



# **Indian River County 2020 Comprehensive Plan**

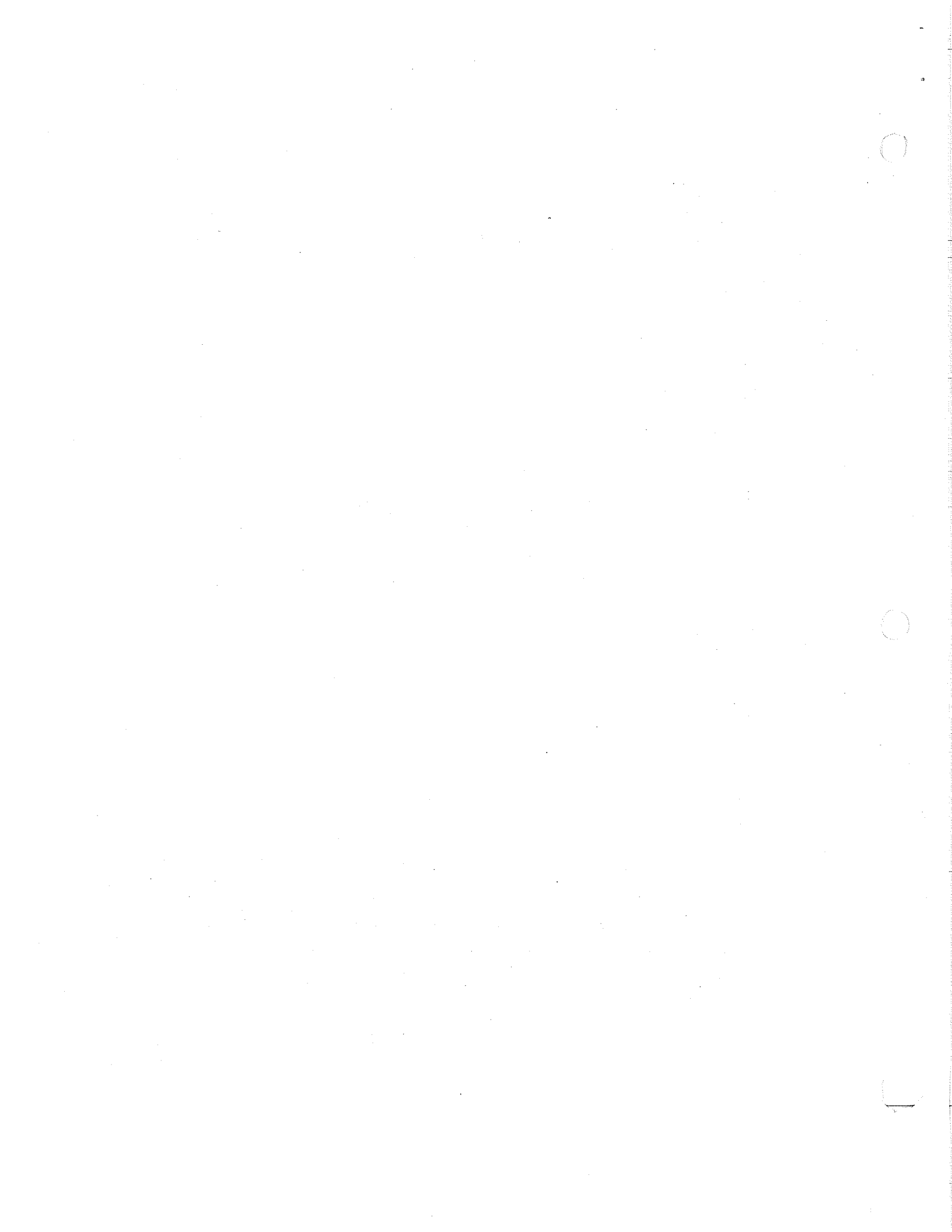
## **Chapter 3A**

# **Sanitary Sewer Sub-Element**

**Indian River County Community Development Department**

**Adopted: March 17, 1998**

Supplement #8 Adopted September 19, 2006



## TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION	1
Wastewater System	1
Purpose	1
DEFINITIONS	2
BACKGROUND	4
History	4
County Utilities Department	4
Centralized Regional System	5
EXISTING CONDITIONS	7
Sanitary Sewer Process	7
County Sewer System	8
Private Sewer Systems	14
Septic Tanks	14
REGULATORY FRAMEWORK	18
Federal	18
State	18
Local	18
ANALYSIS	20
Collection System	20
Treatment	26
Effluent Disposal	33
Summary of Analysis	34
GOAL, OBJECTIVES, AND POLICIES	37
PLAN IMPLEMENTATION	45
EVALUATION AND MONITORING PROCEDURES	49
Appendix A	53

## LIST OF TABLES

TABLE		PAGE
3.A.1	Sanitary Sewer Facilities in Indian River County	6
3.A.2	Regional Wastewater Treatment Systems	11
3.A.3	Subdivisions with Increased Health Risks And/Or Increased Probability of Groundwater Contamination Associated with Continued Septic Tank System Use	17
3.A.4	Regulation of Sewage	19
3.A.5	Typical Concentration of Household Wastewater, Septic Tank Effluent, and Wastewater Treatment Plants Effluent	21
3.A.6	Proposed Wastewater Collection System Expansion	25
3.A.7	2000 & 2010 Projected Average Daily Demand	28
3.A.8	2020 Projected Average Daily Demand	29
3.A.9	Regional Wastewater Treatment Plant Expansion Design Schedule	32
3.A.10	Recommended Wastewater Treatment System Capital Improvements	35
3.A.11	Sanitary Sewer Sub-Element Implementation Matrix	46
3.A.12	Sanitary Sewer Sub-Element Evaluation Matrix	50
3.A.13	Water and Waste Water Connection Matrix for a New Development	51
3.A.A.1	Indian River County Utility Department Rates and Charges	53

## LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
3.A.1	Indian River County Wastewater Service Area	5.1
3.A.2	Soils of Indian River County	16.1
3.A.3	Wastewater Collection System Expansion Plan North Region, North Portion	25.1
3.A.4	Wastewater Collection System Expansion Plan North Region, South Portion	25.2
3.A.5	Wastewater Collection System Expansion Plan North Region, East Portion	25.3
3.A.6	Wastewater Collection System Expansion Plan, Central Region	25.4
3.A.7	Wastewater Collection System Expansion Plan, West Region	25.5
3.A.8	Wastewater Collection System Expansion Plan, South Region	25.6



## **INTRODUCTION**

### **WASTEWATER SYSTEM**

Wastewater is the term used to describe water leaving a site as sewage. Wastewater includes water from the kitchen and bathroom sinks, toilets, dishwashers, clothes washers, and bath tubs/showers. Each day, every person within Indian River County produces an average of 100 gallons of wastewater. This wastewater has three possible destinations. First, it may enter an on-site treatment disposal system, usually a septic tank, where it receives a minimum level of treatment. Second, it may go to a private sewage treatment plant, generally located near the dwelling unit or other structure. Private treatment plants usually provide a greater degree of treatment than septic systems. The third possible destination for wastewater is a regional treatment plant. Such regional plants may be located many miles from the structure where wastewater is generated. These plants generally provide a consistently greater degree of treatment than either septic systems or private plants.

Wastewater treatment systems are comprised of three components; these are collection, treatment, and disposal. The importance of each of these three components varies with the type of wastewater system. This document will address the collection, treatment, and disposal characteristics of septic systems, private treatment plants, and central treatment systems.

### **PURPOSE**

The purpose of the Sanitary Sewer Sub-Element is to:

- identify existing and projected demand and need (demand - supply = need) for sanitary sewer facilities based on the county's population, existing and future land use, capacity of existing facilities and any future changes to these facilities;
- identify the operational responsibilities, geographic service areas and level of service provided by each facility;
- identify those areas where public sewer will and will not be provided; and
- identify environmentally sound methods of disposing of treated wastes and sludge from treatment plants.

This sub-element will provide direction for the county in planning for the collection, treatment, and disposal of wastewater in a manner consistent with federal, state and local laws. In addition, the Sanitary Sewer Sub-Element will identify proposed locations and levels of service of sanitary sewer facilities. Finally, this element will establish sanitary sewer policies that complement the county's future land use pattern and serve as a means of directing future growth in the county.

## DEFINITIONS

Wastewater means untreated sewage.

Effluent means the liquid by-product of the wastewater treatment process.

Wastewater Collection Network means the system of pipes which convey the untreated wastewater from individual homes and other establishments to the treatment plant.

Wastewater Interceptors are defined as parts of the collection system which connect directly to and convey sewage to the treatment plant.

Wastewater Trunk Mains are components of the collection system which connect directly to and convey sewage to the interceptors through a gravity system.

Pump Stations are mechanical devices used to pump sewage through the collection network (force mains) for the purpose of transporting the untreated wastewater to the treatment plant.

Force Main means a pressurized segment of the collection system.

Wastewater Treatment Plant means the facility which functions to remove solid and organic materials from the wastewater.

Wastewater Treatment Process is the means by which solid and organic materials are removed from the untreated wastewater.

Level of Wastewater Treatment is defined by the proportion of solid and organic materials removed from the wastewater. The most common levels of treatment are: primary, secondary; and tertiary.

Primary Treatment removes between 30 and 35 percent of the organic material and up to 50 percent of the solids from the sewage. Because screens and settling tanks are the most common methods used to remove the solids, this process is also referred to as physical treatment.

Secondary Treatment removes between 80 and 90 percent of the total organic material and suspended solids from the sewage. This level of treatment generally requires multiple steps involving one biological process and one or more processes for removal of suspended solids.

Tertiary Treatment is a level of wastewater treatment which removes the organic material and suspended solids, synthetic organic compounds and inorganic chemicals. If not removed, these agents may cause pollution problems. Tertiary treatment adds steps to the primary and secondary processes which will remove these pollutants. The most common tertiary processes remove



compounds of phosphorus and nitrogen. The effluent from advanced treatment processes often approaches the quality of drinking water.

Septic Tank Systems are small scale wastewater treatment systems consisting of two components. Those components are a septic tank where solids settle out and biological action occurs, and a drainfield where the remaining liquid is discharged. Septic tank systems provide a minimal level of wastewater treatment.

Regional Wastewater Treatment Systems are large scale sanitary sewer systems comprised of three components: collection of raw sewage; treatment of the sewage; and the disposal of the treated sludge and effluent.

Package Wastewater Treatment Plants are small treatment systems designed and built in modular units and having components similar to larger regional treatment facilities.

Infiltration means water, other than wastewater, that enters a sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections or manholes.

Inflow means water, other than wastewater, that enters a sewer system (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters or drainage.

## **BACKGROUND**

An important aspect of wastewater or sanitary sewer planning involves examining existing conditions. Prior to that, however, it is helpful to consider the background or history of this system in the county. That provides a perspective regarding county policy on this matter. Instead of a static view of current conditions as the existing conditions section provides, the background section identifies recent trends in this area.

## **HISTORY**

A review of recent history shows that Indian River County has owned and operated sanitary sewer facilities for only a relatively short time. Prior to the 1970's, the use of centralized facilities which provide the highest level of treatment and efficiency was limited to the densest and most intensely developed urban areas of the county. Those areas were located within or adjacent to the City of Vero Beach. While centralized sewer service has been available to the City of Vero Beach since 1926, most of the unincorporated area of the county did not have access to such service until the late 1970's.

In the past, the use of privately owned sewer facilities has provided the county with an alternative to publicly owned, centralized sewer services. Private sewer facilities are operated by private companies which are given the authority to provide wastewater service to specified areas of the county. Most private sewer systems provide service only to an individual subdivision or development.

Prior to the establishment of the County Utilities Department in 1972, the regulation of wastewater facilities rested with several state and federal agencies and often focused on the permitting of new and the expansion of existing treatment facilities. By 1972, the regulatory agencies were becoming more intent on discouraging the use of individual septic tanks and small package systems.

## **COUNTY UTILITIES DEPARTMENT**

The County Utilities Department was established in 1972. Authorized to develop procedures and standards for utilities in the county, the department also issues utility permits. Initially formed to regulate privately owned utility systems, the Utilities Department was also charged with developing a countywide utilities system. At the time that the utility department was created, centralized sewer services in the county were provided by the City of Vero Beach, by private utility companies, and by private systems serving individual buildings and developments. A majority of residential developments in the unincorporated county relied on individual septic tanks for wastewater treatment and disposal.

In 1973, a master sewage plan was developed for the county. This plan identified the need for publicly owned and operated regional facilities to protect the public health and prosperity of the

community. The plan outlined proposed service areas in the eastern portion of the county as well as the necessary facilities and capitalization required to implement the plan. The plan also recommended eventually incorporating private sewer treatment facilities into the county system.

Also in 1973, the County and the City of Vero Beach entered into an agreement regarding the provision of sanitary sewer services. This agreement established boundaries for areas in the county that would receive services from the city.

### **CENTRALIZED REGIONAL SYSTEM**

The county's first direct provision of wastewater treatment services took place in 1978, as the result of problems at two private sewer systems. The Gifford (later to be known as the Central Plant) and Ixora Park facilities had experienced system failures that resulted in the release of raw sewage into the surrounding areas. Because of these problems and their environmental impacts, the County Utilities Department assumed responsibility for the operation of these plants. The Central Plant has since been expanded, while the Ixora plant has been decommissioned.

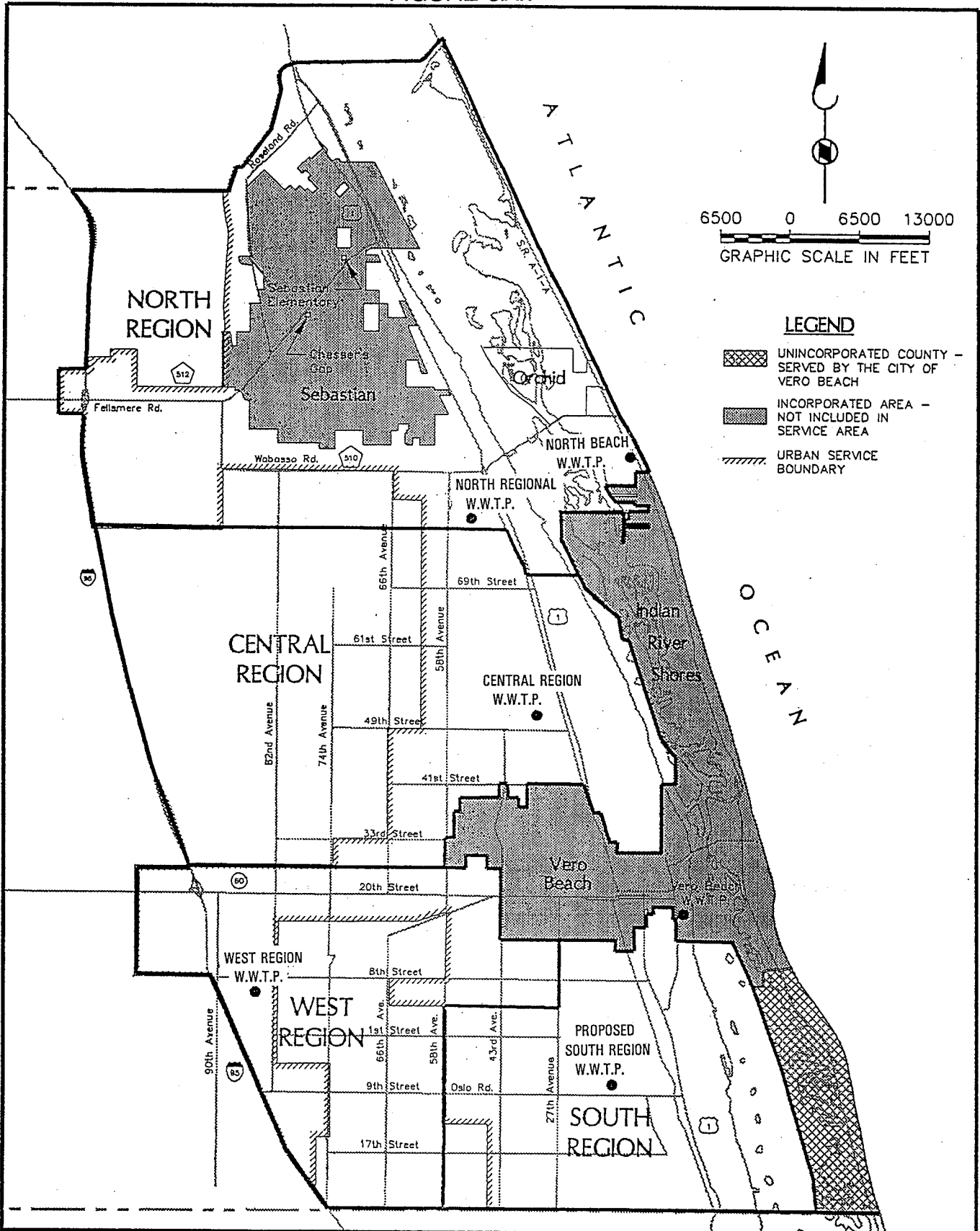
In 1982, county wastewater services expanded when the Utilities Department took over the operation of the Vista Royale and Vista Royale Gardens plants in the southern part of the county. This expansion continued with construction of the West Regional Wastewater Treatment Plant which began operation in 1986. Located south of SR 60 and east of I-95, the West Regional Plant provides wastewater service for the rapidly growing SR 60 Corridor area.

Utilities system expansion has continued in the 1990's. In 1990, the county completed construction of the North County Plant. The County acquired the South County Plant from General Development Utilities in 1993, and in 1995 the county purchased the City of Sebastian's utilities system.

In 1987, Indian River County adopted a Wastewater Master Plan which has been updated several times, most recently in January 1997. This plan establishes a system of wastewater treatment facilities to accommodate the anticipated growth of the county. The Master Plan identifies five sewer service areas. Those areas are North, West, Central, South, and City of Vero Beach.

One publicly owned and operated regional wastewater treatment plant exists within each of the five service areas. In addition to public facilities, septic tanks and private treatment facilities currently exist and will continue to exist in each service area. Figure 3.A.1 shows the boundaries of the five service areas. Table 3.A.1 shows existing wastewater treatment plants in Indian River County with their capacity and service area.

FIGURE 3A.1



Source: I.R.C. Utilities Dept.

**BC** Brown and Caldwell  
Consultants

WASTEWATER SERVICE AREAS  
FOR INDIAN RIVER COUNTY

TABLE 3.A.1

**SANITARY SEWER FACILITIES  
IN INDIAN RIVER COUNTY**

FACILITY	PUBLIC OR PRIVATE	OPERATING ENTITY	PACKAGE OR REGIONAL	SERVICE AREA	DESIGN CAPACITY IN GALLONS/DAY
1. North County	public	IRC	regional	North of 77 <sup>th</sup> Street; will eventually include north barrier island	1,000,000
2. Central County	public	IRC	regional	26 <sup>th</sup> Street and Vero Beach City limits to 77 <sup>th</sup> Street	2,000,000
3. West County	public	IRC	regional	South of 26 <sup>th</sup> Street and west of City of Vero Beach	2,000,000
4. S. County	public	IRC	regional	Southeast mainland	2,000,000
5. Vero Beach	public	Vero Beach	regional	Vero Beach, Ind. Riv. Shores, S. Barrier Island	4,500,000
6. N. Beach	public	IRC	package	North Barrier Island	210,000
7. Vista Royale	public	IRC	package	E. side of US 1, Vero Beach to Oslo Road	500,000
8. Vista Gardens	public	IRC	package	E. side of US 1, Vero Beach to Oslo Road	150,000
9. Blue Cypress	public	IRC	package	Blue Cypress Improvement Dist.	20,000
10. Sun-Ag MHP	private	Sun-Ag Co.	package	Sun-Ag Mobile Home Park near Fellsmere	50,000
11. Sun-Ag Packinghouse	private	Sun-Ag Co.	package	Sun-Ag Packinghouse near Fellsmere	2,500
12. Fellsmere Elemen.	public	IRC School Board	package	City of Fellsmere	7,500
13. Snug Harbor	private	Snug Harbor	package	Snug Harbor	99,000

SOURCE: Indian River County Utilities Department

## **EXISTING CONDITIONS**

In assessing existing conditions, it is necessary to address the sanitary sewer system on several levels. First, it is necessary to differentiate among the various types of systems in the county. This involves separate consideration of the publicly-owned sewer system, privately-owned sewer systems, and individual septic systems. Second, it is necessary to identify individual service areas for both the public system and private systems. Finally, it is necessary to assess each type of system and service area in terms of collection, treatment, and disposal.

### **SANITARY SEWER PROCESS**

Before considering each system and service area, the overall sanitary sewer process should be reviewed. Although specific aspects of the process vary with the type of system, certain characteristics are the same, regardless of system type.

#### **Collection**

Once wastewater is generated by residences, businesses, industries, and other land uses, it is then conveyed from an individual establishment to a wastewater treatment plant by the collection network. Alternatively, the wastewater may go to an individual septic tank for on-site treatment. Where a centralized system is involved, however, the collection network is generally laid out in a pattern roughly comparable to the branching pattern of a tree. The smallest sewer pipes connect individual establishments to components of the collection system called trunk mains and interceptors. Interceptors connect with and convey wastewater directly to the treatment plant.

#### **Treatment**

After being collected, wastewater is processed by a wastewater treatment plant. Presently, both Indian River County and the City of Vero Beach maintain regional wastewater treatment plants. In addition to the five regional facilities, there are eight package wastewater treatment facilities. The existing wastewater treatment plants use a variety of methods to treat the wastewater.

Once at the treatment plant, the wastewater is treated to remove solid and organic materials. The level of processing of the wastewater is either primary, secondary, advanced secondary, or tertiary. The level of treatment is based on the treatment method and the proportion of materials removed from the wastewater.

In addition to differences in the methods of treating wastewater, the existing wastewater treatment plants also differ in the capacity of the facilities. The capacity of a wastewater treatment plant is the number of gallons of wastewater that the plant can treat on an average daily basis. The capacity is expressed in terms of gallons of wastewater per day.

### **By-product Disposal**

The by-products of the treatment process are effluent, screenings and grit, and sludge and septage. Effluent is liquid waste which at the county operated wastewater treatment facilities is usually disposed of through either discharge to a percolation pond or by reuse. Reuse is an effluent disposal method involving irrigation.

Screenings and grit are the accumulated coarse sewage solids retained by the screening process. Screenings and grit are disposed of at the county landfill.

Sludge and septage are the biological organisms that accumulate in the plant. Prior to final disposal, sludge is usually subjected to an additional biological treatment process to remove pathogens. It is also subject to physical dewatering processes which facilitate transportation and disposal. Sludge and septage are disposed of at a special facility adjacent to the Central County Treatment Plant.

### **COUNTY SEWER SYSTEM**

The five geographic areas comprising the county sewer system are: the south service area, the west service area, the central service area, the north service area, and the City of Vero Beach service area. Because the five areas differ in service provided, each area must be considered separately. In this way, the special characteristics of the system within each service area can be identified and described.

#### **South Sewer Service Area**

The South Service Area is located in the southeast portion of the mainland. there are three wastewater treatment plants, each operated by the county County Treatment Plant (SCTP), the Vista Gardens Treatment Plant, and the Plant. The SCTP is a regional plant, while the Vista Plants are package plants to be decommissioned.

*Vista Plants -  
decommissioned?*

The SCTP is an 850,000 GPD facility which uses contact stabilization and extended aeration to provide an advanced secondary level of treatment. Effluent from the SCTP is reused at various county sites.

The Vista plants serve only the Vista Gardens and Vista Royale condominium developments. The Vista Gardens Wastewater Treatment Plant is a 150,000 GPD treatment facility which uses a contact stabilization and extended aeration process with tertiary treatment filters. The Vista Royale Wastewater Treatment Plant is a 500,000 GPD facility which can be operated either as a contact stabilization plant or an extended aeration treatment facility with tertiary treatment filter.

Effluent from the Vista Gardens and the Vista Royale Wastewater Treatment Plants is discharged into polishing ponds and is allowed to overflow into a mosquito impoundment. In the impoundment, the effluent percolates into the groundwater and/or evaporates into the atmosphere.

In addition to force mains along US 1, the South County Service Area collection system currently extends to the Vero Shores, Garden Grove, Grove Isle, and portions of the Vero Beach Highlands residential subdivisions.

**West Sewer Service Area**

The West Regional service area includes the unincorporated SR 60 corridor area and the area southwest of Vero Beach. Within the West Service Area, there is one wastewater treatment plant. The West Regional Treatment Plant is located south of 8<sup>th</sup> Street, north of 4<sup>th</sup> Street, and east of 90<sup>th</sup> Avenue.

This plant, with a 2,000,000 GPD capacity, uses biological nutrient removal to provide an advanced level of treatment. Presently, effluent from this treatment facility is reused for spray irrigation or discharged into a ±165 acre man-made wetland.

The West County Service Area force mains extend from the West County Plant along the SR 60 corridor, and along 66<sup>th</sup> Avenue from SR 60 to 4<sup>th</sup> Street. Force mains also extend from the West County Plant, along 82<sup>nd</sup> Avenue to the Oslo Road/74<sup>th</sup> Avenue commercial/industrial node and to the SR 60/I-95 commercial/industrial node. The system also extends to the Heritage Village, Countryside, Cambridge Park, Indian River Estates, Village Green, Vista Plantation, Lake in the Woods, Sixty Oaks, and portions of the Rivera Estates residential developments.

**Central Sewer Service Area**

The Central Sewer Service Area includes the portion of the mainland generally bounded by I-95 on the west, 77<sup>th</sup> Street on the north, the Indian River Lagoon on the east, and the City of Vero Beach and 26<sup>th</sup> Street on the south. The Central County Treatment Plant, located north of 49<sup>th</sup> Street, just west of the Lateral "H" canal in the unincorporated community of Gifford, is the only treatment plant within this service area.

This plant, with a 2,000,000 GPD capacity, uses contact stabilization and extended aeration to provide an advanced secondary level of treatment. Presently, effluent from the treatment facility is discharged into percolation ponds or reused for spray irrigation.

Collection lines extend from the plant, along 49<sup>th</sup> Street between 43<sup>rd</sup> Avenue and US 1, and along US 1 from 49<sup>th</sup> street to Indian River Memorial Hospital. The system also extends to the Bent Pine and Grand Harbor residential developments, and to much of the Gifford community.



## Comprehensive Plan

*North Beach  
Plant  
decommission?*

### North Sewer Service Area

The North Sewer Service Area lies north of 77<sup>th</sup> Street and encompasses the Atlantic Ocean. Within this service area, there are two wastewater treatment plants operated by the county. These plants are the North County Treatment Plant, and the North Beach Treatment Plant. The North County Plant is a regional plant, while the North Beach Plant is a package plant that will eventually be decommissioned.

The North County Plant is a 1,000,000 GPD facility which uses an oxidation ditch and extended aeration to provide an advanced secondary level of treatment. Effluent from the North County Plant is discharged into percolation ponds or reused for spray irrigation.

The North Beach Plant currently serves only the portion of the barrier island north of the Town of Indian River Shores. The North Beach Plant is a 210,000 GPD treatment facility which uses contact stabilization with tertiary treatment filters. Effluent from the North Beach Plant is reused within the Sea Oaks residential development.

Collection lines extend south from the North County Plant along Old Dixie Highway to 73<sup>rd</sup> Street. From there the lines extend east into the Copeland's Landing residential development. To the north, lines extend along the US 1 corridor to the county line. A force main runs along CR 512, from US 1 to I-95, and north along Roseland Road from CR 512 to approximately ¼ mile north of Main Street. Another force main extends west along Main Street from US 1 to approximately halfway to Roseland Road. Collection lines extend to the Roseland area including a force main along the north two miles of Roseland Road. Collection lines also extend to several residential developments on the north barrier island, including Sea Oaks, Windsor, and the Town of Orchid.

### City of Vero Beach Sewer Service Area

The City of Vero Beach Urban Service Area encompasses the City of Vero Beach, most of the Town of Indian River Shores (one multiple-family residential complex is excluded), and the portion of the barrier island south of the City of Vero Beach. In addition, it serves the Ixora Park residential subdivision, and the Vero Mall, both within the unincorporated county.

The Vero Beach Wastewater Treatment Plant has a design capacity of 4,500,000 GPD. The method of treatment consists of complete mix activated sludge, followed by water reclamation processes that include tertiary filtration and high level disinfection. Most effluent from this plant is used for irrigation by golf courses and residential developments. During and immediately after periods of extremely high rain fall, however, some effluent is discharged into the Indian River Lagoon. Sludge disposal is by land application on agricultural properties for beneficial reuse.

Table 3.A.2 summarizes the county regional wastewater treatment system.

COUNTY REGIONAL WASTEWATER TREATMENT SYSTEMS  
TABLE 3.A.2

SERVICE AREA	TREATMENT PLANT	DESIGN CAPACITY IN GPD	1995 DEMAND IN GPD	TYPES OF LAND USES SERVED	TREATMENT METHOD	TREATMENT LEVEL	EFFLUENT DISPOSAL METHOD	PROPORTIONAL ALLOCATION
NORTH	North County	1,000,000	400,000	residential, commercial, industrial	oxidation ditch and extended aeration	advanced secondary	percolation pond and spray irrigation	90% Sebastian, 10% IRC
	North Beach	210,000	65,000	residential	contact stabilization	tertiary	spray irrigation	95% IRC, 5% Orchid
CENTRAL	Central County	2,000,000	510,000	residential, commercial, industrial	contact stabilization and extended aeration	advanced secondary	percolation pond and spray irrigation	100% IRC
WEST	West County	2,000,000	800,000	residential, commercial, industrial	biological nutrient removal	advanced wastewater treatment	spray irrigation and on-site wetland	100% IRC
SOUTH	South County	2,000,000	450,000	residential, commercial	contact stabilization and extended aeration	advanced secondary	spray irrigation	100% IRC
	Vista Royale	500,000	375,000	residential	contact stabilization	tertiary	polishing pond and mosquito impoundment	100% IRC
	Vista Gardens	150,000	137,000	residential	contact stabilization and extended aeration	tertiary	polishing pond and mosquito impoundment	100% IRC
VERO BEACH	City of Vero Beach	4,500,000	3,400,000	residential, commercial, industrial	complete mix activated sludge and high level disinfection	tertiary	spray irrigation	65% Vero Bch., 24% IRC, 11% Indian River Shores
TOTAL		11,210,000	6,137,000					

## **Finance**

Financially, the Indian River County Utilities Department is an enterprise system. That means that there is no general tax money allocated for the construction or expansion of utility services. The County Utilities Department's revenue comes from sources such as water sales, meter installation charges, hydrant maintenance tax, sewer service charges, effluent reuse sales, penalties, service charges, impact fees, and other sources which make the utility department financially self-sufficient.

County regulations require that most parcels within 200 feet of a county sewer line connect to the county system. Upon connection, a customer incurs certain charges. Those charges generally cover the costs of facility operation and maintenance. Some charges, however, can be incurred even before connection. Because unused capacity can be reserved for future development, wastewater treatment plants are developed with excess capacity. Because maintaining that excess capacity increases operation and maintenance costs, a monthly base facility charge applies to capacity reserved for future development.

Other charges include the following:

- water production charges
- volume charges
- customer charges
- connection charges
- meter re-reads and leak inspection charges
- delinquency charges
- general service call charges
- meter calibration charges
- damage repair charges
- engineering services charges
- deposits required upon opening
- charges for transferring or reconnecting a service
- additional charges for complex connections

Some charges, such as connection fees, vary based on pipe size (Table 3.A.A.1 of Appendix A shows rates and charges for the utility services). The Utilities Department may use these revenues to expand facilities or to modify the existing system. These funds can be used for either capital or operating needs.

Another source of revenue, which can be used only to offset a portion of the capital cost of the anticipated new demand on the system, is the impact fee. The remaining capital cost is recouped through monthly charges. Impact fees pay for certain necessary improvements that must be made in order to provide a wastewater treatment system that meets the needs of new residents as well as industrial and business establishments anticipated in future years.

As a payment option for the extension of the sewer system, the county allows a contribution in aid of construction. After the installation of sewage collection facilities by a developer, title to those facilities is transferred to the county. The requirement for such contributions is to defray the cost of the sewage collection system. The referenced facilities may be “on-site” or “off-site.” These options are discussed below.

**On-Site Facilities**

Each developer is responsible for the design, installation, inspection, and testing of the complete sewage collection system located within the boundaries of the developer’s property.

**Off-site Facilities**

The location, size or proposed density or intensity of a development project may make service to the property dependent upon the extension of off-site sewage collection facilities. Off-site facilities are those mains, sewage collection lines, sewage force mains, and/or pumping stations adequate in size to transmit sewage collected on the developer’s property to a treatment plant or disposal site of the county.

The county’s policy is to expand its sewer system in an orderly and economical manner. That expansion schedule, however, does not always coincide with developer’s plans. In cases where the county had not planned to expand its system to serve a project in the timeframe required by a developer, the developer is required to construct or pay the cost of off-site facilities associated with that project when the following conditions exist:

- such an extension would require an extraordinary expenditure by the county for transmission facilities; and
- such expenditure would cost more than the county’s standard impact fee.

In that event, the county may negotiate an agreement which enumerates the following:

- the county’s responsibility to provide service to the development, and possibly reimburse the developer for oversized facilities; and
- the developer’s responsibility to construct and dedicate to the county the off-site facilities (possibly oversized to meet future demands).

**Refundable Advances**

The county may require, in addition to a contribution in aid of construction of off-site facilities, a refundable advance by a developer to further temporarily defray the cost of any “off-site” extension of water and/or sewer mains and pumping stations necessary to connect the developer’s property to the county’s water and sewer facilities. This provision recognizes instances in which a developer may be required to advance funds to construct off-site facilities sized in accordance with the

County's Master Plan. All amounts expended by a developer pursuant to such an agreement, over and above the developer's need for off-site facilities, may be refunded to the developer in accordance with the terms and conditions of a refunding agreement which the county executes with the developer. The County may assume a portion of the material cost of such projects when it deems it to be in the best interest of the county utility system. The refund agreement shall provide for a plan of refund based upon the connection of other properties served by the "off-site" facilities installed by the developer.

**Assessment**

Another funding option available to the county is assessment. The Board of County Commissioners may assess benefitting property owners a proportional share of the cost of any county project, including utility line extensions. Assessment projects may be initiated by either the Board or property owners. For utility line extensions, main transmission or collection lines (Master Plan lines), are not included in the assessment calculations. Those lines are funded through other sources. Assessments may be financed for up to 10 years. The interest rates for assessments are set by the Board of County Commissioners in January of each year. The Board usually adopts the prime rate.

**PRIVATE SEWER SYSTEMS**

Indian River County has three private sewer systems, each of which uses package treatment plants. The Sun-Ag company operates two of the county's private plants. Those plants are located near the City of Fellsmere, outside of the county's service area. One of those plants serves a mobile home park, while the other serves a packinghouse. Both of those facilities use extended aeration to provide a secondary level of treatment. Effluent at those plants is disposed of through a percolation pond.

The county's other private system is located at the Snug Harbor residential development in the unincorporated county. That facility uses extended aeration to provide a secondary level of treatment. Effluent at that plant is disposed of through a percolation pond.

The Snug Harbor Plant was established prior to the creation of the county. The County Utilities Department eventually plans to provide service to the Snug Harbor Plant. At that time, the private plant will cease to operate, and its customers will be served by the county sewer service system.

*Snug Harbor*

**SEPTIC TANKS**

The third type of sanitary sewer system utilized in the county is the individual system or septic tank. Septic systems are generally small and designed to serve one or a limited number of land uses.

Despite major expansion of the wastewater collection network, many residents within the unincorporated portion of the county do not have access to regional wastewater treatment facilities or package treatment plants. For these land uses, wastewater treatment and disposal is provided by

individual septic systems. According to the Indian River County Health Department, Division of Environmental Health (IRCHD), approximately 500 to 600 new septic systems are constructed annually within the unincorporated county. Of these septic tanks, 5% to 8% are for commercial uses. The residential septic systems are concentrated in Roseland, Sebastian, Vero Lake Estates, and the older platted subdivisions south of the City of Vero Beach.

Septic tank systems provide on-site wastewater treatment for both residential and small-scale commercial developments. Residential septic tanks usually range in capacity from 900 to 1000 gallons. Generally, commercial septic tanks have a larger capacity. Since effluent from septic tanks is discharged to the drainfield where it is allowed to percolate into the soil, soil permeability and depth to the water table are limiting factors for septic tank use. To ensure adequate performance and protect groundwater quality, elevation of septic tank drainfields is often required.

The septic tank system consists of two components. One is the septic tank, while the other is the drainage field. The tank receives sewage from the dwelling unit or commercial establishment and provides a period of settling, during which time a significant portion of the solids settle out. The treatment process is accomplished by bacteria which gradually decompose the solids which have settled to the bottom of the septic tank. The remaining liquids are discharged through underground drainage pipes into the drainfield and percolate into the soil. Once in the soil, microorganisms and filtration processes purify the liquids. Every three to five years, the accumulated solids must be removed. These solids, called septage, are generally transported to regional sanitary sewer facilities for treatment prior to disposal.

According to the IRCHD, Indian River County is a difficult county in which to install septic tank systems. There are several factors which account for this difficulty. These factors are:

- a high water table found in almost all areas of the county; and
- soil conditions consisting of an underlying hardpan strata in much of the county.

The high water table impedes the discharge of liquids into the drainfield. The underlying hardpan strata may prevent the infiltration of effluent into the soil.

There are also other soil conditions that hinder the use of septic tank systems. Most of the land area within the county is poorly drained and has severe septic tank system limitations. There are, however, two areas of the county in which the soils are better suited for the installation of septic tank systems. These areas are as follows:

- Areas of South Florida Coastal Strand on the barrier island; and
- areas on the mainland in the vicinity of the Atlantic Coastal Ridge.

The areas of the county having “Excessively Drained Soils” and “Moderately Drained Soils” are better suited for septic tank systems. As shown on Figure 3.E.1 of the Stormwater Management Sub-Element, even these two soil types have limitations with respect to septic tank system

suitability. Moderately drained soils have a severe limitation rating for septic tank system suitability, while excessively drained soils percolate so rapidly that they provide very poor filtration. Septic tanks on these soils have a potential for causing groundwater contamination. Figure 3.A.2 shows soil suitability characteristics for Indian River County.

The IRCHD requires that a septic tank system have a minimum of 42 inches of well draining soil below the infiltrating surface of the drainfield. During the months of June through October, the season of greatest rainfall, the water table in much of the county may be only 24 inches below this infiltrating surface. Therefore, fill material is often placed on top of existing soil. This fill material, which provides the depth necessary for the proper operation of the septic tank system, is usually a highly porous sand that can purify the liquids discharged into the drainfield.

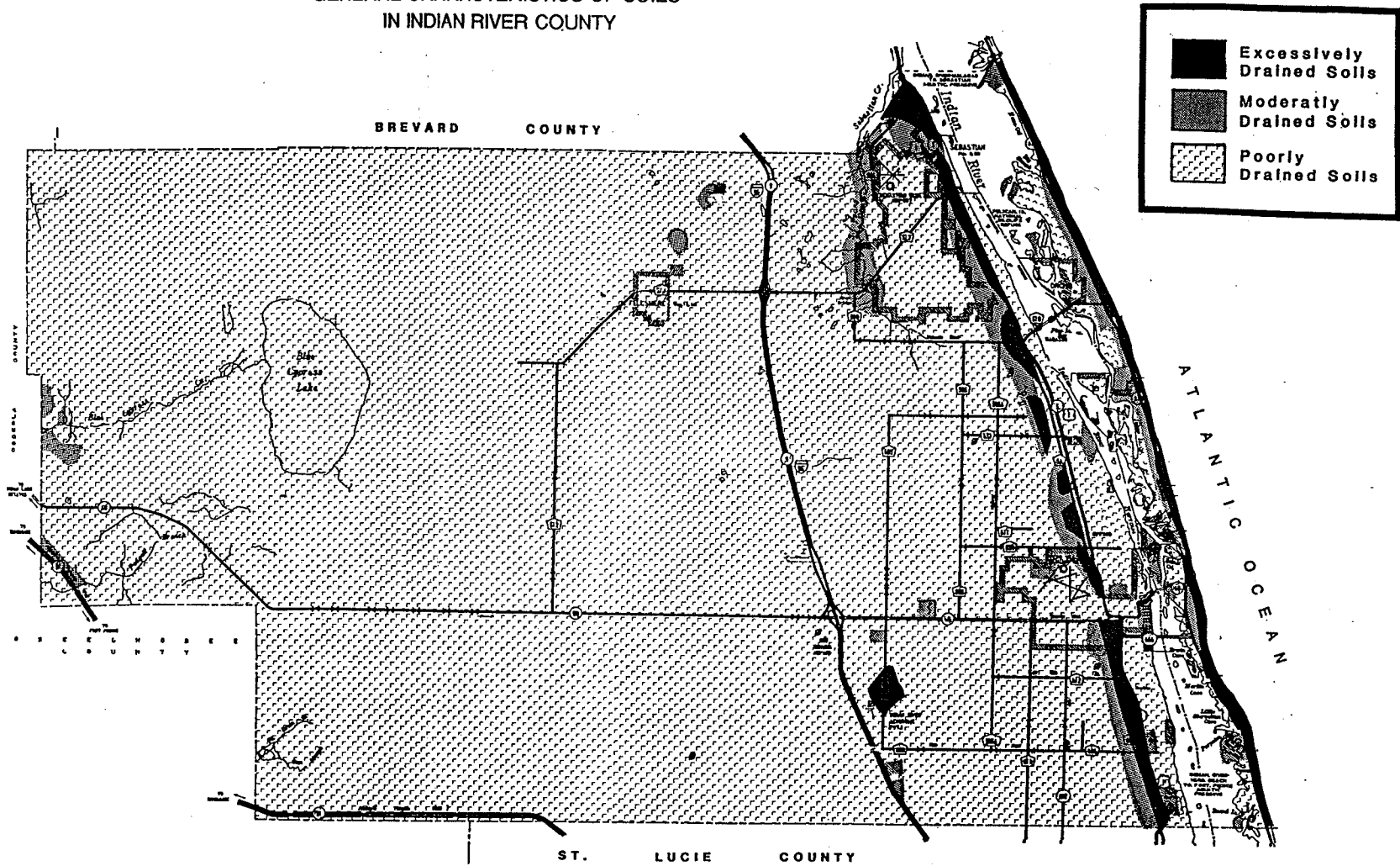
According to the IRCHD, even when fill material is placed on a residential lot, there are still areas of the county in which there are problems with septic tank systems. Besides soil and groundwater conditions, these problems may be due to inadequate separation between septic tank drainfields and wells. Without adequate separation, the potential of contamination from septic tanks seeping into wells is greatly increased.

Presently, the IRCHD requires a minimum separation of 75 feet between wells and septic tanks. Generally, the IRCHD requires that new lots utilizing well and septic tank systems be a minimum of ½ acre (approximately 20,000 square feet). If the lot will be served by a public water system, the size of the lot usually may be reduced to ¼ acre in size (approximately 10,000 square feet).

There are many areas of the county in which existing subdivisions contain lots which do not meet the minimum acreage requirements for well and septic tank systems. Nevertheless, if soil and groundwater conditions are favorable, residential lots that do not meet those standards may be able to utilize septic tank systems without increased health risks or increased probability of groundwater contamination. That is particularly applicable to residential lots that are connected to the regional potable water system. Table 3.A.3 lists subdivisions in the county service area with increased health risks and/or increased probability of groundwater contamination associated with continued septic tank system use.

Like regional and private wastewater treatment facilities, septic systems also produce effluent and a solid by-product called septage. The effluent is discharged into the drainfield and percolates into the groundwater. The septage is deposited in the septic tank. Periodically, the septage must be removed from the tank. For residential septic systems, the interval between removal is typically three to five years. For land uses which generate large quantities of wastewater, the interval between removal times may be as frequent as once a month. The size of the septic tank, however, also influences how often removal occurs. When septage is removed from septic tanks, private contractors must haul the septage to the county's sludge and septage disposal facility at the Central plant or to some other approved facility.

FIGURE 3.A.2  
 GENERAL CHARACTERISTICS OF SOILS  
 IN INDIAN RIVER COUNTY



Source: USDA Soil Conservation Service

Date: 1987

**Boyle**  
 Engineering Corporation

REPRINTED BY PERMISSION OF  
 FDOT. FINANCIAL ASSISTANCE  
 FOR MAP PREPARATION PROVIDED  
 BY FLORIDA DEPT. OF COMMUNITY  
 AFFAIRS.



Miles  
 0 1 2 3 4  
 SCALE

INDIAN RIVER COUNTY  
 FLORIDA



TABLE 3.A.3  
INDIAN RIVER COUNTY  
SUBDIVISIONS WITH INCREASED HEALTH RISKS AND/OR INCREASED  
PROBABILITY OF GROUNDWATER CONTAMINATION ASSOCIATED WITH  
CONTINUED SEPTIC TANK SYSTEM USE

1. Oslo Park
2. Paradise Park
3. Stevens Park
4. Durrance Place

Source: Indian River County Health and Utilities Departments

## **REGULATORY FRAMEWORK**

The wastewater collection, treatment, and disposal system is regulated by various agencies at all levels of government. Table 3.A.4 shows the state and local agencies involved in wastewater regulation and the types of activities in which they are involved.

### **FEDERAL**

The Federal Water Pollution Control Act of 1972 (PL 92-500) and its amendments through the Clean Water Acts of 1977 (PL 95-217) and 1981 (PL 97-117) are the basis for pollution control regulation in the nation. The goal of these acts is the restoration and/or maintenance of the chemical, physical, and biological integrity of the nation's water. The act established a national policy of implementing areawide wastewater treatment and management programs to ensure adequate control of sources of pollutants. Under a provision of PL 92-500, grants are made available to local governments to construct facilities to treat "point sources" of pollution, including effluent from sewage treatment processes. The U.S. Environmental Protection Agency is responsible for implementing the act.

### **STATE**

The Florida Department of Environmental Protection (DEP) is the agency responsible for ensuring that the State carries out the requirements of PL 92-500. In response to PL 92-500, DEP has adopted Chapters 17-3 and 17-6, FAC. These chapters regulate wastewater facilities which treat flows exceeding 10,000 GPD.

The Florida Department of Health (DOH) regulates septic tanks and drainfield installations within the State. Within each county, the DOH has an office to regulate septic systems. These regulations have been adopted by rule in Chapter 64E-6. While 64E-6 does not set the criteria for septic tank effluent quality, it does require that septic tanks be installed in such a manner that, with reasonable maintenance, they will not create a health hazard or endanger the safety of any domestic water supply.

In addition to regulating wastewater facilities, 64E-6 also establishes criteria for mandatory connections to wastewater and potable water systems. Land uses that are within 200 feet of a gravity line and subdivisions within ¼ mile (1320 feet) of a gravity line and with accessibility to that line through public rights-of-way must connect to the utilities system.

### **LOCAL**

In 1984, Indian River County adopted an ordinance that established the utility rate structure and a mandatory hookup policy for both residential and non-residential development. County policy generally states that any development located within 200 feet of a wastewater collection line must connect. In addition to that ordinance, the Utilities Department also has developed and adopted

design standards and review procedures to ensure that all connections to the system are compatible with the system design.

TABLE 3.A.4  
REGULATION OF SEWAGE

Agency	Statutory Authority	Scope	Activity
DEP	Ch 403 FS 17-6 FAC	Responsible for all wastewater treatment plants, and wastewater flows greater than 10,000 GPD.	Permits & inspection of wastewater plants over 10,000 GPD.
DOH; County Health Department	Ch 381 FS 64E-6 FAC	Responsible for all onsite disposal systems less than 10,000 GPD.	Inspects, tests, and enforces all systems less than 10,000 GPD. Responds to all public complaints.
County Utilities Dept.	Local Ordinance Home Rule	Responsible for review and construction of the public wastewater system. Regulates franchise of private wastewater plants.	Inspects all work on county public wastewater system. Regulates franchise package facilities. Will not permit package plants under 20,000 GPD capacity.

Source: Indian River County Utilities Department

# ANALYSIS

The analysis of the Sanitary Sewer Sub-Element focuses on the three components of the sanitary sewer system: collection, treatment, and disposal.

## COLLECTION SYSTEM

The principal components of the sanitary sewer collection system are pipes and pump stations. Because Indian River County has a relatively new sanitary sewer system, those pipes and pump stations are generally in good condition. Most of the major lines are in place and sized to accommodate future growth.

The county's overall plan for growth and development is reflected in the Future Land Use Element of the comprehensive plan. That element defines where the community will grow and where growth will be limited. As indicated in the Future Land Use Element, the urban service area is the area deemed appropriate for future urban type development. Accordingly, it is within the urban service area that utility lines and other infrastructure components will be available.

The major collection system issues include system evaluation and maintenance, system expansion related to serving areas presently served by septic tank systems, and system expansion to serve new development.

### System Evaluation and Maintenance

The collection system is evaluated with each application for new development, and as each package treatment plant is decommissioned. A computer modeling program, known as the "Kentucky Pipe" model, is used to evaluate several factors including pipe capacity, lift station capacity, horse power requirements for pumps, and hydraulic pump pressure. In contrast to the City of Vero Beach, which is largely built-out and has provided utility service for many decades, sewer service is still relatively new to the rapidly growing unincorporated county. Consequently, the county's collection system is constantly evaluated.

The county's major collection system problem is low velocity in 18 inch, 20 inch, and 12 inch force mains in the US 1 corridor have low velocity. The low velocity is caused by oversized lines and a lack of wastewater in pipelines where the velocity is less than 2 feet/second. Settled solids

*Seems that new development will actually cause this problem. How are lines dragged?* 24 vs. the ty. ds is

Additionally, the North County Plant has experienced problems when it becomes "unsettled" and reaches the plant in an unexpectedly large volume. This has resulted in sewage spills. Increased pipeline maintenance is necessary to prevent a reoccurrence of such spills. That maintenance must be performed at regular intervals and includes mechanically "dragging" or clearing pipes of settled solids.

**Septic Tanks**

Septic tanks are a potential source of groundwater contamination, especially in areas where they are densely concentrated and the water table is high. According to the IRCHD, there are many cases on record of a well's water source becoming polluted due to septic tank discharges. As indicated in Table 3.A.5, septic tank effluent is of poor quality by today's wastewater treatment standards. These effluent discharges can cause detrimental increases in nitrogen, chloride, sodium, other ions, total dissolved solids, and the microbiological level of the local groundwater.

TABLE 3.A.5  
TYPICAL CONCENTRATIONS FOR HOUSEHOLD WASTEWATER,  
SEPTIC TANK EFFLUENT AND WASTEWATER TREATMENT PLANT EFFLUENT

PARAMETER	CONCENTRATION		
	HOUSEHOLD WASTEWATER	SEPTIC TANK EFFLUENT	WASTEWATER TREATMENT PLANT
Biochemical Oxygen Demand, 5-day (BOD <sub>5</sub> ), mg/l	430	150	20
Total Suspended Solids, mg/l	370	50	20
Fecal Coliform (per 100ml)	7.5 X10 <sup>5</sup>	5X10 <sup>5</sup>	200
Total Nitrogen, mg/l	84	30	30
Ammonia Nitrogen, mg/l	64	25	N/A
Total Phosphate, mg/l	61	12	6

Source: Indian River County Wastewater Master Plan

Several features inherent to the operation of septic tank systems make them prone to contaminating groundwater without any visual indication. For example, if the tanks are undersized or not emptied often enough, sludge and scum can accumulate, resulting in a poorer quality effluent. Also, if high groundwater conditions (within 3 to 4 feet of drainfield elevation) exist, additional fill is needed. Once a septic tank system is installed and buried, these and other operating problems cannot be recognized until the entire system fails and raw (untreated) sewage backs up into the house plumbing or seeps above ground. Thus, a septic tank system that appears to be functioning properly, in reality, may be providing very poor "treatment". This problem is more likely to occur in areas of higher residential density and in areas with a high concentration of commercial/industrial use.

According to the United States Department of Agriculture's Soil Conservation Service, most of Indian River County's soil has severe limitations for the use of septic tank systems. Combined with the County's high water table, this creates a high potential for groundwater contamination problems associated with septic tank systems.

For those reasons, the IRCHD requires that the bottom of drainfields be at least 42 inches above the water table. Fill material or an approved sand filter may be added to the site to meet this requirement. Also, a minimum separation requirement between wells and septic tank system drainfields, and a minimum lot size requirement must be met. Under those conditions, septic tank performance is considered adequate for developments within the County.

Another problem with septic tank systems is the possibility of wastewater leachate from a septic tank entering open bodies of water in the County. This problem must be examined carefully, especially on the barrier island, in areas near the Indian River Lagoon, in areas near the St. Sebastian River, and in areas adjacent to canals, lakes or wetlands.

To summarize, the problems with septic tank systems are listed below:

- Physical limitations existing in Indian River County
  - A high water table is found in almost all areas of the county, especially during the months of June through October.
  - Ninety-three percent of the county's soil has an underlying spodic horizon (a restrictive layer often comprised of sandy clay loam) and, therefore, is not suitable for septic tanks. This problem could be solved in areas with a low residential density by some modification of design and construction of septic tanks.
- Health and safety
  - poor quality of septic tank effluent compared to wastewater treatment plant effluent.
  - high risk of groundwater contamination and spread of communicable disease.
  - cost and insufficiency of monitoring process.
  - inappropriate septage disposal.
- Environmental Consideration
  - Groundwater contamination.
  - Leachate to surface water bodies.

For those reasons, there is a need to expand the regional wastewater treatment system to areas where existing or future land uses, the soil and groundwater conditions, proximity to surface water bodies, and/or lot size make continued use of septic systems unacceptable due to increased health and groundwater contamination risks.

With this in mind, the county should always allow the voluntary expansion of the regional sanitary sewer system to existing development. Additionally, the county must determine under what conditions to impose retrofitting on existing development. The benefits of that type of expansion must be considered in conjunction with its costs, both to the county and to private land owners. As indicated in the finance section of this element, a major portion of the cost of service expansion to existing subdivisions is funded through assessments. In the past, some residents have objected to the costs of such assessments, often citing an inability to pay.

Many older residential subdivisions, for example, contain lots smaller than the IRCHD's current  $\frac{1}{4}$  acre minimum. Because these subdivisions generally contain households in the lower portion of the county's income range, retrofitting those subdivisions with centralized sewer service would cost those households a greater portion of their income than would be associated with the average county household.

It is important to note that, under certain conditions, the increased health and groundwater contamination risks associated with septic tank systems may be insignificant. This is often the case in residential developments that are connected to a regional potable water system. If conditions are favorable, and the units are connected to a regional potable water system, even residential developments with lots smaller than  $\frac{1}{4}$  acre may be served by septic tank systems without significantly increasing health and groundwater contamination risks. Therefore, expanding the system to include all existing residential subdivisions with lots smaller than  $\frac{1}{4}$  acre is not needed.

Instead, the county must establish criteria to differentiate between areas where retrofitting is required and areas where retrofitting is allowed. Because the cost of retrofitting projects within the urban service area is relatively constant, the most appropriate criteria to use to identify areas to retrofit are reduced health risks and reduced groundwater contamination risks. Retrofitting must occur when any of the following conditions exist and the IRCHD verifies that the health and groundwater contamination risks cannot be sufficiently reduced by any means other than connecting to the regional system.

- Small lot size, a history of septic tank failures, and identified by the IRCHD as a potential threat to public health. Where units are not connected to a regional potable water system, this refers to lots of a  $\frac{1}{2}$  acre or less.
- Intense land uses, a history of septic tank failures, and identified by the IRCHD as a potential threat to public health. Intense land uses means commercial/industrial uses or residential uses greater than 6 units/acre.
- Environmentally Sensitive Areas. This means areas within 500 feet of aquifer recharge areas as identified in the Aquifer Recharge Sub-Element of this plan, within 500 feet of any public water supply well, within 500 feet of the Indian River Lagoon, the St. Sebastian River, or any body of water that drains into them.
- Identified by the IRCHD as a potential threat to public health.

For planning purposes, a history of septic tank failures is defined as follows:

- For subdivisions of 10 or fewer lots, this means 20% failures in five years. For subdivisions of 11 to 75 lots, this means 10% failures in eight years. For subdivisions of more than 75 lots, this means 2% failures in ten years.

Residential subdivisions that meet those criteria are identified in Table 3.A.3. Generally, the most effective and efficient way to correct the wastewater problem of those subdivisions is to connect them to the regional system. Other options could involve adding fill and/or pumping the wastewater to another septic tank. Although the costs and effectiveness of these options vary due to specific circumstances, they seldom justify not connecting to the regional system.

If the health and groundwater contamination risks cannot be corrected in a more efficient manner, the subdivisions identified in Table 3.A.3 should be required to connect to the regional sewer system by 2010. By that time, all proposed main lines are expected to be operating. When those lines are operating, the county can use the assessment process to connect the referenced subdivisions.

### **Service to New Development**

The Utilities Department Master Plan identifies main lines that must be installed along major corridors. Unlike other collection lines, "Master Plan" lines usually do not connect directly to a wastewater generator. Existing and planned Master Plan lines for each county sewer service area are depicted on Figures 3.A.3 through 3.A.8. Table 3.A.6 identifies the estimated construction dates of those lines.

Besides capital improvements planning and the assessment process, another way to expand the collection system is through platting and site plan approval requirements of new development. For example, current land development regulations mandate that each new subdivision within the Urban Service Area connect to the centralized wastewater service system if the proposed subdivision meets either of the following criteria.

- It is within one-quarter of a mile of existing wastewater lines; or
- It contains 25 or more lots.

For non-residential projects, only those located more than ¼ mile from the existing system and generating less than 2000 gallons per day are not required to connect to the regional system. Even non-residential projects meeting those requirements must connect if the system expands to within ¼ mile of the project.

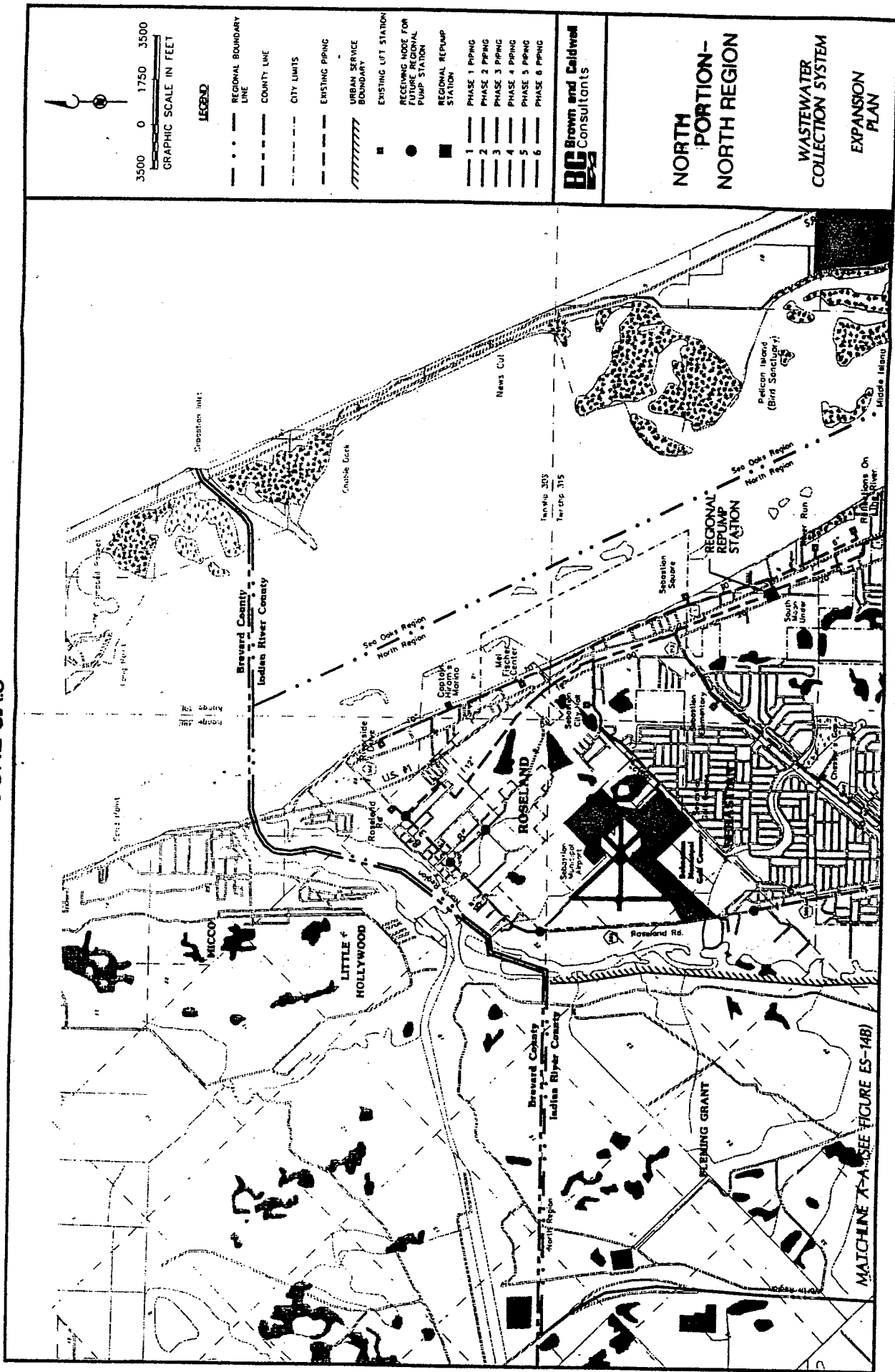
Those requirements must be maintained to ensure the expansion of the regional sanitary sewer system and to ensure that the costs of that expansion are paid by the beneficiaries of the expansion. Even when a development project does not meet the above criteria, it must connect to the regional sanitary sewer system if the project is deemed unacceptable for septic tank system service due to increased health and groundwater contamination risks.



TABLE 3.A.6  
PROPOSED WASTEWATER COLLECTION SYSTEM EXPANSION

PROJECT	EST. CONST. DATE	EST. COST
US 1 & Old Dixie Hwy. area/Central WW#1	2001	\$1,340,000
Residential areas--North Roseland Road/N WW#3	2000	\$710,000
North of Windsor and Polo Club/Sea Oaks WW#1	2000	\$290,000
Residential Areas--33 <sup>rd</sup> St. & 58 <sup>th</sup> Av./Central WW #2	2001	\$1,190,000
East part of Reg. & Pine Park/West WW#3	2005	\$1,230,000
Service on 58 <sup>th</sup> Av., 49 <sup>th</sup> St., 41 <sup>st</sup> St., 37 <sup>th</sup> St., & 33 <sup>rd</sup> St./Central WW#4	2000	\$810,000
Parallel force main to Oslo Road/West WW#4	2000	\$670,000
58 <sup>th</sup> Av. to 65 <sup>th</sup> St./Central #5	2002	\$1,180,000
Residential Areas--41 <sup>st</sup> /Central WW #3	2006	\$380,000
6 inch WW force main from Sebastian Elementary to lift station number 4	1997	\$40,000
12 inch WW along Barber St. & Schumann Dr.	2005	\$675,000
12 inch WW along S. Easy St. to the Sebastian WW	2006	\$575,000
Force main--North County Wastewater Treatment Plant to Central Wastewater Treatment Plant	1998	\$104,253
North beach WW repump & force main	1998	\$75,559
<b>TOTAL</b>		<b>\$9,269,812</b>

FIGURE 3A.3



25.2

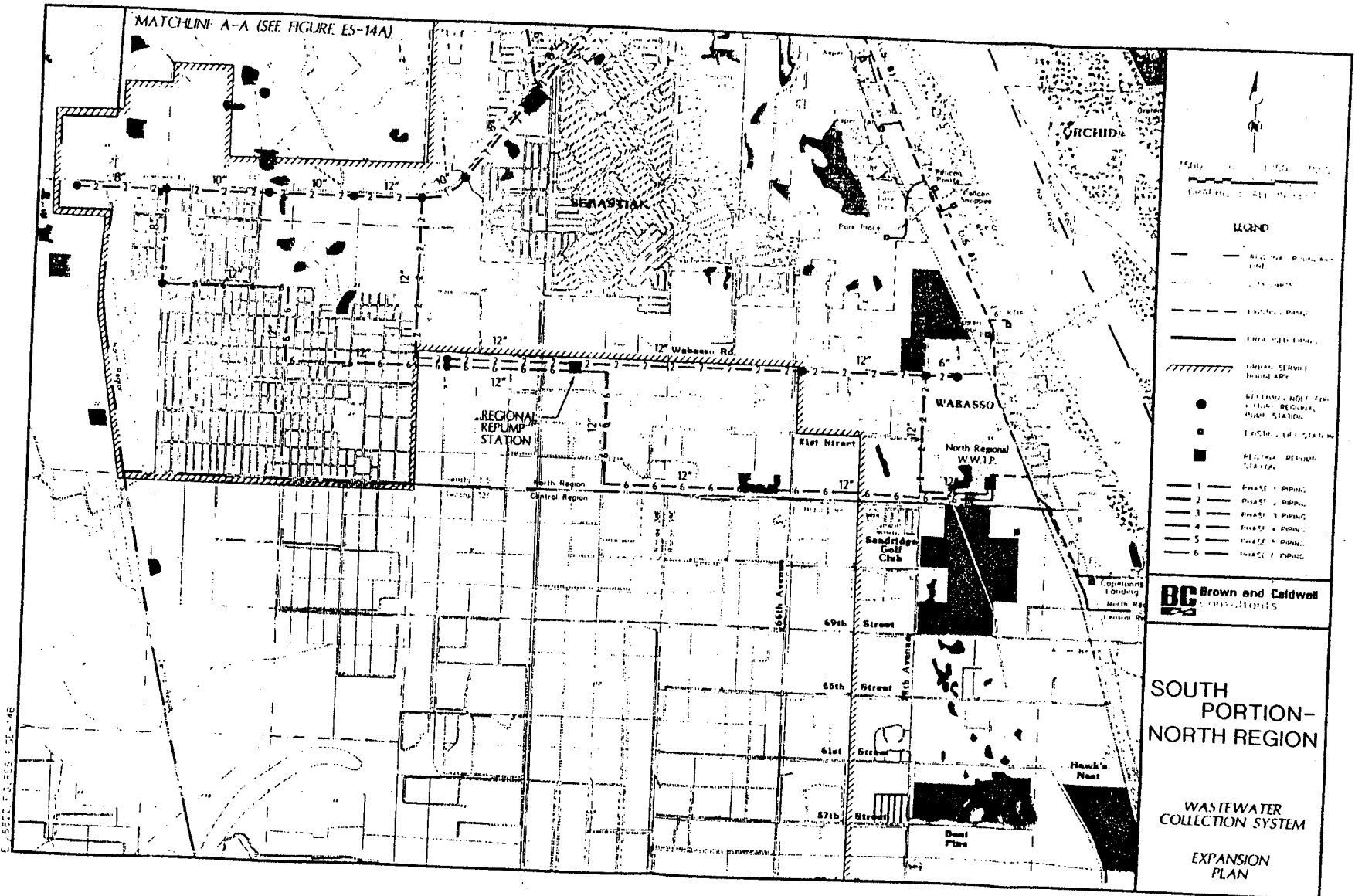


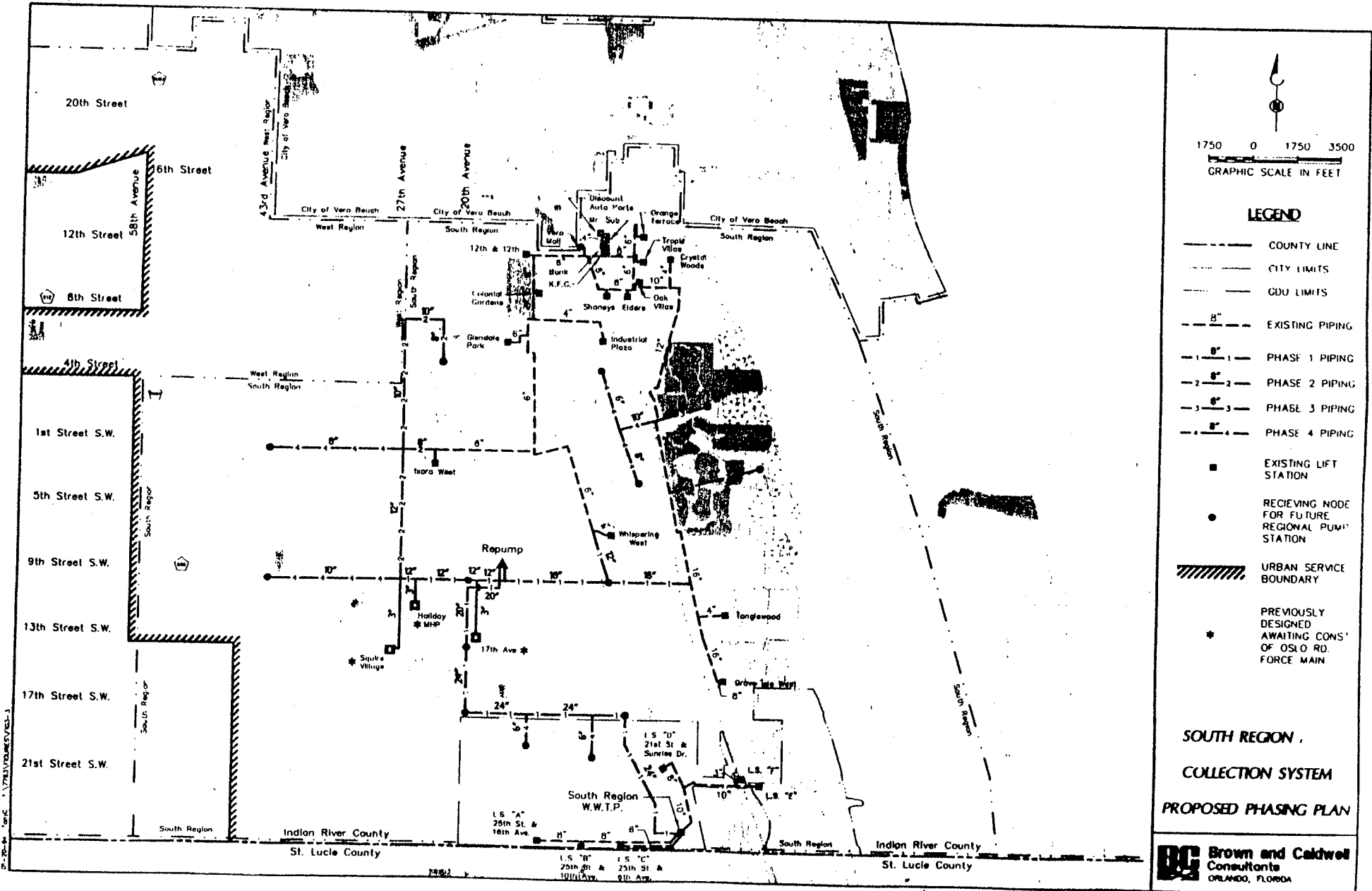
FIGURE 3A.4







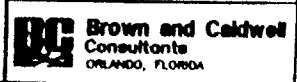
FIGURE 3A.8



**LEGEND**

- COUNTY LINE
- CITY LIMITS
- CDU LIMITS
- 8" --- EXISTING PIPING
- 1 8" --- PHASE 1 PIPING
- 2 8" --- PHASE 2 PIPING
- 3 8" --- PHASE 3 PIPING
- 4 8" --- PHASE 4 PIPING
- EXISTING LIFT STATION
- RECEIVING NODE FOR FUTURE REGIONAL PUMP STATION
- ▨ URBAN SERVICE BOUNDARY
- ★ PREVIOUSLY DESIGNED AWAITING CONSTRUCTION OF OSLO ROAD FORCE MAIN

**SOUTH REGION  
COLLECTION SYSTEM  
PROPOSED PHASING PLAN**



25.6

There are several reasons for requiring nearly all new development to connect to the regional system. Those reasons are listed below.

- Regional systems are less likely to fail.
- Regional systems are better regulated and inspected.
- Regional systems provide a higher level of treatment. That higher level of treatment allows the effluent to be reused rather than injected into the ground which increases the risk of groundwater contamination.
- Regional systems are economically more efficient to build and operate, but only if all new development connects to the system.

## **TREATMENT**

Besides septic tank systems, public and private treatment plants provide wastewater treatment. In Indian River County, large regional public treatment plants now predominate. Major treatment issues in the county relate primarily to ensuring sufficient capacity (either on-site or off-site) to accommodate projected growth.

If demand were allowed to exceed capacity, untreated sewage would have to be discharged. That would result in health hazards and environmental degradation of surface water bodies. To prevent such an occurrence, the county must continue its policy of approving new development only when sufficient capacity is available. The county's computerized concurrency management system and its capital improvements plan ensure that capacity is available to serve new development.

### **Public Treatment Plants**

Besides producing high quality effluent, all public treatment plants currently have more than enough capacity to accommodate existing demand. The following sections discuss the county's future wastewater treatment needs and alternatives to meet those needs.

### **Projection of Future Demand**

#### **Assumptions**

The comprehensive planning process is an opportunity for the county to complete an assessment of its long range sanitary sewer needs. A sound projection of future wastewater needs must include more than a linear projection. Future projections should utilize certain assumptions based on past trends, present conditions, and future desire. The main assumptions utilized in this section are as follows:



- The county will be the primary provider of sanitary sewer collection, treatment, and disposal;
- The City of Vero Beach will continue to serve the City of Vero Beach, the Town of Indian River Shores and a portion of the unincorporated county; and
- 90% to 95% of future new development will connect to the regional sewer system.

### Methodology

The existing conditions section of this sub-element provides a discussion of the existing capacity of centralized wastewater treatment facilities with an emphasis on the county system. That discussion addresses the supply side of the wastewater treatment system. This section considers the demand side.

The information for this section is based on the permanent and functional population projections contained in the Introductory Element and on the projected land use patterns contained in the Future Land Use Element. The following information is also consistent with the county utilities master plan, including its January 1997 update. To develop these projections, data such as historic growth, population estimates, number and type of dwelling units, and developed commercial/industrial acreage were used.

Planning for wastewater treatment facility expansions requires a rational approach to projecting growth over a finite planning period. Past experience has shown that using the historic growth of existing facilities in conjunction with population projections is the most accurate method of projecting wastewater generation rates for future treatment facility expansions.

With a nominal annual increase of approximately 50,000 gallons/day for the regional wastewater treatment facilities, treatment plant flow data indicate that wastewater generation growth during the 1992-1997 time period remained relatively constant. These data include the treatment plant flow records from all county operated wastewater treatment facilities. Although wastewater service is available to a large portion of potential customers throughout the county, wastewater generation growth is a function of customer connections. Over the past five years, the growth in new connections has averaged approximately fourteen percent per year with a variance of approximately six percent. Despite the fact that many potential new customers have had wastewater service made available to them through collection system expansions, the rate at which connections have been made has remained relatively constant.

Residential wastewater generation projections were developed by 1) projecting a per capita wastewater generation rate, 2) projecting the population served by the county sewer system within each Traffic Analysis Zone (TAZ--an area roughly analogous to a neighborhood), and 3) multiplying the projected population by the per capita wastewater generation rate to obtain the projected wastewater generation for each TAZ.

Because the residential generation rate was anticipated to remain the same, historic data were used. Based on that data, the projected residential generation rate was established at 74 gpd/resident. The

population served by the county sewer system within each TAZ was projected by subtracting the projected population using septic tank systems from the projected total population for the TAZ. The number of septic tank systems within each TAZ was projected using septic tank density information published by the Indian River County Public Health Unit (now the IRCHD) in a report Titled Onsite Sewage Disposal Systems Inventory, Indian River County, July 21, 1992. The population using septic tank systems was estimated by multiplying the projected average number of people per residential unit in the TAZ by the number of septic tanks.

Commercial/industrial wastewater generation projections were developed by 1) establishing a unit wastewater generation rate per acre of commercial/industrial land, 2) projecting the number of acres of commercial/industrial land to be served in each TAZ, and 3) multiplying the estimated number of acres by the unit generation rate to obtain a wastewater generation rate by TAZ.

Based on historic data, the commercial/industrial generation rate was projected to be 1000 gpd/acre. The number of acres of commercial/industrial land in each TAZ was determined from the future land use map. Based on local knowledge and historic growth rates, approximately 40% of the commercial/industrial land in each TAZ is projected to be developed by 2010.

The Introductory Element of the comprehensive plan projects growth within the Central Region Service Area to be substantially less than within the North Region Service Area. In order to capitalize on the treatment capacity of the Central County Plant and to delay the need for expansion of the North County Plant, the county will interconnect the North and Central County Plants. In addition to capitalizing on the treatment capacity of the Central County Plant, interconnecting the plants will provide flexibility throughout the life of the system. Because the plants will be interconnected, it is useful to examine the combined demand associated with the North and Central County Plants.

### Results

Based on the above data, wastewater demand for each county owned regional facility can be projected. Those projections are given below.

TABLE 3.A.7 - 2000 & 2010 PROJECTED AVERAGE DAILY DEMAND

PLANT	2000	2010	INCREASE
North County	830,000 gal.	2,080,000 gal.	1,250,000 gal.
Central County	810,000 gal.	1,560,000 gal.	750,000 gal.
North & Central County Combined	1,640,000 gal.	3,640,000 gal.	2,000,000 gal.
West County	1,750,000 gal.	3,000,000 gal.	1,250,000 gal.
South County	1,875,000 gal.	3,158,000 gal.	1,283,000 gal.

By using the above information, it is possible to develop wastewater demand projections for 2020. This can be done by using the 2000 to 2010 increase as an indicator of the 2010 to 2020 increase. Based on that methodology, the following are projections for the year 2020.

TABLE 3.A.8  
2020 PROJECTED AVERAGE DAILY DEMAND

PLANT	2020 PROJECTED AVERAGE DAILY DEMAND
North County	3,330,000 gallons
Central County	2,310,000 gallons
North & Central County Combined	5,640,000 gallons
West County	4,250,000 gallons
South County	4,441,000 gallons

### Evaluation of Future Needs

This section evaluates future sanitary sewer needs in terms of future land uses, the capacity of the existing sanitary sewer system, and the programmed development and expansion of treatment plants.

#### Wastewater Needs and Land Use

With the 1990 adoption of the comprehensive plan, the county established its urban service area. The intent of the comprehensive plan is to direct most growth into that area and to provide urban type services to development in the urban service area.

A review of land use and development patterns shows that the county has been successful at directing growth, both residential and non-residential, into the urban service area. The county has also expanded centralized sanitary sewer service within the urban service area. Through the purchase and decommission of package treatment plants, the county has reduced its overall number of wastewater treatment plants from 76 to 13. Customers that previously were served by small package plants that have been closed are now served by regional facilities.

Besides closing package plants and connecting those plants' customers to the regional system, the county has also increased the population served by regional wastewater plants in other ways. For example, as noted previously, each new subdivision within the urban service area is now required to connect to the centralized wastewater service system if the proposed subdivision meets either of the following criteria.

- It is within one-quarter of a mile of existing wastewater lines; or

- It contains 25 or more lots.

As a result of those actions, expansion of the county's centralized sewer system was extensive during the 1990 to 1995 time period, in terms of both the geographic area served and new customers. From 1989 to 1995, centralized sanitary sewer customers increased by 81% (from 13,000 to 23,500 customers).

The expansion of the regional wastewater treatment system serves commercial/industrial development as well as residential development. Since adoption of the 1990 comprehensive plan, the regional wastewater collection system has been expanded to several commercial/industrial areas in the county, including portions of the three I-95 commercial/industrial nodes. As a result of that expansion, the development potential of land within the urban service area has greatly increased for both residential and commercial/industrial projects.

Although the regional sanitary sewer system service area has been greatly expanded, there are still several areas not yet served. As previously noted, there is a need to expand the regional wastewater treatment system to the areas identified in Table 3.A.3, where existing or future land uses, the soil and groundwater conditions, proximity to surface water bodies, and/or lot size make continued use of septic tank systems unacceptable.

### **Comparison of Supply and Demand**

This section compares projected demand to existing and programmed supply (capacity). Where demand exceeds supply, deficiencies exist and additional capacity should be programmed.

As indicated in the "Projection of Future Demand" section of this element, the Average Daily Demand for the North County Plant in 2020 is projected to be 3.33 MGD. That plant currently has a capacity of 1.0 MGD. That plant is programmed for capacity expansion to 2.0 MGD by the beginning of 2006. With that expansion, the North County Plant will have sufficient capacity to accommodate the Average Daily Demand through 2009. When considering the 2020 Average Daily Demand, however, there will be a 1.33 MGD deficiency unless more capacity is added.

For the Central County Plant, the Average Daily Demand in 2020 is projected to be 2.31 MGD. That plant currently has a capacity of 1.0 MGD. That plant is programmed for capacity expansion to 2.0 MGD by the beginning of 1998. With that expansion, the Central County Plant will have sufficient capacity to accommodate the Average Daily Demand through 2010. When considering the 2020 Average Daily Demand, however, there will be a 0.31 MGD deficiency unless more capacity is added.

Because the North and Central Plants will be interconnected, it is useful to consider their combined capacities. The combined the Average Daily Demand in 2020 for those plants is 5.64 MGD. The current combined capacity for those plants is 2.0 MGD. With programmed expansions, capacity will be increased to 3.0 MGD by the beginning of 1998 and 4.0 by the beginning of 2006. With those

expansions, the North and Central County Plants will have sufficient capacity to accommodate the Average Daily Demand through 2010. When considering the 2020 Average Daily Demand, however, there will be a 1.64 MGD deficiency unless more capacity is added.

For the West County Plant, the Average Daily Demand in 2020 is projected to be 4.25 MGD. That plant currently has a capacity of 2.0 MGD. That plant is programmed for capacity expansion to 3.0 MGD by the beginning of 2007. With that expansion, the West County Plant will have sufficient capacity to accommodate the Average Daily Demand through 2010. When considering the 2020 Average Daily Demand, however, there will be a 1.25 MGD deficiency unless more capacity is added.

For the South County Plant, the Average Daily Demand in 2020 is projected to be 4.441 MGD. That plant currently has a capacity of 2.0 MGD, and is programmed for expansion to 3.0 MGD by the beginning of 2007, and to 4.0 MGD by the beginning of 2008. Therefore, the South County Plant has sufficient capacity to meet Average Daily Demand through the year 2010. When considering the 2020 Average Daily Demand, however, there will be a 0.441 MGD deficiency unless more capacity is added.

To address the referenced or unanticipated deficiencies, and thus ensure sufficient capacity through 2020, the county must begin planning for capacity expansion in a timely manner. To do this, the county must consider not only when demand will occur, but also the amount of time needed to design, permit, and construct a wastewater treatment plant or plant expansion.

Because those factors directly relate to the size of the expansion and other variables, predicting such timeframes with a high degree of accuracy is difficult. Nevertheless, a typical 1.0 MGD expansion generally requires 1.5 to 2 years for design and permitting, and 1.5 to 2 years for construction. Therefore, to ensure sufficient capacity through 2020, the county should take the following steps:

- begin planning and preliminary design for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 5 years;
- prepare plans and specifications for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 4 years;
- submit a complete construction permit application to the Florida Department of Environmental Protection for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 3 years; and
- submit an application for an operation permit for the expanded facility to DEP when a plant's Average Daily Demand is projected to equal or exceed its capacity within 6 months.

Taking these steps within the referenced timeframes will ensure that the county has sufficient time to design, permit, and construct needed plant capacity. At the same time, these timeframes decrease

the chances that plants will have many years of unused capacity. Finally, these procedures are consistent with Rule 62-600.405 of the Florida Administrative Code.

Table 3.A.9 indicates the year during which each regional wastewater treatment plant is anticipated to reach its current capacity.

TABLE 3.A.9  
REGIONAL WASTEWATER TREATMENT PLANT  
EXPANSION DESIGN SCHEDULE

PLANT	CAPACITY YEAR
North	2009 (design for additional capacity begins in 2004)
Central	2018 (design for additional capacity begins in 2013)
North and Central Combined	2012 (design for additional capacity begins in 2007)
West	2010 (design for additional capacity begins in 2005)
South	2017 (design for additional capacity begins in 2012)

Addressing only treatment capacity for the regional sanitary sewer system is not sufficient. In addition, the wastewater collection system must be able to serve existing and future development. As noted in the "Wastewater Needs and Land Use" section of this element, further expansions to the existing collection network within certain areas of the urban service area are needed.

Being an enterprise operation, the Utilities Department is financially self-sufficient. Revenues to pay for collection system expansion are generated through impact fees, assessments, line extension fees, and contributions in aid. Thus lines are paid for as they are expanded, and they are expanded in response to demand.

### **Private Treatment Plants**

As indicated in the background section of this Sub-Element, the reason that the County started direct provision of wastewater treatment services was due to problems at the Central and Ixora plants. The problems with private package treatment facilities, however, were not limited only to those two plants. Other private plants had also experienced similar problems. In many cases, the problems with private plants were due to the operational aspects of the plant, rather than with the plant itself. Because of those problems and their environmental impacts, the County Utilities Department has decommissioned all but three private plants. Customers formerly served by private plants that have been decommissioned have been connected to the county system.

To avoid a repeat of past problems, to ensure the financial viability of the regional system, and to discourage urban sprawl, new package treatment plants are generally prohibited within the urban service area. Consistent with provisions of the Future Land Use Element of this plan, package treatment plants may be allowed outside of the urban service area to serve development projects that meet specific criteria for the following:

- clustering of residential development within agricultural areas;
- clustering of residential development within privately owned upland conservation areas;
- clustering development within mixed use districts; or
- traditional neighborhood design communities.

The three existing private treatment plants are the Sun-Ag Mobile Home Park, the Sun-Ag Packinghouse, and Snug Harbor. While the Sun-Ag plants, which serve the Fellsmere area, will continue operation, the Snug Harbor plant will eventually be decommissioned, and its customers will be connected to the county system.

### **EFFLUENT DISPOSAL**

Another wastewater treatment issue concerns long range plans for effluent disposal. Currently, reuse through spray irrigation is the county's primary effluent disposal method. A potential problem with this method is that the amount of effluent being produced is increasing faster than demand for reuse water. Despite plans for additional effluent reuse at the North County and South County Wastewater Treatment Plants, the County Utilities Department expects that, by approximately 2010, effluent supply will exceed demand for reuse.

The reason that the amount of effluent being produced is increasing faster than demand for reuse water is clear. Wastewater producers such as residential and commercial uses are growing faster than effluent users such as golf courses. For that reason, additional effluent disposal methods eventually must be implemented.

With respect to those methods, the county has several alternatives. Those alternatives include requiring new commercial and/or residential development to use reuse water, retrofitting existing development to use reuse water, or creating wetlands with reuse water.

Retrofitting existing development is, by a large margin, the most expensive of these options. Requiring that new development accommodate reuse water is somewhat less expensive. In fact, new commercial areas are currently required to accommodate reuse lines. Even some single-family and multiple-family residential developers, although not required to, have chosen to incur the extra expense of building their projects to accommodate reuse water. As of this time, such projects have been limited to a few developments, mostly on the barrier island. These include Sea Oaks, Windsor, and the Town of Orchid.

Perhaps the most successful and efficient effluent reuse method currently used by the county is at the West County Plant. At that site, a ±165 acre man-made wetland has been created and maintained with effluent from the plant. Besides the creation of habitat for many species of plants and animals, the benefits of that method of effluent disposal include greatly decreased operating costs.

Although the wetland at the West County Plant is adjacent to the plant, such man-made wetlands are not required to be located near a treatment plant. If not located near a plant, however, they, must be located near a reuse water transmission line. Such lines currently run past several large undeveloped parcels, both inside and outside of the urban service area. Additional lines are proposed along 20<sup>th</sup> Avenue in the south part of the county, along Indian River Boulevard, and in the Wabasso Area.

Because the long term benefit of developing such wetlands may outweigh the initial land acquisition and construction costs, the county should begin studying the feasibility of developing additional wetlands, including land availability and costs.

### **SUMMARY OF ANALYSIS**

County wastewater treatment plants have sufficient capacity to meet projected Average Daily Demand through 2010. When considering the projected 2020 average daily demand, however, there is a 3.331 MGD deficiency. Therefore, to ensure sufficient capacity through 2020, the county should begin planning for capacity expansion in a timely manner. To do this, the county should begin design for additional capacity when a plant's Average Daily Demand is projected to equal or exceed its capacity within 5 years.

Additionally, there is a need to expand the regional wastewater treatment system. Although most package treatment plants have been decommissioned, eight continue to operate. Four of those (North Beach, Vista Royale, Vista Gardens, and Snug Harbor) should be decommissioned. Customers of decommissioned plants should be connected to the regional system.

Finally, the regional sanitary sewer system should be extended to the areas identified in Table 3.A.3, where existing or future land uses, the soil and groundwater conditions, proximity to surface water bodies, history of septic tank failures, and/or small lot size cause the health and/or groundwater contamination risks associated with septic tank systems to be unacceptable.

Table 3.A.10 summarizes capital improvements needed to address issues raised in this section.



TABLE 3.A.10  
RECOMMENDED WASTEWATER TREATMENT  
& COLLECTION SYSTEM CAPITAL IMPROVEMENTS

PROJECT	EST. CONST. DATE	EST. COST
US 1 & Old Dixie Hwy. area/Central WW#1	2001	\$1,340,000
Residential areas--North Roseland Road/N WW#3	2000	\$710,000
North of Windsor and Polo Club/Sea Oaks WW#1	2000	\$290,000
Residential Areas--33 <sup>rd</sup> St. & 58 <sup>th</sup> Av./Central WW #2	2001	\$1,190,000
East part of Reg. & Pine Park/West WW#3	2005	\$1,230,000
Service on 58 <sup>th</sup> Av., 49 <sup>th</sup> St., 41 <sup>st</sup> St., 37 <sup>th</sup> St., & 33 <sup>rd</sup> St./Central WW#4	2000	\$810,000
Parallel force main to Oslo Road/West WW#4	2000	\$670,000
58 <sup>th</sup> Av. to 65 <sup>th</sup> St./Central #5	2002	\$1,180,000
Residential Areas--41 <sup>st</sup> /Central WW #3	2006	\$380,000
6 inch WW force main from Sebastian Elementary to lift station number 4	1997	\$40,000
12 inch WW along Barber St. & Schumann Dr.	2005	\$675,000
12 inch WW along S. Easy St. to the Sebastian WW	2006	\$575,000
Force main--North County Wastewater Treatment Plant to Central Wastewater Treatment Plant	1998	\$104,253
North beach WW repump & force main	1997	\$75,559
Central Region Wastewater Treatment Plant Expansion to 2.0 MGD	1999	\$9,978,000
South Region Wastewater Treatment Plant Expansion to 2.0 MGD	1999	\$8,679,500
Improve P/S's--Addendum to Master Plan WW#1	1998	\$160,000
Effluent--Connect Mosquito Impoundment--Eff#8	2000	\$50,000
Vista Gardens Connection--Eff#9	2000	\$155,000

PROJECT	EST. CONST. DATE	EST. COST
Vista Royale Connection--Eff#10	2000	\$68,750
Wetlands 2.0 MGD expansion--Eff#15	2001	\$750,000
North Region Wastewater Treatment Plant Expansion to 2.0 MGD	2006	\$5,000,000
Regional sludge facility expansion	2005	\$625,000
16 inch effluent main to the Vistas & the mosquito impoundment	2000	\$2,500,000
Effluent connection to Bent Pine Golf Course	2000	\$50,000
<b>TOTAL</b>		<b>\$37,286,062</b>

## GOAL, OBJECTIVES AND POLICIES

### GOAL

Indian River County shall have an efficient system of sanitary sewer disposal that prevents degradation of existing resources, promotes orderly growth and development, and meets existing and projected demands.

### **OBJECTIVE 1      Service Concurrent with Development**

Through 2020, there will be sufficient capacity in the regional sanitary sewer system to accommodate all new development within the urban service area.

POLICY 1.1: New development within the unincorporated portion of Indian River County shall be approved only when capacity is available, either on-site or off-site, to provide needed sanitary sewer service.

POLICY 1.2: The county utilities department, on an annual basis, shall inspect all private wastewater treatment plants in Indian River County.

POLICY 1.3: The county hereby adopts a sanitary sewer level of service standard of 250 gallons per day per equivalent residential unit with a peak monthly flow factor of 1.25. That standard shall be utilized for determining the availability of facility capacity and the demand generated by a development.

POLICY 1.4: Through its computerized permit tracking and its concurrency management system, the county shall continue to implement procedures to update facility demand and capacity information as development orders and permits are issued.

POLICY 1.5: The Planning Division, on an as needed basis, shall provide summary reports containing capacity and demand information for each public wastewater treatment plant within the county service area.

POLICY 1.6: Consistent with Sanitary Sewer Sub-Element Table 3.A.13, the county's adopted water and wastewater connection matrix, the county shall continue to allow the use of septic tank systems in rural areas for single-family units and for small retail establishments utilizing septic tank systems for domestic waste disposal only. The use of septic tank systems must be approved by the Florida Department of Health, Environmental Health Unit and be consistent with Rule 64E-6, FAC.

**OBJECTIVE 2      Regional System Expansion**

By 2002, residential units in the county that are connected to a regional sanitary sewer system will represent at least 40% of all existing residential units in the county. This will be an increase from 34% in 1995.

POLICY 2.1: The county shall continue to offer the utility assessment program to areas with septic service within the County Utilities Department service area.

POLICY 2.2: The county shall continue to offer up to 10 year financing for all utility assessments.

POLICY 2.3: The list of subdivisions designated as requiring sanitary sewer service due to public health threats shall be updated through an annual review process. These subdivisions shall be given priority for the provision of public sanitary sewer services.

POLICY 2.4: The county shall provide sanitary sewer service to areas where the lack of such service is determined to be a public health threat. The county shall recover costs through those connecting to the system and directly benefitting from the improvement.

POLICY 2.5: Consistent with its interlocal agreements with the City of Sebastian (Interlocal Agreement Providing for the Transfer of the City of Sebastian Water and Wastewater System By and Between The City of Sebastian, Florida and Indian River County, Florida--September 20, 1995) and the Town of Orchid (Interlocal Agreement Between Indian River County, Florida and the Town of Orchid Regarding Provision of Water and Wastewater Services--September 12, 1989), the county shall provide sanitary sewer services to those municipalities. Consistent with the county's interlocal agreement with the City of Vero Beach (Agreement Between Indian River County and the City of Vero Beach Setting Service Areas for Water and Sewer Service; Memorializing Certain Water and Sewer Allocations; and Repealing Prior Agreements--August 18, 1989), the City of Vero Beach will provide sanitary sewer service to portions of the unincorporated county.

**OBJECTIVE 3      Surface Water and Groundwater Quality**

Through 2020, the county will have no instances of sanitary sewer facilities contaminating surface water or groundwater resources.

POLICY 3.1: The IRCHD shall conduct annual inspections of septic tanks that are associated with heavy commercial, industrial, and manufacturing uses. The results of these inspections shall be used to prioritize sanitary sewer service expansion.

POLICY 3.2: The county shall regularly monitor all centralized sanitary sewer facilities to ensure that they do not contaminate surface water or groundwater resources.

POLICY 3.3: To ensure that hazardous waste is not discharged into ground or surface water, the IRCHD shall conduct random samplings of on-site sewage systems for businesses which have been identified as hazardous waste generators. Violators shall be prosecuted according to federal, state and/or local regulations.

#### **OBJECTIVE 4      Water Conservation**

Through 2020, 100% of the wastewater effluent produced by the county centralized sanitary sewer facilities will be reused.

POLICY 4.1: The county shall continue to reuse wastewater by spray irrigation, with percolation ponds as back-up.

POLICY 4.2: The county shall require large volume irrigation users, such as developments with golf courses, to use reuse water for spray irrigation.

POLICY 4.3: The county shall continue to enforce Land Development Regulations that require developments that use treated wastewater for spray irrigation to construct and dedicate to the county the effluent transmission lines needed to transport the effluent to the development.

POLICY 4.4: By January 2001, the county shall complete a study of the feasibility of developing man-made wetlands for effluent disposal near county wastewater treatment plants and/or reuse water transmission lines.

#### **OBJECTIVE 5      Capital Improvements**

By 2010, the county will have completed improvements to the sanitary sewer facilities as outlined in Table 3.A.10 of the sanitary sewer sub-element.

POLICY 5.1: In conformance with the review process for the Capital Improvements Element of this plan, the county shall maintain a five-year schedule of capital improvement needs for public facilities.

POLICY 5.2: Proposed capital improvement projects shall be evaluated and ranked according to the following three priority level guidelines:

- Level One - whether the project is needed to protect public health and safety, to fulfill the county's legal commitment to provide facilities and services, or to preserve or achieve full use of existing facilities.

- Level Two - whether the project increases efficiency of use of existing facilities, prevents or reduces future improvement costs, provides service to developed areas lacking full service or promotes in-fill development.
- Level Three - whether the project represents a logical extension of facilities and services within the urban service area.

**POLICY 5.3:** In order to guarantee provision of more than the minimum level of service, the county shall take the following steps:

- begin planning and preliminary design for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 5 years;
- prepare plans and specifications for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 4 years;
- submit a complete construction permit application to the Florida Department of Environmental Protection for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 3 years; and
- submit an application for an operation permit for the expanded facility to DEP when a plant's Average Daily Demand is projected to equal or exceed its capacity within 6 months.

**POLICY 5.4:** The county shall treat sanitary sewer provision as an enterprise system which is financially self-supporting.

**POLICY 5.5:** The County Utilities Department shall fund sanitary sewer capital improvements and expansions through user fees, impact fees, developer's agreements, assessments and other appropriate fees and funding mechanisms.

**POLICY 5.6:** The county shall pursue state and federal sources of funding available for the improvement and expansion of utility services.

**POLICY 5.7:** All improvements, replacement, expansion, or increase in capacity of county facilities shall be consistent with adopted level of service standards for facilities.

**POLICY 5.8:** Consistent with the policies of the *Future Land Use Element* of this plan, provision of centralized sanitary sewer service shall be limited to the following areas:

- Areas within the Urban Service Area;
- Areas where the county has legal commitments to provide facilities and services as of the date of adoption of this plan;
- Areas outside of the Urban Service Area where at least a portion of the site is contiguous to an Urban Service Area boundary as depicted on the Official Future Land Use Map. These areas are subject to the following provisions:
  - The maximum density of such land shall be as shown on the Future Land Use Map, and the provision of centralized sanitary sewer service shall not be justification for an increase in maximum density;
  - Sanitary sewer line extensions shall be limited to laterals and minor lines connecting land uses to main lines; and
  - In no case shall centralized sanitary sewer lines be permitted to extend more than 500 feet from the centerline of a roadway which is an Urban Service Area boundary, or more than 500 feet from the Urban Service Area boundary when the boundary is not a roadway.
- Development projects located outside of the Urban Service Area that meet the criteria of the policies of the *Future Land Use Element* for:
  - clustering of residential development within agricultural areas;
  - clustering of residential development within privately owned upland conservation areas;
  - clustering development within mixed use districts; or
  - traditional neighborhood design communities;
  - public facilities such as public schools.
- Areas where, consistent with Sanitary Sewer Sub-Element Policy 2.4, the lack of centralized sanitary sewer service is determined to be a public health threat.

**OBJECTIVE 6      Package Treatment Plants**

Through 2020, there shall be no instances of package treatment plant failures, or illegal or unsafe package treatment plant discharges.

**POLICY 6.1:** The county shall limit the use of package wastewater treatment systems to areas that meet the following criteria governing connection to the county sanitary sewer system:

- Development served by existing package treatment plants may continue to treat their sewage in that manner until centralized service becomes available. At that time, all development within ¼ mile of a county sewer line shall be connected to the county system. Developments whose sewage treatment systems cause a public health problem must connect to the regional system regardless of the distance to sewer lines.
- Package treatment plants shall be allowed in areas of development outside of the Urban Service Area when such development meets the criteria of policies of the Future Land Use Element for:
  - clustering of residential development within agricultural areas;
  - clustering of residential development within privately owned upland conservation areas;
  - clustering development within mixed use districts; or
  - tradition neighborhood design communities.

**POLICY 6.2:** The county shall ensure that, prior to the issuance of development orders or permits, the applicant has demonstrated that the project complies with applicable federal, state, and local permit requirements for package treatment plants.

**POLICY 6.3:** The county shall require that issuance of permits for replacement or expansion of existing package treatment plants be conditioned upon compliance with the most updated version of DEP regulatory requirements and Federal and State water quality standards as identified in the “Regulatory Framework” section of the sub-element.

**POLICY 6.4:** To ensure proper maintenance and operation, the Utilities Department shall inspect all package treatment plants on an annual basis.



**POLICY 6.5:** The county shall require all new package wastewater treatment plants to be built according to current federal, state, and county requirements. In addition to obtaining a county permit demonstrating compliance with county regulations, any developer building and operating a package wastewater treatment plant must obtain a state permit demonstrating compliance with state and federal regulations. Those regulations include but are not limited to the Federal Water Pollution Control Act of 1972 (PL 92-500) and its amendments through the Clean Water Acts of 1977 (PL 95-217) and 1981 (PL 97-117), Chapters 381 and 403 of the Florida Statutes, and Rules 17-3 and 17-6 of the Florida Administrative Code. Both state and county permits are required for the construction of a plant, and for any future expansion or modification of a plant.

**POLICY 6.6:** At the time the county approves any new package treatment plants, the county will require, that at the time deemed appropriate by the county, the package treatment plant shall be dedicated to the county for operation and maintenance.

**POLICY 6.7:** The county shall continue to enforce ordinances requiring pre-treatment of commercial and industrial waste before discharge into the county system.

**POLICY 6.8:** The county shall require all future connections to the regional sanitary sewer system to be consistent with the attached water and wastewater connection matrix.

#### **OBJECTIVE 7      Septic Tank Systems**

By 2010, the number of new septic tank systems permitted annually will not exceed 450.

**POLICY 7.1:** The county shall limit the use of septic tank systems to areas that meet the following criteria governing connection to the county sanitary sewer system:

- With the exception of those identified in Table 3.A.3, residential subdivisions served by existing septic tank systems may continue to treat their sewage in that manner.
- Commercial/industrial uses and residential subdivisions identified in Table 3.A.3 may continue to treat their sewage with existing septic tank systems until centralized sewer service lines are extended to within ¼ mile of the site. At that time, all residential units in those subdivisions and all commercial/industrial uses shall be connected to the county system. Developments whose sewage treatment systems cause a public health problem must connect to the regional system regardless of the distance to sewer lines.
- Use of septic tank systems for new development shall be prohibited unless:
  - such development meets the criteria set on the water and wastewater connection matrix; or

- such development consists of clustered residential development within privately owned upland conservation (C-3) areas. Even under those circumstances, no individual septic tank systems may be associated with individual residential units. If located outside of any conservation designated areas or areas that are environmentally sensitive or significant, however, centralized community septic tank systems may be provided to each pod of clustered residential development.
- Septic tank systems shall be allowed in areas of development outside of the Urban Service Area when such development meets the criteria of policies of the Future Land Use Element for:
  - clustering of residential development within agricultural areas;
  - clustering of residential development within privately owned upland conservation areas;
  - clustering development within mixed use districts; or
  - traditional neighborhood design communities.

**POLICY 7.2:** The county shall ensure that, prior to the issuance of development orders or permits for projects to be served by septic tank systems, the applicant has demonstrated that the project complies with Florida Department of Health and Rule 64E-6, FAC, permit requirements for septic tank systems.

**POLICY 7.3:** The county shall require that issuance of permits for replacement of existing septic tank systems be conditioned upon compliance with the most updated version of DEP regulatory requirements and Federal and State water quality standards as identified in the “Regulatory Framework” section of the Sub-element.

**POLICY 7.4:** The county, in coordination with the IRCHD, shall establish public education programs on the proper use, inspection requirements, maintenance, and abandonment of septic tanks. The tank abandonment process shall be based on current state and local regulations.

## PLAN IMPLEMENTATION

An important part of any plan is its implementation. Implementation involves execution of the plan's policies. It involves taking actions and achieving results.

For the Sanitary Sewer Sub-Element, implementation involves various activities. While some of these actions will be ongoing, others are activities that will be taken by certain points in time. For each policy in this element, Table 3.A.11 identifies the type of action required, the responsible entity for taking the action, the timing, and whether or not the policy necessitates a capital expenditure.

To implement the Sanitary Sewer Sub-Element, several different types of actions must be taken. These include: expansion of plant capacity, extension of the collection network, enforcement of land development regulations and ordinances, execution of interlocal agreements, coordination, and preparation of studies and evaluation and monitoring reports.

Overall plan implementation responsibility will rest with the planning department. Besides its responsibilities as identified in Table 3.A.11, the planning department has the additional responsibility of ensuring that other entities discharge their responsibilities. This will entail notifying other applicable departments of capital expenditures to be included in their budgets, notifying other departments and groups of actions that must be taken, and assisting other departments and agencies in their plan implementation responsibilities.

TABLE 3.A.11  
SANITARY SEWER SUB-ELEMENT  
IMPLEMENTATION MATRIX

POLICY#	TYPE OF ACTION	RESPONSIBILITY	TIMING	CAPITAL EXPEND.
1.1	Land Development Regulations	Planning	Ongoing	NO
1.2	Monitoring Procedures	Utilities	Ongoing	NO
1.3	Land Development Regulations	Planning	Ongoing	NO
1.4	Monitoring Procedures	Utilities/Planning	Ongoing	NO
1.5	Summary Reports	Planning	As Needed	NO
1.6	Land Development Regulations	Utilities/IRCHD	Ongoing	NO
2.1	Service Provision	Utilities	Ongoing	YES
2.2	Service Provision	Utilities	Ongoing	NO
2.3	Evaluation Process/ Service Provision	Utilities/IRCHD	Ongoing	YES
2.4	Evaluation Process/ Service Provision	Utilities/IRCHD	Ongoing	YES
2.5	Coordination	Utilities/BCC	Ongoing	NO
3.1	Annual Inspections	IRCHD	Ongoing	NO
3.2	Monitoring Procedures	Utilities	Ongoing	NO
3.3	Monitoring Procedures	IRCHD	Ongoing	NO
4.1	Reuse Water by Spray Irrigation	Utilities	Ongoing	NO
4.2	Land Development Regulations	Utilities	Ongoing	NO
4.3	Land Development Regulations	Utilities	Ongoing	NO
4.4	Feasibility Study	Utilities	2001	No
5.1	CIP Maintenance	Finance/Utilities	Ongoing	NO

POLICY#	TYPE OF ACTION	RESPONSIBILITY	TIMING	CAPITAL EXPEND.
5.2	CIP Evaluation & Prioritization	Finance/Utilities	Ongoing	NO
5.3	Capacity Monitoring & Plant Expansion	Utilities	Ongoing	YES
5.4	Land Development Regulations	Finance/Utilities	Ongoing	NO
5.5	Land Development Regulations	Utilities	Ongoing	YES
5.6	Funding Mechanism	Utilities/Finance	Ongoing	NO
5.7	Improvement/Replacement/Expansion	Utilities	Ongoing	YES
5.8	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.1	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.2	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.3	Land Development Regulations	Utilities/Planning/IRCHD	Ongoing	NO
6.4	Plant Inspections	Utilities	Ongoing	NO
6.5	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.6	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.7	Land Development Regulations	Utilities	Ongoing	NO
6.8	Land Development Regulations	Utilities/Planning	Ongoing	NO
7.1	Land Development Regulations	Utilities/Planning	Ongoing	NO
7.2	Land Development Regulations	Utilities/Planning/IRCHD	Ongoing	NO
7.3	Land Development Regulations	Utilities/Planning/IRCHD	Ongoing	NO

POLICY#	TYPE OF ACTION	RESPONSIBILITY	TIMING	CAPITAL EXPEND.
7.4	Public Education Program	Utilities/ IRCHD	Ongoing	NO

## EVALUATION AND MONITORING PROCEDURES

To be effective, a plan must not only provide a means for implementation; it must also provide a mechanism for assessing the plan's effectiveness. Generally a plan's effectiveness can be judged by the degree to which the plan's objectives have been met. Since objectives are measurable and have specific timeframes, the plan's objectives are the benchmarks used as a basis to evaluate the plan.

Table 3.A.12 identifies each of the objectives of the Sanitary Sewer Sub-Element. It also identifies the measures to be used to evaluate progress in achieving these objectives. Most of these measures are quantitative. Besides the measures, Table 3.A.12 also identifies timeframes associated with meeting the objectives.

The utilities department staff will be responsible for monitoring and evaluating the Sanitary Sewer Sub-Element. This will involve collection of data and compilation of information regarding facility capacity, expansion, and new development permitted. This will be done on a regular basis. As part of the county's concurrency management system, the county will continually monitor facility capacity to ensure that wastewater level-of-service standards will be maintained.

While monitoring will occur on a continual basis, formal evaluation of the Sanitary Sewer Sub-Element will occur every five years in conjunction with the formal evaluation and appraisal of the entire comprehensive plan. Besides assessing progress, the evaluation and appraisal process will also be used to determine whether the Sanitary Sewer Sub-Element objectives should be modified or expanded. In this way the monitoring and evaluation of the Sanitary Sewer Sub-Element will not only provide a means of determining the degree of success of the plan's implementation; it will also provide a mechanism for evaluating needed changes to the plan element.

TABLE 3.A.12  
SANITARY SEWER SUB-ELEMENT  
EVALUATION MATRIX

OBJECTIVE #	MEASURE	TIMEFRAME
1	Existence of LDRs regarding concurrency	Through 2020
2	% connected to regional system	By 2002
3	# of instances of sanitary sewer facilities contaminating surface water or groundwater resources	Through 2020
4	% of wastewater effluent reused	Through 2020
5	Completed improvements	By 2010
6	# of package treatment plant failures and # of illegal or unsafe package treatment plant discharges	Through 2020
7	# of septic tank systems permitted annually	By 2010



TABLE 3.A.13  
 WATER & WASTEWATER CONNECTION MATRIX FOR NEW DEVELOPMENT

	INSIDE OF THE URBAN SERVICE AREA	
	CONNECT	NOT CONNECT
Single Family:		
Within 200' of system	X	
Outside of 200' of system		X**
Residential Projects: Subdivision, multi-family site plan, PD, DRI		
Within ¼ mi. of the system		
25 units or more	X	
Less than 25 units	X	
-----		
Outside of ¼ mi. of system		
25 units or more	X	
Less than 25 units		X**
Non-Residential Projects: Subdivision, Site plan, PD, DRI		
Within ¼ mi. of system		
2,000 gallons daily flow or more *	X	
Less than 2,000 gallons daily flow *	X	
-----		
Outside of ¼ mi. of system		
2,000 gallons daily flow or more *	X	
Less than 2,000 gallons daily flow *		X**

\* Daily flow refers to water consumption or sewer generation.

\*\*The applicant for any development project, where such project will not connect to a centralized system, must sign a developer's agreement with the Indian River County Utilities Department to operate on a private system with a commitment to connect to the regional system when service is available. These agreements shall be conditioned upon demonstration of compliance with applicable federal, state, and local permit requirements. When using a private system or on-site facilities, the developer must construct a dry line or wet line at the time of construction, if required by the Utilities Department. The final determination for the type of non-residential establishment which can utilize a private system shall be made by the Utilities Department, Community Development Department, and Environmental Health Department.

**System Availability:** A system is considered available when a collection or distribution line exists in a public easement or right-of-way.

**Distance Determination:** Distance determinations are made from the nearest point of the project (area of development) to the public facility directly through public easements or public rights-of-way.

## APPENDIX A

TABLE 3.A.A.1  
INDIAN RIVER COUNTY  
UTILITY DEPARTMENT

## RATES AND CHARGES

Water

## Minimum Charge (Includes No Consumption)

Base Facilities Charge	\$9.20/ERU
Customer Charge	\$2.00/Meter
Volume Charge	\$1.75/1,000 gallons
Water Production Charge	\$1.72/1,000 gallons

Sewer

## Minimum Charge (Includes No Consumption)

Base Facilities Charge	\$13.50/ERU
Customer Charge	\$2.00/Meter
*Volume Charge	\$3.35/1,000 gallons
*Only applied to first 12,000 gallons of Water Consumption on each Residential ERU.	

SPECIFIC SERVICE CHARGESWater Service Connection

Residential Unit	\$400.00
1" Meter	\$460.00
1 ½" Meter	\$810.00
Larger than 1½" Meter	Cost plus overhead

Sewer Service Connection

Residential Unit	\$500.00
Commercial and Other	Cost plus overhead

Meter Installation

5/8" Meter	\$130.00
1" Meter	\$200.00
1½" Meter	\$500.00
2" Meter	\$630.00
3" Meters and above	Cost plus overhead
Fire Hydrant Meter	\$25.00

Reconnect (Turn-on Fee)

During Working Hours	\$18.00
After Working Hours	\$25.00
Meter Re-Read and Leak Inspection	\$15.00
Delinquency Charge (Late Pymt. Processing)	\$2.00 + 1½%
General Service Calls	Cost + Overhead

Meter Calibration (Meter Testing)

5/8" Meter	\$20.00
1" Meter	\$20.00
1½ Meter or Larger	Cost + Overhead
Damage Repair (Repair Water & Sewer Break)	\$100.00 + cost

Engineering Services

Site Plan Review	
Under 40 units without a lift station	\$50.00 Min. Cost plus overhead
Over 40 units or a development with lift station	\$150.00 Min. Cost plus overhead

Inspection Fee

Residential or Commercial	
Water	\$25.00/ERU
Sewer	\$25.00/ERU
Hydrant Flow Calibration	\$60.00/test

Annual Fire Protection Charge

2" Meter	\$ 24.00
3" Meter	\$49.50
4" Meter	\$75.00
6" Meter or Fire Hydrant	\$150.00
8" Meter	\$240.00

Impact Fee

Water	\$1,300.00/ERU
Sewer	\$2,796.00/ERU

OTHERDeposits

Water (Residential or Commercial)	\$50.00/ERU
Sewer	\$50.00/ERU
Hydrant Meter	\$345.00

Charge for Returned Checks \$12.00/check

Issuing a Duplicate Bill \$1.50

Water Tapping Charge

3/4" Line	\$400.00
1" Line	\$460.00
1½" Line	\$810.00
2" Line and Over	Cost + Overhead

Sewer Tapping Charge

4" Line	\$500.00
Above 4"	Cost + Overhead

Replace Meter

5/8" Meter	\$100.00
1" Meter	\$125.00
1½" Meter	\$300.00
2" and Above	Cost + Overhead

Removal of Meter

5/8" Meter	\$30.00
1" Meter	\$30.00
1½" Meter and Above	\$40.00
Paved Road Cuts	Cost + Overhead (\$200.00 Min.)
Road Jacking and Boaring	Cost + Overhead
Installation of Water and/or Sewer	Cost + Overhead
Grass Restoration	Cost + Overhead
Fire Hydrant Meter Installation	\$25.00
Unauthorized Use of Fire Hydrants	\$115.00
Unspecified Services	Cost + Overhead

Franchises

Application Fee	\$50.00 Min.*
Established Franchise	\$1100.00 Min.*
Franchise Name Change	\$115.00 Min.*
Franchise Territory Change	\$115.00 Min.*
Change of Ownership	
49 Units or Less	\$115.00 Min.*
50 Units or More	\$300.00 Min.*
Rate Hearing	
49 Units or Less	\$300.00 Min.*
50 Units or More	\$575.00 Min.*
Public Hearing	\$115.00 Min.*

\*Expenses incurred in excess of the minimum will be billed at cost plus overhead.