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## **INFRASTRUCTURE ELEMENT**

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### **DATA INVENTORY AND ANALYSIS**

#### **Purpose**

The purpose of the Infrastructure Element is to provide for necessary public facilities and services correlated to future land use designations. This element addresses general utilities which are provided by or managed by the County. These include:

- Potable Water
- Solid Waste
- Drainage and Natural Groundwater Recharge
- Sanitary Sewer

### **POTABLE WATER SUBELEMENT**

#### **Introduction**

The Potable Water Sub element provides a summary of existing potable water supplies and treatment facilities in St. Lucie County. These facilities include municipal regional systems and area or development - specific systems, in addition to systems for individual residences. Only a small portion of the unincorporated county is currently serviced through County owned services (primarily the Holiday Pines development), and North Hutchinson Island. A bulk user agreement is in place with the Fort Pierce Utilities Authority (FPUA) to provide service in portions of the County's northern service area within the Urban Service Boundary. FPUA also serves customers within its retail service area. The Port St. Lucie Utility Systems Department provides service in the southeast portion of the County within their designated service area. The majority of the residential supply within the unincorporated county is provided by private wells, and treatment systems. The needs for the County's future are discussed, with goals, objectives and policies focusing on specific activities which will remedy those needs.

#### **Existing Planning Documents**

St. Lucie County completed the Water and Wastewater Master Plan in October of 2008 and the 10-Year Water Supply Facilities Work Plan in December of 2008 which will serve as the overall planning documents for potable water facilities. The two (2) major municipalities within the County, Fort Pierce and Port St. Lucie, have regionalized potable water treatment and distribution systems.

St. Lucie County Utilities (SLCU) is currently developing a regional water treatment and distribution system to serve unincorporated areas of the County within the urban service boundary. The City of Fort Pierce completed a master plan update for water and wastewater in September 2006. The Fort Pierce Utility Authority completed its Water Supply Facility Work Plan in December 2007 and the City of Port St. Lucie completed theirs in November 2007.

## Geographic Service Area

Figure 2-1 in the Water Supply Facilities Work Plan outlines general areas of potable water service for the major regional facilities now operating in the County. The major regional facilities supplying unincorporated St. Lucie County are:

- St. Lucie County Utilities (SLCU)
- Fort Pierce Utilities Authority (FPUA)

## Regional Facilities

**St. Lucie County Water and Sewer District** (*formerly known as Holiday Pines Service Corporation*): In July 1999, SLCU acquired the Holiday Pines Service Corporation. The service area for the St. Lucie County Water and Sewer District includes the Holiday Pines subdivision and some commercial and residential areas fronting Kings Highway and Indrio Road, as well as North Hutchinson Island. In August 2005, the North Hutchinson Island Utility District, Airport Utility District, North County (Holiday Pines) Utility District, Mid County District, Indian River Estates Municipal Services Benefit Unit (MSBU) District and H.E.W. Utility District were consolidated into the St. Lucie County Water and Sewer District.

SLCU owns and operates a water treatment plant with a permitted capacity of 0.288 MGD (Holiday Pines WTP). Average daily flow at this facility in 2006 was 0.124 MGD. Plans are currently underway to increase the Holiday Pines WTP capacity to 0.5 MGD.

North Hutchinson Island Utility District (now a part of the St. Lucie County Water and Sewer District as noted above): In 1991, SLCU acquired the Bryn Mawr and North Hutchinson Island Water and Wastewater Utilities and expanded them to form a regional water and wastewater utility serving all of North Hutchinson Island. The North Hutchinson Utility District purchases potable water from FPUA and resells the water to its customers on North Hutchinson Island.

North Hutchinson Utility District offers potable water to North Hutchinson Island from North A1A / Little Jim Bridge north to approximately 2.2 miles south of the County line. Construction is currently underway to extend this service north to the County line.

**South Hutchinson Island (SHI) District Wastewater Utility:** The County owns and operates a 1.6 MGD water reclamation facility on SHI to serve the properties within the SHI MSBU. Potable water service for this area is provided by FPUA.

**Fort Pierce Utilities Authority:** The Fort Pierce Utilities Authority, (FPUA) maintains a twenty (20) million gallon per day (MGD) potable water treatment plant referred to as the Henry A. Gahn Water Treatment Plant (WTP) located on 25<sup>th</sup> Street in Fort Pierce. This facility consists of two separate WTPs, one lime-softening and one reverse osmosis (RO), with a combined permitted capacity of 18.99 MGD. Raw water is obtained from several municipal wellfields consisting of both surficial aquifer and Floridan aquifer wells and is processed for potable water use at the WTP.

In 1999, the FPUA announced plans to complete a 4.0 MGD RO expansion to the existing facility, bringing the total plant capacity to 25.2 MGD. An additional 2.0 MGD filter system in the future will increase the permitted treatment capacity to 27.2 MGD.

The production capacity of this facility is presently permitted 17.9 MGD by the South Florida Water Management District water use permit. The first phase of expansion occurred in late 2000, with future expansion plans being adopted.

This facility currently provides water service to the City of Fort Pierce and adjacent unincorporated areas, including most of South Hutchinson Island to the Martin County line, and to areas north, west, and south of the City limits. The water service boundary is approximately bounded by Midway Road to the south (and, on South Hutchinson Island by the Martin County line); by the Turnpike to the west; by St. Lucie Boulevard to the north; and by the Atlantic Ocean to the east. FPUA has entered into a bulk agreement with the County to serve some of these adjoining properties. Properties located adjacent to and nearby Fort Pierce are responsible for locating and maintaining their own water supplies. These on-site water supplies normally obtain their water from shallow aquifer wells.

### **Private Utilities with Capacities Greater than 0.1 MGD in Unincorporated St. Lucie County**

***Spanish Lakes Mobile Home Park:*** The Spanish Lakes Mobile Home Park is owned by the Wynne Building Corporation. Potable water service is provided via an on-site RO WTP. As of February 2008, the RO system construction is not fully complete, but is operating with FDEP permission. Raw water is provided via four (4) surficial aquifer wells. The permitted capacity of the WTP is 0.33 MGD. The existing population within the mobile home park is two thousand, four hundred and seventy (2,470) (1,300 lots), which is anticipated to increase to three thousand, forty (3,040) in 2010.

***Spanish Lakes Fairways:*** Spanish Lakes Fairways is a private adult community located in the northwest portion of the County's mainland St. Lucie County Water and Sewer District service area. The sixteen hundred (1,600) unit development reached a build-out population of thirty-two hundred (3,200) people in 2004 and has no plans for further expansion. The development owns and operates a water treatment plant that provides potable water service via an on-site RO WTP with a permitted capacity of 0.570 MGD. Raw water is supplied to the water treatment plant by four (4), eight (8)-inch wells constructed into the surficial aquifer. The maximum day demands are well within the plant's permitted capacity.

***Panther Woods:*** Panther Woods, formerly Meadowood Golf and Country Club, owns and operates a lime softening WTP that is permitted to produce up to 0.432 MGD of potable water. The historical peak day production is approximately 0.2 MGD. The WTP, fed by four 8-inch surficial aquifer wells, was recently refurbished and start-up took place in January 2008.

### **Water Supply Wells**

There is an increasing trend in the County to shift from the use of shallow groundwater, or the surficial aquifer, to the deeper Floridan aquifer. The Floridan aquifer wells are generally located in the coastal areas. The majority of the water supply wells in St. Lucie County presently draw water from the surficial aquifer. The wells located in the surficial aquifer range in size from one-inch, for the low demand systems, such as a home or small business, to twenty-four (24) inches for the larger demand regional systems. Also in service in the County are deeper wells which are fed from the Floridan aquifer.

The larger surficial wells are primarily used to supply water to package plants and regional facilities. A large number of the smaller surficial wells are concentrated in residential developments that are not served by any regional water or wastewater facility. Many of these wells exist on one quarter (1/4) - acre lots which generally also have on-site septic systems for their wastewater disposal.

The Floridan aquifer wells are generally located in the coastal areas. On South Hutchinson Island, Ocean Towers and Miramar condominiums use Floridan aquifer wells for their private WTPs. FPUA has recently received a water use permit from the SFWMD to construct Floridan aquifer wells that will allow FPUA to blend treated water from the Floridan aquifer with water from the surficial aquifer. FPUA currently operates thirty-five (35) surficial aquifer wells and nine (9) Floridan aquifer wells, and is currently in the process of constructing two (2) additional Floridan aquifer wells. The City of Port St. Lucie has a combined system consisting of thirty-four (34) surficial aquifer wells, eleven (11) existing Floridan aquifer wells and six (6) proposed Floridan aquifer wells. St. Lucie County operates two (2) surficial aquifer wells that serve the Holiday Pines water treatment plant, and the water use permit from the SFWMD will allow for up to twenty-five (25) future Floridan aquifer wells to supply three (3) to four (4) regional water treatment plants at build out of the unincorporated area.

The County has a Wellfield Protection Ordinance in place for the protection of public water supply wells. The ordinance provides for required setbacks from supply wells and regulates land uses to prevent contamination of the water supply. See Map FLU-12 for the Wellfield Protection Zones.

### **Water Quality**

Water quality ranges from fair in the southeast mainland part of the County to brackish in the northwestern part of the County. The poorer water quality has been associated with the use of the brackish artesian Floridan aquifer for irrigation of citrus. Drilling records indicate that there is also an area of naturally existing saltwater extending from the vicinity of St. Lucie Village to the northern and eastern shores of Lake Okeechobee. The concentration of minerals in the connate water increases with depth to the base of the shallow aquifer and at that point it exceeds the mineral content of the artesian aquifer.

The artesian aquifer system is part of an extensive carbonate rock aquifer system that underlies most of Florida. In St. Lucie County, the artesian Floridan aquifer has three distinct producing zones of different hydrologic properties and water quality separated by semi-permeable zones. The upper producing zone of Zone 1 has the best water quality, but it is too brackish for domestic or public water supply without proper treatment (i.e. RO membranes). The water from Zone 1 is suitable for stock watering and some crops, most notably citrus. Most of the artesian wells in the County are developed in Zone 1 of the Floridan aquifer. The water quality in the upper portion of this aquifer in St. Lucie County is fair to poor as potable water, without treatment via a membrane system (such as RO). With proper treatment, the Floridan aquifer water is ideal for potable use.

The surficial aquifer is recharged through local area rainfall. In periods of prolonged drought, water supplies can become a concern. There is no natural groundwater recharge to the Floridan aquifer in St. Lucie County. The Floridan aquifer in St. Lucie County is believed to be recharged in the regions of West Central Florida (Polk, Lake and Orange Counties). The quality of water in the surficial aquifer is generally good.

**Needs Assessment**

The County presently has potable water service provided by three major utilities, several medium sized utilities, small package plants, and domestic wells. This section examines the needs of those areas in the County which are not included in a major or medium-sized utility service area and which have been determined to be potential high growth areas or areas with identified problems.

The future land use plan for St. Lucie County identifies several higher density residential and commercial areas. Of the land uses identified, classifications which would be dense enough to require some form of regional or sub-regional public water supply are medium and high density residential, commercial, industrial and mixed use.

Much of the area east of I-95 is served by SLCU (the consolidated St. Lucie County Water and Sewer District), FPUA, Martin County (South Hutchinson Island) and Port St. Lucie Utility Systems Department (St. Lucie West). The far western area of the County is planned as agricultural. Much of the area just west of Interstate 95 has been acquired by developers. Proposed developments in this area are in various stages of approvals and several may require land use designation changes through the Department of Community Affairs. In anticipation of these areas being developed, SLCU is planning a series of three (3) to four (4) regional WTPs to provide service in the North, Central, and South County Service Areas.

**Level of Service Analysis**

The Level of Service and capacity analysis based upon future demand is contained in Section 4 of the 10-Year Water Supply Facilities Work Plan. The analysis shows sufficient capacity for the short term and long term planning periods.

**Capital Improvement Projects**

The CIE provides details of the planned capital improvement projects, the absence of which will impact the ability of the County to provide the required LOS. Table 4A-1 shows the planned capital projects within the planning period.

<b>Table 4A-1 Capital Improvement Projects</b>						
<b>Project #</b>	<b>Project Title</b>	<b>FY2011</b>	<b>FY2012</b>	<b>FY2013</b>	<b>FY2014</b>	<b>FY2015</b>
3600-3616	North County Water Treatment Plant		\$250,000	\$13,000,000	\$11,750,000	

The North County Water Treatment Plant Project will construct a 4 MGD reverse-osmosis (RO) WTP.

## **SOLID WASTE SUBELEMENT**

### **Introduction**

St. Lucie County has been operating its present landfill since 1978. In 1990, the County retained the firm of Camp Dresser & McKee (CDM) to prepare a Solid Waste Management Master Plan and Build-Out Plan of the current Baling and Recycling Facility site. An updated Build-Out Plan was prepared by CDM in August, 2005. This plan along with the August 2007 Baling and Recycling Facility Useful Life Projections (CDM, 2007) was used extensively for the preparation of this subelement.

For the purpose of this element, the term solid waste excludes hazardous waste and has been used to include the following classifications which indicate general characteristics of the materials and their sources of generation. Residential wastes are mixed household wastes, including yard trash generated by the general population. Commercial wastes are generated by the commercial and institutional sectors. Physical characteristics of these wastes are similar to those of residential wastes, in that they consist largely of combustible materials in the form of paper and food waste from offices, restaurants, retail establishments, schools, hospitals, motels, and churches. Industrial wastes include wastes generated by industrial processes and manufacturing operations, excluding hazardous wastes. These wastes also include general industrial housekeeping and support activity wastes. Class I waste includes all residential/commercial solid waste. Construction and Debris (C & D) wastes are debris from construction sites.

The term landfill refers to the final disposal site of solid wastes and, as it implies, involves the burial of the wastes. Landfills are classified for regulatory purposes according to the characteristics of the wastes they are permitted to receive.

### **Existing Solid Waste Disposal Facilities**

Currently, solid wastes received by the County are disposed of at the St. Lucie County Baling and Recycling Facility, which is the only solid waste disposal facility currently permitted in the County. The County expects to continue to operate a landfill for the entire County indefinitely since the 1988 Solid Waste Management Act discourages municipalities from operating such facilities. The City of Port St. Lucie has an Interlocal Agreement which allows them to use the County facility. The County is desirous of establishing with the City of Fort Pierce a similar Interlocal Agreement. The current site, which was purchased with Federal Revenue Sharing Funds in 1977, is located between the Florida Turnpike and Interstate 95 in Sections 35 and 36, Range 39 East, Township 35 South.

In the past, private haulers operated a number of other landfills throughout the County which have since either closed or become non-operational.

### **Baling and Recycling Facility Site**

The present location of all solid waste disposal in the County is a three hundred and thirty three (333) - acre parcel of land located southwest of the City of Fort Pierce. The primary use of this landfill is as a municipal solid waste disposal (residential and commercial) and recycling facility. To determine the proportional capacity of the Baling

and Recycling Facility that has been allocated to serve the City of Port St. Lucie, City of Fort Pierce, St. Lucie Village, and the unincorporated areas, the population estimates from the Florida Estimates of Population, March, 2009 (BEBR, 2009) report were used with the level of service standard determined by 8 year average generation rate as 5.10 pounds/capita/day for Class I waste to estimate the amount of waste produced. The level of service provided for C&D debris was 2.80 pounds/capita/day, which was calculated in a similar manner.

The Class I landfill area is planned in six phases in addition to other ancillary areas. The Baling and Recycling Facility consists of (Phase I) 28-acre, (Phase II) 28-acres, (Phase III) 25-acres, (Phase IV) 21-acres, (Phase V) 21-acres, (Phase VI) 9.9 - acres of fill area for Class I garbage that is or will be permitted by the Florida Department of Environmental Protection under Permit No. 0126814-011-SC dated January 19, 2007. A summary of the acreage dedicated to each of the major land uses is shown in Table 4B-1.

Closure has been completed for Phase I, including capping the fill with a polyethylene liner. Phase II and Phase IIIA are currently active and accepting Class I waste. Phase IIIB was constructed in 2007 and is now receiving Class I waste.

<b>Table 4B-1</b>	
<b>ST LUCIE COUNTY BALING AND RECYCLING FACILITY PLANNED LAND ALLOCATION</b>	
<b>Planned Use</b>	<b>Size</b>
Class I Landfill - Phase I	28.0 acres
Class I Landfill - Phase II	28.0 acres
Class I Landfill - Phase III	25.0 acres
Class I Landfill - Phase IV	21.0 acres
Class I Landfill- Phase V	21.0 acres
Class I Landfill – Phase VI	9.9 acres
C&D Debris Landfill	35.0 acres
C&D Debris Processing Facility	3.5 acres
Stormwater	73.2 acres
Baling Facility	8.0 acres
Maintenance Facility	5.0 acres
Utilities Facility	5.0 acres
Leachate Management	10.0 acres
Roads, Drainage and Buffer Areas	60.3 acres
Landfill Gas Management	0.1 acres
<b>Total Proposed Area</b>	<b>333.0 acres</b>

Source: CDM, Build-Out Plan, August 2005

**Class I Development:** The Phase I fill area was closed in 1987. The FDEP permitted finished height was ninety five (95) feet above existing grade in addition to a three (3)-foot access road dike on top of the fill area. Phases II and III are active and currently receiving waste. The useful life the Class I landfill at Baling and Recycling Facility is estimated to be exhausted in year 2047, assuming current operations continue. The remaining capacity of the Class I landfill is shown in Table 4B-2.

<b>Table 4B-2</b>	
<b>BALING AND RECYCLING FACILITY SITE, CLASS I – BUILD OUT, REMAINING CAPACITY</b>	
Remaining capacity (in cubic yards) of the Class I Landfill	15,598,190
Number of years of capacity remaining	37

Source: CDM and Calvin Giordano & Associates, 2009

**C&D Debris Development:** The C&D debris landfill is currently active and receiving waste. The useful life of the C&D debris landfill at the Baling and Recycling Facility site is estimated to be exhausted in year 2024, assuming current operations continue. As of January 2010, an estimated 1,179,103 cubic yards of capacity was filled. The C&D debris landfill is estimated to have a capacity of 2,928,704 cubic yards. Codisposal of C&D debris with Class I waste and/or reallocation of future landfill phases are options currently under investigation for future C&D debris disposal. The remaining capacity of the C&D debris landfill is shown in Tables 4B-3, and 4B-4.

<b>Table 4B-3</b>			
<b>BALING AND RECYCLING FACILITY C&amp;D DEBRIS REMAINING CAPACITY</b>			
<b>Year</b>	<b>Event</b>	<b>Capacity added or subtracted (CY)</b>	<b>Capacity Remaining (CY)</b>
2010	Waste Received	(102,977)	1,646,624
2011	Waste Received	(105,686)	1,540,937
2012	Waste Received	(108,396)	1,432,542
2013	Waste Received	(111,105)	1,321,437
2014	Waste Received	(113,814)	1,207,622
2015	Waste Received	(116,524)	1,091,098
2016	Waste Received	(119,590)	971,508
2017	Waste Received	(122,657)	848,851
2018	Waste Received	(125,724)	723,127
2019	Waste Received	(128,790)	594,337
2020	Waste Received	(131,857)	462,480
2021	Waste Received	(134,901)	327,579
2022	Waste Received	(137,945)	189,634
2023	Waste Received	(140,990)	48,644
2024	Waste Received	(144,034)	-

<b>Table 4B-4</b>	
<b>BALING AND RECYCLING FACILITY, BUILD-OUT, C&amp;D REMAINING CAPACITY</b>	
Remaining capacity (in cubic yards) of the C&D Landfill	1,749,601
Number of years of capacity remaining	14

Source: CDM and Calvin Giordano & Associates, 2009

### Needs Assessment

St. Lucie County has solid waste disposal facilities to satisfy the needs of the County for the short term planning period. The County will need to assess disposal options in the year 2024. The projected waste tonnages for the Class I and C&D debris landfill is shown in Tables 4B-5 and 4B-6.

**Table 4B-5  
PROJECTED WASTE TONNAGE FOR CLASS I WASTE, 2011-2030, ST. LUCIE COUNTY**

<b>Fiscal Year</b>	<b>Population (A)</b>	<b>Incoming Class I Tonnage (B)</b>	<b>Class I Tonnage Adjusted for Recycling (C)</b>	<b>Annual Volume (CY) (D)</b>
2011	283,980	279,535	273,945	311,478
2015	313,100	308,200	302,036	343,417
2020	354,300	348,755	347,780	388,607
2025	395,200	389,015	381,234	433,467
2030	434,100	427,306	418,760	476,134

- (A) Population: University of Florida, Bureau of Economic and Business Research, Medium Projection
- (B) Class I tonnage: Based on the population projections in conjunction with per capita generation rates (LOS) of 5.10 lbs/person/day.
- (C) Equals tonnage reduced by 2 percent to account for recycling of metal and cardboard.
- (D) Based on an in-place compacted density, including cover material, of 1,944 lbs/yd<sup>3</sup> (5-year average).

Source: CDM, Calvin Giordano & Associates, 2009

**Table 4-B-6  
PROJECTED WASTE TONNAGE FOR C&D DEBRIS,  
ST. LUCIE COUNTY**

<b>Fiscal Year</b>	<b>Population (A)</b>	<b>Incoming C&amp;D Tonnage (B)</b>	<b>C&amp;D Tonnage Landfilled (C)</b>	<b>Annual Volume (CY) (D)</b>
2011	283,980	145,213	72,607	105,686
2015	313,100	160,104	80,052	116,524
2020	354,300	181,171	90,586	131,587
2025	395,200	202,086	101,043	147,078
2030	434,100	221,977	110,989	161,555

- (A) Population: University of Florida, Bureau of Economic and Business Research, Medium Projection
- (B) Incoming C&D tonnage is estimated based on population and the current C&D debris LOS.
- (C) Assumes 50 percent of the waste stream will be recycled.
- (D) Values based on an in-place compacted density, including cover material, of 1,374 lbs/yd<sup>3</sup> (5-year average).

Source: CDM, Calvin Giordano & Associates, 2009

### **Future Waste Stream Reduction**

The County is exploring Plasma Arc Gasification to reduce the amount of the waste stream that is currently being landfilled and to extend the useful life of the Bailing and Recycling Facility.

## **DRAINAGE AND NATURAL GROUNDWATER AQUIFER RECHARGE**

### **Surface water**

Prior to man's alteration, the areas that presently comprise St. Lucie County had drainage patterns that were controlled by the County's primary topographic feature, the Atlantic Coastal Ridge and the more subtle features such as the Green Ridge (south/central County), the Osceola Plain (southwest County), and Ten-Mile Ridge (north/central County). Overall, the County gently slopes from west to east. Elevations range from about 60 feet, in the western portion, to sea level along the Atlantic coastal beaches, with scattered peaks associated with the above described ridges. The alignment of these surface ridges parallels the existing coastline and serves to impede east/west sheetflow.

The St. Johns Marsh, Allapattah Flats, and the Savanna areas are wetlands formed by these natural impediments. The Allapattah Flats area is located in the southwestern portion of the County. This area drains predominantly, to the south/southeast, discharging into the area now occupied by the C-23 Canal. Portions of the St. Johns Marsh drain to the south into what is now the C-25 Canal basin. Water entering the Savannas normally percolated through the Atlantic Coastal Ridge to the Indian River, but during extremely high water stages there could be overflow to the North Fork of the St. Lucie River (NFSLR), through Platts Creek and several small sloughs. These wetland marshes store water and are believed to provide recharge to the shallow aquifer. The remaining central portions of the County serve as the watershed for the upper reaches of the North Fork of the St. Lucie River.

There are other minor drainage ways where the Atlantic Coastal Ridge has been breached, such as Moore's Creek in Fort Pierce, but the areas drained are not very large and of no major significance on the overall drainage system for the County. The areas east of the Atlantic Coastal Ridge and along the barrier island are not included within any of the major drainage basins of the County. Stormwater discharge in these areas is essentially direct to the primary receiving body, the Indian River Lagoon or Atlantic Ocean.

The stormwater detention time for most of St. Lucie County, prior to man's alteration, was extremely long. The natural features and drainage ways are still apparent on satellite imagery. However, today, the North Fork of the St. Lucie River still serves as the major, and least altered, natural drainage feature in the County.

### **Manmade drainage systems**

Major surface drainage modifications to St. Lucie County commenced with the formation of the North St. Lucie River Water Control District (1917) and the Fort Pierce Farms Water Control District (1919). These Districts were created for the purpose of agricultural drainage and irrigation, with a secondary purpose being flood control activities.

During the 1940s, the U.S. Army Corps of Engineers (COE) channelized portions of the North Fork of the St. Lucie River in an effort to improve its water-carrying capacity and to accelerate its speed or discharge into the Atlantic Ocean. During the 1960s, the COE constructed Canals C-23, C-24, and C-25, along with their control structures. With the construction of this Primary Canal system for the South Florida Water Management District, the County was then divided into a series of Sub-Basins.

The C-25 Basin is located in the northwestern St. Lucie County and extends into parts of Okeechobee and Indian River County. This area is dominated by agricultural uses consisting of either citrus or ranching activities. The canal system in this area was designed to support agricultural activities. Although not the case in St. Lucie County, the western portions of this overall basin do not have any significant flood control protection, which could in times of extreme rainfall have detrimental effects in the downstream areas. With the absence of any significant urban development, local flooding is not presently a major problem in that on-site design requirements meet the current need. However, as elaborated further in this element, there is a need for a countywide review of this community's future drainage management requirements and this review will have to include the portions of this that lie outside of the County.

The C-24 Basin is located in the Central and West-Central portions of the County. This basin may further be divided into three subgroups: emerging urban (east one-third), citrus (central one-third) and ranching (west one-third). One of the primary purposes of this basin is to regulate the level of ground water, through the controlling effects of the S-49 control structure and to prevent the intrusion of saltwater into the local groundwater supplies. When initially constructed, this basin was designed to accommodate the agricultural needs of the area. The emergence of significant urban development may possibly cause a negative downstream impact, affecting the ability to efficiently move the water from the upper reaches of the Basin.

The C-23 Basin is located in the south and southwestern portion of the County. This basin serves the agricultural needs of the southwest area. However, a significant portion of the basin is located in Martin County. This area is, at present, used for agricultural purposes, although, its eastern edges face the potential impacts of future urban development. These emerging areas will have to be accommodated for through the development of interlocal agreements between all affected parties addressing the issue of urban discharge.

The North Fork of the St. Lucie River Drainage Basin is located in the most populous part of St. Lucie County. This drainage basin includes within it the North St. Lucie River Water Control District, along with portions of the City of Port St. Lucie. As mentioned previously, in the 1940's the main river course was channelized by the Army Corps of Engineers. This channelization was effective in increasing the rate of water removal from the basin, but it also allowed for the increased collection and transmission of silt and other debris, affecting not only the long term carrying capacity of the North Fork itself, but also contributing to the accelerated siltation of the lower reaches of the St. Lucie River.

The North Fork basin can be characterized as dominated by urban uses. What agricultural activities remain are in the western reaches of the district. However, it should be noted that although the basin serves an urban environment, the drainage design of this basin is based upon agricultural needs. This area has been the focus of several studies, evaluations and demonstration projects in recent years, attempting to improve upon its overall efficiency. As discussed later in this element, these efforts need to be continued and expanded.

The Taylor Creek-Nubbins Slough (C-59 Basin) basin area is located in extreme southwestern St. Lucie County. This basin affects only 9.5 square miles of the County. Activities in this area are ranching with the remaining property being undeveloped/vacant. There is effectively no impact upon the balance of the County by

this basin since its flows are to the west and the Lake Okeechobee area. However, as addressed in the goals, objectives and policies portion of this element, attention to this area is needed on water-quality issues.

Except for those efforts in Fort Pierce and Port St. Lucie, almost all of the surface drainage modifications that have taken place have been designed for agricultural land uses, or approximately a ten-year-24-hour storm event. As these agricultural lands have become more urbanized, the volumes of stormwater have increased and runoff times have decreased, resulting in more frequent periodic local flooding.

Because the more urbanized areas of the community are located in the downstream areas of much of the drainage system, the potential for urban area flooding has increased.

### **Groundwater**

There are two distinct sources of groundwater in St. Lucie County: the shallow unconfined or semiconfined aquifer, and the deep artesian Floridan Aquifer. These aquifer systems are separated by a layer of relatively impermeable green clay known as the Hawthorne Formation, which is about 400 feet thick and starts at approximately 150 to 180 feet below the average land surface.

The shallow aquifer system is comprised of one to five feet of fine-grained sands and silts of the Pimlico Sand that overlie the Anastasia Formation. The Anastasia Formation consists of interbedded layers and lenses of sand, shell beds, sandy limestone, and sandstone. Beds and lenses tend to be elongated in a direction that parallels the coast. Most of the permeable zones, which are primarily shell beds, are thin and, as a result, well yields are low to moderate. (USGS, 1972).

Water quality is variable in the shallow aquifer due to natural and artificial causes. Water quality ranges from fair in the southeast mainland part of the County to brackish in the northwestern part of the County. The poorer water quality has been associated with the use of the brackish artesian aquifer for irrigation of citrus. However, drilling records and well water analysis indicate that there is also an area of connate saltwater that extends from the vicinity of St. Lucie Village to the northern and eastern shores of Lake Okeechobee. The concentration of minerals in the connate water increases with depth to the base of the shallow aquifer and at that point it exceeds the mineral content of the artesian aquifer.

The artesian aquifer system is part of an extensive carbonate rock aquifer system that underlies most of Florida. In St. Lucie County, the artesian Floridan (sic) Aquifer has three distinct producing zones of different hydrologic properties and water quality separated by semipermeable zones. The upper producing zone, or Zone I, has the best water quality, but it is too brackish for domestic or public water supply. The water from Zone I is suitable for stock watering and some crops, most notably citrus. Most of the estimated 1,300 artesian wells in the County are developed in Zone I of the Floridan Aquifer. There is no natural groundwater recharge to the Floridan Aquifer in St. Lucie County. Producing zones, water quality, and other technical data are more extensively described in the SFWMD Technical Map Series 70-1. (SFWMD, 1979)

Agricultural drainage projects between the urbanized coastal areas and Canals C-23 and C-24 have impacted the major sources of groundwater recharge to the shallow aquifer and lowered the water table. Areas such as the St. Johns Marsh and the Allapattah Flats, which previously stored a large amount of water above the land surface to provide the hydraulic gradient needed to recharge the slightly permeable surficial aquifer have been drained for agricultural purposes. The Allapattah Flats west of the SFWMD canals and the remaining portions of the St. Johns Marsh still provide some degree of recharge, but the major sources for St. Lucie County are the St. Johns Marsh in Indian River County and the Orlando Ridge extension of the Osceola Plain (a marine terrace) in southwestern St. Lucie County and eastern Okeechobee County. The impacts of the construction of the canal drainage system on the groundwater contour levels in the County are illustrated.

From inspection of these diagrams it can be seen that the groundwater flow from the western half of the County is effectively being intercepted by these major canals. This interception is then depriving the wellfields in the central and eastern regions of the County from a source of replenishment. As a result, recharge areas will need to be located and protected near the centers of the drainage basins to optimize their effects.

The distance between water-level contours, when matched with the hydraulic gradient of topographic relief, indicates the relative permeability of the surficial aquifer: the greater the distance between contours, the higher the permeability. This is exemplified in the area bounded by SFWMD C-23 and C-24 canals, where the land surface has little relief and the water level contours are miles apart.

Many secondary drainage systems have been constructed for agricultural drainage. However, most of these secondary systems are shallow and are designed to prevent ponding. This impacts the groundwater recharge. Because of the lack of recharge and the low permeability of the soils, the shallow aquifer provides insufficient water for irrigation during the extended dry season. SFWMD Canals C-23, C-24 and C-25 serve as linear storage reservoirs and provide irrigation supply for many areas although, in extreme periods of drought, they too may only be used in a minimal capacity due to the lack of surface water.

To compensate for this, many agricultural operations will use the Floridan Aquifer for much of their irrigation demand. The problem associated with the use of this aquifer area is irrigation return (excess) flows from the Floridan Aquifer water are mineralized. These flows in turn mineralize the receiving canals.

### **Natural Groundwater Recharge**

Currently, there are no defined aquifer recharge areas in the County. The South Florida Water Management District through the Upper East Coast Water Supply Plan, is attempting to identify the aquifer recharge areas in the County, in addition to identifying the areas where existing problems are occurring and area that may have future problems. The County will continue to monitor the Water Management District as they work to define these areas.

Additionally, the Floridan Aquifer is not recharged within St. Lucie County, but rather primary recharge of that aquifer occurs in the more central portions of the State.

## **Local Drainage Issues**

On the average, St. Lucie County receives about 53 inches of rain per year primarily during the period from June to October. It is recognized that from time to time, portions of the County will experience flooding problems as a result of heavy rainfall. Much of the local flooding that occurs can be attributed to development carried out before the advent of contemporary stormwater management practices. Most of the drainage problem areas are located in the North Fork Drainage Basin. However, there are documented problems in other parts of the County as well.

St. Lucie County has continued to work on drainage improvement projects that are designed to provide relief to small areas of the community. These improvements are not intended to be a comprehensive cure for the problem because they are limited in the areas they impact. The improvements are not system-wide and as such will have little wide-ranging impact. However, if successful, they should provide a degree of intermediate relief of limited scope and duration to the afflicted area.

## **Drainage Improvements**

### **Ten Mile Creek Regional Attenuation Facility**

The Ten Mile Creek Water Preserve Area attenuates summer stormwater flows into the North Fork of the St. Lucie River Estuary which originate in the Ten Mile Creek basin by capturing and storing the passing stormwater. The sedimentation of suspended solids that occurs in the storage reservoir reduces sediment loads delivered to the estuary. In addition, the captured stormwater is passed through a polishing cell for additional water quality treatment before being released into the North Fork. Stored water can be released in the drier winter months to augment current insufficient flows. Stabilizing the salinity concentration will greatly enhance the Estuary's ability to support sea grasses, oysters, and nursery grounds for marine fish.

Ten Mile Creek is the largest sub-basin delivering water to the North Fork of the St. Lucie River Estuary, which has been established as an Outstanding Florida Water (OFW). The St. Lucie Estuary discharges into the Indian River Lagoon, which is also an OFW. The Indian River Lagoon is the most biologically diverse estuary in North America. The entire Lagoon is endangered from increased runoff from watershed drainage enhancements. Excess stormwater due to drainage improvements is causing radical fluctuations of the salinity concentration in the St. Lucie Estuary. Storage of excess water will allow its measured release, and hence a more natural salinity regime.

This project is a critical restoration project, which was authorized by Congress under the Water Resources Development Act of 1996. The project was implemented by the U.S. Army Corps of Engineers, with the South Florida Water Management District acting as the local project sponsor. St. Lucie County is contributing local matching funds and assisting with coordination of local issues and permitting.

The reservoir is located immediately west of the Gordy Road spillway on the south side of the Ten Mile Creek. The site is just west of the Florida Turnpike, about one-half mile south of Okeechobee Road (State Road 70).

The footprint of the reservoir is approximately 550 acres in size, with the remaining acreage of approximately 190 acres being utilized as a polishing cell. Based upon existing topography, stored water depths average ten feet. Total storage capacity is approximately 5,000 acre-feet.

## **Central and Southern Florida "Restudy"**

The Central and Southern Florida Comprehensive Review Study ("Restudy") complete in 1999 is an ambitious Federal/State undertaking to restore and preserve South Florida's natural ecosystems while enhancing water supplies and flood control. The Restudy Comprehensive Plan was developed by the U.S. Army Corps of Engineers and South Florida Water Management District in collaboration with more than 30 other agencies.

Under the Restudy Plan, \$7.8 billion worth of construction and other implementation costs will be shared equally by the Federal government and the citizens of Florida over more than 20 years. An additional \$172 million per year will be required to operate and maintain the project once fully underway. Specific funding mechanisms still must be identified, with a variety being considered.

The Restudy involves a review of the region's water management system known as the Central and Southern Florida (C&SF) Project. Issues to be addressed include: flood control, water supply, water management, saltwater intrusion and ecosystem restoration. The original C&SF project is 50 years old and needs to be modernized. This huge, manmade system has had unintended effects on the natural environment, including the Everglades, Lake Okeechobee, the coastal estuaries and Florida Bay.

While still in the planning stages, the Restudy may involve many new components, including: reservoirs to store water (Ten Mile Creek Project), underground barriers to slow seepage, facilities to inject fresh water underground for retrieval later, reuse of treated wastewater, removal or modification of selected canals and maintaining water levels to prevent saltwater intrusion.

The C&SF Project encompasses approximately 18,000 square miles from Orlando to the Florida Keys. Major features include: the Kissimmee River, Lake Okeechobee, the Everglades Agricultural Area, the Water Conservation Areas, Everglades National Park, Big Cypress National Preserve, the Caloosahatchee and St. Lucie Rivers and Biscayne and Florida Bays.

The Restudy will improve our natural systems ranging from Lake Okeechobee to Florida Bay. The St. Lucie Estuary will benefit from fewer regulatory releases, which send too much fresh water to tide during heavy rains and will receive needed water during drier times. Both efforts will help protect the estuary's delicate salt and fresh water balance. Stabilizing the salinity concentration will greatly enhance the estuary's ability to support sea grasses, oysters, and nursery grounds for marine fish.

Additionally, large water reservoirs are planned in the C-23, C-24, C-25 C-24, North and South Fork Drainage Basins. Projects similar to the Ten Mile Creek Regional Attenuation Facility will be planned for all of the large drainage basins. Results of the Restudy resulted in the IRL-South Plan detailed in the Conservation Element.

## Upper East Coast Water Supply Plan

The Upper East Coast (UEC) Water Supply Plan (WSP) was completed by the South Florida Water Management District and accepted by the Board of County Commissioners in February 1998. The Upper East Coast Plan includes Martin, St. Lucie, and a small portion of Okeechobee County. The District updated the UEC WSP in 2004. In 2006 the District issued the 2006 UEC Plan Amendment. The purpose of the Plan is to provide a framework for future water use decisions to provide adequate water supply for urban areas, agriculture, and the environment through year 2025. The purpose of the 2006 Plan Amendment is to provide local governments with information concerning revisions to state laws relevant to water supply planning and the potable water provisions contained with each local government's comprehensive plan.

The plan estimates the future water supply needs of urban areas and agriculture, weighs those demands against historically used water sources, and identifies areas where demands cannot be met without harming the resource and environment, including wetlands. The plan evaluates the potential of several alternative water source options to meet any unmet demand and makes recommendations for their development.

The planning document is the product of a public process. The District held a series of public workshops during the plan development process. The process weighed urban, agricultural and environmental water demands against supplies.

The Plan developed the following regional objectives to ensure that the Water Supply Plan would address the specific needs of the Upper East Coast:

1. **Water Supply:** Identify sufficient sources of water to meet projected 2025 water demands during a 1-in-10 year drought event, without causing harm to natural resources.
2. **Conservation and Alternative Source Development:** Increase levels of conservation to increase the efficiency of water use; and, increase the use of alternatives sources to reduce dependency on drought susceptible water sources.
3. **Floridan Aquifer:** Encourage development of the Floridan Aquifer as an option to sources that depend on local rainfall for recharge. Establish a monitoring program to collect data to better understand the relationship between water use, water levels and water quality.
4. **Estuarine and Riverine Systems:** Protect and enhance the Loxahatchee River, the St. Lucie River and Estuary and the Indian River Lagoon through effective water deliveries and management of the water resources.
5. **Water Resource Protection:** Protect wetland systems and the water resources from harm due to water use, including drawdowns and harmful movement of saline water.
6. **Compatibility with Local Governments:** Coordinate the UEC Water Supply Plan with the water supply related elements of local government.
7. **Other Regional Planning Efforts:** Achieve compatibility with other related regional water resource planning efforts. These include the Indian River Lagoon (IRL) Surface Water Improvement and Management (SWIM) Plan,

Comprehensive Everglades Restoration Plan (CERP), CERP IRL – South Project, CERP North Palm Beach County Project Part 1, Lake Okeechobee SWIM Plan, Lower East Coast and Kissimmee Basin Water Supply Plans, IRL National Estuary Program Comprehensive Conservation and Management Plan, St. Johns River Water Management District (SJRWMD) Districtwide Water Supply Assessment and Northern Palm Beach County Comprehensive Water Management Plan (source 2004 UEC WSP).

The 2004 Update identified eight water source options to address the needs of the Upper East Coast region, including:

1. Surface Water.
2. Aquifer Storage and Recovery.
3. Floridan Aquifer System.
4. Surficial Aquifer System.
5. Conservation.
6. Reclaimed Water.
7. Reservoirs.
8. Seawater.

Specific goals or strategies were identified for each of the eight options to be implemented as part of the implementation of the UEC Water Supply Plan. Responsible agencies to carry out the goals were identified, along with probable sources of funding.

The 2004 UEC Water Supply Plan contains three volumes in total, including: The Planning Document, dated June, 2004; The Consolidated Water Supply Support Document, dated August 2005; and The Appendices Document, dated June 2004. The 2006 Plan Amendment contains three volumes in total, including the 2006 Plan Amendment, the 2006 Appendices, and the 2006 Consolidated Water Supply Plan Support Document 2005-2006. More detailed information concerning the Plan and planning process can be obtained within the referenced documents.

### **Indian River Lagoon Comprehensive Plan**

In July 1996, the Board of County Commissioners adopted the Indian River Lagoon Comprehensive Conservation & Management Plan (CCMP). The Plan was published in May of 1996 by the members of the Indian River Lagoon National Estuary Program (NEP) Management Conference, in cooperation with SJRWMD, SFWMD, and the U.S. EPA.

With the publication of the Plan (IRLCCP) more than 100 agencies and local governments with management responsibilities for the Lagoon agreed on a unified strategy to preserve and restore the Lagoon. The Plan was formally adopted by the governor and the Environmental Protection Agency (EPA).

The Plan contains more than 69 recommended actions addressing critical problems such as the preservation of wetlands, sea grass restoration, endangered species protection, water and sediment quality improvement, land acquisition needs, and the means of funding preservation and restoration activities. All of these actions have the express purpose of protecting the integrity, diversity and productivity of the Indian River Lagoon.

According to the Indian River Lagoon (CCMP) Plan, "Freshwater and stormwater discharges represent the largest nonpoint source of pollution to the Indian River Lagoon."

Over the years, these discharges have resulted in muck (or "ooze") deposits and sedimentation in the Lagoon and its tributaries. This deposition and sedimentation has caused the loss of seagrass beds with resulting impacts to fisheries and shellfish populations. On occasions, increased loadings of nutrients from freshwater discharges have caused algae blooms and resulted in fish kills.

The formation of a Stormwater Management Program by St. Lucie County is an important first step in implementing the goals of the IRLCCMP Plan. This local government program forms the basis for funding and implementing improvements to our County stormwater management system.

### **Capital Improvement Projects**

The CIE provides details of the planned drainage projects, the absence of which will impact the ability of the drainage systems to provide the required LOS.

### **Stormwater Management Master Plan**

In 1992, a Stormwater Management Master Plan was completed and adopted for the unincorporated areas of the County. The Master Plan addressed the needs of the major canals of the primary and secondary stormwater management system. The canals, which were analyzed, are owned and operated by either North St. Lucie River Water Control District (NSLRWCD), Fort Pierce Farms Water Control District (FPFWCD), or South Florida Water Management District (SFWMD).

The Master Plan concluded that generally the secondary stormwater management system serves the County well for the ten-year, 24-hour storm event. The Master Plan recommended that the County continue to use the ten-year, 24-hour storm event (approximately 6.5 inches of rainfall in a 24-hour period) as the Level of Service standard for flood protection for roadways. This Level of Service standard is incorporated in the County's Land Development Code.

The Master Plan recommended several capital improvement projects for the secondary stormwater management system, including: mechanically operated gates, electrically operated gates, upsizing and lowering selected culvert pipes, and installing fixed-crest weirs at selected locations to improve water quality of stormwater discharge from the secondary drainage canals into the St. Lucie River. All of the improvements recommended by the plan fall within the secondary canals owned by the North St. Lucie River Water Control District or the Fort Pierce Farms Water Control District. Many of these recommendations have already been implemented.

The Master Plan confirmed, "Flooding is far more prevalent in the secondary and local network systems that drain into the primary drainage canal system. A few examples include, but are not limited to: the Carlton Road area, portions of White City, Sunland Gardens, Paradise Park, and large agricultural ownerships in the western portion of the County. Although the primary drainage system could accommodate stormwater from these areas, the secondary or local network systems have not been improved (or do not exist) to transport the runoff from these troubled areas to the primary canal system." The

Plan recognizes that "throughout unincorporated St. Lucie County, many isolated areas have little or no real drainage improvements and no access to a primary or secondary drainage system." Much of this was created when land was subdivided without proper planning of drainage and drainage outfalls. Other problem areas lie within the floodplain of natural creeks or streams.

Many of the existing secondary and local network drainage systems in the County were constructed many years ago, prior to permitting requirements for water quality treatment of stormwater discharges. Consequently, there were no provisions made for treatment of stormwater for water quality improvement prior to discharge to the primary canal system.

The 1992 Master Plan document and the County staff have compiled a listing of problem areas that are known to be flood prone historically. More details are available in the Master Plan document.

### **Comprehensive Everglades Restoration Program (CERP)**

The Conservation Element provides details on CERP programs including the IRL South Plan. The CERP IRL projects will provide benefits to the primary drainage system and water quality. The County's Capital Improvements projects will provide benefits to the secondary and local drainage systems.

### **Levels of Service**

The Level of Service standard as defined by the 1992 Stormwater Master Plan is outlined in Table 4-C-1. Drainage rules in the Land Development Code are tied to the rules of the SFWMD.

<b>TABLE 4-C-1 Stormwater Master Plan--Level of Service Standards</b>			
Structure/Facility	10 yr., 24 hr.	10 yr., 72 hr.	100 yr., 72 hr.
Houses/Building	<FFE <sup>1</sup>	<FFE	<FFE
Evacuation Routes <sup>2</sup>	1/2W <sup>3</sup>	<0.5 ft.	<1.0 ft.
Arterial Roads <sup>4</sup>	1/2W	<0.5 ft.	<1.0 ft.
Other Roads <sup>5</sup>	<0.5 ft.	<0.75 ft.	<1.5 ft.

1. Peak flood stages less than first (finished) floor elevation based on available data.
2. Evacuation routes as defined by the County and the Treasure Coast Regional Planning Council.
3. Flooding limited to each side of the road such that one-half of the roadway width (W) or one travel lane is not flooded.
4. Roads with four or more travel lanes, or roads that are only access to a respective area/development (secondary evacuation routes).
5. Other roads which are not critical for evacuation, but which will be used to estimate encroachment on FFEs.

## **SANITARY SEWER SUB ELEMENT**

### **Introduction**

The Sanitary Sewer Sub-element provides a complete summary of the wastewater treatment facilities in St. Lucie County. Sanitary sewer services are provided in only a small portion of the unincorporated County. Central utility services are provided by the Fort Pierce Utilities Authority (FPUA), the Port St. Lucie Utility Systems Department, St. Lucie County Utilities, or St. Lucie West Utility District. Generally, St. Lucie County Utilities provides sanitary sewer service to those properties located on North and South Hutchinson Island and within the Holiday Pines neighborhood on the mainland. The County also owns and operates a small wastewater treatment facility in the Lakewood Park subdivision. Those multi-family residential developments and Planned Unit Developments in the unincorporated County that are not serviced by St. Lucie County Utilities are serviced by their own on-site wastewater treatment plants (WWTP). Most of the single-family home sites in the unincorporated County are served with individual septic tanks. The importance of the municipal regional systems and on-site treatment facilities is noted.

### **Existing Planning Documents**

St. Lucie County completed the Water and Wastewater Master Plan in October of 2008 and the 10-Year Water Supply Facilities Work Plan in December of 2008 which will serve as the overall planning documents for potable water facilities. The two (2) major urban areas of the County, Fort Pierce and Port St. Lucie, have regionalized potable water treatment and distribution systems.

St. Lucie County Utilities (SLCU) is currently developing a regional wastewater treatment and collection system to serve unincorporated areas of the County within the urban service boundary. The City of Fort Pierce completed a master plan update for water and wastewater in September 2006.

### **Geographic Service Area**

Figure 2-1 in the Water Supply Facilities Work Plan outlines general areas of sanitary sewer service for the major regional facilities now operating in the County. The regional facilities servicing unincorporated St. Lucie County are:

- St. Lucie County Utilities (SLCU)
- Fort Pierce Utilities Authority (FPUA)

These facilities are described below.

Other sub-regional franchises also operate in the County, but their area is usually limited to a single development or a relatively small area.

## Regional Facilities

**St. Lucie County Water and Sewer District** (*formerly known as Holiday Pines Service Corporation*): The service area of the St. Lucie County Water and Sewer District water and wastewater utilities lies within the St. Lucie County Utilities (SLCU) mainland north county service area. The St. Lucie County Water and Sewer District service area includes the Holiday Pines subdivision and some additional commercial and residential areas fronting Kings Highway and Indrio Road.

In August 2005, the North Hutchinson Island Utility District, the Airport Utility District, the North County (Holiday Pines) Utility District, the Mid County District, the Indian River Estates MSBU District and the H.E.W. Utility District were consolidated into a single utility district now known as the St. Lucie County Water and Sewer District. As such, the below mentioned North Hutchinson Island Utility District service area is now included in this District.

The St. Lucie County Water and Sewer District (Holiday Pines) WWTP is a field-erected, precast package plant with a design capacity of 0.3 MGD. The WWTP is located on a 9.8-acre utility site near the Indian Pines Golf Course. Seven (7) percolation ponds are utilized for effluent disposal. Concentrate from the St. Lucie County Water and Sewer District water treatment plant is also discharged into these ponds. Sludge from the facility is lime stabilized and hauled to land application sites.

There are no plans to expand the Holiday Pines WWTP. Upon completion of the North County Regional Water Reclamation Facility (WRF), the Holiday Pines WWTP will be decommissioned and replaced with a master lift station to redirect flow to the new facility.

*North Hutchinson Island:* The North Hutchinson Island Utility District was consolidated into the St. Lucie County Water and Sewer District in August 2005. St. Lucie County Utilities owns and operates the North Hutchinson Island wastewater collection system and a 0.5 MGD WWTP. The County is currently planning the expansion of the facility to increase the capacity to 0.8 MGD. This plant produces reclaimed water that is made available to nearly all of the larger developed parcels on the island.

The upgraded WWTP was placed into service in January 1996. This facility was permitted through the FDEP for 0.50 MGD of treatment capacity. This upgraded WWTP replaced two (2) smaller sub-regional package treatment plants, one at the Bryn Mawr utility site and one at the Sands utility site, in addition to a number of individual WWTPs that served individual residential developments.

*South Hutchinson Island:* In 1996/1997, the South Hutchinson Island wastewater collection and treatment system was constructed by St. Lucie County to provide central sewer service for the portion of South Hutchinson Island located outside of the City of Fort Pierce. Just as with the North Hutchinson Island service area, this system was intended to eliminate all of the numerous individual wastewater package treatment plants that had been constructed in the absence of a centralized treatment network. Many of these existing WWTPs and all existing lift stations were upgraded or replaced to meet St. Lucie County Utility standards and a force main system was constructed to connect these lift stations to the new WWTP. The WWTP was designed to accommodate build out flows for South Hutchinson Island (based on a build out

population of 15,150 residents. The primary method of effluent disposal is reclaimed water irrigation, with backup disposal provided by discharge to the FPL Nuclear Power Plant ocean discharge canal.

This WWTP was permitted for 1.6 MGD and utilizes a conventional plug flow, extended aeration, activated sludge process followed by filtration and high-level disinfection to produce reclaimed water for irrigation. The plant is located on a 19.2 acre, county-owned site approximately two (2) miles south of the FPL Nuclear Power Plant on the west side of A-1-A.

**Fort Pierce Utilities Authority (FPUA):** According to the September 2006 FPUA Water and Wastewater Master Plan, FPUA operates the Island Water Reclamation Facility with a permitted capacity of twelve (12) MGD (max month average daily flow) on the barrier island. This facility provides service to approximately 49,029 residents throughout their service area and treats an average of 5.62 MGD, less than half of the permitted capacity. FPUA produces reclaimed water which is almost exclusively provided to the Florida Municipal Power Agency for use in cooling towers at the Treasure Coast Energy Center. The Island Water Reclamation Facility also utilizes approximately 300,000 gpd of reclaimed water for wash down and irrigation purposes.

FPUA is in the planning process for the construction of a mainland water reclamation facility located in the proximity of the County's landfill. Reclaimed water from the proposed facility may be allocated to the proposed Plasma Arc Gasification Facility planned at the landfill.

The FPUA, via a bulk user agreement with the County, has extended its wastewater service beyond the boundaries of the City of Fort Pierce, and presently serves areas in unincorporated St. Lucie County including the Central Service Area through bulk service.

#### **Privately Owned Utilities with Capacities Greater Than 0.1 MGD Located Within the Unincorporated Area**

**Panther Woods:** Panther Woods owns and operates an on-site WWTP with a permitted capacity of 0.18 MGD, but is limited to 0.105 MGD due to the size of the existing chlorine contact basins. The facility serves a current population of approximately 1,040 residents. Treated effluent is supplemented with well water and used to irrigate the 120-acre Panther Woods Golf Course.

**Spanish Lakes Country Club:** Spanish Lakes Country Club is an adult mobile home community with approximately 1,300 mobile home lots. The community is built out and is home to 3,040 residents. The WWTP serving the Spanish Lakes Country Club is a field-erected, precast concrete package plant with a permitted capacity of 0.160 MGD. Average daily flow is 0.121 MGD. This plant utilizes the extended aeration process to produce a secondary effluent. Effluent disposal facilities include a one-cell percolation pond and a three-cell drainfield. Sludge from this facility is lime stabilized on-site and hauled to land application sites.

The WWTP is adequately sized for the development it serves, but is has no excess capacity. There is minimal area available for expansion on the WWTP site.

**Spanish Lakes Fairways:** Spanish Lakes Fairways is a 1,600 unit (3,200 residents) adult community located in the northwest portion of the St. Lucie County Water and Sewer District service area. The Spanish Lakes Fairways WWTP is a field-erected, precast concrete package plant with a permitted capacity of 0.250 MGD. Average daily plant flow is 0.116 MGD. The plant utilizes the extended aeration process to produce reclaimed water that meets FDEP standards for public access irrigation. The plant consists of two (2) separate treatment trains which include: two (2) 0.127 mg aeration basins with mechanical surface aerators, two (2) rectangular clarifiers, two (2) sand filters, two (2) 0.025 mg digesters and a baffled chlorine contact tank. The primary means of effluent disposal is irrigation on the development's private golf course. A lined pond is provided adjacent to the WWTP for reclaimed water storage. Backup effluent disposal capacity is provided by three (3) percolation ponds at the WWTP site. Sludge from the facility is lime stabilized on-site and hauled to land application sites.

The WWTP is designed to accommodate the community to build out. The maximum flow is 0.142 MGD, or approximately fifty-six (56) percent of the plant's permitted capacity. The excess capacity will be utilized to serve additional phases of the development. There is limited area available for expansion of the wastewater treatment plan.

### **Package Treatment Plants**

There are numerous package treatment plants within the County that make up a significant portion of the wastewater treatment capacity in the County. Many of these package plants are concentrated in the White City and Indrio Road areas. Some of these plants have experienced difficulties in effluent disposal, where disposal systems have failed. The majority of the package plants within the County are under consent order and the Florida Department of Environmental Protection (FDEP) has urged each facility (through their permit renewal process) to seek connection to a central sewer system where available and feasible. As such, these facilities are slowly being connected to the public sewer systems available within the County.

### **Septic Tanks**

Septic tank systems are used principally for the treatment of wastewater from individual residences. In rural areas they are also used for establishments such as schools, motels, rural hotels, trailer parks, housing projects, camps and others. It is impossible to determine the current number of septic tanks in the County since, prior to 1984, the rules and regulations were different and some septic tanks were installed without permits. With the expansion and availability of public utility in the Port St Lucie area, the concentration of septic system use is being decreased by attrition as systems reach the end of their useful life and connection to sewer is mandated by Statute and city policy.

Effluent from septic tanks is normally discharged to a drainfield where it is allowed to percolate into the ground. Soil permeability and depth to the wet season water table are limiting factors on septic tank drainfield performance and may require construction of elevated drainage field grounds to ensure adequate performance. Figures FLU 3a and FLU 3b indicate the general soil types present in St. Lucie County as identified in the Soil Survey of St. Lucie County (U.S. Department of Agriculture, 1980). As this figure indicates, virtually all soils within the County (98.4 percent), excluding a small area located on the Atlantic Coastal Ridge west of the Intracoastal Waterway, have moderate

or severe limitations for septic tank drainage fields. Due to the unsuitability of the soil, the St. Lucie County Health Department, which permits all septic tank system installations in the County, requires 95 percent excavation of the drainfield area and backfilling with acceptable material.

### **Needs Assessment**

The unincorporated County presently has wastewater service provided by three (3) major municipal utilities (FPUA, Port St. Lucie Utilities and SLCU), several medium sized utilities (St. Lucie West and private utilities), small package plants, and septic tanks. This section examines the needs of those areas in the County which are not included in the major or medium sized utilities or in the service areas now identified by those wastewater utilities.

The area of growth in the unincorporated County directly corresponds to the urban service areas for water and sewer service. The area west of this growth area of the County is planned as agricultural.

The most intense development in these areas is expected to occur along the I-95 corridor with concentrations at the Gatlin Boulevard I-95 Intersection, mid-County, and the north County area. Other areas of the unincorporated County exhibiting needs include the Savannah Club area extending north past Tilton Road to Easy Street.

With a few exceptions, all of the package plants were designed to serve a small community, condominium, or commercial area. These plants are designed with a specific capacity in mind, determined by the proposed size of the development and the standards set by the FDEP for flow per unit. Therefore, these developments neither have appreciable excess capacity, nor do they exhibit appreciable needs beyond their initial design capacity. FDEP has urged each of the remaining facilities to seek connection to a central sewer system where available and feasible.

Because these smaller plants require daily attention, tend to wear out with time, and occupy increasingly valuable land, many are candidates for connection to a regional system within the next 20 years. With areas of proliferation of the small plants a County supported regional system would be a viable improvement in the future.

### **Level of Service Analysis**

The St. Lucie County utilities service area is separated into several sub-service area: North Hutchinson Island Service Area from the Fort Pierce Inlet north to the Indian River County Line on the barrier island; South Hutchinson Island Service Area from the Martin County Line north to the Fort Pierce City Limits on the barrier island; the St. Lucie County Water and Sewer District from the Indian River Lagoon to the east, the Indian River County Line to the north, Interstate 95 to the west and St. Lucie Boulevard to the south; and the unincorporated County service areas (north, central and south) as illustrated on Figure 2-1 of the Water Supply Facilities Work Plan. The service areas for FPUA and the City of Port St. Lucie are also depicted on the same Figure.

A level of service for wastewater facilities has been defined by the FDEP at 100 gallons per day per capita (gpcd) of capacity. This makes some allowance for infiltration. Treatment facilities should be planning for expansion when they reach 80 percent of their flow capacity, and under construction at 90 percent of their flow capacity.

The level of service standard for sanitary sewer systems other than those owned and operated by FPUA shall be 100 gpcd.

The LOS standard for those areas of the unincorporated County served by FPUA shall be 110 gpcd (FPUA Master Plan, September 2006).

The population projections for each of the service areas indicates that as St. Lucie County grows there will be a need for additional service capacity within the existing wastewater service facilities. Table 4D-1 provides the projected population within the Service Areas for the years 2011, 2015, 2020, 2025 and 2030. As this table indicates a significant portion of the County's overall population resides in an area located outside the service area of the St. Lucie County Utilities. Those areas lying outside of the County's service area will be provided wastewater service via the following methods: one (1) of the other two (2) public utility providers - FPUA or City of Port St. Lucie Utilities; an on-site package wastewater treatment plant or via an on-site septic system.

<b>Year</b>	<b>2011</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Total County Population	283,980	313,100	354,300	395,200	434,100
<b>Service Area</b>					
North County Service Area	4,836	10,292	15,472	19,441	23,212
Central County Service Area	-	3,819	10,508	12,766	14,821
South County Service Area	-	-	4,338	9,834	11,647
North Hutchinson Island <sup>1</sup>	6,525	7,013	7,875	8,829	9,661

<sup>1</sup>Connected population refers to Equivalent Residential Connections (ERC) connected to North Hutchinson Island wastewater system and assumes 2.2 people per ERC.

<b>Service Area</b>	<b>2011</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
North County Service Area	0.484	1.029	1.547	1.944	2.321
Central County Service Area	0.000	0.382	1.051	1.277	1.482
South County Service Area	0.000	0.000	0.434	0.983	1.165
North Hutchinson Island	0.653	0.701	0.788	0.883	0.966

<sup>1</sup>Wastewater Demand based on Population projections and an assumed per capita flow of 100 gpd/person

Table 4D-2 shows the connected wastewater flows, which were Wastewater flow will increase as the population increases within the service delivery area.

## Capacity Assessment

Many of the WWTPs in St. Lucie County are small package plants intended to serve individual communities, businesses, and condominiums. This type of facility has no significance in a capacity assessment, since it is not large enough to provide service to an expanded service area. The following particular observances are made:

- The FPUA is capable of receiving flow from their expanded service area.
- The South Hutchinson Island WWTP is capable of handling flows at the projected build out conditions (district south of the FPL nuclear power plant).
- Panther Woods Country Club is underutilized, but is designed to serve a specific development at build out. Although continued development has not been significant, future use of this plant as additional development does take place is likely.
- Reserve Utility Corporation is adequate for present needs, and is planning to expand as development takes place inside The Reserve.
- St. Lucie West is capable of handling growth in its service area and planned to grow with the development.
- Spanish Lakes Country Club Village is built out.
- Spanish Lakes MHP is built out.
- Port St. Lucie Utility Systems Department has adequate capacity for incoming flows and for growth.

The above analysis indicates in general a capacity for growth in the municipal service areas, newer planned developments in the unincorporated County (e.g., The Reserve), and some of the Hutchinson Island communities. Growth in all of the other unincorporated areas of the County will require additional wastewater transport and treatment facilities.

**Northern Service Area:** The current Holiday Pines facility is an extended aeration concrete package plant with a permitted capacity of 0.3 MGD. Effluent is disposed through two (2) groups of percolation ponds. The first group is comprised of three (3) ponds with a total area of 95,900 square feet. The second group is comprised of four (4) ponds with a total area of 70,600 square feet. The combined ponds are also permitted to dispose up to 0.120 MGD of Reverse Osmosis brine from the Holiday Pines Water Treatment Plant. It is anticipated that the ponds will provide adequate effluent disposal capacity up to the permitted 0.3 MGD capacity of the existing facility.

Current wastewater flows at the Holiday Pines Wastewater Treatment Facility are nearing capacity. In order to accommodate the population growth needs and wastewater demands into the year 2030 and anticipated growth in the North County area, the following wastewater facility needs and improvements were identified:

- Decommissioning of the Holiday Pines WWTP upon completion of the new regional facility.

- Construct and operate, by 2014, a new North County Regional Water Reclamation Facility to be located south of Indrio Road and east of Taylor Dairy Road. This facility shall at construction contain:
  - a) Initial capacity of 2 MGD by 2014.
  - b) Increase capacity to 4 MGD by 2017, with provisions to expand to 6 MGD as needed.
  - c) Provide equipment capable of treating the wastewater product to unrestricted public access irrigation.
  - d) Potentially construct a deep injection well for wet weather disposal of reclaimed water, or implementation of identified alternative beneficial reuse project for disposal of reclaimed water.
  - e) Construct a bio-solids dewatering facility at the North County Regional Water Reclamation Facility (WRF).
- Provide service to the existing and future developments within the St. Lucie County Water and Sewer District Service Area.

**Central Service Area:** The County will be constructing an interconnect to FPUA to provide service to this area. FPUA has sufficient capacity for the connection during the planning period. The future capacity needs will either be addressed by a future FPUA mainland WWTP or a SLCU WWTP.

**South Service Area:** The St. Lucie County Parks and Recreation Department owns and operates a wastewater collection and treatment system serving the St. Lucie County Fairgrounds and the County's Emergency Operations Center. The facility has a capacity of 0.0314 MGD. Per the 2008 Water and Sewer Master Plan, the County is planning to construct a Southern Regional WWTP at the end of the planning period to supply the required capacity.

**North Hutchinson Island:** SLCU owns and operates a wastewater collection and treatment system that serves the majority of North Hutchinson Island (with the exception of approximately 383 single-family homes and the Fort Pierce Inlet State Park). The County is currently planning the expansion of the facility to increase capacity from 0.5 MGD to 0.8 MGD.

The projected connected wastewater flow approaches the design capacity of the existing North Hutchinson Island WWTP around 2020. In order to maintain sufficient wastewater capacity at the North Hutchinson Island WWTP to maintain quality service at the build out of North Hutchinson Island, the County will have to consider additional expansions of the facility to meet future demand.

**South Hutchinson Island:** South Hutchinson Island is serviced by St. Lucie County Utilities. The South Hutchinson Island District Wastewater Utility was created under Resolution 07-208. In 1995, St. Lucie County constructed a 1.6 MGD wastewater and reclaimed water facility. This facility is designed to accommodate build out of South Hutchinson Island. The County maintains a bank of capacity that can be transferred to properties within the service area to accommodate development. The County has adopted a policy to transfer capacity through the County Utility Office.

Currently over ninety (90) percent of the total wastewater flow from the South Hutchinson Island District Wastewater Utility service area is collected and treated. The only area not currently connected to the system includes five condominiums in the Island Dunes Complex. This condominium complex is serviced by a private WWTP that produces reclaimed water for irrigation of the golf course. As the overall system on South Hutchinson Island was designed to accommodate the maximum build out within the County's service area on the island, no additional expansions are required or planned within the twenty (20) - year planning cycle. FPUA serves all wastewater customers on South Hutchinson Island within their service area. SLCU serves the Island from FPUA's service boundary south to the Martin County line.

**Sanitary Sewer Facility Replacement, Expansion and New Facility Siting:** Because of the importance that the provision of sanitary sewer service will play in the development of the County and also significant pressures for the County to enter into the provision of such services, St. Lucie County Utilities adopted a Water and Wastewater Master Plan for the unincorporated County in 1992. The Master Plan was updated in August, 2000, February 2004, and October, 2008. The 2008 Water and Wastewater Master Plan Update is used in conjunction with the Comprehensive Plan as a planning tool. These plans address the need for renewal, replacement, facility expansions and siting of new and proposed facilities.

**Capital Improvement Projects**

The CIE provides details of the planned capital improvement projects, the absence of which will impact the ability of the County to provide the required LOS. Table 4D-3 shows the planned capital projects within the planning period.

<b>Table 4D-3 Capital Improvement Projects</b>						
<b>Project #</b>	<b>Project Title</b>	<b>FY2011</b>	<b>FY2012</b>	<b>FY2013</b>	<b>FY2014</b>	<b>FY2015</b>
3600-3615	North County Wastewater Plant			\$15,500,000	\$13,000,000	
3602-3636	North Hutchinson Island Wastewater Plant Expansion	\$475,920		\$3,500,000	\$3,500,000	

The North County Wastewater Plant will replace the Holiday Pines Water Treatment Plant and provide a capacity of 2 MGD. The North Hutchinson Island Wastewater Plant Expansion will increase capacity from 0.5 to 0.8 MGD.

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## INFRASTRUCTURE ELEMENT GOALS, OBJECTIVES AND POLICIES

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### POTABLE WATER SUBELEMENT

GOAL 4A.1: Provide needed public utilities in a manner that results in the most effective, environmentally sound, safe and economic potable water systems consistent with present demand and future growth requirements and that promotes orderly, compact urban growth.

Objective 4A.1.1: The County shall provide potable water facilities that do not promote urban sprawl.

Policy 4A.1.1.1: The utility service areas, as delineated in the Water and Wastewater Master Plan, will be determined on the basis of economy and efficient operation but will not promote linear or leapfrog development. The utility service areas shall be reviewed and updated every 5 years (beginning 2013) and shall not include those areas already being served by Fort Pierce Utility Authority or Port St. Lucie Utilities.

Policy 4A.1.1.2: ~~The County Utility District will determine the most cost effective and efficient means of providing potable water services to all areas of the urban service area as depicted in Policy 1.1.5.1 in a manner that will not promote linear or leapfrog development consistent with Policy 1.1.5.2. The County utility department will publish on an annual basis a Service Availability Report setting forth the availability of potable water service from the various suppliers of such service to the unincorporated areas of the County that meets the requirements of Goal 6D.1 and this Policy.~~ The County Utility District will determine the most cost effective and efficient means of providing potable water services for all development approved by the County Commission within the unincorporated areas of the County outside the urban service area which approval is subject to the provision of central water service within such development.

Policy 4A.1.1.3: In order to prevent sprawl and leapfrog development in the unincorporated areas of the County, no water or sewer utility companies shall be permitted to construct or install water or sewer facilities to serve or provide water or sewer utility service to new development within the unincorporated areas of the County without the consent of the County Commission.

Policy 4A.1.1.4: The County shall monitor and review the availability of potable water service from the various potential suppliers of such service to the unincorporated areas of the County through a Service Availability Report.

~~Policy 4A.1.1.2: Provision of regional (not including package treatment plants) potable water service shall be limited to the utility service availability options set forth in the annual Service Availability Report described in Policy 4D.1.1.1b.~~

Objective 4A.1.2: The County shall implement procedures for ensuring that when a development permit is issued, pursuant to the then current Service Availability Report, adequate facility capacity is available or will be available to serve the development concurrent with the impacts, in order to meet the adopted LOS standards.

Policy 4A.1.2.1: All development will be specifically conditioned on the availability of services necessary to maintain LOS standards as adopted within this Comprehensive Plan.

Policy 4A.1.2.2: The LOS standard for those areas of the unincorporated County served by FPUA shall be 117 gpcd (FPUA Water Use Permit, 2007).

Policy 4A.1.2.3: The LOS standard for potable water systems other than those owned and operated by FPUA shall be permanent and seasonal residents - 100 gpcd.

Policy 4A.1.2.4: The County shall include in the annual Service Availability Report an update of all improvements, expansions, or increases in the capacities of facilities of the various potential suppliers of service to the unincorporated areas of the County to ensure compatibility with the established LOS standards for such facilities.

Policy 4A.1.2.5: The County shall prepare annual summaries of capacity and demand information for each facility of the various potential suppliers of service to the unincorporated areas of the County.

~~Policy 4A1.2.6: Development within the unincorporated areas of the County will only be permitted when such development ties into or makes provisions for tying into a regional or sub-regional system that is available as set forth in the annual Service Availability Report. approved by the County Commission within the unincorporated area of the County requiring central potable water service will only be permitted when such development ties into existing potable water facilities of or makes provision for obtaining potable water service from the County Utility District, the Fort Pierce Utility Authority or the City of Port St. Lucie within their respective water utility service areas in accordance with the then current adopted utility extension policy of the applicable potable water service provider.~~

Policy 4A.1.2.7: The County shall require that developments of regional impact determine the available quantity and quality of water resources for treatment to potable water beneath the development; determine the effect of withdrawal on surrounding environment, users and potential users; and make such information available to the County.

Objective 4A.1.3: The County will establish and maintain a five-year and twenty-year schedule of capital improvement needs for the public facilities in the recognized County service areas.

Policy 4A.1.3.1: The following public facility improvements within a facility type are to be considered in the following order of priority, as determined by the Board of County Commissioners:

- A. Replacement of obsolete or worn out facilities, including repair, remodeling and renovation of facilities that contribute to achieving and/or maintaining levels of service.
- B. New facilities that reduce or eliminate existing deficiencies in levels of service.
- C. New facilities that provide the adopted levels of service for new growth during the next five fiscal years, as updated by the annual review of the Capital Improvements Element.
- D. Improvements to existing facilities, and new facilities that significantly reduce the operating cost of achieving and/or maintaining levels of service.
- E. New facilities that exceed the adopted levels of service for new growth during the next five fiscal years by either:
  - 1. Providing excess public facility capacity that may be needed by future growth beyond the next five fiscal years, or
  - 2. Providing higher quality public facilities that are contemplated in the County's normal design criteria for such facilities.
- F. Facilities not described in Subsections A through E, above, but which the County is obligated to complete, provided that such obligation is evidenced by a written agreement the County executed prior to July 31, 1990.
- G. All facilities scheduled for construction or improvement in accordance with this Policy shall be evaluated to identify any plans of State agencies or the South Florida Water Management District that affect, or will be affected by, the proposed capital improvement.
- H. Project evaluation may also involve additional criteria that are unique to each type of public facility, as described in other elements of this Comprehensive Plan.

Policy 4A.1.3.2: In the event that the planned capacity of public facilities is insufficient to serve all applicants for development orders, the Board of County Commissioners will schedule capital improvements to serve developments in the following order of priority:

- A. Previously approved orders permitting new development,
- B. New orders permitting redevelopment, and
- C. New orders permitting new development

Objective 4A.1.4: The County shall take steps to insure that entities in the unincorporated County are adequately served, and in order to protect our drinking water shall investigate needs for waste disposal other than septic tanks and sewage systems.

Objective 4A.1.5: The County shall coordinate with the other potential providers of central potable water service within the unincorporated areas of the County so that the extension of, or increase in the capacity of, facilities to meet future potable water capacity is available when needed.

Policy 4A.1.5.1: Prior to issuance of a building permit, the County shall require that all applicants provide verification that water service can be provided in conformance with the policies in this plan and that adequate system capacity is available if a central system is to be utilized.

GOAL 4A.2: The County shall aggressively indentify, protect, conserve, and best utilize the County's available water supply resources.

Objective 4A.2.1: The County shall continue to review and update the wellfield protection plan for public potable water supply sources in or adjacent to the unincorporated County.

Policy 4A.2.1.1: The County shall in conjunction with FDEP, SFWMD, the St. Lucie County Health Department and existing utility systems, determine and map the location of all existing public potable water supply wells which are permitted to withdraw 100,000 gpd or greater. The County shall annually update this map and keep copies of this map on file.

Policy 4A.2.1.2: The County shall in conjunction with FDEP, SFWMD, County Health Department, utilities and other potential providers of central potable water service establish the probable location of public potable water supply wells in the County.

Policy 4A.2.1.3: The County shall identify land uses which may not be compatible with, and may contribute to the degradation of, public potable water supply wells.

Policy 4A.2.1.4: The County shall identify land uses with existing or future public potable water supply wells.

Policy 4A.2.1.5 The County shall update the Wellfield Protection Ordinance by January 31, 2012

Objective 4A.2.2: The County shall continue to develop a comprehensive water conservation program incorporating, at a minimum, the following policies.

Policy 4A.2.2.1: The County shall continue to require water saving devices in new construction, consistent with the requirements of the Florida Building Code.

Policy 4A.2.2.2: The County shall enforce the landscaping portion of the existing ~~land development regulations~~ Land Development Code and on an ongoing basis require more exacting provisions for native landscaping plants.

Policy 4A.2.2.3: The County shall coordinate with the FDEP, the SFWMD, local municipalities and other appropriate agencies in alternative water supply planning efforts and shall implement reuse programs and potable water conservation strategies as identified in the Water Supply Facilities Work Plan and the UECWSP.

Policy 4A.2.2.4: The County shall encourage reuse and reclamation of water for irrigation, landscape, agriculture, and industry as an alternative to the use of potable water supplies.

Policy 4A.2.2.5: The County shall provide for education of the public concerning the need for water conservation and the use of gray water for irrigation.

Policy 4A.2.2.6: No Conditional Uses for sand mining and no re-zonings to Industrial, Extraction (IX) will be granted within public potable water supply recharge areas designated through the Wellfield Protection Ordinance; when the information is available to designate aquifer recharge areas, this policy will be revised through a Comprehensive Plan Amendment to include those areas.

Objective 4A.2.3: By December 2010, the County shall implement the Upper East Coast Water Supply Plan, prepared by the SFWMD, by amending the ~~land development regulations~~Land Development Code to identify water available and allocation rates to protect natural systems from competing water uses.

Policy 4A.2.3.1: For normal, average rainfall years, water availability, use, allocation, and management plans, the County shall prevent the increasing water demands from reducing the important ecological, recreational and navigational values provided by the natural systems.

Policy 4A.2.3.2: Water use, allocation, and management plans for emergency drought and flood situations shall avoid irreversible impacts on ecological systems and minimize long term adverse impacts.

Policy 4A.2.3.3: The County shall not rely upon water supply sources outside its jurisdictional boundaries to meet the water supply needs of new growth and development until water availability, use, allocation and management plans have been adopted for the proposed source areas which specifically allocate water for such use.

GOAL 4A.3: The County shall institute a program to identify the availability of public potable water supplies required to provide for the growth needs in the unincorporated County.

Objective 4A.3.1: In cooperation with the SFWMD, the County shall, ~~in 2008, complete~~implement a master plan which determines and quantifies groundwater resources available to growth areas in both the surficial and Floridan aquifers, evaluates methods of treatment, considers environmental impact, considers alternative financing options, and provides a schedule for County acquisition of water service.

Policy 4A.3.1.1: The County shall update the Water and Wastewater Master Plan approximately every 5 years to identify and provide for public water supplies to include:

- A. Identification of areas of high growth potential which are (or will be) isolated by existing service areas, natural geographic boundaries, political boundaries, low growth potential areas, or other demarcations.

B. Projection of population growth in these areas.

C. Inventory of existing package water treatment plants within the area, their condition, and their potential for acquisition.

D. Establishment of needs of a public water system, based on LOS, provision of service by potential suppliers of water and population as established above.

Policy 4A.3.1.2: The County shall as part of the Master Plan Update process, if financially feasible, authorize or cause to be authorized, a treatment and transport study to determine the recommended methods for supplying water treatment and transport, if necessary, for each service area identified under Policy 4D.3.1.1.

The studies will include:

- A review of needs, based on projected population and LOS.
- An inventory of available water quantity and quality data.
- An analysis of potential aquifer sources, well locations, treatment methods, environmental effects, waste disposal considerations, and economic costs and efficiencies.
- Recommended method of treatment.
- An evaluation of environmental effects, waste disposal considerations, and costs.
- Identification of transfer needs and alternatives to deliver treated or raw water from the source to the distribution system.
- An application to SFWMD for water withdrawal from the selected aquifer(s).
- A recommendation for wellfield location, configuration, source aquifer, number and spacing of wells.

Objective 4A.3.2: The County shall provide, where feasible, public water supply service within the unincorporated areas of the County; criteria for evaluating the feasibility of providing such public water service will be part of each Water Master Plan Update.

Policy 4A.3.2.1: The County shall authorize engineering and financial studies for areas identified under Policy ~~4A~~4D.3.1.1, which studies will include:

- A. Review of area needs and time frame for development.
- B. Preliminary identification of facility development necessary to meet the needs and timing of provision of public water service.
- C. Preliminary cost estimates and a schedule of capital expenditure projects financial considerations, including recommended method of funding, rate structure and revenue projections.

Policy 4A.3.2.2: The impact new customers have on potable water infrastructure, including water supply, treatment facilities, transmission and distribution systems shall be borne by those new customers, and shall be funded by the new customers in advance of the provision of potable water infrastructure.

Policy 4A.3.2.3: In order to provide the most cost effective and efficient provision of public water service within the unincorporated areas of the County, the County shall communicate with the other potential providers of public water service regarding availability of and willingness to provide public water service from such providers to meet the needs of development within the unincorporated areas of the County through a bulk purchase agreement with the County.

## **SOLID WASTE SUBELEMENT**

Goal 4B.1: Provide the most cost-effective solid waste management, transportation and disposal facilities for St. Lucie County.

Objective 4B.1.1: Establish standards for level of service.

Policy 4B.1.1.1 - Ensure sufficient capacity at the landfill through the year 2037, establish the following standards for level of service for the County's solid waste facilities:

- A. ~~5.395.10~~ pounds of Class I solid waste per capita County-wide per day at the landfill; and  
2.80 pounds of construction and debris per capita County-wide
- B. Maintain at least two years of landfill lined cell disposal capacity;
- C. Maintain at least twenty years of landfill raw land capacity.

Policy 4B.1.1.2 - Maintain Interlocal Agreements between the County and all municipalities within the County.

Policy 4B.1.1.3 - Inspect a minimum of three random Class I loads per week.

Policy 4B.1.1.4 - Continue to implement the most cost effective alternative solid waste management practices that would extend the useful life of the landfill. These alternatives include, but are not-limited to: resource recovery, volume reductions by solid waste generators, ~~volume reduction at transfer stations,~~ separation of solid wastes at the source, ~~composting recycling centers,~~ public information programs, and operational changes which could improve efficiency.

Policy 4B.1.1.5 - Continue to evaluate the costs of resource recovery, extended landfilling, and the combination of other alternatives to establish a 20 year horizon need.

Policy 4B.1.1.6 - Through the development of educational and operational programs, actively encourage the removal of recyclables from the solid waste streams in the County to the maximum extent practicable.

Policy 4B.1.1.7 - Develop and implement incentive programs at the landfill for the removal of recyclable materials by both individuals and corporations.

Objective 4B.1.2: Increase reduction of waste stream as technologies allow it to happen.

Policy 4B.1.2.1 - Continue an education program focusing on informing the public about household hazardous waste, proper disposal methods and less environmentally harmful substitutes for these products.

Policy 4B.1.2.2 - Continue inspection or screening system to exclude obviously suspect items from the landfill. Drums, tanks from unknown sources, waste pesticides, or chemicals and residues from spill clean-ups are a few of the normally suspect items.

**DRAINAGE SUBELEMENT**

Goal 4C.1: It is the goal of St. Lucie County to ensure the provision of an adequate stormwater drainage and management system that is both technically and economically feasible in meeting the existing and future needs of the community.

Objective 4C.1.1: ~~By January 31, 2003, t~~The County shall annually update the complete ~~the~~ Geographic Information System-based Stormwater Mapping System.

Policy 4C.1.1.1 - Upon the completion of the Stormwater Mapping System master plan for the County, the County shall revise minimum levels of service for each defined drainage basin and shall incorporate those levels of service into this Comprehensive Plan.

Policy 4C.1.1.2 - To ensure that St. Lucie County maintains sufficient stormwater runoff, the following level-of-service standard shall be utilized in determining the appropriate amount of runoff for a project:

<b>Stormwater Master Plan--Level of Service Standards</b>			
Structure/Facility	10 yr., 24 hr.	10 yr., 72 hr.	100 yr., 72 hr.
Houses/Building	<FFE <sup>1</sup>	<FFE	<FFE
Evacuation Routes <sup>2</sup>	1/2W <sup>3</sup>	<0.5 ft.	<1.0 ft.
Arterial Roads <sup>4</sup>	1/2W	<0.5 ft.	<1.0 ft.
Other Roads <sup>5</sup>	<0.5 ft.	<0.75 ft.	<1.5 ft.
1	Peak flood stages less than first (finished) floor elevation based on available data.		
2	Evacuation routes as defined by the County and the Treasure Coast Regional Planning Council.		
3	Flooding limited to each side of the road such that one-half of the roadway width (W) or one travel lane is not flooded.		
4	Roads with four or more travel lanes, or roads that are only access to a respective area/development (secondary evacuation routes).		
5	Other roads which are not critical for evacuation, but which will be used to estimate encroachment on FFEs.		

~~Policy 4C.1.1.3 - When the Level of Service standards are revised for drainage subsequent to the completion of the County Wide Stormwater Mapping System~~

~~(as indicated in Policy 6C.1.1.1), the Level of Service standard shall include performance standards for water quality and flood control for each basin. Appropriate local and state regulations specifying stormwater quality standards shall be incorporated by reference into the drainage Level of Service standard to measure performance of systems, which are designed to remove pollutants from runoff. Appropriate regulations specifying ambient water quality standards shall be referenced to prevent further degradation of surface and groundwaters by runoff from stormwater facilities built prior to stormwater quality regulations taking effect in 1982.~~

Policy 4C.1.1.43 - The Level of Service standard in Policy ~~46~~C.1.1.2 shall be applicable to all commercial, industrial and residential development activities within the Unincorporated St. Lucie County.

Policy 4C.1.1.54 - The County shall continue to coordinate efforts with all appropriate authorities in regard to water storage and capacity enhancements for the North Fork of the St. Lucie River, including those portions within the designated aquatic preserve.

Objective 4C.1.2: The County will maintain an inventory of floodprone areas located within its jurisdiction.

Policy 4C.1.2.1 - The County shall maintain an inventory of flooding complaints.

Policy 4C.1.2.2 - The County shall request the South Florida Water Management District, North St. Lucie River Water Control District and Fort Pierce Farms Water Control District establish system-wide water level monitoring stations in order to provide the data base necessary for the development of adequate stormwater management programs.

Objective 4C.1.3: The County shall enforce existing ~~Land Development Regulations~~Land Development Code which support the protection and maintenance of the natural functions (flow and storage) of the 100-year floodplain and other natural drainage features.

Policy 4C.1.3.1 - The County shall continue to enforce the ~~Land Development Regulations~~Land Development Code regulating construction standards within the 100-year flood plain.

Policy 4C.1.3.2 - The County shall provide direction and guidance to the general public on stormwater and floodplain management issues.

Objective 4C.1.4: The County, in conjunction with the South Florida Water Management District, shall review and evaluate existing drainage studies and plans within the County's jurisdiction to determine their relevance to the current stormwater regulations.

Policy 4C.1.4.1 - The County shall request that the South Florida Water Management District continue to update the inventory of groundwater levels within the County.

Policy 4C.1.4.2 - All development will be specifically conditioned on the availability of services necessary to maintain Level of Service standards as adopted within this Comprehensive Plan.

Goal 4.C.2: It is the goal of St. Lucie County to implement a County-wide drainage system for urban and nonurban areas.

Objective 4C.2.1: The County will continue to implement the master drainage plan.

Policy 4C.2.1.1 - The County will continue to seek funding from State/federal grants and/or assessments in the area served by drainage improvements.

Policy 4C.2.1.2 - No development authorizations shall be issued unless there is provided to St. Lucie County assurance that all required drainage improvements will be provided for both on-site and off-site.

Policy 4C.2.1.3 - No final certificate of occupancy, as may be further defined in the ~~Land Development Regulations~~Land Development Code, shall be issued until all drainage improvements, both on-site and off-site, for the particular development have been inspected and approved by St. Lucie County, or other appropriate authority.

Goal 4C.3: It is the goal of St. Lucie County to ensure that the surficial groundwater quality is the highest possible for potable purposes.

Objective 4C.3.1: To improve the water quality level of areas that fail to meet potable standards, and to prevent the further contamination of the surficial aquifer.

Policy 4C.3.1.1 - The County shall continue to enforce the ~~Land Development Regulations~~Land Development Code, including regulations governing the protection of potable wellfields from possible sources of contamination.

Policy 4C.3.1.2 ~~— The County shall coordinate with the FDEP, the SFWMD, local municipalities and other appropriate agencies in alternative water supply planning efforts. The Land Development Regulations~~Land Development Code shall require wastewater reuse plans for new sewage treatment plants operating above 250,000 gallons per day. Any new reuse plan shall be approved by FDEP.

Policy 4C.3.1.3 - The County shall continue developing and maintaining a series of stormwater attenuation areas to reduce the impacts of agricultural fertilizers and other related chemical applicants on the existing potable wellfields in the eastern portion of the County.

Policy 4C.3.1.4 - The County shall continue to cooperate with the South Florida Water Management District in the identification and closure of free-flowing artesian wells.

Policy 4C.3.1.5 - The County ~~Land Development Regulations~~Land Development Code shall continue to include comprehensive stormwater management including consideration of the following:

1. The use of stormwater detention and/or retention;
2. Streambank and shoreline buffer zones;
3. General design and construction standards for onsite stormwater management.

Policy 4C.3.1.6 –The County shall evaluate the financial feasibility of incorporating Low Impact Design (LID) stormwater management techniques by December 2013 in conjunction with South Florida Water Management and Florida Department of Environmental Protection criteria.

~~Policy 4C.3.1.67 - The County shall assist the Federal Government, State of Florida, and the South Florida Water Management District, Fort Pierce Farms Water Control District and North St. Lucie River Water Control District in their efforts to improve the water quality of the primary drainage systems through the implementation of Chapter 17-40, FAC and Chapter 17-25 FAC.~~

Objective 4C.3.2: The County shall enforce the ~~Land Development Regulations~~Land Development Code for regulating land use and development to protect the functions of natural groundwater recharge areas.

Policy 4C.3.2.1 - The County will protect the functions of natural groundwater aquifer recharge of designated public potable water supply wells by enforcing the Wellfield Protection Ordinance contained within the Land Development Code.

Policy 4C.3.2.2 - The County will continue to work with the St. Lucie County ~~Public Health Unit~~Department, Environmental Health Section, by verifying the issuance of the septic tank permit before a building permit is issued.

Policy 4C.3.2.3 - The County will continue to assist the St. Lucie County ~~Public Health Department~~Department, Environmental Health Section, with the Hazardous Waste Verification Program by continuing to require all Occupational License applicants (except Home Occupations) to receive Public Health Unit approval prior to issuance of an Occupational License.

Policy 4C.3.2.4 - No Conditional Uses for sand mining and no rezonings to Industrial, Extraction (IX) will be granted within public potable water supply recharge areas designated through the Wellfield Protection Ordinance.

~~Policy 4C.3.2.5 – The County shall continue to cooperate with the South Florida Water Management District in the identification and closure of free-flowing artesian wells.~~

~~Policy 4C.3.2.6 – The County shall cooperate with the South Florida Water Management District in the implementation of the Upper East Coast Water Supply Plan.~~

## **SANITARY SEWER SUBELEMENT**

Goal 4D.1: The County shall provide needed public utilities in a manner which provides the most effective, environmentally sound, safe and economic waste water treatment system and promotes orderly, compact urban growth.

Objective 4D.1.1: Sanitary sewer facilities shall be provided by the County in a manner that shall not promote urban sprawl.

Policy 4D.1.1.1: The utility service areas, as delineated in the Water and Wastewater Master Plan, will be determined on the basis of economy and efficient operation but will not promote linear or leapfrog development. The utility service areas shall be reviewed and updated every 5 years (beginning 2008) and shall not include those areas already being served by Fort Pierce Utility Authority or Port St. Lucie Utilities, and St. Lucie West Services District.

Policy 4D.1.1.1b2: The County Utility District will determine the most cost effective and efficient means of providing sanitary sewer services to all areas of the urban service area as depicted in Policy 1.1.5.1 in a manner that will not promote linear or leapfrog development consistent with Policy 1.1.5.2. The County utility department will publish on an annual basis a Service Availability Report setting forth the availability of sanitary sewer service from the various suppliers of such service to the unincorporated areas of the County that meets the requirements of Goal 6A.1 and this Policy. The County Utility District will determine the most cost effective and efficient means of providing sanitary sewer services for all development that may be approved by the County Commission within the unincorporated areas of the County outside the urban service area which approval is subject to the provision of sanitary sewer service within such development.

Policy 4D.1.1.3: In order to prevent sprawl and leapfrog development in the unincorporated areas of the County, no water or sewer utility companies shall be permitted to construct or install water or sewer facilities to serve or provide water or sewer utility service to new development within the unincorporated areas of the County without the consent of the County Commission.

Policy 4D.1.1.4: The County shall monitor and review the availability of sanitary sewer service from the various potential suppliers of such service to the unincorporated areas of the County in a Service Availability Report.

Policy 4D.1.1.2: Provision of centralized (not including package treatment plants) sanitary sewer service shall be limited to the utility service availability options set forth in the annual Service Availability Report described in Policy 4D.1.1.1b.

Policy 4D.1.1.35: The County shall investigate alternate methods of waste disposal other than septic tanks.

Objective 4D1.2: The County shall implement procedures for ensuring that when a development permit is issued, pursuant to then current Service Availability Report, adequate facility capacity is available or will be available when needed to serve the development, concurrent with the impacts, in order to meet adopted level-of-service standards.

Policy 4D.1.2.1: Levels of service for on-site improvements, including sewer connection lines, shall be as required of the developer in the ~~land development regulations~~Land Development Code.

Policy 4D.1.2.2: The standards for level of service for sanitary sewer systems other than those owned and operated by FPUA shall be Permanent & Seasonal Residents - 100 gpcd.

The LOS standard for those areas of the unincorporated County served by FPUA shall be 110 gpcd.

Policy 4D.1.2.3: The County shall include in the annual Service Availability Report an update of all improvements, expansions, or increases in the capacities of facilities, of the various potential suppliers of service to the unincorporated areas of the County to ensure compatibility with the established level of service standards for such facilities.

Policy 4D.1.2.4: The County shall prepare annual summaries of capacity and demand information for each facility of the various potential suppliers of service to the unincorporated areas of the County.

Policy 4D1.2.5: Development within the unincorporated areas of the County will only be permitted when such development ties into or makes provisions for tying into a regional or sub-regional system that is available as set forth in the annual Service Availability Report approved by the County Commission within the unincorporated area of the County requiring sanitary sewer service will only be permitted when such development ties into existing sanitary sewer facilities of or makes provision for obtaining water or sewer utility service from the County Utility District, the Ft. Pierce Utility Authority or the City of Port St. Lucie within their respective sanitary sewer service areas in accordance with the then current adopted utility extension policy of the applicable sanitary sewer service provider.

Policy 4D.1.2.6: The County shall condition development orders to provide that when a regional sanitary sewer system is available, the development will be required to tie into it. Issuance of development orders or permits will be further conditioned on demonstration of compliance with applicable federal, state and local permit requirements for on-site wastewater treatment systems.

Objective 4D.1.3: The County will establish and maintain a five-year and twenty-year schedule of capital improvement needs for sanitary sewer facilities in recognized County service areas.

Policy 4D.1.3.1: The following public facility improvements within a facility type are to be considered in the following order or priority, as determined by the Board of County Commissioners:

- A. Replacement of obsolete or worn out facilities, including repair, remodeling and renovation of facilities that contribute to achieving and/or maintaining levels of service.

- B. New facilities that reduce or eliminate existing deficiencies in levels of service.
- C. New facilities that provide the adopted levels of service for new growth during the next five fiscal years, as updated by the annual review of the Capital Improvements Element.
- D. Improvements to existing facilities, and new facilities that significantly reduce the operating cost of achieving and/or maintaining levels of service.
- E. New facilities that exceed the adopted levels of service for new growth during the next five fiscal years by either:
  - 1) Providing excess public facility capacity that may be needed by future growth beyond the next five fiscal years, or
  - 2) Providing higher quality public facilities that are contemplated in the County's normal design criteria for such facilities.
- F. All facilities scheduled for construction or improvement in accordance with this Policy shall be evaluated to identify any plans of State agencies or the South Florida Water Management District that affect, or will be affected by, the proposed capital improvement.
- G. Project evaluation may also involve additional criteria that are unique to each type of public facility, as described in other elements of this Comprehensive Plan.

Policy 4D.1.3.2: In the event that the planned capacity of public facilities is insufficient to serve all applicants for development orders, the Board of County Commissioners will schedule capital improvements to serve developments in the following order of priority:

- A. Previously approved orders permitting new development,
- B. New orders permitting redevelopment, and
- C. New orders permitting new development.

Objective 4D.1.4: The County will enforce the mandatory requirements for design, operation, and maintenance of on-site wastewater treatment systems.

Policy 4D.1.4.1: The County shall develop and implement guidelines for on-site disposal systems. These guidelines will include: establishing general requirements for the construction, use, and abandonment of on-site sewage disposal systems; providing for permits with conditions and approvals; providing for standards for the approval of applications for an on-site sewage disposal system; providing for conditions under which on-site sewage disposal systems shall not be used; providing for system size determination; providing for soil classification data; providing for percolation tests; providing for alternative systems; and, providing for permit fees.

Policy 4D.1.4.2: The County shall, in conjunction with the St. Lucie Public Health Department, limit use of on-site wastewater treatment systems to the following conditions:

Existing septic tank and package treatment plants may remain in service until such time as centralized service is made available;

Use of septic tank systems concurrent with on-site potable water wells for new single family detached residential development shall be limited, depending on soil and water table conditions, and shall be in compliance with State regulations;

Use of small package treatment plants shall be limited to use where central facilities are not available in the rural County area and shall be limited to use in order to provide pre-treatment of sewage where required for particular industries or commercial uses prior to discharge into regional systems in the sanitary sewer areas if such a system is available; and

Interim wastewater plants may be used for residential developments until central sewer service is available; in compliance with Section 381.272(1), Florida Statute, all applicable guidelines shall be followed and all subdivisions must provide sewer utility easements and rights-of-way and the developer should give advance notice to purchasers of lots.

Policy 4D.1.4.3: The County shall require that construction of new residential development at densities greater than two units per acre only be permitted when central water (including package treatment plants) and central sewer (including package treatment plants) systems are available or will be provided concurrent with the impacts of development.

Policy 4D.1.4.4: The County shall coordinate with appropriate federal and State agencies, and amend local ordinances to require that issuance of permits for replacement or expansion of existing on-site wastewater treatment systems is conditioned upon compliance with current regulatory requirements and water quality standards.

Policy 4D.1.4.5: The County shall coordinate with FDEP to encourage small package treatment plants to connect to a central sewer system when feasible.

Objective 4D.1.5: The County shall provide for the coordination of the extension or increase in the capacity of existing facilities as well as the provision of new facilities to meet future needs through development and adoption of a Sanitary Sewer Master Plan. Prior to the completion of the Master Plan, residential development in excess of two units per acre and all other development shall not be permitted if it is intended to be served by on-site septic systems.

Policy 4D.1.5.1: The County shall require that all building permit applicants prior to permit issuance verify that sewer service can be provided in conformance with the policies in this plan and that adequate system capacity is available if a central system is to be utilized.

Goal 4D.2: St. Lucie County will ensure wastewater service for sub-regional or regional areas to meet existing and projected demands in those areas.

Objective 4D.2.1: Every 5-years beginning in 2008, the County will evaluate the County-wide Water and Wastewater Master Plan for wastewater in the unincorporated County areas.

~~Policy 4D.2.1.1: The County shall implement the master plan update for wastewater by 2002. Every five years the county shall review and update the master plan to include the following: By October 31, 2013 the County shall review and update the Water and Sewer Master Plan and continue to review and update it every 5 years thereafter to identify and provide for public wastewater service to include:~~

- A. An inventory of the existing package plants and wastewater treatment facilities in the unincorporated area of St. Lucie County. This inventory is to assess their current flow, committed flow, condition, useful life, ability to expand, and general need to connect to a regional system.
- B. Redefine the potential service areas.
- C. Provide population projections for the service areas based on the population projections used in the development of this Comprehensive Plan.
- D. Estimate the size of necessary treatment facilities.
- E. Suggest general locations for any new treatment facilities.
- F. Identify any remaining potential utility acquisitions.
- G. Provide budget estimates for the necessary capital improvements associated with the development of the County utility system, or components thereof.
- H. -Estimate operating costs for the facilities.
- I. Provide an outline of financing options and implementation guidelines.

Policy 4D.2.1.2: In order to provide sufficient Levels of Service for Sanitary Sewer, the County shall implement the recommendations of the Water and Wastewater Master Plan.

Objective 4D.2.2: ~~The County shall provide, where feasible, public sanitary sewer service within the unincorporated areas of the County; criteria for evaluating the feasibility of providing such public sanitary sewer service will be part of each Water and Wastewater Master Plan Update. The following locations are targeted for higher intensity development or are currently experiencing problems with existing sewer systems and shall have central sanitary sewer service provided:~~

- A. ~~That area surrounding the I-95-Indrio Road Interchange.~~
- B. ~~That area surrounding the I-95-White City Road Interchange, west of I-95.~~
- C. ~~That area along U.S. 1 in the Savannas area.~~
- D. ~~That area along County Road 707 between the Savannas State Reserve and the Indian River Lagoon.~~

~~The date by which service will be provided will be determined in the various utility providers' Sanitary Sewer Master Plans, as amended from time to time. All~~

~~amendments to the dates by which service will be provided will be incorporated into this SUBELEMENT through the comprehensive plan amendment process.~~

~~Policy 4D.2.2.1: The County shall authorize engineering and financial studies for areas identified under Policy 4D.2.1.1, which studies will include: study the development areas listed in Objective 2.2, to establish growth projections, required facility sizes, and a schedule of capital improvements.~~

~~A. Review of area needs and time frame for development.~~

~~B. Preliminary identification of public facility development necessary to meet the needs and timing of provision of public sanitary sewer service.~~

~~C. Preliminary cost estimates and a schedule of capital expenditure projects financial considerations, including recommended method of funding, rate structure and revenue projections.~~

~~Policy 4D.2.2.2: The cost of all new sanitary sewer infrastructure and collection systems shall be borne by those who directly benefit from the improved facilities.The County shall undertake projects which shall be in accordance with the schedule of capital improvements.~~

~~Policy 4D.2.2.3: The County shall give priority to projects needed to correct existing deficiencies in the formulation and implementation of the annual work programs.~~

~~Policy 4D.2.2.4: In order to provide the most cost effective and efficient provision of public sanitary sewer service within the unincorporated areas of the County, the County shall communicate with the other potential providers of public sanitary sewer service regarding availability of and willingness to provide public sanitary sewer service from such providers to meet the needs of development within the unincorporated areas of the County.The County shall consider initiating negotiations with other sanitary sewer service providers to serve those County areas that could be reasonably and cost effectively served by the other sanitary sewer service providers, either existing or proposed through a bulk service agreement with the County.~~

~~Policy 4D.2.2.4: The impact new customers have on sanitary sewer infrastructure, including collection and transmission systems, treatment facilities, disposal facilities, reclaimed water treatment facilities and reclaimed water transmission and distribution systems shall be borne by those new customers, and shall be funded by the new customers in advance of the provision of sanitary sewer infrastructure.~~

~~Objective 4D.2.3: Initiate programs to acquire private utilities serving the unincorporated area that are capable of expansion and of sustaining themselves with revenues.~~

~~Policy 4D.2.3.1: The County shall study those existing private utilities of appreciable service area size to determine their value and revenue-producing potential. In addition, needed capital improvements and service area expansion potential should be considered.~~

Policy 4D.2.3.2: The County shall consider for acquisition those private utilities which would benefit the public welfare through acquisition by the County.

Policy 4D.2.3.3: When areas previously served by package treatment plants are connected to a central system, it shall not be the responsibility of the central system to purchase these package treatment plants or incur the cost associated with removal.