Water Reclamation Projects to the FDEP.

On June 7, 2006, MDWASD authorized CDM to develop a long range alternative water supply plan to submit to the District for review and approval. On September 18, 2006 MDWASD and their consultants held a workshop with the SFWMD, FDEP and DERM to discuss MDWASD's Alternative Water Supply Master Planning effort. A follow-up meeting with MDWASD, SFWMD, FDEP and DERM, was held on October 2, 2006, to clarify issues that were not clearly defined during the workshop.

On October 20, 2006, MDWASD submitted to the SFWMD for review, two conceptual groundwater replenishment/recharge concepts for the reuse of South District Wastewater Treatment Plant (SDWWTP) effluent. On January 9, 2007, MDWASD met with the SFWMD to discuss the proposed projects and implementation schedule of the Alternative Water Supply (AWS) Plan.

On May 10, 2007, MDWASD submitted an AWS Plan to the SFWMD. On November 1, 2007, MDWASD submitted the final AWS Plan and schedule to the SFWMD.

### **Hialeah Floridan Aquifer Reverse Osmosis (RO) Water Treatment Plant**

The Joint Participation Agreement (JPA) was approved by the BCC on July 26, 2007. On October 25, 2007, the City of Hialeah provided MDWASD with a tentative schedule for the construction of the RO plant. Miami-Dade County Mayor Carlos Alvarez and City of Hialeah Mayor Julio Robaina signed the JPA on December 27, 2007. A workshop between the City and MDWASD will be scheduled in the near future.

### **Floridan Aquifer Blending at Hialeah/Preston**

MDWASD has completed the design of the Floridan blending wells for the Hialeah-Preston Water

Treatment Plants and will be starting the permitting process. Three blending wells will be installed at the Northwest wellfield and two blending wells will be installed in Miami Springs. Contract documents are being prepared for the construction of the blending wells.

#### **South District Water Reclamation Plant**

Currently the South District Wastewater Treatment Plant (SDWWTP) has a capacity to reuse more than 4 MGD of reclaimed water. Current on-site irrigation and in-plant use of reclaimed water resulted in 4.920 MGD of water reclamation at the SDWWTP in FY2007 (see Appendix A). In FY2007, the SDWWTP disposed of an average annual flow of 92.10 MGD of wastewater.

On June 26, 2007, the Board of County Commissioners (BCC) approved the Request to Advertise, for design and construction management services for the water reclamation project at the South District Wastewater Treatment Plant. The contract with CDM, Inc., for the design of the South District Water Reclamation Plant, Groundwater Recharge Phase 1, was approved by the BCC on December 4, 2007.

#### **West District Water Reclamation Plant**

MDWASD staff continues to work on preliminary sizing and design for the proposed West District Water Reclamation Facility. A meeting has been scheduled with the District to discuss potential available lands where the West District Water Reclamation Plant could be located.

#### **North District Wastewater Treatment Plant Reuse Projects**

The North District Wastewater Treatment Plant (NDWWTP) currently has a capacity to reuse 4.44 MGD of reclaimed water. In FY2007, 2.46 MGD of wastewater was treated and reused for in-plant processes at NDWWTP. Irrigation at FIU's Biscayne Bay campus accounted for 0.090 MGD of reuse from the NDWWTP (see Appendix A). In FY 2007, the NDWWTP disposed of an average annual flow of 93.63 MGD of wastewater.

On June 26, 2007, the Board of County Commissioners (BCC) approved the Request to Advertise, for design and construction management services for the water reclamation project at the North District Wastewater Treatment Plant. On November 6, 2007 the BCC approved the contract award with Parsons Water & Infrastructure, Inc. to design the North District Water Reclamation Plant. A Notice to Proceed was issued to the consultant on December 7, 2007. The consultant is currently preparing a technical report evaluating different treatment alternatives. The Water Reclamation Plant is being sized for 10 MGD.

#### **Central District Wastewater Treatment Plant Reuse Projects**

The Central District Wastewater Treatment Plant (CDWWTP) has a capacity to treat an estimated 7.878 MGD of wastewater for reuse. Reclaimed water at the CDWWTP is currently substituted for potable water for in-plant processes. The average annual flow of reuse water at CDWWTP was 5.130 MGD for FY2007 (see Appendix A). In FY2007, the CDWWTP disposed of an average annual flow of 110.90 MGD of wastewater.

Installation of reclaimed water piping was initiated on June 29, 2007 in the Village of Key Biscayne. On

June 26, 2007, the Board of County Commissioners (BCC) approved the Request to Advertise, for design and construction management services for the water reclamation project at the Central Wastewater Treatment Plant. The contract with MWH, Americas Inc., for the design of the Central District Water Reclamation Plant was approved by the BCC on December 4, 2007. A Notice to proceed was issued to the consultant on December 28, 2007. The consultant is preparing a "Regulatory and Practical Reviews" technical report. The consultant will confirm by the end of the task assignment, initial as well as future plant size, storage requirements and reclaimed water distribution pipe diameter.

#### **FP&L Turkey Point 14 MGD and 70 MGD**

MDWASD staff is meeting monthly with representatives from FPL to discuss the feasibility of providing 70 MGD of reclaimed water for cooling the proposed nuclear power plant at Turkey Point and 14 MGD of cooling water for the existing Unit # 5, which was placed in service in 2007.

Currently, two alternatives are being considered for providing reclaimed water to Turkey Point. One alternative is to bring reclaimed water from a new water reclamation plant at the Central District Wastewater Treatment Plant, in Virginia Key, which will require approximately thirty (30) miles of pipeline. The second alternative is to modify MDWASD's sewage collection system to divert more flow to the South District Wastewater Treatment Plant and expand the treatment at the SDWWTP and the South District Water Reclamation Plant. MDWASD is developing cost estimates for both alternatives, which will be discussed with FPL.

#### **Aquifer Recharge Pilot Project**

On May 4, 2007, MDWASD completed 90% design and submitted permit applications to the FDEP and to Miami-Dade County, for the Aquifer Recharge Pilot project. On June 4, 2007, FDEP and Miami-Dade County Department of Environmental Resources Management (DERM) provided comments on the application and plans. Parsons addressed the FDEP and DERM comments in a July 2, 2007 response addressed to the FDEP. On September 6, 2007, MDWASD received approval, with conditions, from the Miami-Dade County Environmental Quality Control Board, for the Aquifer Recharge Pilot project. On September 24, 2007, MDWASD provided additional information regarding the project to FDEP. On October 26, 2007, MDWASD in coordination with the Miami-Dade General Services Administration (GSA) applied for a Government Facilities Hearing for a zoning change for the property that will house the pilot project. On December 17, 2007, GSA in conjunction with MDWASD, submitted an application for a waiver of plat for the property.

#### **Coastal Wetlands Rehydration Demonstration Project**

MDWASD has met with Biscayne National Park, the SFWMD, and the DERM to discuss the revised scope of work for the Coastal Wetlands Rehydration Demonstration Project. Additional meetings with stakeholders were held on October 12 and 19, 2007. On November 10, 2007, MDWASD submitted a conceptual plan and basis of design for the revised project to the SFWMD. MDWASD is currently awaiting comments from the SFWMD on the conceptual plan in order to finalize the Request for Proposal documents for the detailed design contract.

## **SECTION V STATUS OF REUSE ORDINANCES**

MDWASD is currently evaluating reuse rates for both wholesale and retail customers.

## **SECTION VI PROPOSED CHANGES TO EXHIBIT 29 AND 30**

MDWASD is not proposing any changes to either Exhibit 29 or Exhibit 30 at this time.

## **APPENDIX A ANNUAL REUSE REPORTS**



Carlos Alvarez, Mayor

Water & Sewer
P. O. Box 330316 • 3071 SW 38th Avenue
Miami, Florida 33233-0316
T 305-665-7471

miamidade.gov

December 14, 2007

CERTIFIED: 7003 1680 0004 5544 0867

- ADA Coordination
Agenda Coordination
Animal Services
Art in Public Places
Audit and Management Services
Aviation
Building
Building Code Compliance
Business Development
Capital Improvements
Citizens' Independent Transportation Trust
Commission on Ethics and Public Trust
Communications
Community Action Agency
Community & Economic Development
Community Relations
Consumer Services
Corrections & Rehabilitation
Cultural Affairs
Elections
Emergency Management
Employee Relations
Empowerment Trust
Enterprise Technology Services
Environmental Resources Management
Fair Employment Practices
Finance
Fire Rescue
General Services Administration
Government Information Center
Historic Preservation
Homeless Trust
Housing Agency
Housing Finance Authority
Human Services
Independent Review Panel
International Trade Consortium
Juvenile Services
Medical Examiner
Metro-Miami Action Plan
Metropolitan Planning Organization
Park and Recreation
Planning and Zoning
Police
Procurement Management
Property Appraisal
Public Library System
Public Works
Safe Neighborhood Parks
Seaport
Solid Waste Management
Strategic Business Management
Team Metro
Transit
Task Force on Urban Economic Revitalization
Vizcaya Museum And Gardens
Water & Sewer

Ms. Shanin Speas-Frost, P.E.
DEP Reuse Coordinator
Mail Station 3540
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Miami-Dade Water and Sewer Department
North District Wastewater Treatment Plant, Permit No. FLA 032183-002
Annual Reuse Report

Dear Ms. Speas-Frost:

Attached, please find the referenced Annual Reuse Report for the fiscal year ending September 30, 2007, submitted in accordance with Rule 62-610.870, F.A.C.

Please contact me at (786) 552-8116 or Mr. Richard O'Rourke P.E. at (786) 552-8123 if you require any additional information.

Sincerely,

[Signature]
Vicente E. Arrebola, P.E.
Assistant Director, Wastewater

VEA/RMO/mc

c: Todd R. Brown, FDEP/WPB
Scott Burns, SFWMD

Attachment: North District Wastewater Treatment Plant, 2006/2007
Annual Reuse Report

Delivering Excellence Every Day

L07244FDEP-ND-Reuse

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Ms. Shanin Speas-Frost, P.E. - DEP Reuse Coordinator

December 14, 2007

North District Wastewater Treatment Plant, Permit No. FLA 032183-002 Annual Reuse Report

bc: J. Renfrow  
J. Ruiz  
L. Yoder  
B. Goldenberg  
J. Mazzaresse  
S. Negahban  
R. O'Rourke  
B. Walton



## Florida Department of Environmental Protection

Twin Towers Office Bldg., 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

### ANNUAL REUSE REPORT

#### Part I - Instructions

1. This form is to be submitted on or before January 1 following the completion of each fiscal year (October 1 through September 30). Submittal is required by Rule 62-610.870, F.A.C. This report will be used to develop and maintain a reuse inventory. It will not be used for determination of compliance with permit limitations, other than requirements to submit this report. If flow monitoring information is not available for individual reuse types or types of users, please provide your best estimates of flows allocated to individual reuse types or types of users.
2. Submit one copy (including all attachments) to each of the following three addresses:
  - a. DEP Water Reuse Coordinator  
Mail Station 3540  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400
  - b. The appropriate DEP district office (attention Domestic Wastewater Program).
  - c. The appropriate water management district.
3. Please type or print legibly. Submit all pages of this form.
4. Completion of this report is required for all domestic wastewater facilities having permitted capacities of 0.1 mgd or larger which contribute reclaimed water to one or more reuse systems permitted under Chapter 62-610, F.A.C. This form is to be completed annually for each separate reuse system. For purposes of this form, "reuse system" means a network of pipes, pumping facilities, storage facilities, and appurtenances designed to convey and distribute reclaimed water from one or more domestic wastewater treatment facilities to one or more users of reclaimed water.
5. Use the units specified in the form. For flows, show annual average flows (in mgd). This can be obtained by averaging daily flows over a 365-day period, dividing the total annual volume by 365, or by averaging the 12 monthly average flow values.
6. Be sure to submit the required attachments (see Part X on pages 8 and 9 of this form).
7. The cover sheet of your permit will identify portions of your project classified as "reuse" and portions classified as "effluent disposal." Rule 62-610.810, F.A.C., lists the criteria for classifying projects (or portions of projects) as "reuse" or "effluent disposal."

**Part II - General Information**

1. Reporting Period: October 1, 2006 through September 30, 2007

2. Date Submitted December 14, 2007

3. Person Completing This Form

Name Mario J. Campa

Title Engineer 1

Organization Miami-Dade Water and Sewer Department

Mailing Address PO Box 330316

City/State/Zip Code Miami, FL 33233-0316

Telephone ( 786 ) 552-8125

E-mail mjcamp@miamidade.gov

4. Reuse System Name North District Wastewater Treatment Plant / In-Plant Reuse System

5. Domestic Wastewater Treatment Facilities Providing Reclaimed Water to This Reuse System

a. Location of Facilities

City Miami County Miami-Dade

DEP District (check one):

- Northwest (Pensacola)
- Northeast (Jacksonville)
- Southwest (Tampa)
- Central (Orlando)
- Southeast (West Palm Beach)
- South (Ft. Myers)

Water Management District (check one):

- Northwest Florida (Havana)
- Suwannee River (Live Oak)
- Southwest Florida (Brooksville)
- St. Johns River (Palatka)
- South Florida (West Palm Beach)

b. Domestic Wastewater Treatment Facility Information

Enter the name of the facility, the DEP identification number, disinfection level,<sup>a</sup> permitted capacity, and annual average flow for each treatment facility providing reclaimed water to this reuse system.

Facility Name	DEP Identification Number	Disinfection Level <sup>a</sup>	Permitted Capacity (mgd)	Average Flow (mgd)
North District WWTP	5013M02271	HB*	112.50	93.70
<b>Total Treated Wastewater</b>			<b>112.50</b>	<b>93.70</b>

<sup>a</sup> Enter one of the following codes for disinfection level for each treatment facility:

- HI = High-level disinfection, as described in Rule 62-600.440(5), F.A.C.
- IM = Intermediate disinfection, as described in Rule 62-600.440(6), F.A.C.
- BA = Basic disinfection, as described in Rule 62-600.440(4), F.A.C.
- LL = Low-level disinfection, as described in Rule 62-600.440(7), F.A.C.
- HB = High-level disinfection & basic disinfection for portions of the treated flow.
- FT = Full treatment disinfection, as described in Rule 62-610.563(3)(b), F.A.C.

\*High-level disinfection for NDWWTP 1.5 MGD Reuse System only.

**Part III - Reclaimed Water and/or Effluent Available for Reuse or Disposal**

Source of Water	Average Flow (mgd)
<b>Treated Wastewater</b> [Enter the total from bottom of table in Part II]	93.70
<b>Supplemental Water Supplies</b> (Enter the flow for each supplemental water source added by the utility)	
Surface Water	0
Stormwater	0
Ground Water	0
Drinking Water	0
<b>Demineralization Concentrate</b> (Blended with final reclaimed water only)	0
<b>Water Recovered from ASR<sup>b</sup></b>	0
<b>Total Water Available for Reuse or Disposal</b> [Should equal the total in Part VI of this form]	<b>93.70</b>

<sup>b</sup> Aquifer Storage and Recovery (ASR) - This activity is described in Rule 62-610.466, F.A.C. If you have an ASR system included in your permit for the reuse system, please make separate entries in both Part III (for the total average flow withdrawn from the ASR well) and in Part VI (for the total average flow injected into the ASR well).

Note: Average Flow is amount of effluent available for reuse. Permitted capacity is based on effluent discharged.

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### Part IV - Reuse

For each reuse activity, enter the permitted capacity, average flows, and acreage. Do not duplicate any of these entries in Part V of this form. Using available flow records, other available information, and your best judgment, please allocate the average flows for all treatment facilities among the reuse types listed in this part. Make discrete entries (do not show ranges). Show totals at the bottom of the table.

Reuse Type	Reuse Sub-Type	Part	Capacity (mgd)	Flow (mgd)	Area (acres)
<b>Public Access Areas &amp; Landscape Irrigation</b>	Golf Course Irrigation	III			
	Residential Irrigation	III			
	Other Public Access Areas	III	1.5	0.090	40
<b>Agricultural Irrigation &amp; Sprayfields</b>	Edible Crops (Be sure to attach the inventory of edible crop irrigation. See Part X of this form.)	III			
	Grass, Pasture, Other Crops	II			
<b>Ground Water Recharge &amp; Indirect Potable Reuse</b>	Rapid Infiltration Basins (Including Some Perc Ponds) <sup>c</sup>	IV			
	Absorption Fields <sup>c</sup>	IV			
	Surface Water Augmentation (Discharge to Class I Waters)	V			
	Injection to Potable Aquifers	V			
<b>Industrial</b>	At Treatment Plant	VII	2.94	2.46	
	At Other Facilities	VII			
<b>Toilet Flushing</b>		III			
<b>Fire Protection</b>		III			
<b>Wetlands</b>					
<b>Other (Specify)</b>					
<b>Total Reuse</b> [Enter total flow on Line 1 in Part VI of this form.]			4.44	2.550	40

<sup>c</sup> To be considered "reuse," either of the following conditions must exist:

\* There are multiple basins or absorption fields that are routinely wetted, dried, and maintained in accord with Part IV of Chapter 62-610, F.A.C., or

\* Continuously-loaded ponds must meet the higher treatment/disinfection requirements in Rule 62-610.525, F.A.C. If neither condition is met, the perc pond or absorption field is "effluent disposal" and should be recorded in Part V in this form (under "Other").

### Part V - Effluent Disposal

For each effluent disposal activity, enter the permitted capacity and average flow. Do not duplicate any of these entries in Part IV of this form. Using available flow records, other available information, and your best judgment, please allocate the average flows for all treatment facilities among the effluent disposal types listed in this part. Make discrete entries (do not show ranges) for capacity and flow. Show totals at the bottom of the table.

Disposal Type	Disposal Sub-Type	Permitted Capacity (mgd)	Average Flow (mgd)
<b>Surface Water Discharges</b>	Ocean Outfall	112.5	89.91
	To Coastal or Estuarine Waters		0
	To Wetlands		0
	To Other Surface Waters		0
<b>Deep Well Disposal</b>		33.9	0.19
<b>Other (specify)</b>	Sludge Transfer to Central District Plant	N/A	3.53
<b>Total Flow Disposed</b> [Enter total flow on Line 2 in Part VI of this form.]		112.50	93.63

**Part VI - Summary of Reuse and Disposal**

Reuse or Disposal Activity	Average Flow (mgd)
1. Reuse (From bottom of Part IV of this form)	2.55
2. Effluent Disposal (From bottom of Part V)	93.63
3. Flow Stored in ASR (See note <sup>b</sup> on ASR in Part III.)	0
<b>Total (Should equal the total in Part III of this form.)<sup>d</sup></b>	<b>96.18</b>

<sup>d</sup> The totals in Parts III and VI will not be equal if one of the following conditions exists (check as appropriate):

- The reuse system includes an ASR system and the amounts injected and withdrawn during the year differ.
- The reuse system includes one or more reuse activities in which reclaimed water is returned to the treatment facility after its use, where it is then available for reuse or disposal.

Effluent flow is metered after it feeds the reuse system.

Part of the plant influent flow is diverted to the Central District plant as a sludge slurry.

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**Part VII – Reuse Activities, Numbers of Customers, and Backup Discharges**

1. How many single-family residences have reclaimed water service? None
2. How many golf courses are irrigated using reclaimed water? None
3. How many parks or playgrounds are irrigated using reclaimed water? None
4. How many schools are irrigated using reclaimed water? 1, Florida International University North Campus
5. Is reclaimed water used to flush toilets?  Yes  No If yes, list locations where reclaimed water is used for toilet flushing. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Is reclaimed water used for fire protection?  No  Yes, in sprinkler systems  
 Yes, in fire hydrants  Yes, other (please describe) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. How many cooling towers use reclaimed water from this reuse system? None
8. List or describe any unique or unusual uses of reclaimed water. \_\_\_\_\_  
Flushing, washdown, pump seal lubricant and WWTP on-site irrigation.  
\_\_\_\_\_
9. Is there a surface water discharge that serves as a backup discharge for the reuse system?  
 No  Yes, a Limited Wet Weather Discharge permitted under Rule 62-610.860, F.A.C.  
 Yes, permitted under the APRICOT Act [Section 403.086(7), F.S.]  
 Yes, permitted under other rules governing surface water discharges
10. Do you require construction of reclaimed water piping in new residential or other developments?  
 Yes  No
11. Do you require connection to the reclaimed water system when reclaimed water service becomes available?  
 Yes  No

### Part VIII – Cross-Connection Control Activities

Rule 62-610.469, F.A.C., imposes cross-connection control requirements on reuse systems permitted under Part III of Chapter 62-610, F.A.C. This includes requirements for the implementation of cross-connection control programs by all public water supply systems serving areas that are within the general reclaimed water service area. Color-coding, labeling, and separation distance requirements are included. In addition, inspections within the reclaimed water service area are required. For purposes of this form, “cross-connection” means a pipe-to-pipe connection between drinking water pipes and reclaimed water pipes.

1. Are all public water supply systems serving areas that are within the general reuse service area actively implementing and enforcing their cross-connection control programs?  Yes  No

Have all of these cross-connection control programs been accepted by the DEP or the approved county health department?  Yes  No

2. How many illegal cross-connections have been identified during the reporting period? None

How many of these cross-connections have been eliminated? N/A

Please, attach a description of identified cross-connections and efforts taken to eliminate them.

3. How many new connections were made to the reclaimed water system during the reporting period? None

How many of the new reclaimed water connections were inspected at the time of initial connection? N/A

4. How often are the reclaimed water connections of existing residential reclaimed water customers inspected (i.e., daily, weekly, monthly, annually)? N/A

How often are the reclaimed water connections of existing non-residential reclaimed water customers inspected (i.e., daily, weekly, monthly, annually)? N/A

5. In addition to the number of new connections inspected in Item 3 above, how many existing connections were inspected during the reporting period? N/A

### Part IX - Rates Charged for the Use of Reclaimed Water

Please, list the fees charged for the use of reclaimed water. Please do not enter wastewater or sewer charges. If reclaimed water is provided at no cost, enter zeroes in both blanks. If the fee structure includes both flat rate and gallonage charge components, make a positive entry in both spaces. Make all entries in the units shown.

1. How much do you charge a single-family residential customer (assume a 0.2-acre lot) for the use of reclaimed water?

Flat rate (\$/month/connection) N/A

Gallonage charge (cents/1000 gal.) N/A

2. How much do you charge non-residential customers, such as golf courses, (assume 0.1 mgd on a 50-acre site) for the use of reclaimed water?

Flat rate (\$/month/connection) N/A

Gallonge charge (cents/1000 gal.) N/A

### Part X - Required Attachments

Check, as appropriate, and attach the required documentation.

**Inventory of Edible Crop Irrigation** - If reclaimed water is used to irrigate edible crops at commercial agricultural sites, attach a copy of the current edible crop irrigation inventory as required by Rules 62-610.475 and 62-610.870, F.A.C. The inventory shall include the following information:

- a. Name of the agricultural operation.
- b. Name and telephone number of the owner or operator of the agricultural operation.
- c. Address of the agricultural operation.
- d. Edible crops irrigated using reclaimed water.
- e. Type of application (irrigation) method used.
- f. Approximate area (acres) under irrigation using reclaimed water on which edible crops are grown.

**Inventory of Storage Facilities** - If this reuse system was permitted under Part III of Chapter 62-610, F.A.C., attach a copy of the current inventory of storage facilities, as required by Rules 62-610.464, 62-610.830, and 62-610.870, F.A.C. The inventory shall include the following information:

- a. Name or identifier for the storage system.
- b. Location.
- c. Function of the storage system (system storage or reject storage).
- d. Type of facility (covered tank, uncovered tank, lined pond, unlined pond).
- e. Indication of whether or not the storage facility is a water of the state or discharges to a water of the state.
- f. Distance to the nearest public water supply well.
- g. Distance to the nearest potable water supply well, which is not a public water supply well.
- h. Volume of each storage tank/pond and the total storage volume of all storage tanks and ponds (in units of million gallons).

**Summary of Public Notification Program** - If this reuse system was permitted under Part III of Chapter 62-610, F.A.C., attach a summary of the public notification program activities during the reporting period, as required by Rule 62-610.468(6), F.A.C. The summary shall include the following:

- a. Details of written public notification activities (include copies of written notices).
- b. Summary of activities involving the news media.
- c. Use of advisory signs.
- d. Other public notification activities.

**Summary of Metering and Rate Structure** - As noted in 403.064(16), Florida Statutes, utilities implementing reuse projects are encouraged to meter use of reclaimed water by all end users and to charge for the use of reclaimed water based on the actual volume used when such metering and charges can be shown to encourage water conservation. Metering and the use of volume-based rates are effective water management tools for the following reuse activities: residential irrigation, agricultural irrigation, industrial uses, landscape irrigation, irrigation of other public access areas, commercial and institutional uses such as toilet flushing, and transfers to other reclaimed water utilities. As required by 403.064(16), F.S., if this reuse system provides reclaimed water for any of the uses listed above, attach a summary of the utility's metering activities and the rate structure that the utility currently employs or plans to employ. The summary shall include the following:

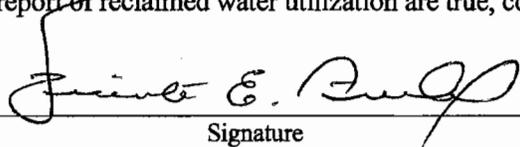
- a. Number of meters employed to monitor volume of reclaimed water used by customers.
- b. If information is available, please provide per capita reclaimed water use for areas that meter and for unmetered areas. If available, please provide historical per capita usage data for before and after the utility began metering reclaimed water.
- c. Provide information on the type of rate structure (i.e., inclining or declining block rates) for reclaimed water employed by the utility.
- d. Provide a description of the utility's use of master meters (i.e., for a subdivision) or the use of individual meters (i.e., for single-family residential customers).
- e. Provide a summary of the utility's plans for metering reclaimed water customers.

None of these items are required for this reuse system.

**Part XI - Permittee's Certification**

I certify that the statements made in this report of reclaimed water utilization are true, correct, and complete to the best of my knowledge and belief.

Date: 12/17/07

  
Signature

Phone: (786) 552-8116

Vicente E. Arrebola, P.E. Assistant Director, Wastewater  
Name and Title (please print/type)

Company Name: Miami-Dade Water and Sewer Department

Address: PO Box 330316

City/State/Zip Code: Miami, FL 33233-0316

E-Mail: arrebv@miamidade.gov

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## Part X – Required Attachments

### Inventory of Storage Facilities

- a. **Name or identifier for the storage system:**  
Covered Storage Tanks, Nos. 1 and 2
- b. **Location:**  
Latitude 25 ° 55 ' 04 " N Longitude 80 ° 09 ' 12 " W  
North District Wastewater Treatment Plant, 2575 N.E. 151 Street, North Miami  
FL 33160
- c. **Function of the storage system:**  
Covered tanks are used as system storage for the reclaimed water.
- d. **Type of facility:**  
Covered tank
- e. **Indication of whether or not the storage facility is a water of the state or discharges to a water of the state:**  
Not applicable, covered tank.
- f. **Distance to the nearest public water supply well:**  
Not applicable, covered storage tank.
- g. **Distance to the nearest potable water supply well, which is not a public water supply well:**  
Not applicable, covered storage tank.

### Public Notification Program

- a. **Written public notices:**  
See item c.
- b. **Summary of activities involving the news media:**  
None
- c. **Use of advisory signs:**  
Advisory signs have been posted at the entrances of the Florida International University North Campus in English and Spanish. These signs are in addition to existing signs placed in areas where reclaimed water is used for irrigation. In FY 2005/2006 MDWASD provided 20 new signs to replace and augment the existing signage.
- d. **Other public notification activities:**  
None



Carlos Alvarez, Mayor

Water & Sewer  
P. O. Box 330316 • 3071 SW 38th Avenue  
Miami, Florida 33233-0316  
T 305-665-7471

miamidade.gov

December 14, 2007

CERTIFIED: 7003 1680 004 5544 0881

- ADA Coordination
- Agenda Coordination
- Animal Services
- Art in Public Places
- Audit and Management Services
- Aviation
- Building
- Building Code Compliance
- Business Development
- Capital Improvements
- Citizens' Independent Transportation Trust
- Commission on Ethics and Public Trust
- Communications
- Community Action Agency
- Community & Economic Development
- Community Relations
- Consumer Services
- Corrections & Rehabilitation
- Cultural Affairs
- Elections
- Emergency Management
- Employee Relations
- Empowerment Trust
- Enterprise Technology Services
- Environmental Resources Management
- Fair Employment Practices
- Finance
- Fire Rescue
- General Services Administration
- Government Information Center
- Historic Preservation
- Homeless Trust
- Housing Agency
- Housing Finance Authority
- Human Services
- Independent Review Panel
- International Trade Consortium
- Juvenile Services
- Medical Examiner
- Metro-Miami Action Plan
- Metropolitan Planning Organization
- Park and Recreation
- Planning and Zoning
- Police
- Procurement Management
- Property Appraisal
- Public Library System
- Public Works
- Safe Neighborhood Parks
- Seaport
- Solid Waste Management
- Strategic Business Management
- Team Metro
- Transit
- Task Force on Urban Economic Revitalization
- Vizcaya Museum And Gardens
- Water & Sewer

Ms. Shanin Speas-Frost, P.E.  
DEP Reuse Coordinator  
Mail Station 3540  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

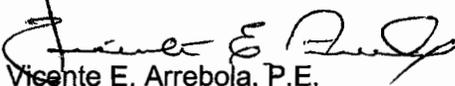
Re: Miami-Dade Water and Sewer Department  
South District Wastewater Treatment Plant, Permit No. FLA 042137  
Annual Reuse Report

Dear Ms. Speas-Frost:

Attached, please find the referenced Annual Reuse Report for the fiscal year ending September 30, 2007, submitted in accordance with Rule 62-610.870, F.A.C.

Please contact me at (786) 552-8116 or Mr. Richard O'Rourke P.E. at (786) 552-8123 if you require any additional information.

Sincerely,

  
Vicente E. Arreola, P.E.  
Assistant Director, Wastewater

VEA/RMO/mc

c: Todd R. Brown, FDEP/WPB  
Scott Burns, SFWMD

Attachment: South District Wastewater Treatment Plant, 2006/2007  
Annual Reuse Report

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L07246FDEP-SD-Reuse

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Ms. Shanin Speas-Frost, P.E. - DEP Reuse Coordinator

December 14, 2007

South District Wastewater Treatment Plant, Permit No. FLA 042137 Annual Reuse Report

bc: J. Renfrow  
J. Ruiz  
L. Yoder  
B. Goldenberg  
J. Mazzaresse  
S. Negahban  
R. O'Rourke  
S. Kronheim



## Florida Department of Environmental Protection

Twin Towers Office Bldg., 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

### ANNUAL REUSE REPORT

#### Part I - Instructions

1. This form is to be submitted on or before January 1 following the completion of each fiscal year (October 1 through September 30). Submittal is required by Rule 62-610.870, F.A.C. This report will be used to develop and maintain a reuse inventory. It will not be used for determination of compliance with permit limitations, other than requirements to submit this report. If flow monitoring information is not available for individual reuse types or types of users, please provide your best estimates of flows allocated to individual reuse types or types of users.
2. Submit one copy (including all attachments) to each of the following three addresses:
  - a. DEP Water Reuse Coordinator  
Mail Station 3540  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400
  - b. The appropriate DEP district office (attention Domestic Wastewater Program).
  - c. The appropriate water management district.
3. Please type or print legibly. Submit all pages of this form.
4. Completion of this report is required for all domestic wastewater facilities having permitted capacities of 0.1 mgd or larger which contribute reclaimed water to one or more reuse systems permitted under Chapter 62-610, F.A.C. This form is to be completed annually for each separate reuse system. For purposes of this form, "reuse system" means a network of pipes, pumping facilities, storage facilities, and appurtenances designed to convey and distribute reclaimed water from one or more domestic wastewater treatment facilities to one or more users of reclaimed water.
5. Use the units specified in the form. For flows, show annual average flows (in mgd). This can be obtained by averaging daily flows over a 365-day period, dividing the total annual volume by 365, or by averaging the 12 monthly average flow values.
6. Be sure to submit the required attachments (see Part X on pages 8 and 9 of this form).
7. The cover sheet of your permit will identify portions of your project classified as "reuse" and portions classified as "effluent disposal." Rule 62-610.810, F.A.C., lists the criteria for classifying projects (or portions of projects) as "reuse" or "effluent disposal."

**Part II - General Information**

1. Reporting Period: October 1, 2006 through September 30, 2007

2. Date Submitted December 14, 2007

3. Person Completing This Form

Name Mario J. Campa

Title Engineer 1

Organization Miami-Dade Water and Sewer Department

Mailing Address PO Box 330316

City/State/Zip Code Miami, FL 33233-0316

Telephone ( 786 ) 552-8125

E-mail mjcamp@miamidade.gov

4. Reuse System Name South District Wastewater Treatment Plant / On-Site Irrigation

5. Domestic Wastewater Treatment Facilities Providing Reclaimed Water to This Reuse System

a. Location of Facilities

City Miami County Miami-Dade

DEP District (check one):

- Northwest (Pensacola)
- Northeast (Jacksonville)
- Southwest (Tampa)
- Central (Orlando)
- Southeast (West Palm Beach)
- South (Ft. Myers)

Water Management District (check one):

- Northwest Florida (Havana)
- Suwannee River (Live Oak)
- Southwest Florida (Brooksville)
- St. Johns River (Palatka)
- South Florida (West Palm Beach)

b. Domestic Wastewater Treatment Facility Information

Enter the name of the facility, the DEP identification number, disinfection level,<sup>a</sup> permitted capacity, and annual average flow for each treatment facility providing reclaimed water to this reuse system.

Facility Name	DEP Identification Number	Disinfection Level <sup>a</sup>	Permitted Capacity (mgd)	Average Flow (mgd)
South District WWTP	5013M04555	HB*	112.50	91.13
<b>Total Treated Wastewater</b>			<b>112.50</b>	<b>91.13</b>

<sup>a</sup> Enter one of the following codes for disinfection level for each treatment facility:

HI = High-level disinfection, as described in Rule 62-600.440(5), F.A.C.

IM = Intermediate disinfection, as described in Rule 62-600.440(6), F.A.C.

BA = Basic disinfection, as described in Rule 62-600.440(4), F.A.C.

LL = Low-level disinfection, as described in Rule 62-600.440(7), F.A.C.

HB = High-level disinfection & basic disinfection for portions of the treated flow.

FT = Full treatment disinfection, as described in Rule 62-610.563(3)(b), F.A.C.

\*High-level disinfection for SDWWTP/On-site Reuse System only.

**Part III - Reclaimed Water and/or Effluent Available for Reuse or Disposal**

Source of Water	Average Flow (mgd)
<b>Treated Wastewater</b> [Enter the total from bottom of table in Part II]	91.13
<b>Supplemental Water Supplies</b> (Enter the flow for each supplemental water source added by the utility)	
Surface Water	0
Stormwater	0
Ground Water	0
Drinking Water	0
<b>Demineralization Concentrate</b> (Blended with final reclaimed water only)	0
<b>Water Recovered from ASR</b> <sup>b</sup>	0
<b>Total Water Available for Reuse or Disposal</b> [Should equal the total in Part VI of this form]	<b>91.13</b>

<sup>b</sup> Aquifer Storage and Recovery (ASR) - This activity is described in Rule 62-610.466, F.A.C. If you have an ASR system included in your permit for the reuse system, please make separate entries in both Part III (for the total average flow withdrawn from the ASR well) and in Part VI (for the total average flow injected into the ASR well).

Note: Average Flow is amount of effluent available for reuse. Permitted capacity is based on effluent discharged.

### Part IV - Reuse

For each reuse activity, enter the permitted capacity, average flows, and acreage. Do not duplicate any of these entries in Part V of this form. Using available flow records, other available information, and your best judgment, please allocate the average flows for all treatment facilities among the reuse types listed in this part. Make discrete entries (do not show ranges). Show totals at the bottom of the table.

Reuse Type	Reuse Sub-Type	Part	Capacity (mgd)	Flow (mgd)	Area (acres)
<b>Public Access Areas &amp; Landscape Irrigation</b>	Golf Course Irrigation	III			
	Residential Irrigation	III			
	Other Public Access Areas	III	0.443 Est.	0.488	
<b>Agricultural Irrigation &amp; Sprayfields</b>	Edible Crops (Be sure to attach the inventory of edible crop irrigation. See Part X of this form.)	III			
	Grass, Pasture, Other Crops	II			
<b>Ground Water Recharge &amp; Indirect Potable Reuse</b>	Rapid Infiltration Basins (Including Some Perc Ponds) <sup>c</sup>	IV			
	Absorption Fields <sup>c</sup>	IV			
	Surface Water Augmentation (Discharge to Class I Waters)	V			
	Injection to Potable Aquifers	V			
<b>Industrial</b>	At Treatment Plant	VII	3.73 Est.	4.43 est.	
	At Other Facilities	VII			
<b>Toilet Flushing</b>		III			
<b>Fire Protection</b>		III			
<b>Wetlands</b>					
<b>Other (Specify)</b>					
<b>Total Reuse</b> [Enter total flow on Line 1 in Part VI of this form.]			4.173 est.	4.920	

<sup>c</sup> To be considered "reuse," either of the following conditions must exist:

\* There are multiple basins or absorption fields that are routinely wetted, dried, and maintained in accord with Part IV of Chapter 62-610, F.A.C., or

\* Continuously-loaded ponds must meet the higher treatment/disinfection requirements in Rule 62-610.525, F.A.C. If neither condition is met, the perc pond or absorption field is "effluent disposal" and should be recorded in Part V in this form (under "Other").

### Part V - Effluent Disposal

For each effluent disposal activity, enter the permitted capacity and average flow. Do not duplicate any of these entries in Part IV of this form. Using available flow records, other available information, and your best judgment, please allocate the average flows for all treatment facilities among the effluent disposal types listed in this part. Make discrete entries (do not show ranges) for capacity and flow. Show totals at the bottom of the table.

Disposal Type	Disposal Sub-Type	Permitted Capacity (mgd)	Average Flow (mgd)
<b>Surface Water Discharges</b>	Ocean Outfall		
	To Coastal or Estuarine Waters		
	To Wetlands		
	To Other Surface Waters		
<b>Deep Well Disposal</b>		112.50	92.1
<b>Other (specify)</b>			
<b>Total Flow Disposed</b> [Enter total flow on Line 2 in Part VI of this form.]		112.50	92.10

**Part VI - Summary of Reuse and Disposal**

Reuse or Disposal Activity	Average Flow (mgd)
1. Reuse (From bottom of Part IV of this form)	4.92
2. Effluent Disposal (From bottom of Part V)	92.1
3. Flow Stored in ASR (See note <sup>b</sup> on ASR in Part III.)	0
<b>Total (Should equal the total in Part III of this form.)</b> <sup>d</sup>	<b>99.18</b>

<sup>d</sup> The totals in Parts III and VI will not be equal if one of the following conditions exists (check as appropriate):

- The reuse system includes an ASR system and the amounts injected and withdrawn during the year differ.
- The reuse system includes one or more reuse activities in which reclaimed water is returned to the treatment facility after its use, where it is then available for reuse or disposal.  
Effluent flow is metered after it feeds the reuse system.

**Part VII – Reuse Activities, Numbers of Customers, and Backup Discharges**

1. How many single-family residences have reclaimed water service? None
2. How many golf courses are irrigated using reclaimed water? None
3. How many parks or playgrounds are irrigated using reclaimed water? None
4. How many schools are irrigated using reclaimed water? None
5. Is reclaimed water used to flush toilets?  Yes  No If yes, list locations where reclaimed water is used for toilet flushing. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Is reclaimed water used for fire protection?  No  Yes, in sprinkler systems  
 Yes, in fire hydrants  Yes, other (please describe) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. How many cooling towers use reclaimed water from this reuse system? None
8. List or describe any unique or unusual uses of reclaimed water. \_\_\_\_\_  
Flushing, washdown, pump seal lubricant and WWTP on-site irrigation.  
\_\_\_\_\_
9. Is there a surface water discharge that serves as a backup discharge for the reuse system?  
 No  Yes, a Limited Wet Weather Discharge permitted under Rule 62-610.860, F.A.C.  
 Yes, permitted under the APRICOT Act [Section 403.086(7), F.S.]  
 Yes, permitted under other rules governing surface water discharges
10. Do you require construction of reclaimed water piping in new residential or other developments?  
 Yes  No
11. Do you require connection to the reclaimed water system when reclaimed water service becomes available?  
 Yes  No

**Part VIII – Cross-Connection Control Activities**

Rule 62-610.469, F.A.C., imposes cross-connection control requirements on reuse systems permitted under Part III of Chapter 62-610, F.A.C. This includes requirements for the implementation of cross-connection control programs by all public water supply systems serving areas that are within the general reclaimed water service area. Color-coding, labeling, and separation distance requirements are included. In addition, inspections within the reclaimed water service area are required. For purposes of this form, “cross-connection” means a pipe-to-pipe connection between drinking water pipes and reclaimed water pipes.

- 1. Are all public water supply systems serving areas that are within the general reuse service area actively implementing and enforcing their cross-connection control programs?  Yes  No

Have all of these cross-connection control programs been accepted by the DEP or the approved county health department?  Yes  No

- 2. How many illegal cross-connections have been identified during the reporting period? None

How many of these cross-connections have been eliminated? N/A

Please, attach a description of identified cross-connections and efforts taken to eliminate them.

- 3. How many new connections were made to the reclaimed water system during the reporting period? None

How many of the new reclaimed water connections were inspected at the time of initial connection? N/A

- 4. How often are the reclaimed water connections of existing residential reclaimed water customers inspected (i.e., daily, weekly, monthly, annually)? N/A

How often are the reclaimed water connections of existing non-residential reclaimed water customers inspected (i.e., daily, weekly, monthly, annually)? N/A

- 5. In addition to the number of new connections inspected in Item 3 above, how many existing connections were inspected during the reporting period? N/A

**Part IX - Rates Charged for the Use of Reclaimed Water**

Please, list the fees charged for the use of reclaimed water. Please do not enter wastewater or sewer charges. If reclaimed water is provided at no cost, enter zeroes in both blanks. If the fee structure includes both flat rate and gallonage charge components, make a positive entry in both spaces. Make all entries in the units shown.

- 1. How much do you charge a single-family residential customer (assume a 0.2-acre lot) for the use of reclaimed water?

Flat rate (\$/month/connection) N/A

Gallonage charge (cents/1000 gal.) N/A

- 2. How much do you charge non-residential customers, such as golf courses, (assume 0.1 mgd on a 50-acre site) for the use of reclaimed water?

Flat rate (\$/month/connection) N/A

Gallonge charge (cents/1000 gal.) N/A

### Part X - Required Attachments

Check, as appropriate, and attach the required documentation.

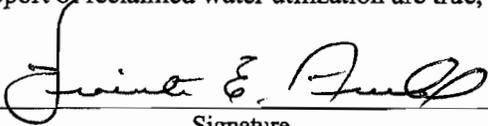
- Inventory of Edible Crop Irrigation** - If reclaimed water is used to irrigate edible crops at commercial agricultural sites, attach a copy of the current edible crop irrigation inventory as required by Rules 62-610.475 and 62-610.870, F.A.C. The inventory shall include the following information:
- Name of the agricultural operation.
  - Name and telephone number of the owner or operator of the agricultural operation.
  - Address of the agricultural operation.
  - Edible crops irrigated using reclaimed water.
  - Type of application (irrigation) method used.
  - Approximate area (acres) under irrigation using reclaimed water on which edible crops are grown.
- Inventory of Storage Facilities** - If this reuse system was permitted under Part III of Chapter 62-610, F.A.C., attach a copy of the current inventory of storage facilities, as required by Rules 62-610.464, 62-610.830, and 62-610.870, F.A.C. The inventory shall include the following information:
- Name or identifier for the storage system.
  - Location.
  - Function of the storage system (system storage or reject storage).
  - Type of facility (covered tank, uncovered tank, lined pond, unlined pond).
  - Indication of whether or not the storage facility is a water of the state or discharges to a water of the state.
  - Distance to the nearest public water supply well.
  - Distance to the nearest potable water supply well, which is not a public water supply well.
  - Volume of each storage tank/pond and the total storage volume of all storage tanks and ponds (in units of million gallons).
- Summary of Public Notification Program** - If this reuse system was permitted under Part III of Chapter 62-610, F.A.C., attach a summary of the public notification program activities during the reporting period, as required by Rule 62-610.468(6), F.A.C. The summary shall include the following:
- Details of written public notification activities (include copies of written notices).
  - Summary of activities involving the news media.
  - Use of advisory signs.
  - Other public notification activities.
- Summary of Metering and Rate Structure** -- As noted in 403.064(16), Florida Statutes, utilities implementing reuse projects are encouraged to meter use of reclaimed water by all end users and to charge for the use of reclaimed water based on the actual volume used when such metering and charges can be shown to encourage water conservation. Metering and the use of volume-based rates are effective water management tools for the following reuse activities: residential irrigation, agricultural irrigation, industrial uses, landscape irrigation, irrigation of other public access areas, commercial and institutional uses such as toilet flushing, and transfers to other reclaimed water utilities. As required by 403.064(16), F.S., if this reuse system provides reclaimed water for any of the uses listed above, attach a summary of the utility's metering activities and the rate structure that the utility currently employs or plans to employ. The summary shall include the following:

- a. Number of meters employed to monitor volume of reclaimed water used by customers.
- b. If information is available, please provide per capita reclaimed water use for areas that meter and for unmetered areas. If available, please provide historical per capita usage data for before and after the utility began metering reclaimed water.
- c. Provide information on the type of rate structure (i.e., inclining or declining block rates) for reclaimed water employed by the utility.
- d. Provide a description of the utility's use of master meters (i.e., for a subdivision) or the use of individual meters (i.e., for single-family residential customers).
- e. Provide a summary of the utility's plans for metering reclaimed water customers.

None of these items are required for this reuse system.

### Part XI - Permittee's Certification

I certify that the statements made in this report of reclaimed water utilization are true, correct, and complete to the best of my knowledge and belief.

Date: 12/17/07   
Signature

Phone: (786) 552-8116 Vicente E. Arrebola, P.E. Assistant Director, Wastewater  
Name and Title (please print/type)

Company Name: Miami-Dade Water and Sewer Department

Address: PO Box 330316

City/State/Zip Code: Miami, FL 33233-0316

E-Mail: arrebv@miamidade.gov

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Water & Sewer  
P. O. Box 330316 • 3071 SW 38th Avenue  
Miami, Florida 33233-0316  
T 305-665-7471

miamidade.gov

Carlos Alvarez, Mayor

December 14, 2007

CERTIFIED: 7004 1680 0004 5544 0874

- ADA Coordination
- Agenda Coordination
- Animal Services
- Art in Public Places
- Audit and Management Services
- Aviation
- Building
- Building Code Compliance
- Business Development
- Capital Improvements
- Citizens' Independent Transportation Trust
- Commission on Ethics and Public Trust
- Communications
- Community Action Agency
- Community & Economic Development
- Community Relations
- Consumer Services
- Corrections & Rehabilitation
- Cultural Affairs
- Elections
- Emergency Management
- Employee Relations
- Empowerment Trust
- Enterprise Technology Services
- Environmental Resources Management
- Fair Employment Practices
- Finance
- Fire Rescue
- General Services Administration
- Government Information Center
- Historic Preservation
- Homeless Trust
- Housing Agency
- Housing Finance Authority
- Human Services
- Independent Review Panel
- International Trade Consortium
- Juvenile Services
- Medical Examiner
- Metro-Miami Action Plan
- Metropolitan Planning Organization
- Park and Recreation
- Planning and Zoning
- Police
- Procurement Management
- Property Appraisal
- Public Library System
- Public Works
- Safe Neighborhood Parks
- Seaport
- Solid Waste Management
- Strategic Business Management
- Team Metro
- Transit
- Task Force on Urban Economic Revitalization
- Vizcaya Museum And Gardens
- Water & Sewer

Ms. Shanin Speas-Frost, P.E.  
DEP Reuse Coordinator  
Mail Station 3540  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

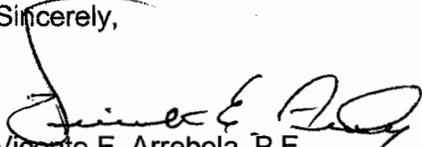
Re: Miami-Dade Water and Sewer Department  
Central District Wastewater Treatment Plant, Permit No. FLA 024805-002  
Annual Reuse Report

Dear Ms. Speas-Frost:

Attached, please find the referenced Annual Reuse Report for the fiscal year ending September 30, 2007, submitted in accordance with Rule 62-610.870, F.A.C.

Please contact me at (786) 552-8116 or Mr. Richard O'Rourke P.E. at (786) 552-8123 if you require any additional information.

Sincerely,

  
Vicente E. Arrebola, P.E.  
Assistant Director, Wastewater

VEA/RMO/mc

c: Todd R. Brown, FDEP/WPB  
Scott Burns, SFWMD

Attachment: Central District Wastewater Treatment Plant, 2006/2007  
Annual Reuse Report

*Delivering Excellence Every Day*

L07245FDEP-CD-Reuse

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Ms. Shanin Speas-Frost, P.E. - DEP Reuse Coordinator

December 14, 2007

Central District Wastewater Treatment Plant, Permit No. FLA 024805-002 Annual Reuse Report

bc: J. Renfrow  
J. Ruiz  
L. Yoder  
B. Goldenberg  
J. Mazzaresse  
S. Negahban  
R. O'Rourke  
T. Maxwell



## Florida Department of Environmental Protection

Twin Towers Office Bldg., 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

### ANNUAL REUSE REPORT

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  - a. DEP Water Reuse Coordinator  
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5. Use the units specified in the form. For flows, show annual average flows (in mgd). This can be obtained by averaging daily flows over a 365-day period, dividing the total annual volume by 365, or by averaging the 12 monthly average flow values.
6. Be sure to submit the required attachments (see Part X on pages 8 and 9 of this form).
7. The cover sheet of your permit will identify portions of your project classified as "reuse" and portions classified as "effluent disposal." Rule 62-610.810, F.A.C., lists the criteria for classifying projects (or portions of projects) as "reuse" or "effluent disposal."

**Part II - General Information**

1. Reporting Period: October 1, 2006 through September 30, 2007

2. Date Submitted December 14, 2007

3. Person Completing This Form

Name Mario J. Campa

Title Engineer 1

Organization Miami-Dade Water and Sewer Department

Mailing Address PO Box 330316

City/State/Zip Code Miami, FL 33233-0316

Telephone ( 786 ) 552-8125

E-mail mjcamp@miamidade.gov

4. Reuse System Name Central District Wastewater Treatment Plant / In-Plant Reuse System

5. Domestic Wastewater Treatment Facilities Providing Reclaimed Water to This Reuse System

a. Location of Facilities

City Miami County Miami-Dade

DEP District (check one):

- Northwest (Pensacola)
- Northeast (Jacksonville)
- Southwest (Tampa)
- Central (Orlando)
- Southeast (West Palm Beach)
- South (Ft. Myers)

Water Management District (check one):

- Northwest Florida (Havana)
- Suwannee River (Live Oak)
- Southwest Florida (Brooksville)
- St. Johns River (Palatka)
- South Florida (West Palm Beach)

b. Domestic Wastewater Treatment Facility Information

Enter the name of the facility, the DEP identification number, disinfection level,<sup>a</sup> permitted capacity, and annual average flow for each treatment facility providing reclaimed water to this reuse system.

Facility Name	DEP Identification Number	Disinfection Level <sup>a</sup>	Permitted Capacity (mgd)	Average Flow (mgd)
Central District WWTP	5013M00797	HB*	143	111.9
<b>Total Treated Wastewater</b>			<b>143.00</b>	<b>111.90</b>

<sup>a</sup> Enter one of the following codes for disinfection level for each treatment facility:

- HI = High-level disinfection, as described in Rule 62-600.440(5), F.A.C.
- IM = Intermediate disinfection, as described in Rule 62-600.440(6), F.A.C.
- BA = Basic disinfection, as described in Rule 62-600.440(4), F.A.C.
- LL = Low-level disinfection, as described in Rule 62-600.440(7), F.A.C.
- HB = High-level disinfection & basic disinfection for portions of the treated flow.
- FT = Full treatment disinfection, as described in Rule 62-610.563(3)(b), F.A.C.

\*High-level disinfection for CDWWTP/On-site Reuse System only.

**Part III - Reclaimed Water and/or Effluent Available for Reuse or Disposal**

Source of Water	Average Flow (mgd)
<b>Treated Wastewater</b> [Enter the total from bottom of table in Part II]	111.90
<b>Supplemental Water Supplies</b> (Enter the flow for each supplemental water source added by the utility)	
Surface Water	0
Stormwater	0
Ground Water	0
Drinking Water	0
<b>Demineralization Concentrate</b> (Blended with final reclaimed water only)	0
<b>Water Recovered from ASR<sup>b</sup></b>	0
<b>Total Water Available for Reuse or Disposal</b> [Should equal the total in Part VI of this form]	<b>111.90</b>

<sup>b</sup> Aquifer Storage and Recovery (ASR) - This activity is described in Rule 62-610.466, F.A.C. If you have an ASR system included in your permit for the reuse system, please make separate entries in both Part III (for the total average flow withdrawn from the ASR well) and in Part VI (for the total average flow injected into the ASR well).

Note: Average Flow is amount of effluent available for reuse. Permitted capacity is based on effluent discharged.

### Part IV - Reuse

For each reuse activity, enter the permitted capacity, average flows, and acreage. Do not duplicate any of these entries in Part V of this form. Using available flow records, other available information, and your best judgment, please allocate the average flows for all treatment facilities among the reuse types listed in this part. Make discrete entries (do not show ranges). Show totals at the bottom of the table.

Reuse Type	Reuse Sub-Type	Part	Capacity (mgd)	Flow (mgd)	Area (acres)
<b>Public Access Areas &amp; Landscape Irrigation</b>	Golf Course Irrigation	III			
	Residential Irrigation	III			
	Other Public Access Areas	III			
<b>Agricultural Irrigation &amp; Sprayfields</b>	Edible Crops (Be sure to attach the inventory of edible crop irrigation. See Part X of this form.)	III			
	Grass, Pasture, Other Crops	II			
<b>Ground Water Recharge &amp; Indirect Potable Reuse</b>	Rapid Infiltration Basins (Including Some Perc Ponds) <sup>c</sup>	IV			
	Absorption Fields <sup>c</sup>	IV			
	Surface Water Augmentation (Discharge to Class I Waters)	V			
	Injection to Potable Aquifers	V			
<b>Industrial</b>	At Treatment Plant	VII	7.84 Est.	4.99	
	At Other Facilities	VII			
<b>Toilet Flushing</b>		III			
<b>Fire Protection</b>		III			
<b>Wetlands</b>					
<b>Other (Specify)</b>	At treatment plant (On-site)		0.038	0.14	
<b>Total Reuse</b> [Enter total flow on Line 1 in Part VI of this form.]			7.878 est.	5.130	

<sup>c</sup> To be considered "reuse," either of the following conditions must exist:

\* There are multiple basins or absorption fields that are routinely wetted, dried, and maintained in accord with Part IV of Chapter 62-610, F.A.C., or

\* Continuously-loaded ponds must meet the higher treatment/disinfection requirements in Rule 62-610.525, F.A.C.

If neither condition is met, the perc pond or absorption field is "effluent disposal" and should be recorded in Part V in this form (under "Other").

### Part V - Effluent Disposal

For each effluent disposal activity, enter the permitted capacity and average flow. Do not duplicate any of these entries in Part IV of this form. Using available flow records, other available information, and your best judgment, please allocate the average flows for all treatment facilities among the effluent disposal types listed in this part. Make discrete entries (do not show ranges) for capacity and flow. Show totals at the bottom of the table.

Disposal Type	Disposal Sub-Type	Permitted Capacity (mgd)	Average Flow (mgd)
<b>Surface Water Discharges</b>	Ocean Outfall	143	110.9
	To Coastal or Estuarine Waters		
	To Wetlands		
	To Other Surface Waters		
<b>Deep Well Disposal</b>		0	0
<b>Other (specify)</b>			
<b>Total Flow Disposed</b> [Enter total flow on Line 2 in Part VI of this form.]		143.00	110.90

**Part VI - Summary of Reuse and Disposal**

Reuse or Disposal Activity	Average Flow (mgd)
1. <b>Reuse</b> (From bottom of Part IV of this form)	5.13
2. <b>Effluent Disposal</b> (From bottom of Part V)	110.9
3. <b>Flow Stored in ASR</b> (See note <sup>b</sup> on ASR in Part III.)	0
<b>Total</b> (Should equal the total in Part III of this form.) <sup>d</sup>	116.03

<sup>d</sup> The totals in Parts III and VI will not be equal if one of the following conditions exists (check as appropriate):

- The reuse system includes an ASR system and the amounts injected and withdrawn during the year differ.
- The reuse system includes one or more reuse activities in which reclaimed water is returned to the treatment facility after its use, where it is then available for reuse or disposal.  
Effluent flow is metered after it feeds the reuse system.

**Part VII – Reuse Activities, Numbers of Customers, and Backup Discharges**

1. How many single-family residences have reclaimed water service? None
2. How many golf courses are irrigated using reclaimed water? None
3. How many parks or playgrounds are irrigated using reclaimed water? None
4. How many schools are irrigated using reclaimed water? None
5. Is reclaimed water used to flush toilets?  Yes  No If yes, list locations where reclaimed water is used for toilet flushing. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Is reclaimed water used for fire protection?  No  Yes, in sprinkler systems  
 Yes, in fire hydrants  Yes, other (please describe) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. How many cooling towers use reclaimed water from this reuse system? None
8. List or describe any unique or unusual uses of reclaimed water. \_\_\_\_\_  
Flushing, washdown, pump seal lubricant and WWTP on-site potable water replacement.  
\_\_\_\_\_
9. Is there a surface water discharge that serves as a backup discharge for the reuse system?  
 No  Yes, a Limited Wet Weather Discharge permitted under Rule 62-610.860, F.A.C.  
 Yes, permitted under the APRICOT Act [Section 403.086(7), F.S.]  
 Yes, permitted under other rules governing surface water discharges
10. Do you require construction of reclaimed water piping in new residential or other developments?  
 Yes  No
11. Do you require connection to the reclaimed water system when reclaimed water service becomes available?  
 Yes  No

### Part VIII – Cross-Connection Control Activities

Rule 62-610.469, F.A.C., imposes cross-connection control requirements on reuse systems permitted under Part III of Chapter 62-610, F.A.C. This includes requirements for the implementation of cross-connection control programs by all public water supply systems serving areas that are within the general reclaimed water service area. Color-coding, labeling, and separation distance requirements are included. In addition, inspections within the reclaimed water service area are required. For purposes of this form, “cross-connection” means a pipe-to-pipe connection between drinking water pipes and reclaimed water pipes.

1. Are all public water supply systems serving areas that are within the general reuse service area actively implementing and enforcing their cross-connection control programs?  Yes  No N/A

Have all of these cross-connection control programs been accepted by the DEP or the approved county health department?  Yes  No N/A

2. How many illegal cross-connections have been identified during the reporting period? N/A

How many of these cross-connections have been eliminated? N/A

Please, attach a description of identified cross-connections and efforts taken to eliminate them.

3. How many new connections were made to the reclaimed water system during the reporting period? N/A

How many of the new reclaimed water connections were inspected at the time of initial connection? N/A

4. How often are the reclaimed water connections of existing residential reclaimed water customers inspected (i.e., daily, weekly, monthly, annually)? N/A

How often are the reclaimed water connections of existing non-residential reclaimed water customers inspected (i.e., daily, weekly, monthly, annually)? N/A

5. In addition to the number of new connections inspected in Item 3 above, how many existing connections were inspected during the reporting period? N/A

### Part IX - Rates Charged for the Use of Reclaimed Water

Please, list the fees charged for the use of reclaimed water. Please do not enter wastewater or sewer charges. If reclaimed water is provided at no cost, enter zeroes in both blanks. If the fee structure includes both flat rate and gallonage charge components, make a positive entry in both spaces. Make all entries in the units shown.

1. How much do you charge a single-family residential customer (assume a 0.2-acre lot) for the use of reclaimed water?

Flat rate (\$/month/connection) N/A

Gallonage charge (cents/1000 gal.) N/A

2. How much do you charge non-residential customers, such as golf courses, (assume 0.1 mgd on a 50-acre site) for the use of reclaimed water?

Flat rate (\$/month/connection) N/A

Gallage charge (cents/1000 gal.) N/A

### Part X - Required Attachments

Check, as appropriate, and attach the required documentation.

**Inventory of Edible Crop Irrigation** - If reclaimed water is used to irrigate edible crops at commercial agricultural sites, attach a copy of the current edible crop irrigation inventory as required by Rules 62-610.475 and 62-610.870, F.A.C. The inventory shall include the following information:

- a. Name of the agricultural operation.
- b. Name and telephone number of the owner or operator of the agricultural operation.
- c. Address of the agricultural operation.
- d. Edible crops irrigated using reclaimed water.
- e. Type of application (irrigation) method used.
- f. Approximate area (acres) under irrigation using reclaimed water on which edible crops are grown.

**Inventory of Storage Facilities** - If this reuse system was permitted under Part III of Chapter 62-610, F.A.C., attach a copy of the current inventory of storage facilities, as required by Rules 62-610.464, 62-610.830, and 62-610.870, F.A.C. The inventory shall include the following information:

- a. Name or identifier for the storage system.
- b. Location.
- c. Function of the storage system (system storage or reject storage).
- d. Type of facility (covered tank, uncovered tank, lined pond, unlined pond).
- e. Indication of whether or not the storage facility is a water of the state or discharges to a water of the state.
- f. Distance to the nearest public water supply well.
- g. Distance to the nearest potable water supply well, which is not a public water supply well.
- h. Volume of each storage tank/pond and the total storage volume of all storage tanks and ponds (in units of million gallons).

**Summary of Public Notification Program** - If this reuse system was permitted under Part III of Chapter 62-610, F.A.C., attach a summary of the public notification program activities during the reporting period, as required by Rule 62-610.468(6), F.A.C. The summary shall include the following:

- a. Details of written public notification activities (include copies of written notices).
- b. Summary of activities involving the news media.
- c. Use of advisory signs.
- d. Other public notification activities.

**Summary of Metering and Rate Structure** - As noted in 403.064(16), Florida Statutes, utilities implementing reuse projects are encouraged to meter use of reclaimed water by all end users and to charge for the use of reclaimed water based on the actual volume used when such metering and charges can be shown to encourage water conservation. Metering and the use of volume-based rates are effective water management tools for the following reuse activities: residential irrigation, agricultural irrigation, industrial uses, landscape irrigation, irrigation of other public access areas, commercial and institutional uses such as toilet flushing, and transfers to other reclaimed water utilities. As required by 403.064(16), F.S., if this reuse system provides reclaimed water for any of the uses listed above, attach a summary of the utility's metering activities and the rate structure that the utility currently employs or plans to employ. The summary shall include the following:

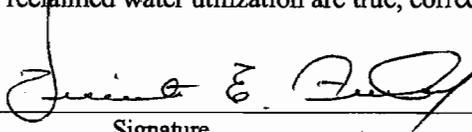
- a. Number of meters employed to monitor volume of reclaimed water used by customers.
- b. If information is available, please provide per capita reclaimed water use for areas that meter and for unmetered areas. If available, please provide historical per capita usage data for before and after the utility began metering reclaimed water.
- c. Provide information on the type of rate structure (i.e., inclining or declining block rates) for reclaimed water employed by the utility.
- d. Provide a description of the utility's use of master meters (i.e., for a subdivision) or the use of individual meters (i.e., for single-family residential customers).
- e. Provide a summary of the utility's plans for metering reclaimed water customers.

None of these items are required for this reuse system.

**Part XI - Permittee's Certification**

I certify that the statements made in this report of reclaimed water utilization are true, correct, and complete to the best of my knowledge and belief.

Date: 12/17/07



Signature

Phone: (786) 552-8116

Vicente E. Arrebola, P.E. Assistant Director, Wastewater

Name and Title (please print/type)

Company Name: Miami-Dade Water and Sewer Department

Address: PO Box 330316

City/State/Zip Code: Miami, FL 33233-0316

E-Mail: arrebv@miamidade.gov

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Miami-Dade Water and Sewer Department  
P. O. Box 330316 • 3071 SW 38th Avenue  
Miami, Florida 33233-0316  
T 305-665-7471

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miamidade.gov

March 13, 2008

Certified Mail 7001 0360 0001 6783 5580  
Return Receipt Requested

- ADA Coordination
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- Consumer Services
- Corrections & Rehabilitation
- Cultural Affairs
- Elections
- Emergency Management
- Employee Relations
- Empowerment Trust
- Enterprise Technology Services
- Environmental Resources Management
- Fair Employment Practices
- Finance
- Fire Rescue
- General Services Administration
- Historic Preservation
- Homeless Trust
- Housing Agency
- Housing Finance Authority
- Human Services
- Independent Review Panel
- International Trade Consortium
- Juvenile Assessment Center
- Medical Examiner
- Metro-Miami Action Plan
- Metropolitan Planning Organization
- Park and Recreation
- Planning and Zoning
- Police
- Procurement Management
- Property Appraiser
- Public Library System
- Public Works
- Safe Neighborhood Parks
- Seaport
- Solid Waste Management
- Strategic Business Management
- Team Metro
- Transit
- Task Force on Urban Economic Revitalization
- Vizcaya Museum And Gardens
- Water & Sewer

Mr. Curtis Thompson  
Water Use Compliance  
South Florida Water Management District  
P. O. Box 24680  
West Palm Beach, FL 33416-4680

Subject: Water Use Permit No. 13-00017-W, Miami-Dade County

Dear Mr. Thompson:

Attached is a copy of the tabulation per exhibit 25 as described in limiting condition 46 of the referenced permit used to determine the "unaccounted for" distribution system losses for calendar year 2007; as requested at the March 4, 2008 meeting.

Should you have any questions, please call me at (786) 552-8112 or Mr. Richard M. O'Rourke, at (786) 552-8123.

Sincerely,

Rafael A. Terrero, P.E., BCEE, M.ASCE  
Assistant Director – Water System Operations

RAT/ro

c: Carlos Hernandez, DERM

Attachment: Miami-Dade Water & Sewer Department Water Accounting

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L08066SFWMD-UAW

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**MIAMI-DADE WATER AND SEWER DEPARTMENT  
WATER LOSS ACCOUNTING**

**ESTIMATED ACCOUNTED FOR WATER**  
(in thousands of gallons)

FISCAL YEAR BY QUARTERS	1		2				UN-ACCOUNT WATER							ADJUSTMENTS				UNACCOUNTED FOR DISTRIBUTION LOSSES	
	WATER PRODUCED & PURCHASED	WATER SOLD	3	4	ANNUAL PERCENT (3/1)	ANNUAL PERCENT (g)	5	6 (h)	7 FLUSHING			10 LEAK DETECTION	11 CLEANING GRAVITY MAINS	12 UNDER - REGISTRATION OF METERS (f)	13 (b)	14	15	ANNUAL PERCENT (h)	
									(d) CONTRACTS	DONATIONS	FLUSHING								
OCT-DEC 2004	31,550,881	24,354,774	7,196,117	22.81	22.04	10,722 (e)	806	4,055	395,995	2,837,354	2,165	1,095,965	14,465	4,361,527	2,834,590	7.68			
JAN-MAR 2005	31,340,809	24,210,336	7,130,473	22.75	22.29	10,722 (e)	1,081	4,763	185,627	2,199,297	1,630	1,089,465	14,843	3,507,428	3,623,045	8.98			
APR-JUN 2005	31,396,884	24,823,572	6,573,322	20.94	21.27	10,722 (e)	562	2,285	185,037	2,948,639	1,542	1,117,061	6,330	4,272,179	2,301,143	8.41			
JUL-SEP 2005	31,500,243	24,828,798	6,671,445	20.86	21.84	10,722 (e)	824	4,838	122,637	1,841,973	1,846	1,121,786	880	3,105,527	3,465,918	9.72			
OCT-DEC 2005	31,298,438	24,955,824	6,342,614	20.26	21.20	10,722 (e)	848	82,848	3,693,341	1,848	1,123,012	745	4,913,364	1,429,250	8.62				
JAN-MAR 2006	31,219,533	24,590,271	6,629,262	21.23	20.82	10,722 (e)	116	10,801	104,098	3,314,020	1,477	1,106,562	711	4,548,507	2,080,755	7.40			
APR-JUN 2006	31,995,722	25,401,400	6,594,322	20.61	20.74	10,722 (e)	113	2,754	100,464	3,225,881	7,167	1,143,063	752	4,480,916	2,103,406	7.21			
JUL-SEP 2006	31,123,063	24,542,979	6,580,084	21.14	20.81	10,722 (e)	130	3,641	283,186	2,988,075	5,078	1,104,434	821	4,386,087	2,183,997	6.21			
OCT-DEC 2006	30,911,230	24,299,396	6,611,834	21.39	21.09	10,722 (e)	N/A	7,090	158,386	2,880,232	1,943	1,093,473	689	4,152,535	2,459,299	7.05			
JAN-MAR 2007	30,376,379	23,565,522	6,812,857	22.43	21.38	10,722 (e)	N/A	262,840	125,285	2,494,443	2,380	1,060,448	725	3,956,843	2,856,014	7.72			
APR-JUN 2007	28,406,692	22,988,613	5,418,079	19.07	21.04	10,722 (e)	N/A	2,937	72,294	3,760,839	1,122	1,034,488	965	4,883,367	534,712	6.65			
JUL-SEP 2007	29,395,395	22,329,324	7,066,071	24.04	21.76	10,722 (e)	N/A	3,925	41,137	4,473,821	1,495	1,004,820	816	5,536,736	1,529,335	6.20			
OCT-DEC 2007	28,421,944	22,313,944	6,108,000	21.49	21.79	10,722 (e)	N/A	6,359	42,843	2,841,221	2,216	1,004,127	633	3,908,121	2,199,879	6.11			

(a) Miami-Dade, City of Coral Gables and City of Miami, includes Key Biscayne  
 (b) LeJeune Building, Westwood Lake and Distribution  
 (c) Revised on 8/29/08 to include Non-Consumer Usage Reported by Collections  
 (d) Starting in October 1999 most of the contract work is PSP, therefore, not much water was used for flushing  
 (e) Average from fiscal year (1998 - 1999) to (2000 - 2001)  
 (f) 10.5 Percent under-registration, as determined by the 4-year mid-point of the overall average water meter accuracy of 98 percent at the 8-year replacement interval was determined in the Brown and Caldwell, Inc. (PT) Program Evaluation, November 1995, because the study did not evaluate meters less than 8 years in service. This percentage will be revised as additional evaluations are performed.  
 (g) Sum 4Qtrs Col 3(Sum 4Qtrs Col 1)  
 (h) Sum 4Qtrs Col 16(Sum 4Qtrs Col 1)

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Miami-Dade Water and Sewer Department  
P. O. Box 330316 • 3071 SW 38th Avenue  
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- Housing Agency
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- Human Services
- Independent Review Panel
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- Metropolitan Planning Organization
- Park and Recreation
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- Police
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- Property Appraiser
- Public Library System
- Public Works
- Safe Neighborhood Parks
- Seaport
- Solid Waste Management
- Strategic Business Management
- Team Metro
- Transit
- Task Force on Urban Economic Revitalization
- Vizcaya Museum And Gardens
- Water & Sewer**

March 14, 2008

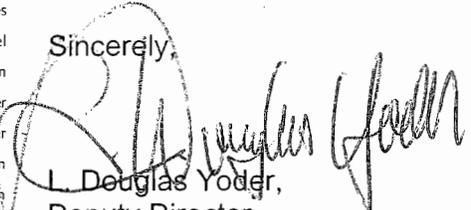
Mr. Curt Thompson, Senior Regulatory Professional  
Environmental Resource Regulation  
South Florida Water Management District  
P. O. Box 24680  
West Palm Beach, FL 33416-4680  
e-mail: [cthompso@sfwmd.gov](mailto:cthompso@sfwmd.gov)

Re: Miami-Dade County Consolidated PWS  
Water Use Permit No. 13-00017-W  
Calibrate Raw and Finished Venturi Meters at Alex Orr WTP; Submit  
Interim Report, Exhibit 33, Limiting Condition 48

Dear Mr. Thompson:

Enclosed is a copy of the Interim Report on the Plan to Address Raw Water  
Flow Measuring Adjustments in accordance with exhibit 33 and limiting  
condition number 48 of the subject permit.

If you have any questions concerning this submittal; please contact me at (786)  
552-8979 or Ms. Bertha Goldenberg, P.E. at (786) 552-8120.

Sincerely,  


L. Douglas Yoder,  
Deputy Director,  
Regulatory Compliance & Capital Improvements

Enclosure: Interim Report on the Plan to Address Raw Water Flow Measuring  
Adjustments

c: M. Elsner [melsner@sfwmd.gov](mailto:melsner@sfwmd.gov)

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Miami-Dade Water and Sewer  
Department

Plan to Address Raw Water Flow Measuring  
Adjustments (FY 2008)

Water Use Permit No. 13-00017-W  
Limiting Condition No. 48

March 15, 2008

*Interim Report*

## SUMMARY

On November 15, 2007, the South Florida Governing Board (SFWMD) approved the Miami-Dade Consolidated PWS Water Use Permit (WUP) No. 13-00017-W.

Limiting condition No. 48 of the WUP requires:

*"By July 1, 2008, the permittee shall submit the final report comparing the volumes of water withdrawn using the cumulative calibrated wellhead flow meter data versus the methods formerly used to estimate flows into/out of the Hialeah-Preston and Alexander Orr water treatment plants. Based on the results of this report and upon District review, the permittee may be required to modify this permit. The necessity to modify the permit will be determined based on a) the degree to which the actual withdrawals (as determined by the calibrated wellhead meters) differs from the historic estimation method, and b) whether the difference is sufficiently large to affect the demonstration that conditions of permit issuance will be met over the life of the permit."*

Mr. Rafael A. Terrero, Assistant Director, Miami-Dade Water and Sewer Department (MDWASD) submitted an eight point plan on October 23, 2007 to be undertaken during FY 2008 to reconcile raw water flow measurements in the water system. This plan is the continuation of MDWASD's attempt to reconcile and adjust historical raw water pumpage reports and records in its water supply system.

The status of each of the plan items is as follows:

1. Address comments from GE Well Water Flow Meter Installation Report.  
Optimize current raw water well meter installations and calibration.
  - Southwest Wellfield-Wells 11-15, Alexander Orr Plant-Well 8, & Hialeah-Wells 11, & 13 have been addressed.
2. Calibrate Raw and Finished Water Venturi meters at the Alexander Orr WTP.  
Submit Interim Report by March 15, 2008.
  - Meters were calibrated on September and December 2007. An independent firm, ADS, LLC, verified meter calibration on September 2007. (see Appendices A, B, C, and D)
3. Perform a water audit within Alexander Orr WTP to investigate raw to finished water flow differences. Initiate installation, calibration, and certification of process water flow meters (including transfers of water softening residuals to calcium carbonate lagoons and recalcining kilns), as appropriate.
  - A water audit study is underway at Alexander Orr WTP by CDM. A flowmeter was installed in softening residuals line. Troubleshooting and calibration of flowmeter installation is underway.

4. Revise the Oracle systems database and create the Oracle based report format to be compliant with SFWMD Water User Permit Allocation and Special Conditions submittal requirements.
  - A SQL Server Database Table was created. SQL based report format was created and implemented. Data is available in new Table starting on May 2007 to present.
5. Transition to all new meter reports during December 2007 using the new raw water well flow meters and reports generated by the Oracle system. Begin using the reports generated by the Oracle system meter recorder values for both FDEP and SFWMD reports on January 1, 2008.
  - Since January 1, 2008, all reports are available in both old and new format. Since the system is still being calibrated, reports are still being submitted in the old format.
6. Undertake the following tasks to analyze raw water flow measuring issues: reconciliation of raw water meter reports between FDEP Monthly Operating Reports (MOR) and Oracle system, record instantaneous well readings to verify the average pumpage of each well, compare reported versus recorded flows for raw and finished water at each WTP, and develop pumpage results for each wellfield on a monthly basis for the first six months of 2008.
  - Ongoing
7. Summary report on flow measuring issues analysis by July 31, 2008.
  - Ongoing.
8. Submit request for allocation adjustment to SFWMD during the third Quarter of 2008 and no later than September 30, 2008.
  - To be determined.

Although the MDWASD letter of October 23, 2007 planned for a submittal by July 31, 2008, the WUP limiting condition number 48 requires the report submittal by July 1, 2008. MDWASD will comply accordingly.

#### STATUS OF INDIVIDUAL ITEMS

The following is MDWASD's Interim Status Report on the plan to address raw water flow measurements adjustments as of March 15, 2008. This plan was conceived to be undertaken during FY 2008 to reconcile raw water flow measurements in the water system. This plan is the result of new raw water well meter installations in almost 100 supply wells during FY 2007. This plan is the continuation of MDWASD's attempt to reconcile and adjust historical raw water pumpage reports and records in its water supply system.

### Item 1 - Address Comments from GE Well Water Flow Meter Installation

Comments from GE Well Water Flow Meter Installation Report (August 30, 2007) are being addressed. Work has been completed on the Southwest Well Field, Alexander Orr Jr WTP, and two out of three wells have been address on the Hialeah Well Fields.

- Southwest Well Field - Wells 11-15 have pipe sizes that are difficult to match up on GE pipe data sheets and appear to have very thick walls. A section of pipe was replaced similar to Well No. 6. Work has been completed.
- Alexander Orr Plant - Well No. 8 has flow disturbances and appeared to have intermittent pockets of air that cause signal to be lost. This problem has been addressed.
- Hialeah - Wells 11, 12, & 13 piping and valves were replaced but the valves are throttled to create enough back pressure for the transducers to have good signals and sound speed. More work is required on these wells. Wells 11 & 13 have been shut down.
- Miami Springs - Some wells needed pipe replacement and were replaced. Wells 1, 2, 3, 4, 5, 6, 7 & 8 had pipe replaced but still have issues with air pockets...Valves were throttled to create backpressure for the transducers to have good signals and sound speed.

Some work is still pending on the GE well meter installation comments, namely Hialeah, and Miami Spring wells.

### Item 2 - Calibrate Raw and Finished Water Venturi Meters at Alexander Orr Jr. Water Treatment Plant (WTP) by March 15, 2008

Calibration on the Venturi Meter Flowmeters' Electronic Transmitters at the Alexander Orr Jr. Water Treatment Plant (WTP) is being performed every 90 days. Venturi Meters Electronics were last calibrated on September and December 2007 (see Appendix A and B). All four raw water and five finished water venturi meters at the WTP passed the calibration process satisfactorily. Calibration of the venturi meters electronic transmitters employs a Fluke 744 Documenting Process Calibrator, Emerson Hart Field Communicator Model 375, and an Ametek Pneumatic Dead Weight Tester Model PK II. (See enclosed Appendix C electronic transmitter's for calibration procedures.)

In addition to the above transmitter calibration, an independent firm, ADS, LLC was contacted to verify venturi meter accuracy by performing pitometer tests on the production water meters at the WTP and some well meters in the West Well field. These testing took place between August 27, 2007 and September 24, 2007. (See enclosed appendix D) The test consisted of the following:

- Tested, in place, for accuracy four raw water meters and five finished water meters at the WTP
- Tested, in place, for accuracy three well meters in the West Well Field.
- Preparation of a report detailing the results of the tests including velocity profiles of each of the gauging points used to test the meters.

Pitometer tests results for the Alex Orr WTP raw water venturi meters installation were as follows:

Test Date	Location	Pitometer Flow (mgd)	Meter Flow (mgd)	Percent Accuracy	Comments
8/29/07	Orr WTP 48" Raw Water No. 1	24.62	25.47	104%	Meter registers within allowable limits of accuracy
8/29/07	Orr WTP 54" Raw Water No. 2	41.71	43.39	104%	Meter registers within allowable limits of accuracy
9/05/07	Orr WTP 72" Raw Water No. 3	35.67	34.60	97%	Meter registers within allowable limits of accuracy
9/05/07	Orr WTP 72" Raw Water No. 2	78.59	78.76	100%	Meter registers within allowable limits of accuracy

This tests show that the raw water venturi meters as a group are registering on average within 1% of the pitometer flow readings.

Pitometer tests results for the Alex Orr WTP finished water venturi meters installation were as follows:

Test Date	Location	Pitometer Flow (mgd)	Meter Flow (mgd)	Percent Accuracy	Comments
9/24/07	Orr WTP 48" Finished Water No. 1	30.95	30.31	102%	Meter registers within allowable limits of accuracy
9/10/07	Orr WTP 48" Finished Water No. 2	40.56	38.89	96%	Meter registers within allowable limits of accuracy
8/29/07	Orr WTP 72" Finished Water No. 3	26.10	25.96	99%	Meter registers within allowable limits of accuracy
9/11/07	Orr WTP 72" Finished Water No. 4	58.16	60.84	105%	Meter registers within allowable limits of accuracy
9/10/07	Orr WTP 72" Finished Water No. 5	67.05	64.67	96%	Meter registers within allowable limits of accuracy

This tests show that the venturi meters as a group are registering within 1% of the pitometer flow readings.

**Item 3 - Perform a water audit within Alexander Orr WTP**

CDM has been retained to evaluate the various flow streams identified within the plant and to verify the calibration of the venturi meters at the WTP. A kick-off meeting was held at the WTP on March 11, 2008. CDM will perform a water audit within the WTP to investigate raw to finished water flow differences, and initiate installation, calibration, and certification of process water flow meters (including transfers of water softening residuals to calcium carbonate lagoons and recalcining kilns), as appropriate. CDM will consider the various methodologies required to reliably estimate unmeasured or unknown flows. In addition, proper analytical methods for determining sludge density and water content in solids residuals will be identified.

MDWASD's instrumentation personnel installed a flowmeter on the water softening residuals line. Instrumentation personnel are still verifying and checking with the initial readings from this meter.

**Item 4 - Revise the Oracle Systems database**

The "Oracle systems database" has been revised and is now called the Normalized Database. It is a SQL Database Server Table which has integrated all raw and finished water SCADA meter reading reports within a single table. This table now holds data from May 2007 to present. A SQL based report format to be compliant with SFWMD Water User Permit Allocation and Special Conditions submittal requirements has been created (see enclosed Appendix F).

**Item 5 - Transition to all new meter reports during December 2007**

Currently, all raw and finished water meter reports are being prepared in both the old and new format while the new meter installations comments are being addressed and the new system's performance is being assessed.

**Item 6 - Undertake the following tasks to analyze raw water flow measuring issues**

MDWASD performed a Comparison of Measured Withdrawals from Wells and Surface Water Pumps for a three month period: December 2007, January 2008, and February 2008 (see Appendix E).

CDM was recently authorized to perform the following tasks for the Alexander Orr WTP system:

- Reconciliation of raw water meter reports between FDEP Monthly Operating Reports (MOR) and historical Normalized database (alias Oracle) system. CDM

will prepare an analysis of daily historical FDEP MOR and historical Normalized Data system meter records for a period of several months.

- Comparative analysis of reported versus recorded flows for raw and finished water. Pumpage results for each wellfield for the month of March 2008.
- Adjustment factor for raw water by wellfield based on WTP influent flow. CDM will derive a factor for the individual wellfield metered flows and plant raw water (Venturi) flows so that the sum of the adjusted wellfield metered flows match the plant raw water Venturi meter flows.

**Item 7 - Summary report on flow measuring issues analysis by July 31, 2008 (July 1 on Limiting Condition No. 48)**

The summary report is anticipated to be submitted by July 1, 2008.

**Item 8 - Submit request for allocation adjustment to SFWMD during the third Quarter of 2008**

To be determined based on the results of ongoing analyses and investigations.

The following Appendices are submitted in support of this Interim Report:

- Appendix A Water Report Alex Orr In-Plant Transmitters and Recorders for September 2007 (Venturi Meter Transmitter Calibration September 2007)
- Appendix B Water Report Alex Orr In-Plant Transmitters and Recorders for December 2007 (Venturi Meter Transmitter Calibration December 2007)
- Appendix C MDWASD Procedures for Venturi Flow Transmitter Calibrations for Plant and Pay Meters (Venturi Transmitter Calibration Procedure)
- Appendix D ADS, LLC Pitometer Testing Report, September 2007 (Venturi Calibration Verification August - September 2007)
- Appendix E Comparative of Measured Withdrawals from Wells and Surface Water Pumps (December 2007 thru February 2008)
- Appendix F Water Treatment Division Data Evaluation and Automation Project (Electronic Database Project)

WATER REPORTS

Alex Orr In-Plant  
Transmitters & Recorders

FOR

Sep-07



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-505-RAW1</b>			<b>Serial Number 1597757</b>	
<b>Raw Water #1 -- 48" Venturi</b>			<b>Rosemount</b>	<b>3051 HART</b>
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy</b>	<b>0.075% of Span</b>
	<b>Input Low</b>	<b>0.00</b>	<b>Output Low</b>	<b>4.000</b>
	<b>Input High</b>	<b>282.50</b>	<b>Output High</b>	<b>20.000</b>
	<b>Input Units</b>	<b>in of H2O</b>	<b>Output Units</b>	<b>mA</b>
	<b>Tolerance mA</b>	<b>0.012 +/-</b>	<b>Square Root</b>	<b>Yes</b>
	<b>Tolerance inch</b>	<b>0.212 +/-</b>		
	<b>Dampening</b>	<b>1.60 Seconds</b>		

### On-Line Communicator

<u>As Found input</u>	<u>Tolerance</u>		<u>Tolerance</u>		<u>Expected Output</u>		<u>Error</u>	<u>Pass/Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Tolerance Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>		
0.00	0.212	-0.212	4.012	3.988	4.000	4.000	0.000	PASS
71.00	71.212	70.788	12.033	12.009	12.021	12.022	0.001	PASS
141.00	141.212	140.788	15.316	15.292	15.304	15.305	0.001	PASS
212.00	212.212	211.788	17.872	17.848	17.860	17.862	0.002	PASS
282.00	282.212	281.788	19.998	19.974	19.986	19.994	0.008	PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>		<u>Tolerance</u>		<u>Expected Output</u>		<u>Error</u>	<u>Pass/Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>		
0.00	0.212	-0.212	4.012	3.988	4.000	4.000	0.000	PASS
71.00	71.212	70.788	12.033	12.009	12.021	12.017	-0.004	PASS
141.00	141.212	140.788	15.316	15.292	15.304	15.300	-0.004	PASS
212.00	212.212	211.788	17.872	17.848	17.860	17.856	-0.004	PASS
282.00	282.212	281.788	19.998	19.974	19.986	19.982	-0.004	PASS

### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
17-Sep-07	Schedule	AO-I-01

### Comments

**Testers**  
P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-505-RAW1

Serial Number 9401-28153-AO1

Raw Water #1 -- 48" Venturi

### Setup

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 100  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	49.99	0.3000	PASS
16.000	75.00	74.99	0.4250	PASS
20.000	100.00	100.00	0.5500	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	49.99	0.3000	PASS
16.000	75.00	74.99	0.4250	PASS
20.000	100.00	100.00	0.5500	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
17-Sep-07	Schedule	AO-I-01-10

### Comments

Testers  
P.Anton

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# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-506-RAW2</b>		<b>Serial Number</b>	<b>1597755</b>
<b>Raw Water #2 -- 54" Venturi</b>		<b>Rosemount</b>	<b>3051 HART</b>
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	<b>0.075% of Span</b>
	<b>Input Low</b> 0	<b>Output Low</b>	<b>4.000</b>
	<b>Input High</b> 84.32	<b>Output High</b>	<b>20.000</b>
	<b>Input Units</b> in of H2O	<b>Output Units</b>	<b>mA</b>
	<b>Tolerance mA</b> 0.012 +/-	<b>Square Root</b>	<b>Yes</b>
	<b>Tolerance inch</b> 0.063 +/-		
	<b>Dampening</b> 1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>		<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>		
0.00	0.063	-0.063	4.012	3.988	4.000	4.000	0.000	PASS
21.00	21.063	20.937	11.997	11.973	11.985	11.989	0.004	PASS
42.00	42.063	41.937	15.304	15.280	15.292	15.295	0.003	PASS
63.00	63.063	62.937	17.842	17.818	17.830	17.835	0.005	PASS
84.00	84.063	83.937	19.982	19.958	19.970	19.975	0.005	PASS

### On-Line Communicator

<u>As Left Input (in</u>		<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>		
0.00	0.063	-0.063	4.012	3.988	4.000	3.999	-0.001	PASS
21.00	21.063	20.937	11.997	11.973	11.985	11.987	0.002	PASS
42.00	42.063	41.937	15.304	15.280	15.292	15.294	0.002	PASS
63.00	63.063	62.937	17.842	17.818	17.830	17.833	0.003	PASS
84.00	84.063	83.937	19.982	19.958	19.970	19.974	0.004	PASS

### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
17-Sep-07	Schedule	AO-I-01

### Comments

**Testers**  
P.Anton

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# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-506-RAW2

Serial Number

9710-78075-C05

Raw Water #2 -- 54" Venturi

### Setup

Flow Recorder

Input Low 4.000  
 Input High 20.000  
 Input Units mA  
 Square Root No

Output Low 0  
 Output High 100  
 Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale  
 0.005 % of Reading  
 0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.01	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	50.00	0.3000	PASS
16.000	75.00	75.00	0.4250	PASS
20.000	100.00	99.99	0.5500	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	50.00	0.3000	PASS
16.000	75.00	75.00	0.4250	PASS
20.000	100.00	99.99	0.5500	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
 Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
 11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
17-Sep-07	Schedule	AO-I-01-10

### Comments

### Testers

P.Anton

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# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-507-RAW3</b>		<b>Serial Number</b>	2239317	
<b>Raw Water #3 -- 72" Venturi</b>		<b>Rosemount</b>	3051 HART	
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.075% of Span	
	<b>Input Low</b>	0	<b>Output Low</b>	4.000
	<b>Input High</b>	289.00	<b>Output High</b>	20.000
	<b>Input Units</b>	in of H2O	<b>Output Units</b>	mA
	<b>Tolerance mA</b>	0.012 +/-	<b>Square Root</b>	Yes
	<b>Tolerance inch</b>	0.217 +/-		
	<b>Dampening</b>	1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
(in H <sub>2</sub> O)	Pv +	Pv -	AO+	AO-	(ma)		
0.00	0.217	-0.217	4.012	3.988	4.000	4.000	0.000 PASS
72.00	72.217	71.783	11.998	11.974	11.986	11.987	0.001 PASS
145.00	145.217	144.783	15.345	15.321	15.333	15.333	0.000 PASS
217.00	217.217	216.783	17.876	17.852	17.864	17.864	0.000 PASS
289.00	289.217	288.783	20.012	19.988	20.000	20.000	0.000 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
H <sub>2</sub> O)	Pv +	Pv -	AO+	AO-	(ma)		
0.00	0.217	-0.217	4.012	3.988	4.000	4.000	0.000 PASS
72.00	72.217	71.783	11.998	11.974	11.986	11.987	0.001 PASS
145.00	145.217	144.783	15.345	15.321	15.333	15.333	0.000 PASS
217.00	217.217	216.783	17.876	17.852	17.864	17.864	0.000 PASS
289.00	289.217	288.783	20.012	19.988	20.000	20.000	0.000 PASS

### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
17-Sep-07	Schedule	AO-I-01

### Comments

### Testers

P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

**Tag ID FIR-507-RAW3**

**Serial Number 9310-22855**

**Raw Water #3 -- 72" Venturi**

**Setup**

Flow Recorder

Input Low 4.000

Output Low 0

Input High 20.000

Output High 85

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

**Results**

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.000	0.0425	PASS
8.000	21.25	21.250	0.1488	PASS
12.000	42.50	42.500	0.2550	PASS
16.000	63.75	63.750	0.3613	PASS
20.000	85.00	85.000	0.4675	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.000	0.0425	PASS
8.000	21.25	21.250	0.1488	PASS
12.000	42.50	42.500	0.2550	PASS
16.000	63.75	63.750	0.3613	PASS
20.000	85.00	85.000	0.4675	PASS

**Test Equipment Used**

**Manufacturers**

**Serial Numbers**

Fluke 744 DPC

8495027

Emerson Hart Field Communicator Model 375

11007890

**ADDITIONAL INFORMATION**

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
17-Sep-07	Schedule	AO-I-01-10

**Comments**

**Testers**

P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-508-RAW4</b>		<b>Serial Number</b>	1841929	
<b>Raw Water #4 -- 84" Venturi</b>		<b>Rosemount</b>	3051 HART	
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.075% of Span	
	<b>Input Low</b>	0	<b>Output Low</b>	4.000
	<b>Input High</b>	263.07	<b>Output High</b>	20.000
	<b>Input Units</b>	in of H2O	<b>Output Units</b>	mA
	<b>Tolerance mA</b>	0.012 +/-	<b>Square Root</b>	Yes
	<b>Tolerance inch</b>	0.197 +/-		
<b>Dampening</b>	1.60	<b>Seconds</b>		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.197	-0.197	4.012	3.988	4.000	4.000	0.000 PASS
66.00	66.197	65.803	12.026	12.002	12.014	12.010	-0.004 PASS
132.00	132.197	131.803	15.346	15.322	15.334	15.331	-0.003 PASS
197.00	197.197	196.803	17.858	17.834	17.846	17.842	-0.004 PASS
263.00	263.197	262.803	20.010	19.986	19.998	19.995	-0.003 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.197	-0.197	4.012	3.988	4.000	4.000	0.000 PASS
66.00	66.197	65.803	12.026	12.002	12.014	12.012	-0.002 PASS
132.00	132.197	131.803	15.346	15.322	15.334	15.332	-0.002 PASS
197.00	197.197	196.803	17.858	17.834	17.846	17.846	0.000 PASS
263.00	263.197	262.803	20.010	19.986	19.998	19.998	0.000 PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
4-Sep-07	Schedule	AO-I-01

### Comments

### Testers

P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-508-RAW4A

Serial Number 9602-58414-003

Raw Water #4 -- 84" Venturi

### Setup

Flow Recorder -- Chem. Bldg. #1

Input Low 4.000

Output Low 0

Input High 20.000

Output High 175

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.02	0.0875	PASS
8.000	43.75	43.75	0.3063	PASS
12.000	87.50	87.50	0.5250	PASS
16.000	131.25	131.25	0.7437	PASS
20.000	175.00	175.00	0.9625	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.00	0.0875	PASS
8.000	43.75	43.75	0.3063	PASS
12.000	87.50	87.50	0.5250	PASS
16.000	131.25	131.25	0.7437	PASS
20.000	175.00	175.00	0.9625	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
3-Sep-07	Schedule	AO-I-01-10

### Comments

Testers  
P.Anton

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# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-509-RAW4B

Serial Number 9401-28155-AO1

Raw Water #4 -- 84" Venturi

### Setup

Flow Recorder -- Chem. Bldg. #2

Input Low 4.000

Output Low 0

Input High 20.000

Output High 175

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.00	0.0875	PASS
8.000	43.75	43.74	0.3063	PASS
12.000	87.50	87.49	0.5250	PASS
16.000	131.25	131.24	0.7438	PASS
20.000	175.00	174.99	0.9625	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.00	0.0875	PASS
8.000	43.75	43.75	0.3063	PASS
12.000	87.50	87.50	0.5250	PASS
16.000	131.25	131.25	0.7438	PASS
20.000	175.00	175.00	0.9625	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
4-Sep-07	Schedule	AO-I-01-10

### Comments

### Testers

P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Setup</b>	<b>Tag ID</b> FIT-500-FIN1	<b>Serial Number</b> 1411231
	Finish Water #1 -- 48" Venturi	Rosemount 3051 HART
	<b>Flow Transmitter</b>	<b>Accuracy</b> 0.075% of Span
	<b>Input Low</b> 0	<b>Output Low</b> 4.000
	<b>Input High</b> 265.20	<b>Output High</b> 20.000
	<b>Input Units</b> in of H2O	<b>Output Units</b> mA
	<b>Tolerance mA</b> 0.012 +/-	<b>Square Root</b> Yes
	<b>Tolerance Inch</b> 0.199 +/-	
	<b>Dampening</b> 1.60 Seconds	

### On-Line Communicator

As Found Input (in H <sub>2</sub> O)	Tolerance ±	Pv Pv-	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0.00	0.199	-0.199	4.012	3.988	4.000	4.000	0.000	PASS
66.00	66.199	65.801	11.994	11.970	11.982	11.983	0.001	PASS
133.00	133.199	132.801	15.343	15.319	15.331	15.332	0.001	PASS
199.00	199.199	198.801	17.872	17.848	17.860	17.862	0.002	PASS
265.00	265.199	264.801	20.006	19.982	19.994	19.998	0.004	PASS

### On-Line Communicator

As Left Input (in H <sub>2</sub> O)	Tolerance ±	Pv Pv-	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0.00	0.199	-0.199	4.012	3.988	4.000	4.000	0.000	PASS
66.00	66.199	65.801	11.994	11.970	11.982	11.983	0.001	PASS
133.00	133.199	132.801	15.343	15.319	15.331	15.332	0.001	PASS
199.00	199.199	198.801	17.872	17.848	17.860	17.862	0.002	PASS
265.00	265.199	264.801	20.006	19.982	19.994	19.998	0.004	PASS

### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
5-Sep-07	Schedule	AO-I-01

### Comments

Testers  
P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-500-FIN1

Serial Number

101655-001-902-8716

Finish Water #1 -- 48" Venturi

### Setup

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 80  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.000	0.0400	PASS
8.000	20.00	20.000	0.1400	PASS
12.000	40.00	39.990	0.2400	PASS
16.000	60.00	59.990	0.3400	PASS
20.000	80.00	80.000	0.4400	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.000	0.0400	PASS
8.000	20.00	20.000	0.1400	PASS
12.000	40.00	39.990	0.2400	PASS
16.000	60.00	59.990	0.3400	PASS
20.000	80.00	80.000	0.4400	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
5-Sep-07	Schedule	AO-I-01-10

### Comments

### Testers

P.Anton

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# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-501-FIN2</b>		<b>Serial Number</b>	1101176	
Finish Water #2 -- 60" Venturi		<b>Rosemount</b>	3051 HART	
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.075% of Span	
	<b>Input Low</b>	0	<b>Output Low</b>	4.000
	<b>Input High</b>	68.90	<b>Output High</b>	20.000
	<b>Input Units</b>	in of H2O	<b>Output Units</b>	mA
	<b>Tolerance mA</b>	0.012 +/-	<b>Square Root</b>	Yes
	<b>Tolerance inch</b>	0.052 +/-		
	<b>Dampening</b>	1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
(in H <sub>2</sub> O)	Tolerance Pv +	Pv -	AO+	AO-	(ma)		
0.00	0.052	-0.052	4.012	3.988	4.000	4.000	0.000 PASS
17.00	17.052	16.948	11.960	11.936	11.948	11.958	0.010 PASS
34.00	34.052	33.948	15.252	15.228	15.240	15.248	0.008 PASS
52.00	52.052	51.948	17.912	17.888	17.900	17.912	0.012 FAIL
69.00	69.052	68.948	20.024	20.000	20.012	20.031	0.019 FAIL

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
H <sub>2</sub> O)	Tolerance Pv +	Pv -	AO+	AO-	(ma)		
0.00	0.052	-0.052	4.012	3.988	4.000	4.000	0.000 PASS
17.00	17.052	16.948	11.960	11.936	11.948	11.950	0.002 PASS
34.00	34.052	33.948	15.252	15.228	15.240	15.242	0.002 PASS
52.00	52.052	51.948	17.912	17.888	17.900	17.900	0.000 PASS
69.00	69.052	68.948	20.024	20.000	20.012	20.012	0.000 PASS

### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
5-Sep-07	Schedule	AO-I-01

### Comments

**Testers**  
P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-501-FIN2

Serial Number

9602-58412C03

Finish Water #2 -- 60" Venturi

### Setup

Flow Recorder

Input Low 4.000

Output Low 0

Input High 20.000

Output High 128.000

Input Units mA

Output Units MGD

Square Root No

No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0640	PASS
8.000	32.00	32.00	0.2240	PASS
12.000	64.00	64.00	0.3840	PASS
16.000	96.00	96.00	0.5440	PASS
20.000	128.00	128.00	0.7040	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0640	PASS
8.000	32.00	32.00	0.2240	PASS
12.000	64.00	64.00	0.3840	PASS
16.000	96.00	96.00	0.5440	PASS
20.000	128.00	128.00	0.7040	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
5-Sep-07	Schedule	AO-I-01-10

### Comments

Testers  
P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID</b> FIT-502-FIN3 Fininsh Water #3 -- 72" Venturi <b>Setup</b> Flow Transmitter Input Low 0 Input High 193.30 Input Units in of H2O Tolerance mA 0.012 +/- Tolerance inch 0.145 +/- Dampening 1.60 Seconds	<b>Serial Number</b> 1101177 Rosemount 3051 HART <b>Accuracy</b> 0.075% of Span Output Low 4.000 Output High 20.000 Output Units mA Square Root Yes
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### On-Line Communicator

As Found Input	Tolerance	Tolerance	Tolerance	Expected Output	Error	Pass/ Fail		
(in H <sub>2</sub> O)	Tolerance Pv +	Pv -	AO+	AO-	(ma)	Output (Ma)		
0.00	0.145	-0.145	4.012	3.988	4.000	4.000	0.000	PASS
48.00	48.145	47.855	11.985	11.961	11.973	11.971	-0.002	PASS
97.00	97.145	96.855	15.346	15.322	15.334	15.332	-0.002	PASS
145.00	145.145	144.855	17.870	17.846	17.858	17.857	-0.001	PASS
193.00	193.145	192.855	20.000	19.976	19.988	19.988	0.000	PASS

### On-Line Communicator

As Left Input (in H <sub>2</sub> O)	Tolerance	Tolerance	Tolerance	Expected Output	Error	Pass/ Fail		
(in H <sub>2</sub> O)	Tolerance Pv +	Pv -	AO+	AO-	(ma)	Output (Ma)		
0.00	0.145	-0.145	4.012	3.988	4.000	4.000	0.000	PASS
48.00	48.145	47.855	11.985	11.961	11.973	11.971	-0.002	PASS
97.00	97.145	96.855	15.346	15.322	15.334	15.332	-0.002	PASS
145.00	145.145	144.855	17.870	17.846	17.858	17.857	-0.001	PASS
193.00	193.145	192.855	20.000	19.976	19.988	19.988	0.000	PASS

### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
5-Sep-07	Schedule	AO-I-01

### Comments

**Testers**  
P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

**Tag ID FIR-502-FIN3**

**Serial Number**

**9501-42407-C03**

**Finish Water #3 -- 72" Venturi**

**Setup**

**Flow Recorder**

Input Low                    4.000  
 Input High                   20.000  
 Input Units                   mA  
 Square Root                 No

Output Low                   0  
 Output High                 150  
 Output Units                MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
 0.0005 % of Full Scale

**Results**

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.01	0.0750	PASS
8.000	37.50	37.50	0.2625	PASS
12.000	75.00	75.00	0.4500	PASS
16.000	112.50	112.49	0.6375	PASS
20.000	150.00	149.99	0.8250	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0750	PASS
8.000	37.50	37.49	0.2625	PASS
12.000	75.00	75.00	0.4500	PASS
16.000	112.50	112.50	0.6375	PASS
20.000	150.00	150.00	0.8250	PASS

**Test Equipment Used**

Manufacturers

Fluke 744 DPC  
 Emerson Hart Field Communicator Model 375

Serial Numbers

8495027  
 11007890

**ADDITIONAL INFORMATION**

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
5-Sep-07	Schedule	AO-I-01-10

Testers  
 P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-503-FIN4</b>			<b>Serial Number</b>	1101174
<b>Finish Water #4 -- 72" Venturi</b>			<b>Rosemount</b>	3051 HART
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy</b>	0.075% of Span
	<b>Input Low</b>	0	<b>Output Low</b>	4.000
	<b>Input High</b>	257.10	<b>Output High</b>	20.000
	<b>Input Units</b>	in of H2O	<b>Output Units</b>	mA
	<b>Tolerance mA</b>	0.012 +/-	<b>Square Root</b>	Yes
	<b>Tolerance inch</b>	0.193 +/-		
	<b>Dampening</b>	1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.193	-0.193	4.012	3.988	4.000	4.000	0.000 PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.983	0.000 PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.333	0.000 PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.863	0.000 PASS
257.00	257.193	256.807	20.009	19.985	19.997	19.998	0.001 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.193	-0.193	4.012	3.988	4.000	4.000	0.000 PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.983	0.000 PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.333	0.000 PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.863	0.000 PASS
257.00	257.193	256.807	20.009	19.985	19.997	19.998	0.001 PASS

### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
6-Sep-07	Schedule	AO-I-01

### Comments

**Testers**  
P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-503-FIN4

Serial Number 101655-8717

Finish Water #4 -- 72" Venturi

### Setup

Flow Recorder

Input Low 4.000

Output Low 0

Input High 20.000

Output High 173

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.24	0.3028	PASS
12.000	86.50	86.49	0.5190	PASS
16.000	129.75	129.74	0.7353	PASS
20.000	173.00	172.97	0.9515	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.25	0.3028	PASS
12.000	86.50	86.50	0.5190	PASS
16.000	129.75	129.75	0.7353	PASS
20.000	173.00	173.00	0.9515	PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
6-Sep-07	Schedule	AO-I-01-10

<u>Comments</u>	<u>Testers</u>
	P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Setup</b>	<b>Tag ID</b> FIT-504-FIN5	<b>Serial Number</b> 1101178
	Finish Water #5 -- 72" Venturi	Rosemount 3051 HART
	<b>Flow Transmitter</b>	<b>Accuracy</b> 0.075% of Span
	<b>Input Low</b> 0	<b>Output Low</b> 4.000
	<b>Input High</b> 257.10	<b>Output High</b> 20.000
	<b>Input Units</b> in of H2O	<b>Output Units</b> mA
	<b>Tolerance mA</b> 0.012 +/-	<b>Square Root</b> Yes
	<b>Tolerance inch</b> 0.193 +/-	
<b>Dampening</b> 1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u> (in H <sub>2</sub> O)	<u>Tolerance Pv +</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output</u> (ma)	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0.00	0.193	-0.193	4.012	3.988	4.000	4.000	0.000	PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.984	0.001	PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.331	-0.002	PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.860	-0.003	PASS
257.00	257.193	256.807	20.009	19.985	19.997	19.994	-0.003	PASS

### On-Line Communicator

<u>As Left Input (in</u> H <sub>2</sub> O)	<u>Tolerance Pv +</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output</u> (ma)	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0.00	0.193	-0.193	4.012	3.988	4.000	4.000	0.000	PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.984	0.001	PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.331	-0.002	PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.862	-0.001	PASS
257.00	257.193	256.807	20.009	19.985	19.997	19.994	-0.003	PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
6-Sep-07	Schedule	AO-I-01

### Comments

Testers  
P.Anton



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-504-FIN5

Serial Number 101655-8717

Finish Water #5 -- 72" Venturi

**Setup**

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 173  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale  
0.005 % of Reading  
0.0005 % of Full Scale

**Results**

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.24	0.3028	PASS
12.000	86.50	86.49	0.5190	PASS
16.000	129.75	129.73	0.7353	PASS
20.000	173.00	172.98	0.9515	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.24	0.3028	PASS
12.000	86.50	86.49	0.5190	PASS
16.000	129.75	129.74	0.7353	PASS
20.000	173.00	172.99	0.9515	PASS

**Test Equipment Used**

Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

Serial Numbers

8495027  
11007890

**ADDITIONAL INFORMATION**

Date

6-Sep-07

Reason For Work

Schedule

Procedure #

AO-I-01-10

Comments

Testers

P.Anton

# WATER REPORT

SouthWest Wellfield  
ASR Wells #4 & 5

FOR

September, 2007



# SouthWest Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-1-ASR #4</b>			<b>Serial Number</b>	2124097 3/98
<b>Production / Recovery</b>			<b>Rosemount</b>	1151DP HART
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy</b>	0.254019015 % of Span
	<b>Input Low</b>	0.00	<b>Pressure Range</b>	4
	<b>Input High</b>	138.84	<b>Output Low</b>	4.000
	<b>Input Units</b>	in of H <sub>2</sub> O	<b>Output High</b>	20.000
	<b>Tolerance mA</b>	0.041 +/-	<b>Output Units</b>	mA
	<b>Tolerance inch</b>	0.353 +/-	<b>Square Root</b>	Yes
	<b>Dampening</b>	6.40 Seconds	<b>Upper Range Limit of TX (URL)</b>	150 " H <sub>2</sub> O

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Pv +</u>	<u>Tolerance Pv</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
(In H <sub>2</sub> O)			:	AO+	AO-	(ma)			
0	0.353		-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353		34.647	12.074	11.993	12.033	12.034	0.001	PASS
69	69.353		68.647	15.320	15.239	15.279	15.278	-0.001	PASS
104	104.353		103.647	17.888	17.807	17.848	17.848	0.000	PASS
139	139.353		138.647	20.050	19.969	20.009	20.009	0.000	PASS

### On-Line Communicator

<u>As Left Input (In</u>	<u>Tolerance</u>	<u>Pv +</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
H <sub>2</sub> O)			Pv -	AO+	AO-	(ma)			
0	0.353		-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353		34.647	12.074	11.993	12.033	12.034	0.001	PASS
69	69.353		68.647	15.320	15.239	15.279	15.278	-0.001	PASS
104	104.353		103.647	17.888	17.807	17.848	17.848	0.000	PASS
139	139.353		138.647	20.050	19.969	20.009	20.009	0.000	PASS

### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
7-Sep-07	Schedule	AO-I-01

### Comments

**Testers**  
P.Anton



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID FIT-2-ASR #4</b>			<b>Serial Number</b>	2124095 3/98	
<b>Setup</b>	Injection / Recharge		Rosemount	1151DP	HART
	Flow Transmitter		Accuracy	0.254019015	% of Span
	Input Low	0.00	Pressure Range	4	
	Input High	138.84	Output Low	4.000	
	Input Units	in of H2O	Output High	20.000	
	Tolerance mA	0.041 +/-	Output Units	mA	
	Tolerance inch	0.353 +/-	Square Root	Yes	
Dampening	6.40	Seconds	Upper Range Limit of TX (URL)	150	" H <sub>2</sub> O

#### On-Line Communicator

<u>As Found Input</u>		<u>Tolerance</u>			<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
(in H <sub>2</sub> O)	Tolerance Pv +	Tolerance Pv -	AO+	Tolerance AO-	(ma)	Output (Ma)		
0	0.353	-0.353	4.041	3.959	4.000	3.990	-0.010	PASS
35	35.353	34.647	12.074	11.993	12.033	12.034	0.001	PASS
69	69.353	68.647	15.320	15.239	15.279	15.281	0.002	PASS
104	104.353	103.647	17.888	17.807	17.848	17.849	0.001	PASS
139	139.353	138.647	20.050	19.969	20.009	20.010	0.001	PASS

#### n-Line Communicator

<u>As Left Input (in</u>		<u>Tolerance</u>			<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
H <sub>2</sub> O)	±	=	AO+	Tolerance AO-	(ma)	Output (Ma)		
0	0.353	-0.353	4.041	3.959	4.000	3.990	-0.010	PASS
35	35.353	34.647	12.074	11.993	12.033	12.034	0.001	PASS
69	69.353	68.647	15.320	15.239	15.279	15.281	0.002	PASS
104	104.353	103.647	17.888	17.807	17.848	17.849	0.001	PASS
139	139.353	138.647	20.050	19.969	20.009	20.010	0.001	PASS

#### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
7-Sep-07	Schedule	AO-I-01

#### Comments

**Testers**  
P.Anton



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID FIT-1-ASR #5</b>				<b>Serial Number 2124094 3/98</b>	
<b>Setup</b>	Production / Recovery			Rosemount	1151DP HART
	Flow Transmitter			Accuracy	0.254019015 % of Span
	Input Low	0.00		Pressure Range	4
	Input High	138.84		Output Low	4.000
	Input Units	in of H2O		Output High	20.000
	Tolerance mA	0.041	+/-	Output Units	mA
	Tolerance inch	0.353	+/-	Square Root	Yes
	Dampening	6.40	Seconds	Upper Range Limit of TX (URL)	150 " H <sub>2</sub> O

#### On-Line Communicator

As Found	Tolerance		Tolerance		Expected Output	Output (Ma)	Error	Pass/ Fail
Input (in H <sub>2</sub> O)	Tolerance	Pv +	Tolerance	Pv -	(ma)			
0	0.353		-0.353		4.000	4.000	0.000	PASS
35	35.353		34.647		12.033	12.034	0.001	PASS
69	69.353		68.647		15.279	15.280	0.001	PASS
104	104.353		103.647		17.848	17.847	-0.001	PASS
139	139.353		138.647		20.009	20.012	0.003	PASS

#### On-Line Communicator

As Left Input	Tolerance		Tolerance		Expected Output	Output (Ma)	Error	Pass/ Fail
(in H <sub>2</sub> O)	Tolerance	Pv +	Tolerance	Pv -	(ma)			
0	0.353		-0.353		4.000	4.000	0.000	PASS
35	35.353		34.647		12.033	12.034	0.001	PASS
69	69.353		68.647		15.279	15.280	0.001	PASS
104	104.353		103.647		17.848	17.847	-0.001	PASS
139	139.353		138.647		20.009	20.012	0.003	PASS

#### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
7-Sep-07	Schedule	AO-I-01

#### Comments

Testers  
P.Anton

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# SouthWest Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-2-ASR #5</b>		<b>Serial Number</b>	2124096 3/98	
<b>Setup</b>	<b>Injection / Recharge</b>	<b>Rosemount</b>	1151DP HART	
	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.25401901 % of Span	
	<b>Input Low</b>	0.00	<b>Pressure Range</b>	4
	<b>Input High</b>	138.84	<b>Output Low</b>	4.000
	<b>Input Units</b>	in of H2O	<b>Output High</b>	20.000
	<b>Tolerance mA</b>	0.041 +/-	<b>Output Units</b>	mA
	<b>Tolerance inch</b>	0.353 +/-	<b>Square Root</b>	Yes
	<b>Dampening</b>	6.40 Seconds	<b>Upper Range Limit of TX (URL)</b>	150 " H <sub>2</sub> O

### On-Line Communicator

As Found Input (in H <sub>2</sub> O)	Tolerance Pv +	Tolerance Pv -	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/Fail
0	0.353	-0.353	4.041	3.959	4.000	3.999	-0.001	PASS
35	35.353	34.647	12.074	11.993	12.033	12.035	0.002	PASS
69	69.353	68.647	15.320	15.239	15.279	15.281	0.002	PASS
104	104.353	103.647	17.888	17.807	17.848	17.852	0.004	PASS
139	139.353	138.647	20.050	19.969	20.009	20.017	0.008	PASS

### On-Line Communicator

As Left Input (in H <sub>2</sub> O)	Tolerance Pv +	Tolerance Pv -	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/Fail
0	0.353	-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353	34.647	12.074	11.993	12.033	12.031	-0.002	PASS
69	69.353	68.647	15.320	15.239	15.279	15.275	-0.004	PASS
104	104.353	103.647	17.888	17.807	17.848	17.845	-0.003	PASS
139	139.353	138.647	20.050	19.969	20.009	20.006	-0.003	PASS

### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
7-Sep-07	Schedule	AO-I-01

### Comments

**Testers**  
P.Anton

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WATER REPORT

SouthWest Wellfield BA Wells  
Transmitters & Recorders

FOR

Sep-07



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID</b> SW-BA-Well32 <b>24" Venturi</b> <b>Setup</b> Flow Transmitter Input Low 0.00 Input High 101.68 Input Units in of H2O Tolerance mA 0.012 +/- Tolerance inch 0.076 +/- Dampening 6.40 Seconds	<b>Serial Number</b> 1411208 <b>Rosemount</b> 3051 HART <b>Accuracy</b> 0.075% of Span <b>Output Low</b> 4.000 <b>Output High</b> 20.000 <b>Output Units</b> mA <b>Square Root</b> Yes
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#### On-Line Communicator

<u>As Found Input</u>			<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance</u>	<u>Pv +</u>	<u>Tolerance Pv-</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>	
0.00	0.076	-0.076	4.012	3.988	4.000	4.000	0.000	PASS
25.00	25.076	24.924	11.946	11.922	11.934	11.935	0.001	PASS
51.00	51.076	50.924	15.343	15.319	15.331	15.333	0.002	PASS
76.00	76.076	75.924	17.845	17.821	17.833	17.835	0.002	PASS
102.00	102.076	101.924	20.037	20.013	20.025	20.027	0.002	PASS

#### On-Line Communicator

<u>As Left Input (in</u>			<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>±</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>			
0.00	0.076	-0.076	4.012	3.988	4.000	4.000	0.000	PASS	
25.00	25.076	24.924	11.946	11.922	11.934	11.935	0.001	PASS	
51.00	51.076	50.924	15.343	15.319	15.331	15.333	0.002	PASS	
76.00	76.076	75.924	17.845	17.821	17.833	17.835	0.002	PASS	
102.00	102.076	101.924	20.037	20.013	20.025	20.027	0.002	PASS	

#### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
10-Sep-07	Schedule	AO-I-01

#### Comments

Testers  
P.Anton

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SouthWest Wellfield -- Alexander Orr Water Treatment Plant

**CALIBRATION CERTIFICATE**

Tag ID SW-BA-Well32R  
24" Venturi

Serial Number 9803-81828-C4

**Setup**

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 16  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

**Results**

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0080	PASS
8.000	4.00	4.00	0.0280	PASS
12.000	8.00	8.00	0.0480	PASS
16.000	12.00	12.00	0.0680	PASS
20.000	16.00	16.00	0.0880	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0080	PASS
8.000	4.00	4.00	0.0280	PASS
12.000	8.00	8.00	0.0480	PASS
16.000	12.00	12.00	0.0680	PASS
20.000	16.00	16.00	0.0880	PASS

**Test Equipment Used**

Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

Serial Numbers

8495027  
11007890

**ADDITIONAL INFORMATION**

Date

10-Sep-07

Reason For Work

Schedule

Procedure #

AO-I-01-10

Comments

Pen goes up & down erratically- Respondes to calibration, baut returns to erratic behavior.

Testers

P.Anton



SouthWest Wellfield -- Alexander Orr Water Treatment Plant

**CALIBRATION CERTIFICATE**

<b>Tag ID SW-BA-Well33</b>			<b>Serial Number</b>	2031056	
<b>24" Venturi</b>			<b>Rosemount</b>	3051	HART
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy</b>	0.075% of Span	
	<b>Input Low</b>	0.00	<b>Output Low</b>	4.000	
	<b>Input High</b>	101.68	<b>Output High</b>	20.000	
	<b>Input Units</b>	in of H2O	<b>Output Units</b>	mA	
	<b>Tolerance mA</b>	0.012	<b>Square Root</b>	Yes	
	<b>Tolerance inch</b>	0.076			
	<b>Dampening</b>	6.40	<b>Seconds</b>		

**On-Line Communicator**

<u>As Found Input</u>	<u>Tolerance</u>	<u>Pv +</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output (ma)</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0.00	0.076		-0.076	4.012	3.988	4.000	4.000	0.000	PASS
25.00	25.076		24.924	11.946	11.922	11.934	11.937	0.003	PASS
51.00	51.076		50.924	15.343	15.319	15.331	15.333	0.002	PASS
76.00	76.076		75.924	17.845	17.821	17.833	17.834	0.001	PASS
102.00	102.076		101.924	20.037	20.013	20.025	20.027	0.002	PASS

**On-Line Communicator**

<u>As Left Input (in H2O)</u>	<u>Tolerance ±</u>	<u>Pv +</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output (ma)</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0.00	0.076		-0.076	4.012	3.988	4.000	4.000	0.000	PASS
25.00	25.076		24.924	11.946	11.922	11.934	11.937	0.003	PASS
51.00	51.076		50.924	15.343	15.319	15.331	15.333	0.002	PASS
76.00	76.076		75.924	17.845	17.821	17.833	17.834	0.001	PASS
102.00	102.076		101.924	20.037	20.013	20.025	20.027	0.002	PASS

**Test Equipment Used**

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

**ADDITIONAL INFORMATION**

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
10-Sep-07	Schedule	AO-I-01

**Comments**

**Testers**  
P.Anton



# SouthWest Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

Tag ID SW-BA-Well33R

Serial Number 9803-81829-C4

24" Venturi

### Setup

Flow Recorder

Input Low 4.000

Output Low 0

Input High 20.000

Output High 16

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0080	PASS
8.000	4.00	4.00	0.0280	PASS
12.000	8.00	8.00	0.0480	PASS
16.000	12.00	12.00	0.0680	PASS
20.000	16.00	16.00	0.0880	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0080	PASS
8.000	4.00	4.00	0.0280	PASS
12.000	8.00	8.00	0.0480	PASS
16.000	12.00	12.00	0.0680	PASS
20.000	16.00	16.00	0.0880	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
10-Sep-07	Schedule	AO-I-01-10

### Comments

Pen goes up & down erratically- Responds to calibration, but returns to erratic behavior.

### Testers

P.Anton



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID SW-BA-Well34</b>			<b>Serial Number 1761462</b>	
<b>24" Venturi</b>			<b>Rosemount 3051 HART</b>	
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy 0.075% of Span</b>	
	<b>Input Low</b>	<b>0.00</b>	<b>Output Low</b>	<b>4.000</b>
	<b>Input High</b>	<b>101.68</b>	<b>Output High</b>	<b>20.000</b>
	<b>Input Units</b>	<b>in of H2O</b>	<b>Output Units</b>	<b>mA</b>
	<b>Tolerance mA</b>	<b>0.012 +/-</b>	<b>Square Root</b>	<b>Yes</b>
	<b>Tolerance inch</b>	<b>0.076 +/-</b>		
	<b>Dampening</b>	<b>6.40 Seconds</b>		

#### On-Line Communicator

<u>As Found</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>Input (in H<sub>2</sub>O)</u>	<u>Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>(Ma)</u>	
0.00	0.076	-0.076	4.012	3.988	4.000	3.999	-0.001 PASS
25.00	25.076	24.924	11.946	11.922	11.934	11.937	0.003 PASS
51.00	51.076	50.924	15.343	15.319	15.331	15.333	0.002 PASS
76.00	76.076	75.924	17.845	17.821	17.833	17.835	0.002 PASS
102.00	102.076	101.924	20.037	20.013	20.025	20.027	0.002 PASS

#### On-Line Communicator

<u>As Left Input</u>	<u>Tolerance</u>	<u>Pv</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>±</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>AO-</u>	<u>(ma)</u>	<u>(Ma)</u>		
0.00	0.076	-0.076	4.012	3.988	3.988	4.000	3.999	-0.001	PASS
25.00	25.076	24.924	11.946	11.922	11.922	11.934	11.937	0.003	PASS
51.00	51.076	50.924	15.343	15.319	15.319	15.331	15.333	0.002	PASS
76.00	76.076	75.924	17.845	17.821	17.821	17.833	17.835	0.002	PASS
102.00	102.076	50.924	20.037	20.013	20.013	20.025	20.027	0.002	PASS

#### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
11-Sep-07	Schedule	AO-I-01

#### Comments

**Testers**  
P.Anton



# SouthWest Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Setup</b>	<b>Tag ID</b> SW-BA-Well34R	<b>Serial Number</b> 9803-81827-C4
	24" Venturi	
	Flow Recorder	
	Input Low 4.000	Output Low 0
	Input High 20.000	Output High 16
	Input Units mA	Output Units MGD
Square Root No		
Tolerance 0.5 % of reading + 0.05% of full scale		0.005 % of Reading 0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0080	PASS
8.000	4.00	4.00	0.0280	PASS
12.000	8.00	7.99	0.0480	PASS
16.000	12.00	11.99	0.0680	PASS
20.000	16.00	15.98	0.0880	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0080	PASS
8.000	4.00	4.00	0.0280	PASS
12.000	8.00	8.00	0.0480	PASS
16.000	12.00	11.99	0.0680	PASS
20.000	16.00	15.98	0.0880	PASS

<u>Test Equipment Used</u>	
<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890

<u>ADDITIONAL INFORMATION</u>		
<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
11-Sep-07	Schedule	AO-I-01-10

<u>Comments</u>	<u>Testers</u>
	P.Anton

# WATER REPORT

West Wellfield BA Wells  
Transmitters & Recorders

FOR

Sep-07



# West Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION SHEET

<b>Tag ID WW-BA-Well29</b>			<b>Serial Number 2124099</b>		
<b>24" Venturi</b>			<b>Rosemount 3051 HART</b>		
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy 0.075% of Span</b>		
	<b>Input Low</b>	0.00	<b>Output Low 4.000</b>		
	<b>Input High</b>	66.70	<b>Output High 20.000</b>		
	<b>Input Units</b>	in of H2O	<b>Output Units mA</b>		
	<b>Tolerance mA</b>	0.012 +/-	<b>Square Root Yes</b>		
	<b>Tolerance inch</b>	0.050 +/-			
	<b>Dampening</b>	0.00	<b>Seconds</b>		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Pv +</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output (ma)</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0.00	0.050	-0.050	4.012	3.988	4.000	4.000	0.000	PASS	
17.00	17.050	16.950	12.090	12.066	12.078	12.079	0.001	PASS	
33.00	33.050	32.950	15.266	15.242	15.254	15.255	0.001	PASS	
50.00	50.050	49.950	17.865	17.841	17.853	17.854	0.001	PASS	
67.00	67.050	66.950	20.048	20.024	20.036	20.037	0.001	PASS	

### On-Line Communicator

<u>As Left Input (in H<sub>2</sub>O)</u>	<u>Tolerance ±</u>	<u>Pv -</u>	<u>Tolerance Pv +</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output (ma)</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0.00	0.050	-0.050	4.012	3.988	4.000	4.000	0.000	PASS	
17.00	17.050	16.950	12.090	12.066	12.078	12.079	0.001	PASS	
33.00	33.050	32.950	15.266	15.242	15.254	15.255	0.001	PASS	
50.00	50.050	49.950	17.865	17.841	17.853	17.854	0.001	PASS	
67.00	67.050	66.950	20.048	20.024	20.036	20.037	0.001	PASS	

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
12-Sep-07	Schedule	AO-I-01

### Comments

Testers  
P.Anton



# West Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION SHEET

<b>Tag ID</b> WW-BA-Well30 <b>24" Venturi</b> <b>Flow Transmitter</b> <b>Setup</b> Input Low            0.00 Input High           66.70 Input Units           in of H2O Tolerance mA        0.012       +/- Tolerance inch      0.050       +/- Dampening          0.00        Seconds	<b>Serial Number</b> 1441538 <b>Rosemount</b> 3051        HART <b>Accuracy</b> 0.075% of Span Output Low        4.000 Output High        20.000 Output Units        mA Square Root        Yes
---	---

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>		<u>Tolerance</u>		<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>	
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance</u>	<u>Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>		
0.00	0.050		-0.050	4.012	3.988	4.000	4.000	0.000	PASS
17.00	17.050		16.950	12.090	12.066	12.078	12.081	0.003	PASS
33.00	33.050		32.950	15.266	15.242	15.254	15.256	0.002	PASS
50.00	50.050		49.950	17.865	17.841	17.853	17.854	0.001	PASS
67.00	67.050		66.950	20.048	20.024	20.036	20.037	0.001	PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Pv</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Error</u>	<u>Pass/ Fail</u>	
<u>H<sub>2</sub>O)</u>	<u>±</u>		<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>		
0.00	0.050		-0.050	4.012	3.988	4.000	4.000	0.000	PASS
17.00	17.050		16.950	12.090	12.066	12.078	12.081	0.003	PASS
33.00	33.050		32.950	15.266	15.242	15.254	15.256	0.002	PASS
50.00	50.050		49.950	17.865	17.841	17.853	17.854	0.001	PASS
67.00	67.050		66.950	20.048	20.024	20.036	20.037	0.001	PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
12-Sep-07	Schedule	AO-I-01

<u>Comments</u>	<u>Testers</u>
	P.Anton



# West Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION SHEET

<b>Tag ID WW-BA-Well31</b>			<b>Serial Number 2299718</b>		
<b>24" Venturi</b>			<b>Rosemount 3051 HART</b>		
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy 0.075% of Span</b>		
	<b>Input Low</b>	0.00	<b>Output Low 4.000</b>		
	<b>Input High</b>	66.70	<b>Output High 20.000</b>		
	<b>Input Units</b>	in of H2O	<b>Output Units mA</b>		
	<b>Tolerance mA</b>	0.012 +/-	<b>Square Root Yes</b>		
	<b>Tolerance inch</b>	0.050 +/-			
	<b>Dampening</b>	0.00 Seconds			

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Pv +</u>	<u>Tolerance</u>	<u>Pv -</u>	<u>AO+</u>	<u>Tolerance</u>	<u>AO-</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>								<u>(ma)</u>			
0.00	0.050		-0.050		4.012		3.988	4.000	4.000	0.000	PASS
17.00	17.050		16.950		12.090		12.066	12.078	12.077	-0.001	PASS
33.00	33.050		32.950		15.266		15.242	15.254	15.255	0.001	PASS
50.00	50.050		49.950		17.865		17.841	17.853	17.855	0.002	PASS
67.00	67.050		66.950		20.048		20.024	20.036	20.037	0.001	PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Pv</u>	<u>Tolerance</u>	<u>Pv -</u>	<u>AO+</u>	<u>Tolerance</u>	<u>AO-</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>±</u>							<u>(ma)</u>			
0.00	0.050		-0.050		4.012		3.988	4.000	4.000	0.000	PASS
17.00	17.050		16.950		12.090		12.066	12.078	12.077	-0.001	PASS
33.00	33.050		32.950		15.266		15.242	15.254	15.255	0.001	PASS
50.00	50.050		49.950		17.865		17.841	17.853	17.855	0.002	PASS
67.00	67.050		66.950		20.048		20.024	20.036	20.037	0.001	PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
12-Sep-07	Schedule	AO-I-01

### Comments

Testers  
P.Anton

# West Wellfield -- Alexander Orr Water Treatment Plant

## CALIBRATION SHEET

As of October, 2003:

All recorders have been removed; S.C.A.D.A. system will be powering the transmitters and recording the flow data.

# WATER REPORT

West Wellfield  
ASR Wells #1 & #3

FOR

Sep-07



PO Box 1648, Lakeland, FL 33802  
 5101 Great Oak Drive, Lakeland, FL 33815  
 800-881-1487 • 863-682-4500 • Fax 863-687-0077  
 csr@amjequipment.com

# Flow Meter Verification Report

Report no 20080

**Customer**  
 Miami-Dade Water & Sewer Department  
 Alexander-Orr Stores  
 6800 SW 87th Avenue  
 Miami  
 FL 33173

**Site** ASR # 1  
**Location** Sunset & Krome

**Installation information**

Wires in separate conduit Yes  
 Splice in wire runs No  
 Proper splices NA  
 Direction of flow correct Yes  
 Non-full pipe condition Yes  
 Cathodic protection No  
 Sensors orientated properly Yes  
 Junction box wiring correct Yes  
 Moisture around wiring Yes  
 Grounding rings No  
 Straight diameters upstream 10  
 Cable length 15'  
 Distance to nearest pump 20'  
 Distance to nearest valve 15'

**Primary device**

**Manufacturer** Isco  
**Model no** UM14F1A1R  
**Serial no** F03E1528

**Transmitter**

**Manufacturer** Affco  
**Model no** DSM110 - 4411e  
**Serial no** C05C1445  
**Measuring range** 0 - 7.1999 MGD  
**Meter factor** .2164  
**C Factor**  
**Scale multiplier**  
**Totalizer start** .99999 **Totalizer stop** .31 Mg

**Resistance Measurements**

Coil + -	6.0 Ohm	Ref + -		Elec + -	20.4k	Shields C+R		Line gnd / Coil Shd	0.6 Ohm
Coil + Shd	21.04M	Ref + Shd		Elec + Shd	69.7k	Shields C+E	0.7 Ohm	Line gnd / Elec Shd	0.7 Ohm
Coil - Shd	21.37M	Ref - Shd		Elec - Shd	76.3k	Shields R+E		Line gnd / Ref Shd	

**Voltage Measurements**

Coil voltage	90Vac	Ref voltage		Elec + to Sh ac volts	0.8mV	Elec + to Sh dc volts	.052V
Coil Hz	40	Ref Hz		Elec - to Shd ac volts	0.22mV	Elec - to Sh dc volts	.091V
Line voltage	120.1	Line Hz	60	Line to Gnd	120.9		

**Technician** Kris Harrelson **Arrival date** 6/6/2007 **Completion date** 6/6/2007 **Total time**  
**Warranty service** No **Follow up service required** No **Media**

**Remarks** The measured parameters are within manufacturers published specifications.

**Customer signature**



PO Box 1648, Lakeland, FL 33602  
 5101 Great Oak Drive, Lakeland, FL 33815  
 1-800-881-1487 • 863-682-4500 • Fax 863-687-0077  
 csr@amjequipment.com

# Flow Meter Verification Report

Report no 20081

Customer  
 Miami-Dade Water & Sewer Department  
 Alexander-Orr Stores  
 6800 SW 87th Avenue  
 Miami  
 FL 33173

Site ASR # 2  
 Location Sunset & Krome

Primary device  
 Manufacturer Isco  
 Model no UM14F1A1S  
 Serial no F02K0986  
 Transmitter  
 Manufacturer Aftco  
 Model no DSM110 - 4411e  
 Serial no C05C1442  
 Measuring range 0 - 7.1999 MGD  
 Meter factor .2155  
 C Factor  
 Scale multiplier  
 Totalizer start 34.5Mg Totalizer stop 34.7Mg

Installation information  
 Wires in separate conduit Yes  
 Splice in wire runs No  
 Proper splices NA  
 Direction of flow correct Yes  
 Non-full pipe condition Yes  
 Cathodic protection No  
 Sensors orientated properly Yes  
 Junction box wiring correct Yes  
 Moisture around wiring Yes  
 Grounding rings No  
 Straight diameters upstream 10  
 Cable length 15'  
 Distance to nearest pump 20'  
 Distance to nearest valve 15'

### Resistance Measurements

Coll + - 6.0 Ohm	Ref + -	Elec + - 27.53k	Shields C+R	Line gnd / Coil Shd 0.3 Ohm
Coll + Shd 25.62M	Ref + Shd	Elec + Shd 11.19k	Shields C+E 1.0 Ohm	Line gnd / Elec Shd 0.3 Ohm
Coll - Shd 25.62M	Ref - Shd	Elec - Shd 16.15k	Shields R+E	Line gnd / Ref Shd

### Voltage Measurements

Coll voltage 91Vac	Ref voltage	Elec + to Sh ac volts 8.3mV	Elec + to Sh dc volts .077V
Coll Hz 39.98	Ref Hz	Elec - to Shd ac volts 0.6mV	Elec - to Sh dc volts .083V
Line voltage 121.72	Line Hz 60	Line to Gnd 120.97	

Technician Kris Harrelson Arrival date 6/6/2007 Completion date 6/6/2007 Total time

Warranty service No Follow up service required No Media

Remarks The measured parameters are within manufacturers published specifications.

Customer signature

101  
~~101~~



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 5101 Great Oak Drive, Lakeland, FL 33815  
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 csr@amjequipment.com

# Flow Meter Verification Report

Report no 20082

**Customer**  
 Miami-Dade Water & Sewer Department  
 Alexander-Orr Stores  
 6800 SW 87th Avenue  
 Miami  
 FL 33173

**Site** ASR # 3  
**Location** Sunset & Krome

**Installation Information**

Wires in separate conduit	Yes
Splice in wire runs	No
Proper splices	NA
Direction of flow correct	Yes
Non-full pipe condition	Yes
Cathodic protection	No
Sensors orientated properly	Yes
Junction box wiring correct	Yes
Moisture around wiring	Yes
Grounding rings	No
Straight diameters upstream	10
Cable length	15'
Distance to nearest pump	20'
Distance to nearest valve	15'

**Primary device**

**Manufacturer** Isco  
**Model no** UM14FA1R-35.4  
**Serial no** F03E1527

**Transmitter**

**Manufacturer** Afco  
**Model no** DSM110 - 4411e  
**Serial no** C03E1527A  
**Measuring range** 0 - 7.1999 MGD  
**Meter factor** .2121  
**C Factor**  
**Scale multiplier**

**Totalizer start** 37.5Mg **Totalizer stop** 37.5Mg

**Resistance Measurements**

Coil +- 6.0 Ohm	Ref +-	Elec +- 26.52k	Shields C+R	Line gnd / Coil Shd 1.0 Ohm
Coil + Shd 17.5M	Ref + Shd	Elec + Shd 7.62k	Shields C+E 0.2 Ohm	Line gnd / Elec Shd 0.3 Ohm
Coil - Shd 17.88M	Ref - Shd	Elec - Shd 161.1k	Shields R+E	Line gnd / Ref Shd

**Voltage Measurements**

Coil voltage 90.7 Vac	Ref voltage	Elec + to Sh ac volts 0.8mV	Elec + to Sh dc volts .062V
Coil Hz 40	Ref Hz	Elec - to Shd ac volts 0.8mV	Elec - to Sh dc volts .071V
Line voltage 121.1 Vac	Line Hz 60	Line to Gnd 121.12 Vac	

**Technician** Kris Harrelson **Arrival date** 6/6/2007 **Completion date** 6/6/2007 **Total time**  
**Warranty service** No **Follow up service required** No **Media**

**Remarks** The measured parameters are within manufacturers published specifications.

**Customer signature**

WATER REPORTS

Alex Orr In-Plant  
Transmitters & Recorders

FOR

Dec-07



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-505-RAW1</b>			<b>Serial Number</b>	1597757
Raw Water #1 -- 48" Venturi			<b>Rosemount</b>	3051 HART
<b>Setup</b>	Flow Transmitter		<b>Accuracy</b>	0.075% of Span
	Input Low	0.00	<b>Output Low</b>	4.000
	Input High	282.50	<b>Output High</b>	20.000
	Input Units	in of H2O	<b>Output Units</b>	mA
	Tolerance mA	0.012 +/-	<b>Square Root</b>	Yes
	Tolerance inch	0.212 +/-		
	Dampening	1.60 Seconds		

### On-Line Communicator

As Found Input (In H <sub>2</sub> O)	Tolerance Pv +	Tolerance Pv -	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0.00	0.212	-0.212	4.012	3.988	4.000	3.997	-0.003	PASS
71.00	71.212	70.788	12.033	12.009	12.021	12.021	0.000	PASS
141.00	141.212	140.788	15.316	15.292	15.304	15.302	-0.002	PASS
212.00	212.212	211.788	17.872	17.848	17.860	17.861	0.001	PASS
282.00	282.212	281.788	19.998	19.974	19.986	19.987	0.001	PASS

### On-Line Communicator

As Left Input (in H <sub>2</sub> O)	Tolerance Pv +	Tolerance Pv -	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0.00	0.212	-0.212	4.012	3.988	4.000	3.997	-0.003	PASS
71.00	71.212	70.788	12.033	12.009	12.021	12.021	0.000	PASS
141.00	141.212	140.788	15.316	15.292	15.304	15.302	-0.002	PASS
212.00	212.212	211.788	17.872	17.848	17.860	17.861	0.001	PASS
282.00	282.212	281.788	19.998	19.974	19.986	19.987	0.001	PASS

### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
1-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID **FIR-505-RAW1**

Serial Number **9401-28153-AO1**

Raw Water #1 -- 48" Venturi

### Setup

Flow Recorder

Input Low 4.000

Output Low 0

Input High 20.000

Output High 100

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.00	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	49.99	0.3000	PASS
16.000	75.00	74.98	0.4250	PASS
20.000	100.00	99.99	0.5500	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total</u>	<u>Pass / Fail</u>
			<u>Calculated Error ±</u>	
4.000	0.00	0.00	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	49.99	0.3000	PASS
16.000	75.00	74.98	0.4250	PASS
20.000	100.00	99.99	0.5500	PASS

### Test Equipment Used

#### Manufacturers

#### Serial Numbers

Fluke 744 DPC

8495027

Emerson Hart Field Communicator Model 375

11007890

### ADDITIONAL INFORMATION

#### Date

1-Dec-07

#### Reason For Work

Schedule

#### Procedure #

AO-I-01-10

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-506-RAW2</b>		<b>Serial Number</b>	<b>1597755</b>
<b>Raw Water #2 -- 54" Venturi</b>		<b>Rosemount</b>	<b>3051 HART</b>
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	<b>0.075% of Span</b>
	<b>Input Low</b>	<b>Output Low</b>	<b>4.000</b>
	<b>Input High</b>	<b>Output High</b>	<b>20.000</b>
	<b>Input Units</b>	<b>Output Units</b>	<b>mA</b>
	<b>Tolerance mA</b>	<b>Square Root</b>	<b>Yes</b>
	<b>0.012 +/-</b>		
	<b>Tolerance inch</b>		
	<b>0.063 +/-</b>		
	<b>Dampening</b>		
	<b>1.60 Seconds</b>		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>(In H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>	
0.00	0.063	-0.063	4.012	3.988	4.000	4.000	0.000 PASS
21.00	21.063	20.937	11.997	11.973	11.985	11.985	0.000 PASS
42.00	42.063	41.937	15.304	15.280	15.292	15.295	0.003 PASS
63.00	63.063	62.937	17.842	17.818	17.830	17.834	0.004 PASS
84.00	84.063	83.937	19.982	19.958	19.970	19.976	0.006 PASS

### On-Line Communicator

<u>As Left Input (In</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>	
0.00	0.063	-0.063	4.012	3.988	4.000	4.000	0.000 PASS
21.00	21.063	20.937	11.997	11.973	11.985	11.986	0.000 PASS
42.00	42.063	41.937	15.304	15.280	15.292	15.295	0.003 PASS
63.00	63.063	62.937	17.842	17.818	17.830	17.834	0.004 PASS
84.00	84.063	83.937	19.982	19.958	19.970	19.976	0.006 PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
2-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-506-RAW2

Serial Number

9710-78075-C05

Raw Water #2 -- 54" Venturi

### Setup

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 100  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	50.00	0.3000	PASS
16.000	75.00	75.00	0.4250	PASS
20.000	100.00	100.00	0.5500	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0500	PASS
8.000	25.00	25.00	0.1750	PASS
12.000	50.00	50.00	0.3000	PASS
16.000	75.00	75.00	0.4250	PASS
20.000	100.00	100.00	0.5500	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
2-Dec-07	Schedule	AO-I-01-10

### Comments

### Testers

C.Gordon/J.Carvajal

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# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-507-RAW3</b>			<b>Serial Number</b> 2239317
<b>Raw Water #3 -- 72" Venturi</b>			<b>Rosemount</b> 3051 <b>HART</b>
<b>Setup</b>	<b>Flow Transmitter</b>		<b>Accuracy</b> 0.075% of Span
	<b>Input Low</b> 0		<b>Output Low</b> 4.000
	<b>Input High</b> 289.00		<b>Output High</b> 20.000
	<b>Input Units</b> in of H2O		<b>Output Units</b> mA
	<b>Tolerance mA</b> 0.012 +/-		<b>Square Root</b> Yes
	<b>Tolerance inch</b> 0.217 +/-		
	<b>Dampening</b> 1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.217	-0.217	4.012	3.988	4.000	3.998	-0.002 PASS
72.00	72.217	71.783	11.998	11.974	11.986	11.985	-0.001 PASS
145.00	145.217	144.783	15.345	15.321	15.333	15.334	0.001 PASS
217.00	217.217	216.783	17.876	17.852	17.864	17.868	0.004 PASS
289.00	289.217	288.783	20.012	19.988	20.000	20.005	0.005 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.217	-0.217	4.012	3.988	4.000	3.998	-0.002 PASS
72.00	72.217	71.783	11.998	11.974	11.986	11.985	-0.001 PASS
145.00	145.217	144.783	15.345	15.321	15.333	15.334	0.001 PASS
217.00	217.217	216.783	17.876	17.852	17.864	17.868	0.004 PASS
289.00	289.217	288.783	20.012	19.988	20.000	20.005	0.005 PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
5-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/JJCarvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-507-RAW3

Serial Number 9310-22855

Raw Water #3 -- 72" Venturi

### Setup

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 85  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0425	PASS
8.000	21.25	21.25	0.1488	PASS
12.000	42.50	42.49	0.2550	PASS
16.000	63.75	63.74	0.3613	PASS
20.000	85.00	85.00	0.4675	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0425	PASS
8.000	21.25	21.25	0.1488	PASS
12.000	42.50	42.49	0.2550	PASS
16.000	63.75	63.74	0.3613	PASS
20.000	85.00	85.00	0.4675	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
5-Dec-07	Schedule	AO-I-01-10

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-508-RAW4</b>		<b>Serial Number</b>	1841929
<b>Raw Water #4 -- 84" Venturi</b>		<b>Rosemount</b>	3051 HART
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.075% of Span
	Input Low 0	<b>Output Low</b>	4.000
	Input High 263.07	<b>Output High</b>	20.000
	Input Units in of H2O	<b>Output Units</b>	mA
	Tolerance mA 0.012 +/-	<b>Square Root</b>	Yes
	Tolerance inch 0.197 +/-		
	Dampening 1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>	
0.00	0.197	-0.197	4.012	3.988	4.000	3.999	-0.001 PASS
66.00	66.197	65.803	12.026	12.002	12.014	12.023	0.009 PASS
132.00	132.197	131.803	15.346	15.322	15.334	15.342	0.008 PASS
197.00	197.197	196.803	17.858	17.834	17.846	17.851	0.005 PASS
263.00	263.197	262.803	20.010	19.986	19.998	20.002	0.004 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>	
0.00	0.197	-0.197	4.012	3.988	4.000	4.000	0.000 PASS
66.00	66.197	65.803	12.026	12.002	12.014	12.013	-0.001 PASS
132.00	132.197	131.803	15.346	15.322	15.334	15.333	-0.001 PASS
197.00	197.197	196.803	17.858	17.834	17.846	17.849	0.003 PASS
263.00	263.197	262.803	20.010	19.986	19.998	20.001	0.003 PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
6-Dec-08	Schedule	AO-I-01

### Comments

### Testers

C.gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-508-RAW4A

Serial Number 9602-58414-003

Raw Water #4 -- 84" Venturi

### Setup

Flow Recorder -- Chem. Bldg. #1

Input Low 4.000

Output Low 0

Input High 20.000

Output High 175

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0875	PASS
8.000	43.75	43.75	0.3063	PASS
12.000	87.50	87.50	0.5250	PASS
16.000	131.25	131.26	0.7437	PASS
20.000	175.00	175.00	0.9625	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0875	PASS
8.000	43.75	43.75	0.3063	PASS
12.000	87.50	87.50	0.5250	PASS
16.000	131.25	131.26	0.7437	PASS
20.000	175.00	175.00	0.9625	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
6-Dec-07	Schedule	AO-I-01-10

### Comments

### Testers

C.Gordon/J.carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-509-RAW4B

Serial Number 9401-28155-AO1

Raw Water #4 - 84" Venturi

**Setup**

Flow Recorder - Chem. Bldg. #2

Input Low 4.000

Output Low 0

Input High 20.000

Output High 175

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

**Results**

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0875	PASS
8.000	43.75	43.75	0.3063	PASS
12.000	87.50	87.50	0.5250	PASS
16.000	131.25	131.25	0.7438	PASS
20.000	175.00	175.01	0.9625	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0875	PASS
8.000	43.75	43.75	0.3063	PASS
12.000	87.50	87.50	0.5250	PASS
16.000	131.25	131.25	0.7438	PASS
20.000	175.00	175.01	0.9625	PASS

**Test Equipment Used**

Manufacturers

Serial Numbers

Fluke 744 DPC

8495027

Emerson Hart Field Communicator Model 375

11007890

**ADDITIONAL INFORMATION**

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
6-Dec-07	Schedule	AO-I-01-10

Comments

Testers

C.Gordon/J.Carvajal

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# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-500-FIN1</b>		<b>Serial Number</b>	1411231
Finish Water #1 -- 48" Venturi		<b>Rosemount</b>	3051 HART
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.075% of Span
	Input Low 0	<b>Output Low</b>	4.000
	Input High 265.20	<b>Output High</b>	20.000
	Input Units in of H2O	<b>Output Units</b>	mA
	Tolerance mA 0.012 +/-	<b>Square Root</b>	Yes
	Tolerance inch 0.199 +/-		
	Dampening 1.60 Seconds		

### On-Line Communicator

As Found Input (in H <sub>2</sub> O)	Tolerance ±	Pv Pv-	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0.00	0.199	-0.199	4.012	3.988	4.000	3.999	-0.001	PASS
66.00	66.199	65.801	11.994	11.970	11.982	11.983	0.001	PASS
133.00	133.199	132.801	15.343	15.319	15.331	15.338	0.007	PASS
199.00	199.199	198.801	17.872	17.848	17.860	17.868	0.008	PASS
265.00	265.199	264.801	20.006	19.982	19.994	20.005	0.011	PASS

### On-Line Communicator

As Left Input (in H <sub>2</sub> O)	Tolerance ±	Pv Pv-	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0.00	0.199	-0.199	4.012	3.988	4.000	4.000	0.000	PASS
66.00	66.199	65.801	11.994	11.970	11.982	11.979	-0.003	PASS
133.00	133.199	132.801	15.343	15.319	15.331	15.327	-0.004	PASS
199.00	199.199	198.801	17.872	17.848	17.860	17.858	-0.004	PASS
265.00	265.199	264.801	20.006	19.982	19.994	19.993	-0.001	PASS

### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
7-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-500-FIN1

Serial Number 101655-001-902-8716

Finish Water #1 -- 48" Venturi

### Setup

Flow Recorder

Input Low 4.000

Output Low 0

Input High 20.000

Output High 80

Input Units mA

Output Units MGD

Square Root No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

As Found Input (mA)	Expected Output (MGD)	As Found Output (MGD)	Total	Pass / Fail
			Calculated Error ±	
4.000	0.00	0.00	0.0400	PASS
8.000	20.00	20.00	0.1400	PASS
12.000	40.00	40.00	0.2400	PASS
16.000	60.00	59.97	0.3400	PASS
20.000	80.00	79.95	0.4400	PASS

As Left Input (mA)	Expected Output (MGD)	As Left Output (MGD)	Total	Pass / Fail
			Calculated Error ±	
4.000	0.00	0.00	0.0400	PASS
8.000	20.00	20.00	0.1400	PASS
12.000	40.00	40.00	0.2400	PASS
16.000	60.00	59.97	0.3400	PASS
20.000	80.00	79.95	0.4400	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
7-Dec-07	Schedule	AO-I-01-10

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID</b> FIT-501-FIN2	<b>Serial Number</b> 1101176
<b>Finish Water #2 -- 60" Venturi</b>	<b>Rosemount</b> 3051 <b>HART</b>
<b>Setup</b> <b>Flow Transmitter</b>	<b>Accuracy</b> 0.075% of Span
<b>Input Low</b> 0	<b>Output Low</b> 4.000
<b>Input High</b> 68.90	<b>Output High</b> 20.000
<b>Input Units</b> in of H2O	<b>Output Units</b> mA
<b>Tolerance mA</b> 0.012 +/-	<b>Square Root</b> Yes
<b>Tolerance inch</b> 0.052 +/-	
<b>Dampening</b> 1.60 Seconds	

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.052	-0.052	4.012	3.988	4.000	3.998	-0.002 PASS
17.00	17.052	16.948	11.960	11.936	11.948	11.956	0.008 PASS
34.00	34.052	33.948	15.252	15.228	15.240	15.230	-0.010 PASS
52.00	52.052	51.948	17.912	17.888	17.900	17.896	-0.004 PASS
69.00	69.052	68.948	20.024	20.000	20.012	20.018	0.006 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.052	-0.052	4.012	3.988	4.000	3.998	-0.002 PASS
17.00	17.052	16.948	11.960	11.936	11.948	11.956	0.008 PASS
34.00	34.052	33.948	15.252	15.228	15.240	15.230	-0.010 PASS
52.00	52.052	51.948	17.912	17.888	17.900	17.896	-0.004 PASS
69.00	69.052	68.948	20.024	20.000	20.012	20.018	0.006 PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
8-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-501-FIN2

Serial Number

9602-58412C03

Finish Water #2 -- 60" Venturi

### Setup

Flow Recorder

Input Low 4.000

Output Low 0

Input High 20.000

Output High 128

Input Units mA

Output Units MGD

Square Root No

No

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0640	PASS
8.000	32.00	32.00	0.2240	PASS
12.000	64.00	64.01	0.3840	PASS
16.000	96.00	96.01	0.5440	PASS
20.000	128.00	128.00	0.7040	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0640	PASS
8.000	32.00	32.00	0.2240	PASS
12.000	64.00	64.01	0.3840	PASS
16.000	96.00	96.01	0.5440	PASS
20.000	128.00	128.00	0.7040	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC

Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027

11007890

### ADDITIONAL INFORMATION

Date

8-Dec-07

Reason For Work

Schedule

Procedure #

AO-I-01-10

Comments

Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-502-FIN3</b>		<b>Serial Number</b>	1101177
<b>Finish Water #3 -- 72" Venturi</b>		<b>Rosemount</b>	3051 HART
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.075% of Span
	<b>Input Low</b> 0	<b>Output Low</b>	4.000
	<b>Input High</b> 193.30	<b>Output High</b>	20.000
	<b>Input Units</b> in of H2O	<b>Output Units</b>	mA
	<b>Tolerance mA</b> 0.012 +/-	<b>Square Root</b>	Yes
	<b>Tolerance inch</b> 0.145 +/-		
	<b>Dampening</b> 1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.145	-0.145	4.012	3.988	4.000	3.999	-0.001 PASS
48.00	48.145	47.855	11.985	11.961	11.973	11.966	-0.007 PASS
97.00	97.145	96.855	15.346	15.322	15.334	15.329	-0.005 PASS
145.00	145.145	144.855	17.870	17.846	17.858	17.853	-0.005 PASS
193.00	193.145	192.855	20.000	19.976	19.988	19.985	-0.003 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>		
0.00	0.145	-0.145	4.012	3.988	4.000	3.999	-0.001 PASS
48.00	48.145	47.855	11.985	11.961	11.973	11.966	-0.007 PASS
97.00	97.145	96.855	15.346	15.322	15.334	15.329	-0.005 PASS
145.00	145.145	144.855	17.870	17.846	17.858	17.853	-0.005 PASS
193.00	193.145	192.855	20.000	19.976	19.988	19.985	-0.003 PASS

### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
9-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/J.Carvajal

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# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-502-FIN3

Serial Number

9501-42407-C03

Finish Water #3 -- 72" Venturi

### Setup

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 150  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0750	PASS
8.000	37.50	37.52	0.2625	PASS
12.000	75.00	75.04	0.4500	PASS
16.000	112.50	112.55	0.6375	PASS
20.000	150.00	150.07	0.8250	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0750	PASS
8.000	37.50	37.52	0.2625	PASS
12.000	75.00	75.04	0.4500	PASS
16.000	112.50	112.55	0.6375	PASS
20.000	150.00	150.07	0.8250	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
11-Dec-08	Schedule	AO-I-01-10

### Comments

### Testers

C,Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-503-FIN4</b>		<b>Serial Number 1101174</b>	
Finish Water #4 -- 72" Venturi		Rosemount 3051	HART
<b>Setup</b>	Flow Transmitter	Accuracy	0.075% of Span
	Input Low 0	Output Low	4.000
	Input High 257.10	Output High	20.000
	Input Units in of H2O	Output Units	mA
	Tolerance mA 0.012 +/-	Square Root	Yes
	Tolerance inch 0.193 +/-		
	Dampening 1.60 Seconds		

### On-Line Communicator

As Found Input	Tolerance	Tolerance	Tolerance	Expected Output		Error	Pass/ Fail
(In H <sub>2</sub> O)	Tolerance Pv +	Pv -	AO+	AO-	(ma)	Output (Ma)	
0.00	0.193	-0.193	4.012	3.988	4.000	3.999	-0.001 PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.980	-0.003 PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.332	-0.001 PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.863	0.000 PASS
257.00	257.193	256.807	20.009	19.985	19.997	20.002	0.005 PASS

### On-Line Communicator

As Left Input (in	Tolerance	Tolerance	Tolerance	Expected Output		Error	Pass/ Fail
H <sub>2</sub> O)	Tolerance Pv +	Pv -	AO+	AO-	(ma)	Output (Ma)	
0.00	0.193	-0.193	4.012	3.988	4.000	3.999	-0.001 PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.980	-0.003 PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.332	-0.001 PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.863	0.000 PASS
257.00	257.193	256.807	20.009	19.985	19.997	20.002	0.005 PASS

### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
12-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/J.Carvajal

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# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-503-FIN4

Serial Number 101655-8717

Finish Water #4 -- 72" Venturi

### Setup

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 173  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale

0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.26	0.3028	PASS
12.000	86.50	86.51	0.5190	PASS
16.000	129.75	129.76	0.7353	PASS
20.000	173.00	173.01	0.9515	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.26	0.3028	PASS
12.000	86.50	86.51	0.5190	PASS
16.000	129.75	129.76	0.7353	PASS
20.000	173.00	173.01	0.9515	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

#### Date

13-Dec-07

#### Reason For Work

Schedule

#### Procedure #

AO-I-01-10

#### Comments

#### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION CERTIFICATE

<b>Tag ID FIT-504-FIN5</b>		<b>Serial Number</b>	1101178
<b>Finish Water #5 -- 72" Venturi</b>		<b>Rosemount</b>	3051 HART
<b>Setup</b>	<b>Flow Transmitter</b>	<b>Accuracy</b>	0.075% of Span
	Input Low 0	Output Low	4.000
	Input High 257.10	Output High	20.000
	Input Units in of H2O	Output Units	mA
	Tolerance mA 0.012 +/-	Square Root	Yes
	Tolerance inch 0.193 +/-		
	Dampening 1.60 Seconds		

### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>	
0.00	0.193	-0.193	4.012	3.988	4.000	4.000	0.000 PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.982	-0.001 PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.333	0.000 PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.864	0.001 PASS
257.00	257.193	256.807	20.009	19.985	19.997	19.999	0.002 PASS

### On-Line Communicator

<u>As Left Input (in</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Tolerance</u>	<u>Expected Output</u>		<u>Error</u>	<u>Pass/ Fail</u>
<u>H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO-</u>	<u>(ma)</u>	<u>Output (Ma)</u>	
0.00	0.193	-0.193	4.012	3.988	4.000	4.000	0.000 PASS
64.00	64.193	63.807	11.995	11.971	11.983	11.982	-0.001 PASS
129.00	129.193	128.807	15.345	15.321	15.333	15.333	0.000 PASS
193.00	193.193	192.807	17.875	17.851	17.863	17.864	0.001 PASS
257.00	257.193	256.807	20.009	19.985	19.997	19.999	0.002 PASS

### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
13-Dec-07	Schedule	AO-I-01

### Comments

### Testers

C.Gordon/J.Carvajal



# Alex Orr Water Treatment Plant

## CALIBRATION SHEET

Tag ID FIR-504-FIN5

Serial Number 101655-8717

Finish Water #5 -- 72" Venturi

### Setup

Flow Recorder

Input Low 4.000  
Input High 20.000  
Input Units mA  
Square Root No

Output Low 0  
Output High 173  
Output Units MGD

Tolerance 0.5 % of reading + 0.05% of full scale  
0.005 % of Reading  
0.0005 % of Full Scale

### Results

<u>As Found Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Found Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.26	0.3028	PASS
12.000	86.50	86.53	0.5190	PASS
16.000	129.75	129.78	0.7353	PASS
20.000	173.00	173.03	0.9515	PASS

<u>As Left Input (mA)</u>	<u>Expected Output (MGD)</u>	<u>As Left Output (MGD)</u>	<u>Total Calculated Error ±</u>	<u>Pass / Fail</u>
4.000	0.00	0.00	0.0865	PASS
8.000	43.25	43.24	0.3028	PASS
12.000	86.50	86.50	0.5190	PASS
16.000	129.75	129.74	0.7353	PASS
20.000	173.00	172.99	0.9515	PASS

### Test Equipment Used

#### Manufacturers

Fluke 744 DPC  
Emerson Hart Field Communicator Model 375

#### Serial Numbers

8495027  
11007890

### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
13-Dec-07	Schedule	AO-I-01-10

### Comments

### Testers

C.Gordon/J.Carvajal

# WATER REPORT

SouthWest Wellfield  
ASR Wells #4 & 5

FOR

Dec-07



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID FIT-1-ASR #4</b>				<b>Serial Number 2031059</b>	
<b>Production / Recovery</b>				<b>Rosemount 1151DP</b>	<b>HART</b>
<b>Setup</b>	<b>Flow Transmitter</b>			<b>Accuracy 0.254019015</b>	<b>% of Span</b>
	<b>Input Low</b>	0.00		<b>Pressure Range 4</b>	
	<b>Input High</b>	138.84		<b>Output Low 4.000</b>	
	<b>Input Units</b>	in of H2O		<b>Output High 20.000</b>	
	<b>Tolerance mA</b>	0.041	+/-	<b>Output Units mA</b>	
	<b>Tolerance Inch</b>	0.353	+/-	<b>Square Root Yes</b>	
	<b>Dampening</b>	6.40	Seconds	<b>Upper Range Limit of TX (URL) 150</b>	<b>" H<sub>2</sub>O</b>

#### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance Pv +</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output (ma)</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0	0.353	-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353	34.647	12.074	11.993	12.033	12.033	0.000	PASS
69	69.353	68.647	15.320	15.239	15.279	15.280	0.001	PASS
104	104.353	103.647	17.888	17.807	17.848	17.849	0.001	PASS
139	139.353	138.647	20.050	19.969	20.009	20.010	0.001	PASS

#### On-Line Communicator

<u>As Left Input (in H<sub>2</sub>O)</u>	<u>Tolerance Pv +</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO-</u>	<u>Expected Output (ma)</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0	0.353	-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353	34.647	12.074	11.993	12.033	12.033	0.000	PASS
69	69.353	68.647	15.320	15.239	15.279	15.280	0.001	PASS
104	104.353	103.647	17.888	17.807	17.848	17.849	0.001	PASS
139	139.353	138.647	20.050	19.969	20.009	20.010	0.001	PASS

#### Test Equipment Used

<b>Manufacturers</b>	<b>Serial Numbers</b>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

<b>Date</b>	<b>Reason For Work</b>	<b>Procedure #</b>
21-Dec-07	Schedule	AO-I-01

#### Comments

#### Testers

C.Gordon/J.Carvajal



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID FIT-2-ASR #4</b>			<b>Serial Number 2031058</b>		
<b>Setup</b>	<b>Injection / Recharge</b>		<b>Rosemount</b>	<b>1151DP</b>	<b>HART</b>
	<b>Flow Transmitter</b>		<b>Accuracy</b>	<b>0.254019015</b>	<b>% of Span</b>
	<b>Input Low</b>	<b>0.00</b>	<b>Pressure Range</b>	<b>4</b>	
	<b>Input High</b>	<b>138.84</b>	<b>Output Low</b>	<b>4.000</b>	
	<b>Input Units</b>	<b>in of H2O</b>	<b>Output High</b>	<b>20.000</b>	
	<b>Tolerance mA</b>	<b>0.041 +/-</b>	<b>Output Units</b>	<b>mA</b>	
	<b>Tolerance Inch</b>	<b>0.353 +/-</b>	<b>Square Root</b>	<b>Yes</b>	
<b>Dampening</b>	<b>6.40</b>	<b>Seconds</b>	<b>Upper Range Limit of TX (URL)</b>	<b>150</b>	<b>" H<sub>2</sub>O</b>

#### On-Line Communicator

<u>As Found Input</u>	<u>Tolerance</u>		<u>Tolerance</u>		<u>Expected Output</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
<u>(in H<sub>2</sub>O)</u>	<u>Pv +</u>	<u>Pv -</u>	<u>AO+</u>	<u>AO</u>	<u>(ma)</u>			
0	0.353	-0.353	4.041	3.959	4.000	4.004	0.004	PASS
35	35.353	34.647	12.074	11.993	12.033	12.056	0.023	PASS
69	69.353	68.647	15.320	15.239	15.279	15.294	0.015	PASS
104	104.353	103.647	17.888	17.807	17.848	17.858	0.010	PASS
139	139.353	138.647	20.050	19.969	20.009	20.019	0.010	PASS

#### On-Line Communicator

<u>As Left Input (in H<sub>2</sub>O)</u>	<u>Tolerance ±</u>	<u>Pv -</u>	<u>Tolerance Pv -</u>	<u>Tolerance AO+</u>	<u>Tolerance AO</u>	<u>Expected Output (ma)</u>	<u>Output (Ma)</u>	<u>Error</u>	<u>Pass/ Fail</u>
0	0.353	-0.353	4.041	3.959	4.000	3.999	-0.001	PASS	
35	35.353	34.647	12.074	11.993	12.033	12.033	0.000	PASS	
69	69.353	68.647	15.320	15.239	15.279	15.280	0.001	PASS	
104	104.353	103.647	17.888	17.807	17.848	17.848	0.000	PASS	
139	139.353	138.647	20.050	19.969	20.009	20.008	-0.001	PASS	

#### Test Equipment Used

<u>Manufacturers</u>	<u>Serial Numbers</u>
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

<u>Date</u>	<u>Reason For Work</u>	<u>Procedure #</u>
22-Dec-07	Schedule	AO-I-01

#### Comments

#### Testers

C.Gordon/J.Carvajal



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID FIT-1-ASR #5</b>				<b>Serial Number</b> 2124099	
<b>Setup</b>	Production / Recovery			Rosemount	1151DP HART
	Flow Transmitter			Accuracy	0.254019015 % of Span
	Input Low	0.00		Pressure Range	4
	Input High	138.84		Output Low	4.000
	Input Units	in of H2O		Output High	20.000
	Tolerance mA	0.041	+/-	Output Units	mA
	Tolerance inch	0.353	+/-	Square Root	Yes
Dampening 6.40 Seconds			Upper Range Limit of TX (URL)	150	" H <sub>2</sub> O

#### On-Line Communicator

As Found Input (In H <sub>2</sub> O)	Tolerance	Pv +	Tolerance Pv -	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0	0.353		-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353		34.647	12.074	11.993	12.033	12.034	0.001	PASS
69	69.353		68.647	15.320	15.239	15.279	15.282	0.003	PASS
104	104.353		103.647	17.888	17.807	17.848	17.849	0.001	PASS
139	139.353		138.647	20.050	19.969	20.009	20.008	-0.001	PASS

#### On-Line Communicator

As Left Input (in H <sub>2</sub> O)	Tolerance	Pv +	Tolerance Pv -	Tolerance AO+	Tolerance AO-	Expected Output (ma)	Output (Ma)	Error	Pass/ Fail
0	0.353		-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353		34.647	12.074	11.993	12.033	12.034	0.001	PASS
69	69.353		68.647	15.320	15.239	15.279	15.282	0.003	PASS
104	104.353		103.647	17.888	17.807	17.848	17.849	0.001	PASS
139	139.353		138.647	20.050	19.969	20.009	20.008	-0.001	PASS

#### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
23-Dec-07	Schedule	AO-I-01

#### Comments

#### Testers

C.Gordon/J.Carvajal



## SouthWest Wellfield -- Alexander Orr Water Treatment Plant

### CALIBRATION CERTIFICATE

<b>Tag ID FIT-2-ASR #5</b>		<b>Serial Number 2299718</b>	
<b>Setup</b>	Injection / Recharge	Rosemount	1151DP HART
	Flow Transmitter	Accuracy	0.25401901 % of Span
	Input Low 0.00	Pressure Range	4
	Input High 138.84	Output Low	4.000
	Input Units in of H2O	Output High	20.000
	Tolerance mA 0.041 +/-	Output Units	mA
	Tolerance inch 0.353 +/-	Square Root	Yes
	Dampening 6.40 Seconds	Upper Range Limit of TX (URL)	150 " H <sub>2</sub> O

#### On-Line Communicator

As Found Input (in)		Tolerance Pv	Tolerance	Tolerance	Expected Output	Output	Error	Pass/ Fail
H <sub>2</sub> O	Tolerance Pv +	=	AO+	AO-	(ma)	(Ma)		
0	0.353	-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353	34.647	12.074	11.993	12.033	12.033	0.000	PASS
69	69.353	68.647	15.320	15.239	15.279	15.285	0.006	PASS
104	104.353	103.647	17.888	17.807	17.848	17.857	0.009	PASS
139	139.353	138.647	20.050	19.969	20.009	20.020	0.011	PASS

#### On-Line Communicator

As Left Input (in)		Tolerance	Tolerance	Tolerance	Expected Output	Output	Error	Pass/ Fail
H <sub>2</sub> O	Tolerance Pv +	Pv -	AO+	AO-	(ma)	(Ma)		
0	0.353	-0.353	4.041	3.959	4.000	4.000	0.000	PASS
35	35.353	34.647	12.074	11.993	12.033	12.031	-0.002	PASS
69	69.353	68.647	15.320	15.239	15.279	15.276	-0.003	PASS
104	104.353	103.647	17.888	17.807	17.848	17.847	-0.001	PASS
139	139.353	138.647	20.050	19.969	20.009	20.009	0.000	PASS

#### Test Equipment Used

Manufacturers	Serial Numbers
Fluke 744 DPC	8495027
Emerson Hart Field Communicator Model 375	11007890
Ametek Pneumatic Dead Weight Tester Model PK II	85348

#### ADDITIONAL INFORMATION

Date	Reason For Work	Procedure #
26-Dec-07	Schedule	AO-I-01

#### Comments

#### Testers

C.Gordon/J.Carvajal

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# South West Wellfield -- Alexander Or Water Treatment Plant

## CALIBRATION SHEET

**As of October, 2003:**

All recorders have been removed; S.C.A.D.A. system will be powering the transmitters and recording the flow data.

# MIAMI DADE WATER AND SEWER



Procedure# AO-I-01-0

August 18, 2005

Procedures For Venturi Flow Transmitter Calibrations For Plant And Pay Meters

**BENCH CALIBRATIONS**

Note: for field calibrations, ignore step 2 and 11

Use a pressure input source at least three times more accurate than the transmitter, and allow the input pressure to stabilize for ten seconds before entering any values

**Inform operations and remove unit from process**

**Install a temporary preconfigured transmitter if required by operations (Steps 12-16)**

**STEP**

1	Drain all water from transmitter ( use a compressed air source to remove all water)
2	Secure transmitter on bench (do not move)
3	Connect a pressure source, HART communicator, & digital readout device to transmitter (need > 250 Ohms of loop resistance for communication)
4	Establish communication between transmitter and communicator.
5	Open bleed valve on Low side, (close equalizing valve)
6	Perform a Zero Trim
7	Perform a 5 step "As Found" test by applying five pressure points and record data ( Apply pressures approximately 0%, 25%, 50%, 75%, 100% of span) ( record input pressure, and analog output on digital readout for each step)
8	Compare the applied pressure to the Process Variable (PV) line on the communicator's On-Line Menu. IF the PV reading on the communicator is <i>outside the expected pressure reading</i> , perform a sensor trim as follow: <div style="margin-left: 40px;">Apply a Zero pressure and Perform a Lower Sensor Trim</div> <div style="margin-left: 40px;">Apply Span pressure and Perform Upper sensor Trim</div> <p><i>Note: A full sensor trim is recommended even if unit passes test.</i> <i>This will ensure continous compliance with plant standards</i></p>
9	Compare the Analog Output (AO) line on the communicator on-line menu to the digital readout device IF the AO reading on the communicator is <i>outside the expected analog reading</i> , perform an Output Trim
10	Perform a 5 step "As Left" test by applying five pressure points and record data ( Apply pressures approximately 0%, 25%, 50%, 75%, 100% of span) ( record input pressure, and analog output on digital readout for each step)
	<b>Returning to process</b>
11	Inform operations if to remove a temporary transmitter
12	Flush out impulse lines to remove sediment and trapped air from venturi before reinstallation
13	Reinstall transmitter back on process, attach all connections and impulse lines.
14	Bleed all air out of transmitter and impulse lines
15	Colse the Hi side manifold valve of the transmitter and open the Equalizing valve.
16	Perform a Zero Trim by applying a "Zero" to the transmitter.
17	Place unit back in service. Verify reading with operations

# MIAMI DADE WATER AND SEWER



Procedure# AO-I-01-10

August 18, 2005

## Procedures For Flow Recorder Calibrations For Plant And Pay Meters

### FIELD CALIBRATIONS

#### Note:

Use a current input source at least three times more accurate than the recorder

With HART transmitters, may use the loops calibrated analog out to generate the 4-20ma test signals

**Inform operations and remove unit from process**

**Calibration using transmitter for source ma**

#### STEP

- 1 Connect a HART communicator, and establish communication
- 2 Perform a 5 point "Loop Test" by applying five current points and record data "As Found"  
( Apply current 0%, 25%, 50%, 75%, 100%)
- 3 Compare the applied current to the recorder digital readout  
If recorder readings are outside the accuracy limits, perform a calibration

Note: Observe reading on SCADA system on all points and report out of tolerance reading to SCADA

- 4 Perform a recorder pen adjustment if needed  
Perform a 5 point "Loop Test" by applying five current points and record data "As Left"  
( Apply current 0%, 25%, 50%, 75%, 100%)
- 5 Perform a totalizer verification by applying a known % signal and check for proper counts  
If totalizer is out of tolerance, perform necessary corrections and retest.
- 6 Place unit back in service. Verify reading with operations
- 7 Log calibration on chart by writing the Technicians name and the words "Calibration Test"



MIAMI-DADE WATER AND SEWER

### Linear and Square Root output Calculations

Perform calculations for expected output with or without square root extraction

Transmitter accuracy on the Rosemount 1151 is  $[0.2 + 0.05 \times \text{URL}/\text{SPAN}]\%$  of span for a square root output transmitter on flow application  
URL = Upper Range Limit of Transmitter  
Example: URL for an 1151 transmitter range 4 is 150 inches of water column  
Instrument Configured 0-130" of water  
 $[0.2 + 0.05 \times 150/130] = 0.258\%$  of span + or -  
Milliamp tolerance:  $0.258\%$  or  $.00258 \times 16(\text{ma}) = \pm 0.0413 \text{ ma}$

Milliamp calculation for a given input:  
Convert input pressure to a percent of the span  
Transmitter configured for 0-130 in. 4-20 ma output  
 $32.5 \text{ in} / 130\% = 25\%$   
 $25/100 = 0.25$   
Standard output  $(0.25 \times 16) + 4 = 8.00 \text{ ma}$   
Square root output  $(0.25 \text{ Sq Root}) \times 16 + 4 = 12.00 \text{ ma}$

Recorder Accuracy on 392 is 0.5% of Reading + 0.05% of full scale  
for recorder 1-5 volt input (4-20 ma)  
Example: recorder configured to 0-100  
Total accuracy at 25% input is  $100 \times .05\% = .05 + 0.5\% \times 25 = 0.125$   
Total accuracy then is + or - 0.175



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## Introduction

ADS, LLC has completed Pitometer Tests on production water meters at the Alexander Orr Water Treatment Plant and well meters in the West Well field. The work consisted of the following:

- Tested, in place, for accuracy four raw water meters and five finished water meters at the Alexander Orr Water Treatment Plant
- Tested, in place, for accuracy three well meters in the West Well field.
- The preparation of this report detailing the results of the tests including velocity profiles of each of the gauging points used to test the meters.

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## Meter Test Procedures

Master meter tests compared the registration on the meters at supply sources to Pitometer measurements. Pitometer measurements used a pitot tube that was inserted into a pipe carrying the same flow as the meter. The pitot tube had two orifices, one facing upstream and the other facing downstream. The velocity of the flowing water produced a differential pressure between the orifices. The water velocity was calculated from the following equation:

$$V = c \times (2 \times g \times d / 12)^{0.5}$$

Where:

- V = Velocity in feet per second (fps)
- c = A coefficient established by laboratory calibration
- g = 32.174 feet per second per second
- d = Differential pressure in inches of water

The flow in a pipe can be calculated from the average velocity. Average velocities were measured by conducting a traverse, in which point velocities were measured along the diameter. The measurement points were chosen such that averaging the point velocities calculated the average velocity. The average velocity was divided by the center velocity to calculate the velocity factor, a constant summarizing the shape of the profile.

Flow was calculated from center velocity measurements using the following equation:

$$Q = 0.6463 \times VC \times VF \times A$$

Where:

- Q = Quantity of flow in million gallons per day (MGD)
- VC = Velocity at the center of the pipe in fps
- VF = Velocity factor
- A = Area of the pipe in square feet

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## Summary of Results

The table below summarizes the master meter test results.

Pitometer Flow Measurement Results					
Test Date	Location	Pitometer Flow (MGD)	Meter Flow (MGD)	Percent Accuracy	Comments
8/29/2007	ORR WTP 48 Raw Water # 1	24.62	25.47	104%	Meter registers within allowable limits of accuracy
8/29/2007	ORR WTP 54 Raw Water # 2	41.71	43.39	104%	Meter registers within allowable limits of accuracy
9/10/2007	ORR WTP 60 Finish Water # 2	40.56	38.89	96%	Meter registers within allowable limits of accuracy
8/29/2007	ORR WTP 72 Finish Water # 3	26.10	25.96	99%	Meter registers within allowable limits of accuracy
9/5/2007	ORR WTP 72 Raw Water # 3	35.67	34.60	97%	Meter registers within allowable limits of accuracy
9/24/2007	ORR WTP 48 Finish Water # 1	30.95	30.31	102%	Meter registers within allowable limits of accuracy
9/11/2007	ORR WTP 72 Finish Water # 4 West High Service PS – West A	58.16	60.84	105%	Meter registers within allowable limits of accuracy
9/10/2007	ORR WTP 72 Finish Water # 5 West High service PS – West B	67.05	64.67	96%	Meter registers within allowable limits of accuracy
9/5/2007	ORR WTP 84 Raw Water # 4	78.59	78.76	100%	Meter registers within allowable limits of accuracy
9/21/2007	BA Well #29 @ West Well Field – GE Meter	4.19	4.60	110%	Meter is over-registering
9/21/2007	BA Well #29 @ West Well Field - TOTALIZER	4.19	3.09	74%	Meter is under-registering
8/27/2007	ASR Well #3 @ West Well Field	3.84	3.88	101%	Meter registers within allowable limits of accuracy
9/24/2007	BA Well #34 @ Southwest Well Field	15.12	14.41	95%	Meter registers within allowable limits of accuracy

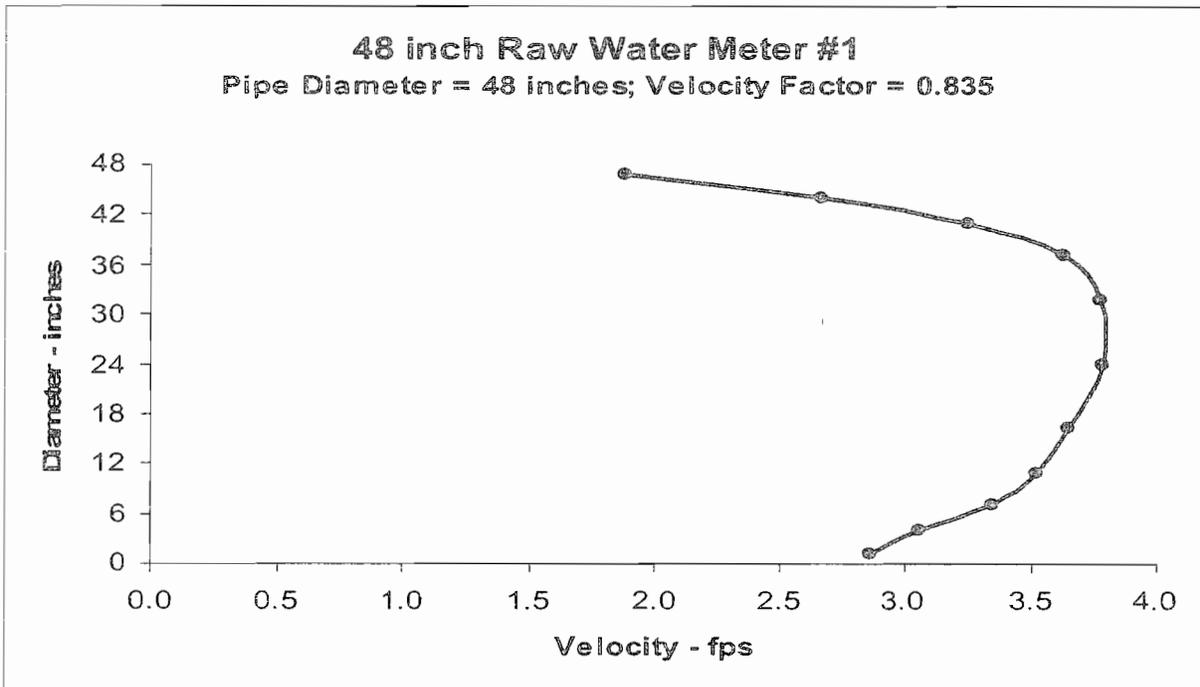
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## Meter Tests

The following tables show the results of the individual meter tests and the velocity profile at the gauging point used to test the individual meter.

### ORR WTP - 48 Raw Water # 1

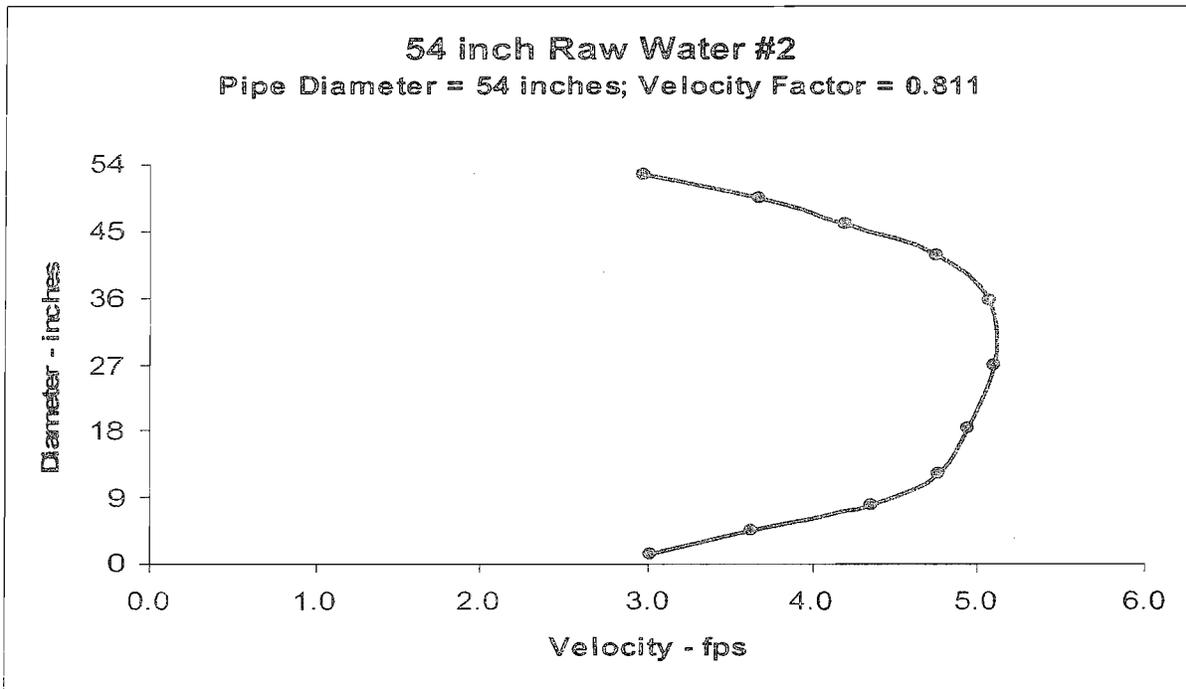
Meter Data	Make/Model	B I F
	Size of Meter	48-inch
	Serial Number	23810
	Size of Pipe at the Pitometer	48 -inch
Test No. 2 Data	Date of Test	August 29-30, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations
Results of Test No. 2	Pitometer Rate of Flow (gpd)	24,620,000 gpd
	Metered Rate of Flow (gpd)	25,474,000 gpd
	Difference (gpd)	854,000 gpd
	Percentage Difference	3.5% over-registration Meter registers within allowable limits of accuracy.



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ORR WTP - 54 Raw Water # 2

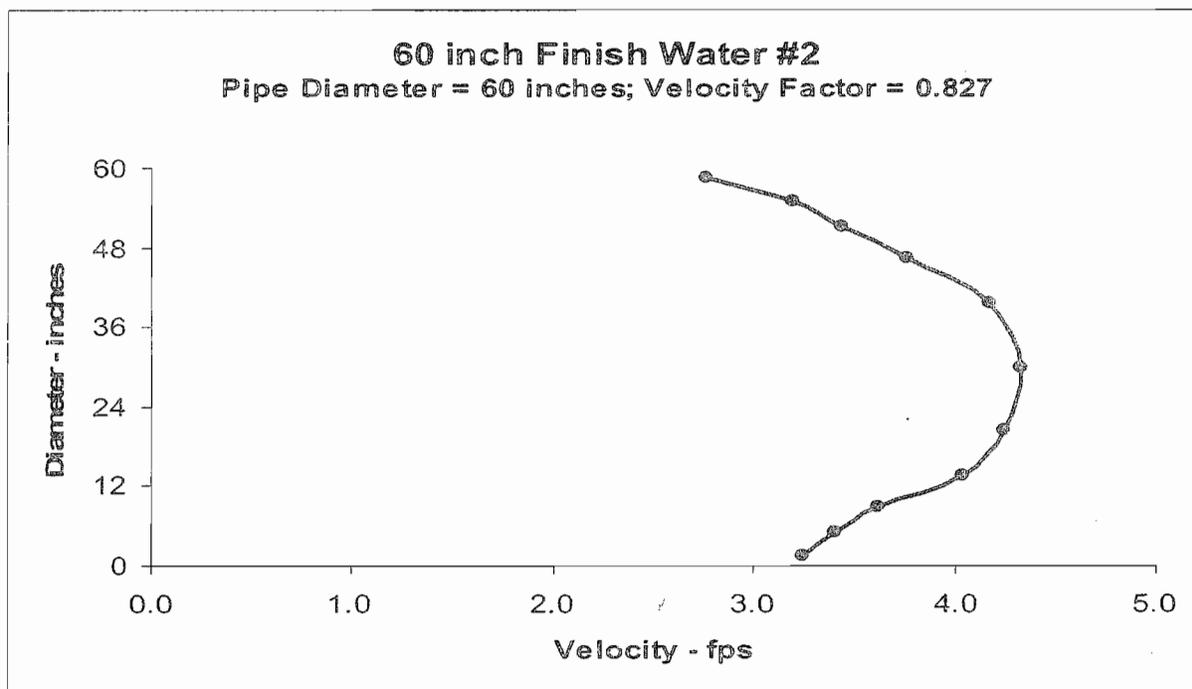
Meter Data	Make/Model	B I F
	Size of Meter	54-inch
	Serial Number	34303
	Size of Pipe at the Pitometer	54 -inch
Test Data	Date of Test	September 5-6, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations
Results of Test	Pitometer Rate of Flow (gpd)	41,710,000 gpd
	Metered Rate of Flow (gpd)	43,394,000 gpd
	Difference (gpd)	1,684,000 gpd
	Percentage Difference	4% under-registration Meter registers within allowable limits of accuracy.



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ORR WTP – 60 Finish Water # 2

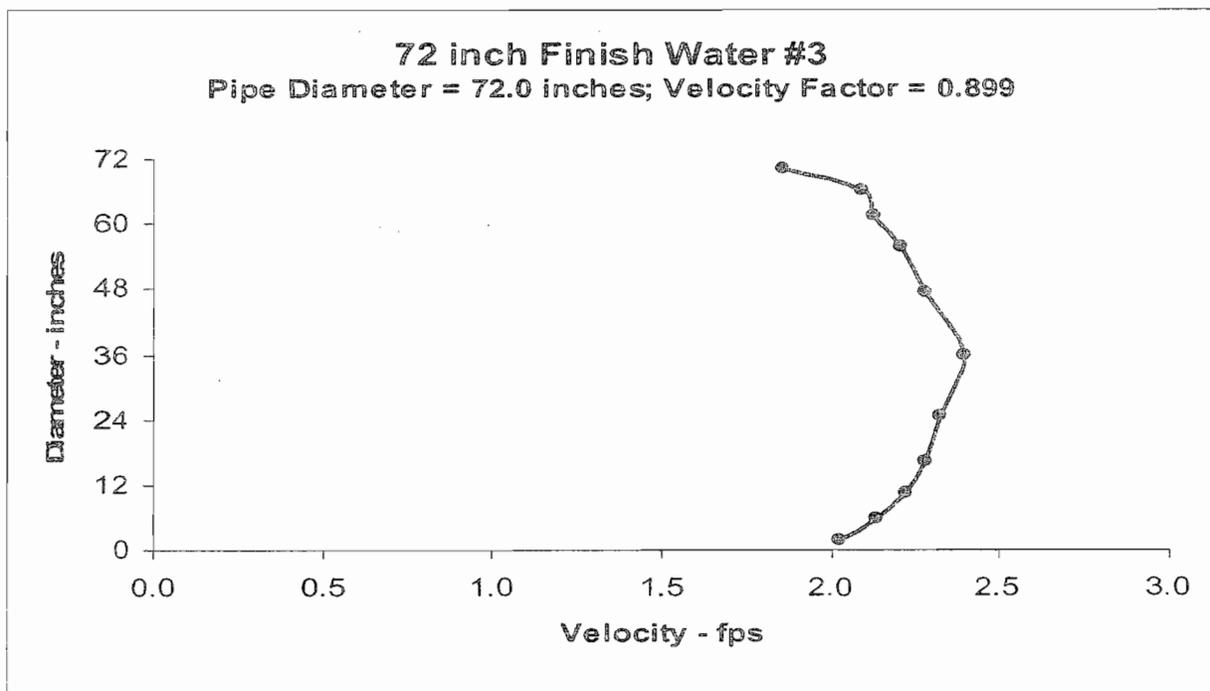
Meter Data	Make/Model	B I F
	Size of Meter	60-inch
	Serial Number	31796
	Size of Pipe at the Pitometer	60 -inch
Test Data	Date of Test	September 10-11, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations
Results of Test	Pitometer Rate of Flow (gpd)	40,560,000 gpd
	Metered Rate of Flow (gpd)	38,894,000 gpd
	Difference (gpd)	1,400,000 gpd
	Percentage Difference	4.1% under-registration Meter registers within allowable limits of accuracy.



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ORR WTP – 72 Finish Water # 3

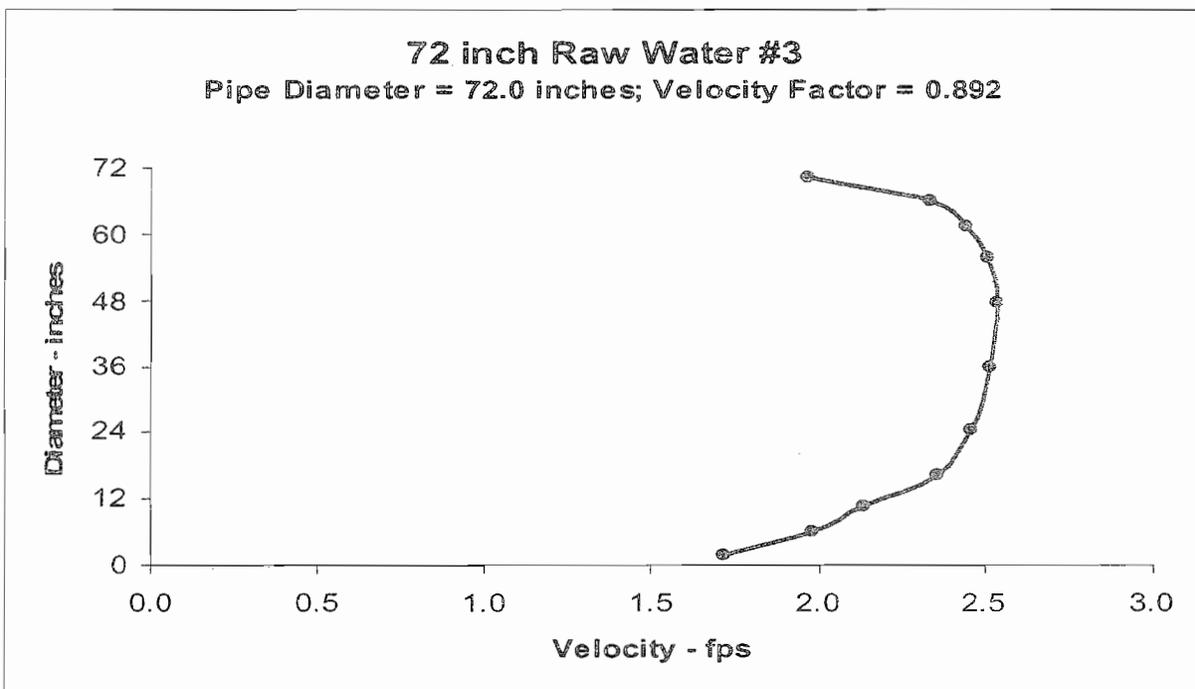
Meter Data	Make/Model	Badger
	Size of Meter	72-inch
	Serial Number	960658
	Size of Pipe at the Pitometer	72 -inch
Test No. 2 Data	Date of Test	September 6-7, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations
Results of Test No. 2	Pitometer Rate of Flow (gpd)	26,100,000 gpd
	Metered Rate of Flow (gpd)	25,960,000 gpd
	Difference (gpd)	140,000 gpd
	Percentage Difference	0.5% Under-registration Meter registers within allowable limits of accuracy.



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**ORR WTP - 72 Raw Water # 3**

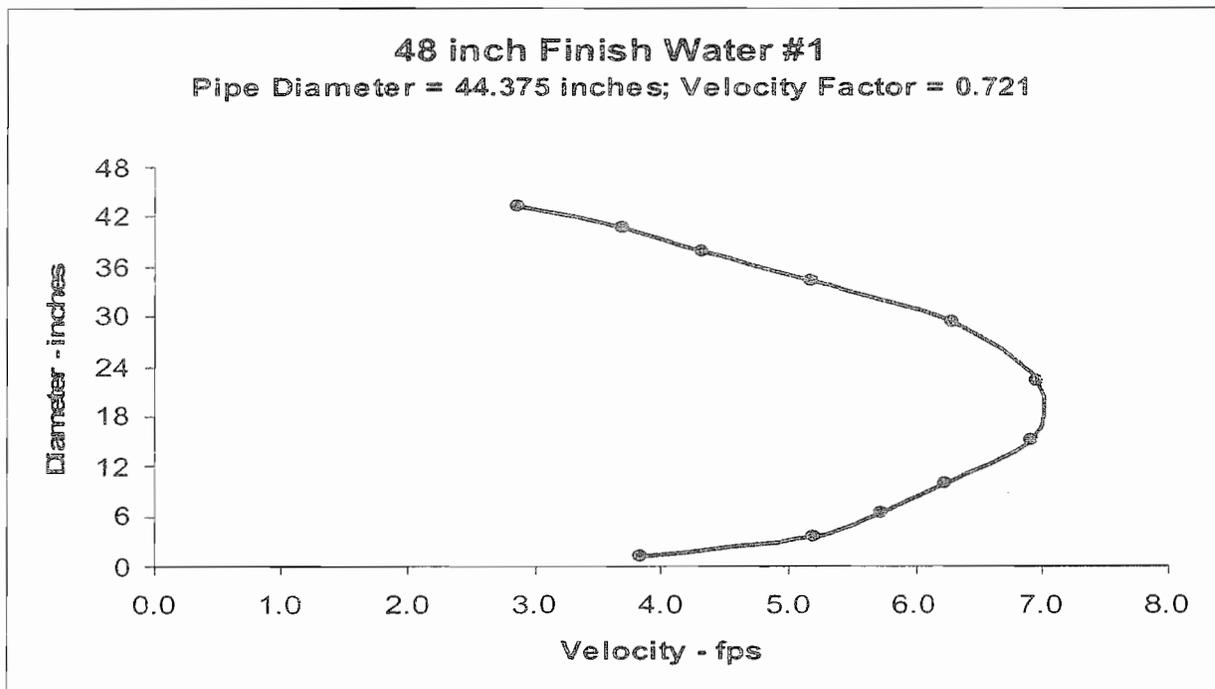
Meter Data	Make/Model	Badger
	Size of Meter	72-inch
	Serial Number	972253
	Size of Pipe at the Pitometer	72 -inch
Test Data	Date of Test	September 5-6, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations
Results of Test	Pitometer Rate of Flow (gpd)	35,670,000 gpd
	Metered Rate of Flow (gpd)	34,601,000 gpd
	Difference (gpd)	1,069,000 gpd
	Percentage Difference	3% Under-registration Meter registers within allowable limits of accuracy.



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ORR WTP 48 Finish Water #1

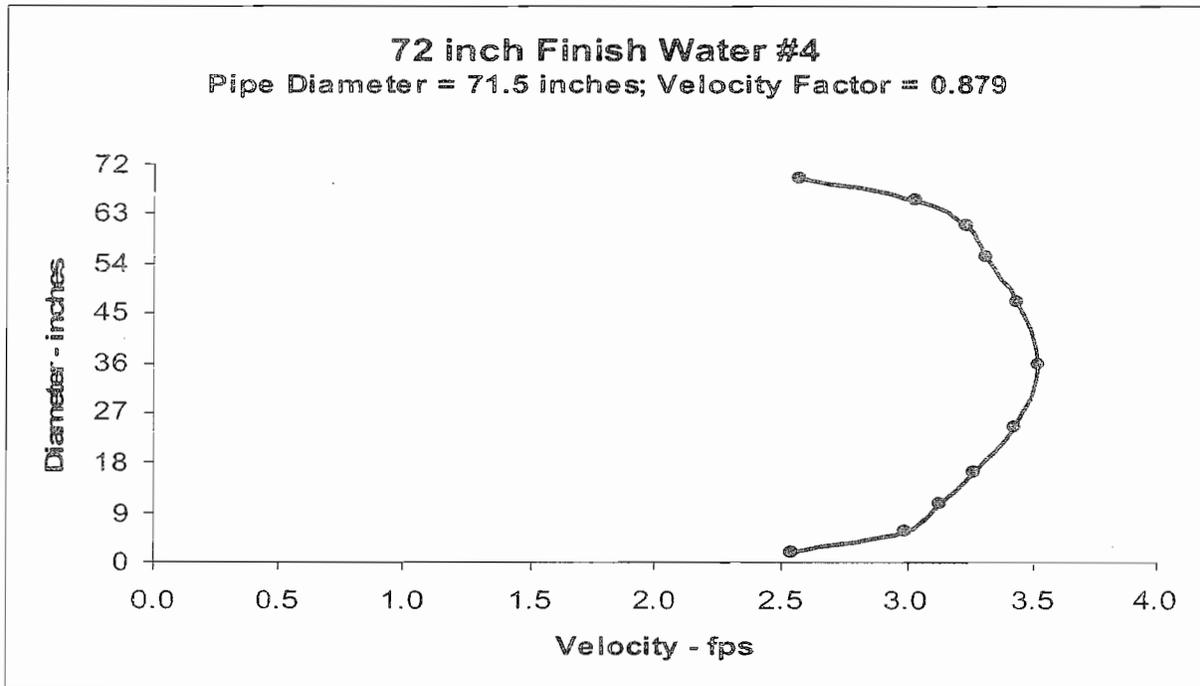
Meter Data	Make/Model	BIF
	Size of Meter	48-inch
	Serial Number	26622
	Size of Pipe at the Pitometer	44.375-inch
Test Data	Date of Test	September 24-25 ,2007
	Length of Test	24 Hours
	Condition of Test	Normal operations
Results of Test	Pitometer Rate of Flow (gpd)	30,950,000 gpd
	Metered Rate of Flow (gpd)	30,310,000 gpd
	Difference (gpd)	640,000 gpd
	Percentage Difference	2.1 % under-registration Meter registers within allowable limits of accuracy.



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ORR WTP – West High Service PS – 72 Finish Water # 4 West A

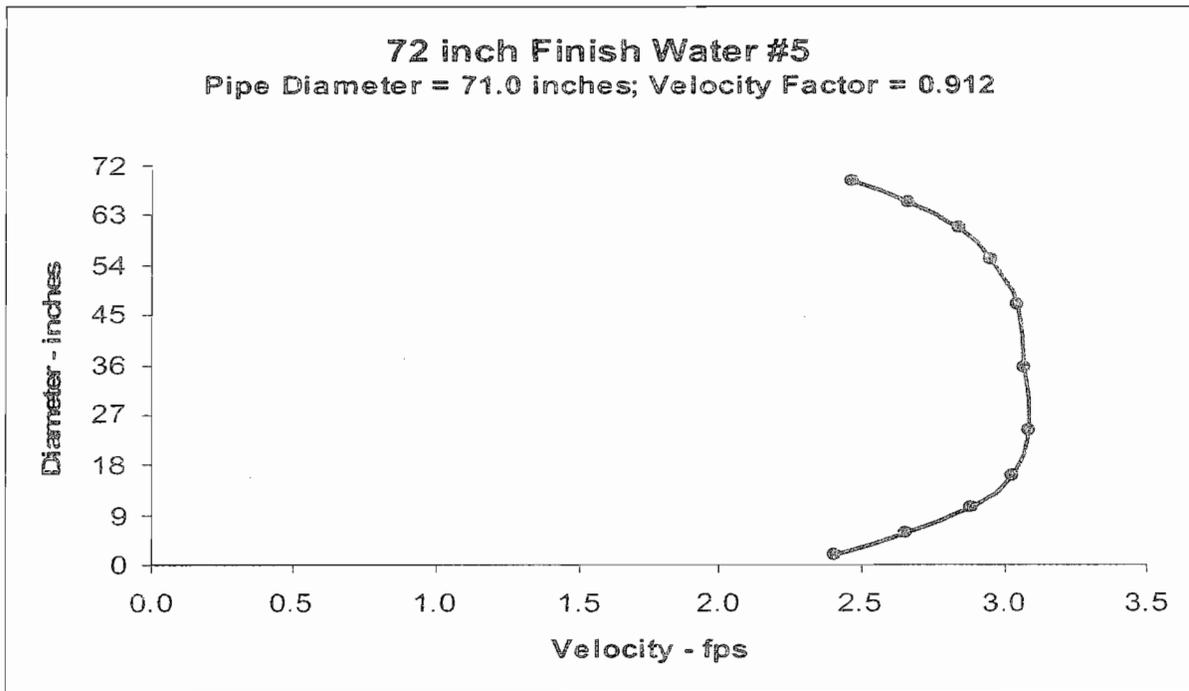
Meter Data	Make/Model	Badger
	Size of Meter	72-inch
	Serial Number	945303 – A
	Size of Pipe at the Pitometer	71.5 –inch
Test Data	Date of Test	September 11-12, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations; pump West –B was not running
Results of Test	Pitometer Rate of Flow (gpd)	58,160,000 gpd
	Metered Rate of Flow (gpd)	60,836,000 gpd
	Difference (gpd)	2,676,000 gpd
	Percentage Difference	4.6% over-registration Meter registers within allowable limits of accuracy.



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ORR WTP – West High Service PS – 72 Finish Water # 5 West B

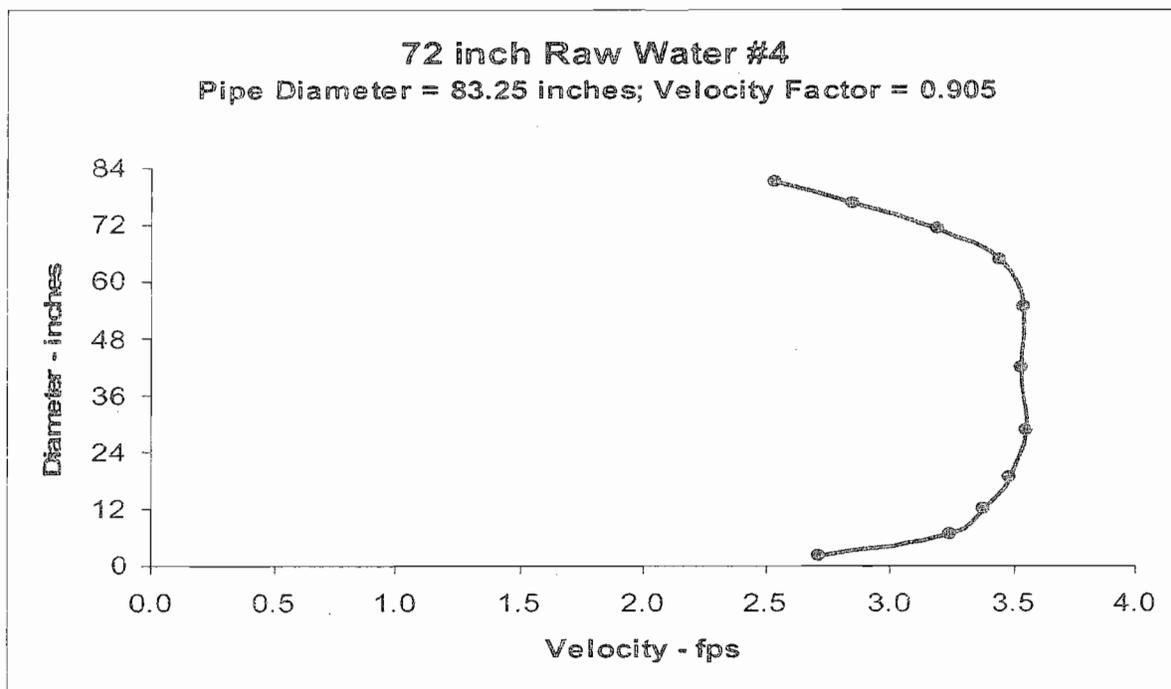
Meter Data	Make/Model	Badger
	Size of Meter	72-inch
	Serial Number	945303 – B
	Size of Pipe at the Pitometer	71 –inch
Test Data	Date of Test	September 10-11, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations; pump A was not running
Results of Test	Pitometer Rate of Flow (gpd)	67,470,000 gpd
	Metered Rate of Flow (gpd)	64,669,000 gpd
	Difference (gpd)	2,801,000 gpd
	Percentage Difference	4.2% under-registration Meter registers within allowable limits of accuracy.



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**ORR WTP - 72 Raw Water # 4**

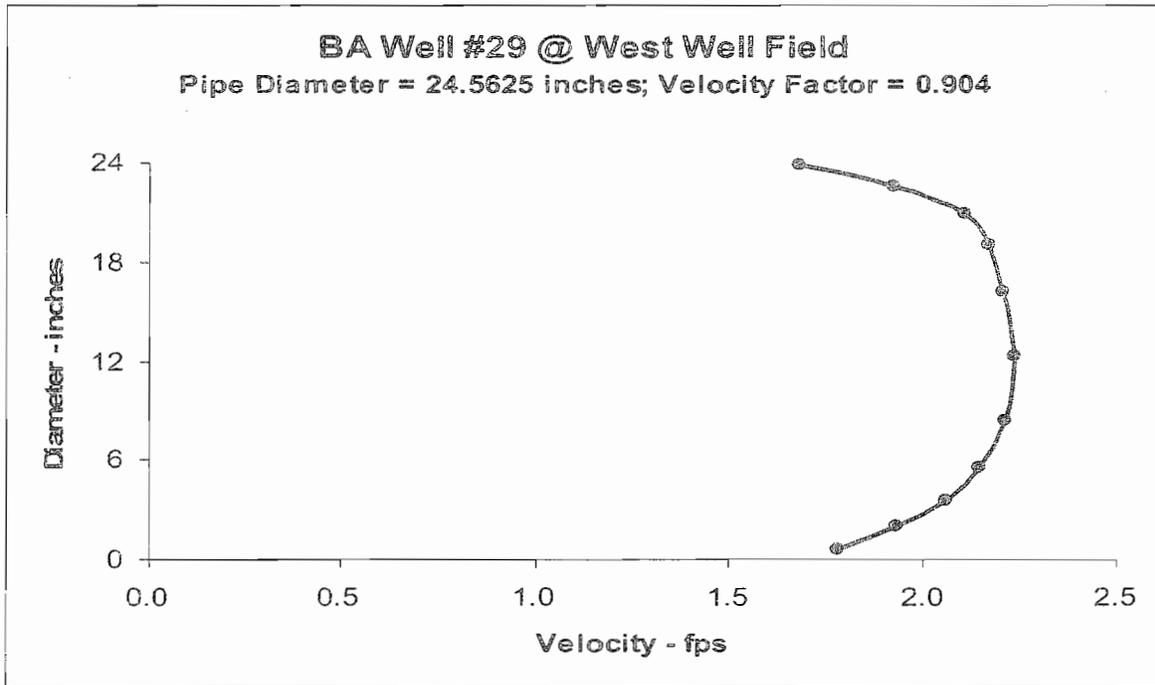
Meter Data	Make/Model	Badger Venturi
	Size of Meter	72 x 35.982 - inch
	Serial Number	928358
	Size of Pipe at the Pitometer	83.25 -inch
Test Data	Date of Test	September 5-6, 2007
	Length of Test	24 Hours
	Condition of Test	Normal operations
Results of Test	Pitometer Rate of Flow (gpd)	77,730,000 gpd
	Metered Rate of Flow (gpd)	78,764,000 gpd
	Difference (gpd)	1,034,000 gpd
	Percentage Difference	1.3 % over-registration Meter registers within allowable limits of accuracy.



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**BA Well # 29 @ West Well Field – Venturi Totalizer and GE Meters**

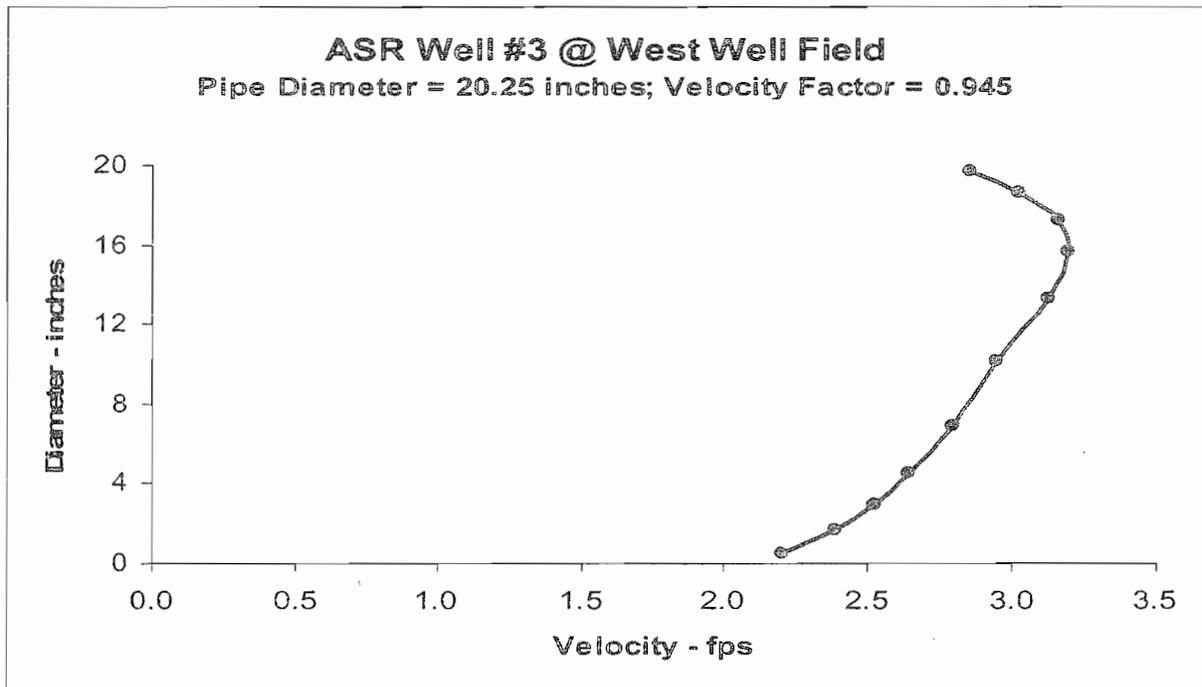
Meter Data	Make/Model	Badger - Totalizer	GE
	Size of Meter	24- inch	24 - inch
	Serial Number	540948-C	
	Size of Pipe at the Pitometer	24.5625 inch	24.5625 inch
Test Data	Date of Test	September 21, 2007	September 21, 2007
	Length of Test	30 minutes	30 minutes
	Condition of Test	Normal	Normal
Results of Test	Pitometer Rate of Flow (gpd)	4,190,000 gpd	4,190,000 gpd
	Metered Rate of Flow (gpd)	3,089,000 gpd	4,600,000 gpd
	Difference (gpd)	1,101,000 gpd	410,000 gpd
	Percentage Difference	26% under-registration	10% over-registration



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**ASR Well # 3 @ West Well Field**

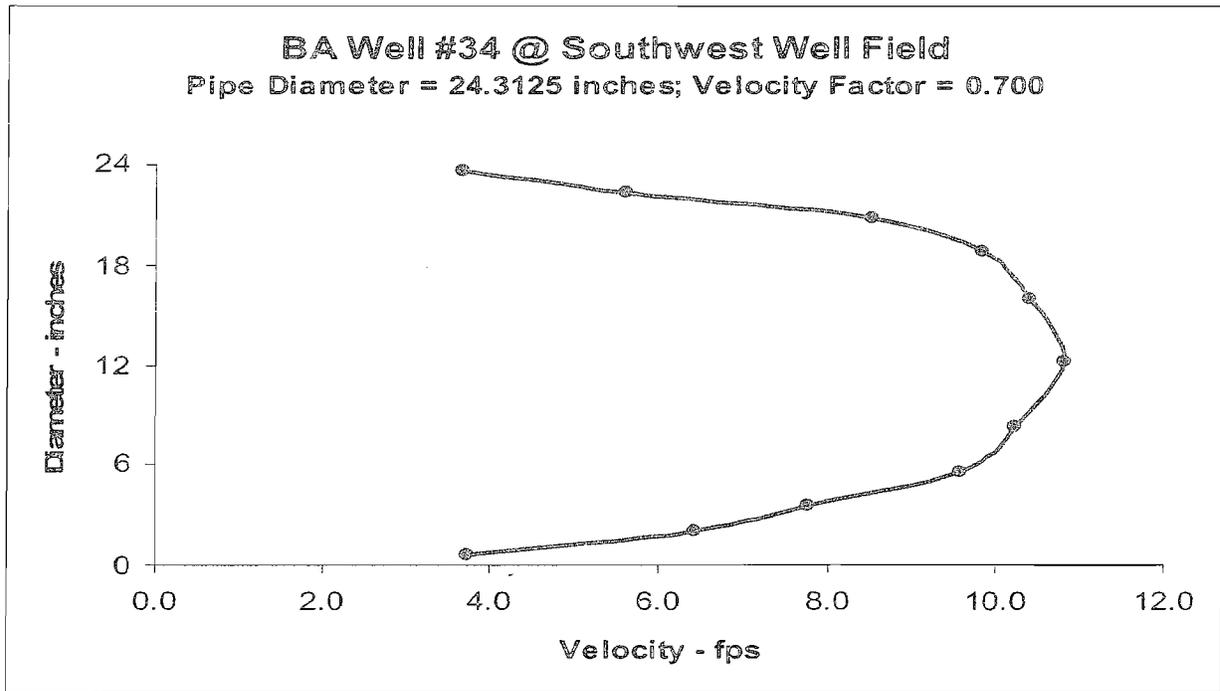
Meter Data	Make/Model	Primary Flow Signal/B HVT-BC Bi-directional Venturi
	Size of Meter	24 x 14 inch
	Serial Number	4453-1 and 4453-2
	Size of Pipe at the Pitometer	20 - inch
Test Data	Date of Test	August 27, 2007
	Length of Test	30 minutes
	Condition of Test	Normal operations; one pump running
Results of Test	Pitometer Rate of Flow (gpd)	3,840,000 gpd
	Metered Rate of Flow (gpd)	3,880,000 gpd
	Difference (gpd)	40,000 gpd
	Percentage Difference	1% over-registration Meter registers within allowable limits of accuracy.



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**BA Well #34 @ Southwest Well Field**

Meter Data	Make/Model	Primary Flow Signal
	Size of Meter	24.00"x14.00"
	Serial Number	4454-2
	Size of Pipe at the Pitometer	24.3125 - inch
Test Data	Date of Test	September 24, 2007
	Length of Test	25 minutes
	Condition of Test	Normal operations; one pump running
Results of Test	Pitometer Rate of Flow (gpd)	15,120,000 gpd
	Metered Rate of Flow (gpd)	14,410,000 gpd
	Difference (gpd)	710,000 gpd
	Percentage Difference	5% under-registration Meter registers within allowable limits of accuracy.



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## Analysis of Results

Each of the venturi meters at Alexander Orr were tested for a period of twenty four (24) hours while each of the west wells were tested for a thirty minute period. After the set up, Miami Dade instrumentation crew person went to the operations center and took readings of the totalizer. Stopwatches at both locations were synchronized so that readings at the totalizer and the PCR were taken during the same time period. The totalizer readings were compared to the PCR results. Visual readings were taking from the transmitter at each of the wells. The meters at Alexander Orr are registering within allowable limits of accuracy. The 48 inch finished water meter was determined to be accurate after the internal pipe diameter at the gauging point was measured to be 44 $\frac{3}{8}$  inches. Two of the West Well Field meters, West Well field No. 34 and West Well field ASR 3, were registering within allowable limits of accuracy. The West Well field No. 29 meter was not registering within allowable limits of accuracy. Two meters were tested at this well, the GE meter and the venturi meter. The GE meter is 10% over-registering when compared to the flow measured with the Pitometer while the venturi meter is 26% under-registering when compared to the flow measured with the Pitometer.

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

## Comparative of Measured Withdrawals From Wells and Surface Water Pumps

This report must be completed and submitted to the District at the address shown as required by your permit

Permit Number 13-00017-W  
 Project Name MIAMI-DADE WATER CONSOLIDATED PWS  
 Issued to MIAMI-DADE WATER AND SEWER DEPARTMENT  
 Address P.O. BOX 330316  
 City, State, Zip: MIAMI FL 33233-0316  
 Phone / Fax Number: (786)552-8156 / (786)552-8647  
 E-mail Address: Renfrj@miamidae.gov

Return To:  
 South Florida Water Management District  
 Attn: Water Use Regulation Division (4320)  
 PO Box 24680  
 West Palm Beach, FL 33416 - 4680

### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
West Wellfield well 29	27187	88.1	87.5	0.6			1.00716
West Wellfield well 30	27188	0.0	2.7	-2.7			0.00000
West Wellfield well 31	27189	0.0	0.0	0.0	88.1	90.1	0.00000
Orr Wellfield well 4	26304	68.2	72.2	-4.0			0.94408
Orr Wellfield well 5	26306	20.7	20.3	0.4			1.02071
Orr Wellfield well 6	26309	83.5	83.4	0.1			1.00168
Orr Wellfield well 7	26310	93.0	92.3	0.7			1.00747
Orr Wellfield well 8	26311	239.4	240.5	-1.1			0.99551
Orr Wellfield well 9	26312	0.0	0.0	0.0			0.00000
Orr Wellfield well 10	26313	0.0	0.0	0.0	714.8	719.8	0.00000

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_ Date: March 4, 2008

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

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 West Palm Beach, FL 33416 - 4680

### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
SW Wellfield well 18	27176	356.3	369.4	-13.1			0.96454
SW Wellfield well 19	27177	169.5	177.4	-7.9			0.95558
SW Wellfield well 20	27178	95.7	96.6	-0.9			0.99078
Snapper Creek well 21	27179	97.0	97.3	-0.3	299.4	299.3	0.99703
Snapper Creek well 22	27180	0.0	0.2	-0.2			0.00000
Snapper Creek well 23	27181	202.4	201.9	0.5			1.00264
Snapper Creek well 24	27182	0.0	0.0	0.0			0.00000
SW Wellfield well 25	27183	340.3	340.0	0.3			1.00093
SW Wellfield well 26	27184	133.5	134.2	-0.7			0.99479
SW Wellfield well 27	27185	191.9	200.8	-8.9			0.95547

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_ Date: March 4, 2008

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

## Comparative of Measured Withdrawals From Wells and Surface Water Pumps

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 City, State, Zip: MIAMI FL 33233-0316  
 Phone / Fax Number: (786)552-8156 / (786)552-8647  
 E-mail Address: RenfrJ@miamidae.gov

Return To:  
 South Florida Water Management District  
 Attn: Water Use Regulation Division (4320)  
 PO Box 24680  
 West Palm Beach, FL 33416 - 4680

### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
Floridan Withdrawal Well ASR-2W	27195	52.6	52.8	-0.1636			0.99690
ASR Injection Well ASR -2W	27195	0.0	0.1	-0.1			0.00000
ASR Withdrawal ASR-2W	27195	0.0	0.0	0.0	87.6	88.4	0.00000
Floridan Withdrawal Well ASR-4SW	27196	0.0	0.0	0.0			0.00000
ASR Injection Well ASR -4SW	27196	0.0	0.0	0.0			0.00000
ASR Withdrawal ASR-4SW	27196	0.0	0.0	0.0			0.00000
Floridan Withdrawal Well ASR-5SW	27197	0.0	0.0	0.0			0.00000
ASR Injection Well ASR -5SW	27197	0.0	0.0	0.0			0.00000
ASR Withdrawal ASR-5SW	27197	0.0	0.0	0.0	0	0	0.00000
Raw Water South Miami Heights	101047	0.0	0.0	0.0			0.00000

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_

Date: March 4, 2008

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

## Water Use Limiting Condition Compliance Report Comparative of Measured Withdrawals From Wells and Surface Water Pumps

This report must be completed and submitted to the District at the address shown as required by your permit

Permit Number 13-00017-W  
 Project Name MIAMI-DADE WATER CONSOLIDATED PWS  
 Issued to MIAMI-DADE WATER AND SEWER DEPARTMENT  
 Address P.O. BOX 330316  
 City, State, Zip: MIAMI FL 33233-0316  
 Phone / Fax Number: (786)552-8156 / (786)552-8647  
 E-mail Address: RenfrJ@miamida.gov

Return To:  
 South Florida Water Management District  
 Attn: Water Use Regulation Division (4320)  
 PO Box 24680  
 West Palm Beach, FL 33416 - 4680

### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
Well FP1	128173	0.0	0.0	0.0			0.00000
Well CP 1	128175	0.0	0.0	0.0			0.00000
Well CP 2	128176	0.0	0.0	0.0			0.00000
Well RHP 1	128178	0.0	0.0	0.0			0.00000
Well RHP 2	128179	0.0	0.0	0.0			0.00000
Well RHP 3	128180	0.0	0.0	0.0			0.00000
Well RHP 4	128181	0.0	0.0	0.0			0.00000
Well RHP 5	128182	0.0	0.0	0.0			0.00000
Well RHP 6	128183	0.0	0.0	0.0			0.00000
Well RHP 7	128184	0.0	0.0	0.0			0.00000

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_ Date: March 4, 2008

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

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### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
Well FB2 NWWF	217721	0.0	0.0	0.0			0.00000
Well FB3 NWWF	217722	0.0	0.0	0.0	0	0	0.00000
Well RO 1 Hialeah	217724	0.0	0.0	0.0			0.00000
Well RO 2 Hialeah	217725	0.0	0.0	0.0			0.00000
Well RO 3 Hialeah	217726	0.0	0.0	0.0			0.00000
Well RO 4 Hialeah	217727	0.0	0.0	0.0			0.00000
Well RO 5 Hialeah	217728	0.0	0.0	0.0			0.00000
Well RO 6 Hialeah	217730	0.0	0.0	0.0			0.00000
Well RO 7 Hialeah	217731	0.0	0.0	0.0	0	0	0.00000
Well EVRGL 3	23821	0	0.0	0			0.00000

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_ Date: March 4, 2008

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

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### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
Well 3 MS Lower	28263	2.53	1.63	0.90			1.55124
Well 4 MS Lower	28264	2.15	0.00	2.15			#DIV/0!
Well 5 MS Lower	28265	41.25	31.00	10.25			1.33054
Well 7 MS Lower	28266	18.22	14.41	3.81			1.26443
Well 8 MS Lower	28267	10.24	8.1	2.14			1.26383
Well 6 MS Lower	28268	101.05	95.32	5.73			1.06012
Well 9 MS Upper	28269	16.62	14.43	2.19			1.15195
Well 23 MS Upper	28270	40.14	32.12	8.02			1.24965
Well 14 MS Upper	28271	82.23	75.10	7.13			1.09490
Well 15 MS Upper	28272	0.61	0.97	-0.36			0.62415

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_ Date: March 4, 2008

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

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### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
Well 3 Preston	28283	84.87	68.20	16.67			1.24448
Well 4 Preston	28284	198.00	129.57	68.43			1.52814
Well 5 Preston	28285	138.31	94.21	44.10			1.46810
Well 6 Preston	28286	99.85	80.51	19.34			1.24016
Well 7 Preston	28287	155.80	164.96	-9.16	948.25	712.98	0.94444
Well 11 Hialeah	28288	0.09	3.21	-3.12			0.02750
Well 12 Hialeah	28289	2.98	0.48	2.50			6.21663
Well 13 Hialeah	28290	3.22	3.82	-0.60	6.29	7.51	0.84245
Well 1 NWWF	28291	348.99	348.69	0.29			1.00084
Well 2 NWWF	28292	353.50	363.47	-9.97			0.97256

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_

Date: March 4, 2008

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

## Comparative of Measured Withdrawals From Wells and Surface Water Pumps

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 West Palm Beach, FL 33416 - 4680

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### Water Withdrawals, Comparison Million Gallons

Well/Pump Name or Number	District Identification Number	Wellhour report: FEB Year: 2008	SCADA report: FEB Year: 2008	Difference MG	Wellhour By wellfield	SCADA by Wellfield	Difference as %
Well 13 NWWF	28303	239.23	276.09	-36.86			0.86650
Well 14 NWWF	28304	55.41	35.53	19.88			1.55970
Well 15 NWWF	28305	237.75	282.47	-44.72	2459.96	2543.63	0.84168
Pump SMH recharge	217931	0.00	0.00	0.00			0.00000
Pump SWWF recharge	217932	0.00	0.00	0.00			0.00000
Pump SWWF recharge 2	217933	0.00	0.00	0.00	0	0	0.00000

Name of Person Completing Form: Arthur Baldwin

Signature: \_\_\_\_\_ Date: March 4, 2008

# Water Treatment Division Data Evaluation and Automation Project

## Project Overview

This effort is a prelude to; and in support of the systems analyses leading to the development of a Sequel Server DB and associated ASP.Net application for capturing the various data fields representing the activities associated with the production of potable water. The following information is task specific, based on report development needs. ASP.Net is suggested because of its ability to provide a secure multilevel data entry/query environment for selectable data generation responsibilities and requirements. Additionally, the deployment of an application using this program provides a unique opportunity to better utilize network resources for periodic inquiries for essential process monitoring. The suggestion of Sequel Server DB is based on the need to maintain the data, from a historical perspective, in a manner which reduces problems with localized data retention/restoration requirements, and also supports multilevel secure data interrogation without the additional requirement of an interface device such as a "Citrix" server. The use of these functional programs and data storage systems does however require a software interface for report generation. In the absence of clearly focused requirements, it is suggested that "Crystal Report Writer" and "Cognos" software products be evaluated for inclusion in this project. Each of these products can translate data strings in either "Oracle" or "Microsoft SQL" formats

The present system of capturing data for reporting purposes has been developed over a number of years and has evolved into an enormous task centered on a single reporting format managed by a single individual. The absence of uniquely trained staff is a major problem area in this regard. This enormous vulnerability has, and continues, to expose the regulatory reporting process to multiple failures. Conceptually, the systems as outline above eliminate this vulnerability by automating the data capture and report generation process and allows the data entry tasks to be apportioned throughout the treatment facilities. Management reports as well as operating reports will be available to authorized on-line users using ASP.NET routines. Data integrity can be managed effectively using "scripts" programmatically assigned to specific data entry fields. This also eliminates the need for local data storage capably because validated data is stored in a database which resides on mainframe storage.

## Background

The Division is required to produce and submit a number of regulatory reports monthly. These reports are commonly referred to as MOR's (Monthly Operating Reports). The agencies that receive these reports are the Florida Department of Environmental Protection (DEP), the Florida Department of Health (DOH), Miami-Dade Department of Environmental Management (DERM) and the South Florida Water Management District (SFWMD). The completion of each of these respective report formats is the basis of the design effort for this project. These reports must be submitted to the above referenced agencies by the 10<sup>th</sup> of the month following the data collection period. Additional, this data must be maintained in accordance with Florida Administrative Code (FAC) guidelines for a period of 10 years. This process also generates management data for inventory control and balancing

Background cont:

equipment runtimes. The reports generated by this data are only available after all of the monthly data has been tabulated which limits its effective use for daily process management activities.

The manual collection of required reporting data is presently accomplished through a number of EXCEL spreadsheets which are included in the attached diskette. Facility specific operational data, and chemical application data, is transferred from shift operating reports directly into a preliminary MOR by senior operating staff for review by Plant Managers. Laboratory data is handled in a similar manner with the exception that this data is first entered into a spreadsheet generated by each laboratory and later transferred to the referenced preliminary MOR. The chemical application data is also used to develop additional process management reports including inventory reports in support of procurement activities. Operational data, which includes "equipment run times" and "flow rates" are manually captured by specific spreadsheets and transferred to the required multi-agency regulatory reports. The Excel Spreadsheets listed below are the actual MOR reports for December 2005 and are presently being manually produced.

Folder Name: DEP MOR's – Hialeah, Preston, Orr, South Dade System (5 sheets) and Parks Department Plants (5 sheets). Included in this folder is an actual copy of the completed 12-05 MOR for the Hialeah WTP

These reports are the essentially the primary reporting elements for the system. They are produced at the end of each operating month and are unique to each facility. Additionally, data for the various management reports (detailed later in this discussion) will be developed based on the data captured by the system

Folder Name: DOH MOR's - Main System (combined plant data), and Rex System (combined plant data)

Folder Name: SFWMD MOR's - Hia PP Quarterly Well Withdrawal, AO Quarterly Well Withdrawal, and Rex Quarterly Well Withdrawal.

Folder Name: ASR Reports - PDF Report format

Supporting Spreadsheets

The following spreadsheets are used to develop the data by range with the necessary calculated values for each field (column) in the associated MOR. The data is entered in the entry fields and transferred to the MOR's using cut and paste technique.

Folder Name: Lab Data Reports - Hia Daily Raw Water Lab Report, Hia Daily Finished Water Lab Report, PP Daily Raw Water Lab Report, PP Daily Finished Water Lab Report, AO Daily Raw and Finished Water Lab Report.

Folder Name: Well Hours - Hia PP Well Hour Report, AO Well Hour Report

Supporting Spreadsheets cont:

Folder Name: Pumpage Balancing Report - WTP Finished Water Balancing Report

Folder Name: Bulk Chemical Reports - Inventory Report for each WTP

Folder Name: ASR Reports - Operational data for ASR Facilities

Folder Name: Lime Plant Reports - Operational data for Lime Plants

As mentioned earlier, a number of these excel spreadsheets contain calc fields which generate data which is transfer to the actual report. At this juncture, it is anticipated that these calc fields will not be part of the MOR's reports; rather the values should be calculated programmatically, which will allow both the raw data and the calculated data to be accessed for reporting purposes. This concept includes any planned daily reports.

The MOR spreadsheets contain the name and licensing information for the plant staff at each respective WTP. For security and management purposes any data values entered for a specific operating shift should be linked to the actual personnel who reported the data. This is also true for Lab personnel, Water Administrative personnel, or other management staff that perform data entry. The application should also include a table for access authority for additional users which will be identified after the application is on-line.

The various spreadsheets which have been developed during the report generation process are also the data collection points for historical operating records mentioned earlier. This historical data must be preserved in its present "XLS" format because at this point, it appears that we will not be able to migrate or transfer this information to a Sequel Sever DB. In that regard, the data cannot be used for historical data inquiries used in the new application. This means that we must continue to store this data for future reference until it becomes historically obsolete.

The following information is a general over-view of the data generation and input process.

Task 1

Plant Operators record Raw Water and Finished Water totalizer readings, Filter Operational Data, Well Hour Run Time Readings, and Chemical Addition Data including inventories, on the daily reports for each facility. Data entry personnel enter the totalizer reading into a excel spreadsheet (Plant Name – Balanced Raw and Finished Readings.xls). Well Hour run time readings which are taken by Plant Shift Operators and recorded on the Daily Report. They are manually entered into an Excel spreadsheet for each Month (Plant Name month year.xls). A special note regarding these spreadsheets; it contains the SFWMD ID# for each well and also it design rated capacity in MGD, which should be included in the finished application as separate tables which reduces the need for DB "Restructures" as equipment or facilities are added to Divisional responsibilities. There are several individual data and calc fields in these files which calculate the individual well pumpage

#### Task 1 cont:

rates based on run time in hours x capacity. The data is summed for an accuracy check against the daily Raw Water Pumpage for each plant. These fields are transferred (copy/paste) to the main Balanced Raw and Finished Water spreadsheet mentioned under Task 3. Chemical Data is entered into the calc fields on the MOR's which are outside of the printable ranges on the spreadsheet which populate the dosage fields and pound fields on the MOR. This data is also entered on the Bulk Chemical spreadsheet for accounting purposes.

#### Task 2

Laboratory Data for each day is entered on a preliminary MOR in the facilities operations room. This data is later entered manually into the MOR spreadsheet for each facility.

#### Task 3

The calculated data developed by the Balanced Raw and Finished spreadsheet is transferred to the MOR Spreadsheet. This data is also used to populate the fields on the SFWMD MOR spreadsheet. Special note concerning the Balanced Spreadsheet. It must be reconciled with anticipated values to ensure accuracy. An error at this point can cause the Raw and Finished Flow ranges on all associated spreadsheets to be understated or overstated. This is a glaring mistake that undermines the integrity of the submittals.

#### Task 4

The Lime Reconciliation spreadsheets are used to reconcile inventories plus purchased materials with actual treated water parameters. This report component is necessary because the instrumentation used to tabulate the actual amount of chemical fed is highly inaccurate.

#### Task 5

Aquifer Storage and Recovery (ASR) report is a relatively new component for the divisional reporting process. Originally, the data was tabulated manually by field visits supporting operational and laboratory records. The task has become extremely protracted, taking almost 1 week of administrative time per operating month to compile into a completed report. This task should be

#### Task 5 cont:

automated programmatically and reduce the exorbitant administrative time presently required. The Excel spreadsheets in the attached diskette are developed from data manually extracted from the SCADA system. Laboratory data is still being compiled and entered into the finished report manually.

## Task 6

Shift operating data is compiled manually by plant staff for inclusion into the monthly report for each plant. The associated tables use generalized calc fields to determine production rates and operational costs.

Each of the tasks mention above interacts with each other to some extent. Although extreme diligence was used in preparing this project outline, there maybe a number of areas which were not thoroughly addressed or even mistakenly omitted. In addition, there are a number of time constraints which need to be considered. This is especially true for laboratory data. Generally lab data is available by noon for the previous operating day. Weekends and holidays are a notable exception. The availability of "SCADA" data is another area which needs further study. Informational requirements for other user Divisions also have not been addressed. Presently the MOR's are circulated to these Divisions, and they use whatever data they need to generate their respective reports.

There are several areas that also need to be addressed regarding interfacing additional sources of automated data. The Department operates an extensive Supervisory Control and Data Acquisition System "SCADA" system which in addition to its primary control functionality, can alternatively provide data logs for operational equipment. Data for reports is presently collected manually because of the lack of an effective automated data interface. This system utilizes both "SQL" and "Oracle" based formats for data storage. The Departments also operates a "LIMS" system for the management of its Laboratory data. This system stores data in an "Oracle" data base format. The system functionally uses a "Citrix" server to isolate data queries form the database structure for security purposes. Both of these active systems can provide a portion of the necessary data to populate fields used to produce regulatory and management reports while enhancing overall Water Treatment management activities by providing periodic observations of process or treatment system stability.

The development of this system is not intended to eliminate daily operational logs or manual data sheets presently used by any division. It is intended to eliminate the double and triple data entry tasks the Water Production Division currently uses. The realization of this system will require involvement of Departments MIS Division and Miami Dade County's ESTD as well as divisional data and MIS specialists. Once completed, the streamlined data management process will provide a vehicle to consistently meet regulatory reporting guidelines and provide easily assessable data for needs assessment the management of treatment plant activities.

## Project Scope Document

### *Project Name:*

Monthly Operating Reports On Demand

### *Business Background:*

The Water Production Division of the Miami-Dade Water and Sewer Department (WASD) is responsible for the safe and efficient provision of water to the Miami-Dade County populace, numbering around three million. The Division pumps water from wells and treats the water at one of three plants: Alexander Orr, Hialeah, and Preston. Various regulatory agencies, including Miami-Dade County's Health Department and Department of Environmental Resources Management, the South Florida Water Management District and the State of Florida's Department of Environmental Protection and Department of Health, require periodic reports concerning the production of water, known collectively as Monthly Operating Reports (MOR's). Most of the reports are due by the 15<sup>th</sup> of each month, although there are some that are quarterly, semi-annual or annual. WASD personnel collect data readings from all pertinent pumps, treatment devices and laboratory analyses. The readings are then entered on one or more working forms, and are combined into multiple layers of spreadsheets until a final report can be produced. Some of the data on these MOR's include: amounts of raw and treated water pumped, hours of operation of each pump, chemicals used to treat the water, and laboratory results of water analysis.

At present, all readings are either keyed in to one of dozens of spreadsheets, or handwritten on preprinted forms and later transferred to spreadsheets. It happens that an operator jots down readings on scrap paper then transfers the entries to a paper form. Another employee transfers from the paper form to a spreadsheet, then faxes the results to another office, where the figures are transcribed from the fax to a "master" spreadsheet. In addition to the recopying of data entries, the operators who record the entries very often have to arithmetically manipulate the data from one form to another, such as reading the height of a chemical storage bin in feet, yet converting that figure and entering the amount stored in pounds.

Another example of laborious data entry is that, on many worksheets, a meter's current reading and a previous reading are both entered and the data entry person calculates the difference, which he also enters. This is repeated at each reading, so that rather than merely entering 12 two-hourly readings for the day, the existing data entry consists of 36 items requiring 12 separate subtractions, two separate summations of the readings, and an averaging of the readings. The operator's arithmetic is simply accepted at face value, and is carried along with no verification.

The recopying and calculations by hand can have consequences beyond imposing an extra work load on the operators. Errors, whether in copying data entries or in arithmetic, may trickle through the MOR's, and may not be noticed until the middle of the next month when the reports are produced, or even later. The person responsible for the reports must examine them all for anomalies. If erroneous reports are actually filed, WASD can be subject to significant penalties. If any mistakes are found (whether before or after the reports are filed), he must work backwards to determine where errors crept in, so that he can correct them and revise the report.

*Project Objectives:*

This project's goal is to automate the handling of the data required for the monthly and other reports to the extent possible, to make the reports quicker and simpler to produce, and to improve the integrity of the data reporting process. A guiding principle is that no datum should be entered more than once, and any calculations should be automatically verified or flagged if seemingly incorrect. To help insure accuracy in data entry, rules are to be developed and applied specifying allowable values, indicating unexpected inputs, and providing override permission as required. In addition, the entry and modification of data should be governed by specific rights, such as who can do so and when. Any changes that are made to database entries should leave a clear audit trail as to what was done, when and by whom it was done, and require an explanation as to why it was done. Finally, to the extent practicable, data entry and retrieval should be done via a web-based front end.

Four levels of reports are required: Exceptions, Trial, Final, and Revised.

- Exceptions reports are working documents that should be produced on screen daily, showing supervisors any unexpected results that may be possible errors in the most recently entered data. By keeping current with these exceptions reports, supervisors would be able to either document the explanations for questionable data, or quickly find and correct the causes if they are actual errors.
- Trial reports are to be created as an aid to preparing the required reports to the agencies mentioned above, and also as a tool for tuning plant operations. It should not be necessary to wait for month's end to prepare these. They should be producible "on demand." That is, at any time, the current month's trial reports should be able to be produced, incorporating the data to date. On the 11<sup>th</sup> of a month, that month's report should be able to be viewed with data included through the 10<sup>th</sup> of the month, etc. This is to enable corrective action to be taken before problems can affect later operations and decisions. (For example, recordings that show a pump producing significantly less than its capacity may not be erroneous - they may indicate the need for repairs.) Producing such reports on an interim basis also makes much simpler the task of discovering where the problems lie.
- Final reports, of course, can only be created when all data has been input.
- Revised reports can only be made after a final one has been prepared.

These last two types of reports are to be saved in report form for the same 10 year minimum as the raw data. Besides the Water Production personnel who create the reports, other users should be able to easily retrieve them via a web-based request. This is in contrast to the current situation wherein a user from another division has to ask Water Production for copies to be faxed, sometimes with no notice, yet with great urgency.

*Justification:*

• More efficient report handling

The basic aim of the project is, as the name indicates, the production of Monthly Operating Reports On Demand. The current regulatory requirements dictate the production of monthly reports. The reports are very time consuming to prepare, requiring the combined efforts of several people in order to meet the deadlines. Treatment Plant Operators (TPO's) enter the original data by pencil on dozens of disparate forms; any errors may not be noticed for weeks, or even years, when some governing agency investigates, or perhaps not ever.

A tangible benefit also accrues to the Department by the avoidance of regulatory infractions. If we are found to be not in compliance with a given regulation, we can be assessed fines of up to \$100,000 per day. From a broader viewpoint, users will be able to get reports when requested, even before the end of a month. More timely preparation of reports will lead to earlier discovery of errors and will provide the lead time for corrections to the reports to be made.

• More efficient monitoring of plant operations

The data collected for the MOR's is interconnected, and the use of a relational database to store readings will enable related bits of data to be usefully combined. For example, if an operator notices the pH of the water is too high, he has many choices as to how to react. Among other choices, he can: do nothing and hope it gets better on its own, he can increase chemicals to lower the pH, or he can notice that a water pump has shut down, and then take appropriate action for it. Currently, the various bits of information are separate. By having the data automatically correlated, we will receive the earliest possible warning of problems that may occur, and be in a better position to correct them in a timely fashion, enabling the plants to be run more smoothly, efficiently, and safely.

*Deliverables:*

• Database

This project will ultimately provide a relational SQL database to include tables of personnel, tasks, equipment, inventory, rules and readings, from which the MOR's can be generated at will. The database will support standard production security.

• Interface

For most users, the primary interface will consist of a series of data entry forms, suitable for easy viewing on a tablet or laptop PC. Some of the forms/tasks would include:

• Administrative

- adding employees
- revising employee assignments
- adding equipment

• Supervisory

- modifying equipment parameters (e.g., maximum flow, acceptable temperatures, etc.)
- preparing a MOR for review and for submittal
- adding inventory purchases

• Operational

- entering readings (e.g., amount of chlorine fed, pH of finished water, etc.)
- recording inventory

The forms should have a generally uniform look and feel, and be easily navigable, such as by a "tab system" or on-screen menu boxes. They will be created in an ASP.Net framework and be available with a full screen view, on a laptop or standard desktop monitor of a PC connected to the WASD intranet. As a subsequent phase, the application can be configured to use mobile devices for data acquisition. The device will need to be wirelessly connected to the database and operate in real-time, or the input will be uploaded to the database via a docking procedure (whether connected by wire or wirelessly).

• LIMS Extraction Service

The laboratory staff uses a LIMS (Laboratory Information Management System) that provides for creating various forms of output. The lab personnel will produce an Excel spreadsheet via the LIMS. The MOR On Demand will provide a background service that will extract the required information from the spreadsheet for storage into the SQL database. It will not be necessary for them to incorporate a new means of data entry, and certainly will not require any cut and paste or other resending of readings.

• Reports

There are various reports currently being produced for the State or County agencies mentioned before that will be duplicated in an "on demand" environment. Users will be able to generate these reports during the middle of the month, rather than having to wait until the end.

In addition, there will be new reports for internal use that will be created to improve the functioning of the TPO's. For example, a report will be compiled showing residual chlorine and chlorine flow - items that are currently tracked, but on different forms, perhaps in different places, and by different people. By having them on a single view, a TPO can adjust the flow to raise or lower the level of residual as necessary.

The deliverable for Reports, then, will consist of two steps. The first will deliver the report formats requested by TPO's or Water Production management. These reports will have sample (although realistic) data, and will serve to confirm the structure and handling of data for the reports. A second step will consist of the reports produced with real and current figures, which will confirm the actual gathering of data, and serve as a test of the project.

• Training sessions

Using the principle of "Train the trainers", a short series of sessions will be provided for the different levels of users:

- Liaison - John Spanioli (for overall technical background and first responder support)
- Administrative functions - Jack Epaves, Ed Turner, Jon Hansen
- Report preparers - Art Baldwin, Sameena Ahmed
- Treatment Plant Operators - *to be selected*

*Key Milestones:*

Milestones will include:

- Acceptance of this document
- Delivery and acceptance of user interface illustrating the tasks that will be able to be done
- Delivery and acceptance of standard reports that can be produced On Demand
- Walkthrough with real data (parallel to old method) producing MOR On Demand and "extra" requested reports. This will constitute the testing phase of the project and will conclude with user acceptance.
- User Training completion and project adoption

*Key Resource Requirements:*

The Water Production Division contacts and subject matter experts include:

- Project Sponsor: Tom Segars
- Project Manager: John Spanioli
- Subject Matter Experts
  - Report Preparers: Art Baldwin, Sameena Ahmed
  - Administrators: Jack Epaves, Ed Turner
  - Plant Supervisors: Jon Hansen, Art Baldwin

The MIS analysts that have been provided for this project are:

- Technical Lead: Yaakov Rudd
- Technical Support: Arsenio Gonzalez

NetAdvantage for .Net, from Infragistics, is a software tool that has been identified as important to the project's success. This tool will enable rapid and consistent development of the user GUI interface, and will be useful in all future .Net projects.

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*Schedule:*

A schedule will be established to allow for the following:

- Approval to proceed
- Requirements definition
- Completion of database design
- Delivery and acceptance of user interface illustrating the tasks that will be able to be done
- Delivery and acceptance of dummy regulatory forms and additional reports (automatically filled in by sample database data)
- Testing
- User Training completion and project adoption
- Production

*Personnel Affected:*

This project will impact a variety of personnel in the Water Production Division. In addition to "general" users who will have access to view data and generate their own copies of reports, etc., the following groups of individuals will be directly involved either in data entry, supervisory or administrative capacities:

- Division Chief 1
- Treatment Plant Chief 2
- Treatment Plant Supervisor 3
- Treatment Plant Operator II 12
- Treatment Plant Operator I 20

*Constraints:*

The timeframe of this project will be reduced by the use of Infragistics' NetAdvantage, a .Net development tool that assists in rapid application development. It is expected to be a re-usable part of all the .Net applications designed in WASD. Without it, the timeframe will need to be expanded to allow for in-house development of the same functions.

*Assumptions:*

The data that currently populates the MOR's generally comes from instrument readings, but not always. Our assumption is that the readings will be used as the source of the monthly entries, but that they may be overridden by individuals with sufficient authorization. Any overrides will need to be given a justification that will be made available for audit purposes.

There are some readings that are currently being captured by a SCADA system, especially for the Aquifer Storage and Recovery (ASR) wells. However, there was no immediate interest in trying to use these readings or to increase the equipment that is being monitored. It may be that a future follow-up project will be requested to interface with current and/or future automatic data capture. The Water Production representatives indicated they do want the ASR wells to be included, but they preferred to delay inclusion of the ASR data until a later phase of this project.

IT contract staff will be retained for the duration of the project.

*Risks:*

Additional equipment, such as pumps or chemical feeders, may be placed into operation, and although the database is being developed to allow for such expansion, it is possible there may be unanticipated requirements for tracking the operation of the new equipment such that the database needs to be revised. If so, a then-current analyst will need to make the appropriate modifications.

Additional reports, or modifications of existing ones, may be required by external agencies, for which new interfaces would need to be developed. If so, a then-current analyst will need to accommodate the requirements.

Inability to keep IT contract staff will delay project completion.

*Concerns:*

- Calculations by hand

Although most data entry consists of single readings, the current data forms also demand some calculations. All of them are able to be done by computer, and the results can be automatically filled in where needed. For example, "the rate of chemical flow times the number of hours equals the amount of chemical." Rather than automating this entirely, the management has indicated they would prefer some calculations still to be done by the Treatment Plant Operators (TPO's). Accordingly, reports that require calculated results will (in the event of miscalculations) signal the user that his results are incorrect, but will not display the correct results. This has the double benefit of helping train the user, and also catching such incorrect input as typos, forgotten decimals, etc. The computer will compare the operator-entered result with the "right" one, and signal when discrepancies occur; however, it seems a waste of the computer's usefulness to still require such tasks as performing long division by hand.

- Not making use of SCADA

Each recopying of data naturally provides more chances for entry errors, the minimization of which should be a significant goal of this project. It follows that the first transcription of a data reading creates the first opportunity for error. Some of the data is available through a SCADA system already in use. However, the Division's management prefers that even those readings be entered manually. They do, however, wish to use the SCADA data for a sort of verification, to insure readings entered by hand are "reasonable" when compared to the SCADA information. The use of SCADA to provide equipment readings would reduce the likelihood of entry errors wherever SCADA is available. If this is done, a backup method for data entry must be provided for those times when the SCADA system is not operational.

- Personnel supervision

The automation of the data collection and report preparation are the prime objectives of this project. However, the Water Production Division is asking to design the proposed solutions in such a way as to incorporate certain oversight functions, also.

For example, the division's management considers that there is a tendency for employees to assume all equipment is correctly working. At the end of a shift, readings for the entire shift might be entered all at one time, without actually having checked at the required intervals. Additionally, one employee might enter readings that his colleague should have made, "covering" for him and calling into

question the integrity of the entire data collection process. To prevent those types of misconduct, management has requested that the system enforce automatic logoffs after periods of inactivity, and require periodic logins of the operators, in addition to requiring the arithmetic to be done by the operator (as mentioned before), and setting time limits as to when readings can be entered.

It's true that one can claim benefits to such an approach (beyond being likely to catch employees not performing their assigned duties appropriately): TPO's will better understand the workings of the plant and be more likely to notice anomalies; requiring the entry of quite a few data items every hour or two can simply serve to make sure the TPO stays awake throughout his shift. Nonetheless, it is hard to escape the feeling that this is a use of technology to enforce what is essentially, and more properly, a personnel supervision issue.

*Current Status:*

A series of meetings have been held with key personnel from the Water Production Division in order to better understand the current processes of data collection and report preparation, and what is being requested of this project. At each meeting, Yaakov Rudd and Arsenio Gonzalez were in attendance representing the MIS Division. The main Water Production personnel interviewed at each meeting are shown

September 1	Alex Orr	Spanioli, Baldwin, Epaves, Ureña(MIS)
September 4	Alex Orr	Spanioli, Baldwin
September 12	Alex Orr	Spanioli, Meacham
September 18	Douglas	Baldwin
September 22	Hialeah	Spanioli, Baldwin, Segars, Hansen
September 27	Alex Orr	Spanioli, Baldwin
October 24	Alex Orr	Spanioli, Baldwin, Epaves, Ahmed



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- ADA Coordination
- Agenda Coordination
- Animal Services
- Art in Public Places
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- Aviation
- Building
- Building Code Compliance
- Business Development
- Capital Improvements Construction Coordination
- Citizens' Independent Transportation Trust
- Commission on Ethics and Public Trust
- Communications
- Community Action Agency
- Community & Economic Development
- Community Relations
- Consumer Services
- Corrections & Rehabilitation
- Cultural Affairs
- Elections
- Emergency Management
- Employee Relations
- Empowerment Trust
- Enterprise Technology Services
- Environmental Resources Management
- Fair Employment Practices
- Finance
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- General Services Administration
- Historic Preservation
- Homeless Trust
- Housing Agency
- Housing Finance Authority
- Human Services
- Independent Review Panel
- International Trade Consortium
- Juvenile Assessment Center
- Medical Examiner
- Metro-Miami Action Plan
- Metropolitan Planning Organization
- Park and Recreation
- Planning and Zoning
- Police
- Procurement Management
- Property Appraiser
- Public Library System
- Public Works
- Safe Neighborhood Parks
- Seaport
- Solid Waste Management
- Strategic Business Management
- Team Metro
- Transit
- Task Force on Urban Economic Revitalization
- Vizcaya Museum And Gardens
- Water & Sewer

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October 23, 2007

CCN: 50401  
File No.: 8DC.14.28.2

Ms. Carlyn Kowalsky, Managing Attorney  
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South Florida Water Management District  
P.O. Box 24680  
West Palm Beach, FL 33416-4680  
Email: [ckowalsk@sfwmd.gov](mailto:ckowalsk@sfwmd.gov)

Re: Miami-Dade County Interim Consumptive Use Authorization and Agreement (Order No. 2006-072-CO-WU).  
Revised Plan To Address Raw Water Flow Measuring Adjustments Table 1, Item II c

Dear Ms. Kowalsky:

Please find enclosed Miami-Dade Water and Sewer Department's (MDWASD) *Revised Plan to Address Raw Water Flow Measuring Adjustments*.

If you have any questions concerning this submittal, please contact me at 786-552-8112 or Ms. Bertha Goldenberg, P.E. at 786-552-8120.

Sincerely,

Rafael A. Terrero, P.E.  
Assistant Director

Enclosure

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MIAMI-DADE WATER AND SEWER DEPARTMENT  
WATER USE PERMIT (10/23/2007)  
PLAN TO ADDRESS RAW WATER FLOW MEASURING ADJUSTMENTS (FY2008)

The following is MDWASD's plan to be undertaken during FY 2008 to reconcile raw water flow measurements in the water system. This plan is the result of new raw water well meter installations in almost 100 supply wells during FY 2007. This plan is the continuation of MDWASD's attempt to reconcile and adjust historical raw water pumpage reports and records in its water supply system. The attached Exhibit B presents the schedule of activities associated with this program.

1. Address comments from GE Well Water Flow Meter Installation Report. Optimize current raw water well meter installations and calibration.
2. Calibrate Raw and Finished water Venturi meters at the Alex Orr WTP. Submit interim report by March 15, 2008.
3. Perform a water audit within Alexander Orr WTP to investigate Raw to Finished water flow differences. Initiate installation, calibration, and certification of process water flow meters (including transfers of water softening residuals to calcium carbonate lagoons and recalcining kilns), as appropriate.
4. Revise the Oracle systems database and create the Oracle based report format to be compliant with SFWMD Water User Permit Allocation and Special Conditions submittal requirements.
5. Transition to all new meter reports during December 2007 using the new raw water well flow meters and reports generated by the Oracle system. Begin using the reports generated by the Oracle system meter recorded values for both FDEP and SFWMD reports on January 1, 2008.
6. Undertake the following tasks to analyze raw water flow measuring issues: reconciliation of raw water meter reports between FDEP Monthly Operating Reports (MOR) and Oracle system, record instantaneous well readings to verify the average pumpage of each well, compare reported versus recorded flows for raw and finished at each WTP, and develop pumpage results for each wellfield on a monthly basis for the first six months of 2008.
7. Summary report on flow measuring issues analysis by July 31, 2008.
8. Submit request for allocation adjustment to SFWMD during the third Quarter of 2008 and no later than September 30, 2008.

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