BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Application for increase in wastewater rates in Monroe County by K W Resort Utilities Corp.
_____/

Docket No. 150071-SU

DIRECT TESTIMONY

OF

EDWARD R. CASTLE

on behalf of

K W Resort Utilities Corp.

Q. Please state your, name profession and address.

A. My name is Edward R. Castle. I am Vice President of Weiler Engineering Corporation, and Director of its wastewater division. My business address is 6805 Overseas Highway, Marathon, Florida 33050.

Q. State briefly your educational background and experience.

A. I hold the degree of Bachelor of Science from the University of Kentucky in Chemical Engineering, with an emphasis on water pollution control, I have been employed in the wastewater industry since 1987. I was Laboratory Director for Seminole County Environmental Services for two years, followed by nine years with Operations Management International as a wastewater operations specialist, then four years as Director of Operations for Davis Water Analysis/Synagro Technologies. The past twelve years I have been a Professional Engineer for Weiler Engineering Corporation.

Q. Do you have any professional affiliations?

A. Yes, I am a licensed Professional Engineer in Florida and hold a Florida Class A wastewater treatment plant operator's license.

Q. Have you previously appeared and presented testimony before any regulatory bodies?

I have prepared and presented expert engineering testimony before the Florida Public Service Commission in K W Resort Utilities Corp.'s last rate case in 2008. I also testified as an expert witness before the Division of Administrative Hearings in the Last Stand protest of the DEP's intent to issue a modification of KWRU's wastewater permit to allow the construction of the plant expansion.

Q. On whose behalf are you presenting this testimony?

A. I am presenting this testimony and appearing on behalf of K W Resort Utilities Corp. (KWRU), the applicant for rate increase in the present docket.

Q. Please describe your familiarity with K W Resort Utilities Corp.'s wastewater system?

A. I first became familiar with KWRU's wastewater system in 1990 when I was working as an independent consultant to the company that was operating the system at the time. In 1998, I was employed full-time by the operating company and continued to assist with KWRU's issues. Since I began my employment with Weiler Engineering in 2003, I have been the Consulting Engineer for the KWRU wastewater system.

Q. What is the purpose of your direct testimony?

A. The purpose of my direct testimony is to present information supporting the design capacity of the plant expansion, the necessity to replace the vacuum tank and the costs associated with such replacement, as well as the reason that the manufacture of the replacement vacuum tank and rental of the temporary vacuum tank was not bid out.

Q. Are you sponsoring any exhibits?

A. Yes, I am sponsoring four exhibits. Exhibit ERC-1 is a schedule showing the expected increases in wastewater flow that determine the design capacity of the plant expansion. Exhibit ERC-2 is my letter to Christopher Johnson explaining the basis for not bidding the air vacuum tank replacement. Exhibit ERC-3 is engineering estimate of the air vacuum tank replacement. Finally, Exhibit ERC-4 is a schedule of my firm's costs in connection with the air vacuum tank replacement.

Q. Was your opinion of the needed design capacity of the plant expansion accepted by DEP?

A. Yes. The FDEP permitting division accepted the proposed design capacity based on the predicted flows, and included the proposed expansion in the draft permit that was challenged by Last Stand. The administrative law judge accepted my opinion that a new .350 MGD treatment train and other facilities related thereto added to the existing .499 MGD treatment plant was the appropriate size to meet demand at buildout which is projected to occur between 2018 and 2020. Exhibit ERC-1 sets forth that analysis. DEP

adopted the administrative law judge's recommendation on this issue. The engineer for the parties protesting the permit modification opined that the design capacity at build out was in excess of 1 MGD which would have substantially increased the cost of the plant expansion including the requirement to install a deep well injection.

Q. Please explain the necessity for replacement of the air vacuum tank.

A. For unknown reasons, the interior coating of the vacuum tank failed, exposing the carbon steel tank shell to hydrogen sulfide gas in the presence of water. This combination of compounds converts to sulfuric acid, which corroded the steel. When the corrosion was discovered, I suggested that KWRU hire a qualified firm to perform ultrasonic thickness testing of the steel to determine if patching and re-coating was an acceptable option. On testing, it was found that the corrosion was extensive and had, in fact, completely dissolved the steel to the outer protective coating around nearly the entire horizontal perimeter of the tank. The structural integrity of the tank has been compromised. With this degree of damage, patching and re-coating is not an acceptable option.

Q. Did you recommend that KWRU use Airvac as the manufacturer of the air vacuum tank, and if so, why.?

A. In Exhibit ERC-2 I set forth a detailed explanation of the reasons why KWRU should go with Airvac as the manufacturer of the replacement air vacuum tank.

Q. Have you prepared an estimate of the cost to replace the air vacuum tank?

A. Yes, my estimate for the air vacuum tank replacement is set forth in Exhibits ERC-3 and ERC-4

Q. Does that conclude your direct testimony?

A. Yes, it does.

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Docket No. 150071-SU

Exhibit ERC-1 to

DIRECT TESTIMONY

OF

EDWARD R. CASTLE

on behalf of

K W Resort Utilities Corp.

PDR

Anticipated Flows

KW Resort Utilities Corporation
Wastewater Treatment Facility

Monroe County

DEP Permit FLA014951

Permit Expiration Date: 19 February 2017

Report Prepared by:

Weiler Engineering
6805 Overseas Highway
Marathon, Florida 33050
305.289.4161

INTRODUCTION

This Anticipated Flows Report is provided with the Preliminary Design Report to be submitted with an application for modification of the existing plant at Key West Resort Utilities (DEP Permit No. FLA014951). This report will provide information regarding the facility's operation and recent flows, and the need for expansion of the plant.

GENERAL INFORMATION

The KWRU facility is currently a 0.499 MGD AADF permitted wastewater treatment plant (WWTP) located on Stock Island in Monroe County, Florida.

Presently, the wastewater treatment facility consists of two post-anoxic biological nutrient removal treatment trains, installed separately but piped together to allow the facility to operate as a single plant. The trains, with design flows of 0.249 MGD and 0.250 MGD, respectively, are equipped with sand filters and chlorine contact chambers.

Treated wastewater is pumped to the Key West Golf Club reuse storage ponds for slow rate land application and to the Monroe County Detention Center for toilet flushing and cooling water, as well as the Lower Keys Medical Center, and Florida Keys Community College for irrigation and cooling water. Backup effluent disposal is provided by two (2) ten-inch Class V Group III underground injection wells.

FUTURE FLOW POPULATION PROJECTION

The KWRU WWTP currently treats wastewater flows from 2932 wastewater accounts consisting of residences, restaurants, an animal clinic, a laundromat, a convalescence facility, a detention center, a hospital, and a college. The AADF at KWRU has been increasing in recent past, most likely a result of the upturn in the economy. The AADF for 2012 was 0.382 MGD. This increased to 0.416 in 2013. In the first quarter of 2014 which coincides with peak tourist season, the average daily flows have been approximately .450 MGD.

In 2014 and 2015, at least four re-developments are expected to begin operating. Based on the plans and wastewater services agreements available to date, these projects will increase flows as described below:

Stock Island Marina Village - Consisting of re-development of the working waterfront on the western side of Safe Harbor on Stock Island, the project includes the addition of wet slip dockage for boats, a large fish house, commercial office space and a hotel. The project is expected to generate approximately 30,250 GPD of wastwater.

Oceanside Marina - The existing marina is being redeveloped to add 78 residential units, 4 transient rental units, a restaurant, a bath house with laundry facilities, 3 swimming pools, a recreational facility and employee housing. The project is expected to generate an additional 26,125 GPD of wastewater in addition to that already being generated.

Sunset Marina - This project is in the planning phase and is expected to add approximately 60 residential units to the existing site, increasing wastewater flows by 15,000 GPD.

Bernstein Development - This project is in the planning phase and is expected to be similar in size and amenities to the Stock Island Marina Village project. It is expected to generate approximately 30,000 GPD of wastewater.

PDR

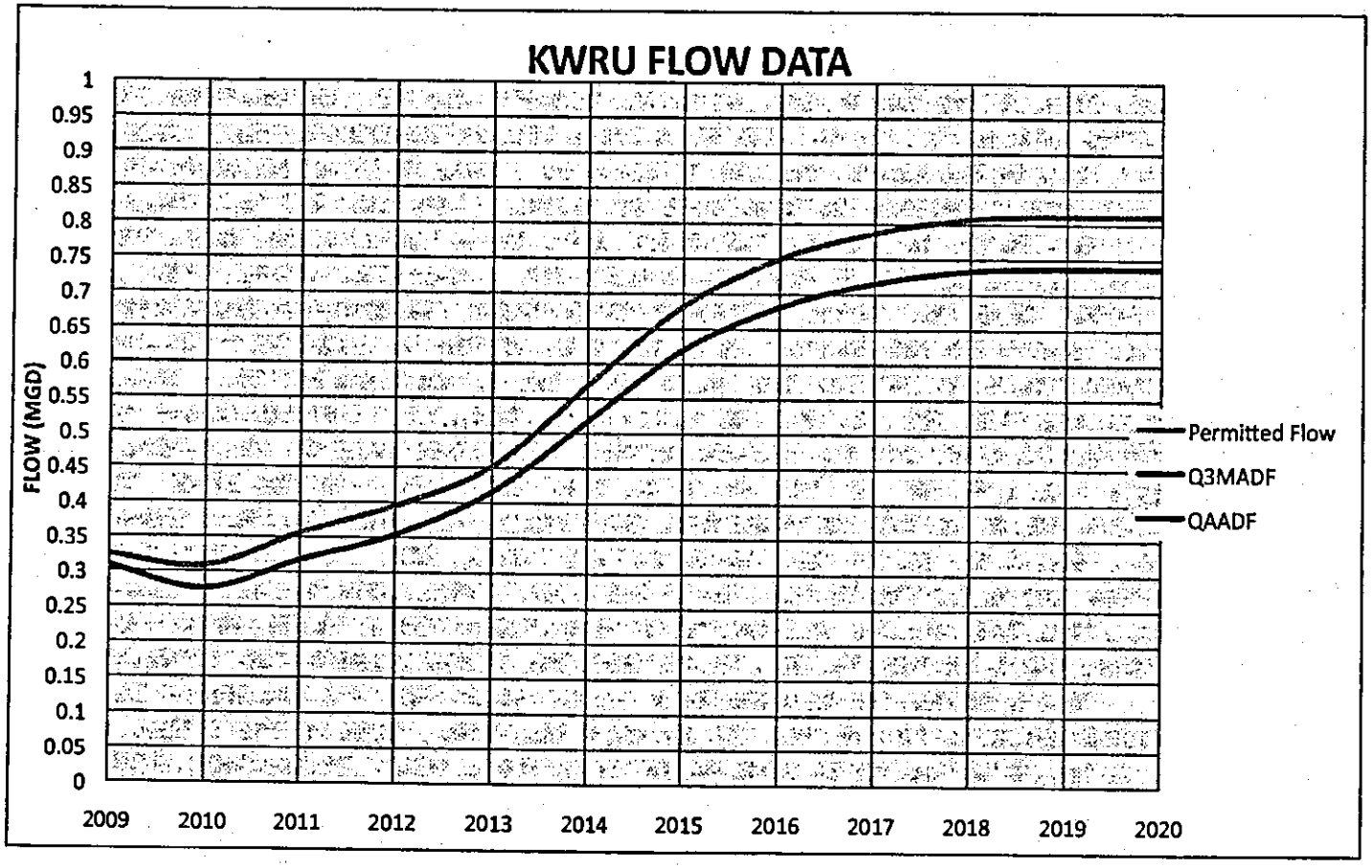
A review of the Monroe County Property Appraiser's GIS maps and associated data, it appears that there is approximately 40 acres of additional scarified or underutilized properties in the KWRU service area that are sites for potential redevelopment. Some large waterfront parcels exist and appear to have been recently purchased as investment properties. These parcels in particular have a high potential for redevelopment.

Although there are restrictions in place limiting new building rights, transferable development rights can be purchased from other properties with high densities in less desirable locations, such as older, land-locked mobile home parks. These development rights can then be used to allow units to be constructed in the more desirable waterfront properties in closer proximity to Key West. For these reasons, and based on the redevelopment history in the keys, it is apparent that the potential for further increases in flow exist in the KWRU service area.

The graph below shows the flow trends at KWRU from

PROJECTED FLOWS

This chart shows the average flows to the facility over the past four years and the expected flow through 2020.



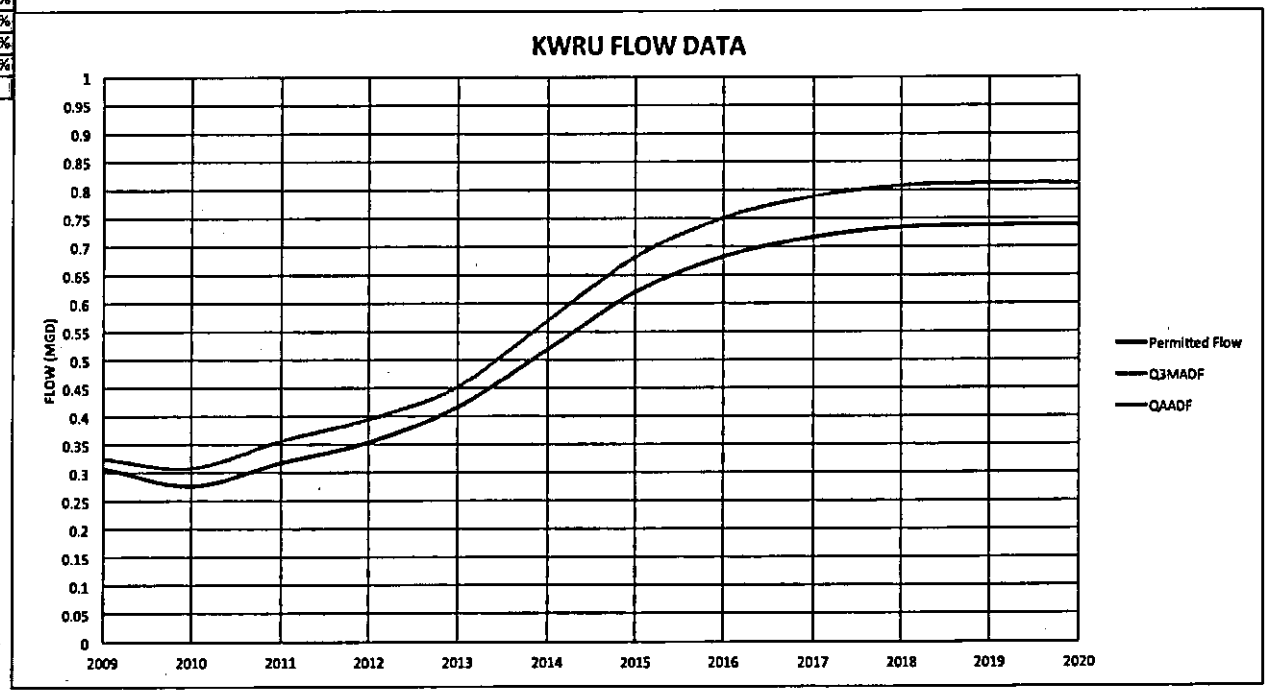
SUMMARY AND CONCLUSIONS

The annual average daily flow to the KWRU WWTP may reach 0.74 MGD AADF or 148% of existing plant capacity following development of the known underutilized or undeveloped properties in the Stock Island service area. This may represent "build-out" flows, although some redevelopment of other existing occupied properties with higher use facilities is possible. With the expansion of the WWTP capacity to 0.849 MGD, the anticipated flows will represent 87% of the proposed permitted capacity, allowing for an additional 100,000 GPD of capacity for such redevelopments,.

Annual Additions	year	Q_{AADF}	Q_{3MADF}		Ratio
	2009	0.308	0.324	SEP-NOV	1.05
	2010	0.276	0.308	AUG-OCT	1.12
	2011	0.318	0.356	SEP-NOV	1.12
	2012	0.354	0.395	OCT-DEC	1.12
	2013	0.416	0.452	AUG-OCT	1.09
0.102	2014	0.518	0.569		1.10
0.102	2015	0.620	0.682		
0.062	2016	0.682	0.750		110.0%
0.034	2017	0.716	0.788		105.0%
0.018	2018	0.734	0.807		102.5%
	2019	0.738	0.811		100.5%
0.300	2020	0.738	0.811		

2014 = 2013 + new developments
Developments in the works
0.18-0.2 mgd

2015 - 2017
developments from my spreadsheet



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Anticipated Flows
Exhibit ERC-1, Page 6 of 6

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

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_____/

Docket No. 150071-SU

Exhibit ERC-2 to

DIRECT TESTIMONY

OF

EDWARD R. CASTLE

on behalf of

K W Resort Utilities Corp.

WEILER ENGINEERING CORPORATION

WEC excellence in engineering

201 WEST MARION AVENUE - SUITE 1306 | PUNTA GORDA | FL 33950
TEL 941-505-1700 | FAX 941-505-1702 | WWW.WEILERENGINEERING.ORG

6805 OVERSEAS HIGHWAY | MARATHON | FL 33050
TEL (305) 289-4161 | FAX(305) 289-4162

April 27, 2016

Christopher Johnson, President
KW Resort Utilities Corp.
6630 Front Street
Key West, Florida 33040

RE: Replacement of Vacuum Sewage Tank System

The vacuum collection system on Stock Island provides wastewater service to approximately 1000 residential and commercial properties on Stock Island in Monroe County, Florida. Recent inspections of the interior of the main vacuum collector tank shell have revealed that coating failure has occurred, with up to 80% of the steel gone in a band around the mid-line horizontal perimeter of the tank. Catastrophic failure of the tank could occur at any time.

100% of the sewage from the vacuum collection system flows into this collector. The components that comprise the collector include the tank shell, sewage inlet and discharge headers, vacuum supply lines, capacitance probes, impedence probes, manways, internal sewage pumps with mounting systems and various other components. The collector is a mechanical system of which the steel shell is a critical component. Should the shell fail catastrophically, there would be no means of collecting and treating sewage from the residences and businesses. These properties would be left with no means of sewage disposal.

The components of the collector must all fit together precisely in order to function. The internal components must be mounted to racks and fasteners, and the probes and the power and communications wiring must run through tank penetrations that are specifically designed as vacuum-tight, In addition to the internal collector components, the piping flanges integral to the shell must align perfectly with the flanges and bolt holes of the 7 large-diameter the existing sewage and air lines. These components and configurations make the collector a unique system. As such, the existing Airvac collector must be replaced in kind with a collector of identical function and dimensions.

I have determined that Airvac is the only manufacturer of vacuum collection system components of this type in the United States. A previous competitor, Roevac, went out of business in the United States in the mid-2000's and in any case, would not have been capable of providing a direct replacement of the collector.

I have been involved in a significant number of vacuum collection systems projects in Monroe County and south Florida. Most all of these systems were constructed by municipal governments, with the materials and construction procured by competitive processes. I am not aware of a single proposal having been submitted in the past 10 years in which any manufacturer of vacuum collection systems other than Airvac was proposed. That is because there is no other manufacturer in the United States at this time.

It has been established that KW Resort Utilities Corp has a critical need to maintain functionality of its vacuum collection system, and that the collector is a fundamental component of the system, without which it cannot function. Due to the potential imminent catastrophic failure of the steel shell of the collector, a replacement must be obtained and installed with as little delay as is possible. I therefor recommend that KW Resort Utilities Corp purchase a replacement from Airvac as a Sole Source provider of the needed collector tank for the following reasons:

- Airvac is the only available manufacturer of vacuum collection systems in the United States
- Airvac provided the existing collector system sized specifically for the Stock Island service area and the specific flows and head conditions associated with the system
- The collector is a unique mechanical system comprised of numerous inter-connected components that must function as a unit.
- The replacement collector must be able to be set in place and mate precisely with the existing flanges and connections and must therefor must be of exactly the same dimensions as the original
- There is a high potential for catastrophic failure, shutting down the entire vacuum collection system. The delay that would be caused by producing bid documents and soliciting bids would create an unnecessary potential for loss of wastewater service to residences and businesses
- Even if competitive bidding were pursued for the purchase of the replacement collector tank, no other manufacturers of vacuum collection systems would participate

For the above reasons, it is clear that ordering the replacement collector tank as a Sole Source from Airvac is the only viable option available and is in the best interest of the property owners of Stock Island.

If you have any questions or need further information, please let me know.

Sincerely,

Edward R. Castle, PE
Weiler Engineering Corporation

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Application for increase in wastewater rates in Monroe County by K W Resort Utilities Corp. / Docket No. 150071-SU

Exhibit ERC-3 to

DIRECT TESTIMONY

OF

EDWARD R. CASTLE

on behalf of

K W Resort Utilities Corp.

KWRU Vacuum Tank Replacement

Description	Principal	Project Manager	Licensed P.E.	Licensed EI	Engineering Designer	Clerical	Cost
Study and Report							
Design Drawings	50.00			16.00			$11,590.00
Preparation of RFP documents, technical specifications, etc.		24.00					$3,480.00
Estimating and budgets preparation	4.00						$780.00
Bidding Assistance and Recommenation of Award	1.00	2.00					$485.00
Shop drawing reviews			2.00		8.00		$1,090.00
Limited Construction Inspections					60.00		$6,000.00
Contract Administration, Progress Meetings, Contract Closeout	4.00	8.00		4.00			
							$0.00
						Subtotal	$23,425.00
Total Hours	59.00	34.00	2.00	20.00	68.00	0.00	
Rate	$195.00	$145.00	$145.00	$115.00	$90.00	$50.00	
Design Subtotal	$11,505.00	$4,930.00	$290.00	$2,300.00	$6,120.00	$0.00	$25,145.00

Reimbursable Expenses	**QTY**	**Unit Cost**					**Total**
							$0.00
							$0.00
							$0.00
							$0.00
Reimbursable Subtotal							**$0.00**

Total Cost **$25,145.00**

KWRU Vacuum Tank Replacement Cost Estimate

Description	Units	Qty	Unit Cost	Sub-Total Cost	Sales Tax	Shipping	Total Cost
Engineering, including design, specs, bidding assistance, limited CEI	LS	1	$25,145.00	$25,145.00	$0.00	$0.00	$25,145.00
Rental of temporary tank and accessories	LS	1	$10,000.00	$10,000.00	$675.00	$4,700.00	$15,375.00
Purchase of temporary pump conversion parts	LS	1	$32,165.00	$32,165.00	$2,004.90		$34,169.90
Purchase of new fiberglass tank	LS	1	$80,200.00	$80,200.00	$4,887.00	$3,800.00	$88,887.00
Set-up and take-down of temporary vacuum tank and pumps, including tapping & reinstating vacuum mains, temporary piping, temporary power	LS	1	$205,000.00	$205,000.00	$12,375.00		$217,375.00
Excavation and removal of existing tank, installation of new tank	LS	1	$65,000.00	$65,000.00	$3,975.00		$68,975.00
Dewatering	LS	1	$30,000.00	$30,000.00	$1,875.00		$31,875.00
Backfill, compaction and restoration of excavations	LS	1	$9,000.00	$9,000.00	$615.00		$9,615.00
Bonds, Insurance and General Conditions	LS	1	$10,418.18	$10,418.18	$700.09		$11,118.27
Mobilization and Demobilization	LS	1	$16,947.91	$16,947.91	$1,091.87		$18,039.79
KWRU Staff for assitance during project	LS	1	$8,682.50	$8,682.50	$595.95		$9,278.45
Contingency (15%)	LS	1	$75,706.26	$75,706.26	$4,617.38		$80,323.64
						Total	**$610,177.04**