

**SANITARY SEWER  
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## **10.0 SANITARY SEWER ELEMENT** *[Rule 9J-5.011, F.A.C.]*

The Sanitary Sewer Element of the Monroe County (County) Comprehensive Plan addresses the data inventory requirements of Rule 9J-5.005(2) and Rule 9J-5.011 of the Florida Administrative Code (F.A.C.). The Sanitary Sewer Element is a required comprehensive plan element under Florida’s Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163.3177.6(c), F.S.).

The purpose of the element is to address the issues and needs of sanitary sewer facilities that will be provided concurrently with the demand for services; to identify safe disposal methods for treated waste; and to establish the level of service for sanitary sewer.

The Sanitary Sewer Element provides a description of the existing and projected sewage treatment and disposal methods in use in the County.

### **10.1 Introduction**

The sustainability of the marine ecosystem of the Florida Keys (the “Keys”) is dependent upon clear water with low nutrient loading. Treatment of sewage and the disposal of wastewater within the County historically have been accomplished through septic tanks, on-site treatment and disposal systems (OSTDS), and small to intermediate sized privately-owned wastewater treatment package plants. With expansion and growth, regional systems consisting of treatment plants and centralized sewer have been built providing a greater level of collection and treatment. Several sewer districts, both private and municipal, have been formed to service more densely populated areas.

Notwithstanding the above accomplishments, the Keys face the challenge of obtaining adequate funding sources to implement the extent of regional systems required to meet guidelines established by State and federal mandates. To further complicate the issue, in more sparsely populated areas, advanced methods of treatment are not generally economically feasible. Regulatory pressure and the implementation of numeric nutrient criteria increase the complexity of providing proper treatment of sewage. Current wastewater treatment practices, combined with severely limited soils and high land use densities result in increased potential for ground and surface water contamination.

Over the last 20 years, aerobic treatment units (ATU) for more advanced onsite treatment and secondary treatment plants have been introduced. Although they provide better treatment than septic tanks, including effluent disinfection, ATUs are not an efficient means of removal of phosphorus and nitrogen.

With the adoption of the *Monroe County Sanitary Wastewater Master Plan* (the “Master Plan”) in June of 2000, the County has implemented a program to address these issues. The Master Plan addresses planned facilities, improvements, and expansion of regional facilities as well

as programs working with the Department of Health (DOH) to administer code enforcement for septic tanks. The plan focuses on utilizing regional systems for treatment in hot spots (areas of high density) and alternative Best Available Technology (BAT) in cold spots (areas of low density). Although originally planned to provide compliance by July of 2010, the Master Plan has fallen short mainly due to a gap in funding. This section will compare the existing service capacity against the level of service required for compliance with regulatory standards for both existing and projected demands.

The 2000 Master Plan identified 23,000 private onsite systems within unincorporated Monroe County, made up of septic tanks, ATUs, and unknown connections servicing a total of 4.88 million gallons per day (MGD). In addition, 246 small wastewater treatment plants (WWTP) were identified servicing another 2.40 MGD. The Master Plan called for several measures including the following:

- Replacement or upgrade of onsite systems to Onsite Wastewater Nutrient Reduction Systems (OWNRS);
- Creation of 12 community collection systems, five of which are to be phased into regional systems;
- Address hot spots with community systems by 2010; and
- Upgrade 17 facilities to BAT/Advanced Wastewater Treatment (AWT) by 2010.

In addition, facilities were to be upgraded to accommodate water reuse programs and the distribution system was to be installed. The major drawbacks to reuse cited in the Master Plan include the lack of large users and economic feasibility.

In the County's *Annual Assessment Report Evaluating the Work Program Year 10* (May 2008), the Department of Community Affairs (DCA) noted the following conclusions from the Department of Environmental Protection (FDEP) report to DCA:

- While progress had been made, there is a long way to go toward compliance in terms of completion schedules and meeting the July 1, 2010 deadline.
- Dozens of small facilities relying on connection to central systems will be out of compliance on that date.
- The same will likely be true of a number of homeowners served by septic tanks and OSTDS.
- FDEP would do whatever it could within its power to promote compliance assuming that the DOH would do the same to resolve the OSTDS requirements.

*The Keys Wastewater Plan – November 2007 Report*, prepared by Monroe County Engineering Division at the request of the Florida House of Representatives Environmental and Natural Resources Council, identified progress of the individual projects along with local government responsibilities for specific facilities. The report included a summary of nine local governments and utility service areas providing centralized systems within

unincorporated Monroe County. The executive summary of the report cited a funding gap of approximately \$336 million in meeting the July 2010 date for compliance.

In April 2010, the Florida Senate and House approved SB 2018 extending the deadline for compliance to the end of 2015, and postponing fines and potential liens against property owners. In addition, the bill authorized \$200 million of State funding for improvements; however, the source of funding remains unresolved.

Meeting the 2015 extension requires a detailed financial plan to implement necessary plant and infrastructure improvements. The funding gap of \$330 million, which has already stretched the County's capacity for debt service, continues to broaden due to a delayed revenue stream resulting from delays in design and construction of new systems. Subsidizing costs is consistent with County's policy.

The County is reluctant to impose assessments on residents for un-funded mandates that could result in home forfeitures and financial hardship. The varying costs among projects pose additional problems. For example, areas such as Cudjoe Regional System, projected at \$15,000 per EDU, costs up to three times as much as other systems ranging from \$5,000 to \$10,000 per EDU. Improvements to Cudjoe Regional System could require supplemental funding to bring costs in-line with other systems to avoid an unreasonable burden to the residents.

The County looks to State and Federal assistance to make up the difference. Because of uncertainties, all alternative avenues for funding need to be explored and implemented. Without a detailed financial plan and diligent pursuit of funding sources, there is concern that the 2015 extension may not be met.

## **10.2 Regulatory Framework** *[Rule 9J-5.011 (2), F.A.C]*

### *10.2.1 Federal Regulation*

Pursuant to the Clean Water Act, 33 U.S.C. §1251 et seq. (1972), the Environmental Protection Agency (EPA) has authority to promulgate and administer regulations for sewage disposal and treatment. Implementation is delegated to the State of Florida through the FDEP. Once a wastewater management plan is approved, EPA may enter into agreement with the local government to implement.

EPA is currently working through the details for implementation of Numeric Nutrient Reduction Standards. The specific criteria of this program are not yet identified; however, the intent of the program is to restrict, in measurable quantities, the discharge of pollutant loads to surface waters and ultimately coastal and subterranean waters.

10.2.2 *State Regulation*

10.2.2.1 Area of Critical State Concern:

In 1975, due to concerns of the degradation of the marine ecosystem and continued pressures for expanded development, the DCA designated the Keys as an Area of Critical State Concern. Among other issues, this designation focused on programs including implementation of a comprehensive plan to address untreated sewage discharge into waters of the Keys. The County has since implemented a comprehensive planning process resulting in the Rate of Growth Ordinance (ROGO) and other efforts to manage impacts associated with development.

10.2.2.2 Five Year Work Program (the “Work Program”) and the Florida Keys Carrying Capacity Study (FKCCS)

In December 12, 1995, the Administration Commission found the 2010 Monroe County Comprehensive Plan not in compliance and ordered facilitated rulemaking/mediation to address outstanding issues. In July 1997, the Administration Commission proposed Rule 28-20.100, F.A.C., which introduced the concept of the Work Program requiring the following activities as it relates to wastewater:

- Continued construction of wastewater facilities in hot spots begun in previous year.
- Design and construction of additional wastewater treatment facilities in accordance with the schedule of a wastewater master plan.
- Implementation of the FKCCS to establish development standards ensuring that all new development not exceed the capacity the ecosystem’s ability to sustain impacts.
- Complete elimination of cesspits.

The FKCCS was tasked with providing specific recommendations, including adequate capital funding, protection of the environment, ensuring private property rights, providing for adequate affordable work force housing and meeting the goal of reducing the State’s role in regulatory oversight. With respect to wastewater, the FKCCS used benchmarks to correlate impacts of nutrient loading on marine ecosystems and the level of sustainable development.

The four key topics of discussion within the FKCCS include Terrestrial Habitat Protection, Allocation and Distribution of Growth, Affordable Housing, and Funding. Of the four topics, Allocation and Distribution of Growth, and Funding addressed recommendations related to wastewater. The Allocation and Distribution of Growth is addressed through ROGO with the establishment of 2,548 additional residential units within the County to be built over a ten-year period. The distribution of the residential units involves many factors and various stakeholders, but the principles of focusing new development and infill within partially developed areas and guiding future growth towards areas with existing or planned/funded wastewater systems are consistent with the goals of the FKCCS.

Finding adequate funding for the environmental and socioeconomic needs of the Keys is a difficult issue. The County has a relatively small population and a high number of tourists. The burden of playing catch-up with years of inadequate treatment facilities combined with the increase in housing costs associated with the tourist-based economy adds to the issue of affordable housing and economically feasible solutions; however, all current infrastructure requirements and waste disposal standards are to be upheld. Many potential sources for additional funding were presented for discussion including establishing tolls, residential impact fees, bed tax, Ad Valorem Tax, State and federal matching funds, and tourist-based sales tax.

Although many tasks identified in the Master Plan remain incomplete, all are being addressed. The remaining tasks consist mainly of costly capital improvement projects for which funding remains the key issue to implementation.

In November of 2010, under section 28-20.130, the requirements for the Work Program were updated by DCA. Under the revised Work Program, specific tasks and timelines are established to bring deficient systems into compliance.

Among the rules are requirements for the County Comprehensive Plan to restrict permits for new development or redevelopment unless served by a central sewer system with committed funding; permitted by DEP and physically under construction or with an onsite sewage treatment facility shown to be in compliance with requirements of s.381.0065(4), F.S. Furthermore, the County must direct new and redevelopment to areas with committed funding, permit, and physically under construction.

Rules specific to Wastewater Implementation include the following:

- By July 1, 2011, the County shall evaluate annually and allocate funding for wastewater implementation with such funding identified in annual update to the Capital Improvements Element of the Comprehensive Plan.
- By July 1, 2011, the County shall determine cold spots and unfounded service areas and provide a map delineating those areas.
- By August 1, 2013, the County shall work with the owners of wastewater facilities, DEP, and DOH to fulfill requirements for compliance and coordinate notice and actions against owners that will not meet advanced wastewater requirements.
- By August 1, 2011, the County shall adopt an ordinance establishing the upgrade program with implementation dates and enforcement procedures for on-site package plants.
- By July 1, 2011, the County shall annually draft a resolution requesting \$50 million of the \$200 million of bonds authorized under Section 215.619, F.S. and appropriate sufficient dept service for the construction of wastewater projects within the Florida Keys.
- By July 1, 2011, the County shall evaluate State and federal funding opportunities and apply annually to at least one State or federal grant program for wastewater projects.

- By July 1, 2011, the County shall develop and implement local funding programs necessary for construction, operation, maintenance, and replacement of facilities.
- By July 1, 2011, the County shall by resolution identify and delineate on a map areas served by central sewage facilities and those that will not be served by central facilities.
- By July 1, 2011, in coordination with DEP, the County shall execute an interlocal agreement addressing non-service and unfunded service areas. The agreement shall address mechanisms for FCAA, DOH or DEP to provide upgrades and central management of onsite facilities located in non-service and unfounded areas. Furthermore, DOH and DEP will report to DCA with an assessment and magnitude of non-compliance and identify enforcement mechanisms needed to ensure upgrades.
- By July 1, 2013, the County shall provide a report including addresses and parcel numbers of property owners that fail or refuse to connect to central sewer facilities within timeline required. This report will be submitted to DCA and shall describe status of enforcement actions and circumstances under which enforcement has or has not been initiated.

Wastewater Projects and their associated timelines included in the rule amendment are as follows:

- Key Largo Wastewater Treatment Facility. Key Largo Wastewater Treatment District is responsible for wastewater treatment in its service area and the completion of the Key Largo Wastewater Treatment Facility.
  - By July 1, 2011, Monroe County shall complete construction of the South Transmission Line; and
  - By July 1, 2011, Monroe County shall complete design of Collection basin C, E, F, G, H, I, J, and K; and
  - By July 1, 2011, Monroe County shall complete construction of Collection basins E-H; and
  - By July 1, 2011, Monroe County shall schedule construction of Collection basins I-K; and
  - By July 1, 2011, Monroe County shall complete construction of Collection basins I-K; and
  - By July 1, 2011, Monroe County shall complete 50 percent of hook-ups to Key Largo Regional WWTP; and
  - By July 1, 2012, Monroe County shall complete 75 percent of hook-ups to Key Largo Regional WWTP; and.
  - By July 1, 2013, Monroe County shall complete all remaining connections to Key Largo Regional WWTP.
- Hawk's Cay, Duck Key and Conch Key Wastewater Treatment Facility.
  - By March 1, 2012, Monroe County shall complete construction of Hawk's Cay WWTP upgrade/expansion, transmission, and collection system; and
  - By July 1, 2013, Monroe County shall complete construction of Duck Key collection system; and

- By March 1, 2012, Monroe County shall initiate property connections to Hawk's Cay WWTP; and
- By December 31, 2012, Monroe County shall complete 50 percent of hook-ups to Hawk's Cay WWTP; and
- South Lower Keys Wastewater Treatment Facility (Big Coppitt Regional System).
  - By July 1, 2012, Monroe County shall complete 75 percent hookups to South Lower Keys WWTP; and
  - By July 1, 2013, Monroe County shall complete all remaining connections to the South Lower Keys WWTP.
- Cudjoe Regional Wastewater Treatment Facility.
  - By July 1, 2011, Monroe County shall complete planning and design documents for the Cudjoe Regional Wastewater Treatment Facility, the Central Area (Cudjoe, Summerland and Upper Sugarloaf) Collection System and the Central Area Transmission Main. (Plant is not being designed and/or constructed in phases.); and
  - By January 2012 Monroe County shall complete design and planning for Outer Area (Lower Sugarloaf, Torches, Ramrod, Big Pine Key) Collection System and Transmission Main; and
  - By October 1, 2011, Monroe County shall initiate construction of the wastewater treatment plant, the Central Area Collection System and Central Area Transmission Main); and
  - By July 1, 2014, Monroe County shall complete construction of Wastewater Treatment, Central Area Collection System and Central Area Transmission Main; and
  - By February 2012 Monroe County shall initiate construction of the Outer Area Collection System and Transmission Main; and
  - By February 2015 Monroe County shall complete construction of the Outer Area Collection System and Transmission Main; and
  - By July 1, 2014, Monroe County shall initiate property connections – complete 25 percent of hook-ups to Cudjoe Regional WWTP; and
  - By July 1, 2015, Monroe County shall complete 50 percent of hook-ups to Cudjoe Regional WWTP; and
  - By December 2015, Monroe County shall complete remaining hook-ups to Cudjoe Regional WWTP.

### 10.2.2.3 Department of Health Program for Compliance

The DOH administers code enforcement for septic tanks within the Keys. The DOH regulates permits and establishes criteria for construction and certification of these facilities.

### 10.2.2.4 Chapter 163.3177, F.S.

This statute encourages local governments to develop a “community vision” which provides for sustainable growth, recognizes fiscal constraints, and protects its natural resources. In

addition, it calls for development of “urban service boundaries” which ensure the area is served (or will be served) with adequate public facilities and services.

10.2.2.5 9J-5.011, F.A.C.

This section of F.A.C. requires local governments to analyze the jurisdictional needs and capabilities or deficiencies of facilities in meeting the requirements established through this section. Local governments are required to provide information in the comprehensive plans to show compliance or plans for compliance including specific information for facilities identified; entity responsible for operation; service areas and service capacity; current and projected demands; and level of service provided.

Among other requirements, local governments are to report on condition and performance of existing facilities and as well as problems and opportunities for improvement.

*10.2.3 Local Regulation*

10.2.3.1 Monroe County Sanitary Wastewater Master Plan

The *Monroe County Sanitary Wastewater Master Plan*, adopted in June 2000, addresses the requirements addressed in 9J-5.011, F.A.C. The Master Plan identifies programs established to meet the demands and level of treatment necessary for compliance.

10.2.3.2 Monroe County Comprehensive Plan

In accordance with 9J-5.011, F.A.C., local governments are required to address the following policy objectives in their comprehensive plans related to wastewater management in guiding development:

- Protection and improvement of water quality by providing for the construction, operation, maintenance, and replacement of central sewage collection, treatment and disposal, and installation and proper operation and maintenance of onsite sewage treatment systems.
- Establishment of construction schedules and capital financing plans for wastewater management improvements and standards for the construction of wastewater treatment facilities or collection systems.

One way the County has responded to these requirements is by establishing the Master Plan and adoption of the following policies in the Sanitary Sewer element, which are summarized in **Table 10.1**.

In addition, the County participated in research projects through the Florida Department of Environmental Protection, and published the document Reasonable Assurance Documentation (FKRAD -May 2008), which “provides reasonable assurance that the

stakeholders in the Keys have provided or will implement sufficient control mechanisms to return the area’s near shore waters to the water quality targets”. The following elements were implemented to provide the reasonable assurance: Description of the Impaired Water, Description of the Water Quality and Aquatic Ecological Goals, Description of the Proposed Management Actions to Be Undertaken, Description of Procedures for Monitoring and Reporting Results, and Description of Proposed Corrective Actions. The FKRAD rules related to Wastewater Management have been incorporated into the County’s master plan and policy decisions.

**Table 10.1 – Monroe County Comprehensive Plan Wastewater Policies**

Policy No.	Summary
901.16	Established January 4, 1998, as the deadline for adoption of permanent level of service standards for package treatment plants and on-site disposal systems (OSTDS) based on the findings of the Wastewater Master Plan and correlated amendments to the Land Development Regulations.
901.4.2	Amendment to the Building Code requiring notification to property owners issued building permits to complete hook-up to the central sewer facilities, pending availability within one year of becoming available, or as required as part of changes in State law or in level of service.
901.4.4	County agreement with EPA, FDEP, South Florida Water Management District (SFWMD), and National Oceanic and Atmospheric Administration (NOAA) regarding the scope of studies required to document pollutant loads from OSTDS, cesspits, package treatment plants, and other point and non-point sources on the Florida Keys into surrounding waters. These studies shall be executed according to the terms of the agreement, in coordination with the Water Quality Protection Program for the Florida Keys National Marine Sanctuary. Upon execution of this agreement, the scope of the Sanitary Wastewater Master Plan shall be adjusted accordingly.
901.5.18	As part of the Sanitary Wastewater Master Plan, an inventory of all wastewater treatment plants and OSTDS areas shall be completed identifying: <ul style="list-style-type: none"> <li>- the entity having operation responsibility;</li> <li>- current rated plant capacity;</li> <li>- existing treatment status (number and type of hookups);</li> <li>- all future committed capacity (number and type of hookups);</li> <li>- all facilities which fall below level of service standards identified in the Master Plan;</li> <li>- costs associated with improving those facilities to meet minimum level of service standards;</li> <li>- funding sources and construction schedules for those improvements; and</li> <li>- average and peak flow design capacity for sanitary sewer facilities.</li> </ul>
901.4.9	In the event Central Sewer Service becomes available (as defined by Chapter 10D-6) to areas served by OSTDS, owners of OSTDS within such areas shall have 30 days to connect to the central system upon notification of availability.
901.5.8	County shall ensure that wastewater treatment facilities are designed and constructed in accordance with the adopted levels of service, so as to limit the discharge or introduction of pollutants
901.5.18	All existing development shall connect to public treatment plants where available within one year of the date of plant start-up.

Source: Monroe County 2010 Comprehensive Plan

### 10.3 Existing Facilities – General Description

*[Rule 9J-5.011 (1) (f), F.A.C.]*

Sanitary sewer treatment within the County is provided through a combination of regional systems, OSTDS, package plants, and septic tanks. Approximately 30 percent of the land mass is within the boundaries of incorporated areas of the County. The majority of the hot spots are located within the incorporated areas, accounting for roughly 75 percent of the total wastewater generated within the Keys.

The Master Plan includes four major principles to improve wastewater management throughout the Keys:

- Upgrade or replace existing onsite systems with onsite wastewater nutrient reduction systems (OWNRS) in cold spots;
- Implement central community wastewater collection and treatment systems in hot spots;
- When community treatment systems increase to the point where no longer economically feasible to operate as community systems, consolidate them into regional systems; and
- Phase implementation of small regional systems and construct regional treatment plants so that interim community treatment systems are not necessary.

With the implementation of the Master Plan, regional service areas have been delineated and total demands within each service area have been identified. The basic unit of measurement used in evaluation is an Equivalent Dwelling Unit (EDU). One EDU is equivalent to approximately 167 gallons per day (gpd) of wastewater.

In accordance with Chapter 64E-6, F.A.C., the DOH has authority for issuing permits for onsite disposal systems. Chapter 64E-6, F.A.C. stipulates that the owner of a properly functioning onsite sewage treatment and disposal system must connect to an available publicly owned or investor-owned sewerage system within 365 days after the system is available for connection. The owner of the onsite system in need of repair or modification must connect to an available sewerage system within 90 days. Due to the designation as an Area of Critical State Concern, variances for compliance shall not be granted under any circumstances.

In areas where injection wells are approved for use, the DOH is the permitting agent for ATUs where the daily domestic sewage flow will not exceed 2,000 gpd. For establishments with greater than 2,000 gpd, but less than 10,000 gpd, the DOH is the permitting authority for the ATUs, and the FDEP is the permitting agent for the injection wells.

Owners of onsite systems must comply with the general maintenance and operational requirements of Chapter 64E-6, F.A.C., and any additional operation and maintenance requirements specified by the system design engineer. Onsite systems must be inspected by an approved maintenance entity at least two times each year.

When site conditions are favorable and septic tank systems are properly designed, constructed, and maintained, they can be efficient and economical alternatives to centralized wastewater treatment systems. Under unfavorable site conditions, such as high septic tank density, high seasonal rainfall, shallow ground water, or highly permeable soils, OSTDS can be a significant source of nutrient and bacterial ground water contamination. Anderson et al. (1988), in their report regarding the impact of individual and small community sewage systems, indicated that virtually 100 percent of the soils in Monroe County are severely limited for conventional OSTDS practices.

### *10.3.1 OSTDS Systems*

Though alternative OSTDS systems have been shown generally to provide improved treatment of sewage relative to conventional septic tanks, further monitoring and evaluation of these systems by DOH is essential to ensure the protection of public health and water quality in the Keys. Nitrogen and phosphorous concentrations in wastewater may be reduced through specifically designed systems. Such systems may be utilized for OSTDS and package treatment plants. They must be carefully designed, constructed, operated and maintained to achieve the desired results.

### *10.3.2 On-Site Management Systems*

Various alternatives for on-site treatment and disposal of wastewater are available for use in the County. It is important, however, when choosing an alternative that each component combined to make a total system should meet the following basic criteria:

- Produce an effluent of adequate quality for safe disposal;
- Be simple (few mechanical parts; easy to maintain);
- Be reliable (maintain consistent treatment);
- Protect the aesthetic qualities of an area; and
- Be acceptable to the homeowner or to the owner of another type of establishment (easy to use; creates no nuisance).

In areas of low density, cold spots, where centralized systems are not economically feasible, the plan for treatment focuses on Best Available Technology (BAT). The term BAT refers to a practice that is determined to be the most effective, practical means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals. The selection of an appropriate BAT will depend greatly upon site conditions such as land use, topography, slope, water table elevation, and geology. BAT selection must be very site specific so as to assure proper operation and prevent undesirable results such contamination of surface waters.

### 10.3.3 *Central Sanitary Sewer Treatment Facilities*

The treatment plant component of the central sanitary sewer facility functions to remove solid and organic materials from the sewage. Depending on the proportion of materials removed, processes which accomplish treatment are generally grouped into one of the following four categories:

- Primary Treatment

Primary treatment removes between 30 and 35 percent of the organic materials and up to 50 percent of the solids from the sewage, and is the least expensive treatment. This level of treatment is also commonly referred to as physical treatment because screens and settling tanks are the most common methods used to remove the solids.

- Secondary Treatment

Secondary treatment removes approximately 90 percent of total organic materials and suspended solids from sewage, and is the most common level of treatment provided by centralized facilities. This level of treatment generally requires multiple steps involving one biological process and one or more processes for removal of suspended solids, and is more expensive than primary treatment.

- Tertiary Treatment

Sewage may also contain large quantities of synthetic organic compounds or inorganic chemicals which may create pollution problems if not removed. Tertiary treatment is any treatment process beyond secondary treatment. The most common tertiary processes remove compounds of phosphorous and nitrogen. One method of tertiary treatment is spray irrigation, such as the irrigation of the golf course at Key Colony Beach. Because of the extra processes required, tertiary treatment is more expensive than secondary treatment.

- Advanced Wastewater Treatment (AWT)

This term refers to tertiary treatment within the wastewater treatment plant itself to levels of water purity generally acceptable for discharge directly into surface waters. AWT standards are set by law (Section 403.086, F.S.) in Florida. Very few wastewater treatment facilities in the State of Florida meet the AWT treatment standards. Advanced waste treatment is the most expensive method of treatment due to the additional plant and operations costs.

**10.4 Existing Facilities – Detailed Description**

*[Rule 9J-5.011 (1) (e), F.A.C.]*

There are currently nine sanitary service providers within the County consisting of four municipalities, four private entities, and the Florida Keys Aqueduct Authority (FKAA). A summary of EDUs treated by each service provider is shown in **Table 10.2**.

**Table 10.2 – Service Area per Sanitary Service Provider**

Service Area	Agency/ Provider	Total EDUs Within Service Area (EDU)	Total Demand Within Service Area (MGD)	Total Treatment Capacity	Excess Planned Capacity
Ocean Reef	NKL Utility Corp.	1,800	0.30	0.66	0.36
Key Largo	KLWTD	14,164	2.3	3.45	1.05
Village of Islamorada	City	8,895	1.49	1.92	0.43
City of Layton	FKAA	350	0.06	0.07	0.01
Duck Key/Conch Key	FKAA	1,412.9	0.17	0.20	0.03
City of Marathon	City	7,893	1.31	1.46	0.15
City of Key Colony	City	1,530	0.25	0.34	0.09
Cudjoe Regional *	FKAA	8,645	0.84	1.05	0.13
Baypoint WWTS	FKAA	430	0.07	0.07	0.045
Big Coppitt	FKAA	1,667	0.20	0.32	0.12
Boca Chica	US Navy	2,600	0.43	0.44	0.01
Key Haven	FKAA	450	0.06	0.20	0.14
Stock Island	KW Resort Util. Corp	2,672	0.45	0.45	0.00
City of Key West	City	24,075	4.84	10.00	5.2
<b>Totals</b>		<b>75,736</b>	<b>12.65</b>	<b>13.04</b>	<b>0.54</b>

Source: Keys Wastewater Plan – 2007, Report to Environmental and Natural Resources Council, FHR; (E. Woods, Senior Administrator, Monroe County Sewer Projects, personal communication, June 27, 2011)

\* Includes North Lower Keys, Big Pine Key, Ramrod, Middle Lower Keys, Summerland, Upper and Lower Sugarloaf.

This table inventories the number of EDUs within each service area to be treated through existing or planned wastewater projects. The table uses a conversion factor of 167 gpd per EDU to convert demand to MGD for comparison against capacity created in treatment facilities.

This section provides a summary of the wastewater systems for each service provider and identifies the treatment capacities provided by individual facilities within their respective service area.

10.4.1 *Current Level of Service Requirements*

In 1999, the Florida Legislature established binding treatment and disposal requirements for wastewater management including central treatment facilities regulated by FDEP and OSTDS regulated by the DOH. A standard of treatment was established for OSTDS and sewage treatment plants with a deadline for compliance of July 1, 2010. Facilities with less than 100,000 gpd were to apply Best Available Technology (BAT) standards, while facilities producing greater than 100,000 gpd apply AWT standards. **Table 10.3** indicates the standards applied to each.

**Table 10.3 - BAT and AWT Standards**

Effluent (treated wastewater) concentration in milligrams per liter (mg/l) as annual average (mg/1 is equal to 1 part per million)	BOD	TS	TN	TP
BAT standards apply to facilities with design capacities less than 100,000 gpd (generally, OSTDS and “package plants”)	10	10	10	1
AWT standards apply to facilities with design capacities equal to or greater than 100,000 gpd (community and central wastewater treatment systems)	5	5	3	1

Source: FDEP Report to DCA, 10 yr Work Program April 2008

10.4.2 *Wastewater Facilities*

The most common type of centralized sanitary sewer system is the localized small sewage treatment facility, or "package plant" as they are commonly known. Large scale municipal sanitary sewer systems which generally provide services to densely populated areas are another type of centralized facility. These centralized facilities are comprised of three components which perform the basic functions of collection, treatment and disposal of sewage.

There are nine sanitary sewer service providers serving 15 associated service areas located throughout the County. For the most part, service areas within incorporated areas coincide with the limits of incorporation. The four service areas served by regional service providers within incorporated areas include the Village of Islamorada, Key Colony Beach, City of Marathon, and the City of Key West; the City of Layton is served by FKAA. Within unincorporated Monroe County, there are five regional service providers: North Key Largo Utility Corp., Key Largo Wastewater Treatment District, Key West Resort Utilities Corp., Stock Island, and FKAA. FKAA provides service to seven of the 15 service areas previously identified. A graphical representation of both the incorporated and unincorporated Regional Service Areas is provided in **Map Series 10.1**. This map also shows the total treatment capacity within each service and estimated demands (number of EDUs).

Regional systems are regulated through FDEP, and as such, are subject to the same State and Federal regulations. Because each regional service provider is accountable for compliance, responsibility for service areas within incorporated areas typically falls with the municipality they serve. With the exception of the City of Layton that is served through FKAA, each municipal and private provider is independent of one another.

The total EDUs for each service area is summarized in **Table 10.4**. The table shows progress made toward accounting for EDUs in implementing the various wastewater projects.

**Table 10.4 – EDU Allocations per Wastewater Project**

Wastewater Project	Total EDUs	Planning	Design	Construction	Connections	
		EDUs	EDUs	EDUs	Completed (EDUs)	Remaining (EDUs)
Ocean Reef	1,800			20	1,780	0
Key Largo	13,707	5,483	3,617	3,618	789	989
Village of Islamorada	8,895	7,695			1,200	0
City of Layton	350				317	33
Duck Key/Conch Key	1,454				1,021	433
City of Marathon	8,203	137	0	7121	945	0
City of Key Colony	1,502				1,502	0
Cudjoe Regional *	7,987		922	7065	0	0
Baypoint WWTS	430	281			149	0
Big Coppitt	1,711			818	893	0
Boca Chica	2,600				2,600	0
Key Haven	450				450	0
Stock Island	2,672				2,672	0
City of Key West	2,4075				24,075	0
<b>Total</b>	<b>75,736</b>	<b>13,596</b>	<b>4539</b>	<b>18,642</b>	<b>38,393</b>	<b>1,455</b>

Source: Keys Wastewater Plan – 2007, Report to Environmental and Natural Resources Council, FHR

\* Includes North Lower Keys, Big Pine Key, Ramrod, Middle Lower Keys, Summerland, Upper and Lower Sugarloaf.

Hook-up of individual services does not correlate directly with construction of collection system or plant improvements. “Remaining EDU’s” reflect those not yet connected, in some state of design, or under construction.

**10.4.2.1 Village of Islamorada**

The Village of Islamorada is sub-divided into five separate collection and treatment basins in varying states of completion. Total 9,654 EDUs; capacity 1.52 MGD.

North Plantation Key

EDUs to be treated: 1,400 EDUs (.17 MGD)  
 Treatment Capacity: 1,800 EDUs (.30 MGD)  
 Type of treatment: AWT  
 Status: Plant construction completed.  
 Collection system expansion in design phase.

South Plantation Key

EDUs to be treated: 1,443 EDUs (.023 MGD)  
 Treatment Capacity: 1,606 EDUs (0.25 MGD)  
 Type of treatment: AWT  
 Status: Competitive procurement for design, build, operate, finance firm.

Windley Key

EDUs to be treated: 507 EDUs (0.08 MGD)  
 Treatment Capacity: 583 EDUs (0.92 MGD)  
 Type of treatment: AWT  
 Status: Competitive procurement for design, build, operate, finance firm.

Upper Matecumbe

EDUs to be treated: 2,459 EDUs (0.39 MGD)  
 Treatment Capacity: 2,632 EDUs (0.41 MGD)  
 Type of treatment: AWT  
 Status: Competitive procurement for design, build, operate, finance firm.

Lower Matecumbe

EDUs to be treated: 1,275 EDUs (0.20 MGD)  
 Treatment Capacity: 1,538 EDUs (0.24 MGD)  
 Type of treatment: AWT  
 Status: Competitive procurement for design, build, operate, finance firm.

10.4.2.2 Key Colony Beach

The Key Colony Beach central collection system was constructed in 1960. Despite ongoing repairs to infiltration and inflow, this project is compliant with 2010 effluent standards.

Key Colony Beach

EDUs to be treated: 1,5301 EDUs (.25 MGD)  
 Treatment Capacity: 2,035 EDUs (0.34 MGD)  
 Type of treatment: AWT  
 Status: Meets LOS with excess capacity.

10.4.2.3 Marathon

The City of Marathon is sub-divided into seven separate collection and treatment basins in varying states of completion. Total 8,665 EDUs; capacity 1.46 MGD

Service Area 1, Knight's Key

EDUs to be treated: 114 EDUs (0.019 MGD)  
Treatment Capacity: 138 EDUs (.023 MGD)  
Type of treatment: BAT  
Status: Pipeline to Service Area 3 WWTP under construction.

Service Area 2, Boot Key

EDUs to be treated: 4 EDUs (0.0 MGD)  
Treatment Capacity: 4 EDUs (0.0 MGD)  
Type of treatment: BAT  
Status: Plans for wastewater service for Boot Key has been suspended since the closure of the Boot Key drawbridge.

Service Area 3, Vaca Key (west)

EDUs to be treated: 1,383 EDUs (0.23 MGD)  
Treatment Capacity: 1,480 EDUs (.25 MGD)  
Type of treatment: AWT  
Status: Under construction.

Service Area 4, Vaca Key (central)

EDUs to be treated: 2,234 EDUs (0.373 MGD)  
Treatment Capacity: 2,289 EDUs (0.399 MGD)  
Type of treatment: AWT with effluent re-use to Sombrero County Club.  
Status: Properties are connecting.

Service Area 5, Vaca Key (east)

EDUs to be treated: 2,671 EDUs (0.446 MGD)  
Treatment Capacity: 2,934 EDUs (.499 MGD)  
Type of treatment: AWT  
Status: Served through expansion of existing Little Venice Plant. Under construction.

Service Area 6, Fat Deer Key (west)

EDUs to be treated: 832 EDUs (0.139 MGD)  
Treatment Capacity: 928 EDUs (.155 MGD)  
Type of treatment: Package Plant  
Status: Properties are connecting. Served through vacuum collection and upgrade to existing package plant.

Service Area 7, Grassy Key

EDUs to be treated: 659 EDUs (0.110 MGD)  
Treatment Capacity: 796 EDUs (0.132 MGD)  
Type of treatment: AWT  
Status: Under construction.

10.4.2.4 City of Key West

The City of Key West operates a wastewater treatment facility constructed in 1989. The system encountered Infiltration and Inflow (I&I) problems approximately ten years ago releasing extensive fecal coliform into nearshore waters. The City has implemented corrective measures since then including I&I testing and repairs to sewer systems; accelerated Capital Improvement Programs (CIP) related to sewer repair/replacement; constructed two Class 1 deep injection wells to eliminate ocean outfall; accelerated retrofit of the WWTP to meet AWT standards; and other pro-active measures. There a current headworks project underway as of January 2011. The U.S. Navy owns 23% of the capacity of the plant.

Key West WWTP

EDUs to be treated: 24,075 EDUs (4.02 MGD)  
Treatment Capacity: 59,880 EDUs (10.0 MGD)  
Type of treatment: AWT  
Status: Meets LOS with excess capacity

10.4.2.5 City of Layton

Through partnership with FKAA, the City of Layton wastewater system serves the entire city. No future projects are currently planned for this system.

Layton BAT

EDUs to be treated: 350 EDUs (.06 MGD)  
Treatment Capacity: 385 EDUs (.066 MGD)  
Type of treatment: BAT  
Status: System compliant with 2010 wastewater standards.

10.4.2.6 Ocean Reef

Ocean Reef is a privately operated system with a secondary treatment facility to accommodate reuse.

Ocean Reef

EDUs to be treated: 1,846 EDUs (.30 MGD)  
Treatment Capacity: 3,952 EDUs (0.66 MGD)  
Type of treatment: AWT

Status: Re-use distribution system in place. System compliant with 2010 wastewater standards.

10.4.2.7 Key Largo

Key Largo wastewater treatment is provided through a WWTP and collection sub-divided among 11 basins identified as A through K. Improvements are in varying states of completion. Total EDUs 13,707; total capacity 2.30 MGD.

Key Largo WWTP

EDUs to be treated: 14,764 EDUs (2.29 MGD)  
Treatment Capacity: 20,658 EDUs (3.4 MGD)  
Type of treatment: AWT  
Status: Project completion anticipate 2011; abandonment of septic tanks/onsite systems and connection to regional system underway.

10.4.2.8 Stock Island

Stock Island is a privately operated system operated by Key West Resort Utility Corporation. An upgrade was completed to bring the secondary treatment plant to AWT.

Stock Island

EDUs to be treated: 2,672 EDUs (0.45 MGD)  
Treatment Capacity: 2,695 EDUs (0.45 MGD)  
Type of treatment: AWT  
Status: System compliant with 2010 wastewater standards.

10.4.2.9 Unincorporated Monroe/FKAA

FKAA operates a total of six wastewater systems within unincorporated Monroe County (does not include Layton). Total EDUs 14,726; total capacity 2.11 MGD.

North Lower Keys (Big Pine)

EDUs to be treated: 5,632 EDUs (0.55 MGD)  
Treatment Capacity: 6,662 EDUs (0.65 MGD)  
Type of treatment: AWT  
Status: 30% design.(Expanded Cudjoe Regional System)

South Lower Keys (Big Coppitt)

EDUs to be treated: 1,667 EDUs (0.20 MGD)  
Treatment Capacity: 1,801 EDUs (0.22 MGD)  
Type of treatment: AWT  
Status: Treatment plant is active. System Complete.

Baypoint

EDUs to be treated: 429 EDUs (.07 MGD)  
Treatment Capacity: 430 EDUs (.07 MGD)  
Type of treatment: BAT  
Status: Treatment plant is active. System complete.

Duck and Conch Keys

EDUs to be treated: 1,413 EDUs (0.17 MGD)  
Treatment Capacity: 1,681 EDUs (0.20 MGD)  
Type of treatment: AWT  
Status: Under construction.

(E. Woods, Senior Administrator, Monroe County Sewer Projects , personal communication, June 27, 2011)

## 10.5 Capacity Analysis

Although unincorporated Monroe County includes approximately 70 percent of the County landmass, it accounts for only 25 percent of the total sanitary sewer demand; the majority of demand is treated by municipal service providers. Service within unincorporated Monroe County is provided through both private and public facilities. This section references facilities within unincorporated Monroe County only.

### 10.5.1 *Operational Responsibility and Proportional Capacity* *[Rule 9J-5.011(1)(d) and (e), F.A.C.]*

Through the Wastewater Master Plan, many regional improvements including facilities and collection systems have been identified. Both demand and treatment capacities for each service area have been accounted for and tabulated. The summary of capacities for unincorporated Monroe is presented here by region; Upper, Middle, and Lower Keys. A baseline was established using the planned EDU's for each service area and converting to a population. This number was compared against the projected unincorporated functional population distribution by sub-area. In comparing the 2010 population report to the population served within the service areas, the numbers deviate slightly but are within 10 percent. The explanation for this is the exacting nature of delineating service areas vs. the general approach to population on a regional basis. In addition, capacities for service areas do not incorporate those systems to remain on septic through DOH. It should be noted that this comparison is based on planned improvements. The level of completion of improvements within each service area varies.

### 10.5.2 *Service Areas and Predominant Land Use* *[Rule 9J-5.011(1)(e)2., F.A.C.]*

The service areas for unincorporated Monroe County have been separated into Upper, Middle, and Lower Keys to align with the 2010-2030 population projections. These service areas are made up of a combination of public and private systems as follows:

- Upper Keys:       Key Largo Wastewater Treatment District  
                           Ocean Reef (private system)
  
- Middle Keys:      Duck Key Service Area (servicing Duck and Conch Keys)
  
- Lower Keys:       Cudjoe Regional Service Area  
                           Big Coppitt Service Area  
                           Baypoint Service Area (institutional)  
                           Boca Chica Key/NAS (institutional)  
                           Key Haven Service Area (private)  
                           Stock Island (private)  
                           Other miscellaneous private service areas

The limits and location of these service areas are identified on **Map Series 10.1**. Additional development and expansion of service is not expected to occur due to the restricted land use. However, the shift from permanent to seasonal occupation of units results in an increase of the functional population and associated increase in the number of persons per household. This increase translates to approximately a 3.6 percent increase in demand for the Upper, Middle, and Lower Keys.

10.5.3 *Design Capacities of Wastewater Treatment Facilities*  
 [Rule 9J-5.011 (1)(e)3., F.A.C.]

**Table 10.5** identifies the capacity for treatment through various planned improvements. The table depicts capacity in MGD, EDU's, and Population for each service area within unincorporated Monroe County. A conversion factor of 2.27 persons per EDU was used to determine Population Capacity.

**Table 10.5 – Capacity of Unincorporated Monroe County Sanitary Sewer Services Area**

Service Area	Provider	Capacity (MGD)	Capacity (EDU's)	Capacity (Population)*
<b><u>UPPER KEYS</u></b>				
Key Largo	KLWTD	2.30	13,772	31,263
Ocean Reef	NKU UTIL.	0.47	2,814	6,389
<b>SUBTOTAL =</b>		<b>2.77</b>	<b>16,587</b>	<b>37,652</b>
<b><u>MIDDLE KEYS</u></b>				
Duck Key/Conch Key	FKAA	0.28	1,677	3,806
Long Key	Not Applicable (N.A)	N/A	N/A	N/A
<b>SUBTOTAL =</b>		<b>0.28</b>	<b>1,677</b>	<b>3,806</b>
<b><u>LOWER KEYS</u></b>				
Cudjoe	FKAA	1.33	7,964	18,078
Big Coppit	FKAA	0.32	1,916	4,350
Baypoint	FKAA	0.07	419	680
Boca Chica	US NAVY	0.44	2,635	5,981
Key Haven	FKAA	0.20	1,198	2,719
Stock Island	KW RESORT UTIL.	0.45	2,695	6,117
<b>SUBTOTAL =</b>		<b>2.81</b>	<b>16,907</b>	<b>37,924</b>

\*Population + 2.27 persons per EDU

The total capacity by population aligns with the projections for functional population. **Table 10.6** shows a more detailed comparison of population within each service area against capacity.

10.5.4      *Level of Service (2010)*  
*[Rule 9J-5.011(1)(e)4. and 5., and (f)1.a.,F.A.C.]*

Expanding upon **Table 10.5**, **Table 10.6** shows the relationship between the 2010 demands and capacity of planned improvements to accommodate such demands and a percent utilized as an indication of surplus capacity for each service area. Assuming service area capacities properly account for peak flows, a utilization rate of 100 percent indicates that no additional EDU's can be treated without further plant expansion.

**Table 10.6 - 2010 Demand vs. Capacity**

Service Area	Capacity (MGD)	Capacity (EDU's)	Demand (EDU's)	Surplus/Deficit (EDU's)	Percent Utilized
<b><u>UPPER KEYS</u></b>					
Key Largo	2.30	13,772	13,707	<b>65</b>	100%
Ocean Reef	0.47	2,814	1,800	<b>1,014</b>	64%
<b><u>MIDDLE KEYS</u></b>					
Duck Key/Conch Key	0.28	1,677	1,454	<b>223</b>	87%
Long Key	NA	NA	NA	<b>NA</b>	
<b><u>LOWER KEYS</u></b>					
Cudjoe	1.33	7,964	7,987	<b>(23)</b>	>100%
Big Coppitt	0.32	1,916	1,711	<b>205</b>	89%
Baypoint	0.07	419	430	<b>(11)</b>	>100%
Boca Chica	0.44	2,635	2,600	<b>35</b>	99%
Key Haven	0.20	1,198	450	<b>748</b>	38%
Stock Island	0.45	2,695	2,672	<b>23</b>	99%

Following projected growth rates of 3.6 percent for the Upper, Middle, and Lower Keys, **Table 10.7** expands upon **Table 10.6** showing additional demands against capacity of planned improvements.

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**Table 10.7 - 2030 Demand vs. Capacity**

Service Area	Capacity (EDU's)	2010 Demand (EDU's)	2030 Demand (EDU's)*	Surplus/Deficit (EDU's)	Percent Utilized
<b>UPPER KEYS</b>					
Key Largo	13,772	13,707	14,200	<b>(428)</b>	
Ocean Reef	2,814	1,800	1,865	<b>949</b>	66%
<b>MIDDLE KEYS</b>					
Duck Key/Conch Key	1,677	1,454	1,506	<b>171</b>	90%
Long Key	NA	NA		<b>NA</b>	
<b>LOWER KEYS</b>					
Cudjoe	7,964	7,987	8274	<b>(310)</b>	
Big Coppit	1,916	1,711	1,773	<b>143</b>	92%
Baypoint	299	419	445	<b>(26)</b>	
Boca Chica	2,635	2,600	2,694	<b>(59)</b>	
Key Haven	1,198	450	466	<b>732</b>	39%
Stock Island	2,695	2,672	2,768	<b>(63)</b>	

\* 2030 Demand = (1.036) (2010 Demand)

**10.5.5 Performance, Problems, and Opportunities**  
*[Rule 95-5.011(1)(f)2. and 3., FAC]*

The capacities and demands for the previous tables are for planned improvements in various states of completion. A more detailed analysis of existing connections and level of service are identified in the analysis of existing conditions. The primary obstruction hindering implementation has been funding.

All proposed improvements at or above 100 percent utilization should be further analyzed to ensure conformance with future demands. In addition, the reallocation of demands from Permanent to Functional Population and the migration from Upper to Lower Keys may result in the need to confirm plant capacities.

One uncertainty is the impact that the pending EPA Water Quality Standards for the State of Florida's Lakes and Flowing Waters and Marine Systems, 40 CFR, part 131, may have on both existing and proposed facilities. The mandates associated with this program may introduce additional requirements for treatment and result in further improvements to both regional and small private facilities.

**10.6 Policy and Regulations**  
*[Rule 9J-5.011 (2) (c), F.A.C]*

The most significant issue in implementing the proposed wastewater plan is the lack of funding and construction of proposed improvements. Of the total number of EDUs treated through the ongoing programs, only 45 percent have resulted in hook-ups being made.

Some of the recommendations to overcome fiscal impacts suggested in the Master Plan are as follows:

- FKAA and County to pursue uniform fee structure to enable implementation to less dense areas to level out impact and connection fees.
- Pursue State and federal grants with FKAA to supplement costs.
- A Memorandum of Understanding between FKAA and County was established identifying FKAA as the service provider, except for municipal areas.
- Acquire necessary land to accommodate future facilities and expansion.
- Develop standards and hook-up requirements for hot spots in coordination with DOH.

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Supplemental and updated information furnished by Elizabeth Wood, Senior Administrator, Monroe County Sewer Projects (personal communication (email), June 27, 2010)

## CHAPTER 10.0 - SANITARY SEWER – COMMENT RESPONSES

Commenter: Kevin G. Wilson, P.E.- Comments Received: 8/19/2010		
Location	Comment	K&S Response
10.2.1 Federal Regulations	Only Surface waters but the ultimate objective is groundwater & coast waters	Agree, revised as suggested.
10.3 Existing Facilities – General Description	What is the variance issue here? (4 <sup>th</sup> paragraph)	Agree, revised as suggested
10.6 Policy and Regulations	Why does FKAA need to own facilities? Eliminate this bullet.	Agree, removed first sentence of the bullet.
Commenter: FKAA – Comments Received:10/25/2010		
Location	Comment	K&S Response
Table 10.2	Baypoint WWTS is incorrect. Current flow of 25,000 gpd; WWTP capacity ~ 70,000 gpd.	Table revised.
Table 10.2	Coppit EDU's are incorrect. Construction is complete and plant operational.	Table revised to reflect comment.
Section 10.4.2	Revise summary of South Lower Keys (Big Coppit) and Duck/Conch Keys treatment plants to be consistent with table 10.2 and 10.4.	Summaries revised.
Tables 10.5 through 10.7	Inconsistencies and errors.	Data obtained, numbers revised, inconsistencies resolved.

Commenter: Judith Clark, P.E. –  
 Comments Received: 2/1/2011

Location	Comment	K&S Response
Wastewater, 10.1 Page 3	Cudjoe Key Regional should be Cudjoe Regional System. They also state a low cost per EDU of \$5,000; I am not aware of any system being that inexpensive. The amount of assessment that other systems have been assessed is that low, \$4,500, but the rest of the cost is subsidized. I'm not sure where that number came from.	Verbiage added identifying County's policy toward subsidizing projects to lower costs to residents.
10.2.2.2 Page 5	The information in the Rule has been changed; we have a conference call this Thursday I think. You probably know that already, but that section will need updating.	Rules have been modified as noted.
10.3.1 Page 11	Aerobic Treatment Units. The text of this paragraph doesn't seem to really address ATUs. Not sure what intent was/is.	Text modified as noted.
10.4.2.9 Page 19	North Lower Keys s/b Big Pine, not Pines. This area is now part of the Cudjoe Regional System. It is under design; construction is on hold until funding sources identified.	Status modified as noted.
10.4.2.9 Page 20	Middle Keys and Lower Sugarloaf are both part of the Cudjoe Regional System. It will be AWT, it is being designed; construction on hold until funding sources identified.	Text modified per comment.

<p>Commenter: Judith Clark, P.E. (cont'd)-  Comments Received: 2/1/2011</p>		
Location	Comment	K&S Response
	<p>There was originally a plan for a couple of separate plants; it was in April 2008 I believe, that we had the Consultant do an analysis and they determined it was more cost effective to combine the area into one regional plant. This is a change from the Master Plan.</p>	<p>Comment noted. No change to text.</p>
<p>10.4.2.9  Page 20</p>	<p>Duck and Conch Keys – It says facility constructed, secondary treatment. Currently this facility is being expanded to treat the residents on Duck Key and it is being upgraded to AWT standards.</p>	<p>Text modified per comment.</p>
<p>Commenter: Planning Commission Meeting Member Denise Werling  Comment Received: January 12, 2011</p>		
Location	Comment	K&S Response
<p>10.2.4  Page 18</p>	<p>The Navy owns the capacity of the City by 23%.  4 million are actually 10 million gallons/day</p> <p>Pg 10-20 include Boca Chica capacity</p>	<p>Comment unclear and contradicts information provided for both the City and Navy facilities. Understand the comment to say that Key West plant capacity is approximately 10MGD with approximately 2.3MGD going to the Navy. Statement contradicts previous information showing City's capacity at 4MGD and Navy's demands of approx. 0.4MGD. This statement seems to suggest that City has excess capacity of 6MGD and that 2.3 of the 6 is dedicated to the Navy.</p>

Commenter: Elizabeth Woods, Senior Administrator, Monroe County Sewer Projects  
 Comments Received: June 27, 2011

Location	Comment	K&S Response
<b>Section 10.0 Sanitary Sewer</b>	Multiple entries of updated information with preferred language revisions recommended throughout document including formatting, punctuation, etc.	Agreed, revised as requested.
<b>Table 10.2 Page 13</b>	Table 10.2 Service Area per Sanitary Service Provider Revised numbers throughout Table relating to Total EDUs, Treatment Capacity, etc.	Agreed, revised as requested.
<b>Section 10.4.2 10.4.2.1 thru 10.4.2.9 Pages 14 - 21</b>	Wastewater Facilities EDUs, Treatment Capacity and Status updated information for each service area.	Agreed, revised as requested.

Commenter: Ron Demes, NAS Key West  
 Comments Received: Via Email June 27, 2011

Location	Comment	K&S Response
<b>Section 10.4.2.4</b>	Key West wastewater treatment plan update as follows: 1. Permitted capacity 10.0 MGD 2. There are two injection wells.	Agreed, revised as requested.

	<ol style="list-style-type: none"><li>3. There is a current headworks project (Januay 2011).</li><li>4. The Navy owns 23% of the capacity of the Plant.</li></ol>	
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