

Cedar Key Water and Sewer District 2007 Public Facilities Report

Introduction

This report was prepared to satisfy the requirements of Section 189.415, Florida Statutes. The purpose of this report is to increase cooperation between special districts and local governments relating to comprehensive planning efforts.

Existing Facilities-Wastewater

The treatment plant is classified as a water reclaiming facility by the Florida DEP since it is designed to treat the wastewater to a degree where it can be reused for irrigation purposes. The water reclaiming facilities are located at C and 3rd Streets. The treatment plant consists of screening, grit removal, aeration, settling, filters and disinfection. Unit processes consist of dual tanks or equipment, thus providing class 1 reliability. A propane fueled motor generator set is also provided to generate electricity in case of power failure. High level disinfection is included to destroy bacteria, and dechlorination facilities dechlorinate the effluent during periods of effluent discharge into the back bayou.

The primary effluent disposal of the reclaimed water is at the approximately 1 acre block surrounded by G St., H St., 8th St. and Whiddon Ave. This area is approved for 166,000 gpd. Effluent disposal has been through a low pressure subsurface drip irrigation system, but now is being converted to an Infiltrator system. By the end of 2007, 4,200 sq. ft. of the site had been converted to infiltration chambers, disposing of approximately 105 gpm of reclaimed water when in use. Since installed, the infiltrators have operated with absolutely no problems. Like the drip irrigation system, the Infiltrators distribute the flow over the entire site, supplementing the ground water and enhancing its use for irrigation by surrounding property owners who have irrigation wells and pumps. The change from drip irrigation to Infiltrators was prompted by a low useful life of the drippers imbedded in the drip irrigation piping. Additional areas approved for 14,000 gpd of effluent irrigation are the cemetery, the School, the City Park and some RAW areas along "G" Street.

The grease problem identified in last years report was addressed in 2007 by adoption of a Resolution regarding Fat, Oil and Grease (FOG) disposal into our collection system. The implementation of this resolution is now underway, and recently the FOG problem has seemed to diminish.

Cedar Key's wastewater collection system consists of gravity sewer collection areas discharging into pumping stations and a force main network discharging to the treatment plant. As part of a CDBG to the City of Cedar Key in 1992, sewers along portions of 2nd, 4th, 5th, D, E and G Streets were rehabilitated in order to reduce infiltration and storm water inflow into the sewer system. A low pressure sewer system was constructed in 2000, connecting all remaining buildings on the island to the existing sewer system. Individual hookups were completed in 2001.

In October 2007, a five year wastewater treatment plant renewal permit was submitted to the FDEP. As of this writing, the permit was still under review.

Current Capacity

Effective in 2003, the FDEP approved the reclaiming facilities for an average annual flow of 180,000 gpd with an instantaneous peak capacity of 400 gpm, or 576,000 gpd.

Current Demands

Wastewater flows recorded during 2007 are summarized below:

<u>Month</u>	<u>Flow (gpd)</u>
Jan	105,000
Feb	116,140
Mar	111,690
Apr	113,220
May	99,600
Jun	110,870
Jul	117,940
Aug	104,960
Sep	112,030
Oct	109,440
Nov	40,260
Dec	<u>92,080</u>
Annual Average:	102,769

Average and maximum month flows for the last sixteen years are:

<u>Year</u>	<u>Average Wastewater Flows (gpd)</u>	<u>Maximum Month Flows (gpd)</u>
1992	89,000	111,000
1993	90,000	116,000
1994	89,000	105,000
1995	97,000	130,000
1996	109,000	147,000
1997	105,100	130,000
1998	116,300	151,000
1999	95,000	111,000
2000	95,000	108,000
2001	112,000	135,000
2002	122,000	150,000
2003	121,000	144,000
2004	117,000	153,000
2005	119,500	149,000
2006	113,750	132,000
2007	102,769	117,940

In 2007, 57.1% of the treatment capacity was utilized based on average daily flows. The approved FDEP capacity is 180,000 gpd.

Existing Facilities – Water

Description

The District's existing public water supply system includes three wells and a lime softening water treatment plant located on the mainland, a distribution system consisting of galvanized steel, asbestos cement, cast iron and PVC pipe ranging in size between ¾ inches to 8 inches in diameter, and a 250,000 gallon elevated steel water storage tank.

In 2004, the District found that Disinfection By-Products tri halo methane's (THM's) and HAA5's exceeded the newly established EPA limits. The District began evaluation of the best way to remove these contaminants in 2004 and 2005. Chlorine Dioxide was first tested and found unable to reduce the THM level by the necessary amount. The use of enhanced coagulation with Ultra Filtration was investigated next. This proved impractical because of the extremely high amount of chemicals required. The MIEX system was evaluated, permitted, and constructed in 2006. It was placed into operation in December of 2006.

The District's water treatment plant is located at CR 347 and SR 24. Well 1, abandoned in 1993, was also located at this site. Well 2, is located on the west side of CR 347 approximately ½ mile north of SR 24 and is used as a standby water supply and not normally used. Wells 3 & 4 are located on the southeast side of SR 24 approximately 2 miles east of CR 347. The elevated storage tank is located at the northwest corner of G Street and 8th Street.

Current Capacity

The capacity of a water system, as determined by the Florida DEP is its maximum day (24 hour) supply or treatment capability, whichever is less. In the case of Cedar Key, the limiting factor is the water treatment plant, rated at 250 gpm or 360,000 gpd. This capacity is somewhat reduced (temporarily), due to lime deposits in the transmission main.

Current Demands

Monthly average and maximum day (24 hour) water demands for 2007 are summarized below:

Month	Average Production (gpd)	Maximum Day Demand (gpd)
Jan	123,912	173,350
Feb	149,505	289,430
Mar	183,485	230,400
Apr	190,974	254,000
May	168,742	237,410
Jun	156,870	224,800
Jul	178,181	210,370
Aug	156,416	205,560
Sep	169,256	250,500
Oct	150,521	225,560
Nov	152,335	239,000
Dec	135,280	180,000
Annual Average:	159,623	

For the year 2007, the highest single day demand was 289,430 gallons.

Average annual and maximum day demands for the last 16 years are summarized below. The high maximum day demand during 1993 resulted from broken water lines caused by the March 13th "Storm of the Century". Other maximum day demands frequently result from fire flows. The maximum single day demand will be taken into consideration in calculating the percentage of the treatment capacity (360,000 gpd) being used.

<u>Year</u>	<u>Water Treatment Capacity Used</u>		
	<u>Average Water Production (gpd)</u>	<u>Maximum Day Demand (gpd)</u>	<u>Treatment Capacity Used</u>
1992	175,000	302,000	84%
1993	189,775	582,000	162%
1994	132,680	322,000	89%
1995	163,175	332,000	92%
1996	182,000	380,000	105%
1997	140,750	235,000	65%
1998	153,000	288,000	80%
1999	150,400	290,000	80.6%
2000	149,500	282,000	78.3%
2001	147,000	244,000	67.8%
2002	152,000	262,000	72.8%
2003	150,600	304,000	84.4%
2004	145,900	264,000	73.3%
2005	135,100	235,000	65%
2006	144,583	239,000	66.3%
2007	159,623	289,430	80.4%

Metered water usage billed during 2007 is summarized below:

<u>Month</u>	<u>Total Metered Usage-Billed (Gallons)</u>
Jan	4,630,964
Feb	2,245,940
Mar	3,536,150
Apr	4,216,882
May	3,721,738
Jun	4,107,350
Jul	4,578,480
Aug	5,180,510
Sep	4,011,444
Oct	3,071,001
Nov	3,897,299
Dec	<u>3,541,401</u>
Annual Total:	46,739,159
Monthly Average:	3,894,930
Daily Average:	128,052

There was only 690 gallons of metered water use recorded during 2007 at the City Cemetery since reclaimed water is now being used. Water use for the City Hall complex was measured at 109,170 gallons. Water use for the District's Office and Water Reclaiming Facility was measured at 20,880 gallons. In addition, 654,000 gallons were measured from blow offs during 2007. Total metered usage for 2007 is summarized below:

<u>Category</u>	<u>Metered Water Usage</u>	
	<u>Gallons per Year</u>	<u>Gallons per Day</u>
Metered – Billed	46,739,159	128,052
Metered – Not Billed	<u>784,740</u>	<u>2,150</u>
Total Accounted For	47,523,899	130,202

Unaccounted For Water

The difference between gallons produced at the water treatment plant and metered use of consumption is referred to as "unaccounted for water". Unaccounted for water is comprised of water used for fire fighting, unmetered flushing of water lines from fire hydrants, unmetered connections, and leaks. Most state and federal agencies regulating water use recommend that unaccounted for water not exceed a maximum of 10% to 15%. Unaccounted for water was 159,623 gpd, less 130,202 gpd, or 29,421 gpd during 2007. As a percentage, the unaccounted water for 2007 was 18.4%. A summary of average water production, usage and unaccounted for water over the past 16 years is listed below:

<u>Year</u>	<u>Average Water Production (gpd)</u>	<u>Total Metered Usage (gpd)</u>	<u>Unaccounted For Water</u>	
			<u>(gpd)</u>	<u>(%)</u>
1992	175,000	113,275	61,725	35
1993	189,775	113,702	76,073	40
1994	155,900	112,305	43,595	28
1995	163,175	123,377	39,798	24
1996	182,000	136,914	45,086	25
1997	140,750	130,869	9,881	7
1998	153,000	139,800	13,200	8.6
1999	150,400	144,186	6,214	4.1
2000	149,500	143,881	5,619	3.8
2001	147,000	139,043	7,957	5.4
2002	152,000	140,267	11,733	7.7
2003	150,600	131,015	19,585	13.0
2004	145,900	129,800	16,100	11.0
2005	135,100	121,914	13,186	9.8
2006	144,583	130,544	14,036	9.7
2007	159,623	130,202	29,421	18.4

The significant increase in unaccounted for water during 2007 was due to the large amount of line flushing required as part of the District's efforts to reduce the amount of trihalomethanes in our drinking water.

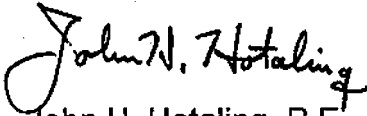
Water Conservation Program

In 1994, a new federal law limiting new toilets to a maximum flush of 1.6 gallons became effective.

Also, the District was required to implement a recommendation of the Comprehensive Plan in 1993 calling for a surcharge on large volume commercial or multifamily users unless they retrofitted their plumbing fixtures to ultra low flow water conserving fixtures. This policy became effective in mid 1998, and states that any customer using an average of 15,000 gallons per month or more will be subject to a 25% surcharge to their water/sewer bill unless they convert to ultra water conserving plumbing fixtures.

It is felt that some commercial users have not maintained their water conserving plumbing fixtures, especially the lavatory faucet aerators. Cedar Key's water conservation program has resulted in lower water demands and wastewater flows, but could do better.

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