

I. INTRODUCTION

A. Purpose

The City of Ocoee will continue to provide economical treatment of wastewater and effluent disposal for reuse for irrigation purposes to meet the needs of all existing and future customers. This Sanitary Sewer Sub-element contains an inventory of the existing sewer collection/transmission system, wastewater treatment plant capacity, and effluent disposal facilities, along with determining existing and projected wastewater demands, assess the existing facilities with respect to the existing needs, future needs, and regulatory requirements, and determine the deficiencies of the wastewater system for meeting current and future wastewater demand and regulatory agency requirements.

Where deficiencies exist, this Sub-element provides a plan for improvements of existing facilities and construction of new facilities. Goals, objectives, and policies are included as a means to enable the City to provide sufficient collection treatment and disposal for the City's growing demands.

B. Terms and Concepts

Wastewater treatment plants are facilities designed to reduce the biological and chemical concentrations and bacterial levels in sewage prior to disposal. The treated water, termed effluent or reclaimed water, can be disposed of in several styles consisting of surface water discharge, discharge to artificial or manmade wetlands or land application by either rapid rate or slow rate methods.

Typically in Florida, sewage is transported to a sewage treatment plant through gravity collection and pressure force main pipes constructed of PVC, ductile iron or other materials. In level areas such as Ocoee, sewage-pumping stations are provided at strategic locations to pump the raw sewage under pressure to the wastewater treatment plants.

The City of Ocoee currently disposes of its effluent from the A.D. Mims Road Waste Water Treatment Facility (WWTF) by both percolation ponds on-site and off-site, and sprayfield irrigation on the Forest Lake Golf Course. These percolation ponds detain effluent prior to its seepage into the adjacent groundwater. This style of effluent disposal is classified as rapid rate. The spray field irrigation method of effluent disposal is classified as slow rate land application.

The City is in the process of implementing a plan to increase the amount of effluent disposal utilizing a slow rate method which consists of spray irrigation on residential and commercial landscaped areas as well as public areas and rights-of-way. Effluent reuse policies are being developed which will aid in reducing potable water usage for meeting irrigation requirements.

C. Regulatory Framework

The Federal Water Pollution Control Act (PL 92-500) also known as the Clean Water Act (CWA) is the controlling national legislation relating to the provision of sanitary sewer service. The CWA has been modified many times since its original promulgation in 1972, but it is still the controlling Federal legislation for wastewater treatment and disposal.

The goal of the CWA is the restoration and/or maintenance of the chemical, physical and biological integrity of the nation's waters. It established the national policy of implementing area wide waste treatment and management programs to ensure adequate control of sources of pollutants. The U.S. Environmental Protection Agency is responsible for implementing the CWA. The City of Ocoee will not be required to obtain any Federal permits since the effluent disposal will not discharge to surface waters.

The Florida Department of Environmental Protection (DEP) is responsible for ensuring that the State carries out responsibilities assigned to it under PL 92-500 and its amendments. DEP has adopted rules for the regulation of wastewater facilities in Chapter 62, FAC. These rules apply to all facilities, which treat wastewater.

The City of Ocoee has DEP and Orange County Operating Permits for its A.D. Mims Road WWTF. The DEP permit is numbered FLA 010815-001 and the Orange County permit is numbered DO 96-11. The operating time period for the permits were recently extended, and both permits expire in 2007.

The Florida Department of Health and Rehabilitative Services regulates septic tank and drainfield installation within the state. These requirements have been adopted by rule in Chapter 64E-6, FAC.

II. EXISTING CONDITIONS

A. Service Area

The City of Ocoee is located approximately 10 miles west of downtown Orlando in Orange County, Florida. Figure 15 is a map of the existing service area of the City's sanitary sewer system and service area including the utility service boundary. The map also shows the areas served by the City's wastewater collection/transmission system and areas where septic tanks are located.

The City's wastewater service area includes approximately fifteen square miles of land area. The Utility Department owns, operates, and maintains Ocoee's one WWTF located on A.D. Mims Road. The City is permitted by DEP and Orange County Environmental Protection Division to operate the wastewater treatment plant and effluent disposal sites listed in Section C. There are approximately 5,402 active connections to this treatment plant and these active connections are generating approximately 1,534 million gallons per day (mgd) average daily flow (ADF) of wastewater.

An additional 5,069 customers are expected to connect to existing and future treatment facilities in the next twenty years. Additional facilities for collection/transmission, wastewater treatment, and effluent disposal will need to be constructed in an economical and timely fashion to meet the demands of expected growth.

B. Sanitary Collection/Transmission System

The City’s collection/transmission system is composed of a network of sewer pipes, which collect sewage from individual establishments and convey it to the existing wastewater treatment plant for treatment and disposal. Figure 15 shows the City’s existing sanitary sewer collection/transmission lines.

The wastewater collection/transmission system consists of several types of pipe construction materials. The older portion of this system is constructed of vitrified clay and cast iron pipe. Recent installations have been constructed with PVC or ductile iron pipe in gravity and pressure force main applications. Table 1 details the approximate lengths of gravity and force main lines in the Ocoee sanitary sewer service area.

**Table 1
Gravity and Force Main Sewer Line Inventory, 2001**

Pipeline Type	Diameter (inches)	Length (feet)	Total (miles)
Gravity Lines	8	223,938	
	10	5,282	
	12	8,540	
	15	92	
Subtotal Gravity		237,852	45.0
Force Main Lines	4	14,544	
	6	36,896	
	8	13,409	
	10	4,295	
	12	38,338	
	16	6,522	
	20	8,807	
Subtotal Force Main		122,811	23.3
Total Sanitary Sewer Pipeline		360,663	68.3

Due to the relatively level terrain of Ocoee, several pumping stations are used in conjunction with the gravity sewer collection system. The City's Utility Department

currently operates a total of forty-four pumping stations that transmit sewage to the treatment plant. Five private lift stations serve individual customers tied to the City's system. All wastewater collected is pumped to the A.D. Mims Road WWTF by way of the lift stations and force mains shown in Figure 15.

C. Wastewater Treatment Plant

The City of Ocoee owns and operates one wastewater treatment plant in the City's service area. When the original ring steel plant was taken out of service and demolished in 1994, wastewater flow was directed to a new A.D. Mims Road WWTF, which has a design capacity of 3.0 mgd ADF. Currently, this facility treats 1.534 mgd ADF. The A.D. Mims Road WWTF uses a conventional activated sludge process consisting of mechanical screening, grit removal, dual oxidation ditches, secondary clarification, chemical feed facilities, tertiary sand filtration, and chlorination.

A.D. Mims Road WWTF also contains reuse pumping and storage tanks for effluent disposal to the Forest Oaks Golf Course or for residential and commercial landscape irrigation, when those areas are brought on line. Gas chlorination is provided by a one-ton chlorine injection system. Flows are measured by a flow meter and recorder system on the effluent flow from the chlorine contact chamber, on the pipelines to the golf course, and out to the reuse distribution system. The effluent disposal system for this plant is outlined in the next section.

The operations and laboratory building at the A.D. Mims Road WWTF includes equipment for laboratory analysis, aeration blowers, office furniture, tools and miscellaneous items required to operate the facility. The building has a break room for the plant operations and collection/transmission personnel. The facility includes a water and wastewater system Vehicle and Material Storage Building.

Approximately 2,184 tons per year of wet sludge were processed in the year 2000 at the A.D. Mims Road WWTF. The sludge is primarily trucked by contract hauler to a state approved sludge disposal facility located in north Florida. The entire process is approved by DEP and Orange County as part of the City's operating permits.

The existing sanitary sewer facilities meet or exceed all DEP operating criteria and are in full compliance with existing operating permits. The estimated life of this facility is approximately 30 years. It is estimated that this facility will need to be upgraded capacity-wise prior to the end of this 20-year planning period. The capacity upgrade will consist of a flow equalization basin, fourth clarifier, additions to the sand filters and chlorine contact basin, and chemical feed systems as necessary.

The future upgrade is planned to be constructed at the A.D. Mims Road plant site within this twenty-year planning period. These proposed facilities are scheduled to be constructed and operational in order to serve the projected twenty-year building schedule. Expansions are programmed to occur as flows reach 80 percent of the permitted capacity.

The City of Ocoee has been in the wastewater utility business only since the beginning of 1988 and has no long-term records of capacity demands and historical consumption volumes. The City established a level of service (LOS) of 270 gallons per day (gpd) per equivalent residential unit (ERC) in 1988, and has maintained that number for consumption and impact calculations. The LOS of 270 gpd per ERC is adequate and shall provide sufficient capacity for future users of the system. The City operates its utility system as an enterprise fund and utilizes connection fees to expand the needed capital facilities.

Effluent disposal through percolation ponds and spray irrigation on the City-owned Forest Lake Golf Course property has been consistent with all permit conditions. The mandated monitoring program has indicated treatment and disposal in full compliance of existing operation permits. This disposal system utilizes the percolation ponds on the A.D. Mims Road WWTF property and the dual disposal system of the percolation's ponds and spray irrigation at the golf course property. No deleterious impacts are known to exist at this time.

D. Effluent Disposal

Two on-site percolation ponds on the A.D. Mims Road WWTF property are the secondary means of effluent disposal for the facility. The total percolation pond area consists of Pond A at 8.6 acres and Pond B at 5.5 acres. These ponds have a permitted effluent disposal capacity of 0.35 mgd adjusted average daily flow (AADF) and are only used for secondary wet weather storage or for reuse water discharge in the event of a water quality problem. See Figure 15 for the location of this effluent disposal facility.

The City of Ocoee owns the property where the Forest Oaks Golf Course was constructed. There is a long-term lease (50 years) to allow for the golf course. This 200-acre site is permitted for 1.0 mgd AADF of disposal capacity. The City is currently placing 1.0 mgd ADF on the golf course and in the 9.2-acre percolation ponds located in the approximate center of the property.

The City is currently in the process of expanding its effluent disposal facilities. The City has constructed pumping and storage facilities on the A.D. Mims Road WWTF and installed transmission and distribution pipelines to provide irrigation quality reuse water to portions of its utility service area for residential and commercial landscape irrigation. At this time this system is not in service, but is planned to be fully operational in 2002. Initially this reuse system will provide reclaimed effluent water along the Clarke Road corridor from Clarcona-Ocoee Road to SR 50 (West Colonial Drive).

To provide for capacity from the A.D. Mims Road WWTF, the City has entered into an agreement with neighboring City of Winter Garden to take up to 1.0 mgd to serve the Forest Oaks Golf Course. The available capacity will be provided to the customers in the initial service area to ensure adequate capacity. See Figure 17 for the area of the current effluent disposal facilities and the reuse-reclaimed pipeline system for transmission and distribution.

The City has also entered into an agreement with the City of Orlando and Orange County to obtain reuse water from the WATER CONSERV pipelines to be used for residential and commercial landscape irrigation in the southern portion of the service area. Backbone pipelines are being installed as part of a roadway improvement project in this area, but will not be ready for use until 2002. The pumping and storage facilities are being designed at this time; they should go on line in 2003.

E. Alternatives to Central Wastewater Disposal

Septic tanks are currently used for treatment of sewage from individual sites, primarily residential and older commercial uses. Septic tanks are typically designed for a 24-hour detention period, allowing sedimentation and primary sludge digestion. Septic tank effluent is normally discharged to subsurface leaching fields, achieving percolation into the surrounding soil.

The Florida Department of Health's Orange County Health Department is the regulatory agency responsible for permitting septic tank use. Septic tanks are permitted in accordance to HRS Rule 10-D-6, and are allowed only where suitable soils exist. Presently, neither Orange County nor the City of Ocoee regulate septic tank repair, thus no records of failures exist.

Soil suitability for a specific site within the City is determined by soil sampling and an evaluation of soil potential. The Soil Service Survey for Orange County identifies that the majority of soils within the City are acceptable for septic tank use. Table 9 in the Drainage Sub-element and Figure 6 in the Future Land Use Element describe and locate and types of soils, or hydric map units, found in the City. It is important to note the need for a site-specific study to evaluate the full potential of any soil.

Specific standards for septic tank and central wastewater usage are described in the City's land development regulations. Increases in land use density and concerns of greater environmental protection have led to strict criteria concerning septic tank use and more favorable consideration of central wastewater systems. The City has required most new development to utilize central wastewater facilities. Future urban development shall be required to obtain central wastewater service. The City requires connection to central services to maximize the use of existing facilities and discourage urban sprawl.

III. NEEDS ASSESSMENT

As of October 2000, the City of Ocoee has provided wastewater service to approximately 5,402 customer connections and operates one wastewater treatment facility, forty-four pumping stations and 68.31 miles of sewer lines. Table 2 details the City of Ocoee's service area population and sewage flow rate projections up to year 2020. This projection is based on the City's requirement that all new developments connect to the wastewater system if at all practical. Septic tank systems may still be installed in areas where no collection/transmission systems are available and the soils are suitable for this type of treatment/disposal.

**Table 2
Sanitary Sewer Service Area
Population, Connections and Flow Rate Projections, 2000-2020**

Year	Service Area Population¹	Number of Connections in Service Area	% of Pop. Connected to Central Sewer²	Sewage Flow Rate (tons per year)
2000	33,808	5,402	44%	1,534
2005	38,067	6,869	52%	1,951
2010	43,351	8,691	58%	2,468
2020	48,514	10,471	63%	2,974

1. Population projections include permanent and seasonal population.
2. Percentage of population within sewer service area connected to central sewer. 2000 data is actual customers; future numbers assume all new residents will connect to the central sewer system. As shown, the percentage increases as new development is added to the central sewer system.
Source: City of Ocoee Utilities Department, October 2000.

In 1994, the City constructed the A.D. Mims Road WWTF with a rated capacity of 3.0 mgd ADF. Approximately 5,000 ERCs of sewer capacity was reserved and prepaid in 1990, and almost 3,100 ECRs of that sewer capacity has been utilized to date. At the present rate of growth the City will need to expand the WWTF before 2010. It should be noted that approximately 400,000 gallons of excess capacity is projected for the year 2010. This capacity is available and sufficient to furnish sewer capacity to any areas where septic tanks may fail due to poor soil conditions.

To meet the growing demand of wastewater treatment in Ocoee, the City has developed a construction schedule to assure adequate collection/transmission, treatment and disposal facilities. Table 3 details this proposed five-year facility construction schedule.

**Table 3
Wastewater System
Five-Year Capital Improvement Projects, FY 2001-2006**

	Project Description	FY 01/02	FY 02/03	FY 03/04	FY 04/05	FY 05/06	Total
		\$	\$	\$	\$	\$	\$
1.	Sanitary System Hydraulic Modeling Analysis		40,000				40,000
2.	Reroute Pioneer Key II Sewer to New Lift Station #22			100,000			100,000
3.	Gravity Sewer Area Around New Lift Station #22					500,000	500,000
4.	South Service Area Reuse Retrofit		300,000	700,000			1,000,000
5.	Maguire Road to Clarke Road Reuse Pipeline Interconnect				1,000,000		1,000,000
6.	Utility Operations Building		1,000,000				1,000,000
7.	Convert Disinfection System at WWTP to Hypochlorite System			500,000			500,000
8.	Study & Design WWTP Upgrade					350,000	350,000
FY Totals		0	1,340,000	1,300,000	1,000,000	850,000	4,490,000

Note: Figures shown include design, construction, and administrative costs.
Source: City of Ocoee Finance Department, 2001.

IV. CONCLUSION

The City will improve and expand its wastewater facilities to provide capacity to all future urban developments. The City's wastewater treatment facilities shall be expanded to provide 4.5 mgd by the year 2010. This shall provide sufficient treatment capacity for the population projections for the year 2020. In areas where central wastewater service is not available, septic tank use may be utilized if soil potential is acceptable, adverse environmental impacts are minimal, and development is not urban.

The City shall carefully monitor all wastewater treatment facilities to avoid experiencing health and safety hazards. The City shall continue to require urban development to utilize existing capital infrastructure and minimize the costly expense of providing services to areas of urban sprawl.

V. GOALS, OBJECTIVES, AND POLICIES**GOAL 1**

IT IS THE CITY OF OCOEE'S GOAL TO PROVIDE AN EFFICIENT AND ADEQUATE LEVEL OF WASTEWATER SERVICE AND FACILITIES IN AN ECONOMICAL MANNER FOR EXISTING AND FUTURE DEVELOPMENT.

Objective 1.1

The City of Ocoee shall provide and maintain an economical wastewater system, through the implementation of the following policies.

Policy 1.1.1

The City's Utility Department shall provide proper maintenance of the existing and proposed wastewater system components and facilities to ensure long life service of all mechanical items and cost-effective service.

Policy 1.1.2

The City of Ocoee shall encourage the use of new technologies and energy conscience systems where applicable.

Policy 1.1.3

Should there be a large number of septic tank drainfield failures, the City will consider initiating a program to bring them into the sanitary sewer service area when cost-effective to do so.

Policy 1.1.4

The City shall continue its utility television monitoring program to check existing sanitary sewer lines in order to identify and correct operational deficiencies, to reduce flow into the plant and provide capacity for development, as a part of the City's annual refurbishing program.

Objective 1.2

The City of Ocoee shall plan for the expansion or increase in capacity of central wastewater facilities to meet future needs.

Policy 1.2.1

The Sanitary Sewer Hydraulic Modeling Analysis shall be the basis for accommodating projected wastewater service demand on the wastewater system

and shall be used to prioritize and coordinate the expansion and upgrade of facilities to meet future needs.

Policy 1.2.2

Expansion of central wastewater facilities shall be based on the demands of projected development in accordance with the adopted level of service standards (270 gallons per day per equivalent residential unit) and the future land use projected in the Future Land Use Element.

Policy 1.2.3

The City of Ocoee shall continue to update its current five year funded Wastewater Facilities Capital Improvements Program, as part of the City of Ocoee's five-year CIP, for the extension or increase in capacity of facilities.

Policy 1.2.4

The priorities for wastewater service provision shall be:

- A. Service to existing areas that present either an immediate threat to public health or safety, or produce serious pollution problems.
- B. Maintenance or upgrading of existing wastewater system to meet or exceed the adopted level of service standards.
- C. Service to areas scheduled to be developed in the near future as defined in the Wastewater Facilities Capital Improvements Program.
- D. Extension of wastewater service to undeveloped areas in the Urban Service Area where other major urban services have been or are being developed simultaneously, as long as the improvements do not take away from the funded Capital Improvements Program.
- E. Expansion into other areas of the Urban Service Area.

Policy 1.2.5

When central sewer is required for development, the developer shall purchase capacity at a level of service of 270 gallons per day per equivalent residential unit prior to obtaining a development permit.

Policy 1.2.6

Connections to the wastewater system shall be permitted only where the capacity is available in the line.

Policy 1.2.7

Wastewater facilities needed above and beyond the development projected in this Element shall be provided by the developer.

Policy 1.2.8

Implementation of the recommended system needed to maintain the adopted level of service standards should be funded.

Policy 1.2.9

Connection fees shall cover the cost of the needed wastewater system expansion.

Policy 1.2.10

Public or approved private wastewater systems in the City of Ocoee shall be self-supporting and should not utilize ad valorem taxation. An "enterprise" funding system shall be maintained.

Objective 1.3

Future and existing development patterns shall effectively utilize the present wastewater facilities and available capacity.

Policy 1.3.1

The shift to new technologies and operational procedures shall occur as they become economically feasible; e.g., artificial recharge systems and continued reclamation of wastewater.

Policy 1.3.2

The City shall actively participate in the development of innovative wastewater programs, which protect and conserve the City's water resources.

Policy 1.3.3

User fees shall cover the full cost of operating and maintaining the system including debt service.

Objective 1.4

Wastewater facility plans and programs shall be designed to avoid urban sprawl, through the Five-Year Capital Improvements Program. The "infilling" of urban areas shall be directed to locations where an existing wastewater collection network is available and

where treatment capacity is adequate, or to areas where funds have been committed for the provision of adequate capacity.

Policy 1.4.1

Wastewater facility plans and programs shall be designed and coordinated in a manner, which will support the Urban Service Area growth management concept, avoiding urban sprawl.

Policy 1.4.2

Future growth at urban densities or intensities will be encouraged to locate in areas, which have existing or planned wastewater capacity. Throughout the planning period, the City shall maximize the use of existing facilities in the service area so as to discourage urban sprawl. No development permits will be issued for new development which will result in increased demand on public facilities, beyond their design capacities based on adopted LOS standards.

Policy 1.4.3

The City shall continue to promote the reuse of treated effluent in the City as irrigation for residential and commercial irrigation and on parks and landscaped areas to reduce the demand on existing potable water supplies.

Objective 1.5

The City of Ocoee shall continue to coordinate with county and private water and wastewater agencies to assist in preventing fragmentation, duplication of effort, overlapping jurisdictions and excessive costs.

Policy 1.5.1

The City shall continue the service area interlace agreements with Orange County and other entities to avoid unnecessary duplication of capital infrastructure.

Policy 1.5.2

The City of Ocoee shall continue to pursue sources of funding and participation with other localities in order to plan and construct wastewater systems.

Policy 1.5.3

The City of Ocoee shall continue to investigate alternative management systems for providing wastewater service.

GOAL 2**WASTEWATER SERVICES SHALL BE ENVIRONMENTALLY SOUND, PROMOTE WATER CONSERVATION AND PROTECT THE QUALITY OF THE WATER SUPPLY.****Objective 2.1**

All City septic tank regulations and policies will be enforced or amended to ensure a non-threatening coexistence with the ecosystem and the elimination of health hazards.

Policy 2.1.1

The City shall continue to coordinate with Orange County Health Department to identify the location of individual septic tanks in the City that poses a potential health hazard.

Policy 2.1.2

The City shall limit the use of elevated septic tanks and drainfield systems to lots of a half-acre minimum in order to provide a more balanced ecological and aesthetic approach to new development.

Policy 2.1.3

The Land Development Code shall unify all governing criteria for the use of septic tanks.

Policy 2.1.4

The City of Ocoee shall allow the use of septic tanks for development only in areas of suitable soils and when central wastewater services are not available. Where there are marginal soils, the City may allow the use of septic tanks based on detailed soil and site analysis so that ground or surface waters will not be polluted. Specific septic tank criteria shall be governed by the City of Ocoee Subdivision Regulations or supplemental guidelines adopted under the proposed Land Development Code, as well as the requirements established in Chapter 64E-6 of the Florida Administrative Code.

Policy 2.1.5

When it has been determined by the City Commission that the application of Policy 2.1.4 will result in substantial environmental impact to the subject or abutting property, the City may limit the density of the development. Substantial environmental impact shall be determined by one or more of the following:

- A. Total clearing of on-site vegetation or placement of fill material which results in the substantial destruction of the natural vegetation.

- B. Unmitigated interruption of the surface drainage pattern.
- C. Contamination of surface water bodies or groundwater.

Policy 2.1.6

New development in the Urban Service Area shall be connected to central wastewater systems. The waiver of this requirement to permit the use of septic tanks should only be considered pursuant to Policy 2.1.4.

Policy 2.1.7

In areas of unsuitable soils, existing septic tanks shall be required to connect to the City wastewater system within one (1) year from the date of notification that these services are available.

Objective 2.2

The City wastewater treatment facilities shall be designed and monitored to ensure a non-threatening co-existence with the ecosystem and the elimination of health hazards.

Policy 2.2.1

The City of Ocoee shall continue to follow all federal, state and local wastewater facility regulations, which provide for the protection of the environment.

Policy 2.2.2

The City of Ocoee shall design, permit, and construct all new wastewater system components and facilities according to all DEP and Orange County regulations.

Policy 2.2.3

The City of Ocoee shall report any rule violations concerning the wastewater treatment and disposal system to the DEP immediately.

(Amendments to Objectives & Policies Subsection of the Sanitary Sewer Sub-Element Goals)**Objective 2.3**

The City of Ocoee shall develop and amend the Comprehensive Plan to adopt a wastewater facility plan meeting the requirements of Section 369.320.F.S.

Policy 2.3.1

By June 1, 2010, the City of Ocoee shall develop a wastewater facility plan meeting the requirements of Section 369.320, F.S., and, amend the Sanitary Sewer Sub-element of The Comprehensive Plan to ensure implementation of the wastewater facility plan consistent with the requirements of Section 369.320, F. S. **[Wekiva Parkway and Protections Act (WWPA): Ch. 369.321 (3), F. S.]**