

**CITY OF OCOEE  
COMPREHENSIVE PLAN**

**CONSERVATION ELEMENT  
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## **I. INTRODUCTION**

In 1975, the Florida Legislature enacted the Local Government Comprehensive Planning Act, Chapter 163, Part II, Florida Statutes. This Act required all units of local government to prepare a comprehensive plan by 1980. Pursuant to this mandate, the City of Ocoee adopted a comprehensive plan for the City.

In 1985, the Legislature passed the Local Government Comprehensive Planning and Land Development Regulation Act, which substantially increased the requirements for the preparation of local government comprehensive plans. This law, commonly referred to as the "Growth Management Act", requires that all plans meet certain minimum criteria, as set forth in Chapter 9J-5, Florida Administrative Code (FAC), and that a Capital Improvements Element be prepared to determine the costs and revenues associated with implementing the plan.

The Comprehensive Plan for the City of Ocoee includes eight parts called Elements. The Elements are as follows:

1. Future Land Use
2. Transportation
3. Housing
4. Sanitary Sewer, Solid Waste, Drainage, Potable Water, Natural Groundwater Aquifer Recharge (hereafter referred to as the Infrastructure Element)
5. Conservation
6. Recreation and Open Space
7. Intergovernmental Coordination
8. Capital Improvements

The population projections used in this Element are those developed in conjunction with the Department of Community Affairs in their report *Population Estimation and Projection Techniques*, the University of Florida's Bureau of Economic and Business Research (BEBR) report *Florida's Estimates of Population 1987*, the U.S. Bureau of the Census, 1960, 1970, 1980, 1990 and 2000 Censuses, and the City of Ocoee Master Transportation Plan, 1998.

### **A. Purpose**

The purpose of this Conservation Element is to promote and enhance the conservation, use and protection of the natural resources of the City. This Element meets the minimum criteria for review of local government comprehensive plans as specified in Chapter 9J-5.014, FAC.

In addition, the element establishes a plan and policy direction concerning conservation of natural resources and will provide a basis for decision-making by city officials. As growth occurs in and around the City of Ocoee, the need for protection and management of the City's natural resources will increase.

The City's natural resources are identified and analyzed in this element. A description of these resources and their significance to the City, as well as the region is also included. Policies to maintain and enhance these resources as well as shape growth patterns of the City are included in the Goals, Objectives, and Policies section of this element.

## **B. Environmental Setting**

The City of Ocoee lies within three major drainage basins, the Wekiva River, the Cypress Creek and the Lake Apopka. The City is within an area identified as the Mt. Dora Ridge, characterized by undulating hills with well-drained sandy soils, dotted with frequent lake depressions and solution sinks that usually contain water. The mild climate in the area is favorable for field crop and citrus production. The summers are long, hot, and humid. Winters are mild with infrequent cold fronts dropping temperatures to below freezing. The mean annual temperature is approximately 75.25 degrees. Rainfall is approximately 48.7 inches per year. Two landscape associations, or ecological communities, are present in and around the City: (1) pine flatwoods/hammocks/hardwood swamps, and (2) sandhills/isolated or flowing water wetlands.

## **C. Current Condition**

The population of Ocoee for 2000 is estimated to be approximately 24,391. The 1970 population was 3,937, the 1980 population was 7,803, and the 1990 population was 14,850. The City's recent growth can be attributed to its role as a bedroom community for the Orlando SMSA, central location, easy access to the Florida Turnpike, East-West Expressway, SR 50 and the recently completed Western Beltway. In addition, the City is coming under increasing development pressures due to its aesthetic appeal. Due to its natural amenities, residential and commercial activities are increasing at a rapid rate.

Due to the recent completion of the Western Beltway, the completion of Clarke Road (major 4-lane north/south road), and the recent extension of County water and sewer along Clarcona-Ocoee Road, growth is expected to continue to climb at an enormous rate. It is expected that most of the future development activity anticipated by the year 2020 will occur in the southern, northwestern, and eastern areas of the City.

Currently, the only water pollution problems in the area exist in the surface waters. Most of the pollution found in the lakes is due to agricultural and urban runoff. At this time, the quality of the water recharging the Floridan Aquifer is not seen as a potential problem.

## **II. DATA SUMMARY AND ANALYSIS**

### **A. Air Quality**

The Orange County Environmental Protection Department ambient air quality monitoring program is part of a statewide air monitoring network directed by the Bureau of Air Quality Management in Tallahassee. The City coordinates with Orange County in this program.

The Bureau has established legal pollutant concentration limits allowed to occur in the ambient air for six pollutants, five are currently monitored in Orange County: (1) Carbon Monoxide, (2) Nitrogen Dioxide, (3) Ozone, (4) Sulfur Dioxide, and (5) Total Suspended Particulate. Table 1 defines the State and Federal Ambient Air Quality Standards.

The United States Environmental Protection Agency has developed a uniform standardized daily air quality reporting index called the Pollution Standard Index (PSI). Locally, this is known as the Air Quality Index (AQI). This was done in order to provide a simplified method of advising the public of any possible adverse health effects due to air pollution on a day-to-day basis.

In Orange County, the measured levels of the five criteria pollutants identified above are used to obtain a single index number. This index number is translated into a single descriptor word that characterizes the air quality. Table 2 gives the PSI values along with the Health Effect Descriptor, General Health Effects, and Cautionary Statements for each pollutant.

Due to the prevailing west winds in Ocoee, the City is usually not affected by the poorer air quality found in eastern metropolitan Orlando. The AQI for the City is generally less than or equal to 50, with the Health Effect Descriptor "Good".

### **Point Source Emissions**

There are no major industrial plants in the City of Ocoee that generate large amounts of point source emissions. The most significant emission generators are automobiles. At present, even this source is insignificant. The Department of Environmental Protection periodically monitors these emissions to ensure that this source does not become a major problem.

**Table 1  
State and Federal Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Averaging Time</b>	<b>State of Florida Standard</b>	<b>Federal Preliminary Standard</b>	<b>Federal Secondary Standard</b>
Carbon Monoxide	8-hour <sup>a</sup>	10mg/m <sup>3</sup> (9 ppm)	10mg/m <sup>3</sup> (9 ppm)	same as primary
	1-hour <sup>a</sup>	40 mg/m <sup>3</sup> (35 ppm)	40 mg/m <sup>3</sup> (35 ppm)	same as primary
Lead	Quarterly Arithmetic Mean	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	same as primary
Nitrogen Dioxide	Annual Arithmetic Mean	100 µg/m <sup>3</sup> (0.05 ppm)	100 µg/m <sup>3</sup> (0.05 ppm)	same as primary
Ozone	8-hour average	0.12 ppm	0.12 ppm	same as primary
Sulfur Dioxide	Annual Arithmetic Mean	60 µg/m <sup>3</sup> (0.02 ppm)	80 µg/m <sup>3</sup> (0.03 ppm)	N/A
	24-hour <sup>a</sup>	260 µg/m <sup>3</sup> (0.1 ppm)	365 µg/m <sup>3</sup> (0.14 ppm)	N/A
	3-hour <sup>a</sup>	1300 µg/m <sup>3</sup> (0.5 ppm)	N/A	1300 µg/m <sup>3</sup> (0.5 ppm)
PM10 Particulate Material 10 Microns or Less	Annual Geometric Mean	50 µg/m <sup>3</sup>	75 µg/m <sup>3</sup>	See note
	24-hour <sup>a</sup>	150 µg/m <sup>3</sup>	260 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>

a Not to be exceeded more than once per year.

b Not to be exceeded more than an average of once per year over a three year period.

Note: On the Federal level, an annual geometric mean of 60 ug/m<sup>3</sup> is used as a guide in assessing plans to attain and/or maintain the 24-hour secondary standard.

**Table 2**  
**National Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Standard Value *</b>		<b>Standard Type</b>
<b>Carbon Monoxide (CO)</b>			
8-hour Average	9 ppm	(10 mg/m <sup>3</sup> )	Primary
1-hour Average	35 ppm	(40 mg/m <sup>3</sup> )	Primary
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>			
Annual Arithmetic Mean	0.053 ppm	(100 µg/m <sup>3</sup> )	Primary & Secondary
<b>Ozone (O<sub>3</sub>)</b>			
1-hour Average	0.12 ppm	(235 µg/m <sup>3</sup> )	Primary & Secondary
8-hour Average **	0.08 ppm	(157 µg/m <sup>3</sup> )	Primary & Secondary
<b>Lead (Pb)</b>			
Quarterly Average	1.5 µg/m <sup>3</sup>	N/A	Primary & Secondary
<b>Particulate (PM 10)</b> <i>Particles with diameters of 10 micrometers or less.</i>			
Annual Arithmetic Mean	50 µg/m <sup>3</sup>	N/A	Primary & Secondary
24-hour Average	150 µg/m <sup>3</sup>	N/A	Primary & Secondary
<b>Particulate (PM 2.5)</b> <i>Particles with diameters of 2.5 micrometers or less.</i>			
Annual Arithmetic Mean **	15 µg/m <sup>3</sup>	N/A	Primary & Secondary
24-hour Average **	65 µg/m <sup>3</sup>	N/A	Primary & Secondary
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>			
Annual Arithmetic Mean	0.03 ppm	(80 µg/m <sup>3</sup> )	Primary
24-hour Average	0.14 ppm	(365 µg/m <sup>3</sup> )	Primary
3-hour Average	0.50 ppm	(1300 µg/m <sup>3</sup> )	Secondary

\* Parenthetical value is an approximately equivalent concentration.

\*\* The ozone 8-hour standard and the PM 2.5 standards are included for information only. A 1999 federal court ruling blocked implementation of these standards, which EPA proposed in 1997. EPA has asked the U.S. Supreme Court to reconsider that decision.

## **B. Surface Water Bodies**

The City of Ocoee lies within three major basins: (1) the Wekiva River, (2) Cypress Creek, and (3) Lake Apopka. Figure 3 in the Future Land Use Element is a map of these major drainage basins. There are 18 lakes within the area of Ocoee, 14 of which are identified in the Gazetteer of Florida Lakes. Table 3 identifies these lakes. Figure 6 in the Future Land Use Element shows the approximate location of surface water bodies and the wetlands in the area.

There are 13 lakes within the area that have been analyzed for nonpoint source pollution by the Nonpoint Source Management Section of the Department of Environmental Protection in coordination with the St. Johns River Management District (SJRWMD) and the City of Ocoee. Tables 4, 5, and 6 analyze the condition of these lakes. In brief, the aforementioned tables show that the major source of nonpoint pollution comes from agricultural areas. Pollutants such as nutrients, pesticides, and the associated pH imbalance occurring in the lakes can also be attributed to the agricultural uses in their vicinity. Urban runoff is also a significant source of nonpoint pollution in the area.

In Lake Pearl, septic tanks were identified as contributors to the nonpoint pollution identified. Due to the similar soil types found near the other lakes identified in this Element, the use of septic tanks shall be thoroughly studied in the review of development proposals to prevent the irreversible effects of septic tank leachate.



**Table 3  
Major Lakes in the Ocoee Area**

<b>Name</b>	<b>Surface Area (Acres)</b>	<b>Water Surface Elevation (Feet above MSL)</b>	<b>Type of Lake</b>
Bennet	18	110	4
Johio	28	111	4
Lilly	18	114	4
Lotta	40	85	3
Meadow	24	76	4
Olympia	81	81	4
Peach	8	148	4
Prairie	37	76	4
Rhea	11	109	4
Spring	45	103	4
Stanley	44	72	4
Starke	203	98	4
Whitney	38	110	4
Moxie	*	*	*
Prima Vista	*	*	*
Sidney	*	*	*
Trout	**	**	**
Sims	**	**	**
Adah	**	**	**
Pearl	**	**	**
Bonnet	**	**	**

\* No data was available for these lakes.

\*\* Not originally included in Table 3, but located within the Ocoee-Orange County JPA.

- Lake Type Index:
1. Lakes with streams flowing into them.
  2. Lakes with streams flowing out of them.
  3. Lakes with streams flowing in and out of them.
  4. Lakes that are landlocked.

Source: *Gazetteer of Florida Lakes*, 1986.

Note: No new lakes have been added to the Ocoee-Orange County Joint Planning Area since the adoption of the Comprehensive Plan.

**Table 4  
Nonpoint Pollution Sources**

<b>Name</b>	<b>Urban Runoff</b>	<b>Agriculture</b>	<b>Septic Tanks</b>	<b>Hydrologic Modifications</b>
Bennet	Yes	Yes	No	Yes
Johio	No	Yes	Yes	Yes
Lilly	Yes	No	Yes	Yes
Lotta	Yes	No	No	Yes
Meadow	Yes	Yes	No	No
Moxie	Yes	No	No	Yes
Olympia	Yes	Yes	No	Yes
Peach	Yes	Yes	No	Yes
Pearl	Yes	No	Yes	Yes
Prairie	Yes	Yes	No	Yes
Prima Vista	Yes	Yes	Yes	No
Spring	Yes	Yes	Yes	Yes
Stanley	Yes	Yes	No	No
Starke	Yes	No	Yes	Yes
Rhea	*	*	*	*
Adah	No	Yes	Yes	Yes
Bonnet	Yes	Yes	No	Yes
Sidney	*	*	*	*
Whitney	*	*	*	*
Sims	**	**	**	**
Trout	**	**	**	**

\* No data was available for these lakes.

\*\* Not originally included in Table 4, but located within the Ocoee-Orange County JPA.

Sources: DEP, *Florida Non-Point Source Assessment*, 1988, and City of Ocoee, 2001,

Note: No new lakes have been added to the Ocoee-Orange County Joint Planning since the adoption of the Comprehensive Plan.

**Table 5  
Surface Symptoms**

Lake Name	Fish Kill	Aquatic Vegetation Problem	Algal Bloom	Decline in Fishery	Odor	Turbidity	Closed to Swimming	Oxygen Depletion
Bennet								
Johio								
Lilly								
Lotta								
Meadow								
Moxie								
Olympia								
Peach								
Pearl								
Prairie								
Prima Vista							X	
Spring								
Stanley								
Starke							X	
Rhea	*	*	*	*	*	*	*	*
Sidney	*	*	*	*	*	*	*	*
Whitney	*	*	*	*	*	*	*	*
Adah	**	**	**	**	**	**	**	**
Bonnet	**	**	**	**	**	**	**	**
Sims	**	**	**	**	**	**	**	**
Trout	**	**	**	**	**	**	**	**

\* No data was available for these lakes.

\*\* Not originally included in Table 5, but located within the Ocoee-Orange County JPA.

Sources: DEP, *Florida Non-Point Source Assessment*, 1988, and City of Ocoee, 2001.

Notes: The Florida Department of Environmental Protection no longer monitors non-point pollution sources for all lakes in the state. The respective counties occasionally monitor non-point pollutions for lakes. No new lakes have been added to the Ocoee-Orange County Joint Planning Area since the adoption of the Comprehensive Plan.

**Table 6  
Pollutants**

Name	SE	NU	BA	PE	OC	SA	PH	ME	HA	OI	FL
Bennet		X	X	X	X	X	X		X	X	
Johio		X	X	X	X	X	X			X	
Lilly		X	X	X	X	X	X		X	X	
Lotta		X	X	X	X	X	X			X	
Meadow		X	X	X	X	X	X			X	
Moxie	X	X	X	X	X	X	X				
Olympia		X	X	X	X	X	X			X	
Peach	X	X	X	X	X	X	X			X	
Pearl		X								X	
Prairie	X	X	X	X	X	X	X			X	X
Prima Vista		X	X	X	X	X	X	X		X	
Spring		X	X	X	X	X	X			X	
Stanley	X	X	X	X	X	X	X			X	
Starke		X	X	X	X	X	X		X	X	
Rhea	*										
Sidney	*	*	*	*	*	*	*	*	*	*	*
Whitney	*	*	*	*	*	*	*	*	*	*	*
Adah		X	X	X	X	X	X		X	X	
Bonnet		X	X	X	X	X	X		X	X	
Sims	**	**	**	**	**	**	**	**	**	**	**
Trout	**	**	**	**	**	**	**	**	**	**	**

\* No data was available for these lakes.

\*\* Not originally included in Table 6, but located within the Ocoee-Orange County JPA.

- LEGEND:**
- SE** --Sediments
  - NU** --Nutrients
  - BA** --Bacteria
  - PE** --Pesticides
  - OC** --Other Chemicals
  - SA** --Salinity
  - PH** --pH
  - ME** --Metals
  - HA** --Habitat Alteration
  - FL** --Flow Alteration
  - OI** --Oils/ Grease

Sources: DEP, *Florida Non-Point Source Assessment*, 1988, and City of Ocoee, 1988 and 2001.

Notes: The Florida Department of Environmental Protection no longer monitors non-point pollution sources for all lakes in the state. The respective counties occasionally monitor non-point pollutions for lakes. No new lakes have been added to the Ocoee-Orange County Joint Planning Area since the adoption of the Comprehensive Plan.

## **Recreational and Commercial Uses**

Currently, there are no commercial activities taking place within the surface waters of the City. There are no fisheries, charter boat services, etc.

Recreational uses in the City include swimming, water skiing, fishing, canoeing, and boating. These activities for the most part take place on the larger lakes within the City: Starke Lake, Lake Prima Vista and Lake Olympia. The City restricts the use of power boats on the smaller lakes within the area through its Boating Ordinance. The Ocoee Boating Code (Ordinance No. 90-10) prohibits all motor boat activity on Lakes Peach and Moxie.

In addition, only electric motors and non-powered boats are allowed on Spring and Prairie Lakes, jet skis are prohibited. No motorboats with a motor capable of generating more than ten horsepower are allowed on Lakes Blanchard and Lotta. Motorboats that generate more than ten horsepower are only allowed on Starke Lake, Lake Prima Vista, and Lake Olympia. The Ordinance also regulates speed, launching sites, required equipment, and times when water sports can be undertaken. Ordinance 90-25 prohibits the use of airboats on all lakes within the City of Ocoee.

### **C. Groundwater Quality**

Groundwater is the principal source of water supply for municipal systems as well as private industrial, agricultural, and domestic use. Groundwater also serves to maintain the water level in the many lakes in the area.

Groundwater is derived from precipitation and surface water from streams, lakes, swamps, and ponds. This water filters into the ground where the soil is permeable or through openings or passages in rock formations to reach the aquifer systems. The City is in an area classified by the Department of Natural Resources Bureau of Geology as one of "high recharge potential".

Two principal hydrogeologic units underlie the City of Ocoee and the Joint Planning Area. The uppermost unit is the surficial aquifer, which consists of unconsolidated, unconfined, fine-grained sands, silty sands, and clay sands. The surficial aquifer extends from ground elevations to approximately 40 feet below the land surface. Underlying this surficial aquifer is the Floridan Aquifer, which produces large quantities of high quality groundwater. The surficial and Floridan aquifers are separated from one another by the Hawthorne Formation.

Within the surficial aquifer, the water table generally ranges from 6 to 20 feet below the ground surface. In general, the water table tends to conform to the configuration of the surface topography; however, it may be considerable deeper below highly permeable sand hills and may be expressed surficially in swampy areas. Groundwater recharge is derived directly from precipitation and indirectly from surface water runoff and seepage. Most water yielded by the surficial aquifer is soft [ $<28$  mg/l as  $\text{CaCO}_3$  (Calcium carbonate)], low in mineral content, and low in pH.

Low pH values in this water can be attributed to deteriorated background quality as a result of fertilizers leaching from the soil zone and water contamination due to leaky underground tanks, well contamination, and discharged wastewater treatment plant effluent. The water drawn from the surficial aquifer is primarily used for watering lawns, livestock, and waste removal.

The United States Geological Survey (USGS) identifies a large percent of the land area of the City of Ocoee as being in a "High Recharge Area" to the Floridan Aquifer. High Recharge Areas are those areas that donate between 8 and 12 inches of water to the Aquifer per year. These areas are generally well-drained upland areas characterized by poorly developed stream drainage systems and many closed depressions, some of which contain water perennially. Extreme local relief may result in the occurrence of springs. Figure 3 in the Future Land Use Element shows the areas of natural recharge to the Floridan Aquifer.

### **Wellfield Protection**

A wellfield protection program is designed to protect potable water wellfields and related geographic areas that would be harmed by the introduction of contaminants. This is achieved by reducing the possibility of contaminants entering into the "cone of influence" of a public supply well by using adequate buffering, land use controls and other regulatory actions. The "cone of influence" of wells varies and depends upon the flow rate of runoff or groundwater to the well system or drawdown depth. A comprehensive wellfield protection program should include monitoring, surveillance, containment and response capabilities.

The City of Ocoee shall coordinate all wellfield location procedures and the protection of those fields with the St. Johns River Water Management District, the Florida Department of Environmental Protection, and Orange County. Orange County recognizes that protection of wellheads and wellfields is vital to the safety of our drinking water supply. Orange County Public Utilities is committed to delivering potable water, which complies with all regulatory and environmental standards.

The City will continue to direct its own wellhead and wellfield protection program within its jurisdiction. However, the areas within the County's water service area and in the Ocoee-Orange County Joint Planning Area will adhere to the wellhead protection goals, objectives, and policies of the Orange County Comprehensive Policy Plan's Conservation Element.

### **D. Floodplains**

Floodplains are low areas, many of which were formed by sinkholes. Approximately sixteen (15.52) percent of the land area within the City lies within the 100-year flood zone. Figure 4 in the Future Land Use Element is the 100-year flood zone map for the Ocoee area. The City of Ocoee restricts development in floodplains through its Flood Damage Prevention Ordinance No. 671, Article IV, of the City Code, as amended.

The City of Ocoee's original Flood Damage Prevention Ordinance became effective June

1, 1991. The Ordinance was later updated in 2000 to meet federal regulations by complying with the criteria adopted by Federal Emergency Management Agency (FEMA).

The ordinance includes specific standards for mobile homes, recreational vehicles, new mobile home parks, and expansions to existing mobile home parks. The ordinance specifically requires all mobile homes to meet all the requirements for new construction contained in the ordinance, and requires all recreational vehicles to either meet all the requirements for new construction contained in the ordinance, or be fully licensed and ready for highway use. The ordinance also contains specific standards relating to setbacks from water bodies, placement of septic tanks and drainfields, and fill material placed within the floodplain.

The decisions of the City's Board of Adjustment shall constitute final action by the City. All appeals will be through the Circuit Court of Orange County, Florida. This is consistent with the requirements set forth by the National flood Insurance Program.

## **E. Soils, Geology, and Topography**

The City of Ocoee and the Joint Planning Area lie within the Mount Dora Ridge. This ridge is characterized by undulating hills with well-drained, sandy soils, dotted with frequent lake depressions.

The USGS topographic 7.5-minute quad maps and the United States Department of Agriculture Soil Conservation Service Maps were reviewed to determine the soil conditions within the area. Table 7 identifies those soils occurring frequently within Orange County, and Figure 6 of the Future Land Use Element is a map of local soil types.

As identified in Table 7, there are seven soil types that have the general characteristic of being subject to frequent flooding. Development should be restricted on lands with the following soil types: 10 (Chobee fine sandy loam), 11 (Chobee-Floridana association), 12 (Emerald-Holopaw association), 15 (Felda soils), 16 (Floridana fine sand), 17 (Floridana mucky fine sand), and 31 (Pineda fine sand). The land development regulations provide methods to analyze soil conditions and provide for regulatory procedures when the identified soils are unsuitable for development.

**Table 7**  
**Soil Map Units in Orange County, FL**

<b>Map Symbol</b>	<b>Map Unit Name</b>
1	Arents
2	Archbold fine sand, 0 to 5 percent slopes
3	Basinger fine sand, depressional
4	Candler fine sand, 0 to 5 percent slopes
5	Candler fine sand, 5 to 12 percent slopes
6	Candler-Apopka fine sand, 5 to 12 percent slopes
7	Candler Urban land complex, 0 to 5 percent slopes
8	Candler Urban land complex, 5 to 12 percent slopes
10	Chobee fine sandy loam, frequently flooded
15	Felda soils, frequently flooded
20	Immokalee fine sand
22	Lockloosa fine sand
26	Ona fine sand
27	Ona-Urban land complex
28	Orlando fine sand, 0 to 5 percent slopes
29	Orlando-Urban land complex, 0 to 5 percent slopes
33	Pits
34	Pomello fine sand, 0 to 5 percent slopes
35	Pomello-Urban land complex, 0 to 5 percent slopes
37	St. Johns fine sand
38	St. Lucie fine sand, 0 to 5 percent slopes
39	St. Lucie-Urban land complex, 0 to 5 percent slopes
40	Samsula muck
41	Samsula-Hontoon-Basingerassociation, depressional
42	Sanibel muck
43	Seffner fine sand
44	Syrma fine sand
45	Syrma-Urban land complex
46	Tavares fine sand, 0 to 5 percent slopes
47	Tavares-Millhopper fine sand, 0 to 5 percent slopes
48	Tavares-Urban land complex, 0 to 8 percent slopes
50	Urban land
51	Wabasso fine sand
52	Wabasso-Urban land complex
53	Wauberg fine sand
54	Zolfo fine sand
55	Zolfo-Urban land complex

Sources: USDA, Soil Conservation Service, 1989 Edition; City of Ocoee Basin Studies.



### **Areas Experiencing Soil Erosion**

According to a land use survey conducted in 1985, there were approximately 102.5 acres in agricultural production in the City. Approximately 300-400 acres of agriculture were in production as of 2000. This increase is due to the extended boundary of the City limits and favorable climatic conditions.

According to the United States Department of Agriculture, Soil Conservation Service (SCS), there are no consistent erosion problems in Ocoee. In order to provide protection from possible erosion on construction sites, the City requires that temporary erosion control measures be used.

Erosion control practices in the planning area can provide surface cover, reduce runoff and increase the rate of infiltration. Any system, such as minimizing tillage and leaving crop residues on the surface, that keeps vegetative cover on the soil for long periods helps minimize erosion.

### **F. Potentially Threatened or Endangered Flora**

A total of 144 plant species that are classified as rare, endangered, or threatened have the potential to occur in the planning area, based on their habitat and inclusion on lists compiled by the Florida Committee on Rare and Endangered Plants and Animals (FCREPA), the Florida Department of Agriculture and Consumer Services (FDACS), the U.S. Fish and Wildlife Services (USFWS), and the Convention on International Trade and Endangered Species of Wild Fauna and Flora (CITES). As of 1987, four of the 144 species were listed as endangered or threatened by a federal statute and the status of 54 species was under review. The FDACS list included 110 plants protected under the provisions of Section 581.185, FS, which provides safeguards for plants of horticultural interest. Fourteen of the species are classified as rare, threatened or endangered by FCREPA. Table 8 is the Florida Fish and Wildlife Conservation Commission's Official list of Florida's Endangered, Threatened, Commercially Exploited, and Species of Special Concern (August 1, 1997). Species names highlighted are likely to occur in the area.

### **G. Potentially Threatened or Endangered Flora and Invertebrate**

Threatened or endangered terrestrial vertebrate and invertebrate species are not expected to occur in most reaches of the planning area due to the degree of disturbance around most of the wildlife habitats. Many native species have been replaced by invasive ubiquitous species. Table 8 identifies Florida Fish and Wildlife Conservation Commission's Official list of Florida Fish and Wildlife Conservation Commission's Official list of Florida's Endangered, Threatened, Commercially Exploited, and Species of Special Concern (August 1, 1997). Species names highlighted are likely to occur in the area.

**Table 8**  
**Endangered, Threatened, Commercially Exploited and Species of Special Concern**

**Plants**

**Endangered Plants**

1. *Acacia choriophylla* (tamarindillo).
2. *Acacia tortuosa* (poponax).
3. *Actaea pachypoda* (baneberry).
4. *Adiantum melanoleucum* (fragrant maidenhair fern).
5. *Adiantum tenerum* (brittle maidenhair fern).
6. *Aeschynomene pratensis* (meadow jointvetch).
7. *Ageratum littorale* (Cape Sable whiteweed).
8. *Agrimonia incisa* (harvest-lice).
9. *Aletris bracteata* (bracted colicroot).
10. *Alvaradoa amorphoides* (alvaradoa).
11. *Amorpha crenulata* (Miami lead plant).
12. *Anemia wrightii* (parsley fern).
13. *Aquilegia canadensis* (columbine).
14. *Arabis canadensis* (sicklepod).
15. *Argythamnia blodgettii* (Blodgett's wild-mercury).
16. *Aristida simpliciflora* (southern three-awn).
17. *Aristolochia pentandra* (Marsh's dutchman's pipe).
18. *Aristolochia tomentosa* (pipevine).
19. *Asclepias curtissii* (Curtiss's milkweed).
20. *Asimina tetramera* (four-petal pawpaw).
21. *Asplenium auritum* (auricled spleenwort) (fern).
22. *Asplenium monanthes* (San Felasco spleenwort).
23. *Asplenium pumilum* (dwarf spleenwort).
24. *Asplenium serratum* (bird's-nest spleenwort).
25. *Asplenium trichomanes-dentatum* (slender spleenwort).
26. *Asplenium verecundum* (delicate spleenwort).
27. *Aster hemisphericus* (aster).
28. *Aster spinulosus* (pinewoods aster).
29. *Balduina atropurpurea* (purple balduina).
30. *Baptisia megacarpa* (Apalachicola wild-indigo).
31. *Basiphyllaea corallicola* (Carter's orchid).
32. *Bigelovia nuttallii* (Nuttall's rayless goldenrod).
33. *Blechnum occidentale* (sinkhole fern).
34. *Bonamia grandiflora* (Florida bonamia).
35. *Bourreria cassinifolia* (little strongback).
36. *Bourreria radula* (rough strongbark).
37. *Bourreria succulenta* (bodywood).
38. *Brassia caudata* (spider orchid).
39. *Brickellia cordifolia* (Flyr's nemesis).
40. *Brickellia mosieri* (Brickell-bush).
41. *Bulbophyllum pachyrrachis* (rat-tail orchid).
42. *Bumelia anomala* (Clark's buckthorn).
43. *Bumelia lycioides* (gopherwood buckthorn).
44. *Bumelia thornei* (Thorne's buckthorn).
45. *Burmannia flava* (Fakahatchee burmannia).
46. *Caesalpinia major* (yellow nicker).
47. *Caesalpinia pauciflora* (fewflower holdback).
48. *Callirhoe papaver* (poppy mallow).
49. *Calopogon multiflorus* (many-flowered grass-pink).
50. *Calycanthus floridus* (sweet shrub).
51. *Calyptanthus zuzygium* (myrtle of the river).
52. *Calystegia catesbaeiana* (Catesby's bindweed).
53. *Campanula robinsiae* (Chinsegut bellflower).
54. *Campylocentrum pachyrrhizum* (leafless orchid).
55. *Campyloneurum angustifolium* (narrow swamp fern).
56. *Campyloneurum costatum* (tailed strap fern).
57. *Campyloneurum latum* (wide strap fern).
58. *Canella winterana* (wild cinnamon).
59. *Carex chapmanii* (Chapman's sedge).
60. *Carex microdonta* (little-tooth sedge).
61. *Cassia keyensis* (*Chamaecrista lineata* var. *keyensis*) (Key cassia).
62. *Catesbaea parviflora* (dune lily-thorn).
63. *Catopsis beteroniana* (airplant).
64. *Catopsis floribunda* (many-flowered airplant).
65. *Catopsis nutans* (nodding catopsis).
66. *Celosia nitida* (West Indian cock's-comb).
67. *Celtis iguanaea* (Iguana hackberry).
68. *Celtis pallida* (spiny hackberry).
69. *Centrosema arenicola* (sand butterfly pea).
70. *Cereus eriophorus* (Indian River prickly-apple).
71. *Cereus gracilis* (West Coast prickly-apple).
72. *Cereus robinii* (tree cactus).
73. *Chamaesyce cumulicola* (sand dune spurge).
74. *Chamaesyce deltoidea* (*Euphorbia deltoidea*) (rockland spurge).
75. *Chamaesyce garberi* (Garber's spurge).
76. *Chamaesyce porteriana* (Porter's spurge).
77. *Cheilanthes microphylla* (southern lip fern).
78. *Chionanthus pygmaeus* (pygmy fringe-tree).
79. *Chrysopsis cruiseana* (Cruise's golden-aster).
80. *Chrysopsis floridana* (Florida's golden-aster).
81. *Chrysopsis godfreyi* (Godfrey's golden-aster).
82. *Cienfuegosia yucatonensis* (*Cienfuegosia heterophylla*) (yellow-hibiscus).
83. *Cladonia perforata* (Florida perforate cladonia).
84. *Clitoria fragrans* (pigeon wings).
85. *Colubrina arborescens* (greenheart).
86. *Colubrina cubensis* (colubrina).
87. *Colubrina elliptica* (soldierwood).
88. *Conradina brevifolia* (short-leaved rosemary).
89. *Conradina etonia* (etonia rosemary).
90. *Conradina glabra* (Apalachicola rosemary).
91. *Conradina grandiflora* (large-flowered rosemary).
92. *Corallorhiza odontorhiza* (autumn coralroot).
93. *Cordia globosa* (Curacao bush).
94. *Coreopsis integrifolia* (dye-flower).
95. *Cornus alternifolia* (pagoda dogwood).
96. *Cranichis muscosa* (moss orchid).
97. *Crataegus phaenopyrum* (Washington thorn).
98. *Croonia pauciflora* (croonia).
99. *Crossopetalum rhacoma* (rhacoma).
100. *Crotalaria avonensis* (Avon Park harebells).
101. *Croton humilis* (pepperbush).
102. *Cryptotaenia canadensis* (honestwort).
103. *Ctenitis sloanei* (Florida tree fern/red-hair comb fern).
104. *Ctenitis submarginalis* (brown-hair comb fern).
105. *Ctenium floridanum* (Florida toothache grass).
106. *Cucurbita okeechobeensis* (Okeechobee gourd).
107. *Cupania glabra* (cupania).
108. *Cuphea aspera* (tropical waxweed).
109. *Cynoglossum virginianum* (wild comfrey).
110. *Cyperus floridanus* (Florida flatsedge).
111. *Cyperus fuliginus* (limestone flatsedge).
112. *Cyrtopodium punctatum* (cowhorn or cigar orchid).
113. *Dalbergia brownii* (Brown's Indian rosewood).
114. *Dalea carthagenensis* (Florida prairie clover).
115. *Deeringothamnus pulchellus* (white squirrel-banana).
116. *Deeringothamnus rugelii* (yellow squirrel-banana).
117. *Delphinium carolinianum* (Carolina larkspur).
118. *Dennstaedtia bipinnata* (cuplet fern).
119. *Dicerandra christmanii* (Christmann's mint).
120. *Dicerandra cornutissima* (Robin's mint).
121. *Dicerandra frutescens* (Lloyd's mint).
122. *Dicerandra immaculata* (Olga's mint).
123. *Digitaria pauciflora* (Florida pineland crabgrass).
124. *Dirca palustris* (leatherwood).
125. *Dodecatheon meadia* (shooting-star).

**Table 8**  
**Endangered, Threatened, Commercially Exploited and Species of Special Concern**

126. *Dodonaea elaeagnoides* (Keys hopbush).  
 127. *Drosera filifolia* (dew-thread).  
 128. *Drypetes diversifolia* (milkbark).  
 129. *Echinacea purpurea* (purple coneflower).  
 130. *Eleocharis rostellata* (beaked spikerush).  
 131. *Eltroplectris calcarata* (*Centrogenium setaceum*) (spurred neottia).  
 132. *Encyclia boothiana* (*Epidendrum boothianum*) (dollar orchid).  
 133. *Encyclia cochleata* (Florida clamshell orchid).  
 134. *Encyclia pygmaea* (dwarf epidendrum).  
 135. *Epidendrum acunae* (Acuna's epidendrum).  
 136. *Epidendrum anceps* (dingy-flowered epidendrum).  
 137. *Epidendrum difforme* (umbelbed epidendrum).  
 138. *Epidendrum nocturnum* (night-scented epidendrum).  
 139. *Epidendrum rigidum* (rigid epidendrum).  
 140. *Epidendrum strobiliferum* (matted epidendrum).  
 141. *Epigaea repens* (trailing arbutus).  
 142. *Eragrostis tracyi* (Sanibel lovegrass).  
 143. *Eriocaulon nigrobracteatum* (dark-headed hatpins).  
 144. *Eriogonum floridanum* (*Eriogonum longifolium* var. *gnaphalifolium*) (scrub buckwheat).  
 145. *Ernodea cokeri* (one-nerved ernodea).  
 146. *Eryngium cuneifolium* (scrub eryngium).  
 147. *Erythronium umbilicatum* (dimpled dogtooth-violet).  
 148. *Eugenia confusa* (redberry eugenia).  
 149. *Eugenia rhombea* (red stopper).  
 150. *Euonymus atropurpurea* (burning bush).  
 151. *Eupatorium frustratum* (Cape Sable thoroughwort).  
 152. *Euphorbia commutata* (wood spurge).  
 153. *Euphorbia telephioides* (spurge).  
 154. *Evolvulus convolvuloides* (dwarf bindweed).  
 155. *Evolvulus grisebachii* (Grisebach's bindweed).  
 156. *Exostema caribaeum* (Caribbean princewood).  
 157. *Forestiera godfreyi* (Godfrey's swamp privet).  
 158. *Galactia smallii* (Small's milkpea).  
 159. *Galeandra beyrichii* (helmet orchid).  
 160. *Gentiana pennelliana* (wiregrass gentian).  
 161. *Goodyera pubescens* (downy rattlesnake orchid).  
 162. *Gossypium hirsutum* (wild cotton).  
 163. *Govenia utriculata* (Gowen's orchid).  
 164. *Guaiaacum sanctum* (*lignum vitae*).  
 165. *Guzmania monostachia* (Fuch's bromeliad).  
 166. *Gyminda latifolia* (West Indian falsebox).  
 167. *Habenaria distans* (*distans habenaria*).  
 168. *Harperocallis flava* (Harper's beauty).  
 169. *Hasteola robertiorum* (Gulf hammock indian-plantain).  
 170. *Helianthus carnosus* (flatwoods sunflower).  
 171. *Hepatica nobilis* (*Hepatica americana*) (liverleaf).  
 172. *Hexalectris spicata* (crested coral-root).  
 173. *Hibiscus poeppigii* (Poeppig's rosemallow).  
 174. *Hippomane mancinella* (manchineel).  
 175. *Hybanthus concolor* (green violet).  
 176. *Hydrangea arborescens* (wild hydrangea).  
 177. *Hymenocallis godfreyi* (Godfrey's spiderlily).  
 178. *Hymenocallis henryae* (Mrs. Henry's spiderlily).  
 179. *Hypelate trifoliata* (inkwood).  
 180. *Hypericum cumulicola* (Highlands scrub hypericum).  
 181. *Hypericum edisonianum* (Edison ascyrum).  
 182. *Hypericum lissophloeus* (smooth-barked St. Johns-wort).  
 183. *Ilex krugiana* (Krug holly).  
 184. *Illicium parviflorum* (star anise).  
 185. *Indigofera keyensis* (Keys' indigo).  
 186. *Ionopsis utricularioides* (delicate ionopsis orchid).  
 187. *Ipomoea microdactyla* (wild-potato morning-glory).  
 188. *Ipomoea tenuissima* (rocklands morning-glory).  
 189. *soetes engelmannii* (Engelmann's quillwort).  
 190. *Isopyrum biternatum* (false rue-anemone).  
 191. *Isotria verticillata* (whorled pogonia).  
 192. *Jacquemontia havanensis* (Havana clustervine).  
 193. *Jacquemontia pentanthos* (skyblue clustervine).  
 194. *Jacquemontia reclinata* (beach jacquemontia).  
 195. *Juncus gymnocarpus* (Coville's rush).  
 196. *Justicia cooleyi* (Cooley's justicia).  
 197. *Justicia crassifolia* (thick-leaved water-willow).  
 198. *Kosteletzkya depressa* (white fen).  
 199. *Lantana canescens* (hammock shrub verbena).  
 200. *Lantana depressa* (pineland lantana).  
 201. *Lechea divaricata* (spreading pinweed).  
 202. *Lechea lakelae* (Lakela's pinweed).  
 203. *Leiphaimos parasitica* (parasitic ghostplant).  
 204. *Leochilus labiatus* (lipped orchid).  
 205. *Lepanthopsis melanantha* (tiny orchid).  
 206. *Lepuropetalon spathulatum* (little-people).  
 207. *Liatris ohlingerae* (scrub blazing-star).  
 208. *Liatris provincialis* (Godfrey's blazing-star).  
 209. *Licaria triandra* (licaria).  
 210. *Lilium iridollae* (panhandle lily).  
 211. *Lilium michauxii* (Carolina lily).  
 212. *Lilium superbum* (Turk's-cap lily).  
 213. *Lindera melissifolia* (pondberry).  
 214. *Lindera subcoriacea* (bog spicebush).  
 215. *Linum arenicola* (sand flax).  
 216. *Linum carteri* (Everglades flax).  
 217. *Linum westii* (West's flax).  
 218. *Liparis nervosa* (tall twayblade).  
 219. *Litsea aestivalis* (pond-spice).  
 220. *Lomariopsis kunzeana* (climbing holly-fern).  
 221. *Lupinus aridorum* (*Lupinus westianus* var. *aridorum*) (McFarlin's lupine).  
 222. *Lycopodium dichotomum* (hanging clubmoss).  
 223. *Lythrum curtissii* (Curtis' loosestrife).  
 224. *Lythrum flagellare* (lowland loosestrife).  
 225. *Macbridea alba* (white birds-in-a-nest).  
 226. *Macradenia lutescens* (Trinidad macradenia).  
 227. *Macranthera flammea* (hummingbird-flower).  
 228. *Magnolia acuminata* (cucumber-tree).  
 229. *Magnolia ashei* (Ashe's magnolia).  
 230. *Magnolia pyramidata* (pyramid magnolia).  
 231. *Magnolia tripetala* (umbrella magnolia).  
 232. *Malaxis unifolia* (green adder's-mouth orchid).  
 233. *Marshallia obovata* (Barbara's buttons).  
 234. *Marshallia ramosa* (Barbara's buttons).  
 235. *Matelea alabamensis* (Alabama spiny pod).  
 236. *Matelea baldwyniana* (Baldwin's spiny pod).  
 237. *Matelea flavidula* (yellow-flowered spiny pod).  
 238. *Matelea floridana* (Florida spiny pod).  
 239. *Matelea pubiflora* (sandhill spiny pod).  
 240. *Maxillaria crassifolia* (hidden orchid).  
 241. *Maxillaria parviflora* (minnie-max).  
 242. *Medeola virginiana* (Indian cucumber).  
 243. *Microgramma heterophylla* (climbing vine fern).  
 244. *Minuartia godfreyi* (Godfrey's sandwort).  
 245. *Monotropa hypopithys* (pine-sap).  
 246. *Monotropis reynoldsiae* (pygmy-pipes).  
 247. *Nemastylis floridana* (celestial lily).  
 248. *Neurodium lanceolatum* (ribbon fern).  
 249. *Nolina brittoniana* (Britton's bear-grass).  
 250. *Ocimum campechianum* (ocimum).

**Table 8**  
**Endangered, Threatened, Commercially Exploited and Species of Special Concern**

251. *Okenia hypogaea* (burrowing four-o'clock).  
 252. *Oncidium bahamensis* (dancing-lady orchid).  
 253. *Oncidium floridanum* (Florida orchidium).  
 254. *Oncidium luridum* (mule-ear orchid).  
 255. *Ophioglossum palmatum* (hand fern).  
 256. *Opuntia spinosissima* (semaphore cactus).  
 257. *Opuntia triacantha* (Keys Joe-jumper).  
 258. *Oxypolis greenmanii* (giant water-dropwort).  
 259. *Pachysandra procumbens* (Allegheny-spurge).  
 260. *Panicum abscissum* (cut-throat grass).  
 261. *Parnassia caroliniana* (Carolina grass-of-Parnassus).  
 262. *Parnassia grandifolia* (grass-of-Parnassus).  
 263. *Paronychia chartacea* (papery whitlow-wort).  
 264. *Passiflora multiflora* (white-flowered passionvine).  
 265. *Passiflora pallens* (pineland passionvine).  
 266. *Passiflora sexflora* (goat's foot leaf).  
 267. *Pavonia paludicola* (swampbush).  
 268. *Pecluma dispersa* (a polypody).  
 269. *Pecluma plumula* (plume polypody).  
 270. *Pecluma ptilodon* (swamp plume polypody).  
 271. *Pellaea atropurpurea* (hairy cliff-brake fern).  
 272. *Peperomia amplexicaulis* (clasping peperomia).  
 273. *Peperomia glabella* (cypress peperomia).  
 274. *Peperomia humilis* (peperomia).  
 275. *Peperomia magnoliifolia* (spathulate peperomia).  
 276. *Peperomia obtusifolia* (Florida peperomia).  
 277. *Phoradendron rubrum* (mahogany mistletoe).  
 278. *Phyla stoechadifolia* (southern matchsticks).  
 279. *Phyllanthus leibmannianus* (pine woods dainties).  
 280. *Physocarpus opulifolius* (ninebark).  
 281. *Picramnia pentandra* (Florida bitterbush).  
 282. *Pilosocereus bahamensis* (Bahamian treecactus).  
 283. *Pinguicula ionantha* (Panhandle butterwort).  
 284. *Pinguicula primuliflora* (primrose-flowered butterwort).  
 285. *Pisonia rotundata* (devil's smooth claws).  
 286. *Pityopsis flexuosa* (Florida golden-aster).  
 287. *Platanthera clavellata* (green rein orchid).  
 288. *Platanthera integra* (orange rein orchid).  
 289. *Pleopeltis astrolepis* (star-scaled fern).  
 290. *Pleurothallis gelida* (frosted orchid).  
 291. *Podophyllum peltatum* (mayapple).  
 292. *Poinsettia pinetorum* (*Euphorbia pinetorum*) (Everglades poinsettia).  
 293. *Polygala lewtonii* (Lewton's polygala).  
 294. *Polygala smallii* (tiny polygala).  
 295. *Polygonella basiramia* (tufted wireweed).  
 296. *Polygonella myriophylla* (sandlace).  
 297. *Polygonum meisnerianum* (Mexican tear-thumb).  
 298. *Polymnia laevigata* (Tennessee leaf-cup).  
 299. *Polyradicion lindenii* (*Polyrrhiza lindenii*) (ghost orchid).  
 300. *Polystachya concreta* (pale-flowered polystachya).  
 301. *Ponthieva brittoniae* (Mrs. Britton's shadow witch).  
 302. *Potamogeton floridanus* (Florida pondweed).  
 303. *Prescottia oligantha* (small-flowered orchid).  
 304. *Prunus geniculata* (scrub plum).  
 305. *Pseudophoenix sargentii* (Sargent's cherry palm).  
 306. *Psychotria ligustrifolia* (Bahama wildcoffee).  
 307. *Remirea maritima* (beach-star).  
 308. *Rhexia parviflora* (Apalachicola meadow-beauty).  
 309. *Rhipsalis baccifera* (mistletoe cactus).  
 310. *Rhododendron alabamense* (Alabama azalea).  
 311. *Rhododendron austrinum* (Florida flame azalea).  
 312. *Rhododendron chapmanii* (Chapman's rhododendron).  
 313. *Rhus michauxii* (Michaux's sumac).  
 314. *Rhynchosia swartzii* (Swartz' snoutbean).  
 315. *Rhynchospora crinipes* (hairy peduncled beakrush).  
 316. *Ribes echinellum* (Miccosukee gooseberry).  
 317. *Roystonea elata* (Florida royal palm).  
 318. *Rudbeckia nitida* (St. Johns-Susan).  
 319. *Ruellia noctiflora* (night-flowering wild-petunia).  
 320. *Sachsia bahamensis* (Bahama sachsia).  
 321. *Salix eriocephala* (heart-leaved willow).  
 322. *Salix floridana* (Florida willow).  
 323. *Savia bahamensis* (Bahama maidenbush).  
 324. *Salvia urticifolia* (nettle-leaved sage).  
 325. *Sarracenia leucophylla* (white-top pitcher-plant).  
 326. *Schaefferia frutescens* (Florida boxwood).  
 327. *Schisandra coccinea* (bay star vine).  
 328. *Schizachyrium niveum* (scrub bluestem).  
 329. *Schizachyrium sericatum* (silky bluestem).  
 330. *Schizaea germanii* (ray fern).  
 331. *Schwalbea americana* (chaff-seed).  
 332. *Scleria lithosperma* (Keys' nutrush).  
 333. *Scutellaria floridana* (Florida skullcap).  
 334. *Scutellaria havanensis* (Havana skullcap).  
 335. *Selaginella eatonii* (pygmy spikemoss).  
 336. *Setaria chapmanii* (coral panic grass).  
 337. *Silene polypetala* (fringed pink).  
 338. *Silene virginica* (fire pink).  
 339. *Sphenomeris clavata* (wedgelet fern).  
 340. *Sphenostigma coelestinum* (Bartram's ixia).  
 341. *Spigelia gentianoides* (gentian pinkroot).  
 342. *Spigelia loganioides* (Levy pinkroot).  
 343. *Spiranthes adnata* (pelexia).  
 344. *Spiranthes brevibrabis* (small ladies'-tresses).  
 345. *Spiranthes costaricensis* (Costa Rican ladies'-tresses).  
 346. *Spiranthes elata* (tall neottia).  
 347. *Spiranthes ovalis* (lesser ladies'-tresses).  
 348. *Spiranthes polyantha* (Ft. George ladies'-tresses).  
 349. *Spiranthes torta* (southern ladies'-tresses).  
 350. *Stachydeoma graveolens* (*Hedeoma graveolens*) (mock pennyroyal).  
 351. *Stachys crenata* (shade betony).  
 352. *Stachys tenuifolia* (narrow-leaved betony).  
 353. *Staphylea trifolia* (bladder nut).  
 354. *Stewartia malacodendron* (silky camellia).  
 355. *Strumpfia maritima* (pride-of-Big-Pine).  
 356. *Stylisma abdita* (hidden stylisma).  
 357. *Stylosanthes calcicola* (Everglades pencilflower).  
 358. *Swietenia mahagoni* (mahogany).  
 359. *Taxus floridana* (Florida yew).  
 360. *Tectaria coriandrifolia* (Hattie Bauer halberd fern).  
 361. *Tectaria fimbriata* (least halberd fern).  
 362. *Tephrosia angustissima* (hoary pea).  
 363. *Thalictrum cooleyi* (Cooley's meadow rue).  
 364. *Thalictrum thalictroides* (*Anemonella thalictroides*) (Rue-anemone).  
 365. *Thelypteris grandis* (Collier County maiden fern).  
 366. *Thelypteris patens* (grid-scale maiden fern).  
 367. *Thelypteris reptans* (creeping star-hair fern).  
 368. *Thelypteris reticulata* (lattice-vein fern, cypress fern).  
 369. *Thelypteris sclerophylla* (stiff star-hair fern).  
 370. *Thelypteris serrata* (dentate lattice-vein fern).  
 371. *Thrinax morrisii* (*T. microcarpa*) (brittle thatch palm).  
 372. *Thrinax radiata* (*T. floridana*) (Florida thatch palm).  
 373. *Tillandsia fasciculata* (common or stiff-leaved wild-pine).  
 374. *Tillandsia flexuosa* (twisted or banded air plant).  
 375. *Tillandsia pruinosa* (fuzzy-wuzzy or hoary air-plant)

**Table 8**  
**Endangered, Threatened, Commercially Exploited and Species of Special Concern**

376. <i>Tillandsia utriculata</i> (giant wild-pine).	25. <i>Cynanchum blodgettii</i> (Blodgett's swallowwort).
377. <i>Torreya taxifolia</i> (Florida torreyia).	26. <i>Digitaria dolichophylla</i> (Caribbean crabgrass).
378. <i>Tournefortia gnaphalodes</i> ( <i>Argusia gnaphalodes</i> or <i>Mallotonia gnaphalodes</i> ) (sea-lavender).	27. <i>Drosera intermedia</i> (water sundew).
379. <i>Tournefortia hirsutissima</i> (chiggery grapes).	28. <i>Drypetes lateriflora</i> (Guiana plum).
380. <i>Trema lamarckianum</i> (Lamarck's trema).	29. <i>Erithalis fruticosa</i> (blacktorch).
381. <i>Trichomanes holopterum</i> (entire-winged bristle fern).	30. <i>Garberia heterophylla</i> (garberia).
382. <i>Trichomanes krausii</i> (Kraus's bristle fern).	31. <i>Harrisella filiformis</i> (threadroot orchid).
383. <i>Trichomanes lineolatum</i> (lined bristle fern).	32. <i>Hartwrightia floridana</i> (hartwrightia).
384. <i>Trichomanes punctatum</i> (Florida bristle fern).	33. <i>Hexastylis arifolia</i> (heartleaf wild ginger).
385. <i>Trillium lancifolium</i> (lance-leaved wake-robin).	34. <i>Ilex amelanchier</i> (serviceberry holly).
386. <i>Triphora craigheadii</i> (Craigheads's orchid).	35. <i>Illicium floridanum</i> (Florida anise).
387. <i>Triphora latifolia</i> (wide-leaved triphora).	36. <i>Jacquemontia curtissii</i> (pineland jacquemontia).
388. <i>Tropidia polystachya</i> (young-palm orchid).	37. <i>Jacquinia keyensis</i> (joewood).
389. <i>Uvularia floridana</i> (Florida merrybells).	38. <i>Kalmia latifolia</i> (mountain laurel).
390. <i>Vallesia antillana</i> (tear shrub).	39. <i>Lachnocaulon digynum</i> (Panhandle bogbuttons).
391. <i>Vanilla barbellata</i> (worm-vine orchid).	40. <i>Lechea cernua</i> (scrub pinweed).
392. <i>Vanilla dilloniana</i> (Dillon's vanilla).	41. <i>Leitneria floridana</i> (corkwood).
393. <i>Vanilla mexicana</i> (unscented vanilla).	42. <i>Lilium catesbaei</i> (Catesby lily).
394. <i>Vanilla phaeantha</i> (leafy vanilla).	43. <i>Listera australis</i> (southern twayblade).
395. <i>Veratrum woodii</i> (false hellebore).	44. <i>Lobelia cardinalis</i> (cardinal flower).
396. <i>Verbena maritima</i> (coastal vervain).	45. <i>Lupinus westianus</i> (Gulfcoast lupine).
397. <i>Verbena tampensis</i> (Tampa vervain).	46. <i>Malus angustifolia</i> (crabapple).
398. <i>Vernonia blodgettii</i> (Blodgett's ironweed).	47. <i>Manilkara jaimiqui</i> (wild dilly).
399. <i>Vicia ocalensis</i> (Ocala vetch).	48. <i>Matelea gonocarpos</i> (angle pod).
400. <i>Viola tripartita</i> (yellow violet).	49. <i>Maytenus phyllanthoides</i> (Florida mayten).
401. <i>Warea amplexifolia</i> (clasping warea).	50. <i>Melanthera parvifolia</i> (small-leaved melanthera).
402. <i>Warea carteri</i> (Carter's mustard).	51. <i>Myrcianthes fragrans</i> ( <i>Eugenia simpsonii</i> ) (Simpson's stopper).
403. <i>Xanthorhiza simplicissima</i> (yellow-root).	52. <i>Najas filifolia</i> (slender naiad).
404. <i>Xyris chapmanii</i> (Chapman's yellow-eyed-grass).	53. <i>Nephrolepis biserrata</i> (giant sword fern).
405. <i>Xyris isoetifolia</i> (quillwort yellow-eyed-grass).	54. <i>Nolina atopocarpa</i> (Florida beargrass).
406. <i>Xyris longisepala</i> (Karst pond yellow-eyed-grass).	55. <i>Opuntia stricta</i> (shell mound prickly-pear).
407. <i>Xyris louisianica</i> (Kral's yellow-eyed-grass).	56. <i>Panicum nudicaule</i> (naked-stemmed panic grass).
408. <i>Zanthoxylum americanum</i> (prickly-ash).	57. <i>Phoebanthus tenuifolius</i> (pineland false sunflower).
409. <i>Zanthoxylum coriaceum</i> (leathery prickly-ash).	58. <i>Physostegia godfreyi</i> (Apalachicola dragonhead).
410. <i>Zanthoxylum flavum</i> (yellowheart).	59. <i>Pinckneya bracteata</i> (fever-tree).
411. <i>Zigadenus leimanthoides</i> (coastal death camas).	60. <i>Pinguicula caerulea</i> (blue-flowered butterwort).
412. <i>Ziziphus celata</i> (scrub ziziphus).	61. <i>Pinguicula lutea</i> (yellow-flowered butterwort).
	62. <i>Pinguicula planifolia</i> (swamp butterwort).
	63. <i>Pithecellobium keyense</i> (Keys' blackbead).
	64. <i>Platanthera blephariglottis</i> (white-fringed orchid).
	65. <i>Platanthera ciliaris</i> (yellow-fringed orchid).
	66. <i>Platanthera cristata</i> (crested fringed orchid).
	67. <i>Platanthera flava</i> (gypsy-spikes).
	68. <i>Platanthera nivea</i> (snowy orchid).
	69. <i>Pogonia ophioglossoides</i> (rose pogonia).
	70. <i>Polygonella macrophylla</i> (large-leaved jointweed).
	71. <i>Prunus myrtifolia</i> (West Indian cherry).
	72. <i>Psidium longipes</i> (mangrove berry).
	73. <i>Pteris bahamensis</i> (Bahama ladder brake fern).
	74. <i>Pteroglossaspis ecristata</i> (non-crested eulophia).
	75. <i>Pycnanthemum floridanum</i> (Florida mountain-mint).
	76. <i>Quercus arkansana</i> (Arkansas oak).
	77. <i>Reynosia septentrionalis</i> (Darling plum).
	78. <i>Rhexia salicifolia</i> (Panhandle meadow beauty).
	79. <i>Rhynchosia parvifolia</i> (small-leaf snoutbean).
	80. <i>Rhynchospora stenophylla</i> (narrow-leaf beakrush).
	81. <i>Sarracenia minor</i> (hooded pitcher plant).
	82. <i>Sarracenia psittacina</i> (parrot pitcher plant).
	83. <i>Sarracenia purpurea</i> (decumbent pitcher plant).
	84. <i>Sarracenia rubra</i> (red-flowered pitcher plant).
	85. <i>Scaevola plumieri</i> (inkberry).
	86. <i>Senna mexicana</i> (Chapman's sensitive plant).
	87. <i>Smilax havanensis</i> (Everglades greenbrier).
	88. <i>Solanum donianum</i> (mullein nightshade).

#### Threatened Plants

1. *Acoelorrhaphe wrightii* (Everglades palm).
2. *Acrostichum aureum* (golden leather fern).
3. *Andropogon arctatus* (pine-woods bluestem).
4. *Angadenia berteroi* (pineland golden trumpet).
5. *Asclepias viridula* (green milkweed).
6. *Athyrium filix-femina* (southern lady fern).
7. *Baptisia hirsuta* (hairy wild-indigo).
8. *Baptisia simplicifolia* (scare-weed).
9. *Bletia purpurea* (pine-pink orchid).
10. *Byrsonima lucida* (locust berry).
11. *Cacalia diversifolia* (Indian-plantain).
12. *Calamintha ashei* (Ashe's calamintha).
13. *Calamintha dentata* (toothed savory).
14. *Calamovilfa curtissii* (Curtis' sandgrass).
15. *Calyptanthus pallens* (pale lidflower).
16. *Carex baltzellii* (Baltzell's sedge).
17. *Cereus pentagonus* (barbed-wire cactus).
18. *Chamaesyce pergamena* (rocklands spurge).
19. *Chaptalia albicans* (white sunbonnets).
20. *Chrysophyllum oliviforme* (satin leaf).
21. *Cleistes divaricata* (spreading pogonia).
22. *Coccothrinax argentata* (silver palm).
23. *Coelorachis tuberculosa* (piedmont joint grass).
24. *Crossopetalum ilicifolium* (Christmas berry).

**Table 8**  
**Endangered, Threatened, Commercially Exploited and Species of Special Concern**

89. *Spermacoce terminalis* (false buttonweed).
90. *Spiranthes laciniata* (lace-lip ladies' tresses).
91. *Spiranthes longilabris* (long-lip ladies' tresses).
92. *Spiranthes tuberosa* (little pearl-twist).
93. *Stenorrhynchos lanceolatum* (leafless beaked orchid).
94. *Tectaria heracleifolia* (broad halberd fern).
95. *Tephrosia mohrii* (pineland hoary-pea).
96. *Tetrazygia bicolor* (tetrazygia).
97. *Thelypteris augescens* (abrupt-tipped maiden fern).
98. *Tillandsia balbisiana* (inflated & reflexed wildpine).
99. *Tillandsia valenzuelana* (soft-leaved wildpine).
100. *Tipularia discolor* (crane-fly orchid).
101. *Tragia saxicola* (rocklands noseburn).
102. *Triphora trianthophora* (three-birds orchid).
103. *Tripsacum floridanum* (Florida tripsacum).
104. *Verbesina chapmanii* (Chapman's crownbeard).
105. *Xyris scabrifolia* (Harper's yellow-eyed grass).
106. *Zephyranthes atamasco* (rainlily).
107. *Zephyranthes simpsonii* (Simpson's zephyr-lily).
108. *Zephyranthes treatiae* (Treat's zephyr-lily).

#### Commercially Exploited Plants

1. *Encyclia tampensis* (butterfly orchid).
2. *Epidendrum conopseum* (green-fly orchid).
3. *Lycopodium cernuum* (*Palhinaea cernua*) (nodding club-moss).
4. *Osmunda cinnamomea* (cinnamon fern).
5. *Osmunda regalis* (royal fern).
6. *Rhapidophyllum hystrix* (needle palm).
7. *Rhododendron canescens* (pink azalea).
8. *Zamia* spp. (all native species) (coontie).

#### Reptiles

##### Endangered Reptiles

1. *Chelonia mydas mydas* (Atlantic green turtle)
2. *Crocodylus acutus* (American crocodile)
3. *Dermochelys coriacea* (Leatherback (leathery) turtle)
4. *Eretmochelys imbricata imbricata* (Atlantic hawksbill turtle)
5. *Kinosternon bauri* (Striped mud turtle)
6. *Lepidochelys kempi* (Atlantic ridley turtle)

##### Threatened Reptiles

1. *Caretta caretta* (Atlantic loggerhead turtle)
2. *Diadophis punctatus acricus* (Big Pine Key ringneck snake)
3. *Drymarchon corais couperi* (Eastern indigo snake)
4. *Eumeces egregius lividus* (Bluetail mole skink)
5. *Neoseps reynoldsi* (Sand skink)
6. *Nerodia fasciata taeniata* (Atlantic salt marsh snake)
7. *Stilosoma extenuatum* (Short-tailed snake)
8. *Storeria dekayi victa* (Florida brown snake)
9. *Tantilla oolitica* (Miami black-headed snake; rimrock crowned snake)
10. *Thamnophis sauritus sackeni* (Florida ribbon snake)

##### Species of Special Concern Reptiles

1. *Alligator mississippiensis* (American alligator)
2. *Elaphe guttata guttata* (Red rat snake; corn snake)
3. *Eumeces egregius egregius* Florida Keys mole skink
4. *Gopherus polyphemus* (Gopher turtle)
5. *Graptemys barbouri* (Barbour's map (sawback) turtle)
6. *Macroclmys temmincki* (Alligator snapping turtle)
7. *Pituophis melanoleucus mugitus* (Florida pine snake)
8. *Pseudemys concinna suwanniensis* (Suwannee cooter)

#### Birds

##### Endangered Birds

1. *Ammodramus maritimus mirabilis* (Cape Sable seaside sparrow)
2. *Ammodramus savannarum floridanus* (Florida grasshopper sparrow)
3. *Campephilus principalis* (Ivory-billed woodpecker)
4. *Dendroica kirtlandii* (Kirtland's warbler)
5. *Falco peregrinus tundrius* (Arctic peregrine falcon)
6. *Mycteria americana* (Wood stork)
7. *Rostrhamus sociabilis* (Snail kite)
8. *Vermivora bachmanii* (Bachman's warbler)

##### Threatened Birds

1. *Aphelocoma coerulescens* (Florida scrub-jay)
2. *Charadrius alexandrinus tenuirostris* (Southeastern snowy plover)
3. *Columba leucocephala* (White-crowned pigeon)
4. *Falco sparverius paulus* (Southeastern American kestrel)
5. *Grus Canadensis pratensis* (Florida sandhill crane)
6. *Haliaeetus leucocephalus* (Bald eagle)
7. *Picoides borealis* (Red-cockaded woodpecker)
8. *Polyborus plancus audubonii* (Audubon's crested caracara)
9. *Sterna antillarum* (Least tern)
10. *Sterna dougallii* (Roseate tern)

##### Species of Special Concern Birds

1. *Ajaia ajaja* (Roseate spoonbill)
2. *Ammodramus maritimus juncicolus* (Wakulla seaside sparrow)
3. *Ammodramus maritimus peninsulae* (Scott's seaside sparrow)
4. *Aramus guarana* (Limpkin)
5. *Charadrius melodus* (Piping plover)
6. *Cistothorus palustris griseus* (Worthington's marsh wren)
7. *Cistothorus palustris marianae* (Marian's marsh wren)
8. *Egretta caerulea* (Little blue heron)
9. *Egretta rufescens* (Reddish egret)
10. *Egretta thula* (Snowy egret)
11. *Egretta tricolor* (Tricolored (Louisiana) heron)
12. *Eudocimus albus* (White ibis)
13. *Grus americana* (Whooping crane)
14. *Haematopus palliatus* (American oystercatcher)
15. *Pandion haliaetus* (Osprey)
16. *Pelecanus occidentalis* (Brown pelican)
17. *Rynchops niger* (Black skimmer)
18. *Speotyto cunicularia* (Burrowing owl)

#### Mammals

##### Endangered Mammals

1. *Balaena glacialis* (Right whale)
2. *Balaenoptera borealis* (Sei whale)
3. *Balaenoptera physalus* (Finback whale)
4. *Eumops glaucinus floridanus* (Florida (Wagner's) mastiff bat)
5. *Felis concolor coryi* (Florida panther)
6. *Megaptera novaeangliae* (Humpback whale)
7. *Microtus pennsylvanicus dukecampbelli* (Duke's (Florida) saltmarsh vole)
8. *Myotis grisescens* (Gray bat)
9. *Myotis sodalis* (Indiana bat)
10. *Neotoma floridana smalli* (Key Largo woodrat)
11. *Odocoileus virginianus clavium* (Key deer; toy deer)
12. *Oryzomys argentatus* (Silver rice rat)
13. *Peromyscus gossypinus allapaticola* (Key Largo cotton mouse)
14. *Peromyscus polionotus allophrys* (Choctawhatchee beach mouse)
15. *Peromyscus polionotus peninsularis* (St. Andrews beach mouse)
16. *Peromyscus polionotus phasma* (Anastasia Island beach mouse)

**Table 8**  
**Endangered, Threatened, Commercially Exploited and Species of Special Concern**

17. *Peromyscus polionotus trissyllepsis* Perdido (Key beach mouse)
18. *Physeter catodon* (Sperm whale; cachalot)
19. *Sylvilagus palustris hefneri* (Lower Keys marsh rabbit)
20. *Trichechus manatus* (West Indian (Florida) manatee)

**Threatened Mammals**

1. *Mustela vison evergladensis* (Everglades mink)
2. *Peromyscus polionotus niveiventris* (Southeastern beach mouse)
3. *Sciurus niger avicennia* (Big Cypress (mangrove fox squirrel)
4. *Ursus americanus floridanus* (Florida black bear)

**Species of Special Concern Mammals**

1. *Blarina carolinensis (brevicauda) shermani* Sherman's short-tailed shrew
2. *Oryzomys palustris sanibeli* (Sanibel Island rice rat)
3. *Podomys floridanus* (Florida mouse)
4. *Sciurus niger shermani* (Sherman's fox squirrel)
5. *Sorex longirostris eionis* (Homosassa shrew)
6. *Tamias striatus* (Eastern chipmunk)

**Amphibians**

**Species of Special Concern Amphibians**

1. *Haideotriton wallacei* (Georgia blind salamander)
2. *Hyla andersonii* (Pine Barrens treefrog)
3. *Rana capito* (Gopher (rawfish) frog)
4. *Rana okaloosae* (Bog frog)

**Insects**

**Endangered Insects**

1. *Heraclides aristodemus ponceanus* (Schaus' swallowtail butterfly)

**Fish**

**Endangered Fish**

1. *Acipenser brevirostrum* (Shortnose sturgeon)
2. *Etheostoma okaloosae* (Okaloosa darter)
3. *Notropis melanostomus* (Blackmouth (Pond Creek) shiner)

**Threatened Fish**

1. *Ammocrypta asprella* (Crystal darter)
2. *Menidia conchorum* (Key silverside)

**Species of Special Concern Fish**

1. *Acipenser oxyrhynchus* (Atlantic sturgeon)
2. *Centropomus undecimalis* (Common snook)
3. *Cyprinodon variegatus hubbsi* (Lake Eustis pupfish)
4. *Etheostoma histrio* (Harlequin darter)
5. *Etheostoma olmstedii maculaticeps* (Southern tessellated darter; tessellated johnny darter)
6. *Fundulus jenkinsi* Saltmarsh (topminnow)
7. *Micropterus notius* (Suwannee bass)
8. *Micropterus* (n. sp. cf *coosae* Shoal bass; Chipola bass)
9. *Pteronotopis welaka* (Bluenose shiner)
10. *Rivulus marmoratus* (Mangrove rivulus; rivulus)
11. *Starksia starcki* (Key blenny)

Note: Shaded species have the likelihood of occurring in the area.

Source: Florida Fish and Wildlife Conservation Commission, *Florida's Endangered Species, Threatened Species and Species of Special Concern Official Lists*, August 1, 1997.

## H. Ecological Communities

To identify ecological communities present in the planning area, the uses the landscape associations identified by the East Central Florida Regional Planning Council in their publication, *Buffer Zones for Water, Wetlands, and Wildlife in the East Central Florida Region - Final Report*, October 1989. Based on an analysis of vegetation and land use maps of the St. Johns River Water Management District, six landscape associations were identified in the East Central Florida Region: 1) pine flatwoods/isolated wetlands, 2) pine flatwoods/flowing water wetlands, 3) pine flatwoods/hammock/hardwood swamps, 4) sandhills/isolated and or flowing-water wetlands, 5) pine flatwoods/salt marshes, and 6) coastal hammock/salt marshes. Within the City of Ocoee, two of these associations can be found: pine flatwoods/hammock/hardwood swamps, and sandhills/isolated or flowing-water wetlands. A map of these associations is show in Figure 4 of the Future Land Use Element.

### **Pine Flatwoods/Hammocks/Hardwood Swamps**

The soils in this category are poorly drained, sandy soils and level to sloping topography characterize this landscape association. Between flatwoods and mesic hammocks in relatively higher zones and hardwood swamp or marsh in lower zones are hydric hammocks, which also occur on the banks of spring runs.

Mesic hammocks are the most diverse of the upland communities in the Region and may contain between 8 and 35 tree species. Overstory species in mesic hammock include southern magnolia, laurel oak, red bay, pignut, American holly, water oak, black cherry and live oak. The canopy is so dense that little sunlight reaches the forest floor. Soils are moderately well drained to somewhat poorly drained. Rainfall is the major water source for mesic hammocks, although seepage and runoff may provide water to some stands.

Soils in hydric hammocks are generally shallow and sandy, and limestone (either in bedrock or in nodules in the soil) is always present. Hardpans do not occur in hydric hammocks, but clay layers that support surficial water tables occur in some hammocks. High water tables are characteristic of this soil type and soils are saturated most of the year. Sources of water to hydric hammocks include groundwater seepage, rainfall, stream overflows, and aquifer discharge. Hydric hammocks have the most diverse flora of any wetland in East Central Florida. Species include popash, live oak, laurel oak, water oak, Southern magnolia, red bay, tulip poplar, red maple, red cedar, cabbage palm, slash pine, and blue beech.

Hardwood swamps are characterized by seasonal flooding of the flowing waters along which they are found. Species composition depends upon the flow rate, water quality, and turbidity of the adjacent waterway. The most common species are red maple, water tupelo, swamp black gum, sweet gum, bald cypress, pop ash, Florida elm, and cabbage palm. Soils associated with this community are nearly level, very poorly drained, and dark in color. They are either organic or have coarse- to medium-textured surfaces underlain by finer textured materials.



## **Sandhills/Isolated or Flowing Water Wetlands**

Relative to other landscape classes in the East Central Florida region, the Sandhills/Wetlands complex has the greatest topographic relief and the greatest degree of soil drainage. Wetlands include both isolated and flowing-water wetlands. The term "sandhill" includes both pine sandhill and sand pine scrub communities. Sandhill soils are well-drained deep sands; the top of the surficial water table is often six feet or more below the soil surface.

Typical plants of pine sandhills are the longleaf pine *Pinus palustris*, turkey oak *Quercus laevis*, and wiregrass *Aristida stricta*; sand pine scrub is characterized by sand pine *Pinus clausa*, Chapman oak *Quercus chapmanii*, myrtle oak *Quercus myrtifolia*, dwarf live oak *Quercus minima*, and Rosemary *Ceratiola ericoides*. In sand pine scrubs, the understory is sparse and interspersed with patches of bare sand. The dominant overstory species is sand pine *Pinus clausa*.

### **I. Natural Reservations**

Section 9J-5.003 (77), FAC, defines natural reservations as those areas designated for conservation purposes, and operated by a contractual agreement with or managed by a federal, state, regional, or local government or non-profit agency. These areas include national and state parks, lands purchases under the Conservation and Recreation Lands, or Save Our Rivers programs. Also included are sanctuaries, preserves, monuments, archaeological sites, historic sites, wildlife management areas, and Outstanding Florida Waters. There are no areas in the City that are national or state parks that have been purchased through the Conservation and Recreation Lands or Save Our Rivers programs; sanctuaries; preserves; monuments; wildlife management areas; or Outstanding Florida Waters. Historic and archaeological sites are identified in the Recreation and Open Space Element of the City's Comprehensive Plan.

### **J. Water Use**

The primary source of water for potable, agricultural and industrial use in the City is groundwater from the Floridan Aquifer. Presently, 100 percent of water used for these purposes is withdrawn from the Floridan Aquifer. The average annual rainfall within the City is 48.7 inches. Approximately twenty percent of the City is within a high recharge area to the Floridan Aquifer. Recharge rates in these areas are estimated to be between 8 and 12 inches per year.

The City shall enforce district declared water shortages pursuant to Section 373.609, FS. The City's Land Use Regulations implement potable water conservation strategies and techniques that include:

- 1) Educating the public
- 2) Consideration of xeriscaping
- 3) Reuse of treated effluent
- 4) Promotion of non-potable water use (i.e. storm water and surface water)
- 5) Requiring low-flow water devices in all construction

**Demand for Water: Current Demand**

The average daily water demand for the City of Ocoee was determined using water operating reports. Table 9 summarizes the water demand in the City. The total average daily flow (ADF) for the entire service area is 6.486 million gallons per day (mgd).

**Table 9  
Potable Water Demand in Ocoee, 2000**

<b>Water Treatment Plant</b>	<b>Average Daily Demand (mgd)</b>	<b>Maximum Daily Demand (mgd)</b>
Forest Oaks	2.463	3.162
South	3.442	4.297
Jamela	0.581	1.176
Total	6.486	8.635

Source: City of Ocoee Utilities Department Monthly Operating Reports, October 2000.

The City of Ocoee currently serves approximately 16,200 Equivalent Residential Connections (ERC). Based on water demand estimates for 2000, as expressed in ERCs, the average annual demand is 2.367 billion gallons. The average daily demand is 6.486 million gallons or 300 gallons per ERC.

**Demand for Water: Projected Demand**

Projected demand for potable water use is based on historical trends for average use. Large scale development could significantly alter water use projections. The following projections are the best indication of future use based on average conditions.

Table 10 depicts the projected demand for potable water for the City of Ocoee for the years 2000, 2005, 2010, and 2020. The projected demand is based on population projections for the Ocoee Utility Service Area (shown on Figure 15 in the Future Land Use Element) not the City limits.

Table 10 depicts the projected demand for potable water for the City of Ocoee for the years 2000, 2005, 2010, and 2020. The projected demand is based on population projections for the Ocoee Utility Service Area not the City limits.

**Table 10**  
**Projected Potable Water Demand in Ocoee, 2000-2020**

<b>Year</b>	<b>Projected Population <sup>1</sup></b>	<b>Equivalent Residential Connections (ERC)</b>	<b>Projected Average Daily Water Demand <sup>2</sup> (mgd)</b>	<b>Projected Maximum Daily Water Demand <sup>3</sup> (mgd)</b>
2000	33,808	16,200	6.48	8.64
2005	38,067	17,667	5.30	7.03
2010	42,351	19,489	5.83	7.78
2020	48,514	21,269	6.38	8.48

1. Total projection includes permanent and seasonal population.
2. Based on an average daily use of 400 gpd/ERC for the year 2000 and reduced to 300gpd/ERC for the year 2005 and on data based upon aggressive reuse system expansion.
3. Projected maximum daily water demand is 1.33 times greater than the average daily water demand (taken from the 2000 data).

Source: City of Ocoee, Utilities Department, October 2000.

To meet the growing demand of water treatment in the City, the City has developed a construction schedule for system improvements to assure adequate treatment and distribution facilities. Please refer to the Potable Water sub-element for additional information.

## **K. Hazardous Waste**

Hazardous waste generally includes any materials, which require special management provisions during processing, storage, collection, hauling, and disposal because of its acute and/or chronic effects on the public health and welfare, the individuals who handle it, or on the environment. Hazardous wastes can take the form of solids, sludges, liquids, or gases. Examples of hazardous waste sites include landfills, dumps, pits, lagoons, salvage areas, and storage tanks. There are no hazardous waste sites in the City.

The Keene Road Landfill is the largest known operating solid waste facility in the area. Designated by DEP as a Class III Solid Waste Disposal Facility, the Keene Road Landfill is only permitted to accept trash. Therefore, dumping practices are regulated to exclude any known or suspected hazardous materials. This landfill is approximately 80 acres in size and receives approximately 75 tons of waste materials per day. The Keene Landfill is still in operation.

On Ocoee-Apopka Road between Marden and Bradshaw Roads is the abandoned Lake Fuller site. Historically, the Fuller site was used for dumping solid wastes. However, field investigations have failed to reveal any visible surface remains of past disposal

practices. Similarly, the precise site location and nature of the buried wastes remains unidentified. This site has been inactive since August 1985.

Abandoned dump sites and gasoline stations are often difficult to locate because there is seldom enough surficial evidence in their existence. Therefore, there may be sites in the area that have not been identified as potential hazardous waste sites. In addition, illegal dumping practices usually proceed unnoticed and, therefore, undocumented. As a result, sites of potential hazardous wastes may extend beyond those identified herein.

#### **L. Commercially Valuable Minerals**

There are no commercially valuable minerals within the planning area.

### **III. THE PLAN**

These recommendations are designed to provide direction and a course for future action by the City. Proper management techniques and control of the City's natural resources are essential to the economic well-being of the City. In addition, it is important to ensure for City's residents that their quality of life will remain high.

#### **A. Air Quality**

Air quality in the City is considered to be quite good. To assure that the City continues to enjoy good air quality, the City shall coordinate with Orange County Environmental Protection Division. The City shall assist the DEP in their Air Pollution Inventory Source (APIS) program. The City shall report any suspected violations to the DEP.

The impact of future growth shall be considered to determine what effect it will have on local air quality. Emission data for new industries shall be considered as part of the development review process and when issuing development orders or permits. This could help evaluate potential problems before development decisions are finalized.

Land use patterns and transportation systems shall be compatible with a desired level of air quality. Automobile emissions on major thoroughfares such as SR 50, the Florida Turnpike, and the Western Beltway will continue to be monitored by DEP to maintain an acceptable air quality standard. Whenever possible, urban land uses shall be buffered from stationary and linear sources of emissions with open space. Dense vegetation can be utilized in intense commercial and industrial areas. The City shall coordinate with DEP's monitoring program.

Facilities that house the young, elderly and sick shall generally be located away from emission sources. These facilities include hospitals, nursing homes, orphanages, day care centers, and recreation centers. Designs featuring planned unit development, multi-use centers and other innovative development forms shall be encouraged to reduce the need to travel.

## **B. Surface Water Bodies**

In order to protect the quality of the water resources in the City, the City regulates development activities to protect natural water-cleansing features and reduce or prevent discharges of contaminants from urban and agricultural land uses through the land development regulations. The land development regulations include provisions such as, but not limited, to use of such natural features in the treatment of stormwater runoff, limitations on destruction of native vegetation and/or land clearing within such natural features, and maintenance of buffers with a minimum width of twenty-five (25) feet surrounding such natural features. For the purposes of this policy, natural features shall include DEP jurisdictional wetlands.

## **C. Floodplains**

The City shall continue to implement the provisions of the Flood Damage Prevention Ordinance, as amended, in order to restrict development in flood zones.

## **D. Soils**

The City shall restrict development on soils with steep slopes and those frequently flooded, as identified in the analysis section of this Element.

In order to protect areas from possible erosion on development sites, temporary erosion control measures are used. Erosion control practices include building sediment basins or traps to keep the soil on the site; stabilizing cut and fill slopes with temporary diversions, berms, bench terraces, or dikes to intercept and divert storm runoff; leaving vegetation as long as possible; planting ryegrass or other temporary cover promptly after grading or filling; tying down grass seed with jute, cotton, or paper netting or with straw mulch sprayed lightly with asphalt; using erosion-control plants for steep slopes; reducing runoff velocity with grade stabilization structures, grassed waterways, or energy dissipaters; and controlling dust by sprinkling.

## **E. Flora and Fauna Protection**

The City of Ocoee shall begin a management program for preserving and conserving ecological communities. This program will include the following efforts.

### **1) Protecting the Most Vulnerable Communities**

The City shall list communities requiring the most protecting and recommend their acquisition through the State land acquisition programs (i.e. Conservation and Recreation Lands).

### **2) Protecting All Ecological Communities**

In conjunction with acquisition of ecological communities most in need of preservation, the City's land development regulations include provisions to conserve ecological communities through the following methods:

- a) preserve the most sensitive portions of the ecological community;
  - b) provide for a development plan which promotes clustering of dwelling units away from sensitive portions of the ecological community associations;
  - c) discourage the fragmentation of large ecological community associations;
  - d) provide for buffering adjacent to the ecological community; and
  - e) require sustaining management programs to restore affected disturbed ecological communities.
- 3) Protecting Endangered Species

Species in the Ocoee area having special protection status designated by the state and federal government shall be evaluated for appropriate protective status. The City's performance standards in the land development regulations for species-specific habitats regulate building in or near these areas. The performance standards are similar to those for ecological communities. The City shall coordinate with state and federal agencies responsible for enforcing regulations concerning rare and endangered species.

On those lands that are privately owned, the City shall establish a program with land owners to protect the species habitat. This will allow biologists to identify prime habitats and advise the land owners of methods of protection such as conservation easements or the establishment of private sanctuaries. The landowners shall also be encouraged to use the best management practices in leaving the species' most desirable habitats.

4) Creating Buffer Zones

In order to ensure the preservation of valuable wetland habitats, buffer zones are required for all developments adjacent to those areas. The purpose of setting aside buffer zones between a wetland and a developed upland area is to protect the integrity of the wetland's water supply, its water quality, and associated wetland-dependent wildlife. A buffer zone can also be thought of as a transition zone between two different land uses that separates and protects one from another.

In determining buffer sizes for wetland protection, the goals are to: 1) minimize groundwater draw down in wetlands; 2) minimize sediment transport into wetlands; and 3) protect wildlife habitat. The Center for Wetlands at the University of Florida evaluated the landscape associations to determine generalized buffer requirements. However, there are important qualifiers to consider when establishing buffer zones.

In order to ensure the most equitable solution to the placement of buffer zones, ensuring adequate protection of groundwater and wetland habitats, buffer

widths shall be examined on a site-by-site basis. The City shall design buffers with a minimum width of twenty-five (25) feet based on the methods identified in Section III of the East Central Florida Regional Planning Council's Final Report, *Buffer Zones for Water, Wetlands, and Wildlife in the East Central Florida Region*, October 1989.

5) Informing the Public

To increase public awareness, the City shall develop a public information program. City staff will initiate a program of mapping and identifying ecological communities and species so proper management of them can be established. A public information program to inform the public on identifying and understanding ecological communities and special protected species shall be established. DNR's Resource Recovery Alert Program to report violations of laws protecting species and their habitats through a toll free number shall be publicized.

## **F. Water Conservation**

The City's principal water management opportunities involve maximizing the use of existing sources and supplies, eliminating unnecessary uses, and developing plans for managing water shortages.

The City saves water by promoting the reuse of treated effluent. Treated effluent is used for irrigation of parks and landscaped areas to reduce the demand on existing potable water supplies. The City is committed to make available 0.5 mgd of treated effluent in the dual water system proposed for the Clark Road corridor. In addition, as a condition for the approval of a consumptive use permit for the City's northern sprayfields and effluent disposal site, 0.5 mgd must be reused. The City delivers 0.7 to 0.8 mgd of treated effluent to the Forest Lake Golf Course.

During periods of extended drought, the City manages the allocation of water to competing users through the strict enforcement of SFWMD and SJRWMD declared shortages to ensure adequate protection of health and safety. The City of Ocoee promotes conservation education on water use restrictions and reuse concepts through the Protect Ocoee's Water Resources (POWR) program.

## **G. Hazardous Waste Management**

To protect the City's citizens and the water resources the City practices short- and long-term management, which improves hazardous waste storage and disposal methods and lessen the risk of an accident by including the following management practices.

### **Safe Management in the Workplace**

Knowledge of hazardous waste and training in how to handle it provide a firm basis for a safe operation. Under Florida's "Right-to-Know Law," employers at small quantity generators are required to notify employees of toxic substances being used in the workplace, and provide them with written information explaining the properties and hazards of each toxic substance. Employee awareness is the first step toward safe and

effective waste management in the workplace. The City shall encourage employers in the area to properly notify employees of potential dangers. Small quantity generators shall have proper storage containers available for this waste, designate temporary storage areas at the workplace, and use licensed waste transporters or recyclers to remove the hazardous materials from the workplace.

**Public Awareness**

To increase public awareness of the hazardous nature of many common household products, the City places notices in the City utility bills, includes hazardous waste management tips in the quarterly City news letter, posts tips on the City's web site and displays tips on the City's government channel to educate the general public about which household wastes are considered hazardous, and how to store, recycle, and properly dispose of such wastes.



#### **IV. GOALS, OBJECTIVES, AND POLICIES**

##### **GOAL**

**TO CONSERVE, PROTECT, AND APPROPRIATELY MANAGE THE NATURAL RESOURCES OF THE CITY OF OCOEE TO ENSURE THE HIGHEST ENVIRONMENTAL QUALITY POSSIBLE, CONSISTENT WITH THE APPROPRIATE GROWTH AND DEVELOPMENT OF THE CITY.**

##### **Objective 1**

The City of Ocoee shall continue to meet or exceed the minimum air quality standards established by the Florida Department of Environmental Protection, by ensuring that new development at least maintain the current standards. This shall be accomplished through the policies which follow (Chapter 187.201, 11(a), and 11(b)1-5, FS; 9J-5.013(2)(b)1, FAC).

##### **Policy 1.1**

The City shall cooperate with the State and Orange County in monitoring the existing Air Pollution Inventory System (APIS) facilities. Cooperation shall include, but not be limited to assisting in the location of monitoring facilities, conducting reviews of data with the Florida Department of Environmental Protection (DEP) personnel and reporting suspected emission violations within five (5) days.

##### **Policy 1.2**

Industrial land uses shall be located where they minimize the impact on current air quality standards.

##### **Policy 1.3**

The City shall review with DEP emission data for new industries as part of the development review process and when issuing development orders and permits. When DEP recommends design changes and/or mitigation, such information shall be reviewed with the applicant. In addition, all permits for industrial uses shall be sent to DEP for review.

##### **Policy 1.4**

The City shall encourage the use of innovative development forms, such as planned unit developments, multi-use centers, and others to reduce the need to travel. Incentives such as density bonuses and transfers of development rights shall be used to encourage these forms.

### Policy 1.5

As of the effective date of this Comprehensive Plan, open space shall be used to buffer urban land uses from stationary and linear sources of emissions.

### **Objective 2**

The City shall protect the quality of all surface water bodies and groundwater quality by implementing the following policies (Chapter 187.201, 8(a), and 8(b)1-14, FS).

### Policy 2.1

The City shall regulate development activities to protect natural water-cleansing features and reduce or prevent discharges of contaminants from urban and agricultural land uses through the land development regulations. The land development regulations include provisions such as (but not limited to) the use of such natural features in the treatment of stormwater runoff, limitations on destruction of native vegetation and/or land clearing within such natural features, and maintenance of upland buffers and/or environmental swales within a minimum width of twenty-five (25) feet surrounding such natural features. For the purposes of this policy, natural features shall include DEP jurisdictional wetlands (9J-5.013(2)(c)(3), FAC).

### Policy 2.2

The City shall ensure the protection of groundwater sources by restricting Commercial and Industrial future land uses known to adversely affect the quality and quantity of identified water sources within wellhead protection areas, existing cones of influence, and aquifer recharge areas. In addition, other land use activities such as hazardous waste facilities, fuel storage facilities, and groundwater injection wells known to adversely affect the quality and quantity of groundwater sources will be prohibited within wellhead protection areas, existing cones of influence, and aquifer recharge areas (9J-5.006 (3)(c)(6) and 9-J-5.013 (2)(c)(1), FAC).

### Policy 2.3

As of the effective date of this Comprehensive Plan, future development, as defined by the Ocoee Land Development Code, shall not occur within 25 feet of an approved 100-year floodplain elevation or jurisdictional wetland boundary except where exempted by State Statute or in cases where offsetting on-site environmental mitigation or enhancement of these areas is demonstrated to improve natural functions or to provide low-impact uses or recreational amenities which encourage enjoyment of such areas.

### Policy 2.4

The use of septic tanks in developments and redevelopments shall be permitted in accordance with Chapter 10-D-6 FAC to prohibit septic tanks in flood plains,

wetlands, areas adjacent to lakes and in areas designated with soils unsuitable for septic tanks.

### **Objective 3**

The City shall protect the natural functions of the 100-year floodplains as prescribed by FEMA and/or Orange County so that the flood-carrying and flood storage capacity are maintained. This Objective shall be implemented by the following policies (Chapter 187.201, 8(b)(8); 9J-5.013(2)(c)(6), FAC; ECFRPC Policies 4.14, 4.15 & 4.16).

#### Policy 3.1

The City shall continue to implement the provisions of the Flood Damage Prevention Ordinance.

#### Policy 3.2

The City shall identify and recommend to the state and the SFWMD and SJRWMD floodplains that would warrant acquisition under the Conservation and Recreation Lands Program.

#### Policy 3.3

Limited low-impact and passive recreational development as defined by the Ocoee Land Development Code may be permitted at the City's discretion within these portions of 100-year floodplain areas which are situated above the normal water level of lakes, streams, and flood prone area and 25 feet upland of any jurisdictional wetland area contained therein. Types of uses which may be permitted on a case-by-case basis include landscaping, passive open space areas, park benches, pedestrian/bicycle/multi-use trails, open play fields, covered shelters, picnic tables, play courts and similar uses where no reduction of flood storage capacity has been demonstrated.

#### Policy 3.4

The City will continue to direct its own wellhead and wellfield protection program within its jurisdiction. However, the areas within the County's water service area and in the Ocoee-Orange County Joint Planning Area will adhere to the wellhead protection goals, objectives, and policies of the Orange County Comprehensive Plan's Conservation Element.

### **Objective 4**

The City's wetlands shall be conserved and protected from physical and hydrologic alterations, by implementing the following policies (Chapter 187.201, 8(b)2, 4, 8, 10, and 14, 10(a), 10(b)1, 2, 6, 7, and 10, FS; 9J-5.013(3)(a), FAC; ECFRPC Policies 4.23, 4.24, 4.25).

#### Policy 4.1

The City's land development regulations ensure that:

- a) Site plans for new development identify the location and extent of wetlands located on the property.
- b) Site plans provide measures to assure that normal flows and quality of water will be provided to maintain wetlands after development.
- c) Where alteration or removal of wetlands is necessary in order to allow reasonable development of property, either the restoration or enhancement of disturbed wetlands will be provided or additional wetlands will be created to mitigate any wetland destruction, within the same site or watershed, if possible.

#### Policy 4.2

The City shall protect and conserve the natural functions of wetlands by directing land uses incompatible with the protection and conservation of wetlands and wetland functions away from identified wetlands. The type, value, function, size, conditions and locations of wetlands will be factors used to consider land use changes. Where incompatible uses are allowed to occur, mitigation shall be considered and will be based on the regulations set forth in the Land Development Code (9J-5.013(3)(a)&(b), FAC).

#### Policy 4.3

The City shall continue to utilize standards and guidelines through Land Development Regulations to protect wetlands, including:

- a) Prevention of excavation or filling unless the City Commission finds, on the basis of reasonable evidence, that there are no practical alternatives to the filling;
- b) Where wetland disturbance is permitted, requiring two-for-one replacement of area, maintenance of proximal locational relationship and functionality, and enforcement of alternative mitigation requirements if necessary;
- c) Retention of buffer areas in their natural state surrounding connected wetlands at a minimum width of 25 feet unless the City Commission finds that width impractical to maintain;
- d) Modifications in wetlands shall ensure that predevelopment water flow (rate and quantity) is maintained to preserve wetland viability; and
- e) Wetlands management shall conform to standards included in the Comprehensive Plan.

**Objective 5**

The City shall continue to reduce the rate of soil erosion caused by land development and other human activities, through the implementation of the following policies (Chapter 187.201, 23(b)9, FS; 9J-5.013(2)(b)(3), FAC).

**Policy 5.1**

The City shall review topographic, hydrologic, and vegetative cover factors in the site plan review process of proposed development.

**Policy 5.2**

The City shall assist the U.S. Soil Conservation Service in those activities directed at minimizing soil erosion.

**Policy 5.3**

The land development regulations require all land development to control erosion on the construction site through the following methods:

- a) Building sediment basins or traps to keep the soil on the site.
- b) Stabilizing cut and fill slopes with temporary diversions, berms, bench terraces, or dikes to intercept and divert storm runoff.
- c) Leaving vegetation as long as possible.
- d) Planting ryegrass or other temporary cover promptly after grading or filling.
- e) Tying down grass seed with jute, cotton, or paper netting or with straw mulch sprayed lightly with asphalt.
- f) Using erosion-control plants for steep slopes.
- g) Reducing runoff velocity with grade stabilization structures, grassed waterways, or energy dissipaters.
- h) Controlling dust by sprinkling with water.

**Objective 6**

Ecological communities and wildlife, especially endangered and rare species, shall be identified, managed and protected, through the implementation of the following policies (Chapter 187.201, 10(a), and 10(b)1-7, FS; 9J-5.013 (2)(b)(4), 9J-5.013 (2)(c)(5)&(9), FAC; ECRRPC Policies 4.26, 4.27, 4.28, 4.29, 4.30 & 4.31).

### Policy 6.1

The City shall maintain a comprehensive inventory of ecological communities and shall seek to acquire the most valuable communities through Florida's Conservation and Recreation Lands (CARL) program or other assistance programs (9J-5.013 (2)(c)9).

### Policy 6.2

The City's land development regulations include provisions for the protection and conservation of the natural function of existing soils, wildlife habitat, lakes, floodplains, wetlands and ecological communities by the following methods (9J-5.013(2)(c)6 & 9, FAC; ECFRPC Policies 4.29 & 4.31).

- a) Identify and preserve the most sensitive portions of each ecological community.
- b) Provide for a development plan which promotes clustering of dwelling units away from sensitive portions of the community associations.
- c) Discourage the fragmentation of large ecological community associations.
- d) Provide for buffers with a minimum width of twenty-five (25) feet adjacent to the ecological community.
- e) Require sustainable management to restore affected disturbed communities.
- f) Provide comprehensive mitigation measures where environmental impacts are unavoidable.

### Policy 6.3

The City shall maintain performance standards in its land development regulations for species-specific habitats to protect native vegetative communities from destruction by development activities by regulating building in or near these areas. The performance standards shall be similar to those in Policy 6.2 (9J-5.013 (2)(c)5).

### Policy 6.4

The City shall assist, through local staff enforcement means, appropriate state and federal agencies responsible for enforcing regulations concerning rare and endangered species.

#### Policy 6.5

The City shall ensure that property owners use appropriate practices in preserving desirable habitats, through the review of all building and clearing permits. Appropriate practices shall include but not be limited to: identification on development plans of specific habitat areas based on the City's comprehensive inventory and other sources, orientation of activities, structures, and disturbed areas away from those habitat areas and establishment of operational rules to respect habitat areas.

#### Policy 6.6

The City shall coordinate with the Florida Department of Environmental Protection and Florida Fish and Wildlife Conservation Commission in developing a public awareness program to inform the public on identifying and understanding ecological communities and special protected species.

#### Policy 6.7

The City shall consult with the Florida Fish and Wildlife Conservation Commission prior to the issuance of a land use approval that would result in an adverse impact to any endangered and rare species.

#### Policy 6.8

The City may protect endangered and rare species by use of conservation easements, transfer of development rights, and fee simple acquisition and zoning where the protection of habitats cannot be accomplished through design review and development standards (ECFRPC Policy 4.26).

#### Policy 6.9

The City shall cooperate and coordinate with adjacent local governments to conserve, appropriately use, or protect unique vegetative communities located within joint jurisdictions (9J-5.013(2)(c)(8), FAC).

#### Policy 6.10

The City shall continue to strictly enforce provisions in the Land Development Code designed to preserve existing trees and to require the planning of new landscaping materials in new developments.

**Objective 7**

The City shall seek to reduce water consumption. This objective shall be achieved by implementation of the following policies (Chapter 187.201, 8(a), 8(b)1, 2, 5, 9, 10, 11, 12, 13 & 14, FS; 9J-5.013(2)(b)2 and (2)(c)4, FAC; ECFRPC Policies 4.1, 4.2, 4.3, 4.4, 4.7 & 4.12).

**Policy 7.1**

The City shall maximize the use of existing sources and supplies, eliminating unnecessary uses and developing plans for managing water shortage. Such management plans shall include but are not limited to: adoption of a water emergency ordinance consistent with the recommendations of the water management districts, distribution of information on water conservation practices, and review of codes relative to water conservation practices.

**Policy 7.2**

The City shall cooperate with the SJRWMD and SFWMD to conduct water conservation programs.

**Policy 7.3**

The City shall continue to promote the reuse of treated effluent in the City for irrigation of parks and landscaped areas to reduce the demand on existing potable water supplies. The City is committed to make available 0.5 mgd of treated effluent in the dual water system proposed for the Clarke Road corridor. In addition, as a condition for the approval of a consumptive use permit for the City's northern sprayfields and effluent disposal site, 0.5 mgd must be reused. The City will continue to deliver 0.7 to 0.8 mgd of treated effluent to the Forest Lake Golf Course.

**Policy 7.4**

The City shall continue to implement the water reuse program on City-owned properties and eventually expand the program to include private sector users.

**Policy 7.5**

The City will continue to strictly enforce district-declared water shortages declared by the South Florida Water Management District and St. Johns River Water Management District to ensure adequate protection of health and safety (9J-5.013(2)(c)(4), FAC).



**Objective 8**

The City shall continue to promote, through the following policies, the protection of natural reservations (as identified in the Recreation and Open Space Element) to lessen the adverse effects that adjacent developments might have (Chapter 187.201, 8(a), 8(b)2, 4, and 8, 10(a), 10(b)1-13, 19(a), 19(b)1-6; 9J-5.013(2)(c)7, FAC).

**Policy 8.1**

The City shall protect and preserve the historic sites and natural reservations identified in the Recreation and Open Space Element through their designation as Conservation Areas (9J-5.013(2)(c)7).

**Objective 9**

The City shall continue to coordinate with Orange County to develop a hazardous waste management programs for the proper storage, recycling, collection, and disposal of hazardous wastes (Chapter 187.201, 13(a), 13(b)1-11, FS; 9J-5.013(2)(c)(10), FAC; ECFRPC Policy 2.1).

**Policy 9.1**

The City shall require small quantity generators to have proper storage containers available for waste, designate temporary storage areas at the workplace, and use licensed waste transporters or recyclers to remove the hazardous materials from the workplace (9J-5.013(2)(c)10).

**Policy 9.2**

The City shall continue to promote the recycling of hazardous wastes by publicizing lists of approved recyclers.

**Policy 9.3**

The City shall maintain a location list of hazardous waste generators to ensure adequate inspection and enforcement capabilities.

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