



DESOTO COUNTY COMPREHENSIVE PLAN CONSERVATION ELEMENT

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CHAPTER IX
CONSERVATION ELEMENT

A. INTRODUCTION

As stated in Rule 9J-5.013, Florida Administrative Code (F.A.C.), the purpose of the Conservation Element is to promote the conservation, use, and protection of natural resources. This Element of the DeSoto County Comprehensive Plan identifies and analyzes sources of surface and groundwater, wetlands, floodplains, air quality, valuable minerals, soil erosion, dominant vegetative and wildlife communities, and vegetative and wildlife species listed as endangered. In addition, this Element will provide potential methods for the conservation, use, and protection of these vital resources.

Covering 637 square miles, DeSoto County occupies the DeSoto Plain, a broad, flat area of land lying immediately adjacent to the Lake Wales Ridge on the east. Located in southwestern Florida it is bordered by Hardee County on the north, Charlotte County on the south, Highlands County on the east, and Sarasota and Manatee Counties on the west. DeSoto County is an important agricultural region consisting of predominantly cattle and citrus. The Peace River flows through DeSoto and is one of Florida's major rivers. The County, which is interspersed with meandering streams, lies almost entirely in the Peace River basin. The City of Arcadia is the County's only incorporated municipality.

B. INVENTORY OF NATURAL FEATURES

Although each and every natural resource existing in DeSoto County is a valuable component of the ecosystem, worthy of being protected and conserved, the following sections identify and describe the more significant resources of the County.

1. Surface Waters

DeSoto County has an abundance of natural surface water features. This section will identify major surface water basins within the County.

The surface drainage of Desoto County is dominated by the Peace River. The Peace River is the only river in the County and flows in a southwesterly direction from its source in Polk County. A small section along the western boundary of the County drains to the Myakka River, which flows westward into Manatee County. Principal sub basins within the County include the watersheds of Joshua Creek, Shell Creek and Horse Creek. **Map VII-1** of the **Drainage Element** shows the major regional drainage basin and principal sub basins within DeSoto County and **Map VII-2** of the **Drainage Element** shows all the minor sub basins.

a. The Peace River Basin

The Peace River Basin is characterized as a gently sloping plain with well-developed surface drainage features. The Peace River originates in the Green Swamp in north central Polk County and flows generally southwest entering the Gulf of Mexico at Charlotte Harbor. The drainage area encompasses over 2,300 square miles. Numerous lakes and large areas of poorly drained swamps in the headwaters of the Peace River act as an important recharge area for the Floridan Aquifer. The basin then enters the Gulf Coastal Lowlands province where elevations are below 30 feet and the river develops a broad floodplain. The following are the Peace River tributaries/ watersheds:

(1) Joshua Creek

Joshua Creek originates in northeastern DeSoto County and flows southwestward into the Peace River, 2.2 miles downstream of Nocatee in central DeSoto County. The drainage area of Joshua Creek is 132 square miles.

(2) Horse Creek

Horse Creek, which originates in northwest Hardee County and northeast Manatee County, flows southward into the Peace River near Fort Ogden in Southwest DeSoto County.

(3) Shell and Prairie Creek

Prairie Creek, which originates in east central DeSoto County, flows southwestward into Shell Creek in northwest Charlotte County. Shell Creek then flows westward into the Peace River just north of Charlotte Harbor.

(4) Deep Creek Gully

Deep Creek Gully is a tributary of the Peace River, located in the southwest corner of Desoto County. The watershed is approximately 12 square miles in size and is contiguous to the jurisdictional limits of the City of Port Charlotte and North Port on the southern and western boundaries.

2. Wetlands

Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands are generally classified as hydric or alluvial soils. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, and in coastal areas, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.

Wetlands provide many important functions such as providing vital fish and wildlife habitats, and acting as storage areas for excess surface water. They also improve water quality as impurities enter the wetland and are filtered through the vegetation. As the water travels through the wetland, toxins and nutrients are removed, allowing the filtered clean water to exit the wetland. This protects the rivers from overloading with nutrients, which would have a negative effect on fisheries throughout Florida. In addition, the soil is stabilized which, in turn, prevents erosion. Unfortunately, much of this natural, ordered system of surface water purification is quickly disappearing due to urban encroachment.

In DeSoto County, wetlands existed along the banks of the Peace River, Horse Creek, Joshua Creek and upper reaches of Prairie Creek. In the eastern portions of the County, Oak Creek Marsh, Long Point Marsh and Long Island Marsh are characterized by high water and poorly drained soils. These wetland systems are shown on **Map IX-1**.

3. **Groundwater**

Groundwater consists of rainfall and surface water that filters into the underlying aquifer system. It is the principal source of water for most municipal water distribution systems as well as for most private industrial, agricultural, and domestic water users within the County.

Groundwater levels vary in response to five general factors. The first is infiltration from rainfall, lakes, and streams. The second is evapo-transpiration, which is a joint term for evaporation and transpiration. Evapo-transpiration from the water table occurs where water is within approximately five feet of land surface. The third factor is lateral discharge of water to lakes, springs, and streams, while the fourth is vertical discharge of water from the surficial and intermediate aquifer to the underlying Floridan Aquifer. The final factor is lateral submarine discharge from the Floridan Aquifer directly into the Gulf of Mexico. Groundwater levels also vary seasonably; with the highest levels being recorded in September, just after the rainy season and the lowest levels are in May, after the dry season. There are three aquifer systems that underlie DeSoto County and are described as follows.

a. Surficial Aquifer

The surficial aquifer is composed of sand, shells, and some clay, and is generally contiguous with land surface. The top of the aquifer is defined by the water table, which marks the line below which all pore spaces are filled with water, and rises and falls in response to the atmospheric pressure. It has been estimated that the surficial aquifer may be less than seven (7) feet below land surface in DeSoto County. Flow in the surficial aquifer usually follows the topography of the land and is an important source of water for individual domestic wells and small-scale irrigation.

b. Intermediate Aquifer

The intermediate system lies below the surficial aquifer but above the Floridan and occurs randomly throughout the groundwater basin. It is composed of clays and thin, water-bearing zones of sand, shell, and limestone. The intermediate aquifer is usually found within the confining unit of the Floridan and occurs at 60 to 150 feet below land surface, and may extend down to 600 feet in depth in southeast DeSoto. This aquifer supplies water to some parts of the basin and is considered an important source of potable water. This aquifer supplies much of the potable water for the Arcadia system and some for the County water system.

c. Floridan Aquifer

The Floridan Aquifer is the most productive aquifer in DeSoto County and is the source of water for the County's public water supply for the State Correctional Facilities and formerly for the Wal-Mart Distribution Center. The Floridan aquifer is an artesian aquifer composed of a thick stratified sequence of limestone and dolomite. Its thickness averages about 1,500 feet in DeSoto County. Characteristically, artesian aquifers contain groundwater that is under greater pressure than the atmospheric pressure. This pressure is demonstrated by the level to which water will rise in tightly enclosed wells that penetrate the aquifer. Groundwater in the Floridan Aquifer is generally more mineralized than water from the surficial and intermediate aquifers. In most areas, the Upper Floridan yields supplies suitable in quality and quantity for irrigation purposes.

4. **Potable Water Source**

The County's central water system is comprised of three (3) water treatment plants, collectively consisting of seven (7) public water supply wells, two ground storage tanks, six (6) high service pumps, and two (2) elevated storage tanks. The distribution system consists of approximately 211,200 feet of water mains ranging in size from 2-inches through 16-inches in diameter. In addition, the County has direct connection to the Peace River Manasota Regional Water Supply Authority (PRMRWSA), which supplies potable water to the County. Currently, the DeSoto County water system is servicing 27 large non-residential water customers. In addition to the County's facilities that are considered to be part of the DeSoto County central water supply and treatment facilities, there are a nine (9) other existing public potable water treatment facilities. These facilities are owned and operated by various public utilities, agencies, or institutions. Except for the City of Arcadia facilities and the PRMRWSA facility, these additional public facilities are limited to serving a particular facility (i.e. school, prisons, public building, etc.); and as such, are not intended to provide service beyond those facilities.

The City of Arcadia potable water system is the only other public central water system. For the most part, the City of Arcadia water service area is limited to its corporate city boundaries; however, there are several isolated areas in the County adjacent to the city limits where the City provides water service.

For further information refer to the Potable Water Element of this Comprehensive Plan.

5. **Floodplains**

DeSoto County contains major riverine and marsh floodplains. Wetlands and surrounding areas are prone to flooding. This is a natural occurrence necessary to maintain their ecological function. The Federal Emergency Management Agency (FEMA) conducted a study in 1988 to determine the existence and severity of flood hazards in the County. For purposes of the study, flood prone areas were defined as being within the area expected to flood on the average of once every one hundred (100) years. **Map IX- 2** depicts the 100-year floodplains in the County. The County also adopted a Floodplain Management Ordinance in order to continue participation in the National Flood Insurance Program and to better protect development in the significant amount of flood prone areas of the County. Approximately fifteen (15) to twenty (20) percent of the County lies within the floodplain. To protect the Peace River from adverse effects of development and the safety and welfare of the citizens, the County, in its land development regulations, requires minimum floor elevations for construction, and strictly regulates development in a floodplain so as not to alter the function of the floodplain or degrade the Peace River. The County also requires buffer areas along river and stream banks.

6. **Air Quality**

The quality of ambient air, which is the outside air we breathe, is monitored by the FDEP. The Florida air-quality monitoring network consists of approximately 300 monitors located in 35 counties throughout the State. The monitors are placed in areas where the ambient air-quality standards are being violated or in areas where the standards are being met but plans are needed to ensure maintenance of acceptable levels in the face of anticipated population or industrial growth.

The population and industrial growth rate of DeSoto County have not been sufficient to warrant the placement of a monitoring station in the past, but future growth may require placement in the future.

Air quality in the County is considered to be good. The Florida Department of Protection (FDEP) does not have an air pollution monitoring station within the DeSoto County. The FDEP samples ambient air quality from monitoring stations located in Sarasota County and Highland County as shown on **Figures CE- 1** and **CE- 2**.

DeSoto County has a very limited amount of air pollution for a county of its size. This can be attributed to the agricultural nature of the County and, therefore, the minimal existence of air pollution sources associated with more industrial areas

Even though monitoring is not being done in DeSoto County, Carbon Monoxide, Lead, Nitrogen Dioxide, and Sulfur pollutants could be present in the County, according to the FDEP. An assessment of these pollutants is provided below.

a. Carbon Monoxide

Carbon Monoxide (CO) occurs in both natural and synthetic forms. Natural emissions of CO take place from the oxidation of naturally occurring methane, plant synthesis and decomposition, and forest fires. Synthetic emissions, on the other hand, tend to be concentrated in urban areas and are responsible for the high CO concentrations associated with adverse health effects. The primary synthetic source of CO is motor vehicles with gasoline-burning, internal-combustion engines. However, existing traffic patterns within the County are such that large concentrations of traffic seldom accumulate for long periods of time. This helps to negate the possibility of large concentrations of carbon monoxide from forming. Other synthetic sources of CO include industrial process losses; open burning; and fuel combustion in industrial, utility, and other boilers, such as concrete plants.

b. Lead

While lead is an abundant element of the earth's crust and is found readily in most aspects of human life, it is the lead from synthetic sources, which is most prevalent. Legislation from the Environmental Protection Agency has reduced the amount of lead allowed in gasoline to the point that the maximum allowable level of lead in gasoline stands at 0.1 grams per gallon. According to the FDEP, lead as an air pollutant is practically non-existent in the State of Florida except in areas that have lead smelters or process batteries. Therefore, DeSoto County should face no substantial problems with lead.

c. Nitrogen Oxide

The threat of heavy concentrations of nitrogen dioxide in DeSoto County is relatively low due to the traffic patterns of the County, and also to environmental legislation. The prime contributor of nitrogen dioxide to the atmosphere is the high temperature fuel combustion engine. Under legislation from the Federal Clean Air Act, new model cars are required to be equipped with catalytic converters. These converters act as a filter of car exhaust, thereby helping to prevent the further proliferation of nitrogen dioxide.

d. Ozone

Ozone is not emitted directly into the atmosphere but results from a series of reactions between nitrogen oxides and volatile organic compounds (VOCs) in the presence of sunlight. The nitrogen oxides, important in triggering the sequence of ozone-producing reactions, are emitted primarily from high-temperature combustion sources. The VOCs, important in sustaining the reactions, are emitted primarily from motor vehicles but may also arise from the evaporation of gasoline and solvents, from surface coating operations, and from open-burning and other combustion sources.

The worst ozone conditions occur on hot, calm winded days. During this type of weather, the atmosphere becomes extremely heated causing increased reactions and levels of ozone to grow. Without wind the ozone remains in a concentrated area causing further pollution problems. Since ozone is a problem associated primarily with heavily urbanized areas, DeSoto County is not presently in danger of exceeding or approaching the ambient ozone air-quality standards. State and Federal control programs are expected to be important in reducing the future impacts of ozone.

e. Sulfur Dioxide

Human made sources of sulfur dioxide (SO₂) account for approximately one third (1/3) of all measurable amounts in the atmosphere. The majority of this amount is emitted through coal fired or oil fired electric generation plants. Other sources of SO₂ emissions include fuel combustion in mobile sources, the production of sulfuric acid, and the production of natural gas. However, since these sources are not significant contributors in DeSoto County, ambient SO₂ air quality is not likely to be degraded by any considerable amount in future years.

f. Total Suspended Particulate

Particulate matter is emitted from both natural and human made sources with natural sources accounting for the greatest portion of the mass of total suspended particulate (TSP) in the atmosphere. The human made contribution to the natural background can be divided into two categories, traditional and nontraditional. Traditional sources include combustible engines, and sources produced from some industrial activities. Non-traditional sources include dirt from unpaved streets, dry topsoil from agricultural fields, and dust from construction or mining.

Traditional sources of TSP can be controlled with currently available air-pollution control equipment or through the choice of fuels, process techniques, and operating practices employed. Common particulate-matter control devices currently in use in Florida are inertial separators, wet-collection devices, baghouses, and electrostatic precipitators. Emissions of particulate matter from non-traditional sources can be controlled through measures such as paving or wetting unpaved roads, cleaning streets, constructing windbreaks in agricultural areas, restricting open burning, and treating aggregate storage piles with chemical stabilizers.

7. Hazardous and Household Chemical Waste

The generation and disposal of hazardous waste is an important issue, which can affect the health and safety of the County's residents. DeSoto County has a Household Hazard Waste Collection Agreement with Clean Harbor's Environmental Services, Inc. for the purpose of conducting two household hazardous waste collection events per year. They are responsible for the mobilization of manpower, supplies, and equipment to perform the function of traffic control, collection, handling and packaging of wastes, identification of waste, packaging and consolidation of wastes, the labor required in lab packing waste, the handling of waste for storage or transportation, the production of reports and the contractors supervision of these activities. The County's Environmental Services Department maintains principal liaison

DeSoto County also has an Interlocal Agreement with Hardee County to allow the two governmental entities to jointly designate hazardous waste storage facility areas. This agreement is monitored by Desoto County's Environmental Services Department.

Currently, there are no industrial sources of hazardous waste in DeSoto County.

8. Commercially Valuable Minerals

Three (3) major mineral deposits, phosphate, shell, and sand that are present within DeSoto County. Phosphate was located within the northwestern part of the County, while shell deposits are located in the southern part of the County around Prairies Creek. Sand mining occurs near the Lake Suzy area in the southwestern portion of the County. Shell and sand are the only minerals being mined in DeSoto County. DeSoto County requires a performance bond prior to the issuance of a permit for mining activities, and requires reclamation of mined areas pursuant to the regulations adopted by the Southwest Florida Water Management District (SWFWMD), FDEP and the County's LDRs.

Historically, sand and shell were extracted and transported out of the County prior to processing. The failure of past reclamation practices on many mines had led to environmental degradation of those sites. Failure to properly grade and reclaim such mining operations after they were depleted led to increased runoff, reduction in surface water quality and lowering of property values.

There is currently no commercial mining of phosphate in DeSoto County. However, phosphate companies do own large tracts of land in the west central part of the County. The US Bureau of Mines estimated DeSoto County phosphate resources at 54,400,000 metric tons. These phosphate deposits could be a significant future resource to the County, but is dependent upon favorable market conditions. Phosphate mining could potentially impact the land, water, and air of DeSoto County. Proper planning and modern land reclamation techniques can negate or mitigate most of the adverse impacts of phosphate mining.

9. Soil Erosion

For the majority of the County, topographic features such as relatively level land and large amounts of vegetation have been significant in reducing the threat of soil erosion. The Peace River Soil and Water Conservation District indicated that there are no areas within Desoto

County experiencing soil erosion problems. A soil erosion problem is considered to exist if a soil erodes at a rate greater than five (5) tons per acre per year.

Water and wind are the major causes of erosion, transport and deposition. Water is by far the most important because amounts of soil locally removed by wind usually are small compared with those eroded and transported by water. Wind erosion is often related to drought, whereas water erosion is generally related to flooding and stormwater runoff. Soil erosion can occur where fields are plowed for replanting and in areas of new construction activity. In these cases, soil erosion is usually short-term and can be resolved through the planting of vegetation.

10. Soils Inventory

Soils provide several resource functions including drainage, stormwater filtration, water storage, aquifer recharge, and ground stabilization. The dominant soils within the County consist of the Smyrna fine sand at 14%, Immokalee fine sand at 12%, Myakka fine sand at 11%, and Farmton fine sand at 9%. **Map CE-3** shows soil types and percent coverage within the County.

11. Vegetative Communities

The Florida Natural Areas Inventory (FNAI) developed and classified eighty-one (81) natural communities that had been identified as collectively constituting the original, natural biological associations of Florida. A natural community is described, by the FNAI, as “a distinct and reoccurring assemblage of populations of plants, animals, and fungi naturally associated with each other and their environment.” Natural communities were characterized and defined by a combination of appearance, vegetation structure and composition, topography, and soils. They were named for their most characteristic biological or physical feature.

The US Fish and Wildlife Service had identified five (5) major vegetative communities in Desoto County as shown on **Map IX-4**. The identified communities were pine flatwoods, grasslands of prairie type, forests of longleaf pines and xerophytic oaks, swamp forests mostly of hardwood, and mangrove forests. A brief discussion of the major characteristics of each of those communities follows.

Pine Flatwoods: Pine flatwoods are characterized as open-canopy forest of widely spaced pine trees with little or no understory by a dense cover of herbs and scrubs. The most common associations are longleaf pine/wiregrass/runner oak and slash pine/gallberry/saw palmetto. Typical plants of the pine flatwoods include: St. Johns-wort, dwarf huckleberry, fetterbush, dwarf wax myrtle, stagger bush, blueberry, gopher apple, tar flower, bog buttons, blackroot, false foxglove, white topped aster, yellow eyed grass, and cutthroat grass. Typical animals of the pine flatwoods include: white-tailed deer, black bear, bobcat, raccoon, gray fox, black racer, red rat snake, cotton rat, cotton mouse, brown headed nuthatch, Bachman’s sparrow, southeastern kestrel, and pine warbler.

Prairie Grasslands: Prairie grasslands are characterized as nearly treeless plain with a dense ground cover of wiregrass, saw palmettos, and other grasses, ferns, and low shrubs. Some typical plants of prairie grasslands include: broom sedge, carpet grass, runner oak, Indian grass, love grass, blazing star, rabbit tobacco, pine lily, marsh pink, milkwort, goldenrod, muskymit, pawpaw, dwarf wax myrtle, gallberry, stagger bush, fetter bush, and dwarf

blueberry. Typical animals of prairie grasslands include: bobcat, spotted skunk, cotton rat, harvest mouse, least shrew, turkey vulture, meadowlark, bobwhite, loggerhead shrike, box turtle, black racer, burrowing owl, sandhill crane, grasshopper sparrow, crested caracara, and six-lined racerunner and coachwhip.

Longleaf Pine and Xerophytic Oak Forests: This vegetation community is characterized as a forest of widely spaced pines with few understory shrubs and dense ground cover of grasses and herbs. Pristine areas are dominated by longleaf pine and wiregrass, while areas that suffered agricultural disturbances are dominated generally by shortleaf and loblolly pines and old field grasses and herbs. Other typical plants include southern red oak, runner oak, blue jack oak, blackjack oak, post oak, sassafras, black cherry, gallberry, persimmon, mokernut hickory, twinflower, huckleberry, dangleberry, goldenrod, indian grass, partridge pea, goats rue, winged sumac, blueberry, dog fennel, sakeroot, golden-aster yellow jasmine, broom wedge, asters, pencil flower, bracken fern, greenbrier, fox grape, flowering dogwood, sweetgum, and blackgum. Typical animals include white-tailed deer, bobcat, grayfox, eastern fence lizard, eastern diamondback rattlesnake, gopher tortoise, fox squirrel, cotton rat, cottonmouse, barred owl, bobwhite, and red-bellied woodpecker.

Hardwood Swamp Forests: This vegetative community is characterized as a well developed hardwood and cabbage palm forest with a variable understory, which is often dominated by palms and ferns. Typical plants include cabbage palm, diamond leak oak, red cedar, red maple, swampbay, sweetbay, water oak, southern magnolia, wax myrtle, saw palmetto, bluestern palmetto, needle palm, poison ivy, dahoon holly, myrsine, hackberry, sweetgum, loblolly pine, Florida elm, swamp chestnut oak, American hornbeam, Walter vibunum, royal fern, pepper vine, rattanvine, yellow jasmine, and Virginia creeper. Typical animals include Gulf Hammock rat snake, gray squirrel, warblers, and flycatchers.

Mangrove Forest: A mangrove forest area has been identified in southwestern DeSoto County along the lower Peace River. This portion of the river has been declared a natural habitat of the endangered Florida Manatee. Manatees have been spotted in the area. Except for the fringe of hydrophytic trees, shrubs and scattered emergements, plants may be absent altogether, or they may almost completely cover the water surface. When present, typical plants include fragrant water lily, banana lily, American lotus, spatterdock, duckweed, water meal, bog mat, water fern, dollar bonnet, frog's bit, waterhyssop, water pennywort, coontail, millfoil, bladerwort, bog moss, and fanworts. Several exotic plants may also occur, including water lettuce, water hyacinth, salvinia, alligator weed, water spinach, parrot's feather, water chestnut, water sprits, hydrilla, and elodea. Scattered emergent plants such as lizard's tail, pickerel weed, slender spike rush and golden club may also occur, but the community will more appropriately be called Depression Marsh or Floodplain Marsh if emergents dominate the water body. Typical animals include river otter, beaver, little blue heron, great blue heron, green-backed heron, woodstork, white ibis, common egret, snowy egret, kingfisher, cottonmouth, brown water snake, banded watersnake, redbellied water snake, mud snake, Florida cooter, Florida soft-shell turtle, stinkpot, snapping turtle, eastern mud turtle, alligator, yellow-bellied turtle, Alabama water dog, sirens, amphiuma, tiger salamander, mole salamander, newts, leopard frog, cricket frog, river frog, pig frog, bullfrog, Florida far, redbfin pickerel, taillight shiner, golden shiner bowfin, lake chubsucker, brown bullhead, tadpole madtom, mosquito fish, star head top minnow, golden top minnow, pygmy killifish, pirate

perch, flier, warmmouth, bluegill, redbreast sunfish, dollar sunfish, blue spotted sunfish, swamp darter, and largemouth bass.

12. **Threatened and Endangered Species**

The Florida Fish and Wildlife Conservation Commission (FFWCC) compiled a listing of endangered and potentially endangered fauna and flora in Florida. The status of these species whose range included DeSoto County is listed in **Table CE-1**

The presence of the endangered Manatee in the Peace River is of special importance to Desoto County. The range of the Manatee in the United States is found only in coastal Florida. The Manatee is one of the few federally protected endangered species for which “Critical Habitat” has been designated. These critical habitat areas are protected under the Endangered Species Preservation Act. The Peace River from SR 760 south in DeSoto and Charlotte Counties has been designated as Critical Habitat. This designation applies to federal agency actions on development along this portion of the river; that is, dredge and fill permits or federally assisted programs.

The FFWCC has undertaken a survey of wading bird rookeries in the County. This survey located several sites used by nesting colonies of wading birds. Located in wetland marsh areas, these rookeries represented important wildlife nesting habitat. In addition, biologists from the FFWCC identified the extensive dry prairie grasslands and freshwater marshes of southeastern DeSoto County as some of the last remaining prime habitat of the Audubon’s Caracara bird in Florida.

13. **Commercial, Recreational, and Conservation Use of Natural Resources**

The following section provides an inventory of the commercial, recreational, and conservation uses of natural resources currently being practiced in DeSoto County.

a. Commercial

Commercial uses of natural resources include activities such as, agriculture and nature-based tourism. A description of these uses occurring in DeSoto County is provided below.

(1) Agriculture

The agricultural industries of citrus groves, nurseries, and livestock grazing are important commercial uses of the natural resources for DeSoto County. The economic impacts generated by these activities are considered substantial in the community. The income earned in these agricultural sectors of DeSoto County supports a range of jobs elsewhere in the County’s economy. Many secondary jobs are concentrated in the business and professional services sectors of agriculture.

(2) Nature-based Tourism

Nature-based tourism refers to environmentally responsible tourism that is based on the natural ecological features of the area as opposed to manufactured attractions or features. The Peace River is known for its natural beauty, which is why the nature-based tourism industry within DeSoto County is ever increasing. Nature-based tourism activities include

guided tours through nature preserves and waterways, camping, canoeing, kayaking, and birding. These environmentally based forms of tourism create revenues while preserving and protecting the environment.

b. Recreational

DeSoto County's abundant natural resources provide many passive recreational opportunities such as hiking, boating, camping, canoeing, hunting and fishing. The Florida Fish and Wildlife Conservation Commission regulate hunting and freshwater fishing in the State of Florida. Citizens wishing to hunt or fish may obtain a license at the Tax Collectors' Office or other locations designated by the Tax Collector.

c. Conservation

DeSoto County possesses a wide variety of ecosystems, many of which are environmentally sensitive. In an attempt to preserve and protect such delicate ecosystems, the Southwest Florida Water Management District and other agencies acquire land to protect and manage. The acquisitions fulfill a variety of needs such as reducing the risk of flooding, protecting and improving water quality, developing water supplies, protecting areas where rainfall recharges or replenishes water sources, restoring and managing uplands, and protecting wetland systems, such as headwater swamps and river floodplains. All of these lands serve to protect and restore natural systems.

C. ANALYSIS OF NATURAL FEATURES

This section analyzes the condition of natural resources in the County and shows how the management of these resources relates to the sustainability or growth of the County.

1. Surface Waters

A Federal permitting program jointly administered by the Environmental Protection Agency (EPA) and the FDEP, the National Pollution Discharge Elimination System (NPDES), regulates the discharge of pollutants into surface waters of the United States from one or more point sources.

Recommendations for the acquisition, improvement, restoration and protection of wetlands, floodplains and surface waters are considered together, primarily because the remedial and protective actions each requires will benefit each resource type. Although considerable efforts are underway by the SWFWMD, FFWCC, FDEP, and U. S. Army Corps of Engineers (USACE), DeSoto County needs to consider developing and implementing more effective local mechanisms to protect its good-quality wetlands, floodplains, and surface waters and their associated wildlife habitats. The County should continue to pursue the development and adoption of standards and rules for wetland and surface water acquisition, protection, and restoration. As part of the protection standards, regulations should be developed to allow for intelligent upland development while protecting the wetlands and surface waters. Such standards are necessary for preventing edge effects. Currently, the County defaults to SWFWMD's standards.

Regional cooperation and planning is vital to the future protection of wetlands and surface waters in the County. Development on the eastern side of the County could potentially have significant deleterious effects on the Peace River Drainage Basin.

a. Surface Water Quality of Watersheds

Water quality data contained in the Water Management District's Peace River Basin Plan indicated the presence of high phosphate and organic nitrogen levels in all streams sampled, with high ammonia and nitrate levels also present in some streams. The following information describes the Peace River Drainage Basin and water quality problems associated with the basin and DeSoto County.

Land use in the upper portion of the Peace River Basin, outside of the County, is predominantly agricultural with a large percentage of barren land (25%) that reflects the extensive phosphate mining activities. In the lower portion of the Peace River Basin, inside of the County, land use consists primarily of agriculture and rangeland. Pollution sources in the Peace River Basin include domestic sewage discharges, heavy industrial discharges from phosphate mining activities, chemical and citrus processing plants, and surface runoff from urban, agricultural, range and erosion from barren (mined) areas.

Most of the water quality problems originate in the upper portion of the basin, outside of the County, and exhibit very poor quality as seen in the elevated nutrients, periodic low dissolved oxygen, high phosphorus, and high bacteria. Some nutrient loading in this area is natural since waters flowing through phosphate strata have higher background concentrations. However, mining operations contributed far greater nutrient loading than background loads.

Where the river enters DeSoto County there are few point sources, and the non-point runoff shifts from mining operations to agricultural and rangeland. Because of this less intensive land use and with the confluence of Horse Creek, a relatively undisturbed tributary system, the Peace River exhibits fairly good water quality in DeSoto County.

b. Land Acquisition Programs

As stated previously, the Southwest Florida Water Management District is one of the agencies that acquire land to protect and manage. Monies from the Save Our Rivers Project are used for acquiring lands necessary for water management, water supply, and the conservation and protection of water resources. These managed natural areas provide approximately 3,681 acres set aside for recreation and environmental purposes and the long-term preservation of the County's water resources are dependent upon them. **Map CE-5** shows the location of the District's lands. **Table CE-2** describes each acquisition by its name, status of acquisition, the type of acquisition, and acreage.

c. Stormwater Management Programs

Stormwater runoff is a contributor of surface water pollution in the County and includes runoff from urban areas and agricultural lands. As the County grows,

stormwater management will become a more important factor in the control of surface water pollution.

The County should consider adopting a countywide Stormwater Management Plan. The Plan should emphasize non-structural approaches to surface water management, which include long-range land use planning that protects wetlands and promotes innovative techniques and strategies for the treatment of stormwater.

d. Best Management Practices

Best Management Practices (BMPs) have been defined as practices or combinations of practices, industrial techniques, and good housekeeping principles determined to be the most effective and practical known means of preventing or reducing the amount of non-point source pollution. The overall philosophy is to conduct everyday activities in an ecologically sound manner in order to keep pollutants out of the water.

In order to be effective, BMPs should be incorporated into a Stormwater Management Plan that is both feasible and economically viable.

2. **Groundwater**

Seawater intrusion is a problem in coastal aquifers in many parts of Florida. The problem is exacerbated where a highly permeable aquifer, such as the Upper Floridan Aquifer, extends off shore beneath the sea floor. Under virgin conditions, before development, fresh groundwater flows outward at the coastline and discharges to the sea off the coast. This outward discharge maintains a sufficiently high hydraulic head within the aquifer at the coastline to maintain the seawater/freshwater interface off shore.

As development of the aquifer occurs, groundwater that originally discharged beneath the sea floor is diverted by the pumping to wells. Groundwater levels decline in response to the pumping. With the decline in the hydraulic head the seawater/freshwater interface moves toward the land, and ultimately it moves on shore. The seawater/freshwater interface moves in an attempt to reach a new stable configuration.

The general condition of groundwater within the Upper Floridan Aquifer near the coast is that the seawater/freshwater interface is onshore and moving eastward (landward) within the most permeable portions of the aquifer. Numerous agency investigations that included both data collecting and model analyses were conducted to investigate the position of the interface and its rate of movement. The interface currently moves one to one and a half miles in fifty years, or at a rate of 200 to 300 feet per year. Wells that overlie the seawater/freshwater interface are at risk to seawater contamination.

In an effort to help prevent the problem from getting worse the Water Management District established the Southern Water Use Caution Area (SWUCA). As part of the strategy, the District proposed a minimum aquifer level over the entire SWUCA to preserve the freshwater resources of the Floridan Aquifer and stabilize the movement of the seawater/freshwater interface.

DeSoto County is located in the Southern Water Use Caution Area and even though the Floridan aquifer underlying the County is of good water quality, groundwater withdrawal within the County has an effect on the movement of the seawater/freshwater interface. It is

important that the County in conjunction with the Southwest Florida Water Management District protects aquifer recharge areas and caps abandoned free flowing artesian wells.

- Conservation and Reuse Programs

Voluntary residential and commercial water conservation can be achieved through the County's participation in water conservation efforts of the Water Management District. Locally, the County should consider the following items to help protect the quality and quantity of the County's groundwater resources:

Irrigation Hours Ordinance	Reclaimed Water Feasibility Analysis
Native Landscape Ordinance	Ultra-low volume Fixture Ordinance
Rain Sensor Device Ordinance	Water Conservation Based Rate Structure
Leak Detection and Repair Program	Water Conservation Public Education Program

- Protection of Recharge Areas

A process known as recharge, which is the percolation of rainwater into the soil, maintains groundwater reserves. Recharge can only occur in areas possessing suitable geological characteristics needed for recharge. The development of impervious surfaces such as roads, buildings, and parking areas reduces the area available for percolation, which, in turn, reduces the quantity of natural recharge to the aquifer. Since the majority of the water in the County is withdrawn from the aquifer, the protection of recharge areas should be given high priority. Even though the County has very little land that is of any recharge value, the County should consider aquifer recharge protection regulations.

3. **Water Demand**

The evaluation of necessary systems to meet domestic and commercial consumptive demand is based upon the entire system's ability to meet peak demands. The County's capacity exceeds the current demand and no service pumping improvements are needed to meet future demand. For additional information see the Potable Water Element of this Comprehensive Plan.

4. **Wetlands**

The Florida Land Use and Forms Classification System (FLUCCS) shall be used for classifying wetland types. FLUCCS is written for all land uses. All wetlands, as described in the FLUCCS, can be further described using the Florida Fish and Wildlife Conservation Commission (FFWCC) Classification System once detailed field visits are made.

Changes in wetland quality may be brought about from natural succession, enhancement through conservation and restoration programs, or degradation through development activities such as excavating (dredging), filling, ditching/drainage, clearing or edge encroachment, and mining. Off-site activities that cause indirect effects upon wetlands include the discharging of wastewaters and the artificial alteration of run-off flow in areas near wetlands. Edge effects result from the lack of protective buffer areas between developing uplands and adjoining wetlands. Wetland types vary in their ability to accept

development activities without diminishing wetland functions. For this reason the compatibility of development impacts must be defined in terms of wetland type, function and significance. The compatibility of each development impact is determined by comparing the effects of the activity on each wetland function and type. Channelization or ditching of wetlands for the purpose of surface drainage improvements can dewater the wetland. Another form of physical alteration of wetlands is mining or excavation. This process alters wetland biological functional values by replacing vegetative communities with open water. This can lead to degradation of water quality as the filtration processes of the wetland are removed.

Like most counties in Florida the wetlands of DeSoto County have suffered degradation through the impacts of development and agricultural practice; therefore, it is important that measures be taken to curb future degradation. There are multiple regulatory permitting programs administered by federal, state and regional agencies that provide the basic framework for the acquisition, conservation, restoration, and protection of wetlands throughout DeSoto County as well as the County's own Land Development Regulations. Described below are the agencies that provide regulatory oversight of the County.

- U.S. Army Corps of Engineers (USACE)
- Florida Department of Environmental Protection (FDEP)
- Florida Department of Transportation (FDOT)
- Southwest Florida Water Management District (SWFWMD)

In addition to their regulatory functions, the Water Management District provides wetland conservation and protection through the Save Our Rivers (SOR) program. The Save Our Rivers program uses monies from the Water Management Lands Trust Funds to acquire lands outright or other interest in lands the District deems necessary for water management, water supply, and the conservation, protection and appropriate use of water (including wetland) resources.

- DeSoto County Land Development Regulations

In addition to DeSoto County Land Development Regulations, the County has adopted in the Future Land Use Element of this Comprehensive Plan, a Conservation Overlay District to limit development of natural drainage features and wetlands. This overlay district includes the 100-year floodplain as defined by FEMA maps and all the wetlands as defined by USFWS. This overlay is described in more detail in the FLUE

The County requires all new development and redevelopment to obtain a stormwater management and dredge and fill permit from the Water Management District, Florida Department of Environmental Protection and the U.S. Army Corps of Engineers. It is recommended that the County monitors all stormwater management and dredge and fill permit applications within the County by coordinating with the SWFWMD, the FDEP, and the USACE. No final development orders permitting construction will be issued without the appropriate agency permits.

5. **Floodplains**

Floodplains are areas inundated during a 100-year flood event, as determined by the Federal Emergency Management Agency's (FEMA) flood insurance rate maps. The 100-year flood has been adopted by the Federal Insurance Administration (FIA) as the base flood for purposes of floodplain management. Floodplains slow the velocity of stormwater run-off and are valuable as wildlife habitats and groundwater recharge zones.

Flooding may occur throughout the year, but it is most common during the rainy season, from June to October. The potential for the most severe flooding is from rainfall associated with hurricanes and tropical storms or when the ground has been saturated from previous rainfall. Most floodplains occur within wetlands and around surface waters. Therefore, they are substantially protected from development as previously covered in the above Wetlands section.

It is important that the County remains current with the Water Management District's floodplain regulations that require development in the 100-year floodplain to use strict construction standards and site plan guidelines, including but not limited to, the maintenance of flood carrying and flood storage capacity for the protection of the natural functions of the designated floodplain. Recognizing the importance of floodplains and the problems caused by encroachment, the County has adopted standards to regulate development in the floodplains.

6. **Air Quality**

Presently, air quality in DeSoto County is relatively good. However, with the County's projected population and increased commercial activity and urbanization expected in certain areas, there is the concern that the potential for air quality degradation is increasing. However, good air quality can be maintained in the County by monitoring current air quality and initiating actions to prevent air quality degradation.

a. Monitoring

Eventually, the County should request that the establishment of an air quality monitoring station in the county. The monitoring station would be significant in developing long-term historical data and detecting air quality problems in sufficient time to address problems before they become insurmountable. Rises in carbon monoxide, lead, nitrogen and ozone, which result from the increase in motor vehicles, are the pollutants that should be monitored.

b. Management

In order to appropriately manage the factors that lead to poor air quality, they must first be recognized. This can be accomplished using the following methodologies.

(1) Evaluation

Future developments may need to be evaluated for their cumulative effects on air quality during the development review process. Air quality impact analyses should be prepared for those development and transportation projects suspected of causing violations of State air quality standards.

(2) Consistency with Land Use

Land use should be compatible with the maintenance of good air quality. Urban land uses should be buffered from stationary and linear pollution sources (roadways). Vegetation should be utilized, when possible to buffer air pollution sources. Facilities for housing the elderly, very young and sick should be located away from emission sources and development designs that reduce the need to travel should be encouraged. The inclusion of design features such as bicycle facilities and sidewalks in transportation projects, office parks, multi-family residential projects and commercial areas will encourage other forms of travel. Constructing multi-use developments, such as multi-use centers and planned developments, will also promote other modes of travel.

(3) Limitation of Emission

The primary efforts to control Carbon Monoxide (CO) emissions from motor vehicles are centered on the emission limitations mandated through the Federal Motor Vehicle Control Program (FMVCP) under the Clean Air Act. The FMVCP sets forth a schedule of continued reduction of CO from new motor vehicles. However, with population growth, the area wide emissions of CO could increase in area of increased traffic congestion.

7. Hazardous and Household Chemical Waste

Improper handling, storage, disposal, and use of household chemical waste are major considerations for hazardous waste management. It is essential that hazardous wastes, including household chemical wastes, be managed to provide the maximum protection to the environment and general public.

As previously stated, DeSoto County has developed a household hazardous waste collection program for the disposal of small quantities of hazardous waste. Currently, there are no known industrial sources of hazardous waste in DeSoto County.

8. Commercially Valuable Mineral Resources

Currently, there is no commercial mining of phosphate in DeSoto County. If mining operations should ever occur again in the County, the mine operator must obtain a performance bond prior to the issuance of a permit for mining activities, and is required to perform reclamation of mined areas pursuant to the regulations adopted by the SWFWMD and the FDEP.

DeSoto County sets forth in their Land Development Regulations, standards for mining to protect the health, safety, and welfare of the County's population. The LDRs detail zoning, review, setback, and inspection criteria, as well as standards for ground and surface water, and reclamation of the mined areas.

9. Soil Erosion

A major problem that erosion causes is the loss of topsoil. Loss of topsoil is damaging for essentially two reasons: first, productivity is reduced and secondly, it results in sedimentation in lakes and rivers.

Generally, soil erosion is not a problem in DeSoto County. However, soil erosion control practices should be applied whenever soils are disturbed to prevent problems from occurring.

10. **Vegetative Communities**

A wide variety of vegetative communities exist in DeSoto County. Several of these vegetative communities are sensitive and should be given special recognition.

a. Sensitive and Significant Areas

Since upland communities are usually less costly to develop than wetland communities and not as protected, they are extremely vulnerable to human encroachment. However, some upland communities that are home to several sensitive plants and animals warrant protection and conservation. . Two (2) upland communities, the sand pine scrub and dry prairie, are the home of plant communities imperiled in the State because of rarity or vulnerability to extinction due to biological or human factors. Development in these areas shall incorporate conservation techniques to assure the co-existence of the flora and fauna with these uses.

b. Invasive Non-Native Species

The exotic plant Brazilian Pepper is known to exist in DeSoto County. This species is considered undesirable due to growth characteristics, which can eliminate habitat for more desirable native vegetative species. The County should consider a program setting forth provisions for clearing development sites of these trees.

11. **Threatened and Endangered Species**

Habitat degradation and destruction have been cited by biologists and environmentalists as primary causes for reduction and loss of species in DeSoto County. According to Federal, State and local sources, the County provides habitat for 74 species under special protection laws. Unfortunately, special protection laws, in the past, have been species-oriented, with little or no concern for habitats. Regulating and monitoring species cannot guarantee preservation without protection and conservation for a diversity of native habitats.

The County should consider providing for the protection and/or conservation of threatened and endangered species in the Land Development Regulations. The regulations could require the developer to include the following information as part of the development review process:

- Identification of specific areas that contain threatened or endangered habitat or species as list by the FFWCC.
- Identification of specific alteration activities that will adversely impact threatened or endangered habitat or species.
- Habitat protection and or conservation measures that are compatible with the agricultural or residential development in areas containing threatened or endangered wildlife species and their habitats.

12. **Commercial, Recreational, and Conservational Uses of Natural Resources**

Commercial, recreational, and conservational uses of natural resources can be economically beneficial to the County when properly managed. The following aspects should be considered:

a. Commercial

The agricultural industry, in particular citrus production, is dependent upon the recognition that water resources must be treated as a potentially non-renewable resource. To sustain the economic revenues generated by this activity it must be recognized that it is inextricably linked to the careful use and control of water resources.

b. Recreational

The managed public conservation areas within the County should be protected in order to provide recreational opportunities, enhance the resource base, and retain the economic opportunities and benefits associated with the areas. These conservation areas must be seen not just as remaining space from development, but as an essential element determining the character and quality of the County.

As mentioned previously, one method of preserving uplands, wetlands, and riverine areas is to use them for recreation uses like for nature-based tourism, hunting and fishing.

c. Conservation

The County should consider the development of the following programs to provide protection and conservation the County's natural resources:

- Greenway Programs
- Restoration Programs
- Acquisition Programs
- Public Conservation Education
- Surface Water Conservation Program
- Groundwater Conservation Program

Table CE - 1: Listed Species Plant and Animal Species in DeSoto County

Scientific Name	Common Name	State Rank	Federal Status	State Status
Amphibians				
<i>Rana capito</i>	Gopher frog	S3	N	LS
Reptiles				
<i>Alligator mississippiensis</i>	American Alligator	S4	SAT	LS
<i>Drymarchon couperi</i>	Eastern Indigo Snake	S3	LT	LT
<i>Gopherus polyphemus</i>	Gopher Tortoise	S3	N	LS
<i>Lampropeltis calligaster</i>	Mole Snake	S2S3	N	N
<i>Macrochelys temminckii</i>	Alligator Snapping Turtle	S3	N	LS
<i>Neoseps reynoldsi</i>	Sand Skink	S2	LT	LT
Birds				
<i>Accipiter cooperii</i>	Cooper's Hawk	S3	N	N
<i>Aimophila aestivalis</i>	Bachman's Sparrow	S3	N	N
<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	S1	LE	LE
<i>Aphelocoma coerulescens</i>	Florida Scrub-jay	S2	LT	LT
<i>Aramus guarauna</i>	Limpkin	S3	N	LS
<i>Ardea alba</i>	Great Egret	S4	N	N
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	S3	N	LS
<i>Buteo brachyurus</i>	Short-tailed Hawk	S1	N	N
<i>Caracara cheriway</i>	Crested Caracara	S2	LT	LT
<i>Egretta caerulea</i>	Little Blue Heron	S4	N	LS
<i>Egretta thula</i>	Snowy Egret	S3	N	LS
<i>Egretta tricolor</i>	Tricolored Heron	S4	N	LS
<i>Elanoides forficatus</i>	Swallow-tailed Kite	S2	N	N
<i>Eudocimus albus</i>	White Ibis	S4	N	LS
<i>Falco columbarius</i>	Merlin	S2	N	N
<i>Falco peregrinus</i>	Peregrine Falcon	S2	N	LE
<i>Falco sparverius paulus</i>	Southeastern American Kestrel	S3	N	LT

Scientific Name	Common Name	State Rank	Federal Status	State Status
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	S2S3	N	LT
<i>Haliaeetus leucocephalus</i>	Bald Eagle	S3	LT,PDL	LT
<i>Ixobrychus exilis</i>	Least Bittern	S4	N	N
<i>Laterallus jamaicensis</i>	Black Rail	S2	N	N
<i>Mycteria americana</i>	Wood Stork	S2	LE	LE
<i>Nyctanassa violacea</i>	Yellow-crowned Night-heron	S3	N	N
<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	S3	N	N
<i>Pandion haliaetus</i>	Osprey	S3S4	N	LS*
<i>Picoides villosus</i>	Hairy Woodpecker	S3	N	N
<i>Plegadis falcinellus</i>	Glossy Ibis	S3	N	N
<i>Rallus longirostris scottii</i>	Florida Clapper Rail	S3?	N	N
<i>Recurvirostra americana</i>	American Avocet	S2	N	N
<i>Rynchops niger</i>	Black Skimmer	S3	N	LS
<i>Sterna caspia</i>	Caspian Tern	S2	N	N
<i>Sterna maxima</i>	Royal Tern	S3	N	N
<i>Sterna sandvicensis</i>	Sandwich Tern	S2	N	N
Mammals				
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	S2	N	N
<i>Mustela frenata peninsulae</i>	Florida Long-tailed Weasel	S3	N	N
<i>Neofiber alleni</i>	Round-tailed Muskrat	S3	N	N
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	S3	N	LS
<i>Trichechus manatus</i>	Manatee	S2	LE	LE
<i>Ursus americanus floridanus</i>	Florida Black Bear	S2	N	LT*
Plants				
<i>Hypericum edisonianum</i>	Edison's Ascyrum	S2	N	LE
<i>Nymphaea jamesoniana</i>	Sleeping Beauty Waterlily	S2S3	N	LE
<i>Rhynchospora harveyi</i> var. <i>culixa</i>	Georgia Beakrush	SH	N	N

Source: Florida Natural Areas Inventory and Land Design Innovations, 2005.

LEGEND

FNAI STATE RANK DEFINITIONS

- S1** = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range)
S5 = Demonstrably secure in Florida
SH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
SX = Believed to be extinct throughout range
SA = Accidental in Florida, i.e., not part of the established biota
SE = An exotic species established in Florida may be native elsewhere in North America
SN = Regularly occurring, but widely and unreliably distributed; sites for conservation hard to determine

FEDERAL LEGAL STATUS *Provided by FNAI for information only.*

- LE** = Endangered: species in danger of extinction throughout all or a significant portion of its range.
LT = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
E(S/A) = Endangered due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
T(S/A) = Threatened due to similarity of appearance (see above).
PE = Proposed for listing as Endangered species.
PT = Proposed for listing as Threatened species.
C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
XN = Non-essential experimental population.
MC = Not currently listed, but of management concern to USFWS.
N = Not currently listed, nor currently being considered for listing as Endangered or Threatened.

STATE LEGAL STATUS *Provided by FNAI for information only.*

- LE** = Endangered: species, subspecies, or isolated population so few or depleted in number or so restricted in range that it is in imminent danger of extinction.
LT = Threatened: species, subspecies, or isolated population facing a very high risk of extinction in the future.
LS = Species of Special Concern is a species, subspecies, or isolated population which is facing a moderate risk of extinction in the future.
PE = Proposed for listing as Endangered.
PT = Proposed for listing as Threatened.
PS = Proposed for listing as Species of Special Concern.
N = Not currently listed, nor currently being considered for listing.
LE = Endangered: species of plants that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S Endangered Species Act.
LT = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
PE = Proposed for listing as Endangered.
PT = Proposed for listing as Threatened.
N = Not currently listed, nor currently being considered for listing.

Table CE - 2: SWFWMD Conservation Lands

PROJECT NAME	ACQUISITION STATUS	ACRES
Lower Peace River Corridors	Proposed SWFWMD Fee Acquisition	2,179.54
Future Reserve	Proposed SWFWMD Fee Acquisition	8.53
Future Marsh	Proposed SWFWMD Fee Acquisition	323.48
Prairie/Shell Creek Corridor	Proposed SWFWMD Fee Acquisition	29.08
Prairie/Shell Creek Corridor	Proposed SWFWMD Conservation Easement	986.98
Future Reserve	Proposed SWFWMD Conservation Easement	360.64
Future Watershed	Proposed SWFWMD Conservation Easement	1,784.43
RV Griffin Reserve	SWFWMD Fee Acquisition	503.34
RV Griffin Reserve	SWFWMD Fee Acquisition	2.07
Lower Peace River Corridor	SWFWMD Fee Acquisition	154.7
Lower Peace River Corridor	SWFWMD Fee Acquisition	18.02
Lower Peace River Corridor	SWFWMD Fee Acquisition	6.68
Lower Peace River Corridor	SWFWMD Fee Acquisition	3.85
Lower Peace River Corridor	SWFWMD Fee Acquisition	1.28
Lower Peace River Corridor	SWFWMD Fee Acquisition	0.05
Bright Hour Watershed	SWFWMD Conservation Easement	2,991.22
TOTAL		9,353.89
	Subtotal of Fee Acquisition	689.98
	Subtotal of Conservation Easement	2,991.22

Source: SWFWMD and Land Design Innovations, 2005.

Figure CE - 1: Sarasota Air Quality

AIR QUALITY INDEX CHART

Geographic Area: Sarasota Co, Florida

Date Range: January - December 2004

Chart Type: Daily values

AQI Values: Maximum 135, Minimum 16, Percentiles... 90th 48, 75th 42, 50th 34, 25th 27

AQI Category: Days Good 333 (91%), Moderate 27 (7%), Unhealthy/Sensitive 4 (1%)

Main Pollutant: Days CO 13 (4%), O₃ 311 (85%), PM_{2.5} 24 (7%), PM₁₀ 16 (4%)

364 Days of AQI data selected

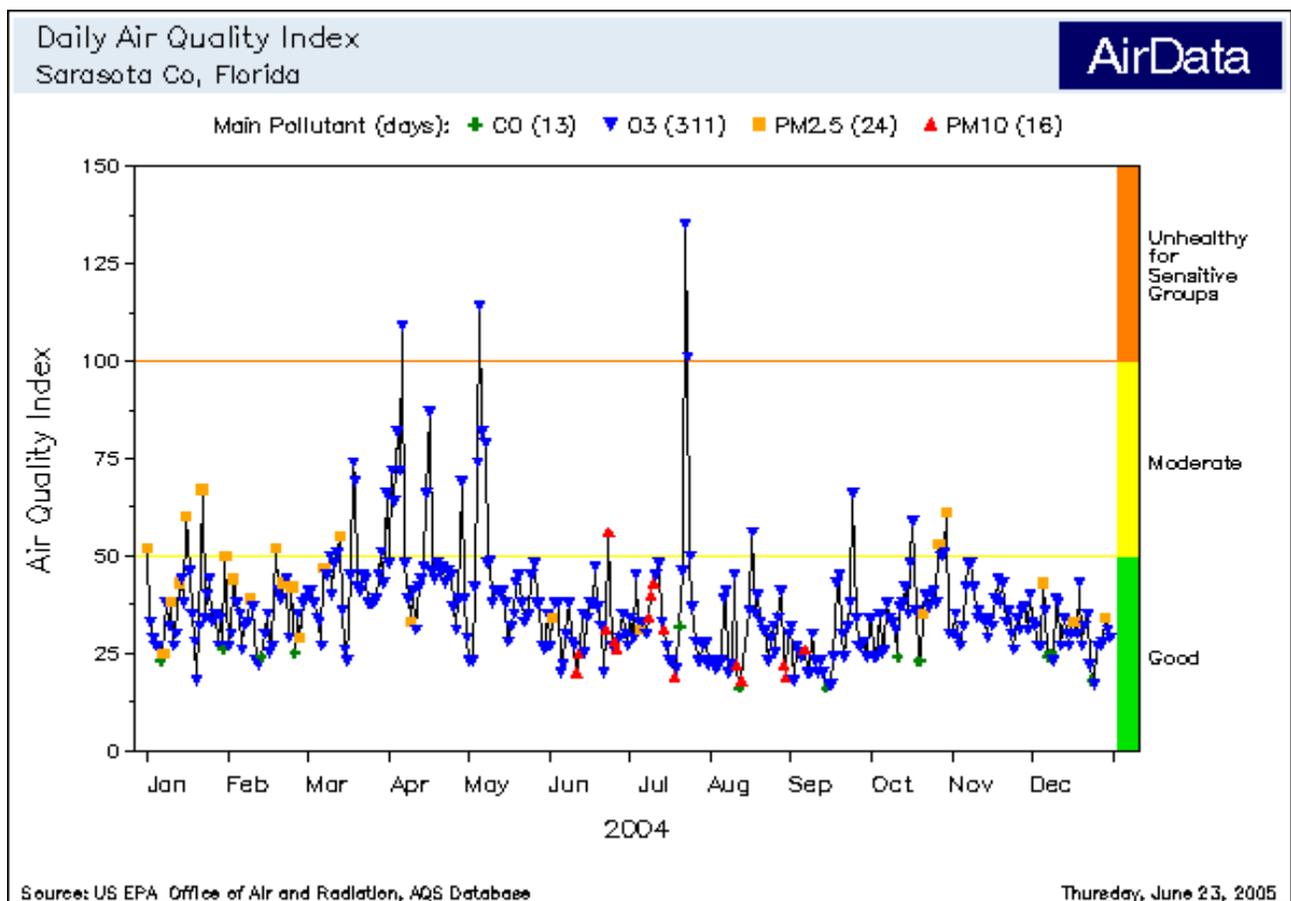


Figure CE - 2: Highland Air Quality

AIR QUALITY INDEX CHART

Geographic Area: Highlands Co, Florida

Date Range: January - December 2004

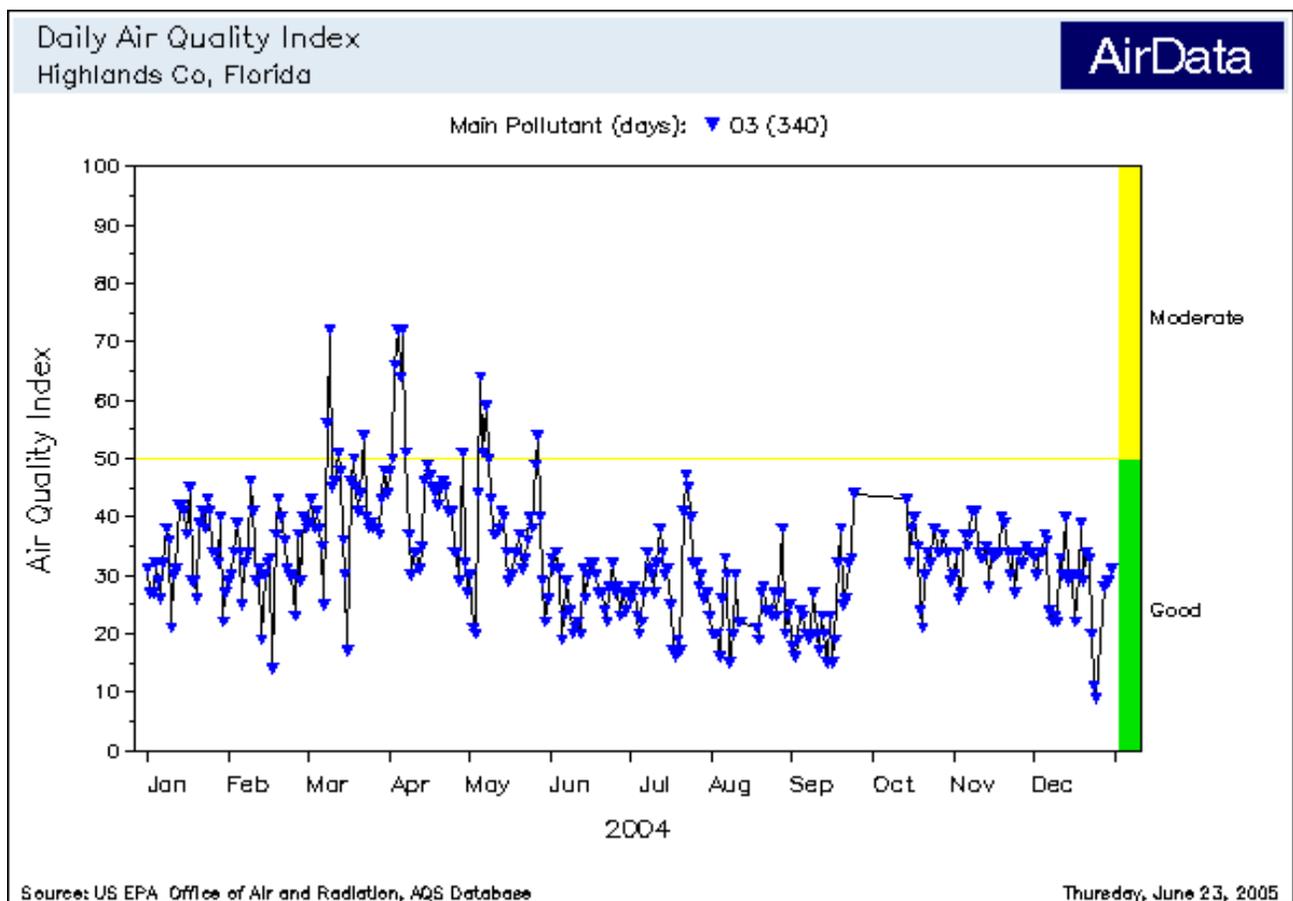
Chart Type: Daily values

AQI Values: Maximum 72, Minimum 9, Percentiles... 90th 45, 75th 38, 50th 32, 25th 27

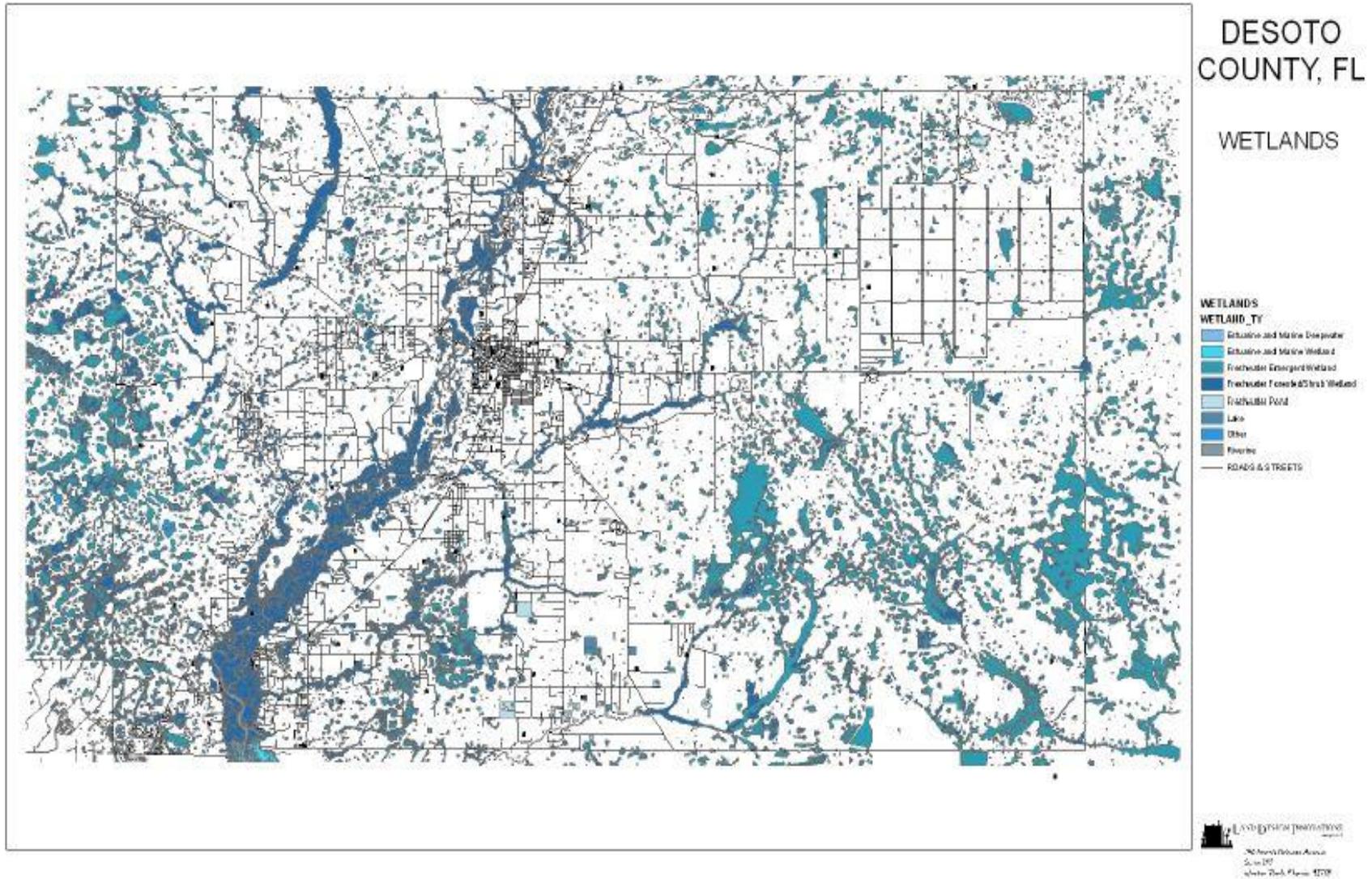
AQI Category: Days Good 326 (96%), Moderate 14 (4%)

Main Pollutant: Days O₃ 340 (100%)

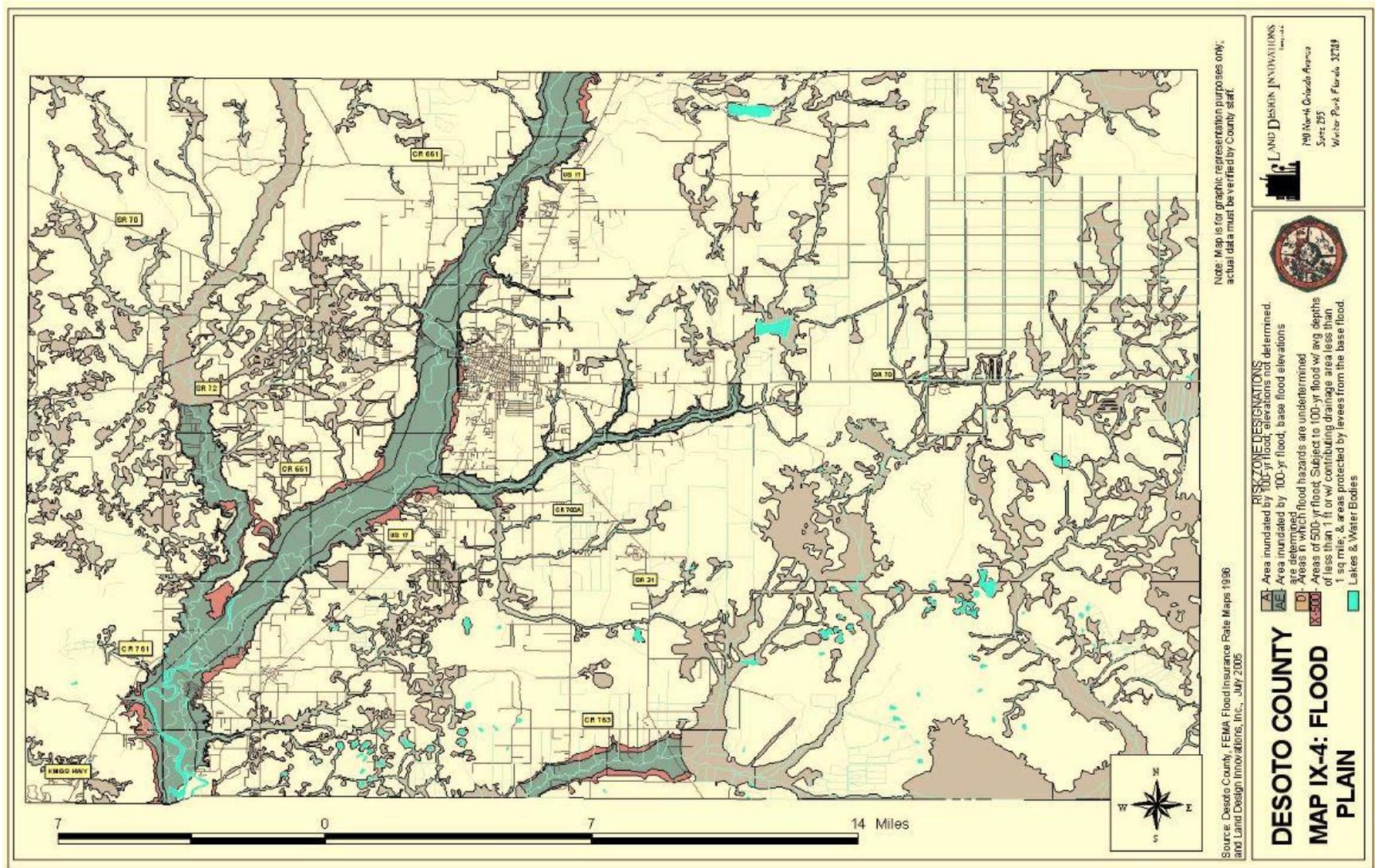
340 Days of AQI data selected



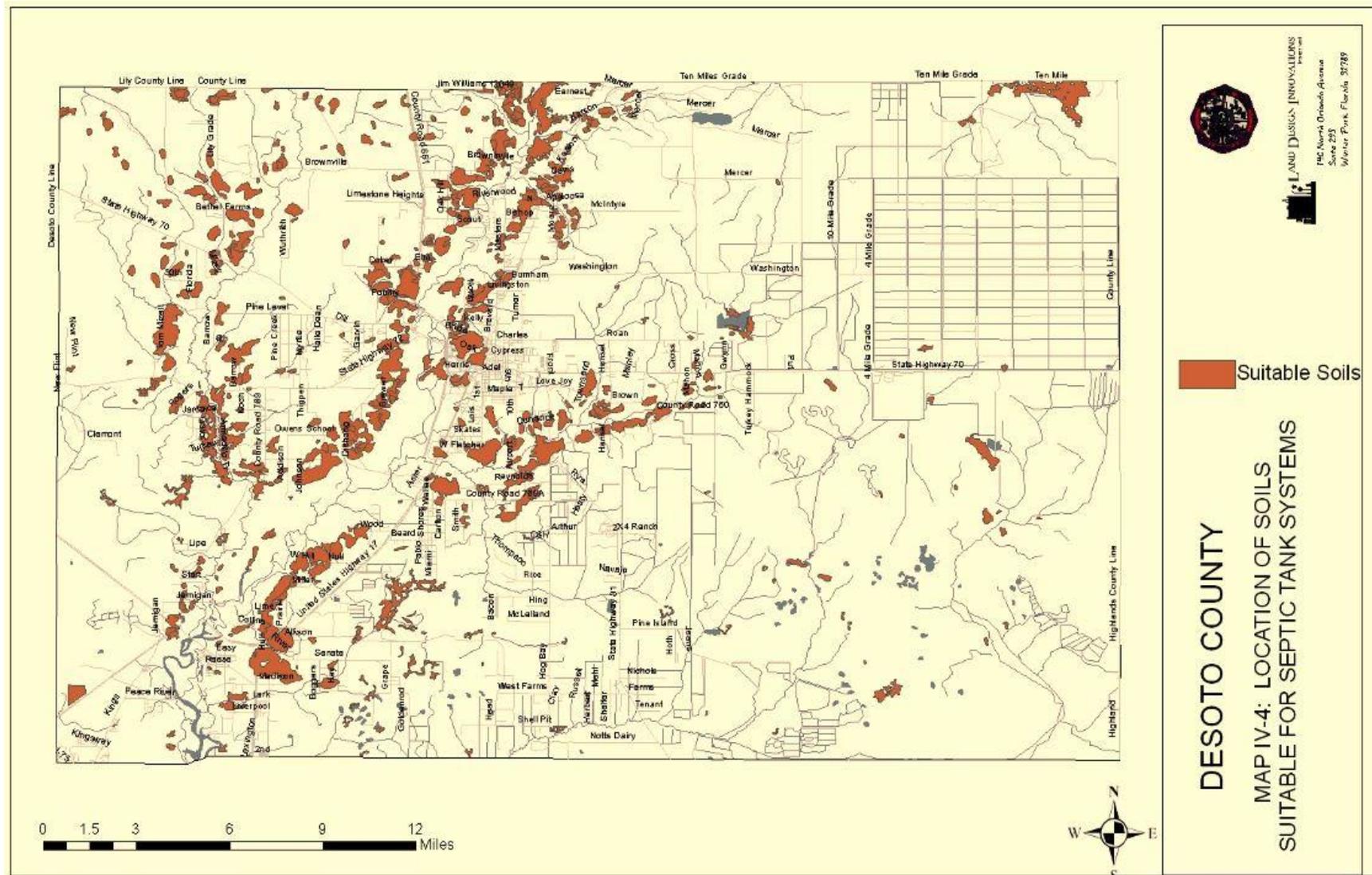
Map CE - 1: Wetlands Map



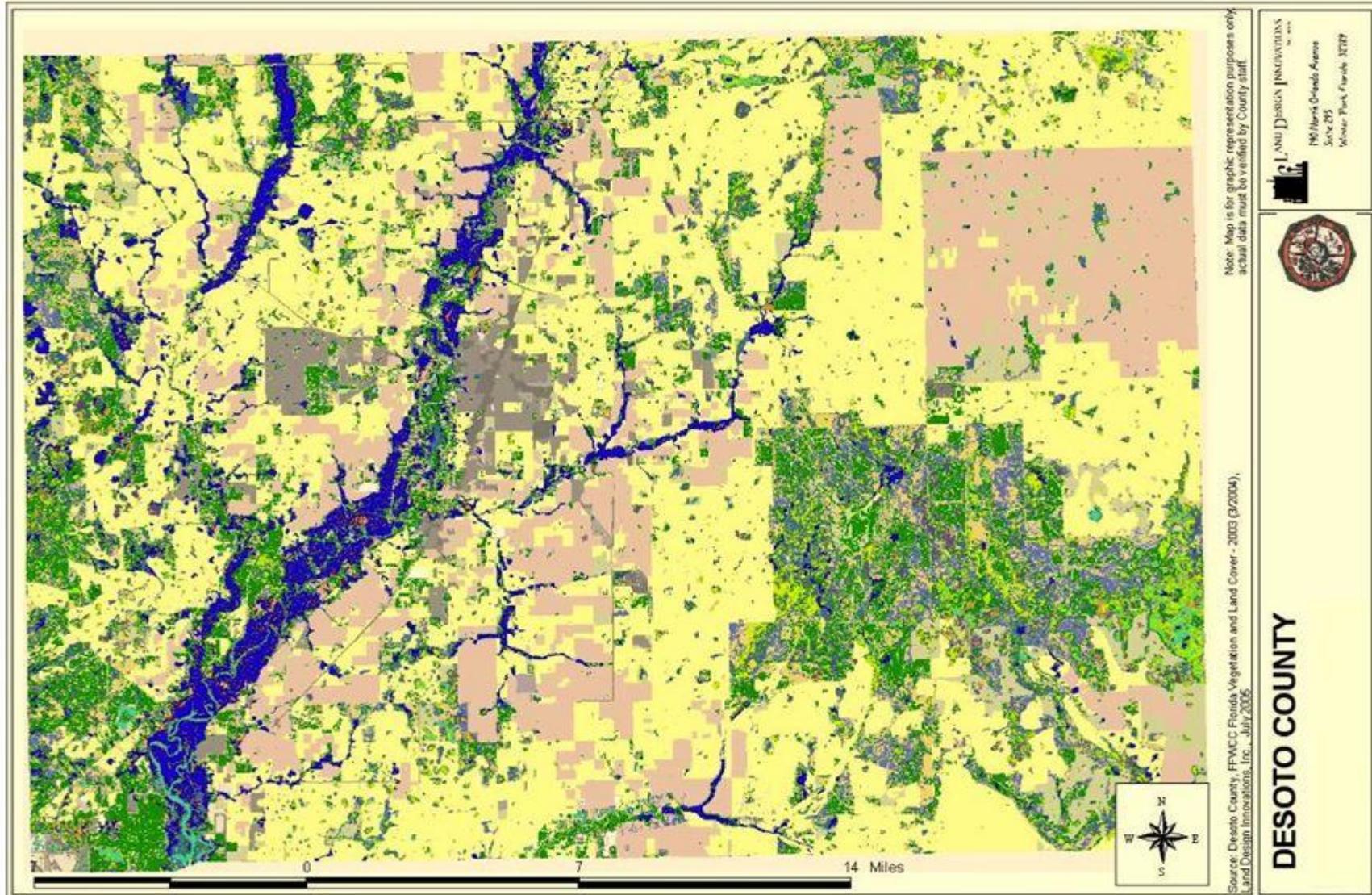
Map CE - 2: FEMA Flood Plain Map



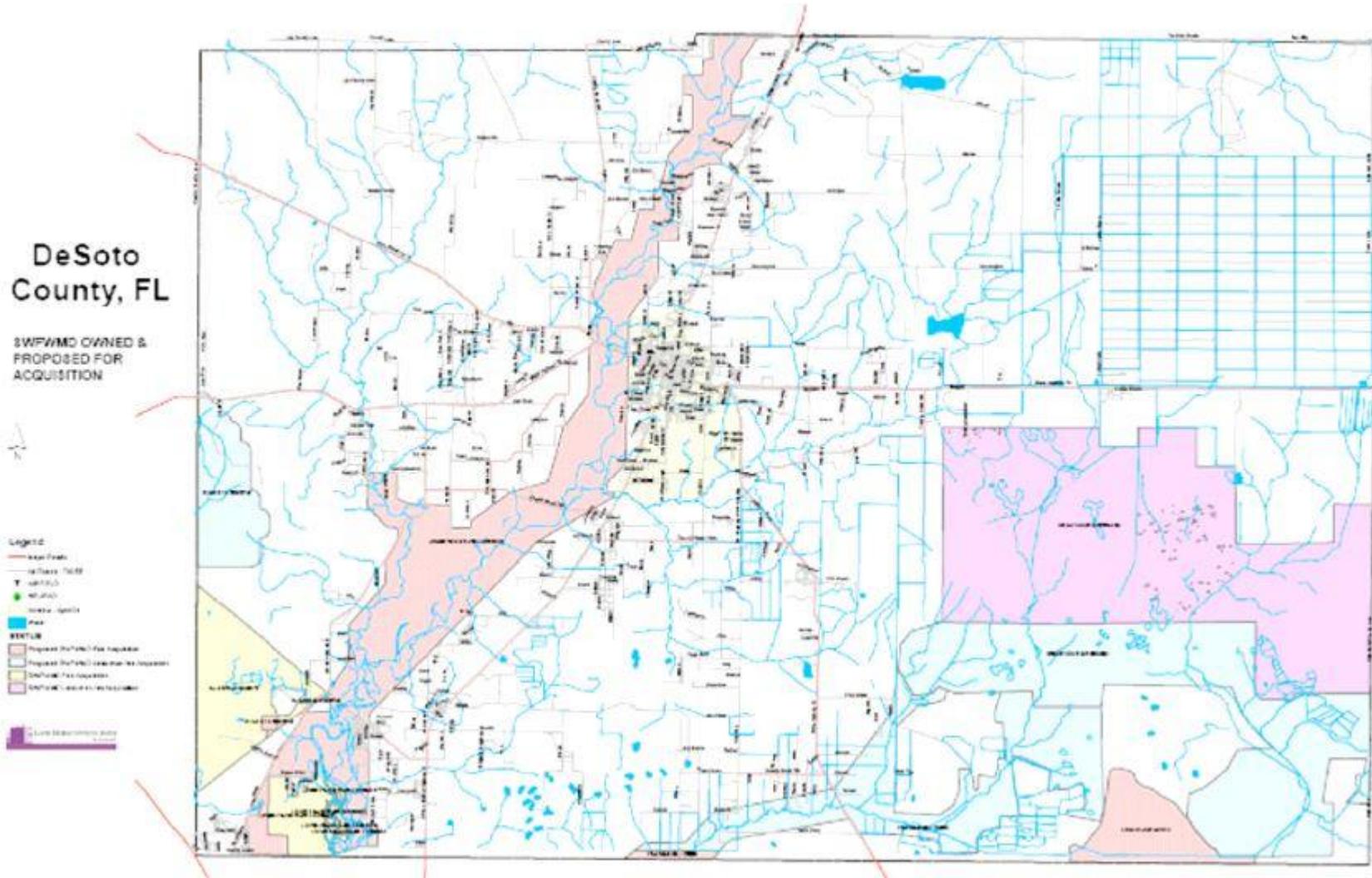
Map CE – 3: Soils



Map CE – 4: Vegetative Communities



Map CE – 5: SWFWMD Land Acquisitions



D. GOALS, OBJECTIVES AND POLICIES

GOAL 1: Protection and Conservation. To protect, maintain, restore, and enhance natural resources in order to maintain a living environment that supports a healthy, vibrant population and promotes the well being of all citizens and the natural environment.

Objective 1.1: Air Quality. DeSoto County shall prevent degradation of air quality in the County through development regulations and coordination with appropriate agencies and shall continue to meet acceptable ambient air quality standards set by the Florida Department of Environmental Protection..

Policy 1.1.1: DeSoto County shall continue to reduce the potential for automotive air pollution by requiring vegetative buffer strips between roadways and future multi-unit residential developments, and by assuring the continued operation of County roadways at established levels of service.

Policy 1.1.2: DeSoto County shall require new developments that discharge gases or particulates into the air to meet the minimum air quality standards as defined in Chapter 62.024, F.A.C., as amended from time to time..

Policy 1.1.3: DeSoto County shall cooperate with the FDEP upon the establishment of an air-quality monitoring station in the county, as necessary.

Policy 1.1.4: DeSoto County shall report suspected air-quality violations to FDEP,

Policy 1.1.5: By 2010, the County shall prepare and adopt rules and standards for the protection of air quality.

Policy 1.1.6: DeSoto County shall encourage alternative forms of travel such as bicycle ways/paths and pedestrian sidewalks as long-term strategies to protect air quality.

Objective 1.2: Groundwater Resources. The quality of DeSoto County's groundwater resources shall not be degraded, either directly or indirectly, by human influences below the minimum criteria for groundwater provided in Chapter 62-520-400 F.A.C., and shall be maintained, or as necessary improved, in a responsible and sustainable manner, to ensure the availability or quality of this resource for present and future generations.

Policy 1.2.1: Except for bona fide agricultural operations and incidental domestic uses, land use activities which utilize, store, or generate hazardous materials, or which involve the bulk storage or continuous transmission or petroleum products or other hazardous substances, shall be prohibited within recharge areas for the immediate aquifer system, and within cones of influence and watershed areas for public water supply wells. The agricultural and domestic exemptions shall not be construed to relieve those activities from compliance with applicable State and Federal regulations pertaining to the installation and use of above- or below-

ground storage tanks, or other structures or improvements intended for the use, storage, or generation of petroleum products or other hazardous substances. These land use activities shall be required to design be designed consistent with Chapter 3-5, Article XV, Surface Water and Wetland Protection.

- Policy 1.2.2:** The construction of new canals which may result in saltwater intrusion is prohibited by the Count if determined that such canals would not comply with the water quality standards provided in Chapter 62-302, F.A.C.
- Policy 1.2.3:** DeSoto County shall work with the Southwest Florida Water Management District to have active free-flowing artesian wells plugged under the Quality Water Improvement Program or by methods approved by the Southwest Florida Water Management District or other appropriate regulatory agency, and the County.
- Policy 1.2.4:** DeSoto County will review State and Federal agencies' monitoring of all closed or abandoned landfills in DeSoto County to determine whether such monitoring adequately assesses whether these pose a threat to the quality of groundwater resources. If the County determines that such agencies' monitoring does not provide reasonable assurance that such sites do not pose a threat to groundwater resources, DeSoto County will undertake monitoring as necessary to determine whether a threat exists and will take appropriate actions, including legal actions against known violators, to correct situations which pose a threat to the health, safety, and welfare or the general public.
- Policy 1.2.5:** By 2010, the County shall create local programs for identification, conservation, management, protection, and restoration of environmentally sensitive area, which shall include, but not be limited too, recharge areas and areas suitable for water withdrawal.
- Policy 1.2.6:** The County shall, in cooperation with FDEP and SWFWMD continue to monitor groundwater quality and levels.
- Policy 1.2.7:** DeSoto County shall monitor groundwater testing information on an annual basis to ascertain changes in water quality and quantity in the aquifer.
- Policy 1.2.8:** DeSoto County will cooperate with emergency water conservation measures of the SWFWMD.
- Policy 1.2.9:** DeSoto County should consider investing with SWFWMD and DEP for the acquisition and protection of lands along the Peace River and it's tributaries for long-term potable water protection.

- Policy 1.2.10:** All requests for development shall be reviewed to ensure that potential impacts of the proposed development do not degrade the water quality and quantity of groundwater resources.
- Policy 1.2.11:** To promote the conservation of groundwater, DeSoto County shall encourage the use of Best Management Techniques, which include landscaping that requires less irrigation, the use of solid waste compost, efficient irrigation systems, and the prohibition of exotic plant species.
- Policy 1.2.12:** By 2014, DeSoto County shall implement plumbing standards for water conservation included in the Standard Building Code.
- Policy 1.2.13:** When available, DeSoto County shall support connection of new development in the County to water reuse systems.
- Policy 1.2.14:** DeSoto County shall require any new County waste water treatment facility to establish a program for the reuse of the wastewater generated.
- Policy 1.2.15:** DeSoto County shall protect groundwater recharge areas throughout the County by requiring properly functioning stormwater management systems meeting drainage LOS standards and a minimum percentage of 15% pervious open space for all non-residential development projects and a minimum of 25% pervious open space for residential development projects. This may be further restricted in the LDRs through individual zoning districts and othe development performance standards..

Objective 1.3: Wellfield Protection. The County shall enforce provisions in its land development regulations for the conservation and protection of the quality and quantity of current and projected water sources, high natural aquifer recharge areas and public supply potable water wells.

- Policy 1.3.1:** DeSoto County shall continue to cooperate with the Southwest Florida Water Management District or other appropriate agency to identify cones of influence, water recharge areas and develop a comprehensive well head protection program by 2009. This program shall include provisions to further restrict incompatible uses and substances frond on the Florida Substance list known to have adverse effects on water quality and quantity. DeSoto County shall request funding assistance fromt the Southwest Florida Water Management District to accomplish this.
- Policy 1.3.2:** As interim measure between program adoption and the Southwest Water Management District's public water supply well cone of influence designation. DeSoto County shall establish a 400-foot radius from the base of a public supply potable water wellfield as a cone of influence and wellhead protection area. The first 200-foot radius shall be a zone of exclusion, where no development activities will be permitted.

- Policy 1.3.3:** Within the outer 200 feet of the wellhead protection area, the following will be prohibited: landfills, facilities for bulk storage, handling or processing of materials on the Florida substance list; activities that require the storage, use handling, production or transportation of restricted substances, agricultural chemicals, petroleum products, hazardous toxic waste, medical waste, or similar substances; feed lots or other commercial animal facilities; wastewater treatment plants, percolation ponds, or similar facilities; mines; and excavation of waterways or drainage facilities which intersect the water table.
- Policy 1.3.4:** In establishing an interim cone of influence for public supply potable water wellfields, DeSoto County recognizes that there exist public supply potable water wellfields which are located within 200 feet of their property boundaries and that implementation of the zone of exclusion may cause hardships to innocent neighboring landowners. Therefore, for those existing public supply potable water wellfields located at Live Oak Resort, Craig's RV Park, ARCADIA Village Adult Mobile Home Park, and DeSoto Village Mobile Home Park, the zone of exclusion shall not extend beyond the property lines of these listed developments unless there is a change in use.
- Policy 1.3.5:** No new public supply potable water wellfields shall be permitted to be closer than 400 feet to any property boundary line.
- Policy 1.3.6:** Establish a minimum 1,000-foot potable water wellfield protection zone to prohibit mining, animal facilities, wastewater facilities, storage of bulk hazardous toxic, chemical, fuel or other wastes.

Objective 1.4: Surface Water. DeSoto County shall pursue identification, conservation, protection, and restoration of surface waters from known and identifiable pollution sources. The surface waters of DeSoto County shall be protected to ensure that their quality is maintained or improved to, at a minimum meet the standards established by Chapter 62-302, F.A.C. and the Clean Water Act, 3 USC 1251..

- Policy 1.4.1:** Except for bona fide agricultural operations and incidental domestic uses, land use activities which utilize, store, or generate hazardous materials, or which involve the bulk storage or continuous transmission or petroleum products or other hazardous substances, shall be prohibited within any area included within the Special Surface Water Protection Overlay District or within any Conservation Overlay District. The agricultural and domestic exemptions, all which are reviewed prior to the issuance of the approved exemption, shall not be construed to relieve these activities from compliance with applicable State and Federal regulations pertaining to the installation and use of above- or below-ground storage tanks, or other structures or improvements intended for the sue, storage, or generation of petroleum products or other hazardous substances.

Policy 1.4.2: DeSoto County shall protect its surface waters through implementation of the following standards and guidelines:

- a) On-site sewage disposal systems, including their associated drainfields, will be located as far landward as feasible on waterfront properties so as to reduce or prevent unnecessary nutrient and pathogen loading into surface waters.
- b) The discharge of runoff, wastewater, or other potential sources of contamination into surface water resulting in the degradation of the quality of the receiving body below the standards set forth in, but not limited to, Chapter 62-, 62-4, 62-302, 626-520, 62-522, and 62-550, F.A.C., (including any anti-degradation provisions of section 62-4.242 (1)(a) and (b), 612-4.242(2) and (3) and 62-302.300, F.A.C.), and any special standards for Outstanding Florida Waters and Outstanding Natural Resources Waters set forth in Section 62-4.242(2) (3), F.A.C. (as required for environmental resources permitting process) will be prohibited.
- c) The most current best management practices identified in the Handbook, Urban Runoff Pollution Prevention and Control Planning, EPA/625/R-93/004, September 1993 which control erosion and limit the amount of sediment reaching surface waters shall be used during all development activities,
- d) Removal or control of submerged, emergent, or floating vegetation shall be limited to that necessary to provide reasonable access to aquatic weed control and conducted according to the guidelines provided in Chapter 62C-20 F.A.C., as permitted by the Florida Department environmental Protection and in compliance with control standards outlined in Environmental Control, F.S. 403 and 369. This policy shall not apply to the removal of nuisance species such as hydrilla, water hyacinth, or water lettuce.
- e) DeSoto County will continue to provide treatment for the control of aquatic weeds and mosquitoes as governed by Chapter 388 F.S. and where feasible, use non-chemical means and best management practices as alternatives to insecticides and herbicides.
- f) Withdrawal from, or discharges to, surface waters which alter hydroperiods shall require the appropriate permits through the Florida Department of Environmental Protection, Southwest Florida Water Management District, or the Army Corps of Engineers, and shall not reduce the quality or productive capability of water dependent ecosystems.
- g) Development proposals must demonstrate the post development discharges into surface waters, or diversion of freshwater inflow into surface waters, will not lower the quality or productive capability of the receiving water body. All development proposals which require Environmental Resource Permits as provided by Chapter 40D-4 and

62-330, F.A.C., will be reviewed for consistency with the other Elements of the Comprehensive Plan.

- h) All development proposals must demonstrate post development discharges into marine and estuarine systems, or waters which flow into estuarine systems will not adversely affect the aquatic system in question. Such discharge must not exceed the legal limit for established surface water quality parameters, including but not limited to, biological oxygen demand, dissolved oxygen, nutrients, bacteriological quality and turbidity, for the appropriate class water, as outlined in 62-302, F.A.C.

Policy 1.4.3: The County shall identify and require the creation of upland buffer zones, in accordance with the regulations of the water management districts, between development and surface water, environmentally sensitive areas, and wetlands in order to protect these natural resources from the activities and impacts of development.

Policy 1.4.4: DeSoto County shall protect water quality and quantity by implementing criteria and performance standards for alteration activities in buffer zones adjacent to surface waters and wetlands.

Policy 1.4.5: Buffer zones shall serve as protection to surface water from intrusive activities and impacts of development.

Policy 1.4.6: DeSoto County shall coordinate with State and Federal agencies to ensure proper approval is given for any alteration activities along surface waters.

Policy 1.4.7: DeSoto County shall require all new development within the County to conform to the drainage level of service standards and design criteria of Southwest Florida Water Management District.

Policy 1.4.8: DeSoto County shall strive to restore degraded wetlands and floodplains adjacent to surface waters in order to improve the quality of runoff into these surface waters.

Objective 1.5: Wetland Protection. Wetlands and the natural functions of wetlands shall be conserved, protected, and restored from activities which alter their physical and hydrological nature to ensure the filtration of water to enhance water quality, provide flood control, maintain wildlife habitat, and offer recreational opportunities, which enhance the quality of life in DeSoto County.

Policy 1.5.1: The County, as part of its development review process, shall require the coordination of development plans with the Florida Department of Environmental Protection, the Southwest Florida Water Management District or other appropriate regulatory agency, to assist in monitoring land uses which may impact potential wetlands as shown on the National

Wetlands Inventory (shown as part of the Conservation Overlay Area on the FLUM).

Policy 1.5.2: The County shall require that all development proposals be accompanied by evidence that an inventory of wetlands; soils posing severe limitations to construction; unique habitat; endangered species of wildlife and plants; significant historic structures and/or sites; has been conducted.

Policy 1.5.3: Wetlands identified in the County and as shown as part of the Conservation Overlay District on the Future Land Use Map and shown in **Map IX-1**, are general designations and actual wetland boundaries are subject to field verification at the time of Southwest Florida Water Management District or other appropriate regulatory agency permitting. Once verified as being wetlands, such lands shall be designated Conservation on the Future Land Use Map and development of such wetlands shall be restricted as stated herein.

Policy 1.5.4: The County shall prohibit all development within wetlands that upon completion of construction, including mitigation and/or reclamation, and within acceptable time frame, as designated within an approved permit, does not maintain or improve the function of biological systems at the site. Functions that may be considered include, but are not limited to:

- a) Provision of wildlife and fisheries habitat;
- b) Maintenance of in-stream flows and lake levels during periods of high and/or low rainfall;
- c) Erosion control;
- d) Water quality enhancement; and
- e) Natural vegetative communities

Policy 1.5.5: Development within wetlands shall conform to the following criteria:

- a) All permits from an agency with jurisdiction shall be approved prior to issuance of a final development order;
- b) All new development or redevelopment shall be designed to avoid impacts to wetlands. Where impacts cannot be avoided, impacts shall be minimized and shall be mitigated by wetland compensation or wetland enhancement. Wetland impacts, where unavoidable and where properly mitigated, as determined by state or federal agencies having jurisdiction, shall be permitted for:
 - 1) Access to the site;

- 2) Internal traffic circulation, where other alternatives do not exist, or for purposes of public safety;
- 3) Utility transmission lines;
- 4) Pre-treated stormwater management;
- 5) Preventing all beneficial use of the property from being precluded. If a site is such that all beneficial use of the property will be precluded due to wetland restrictions, the property shall be developed at a density of one dwelling unit per 20 acres;
- 6) If billable uplands are available, residential development shall be clustered away from wetlands such that wetlands and their functions are protected;
- 7) If buildable uplands are available on site, but the proposed development will cause or result in a disturbance of wetlands, residential development shall be transferred from the wetland portions of the site to the non-wetland portions at a density of one dwelling unit per 10 acres, unless otherwise listed within this Plan, and the unavoidable impact to wetlands be mitigated; and
- 8) Development activities subject to state or federal mining reclamation requirements that ensure the maintenance or improvement of biological systems at the site.

Policy 1.5.6: Mitigation activities for impacting wetland areas will be [permitted when the mitigation activities are intended and designed to restore wetland areas to their natural conditions, including water flows, hydroperiods, and native vegetative communities. Mitigation of wetland impacts will be from the Southwest Florida Water Management District, the Florida Department of Environmental Protection, and/or the U.S. Army Corps of Engineers, as applicable. The rate of mitigation shall be one-to-one, or as specified by the permitting authorities, whichever is more restrictive

Policy 1.5.7: The minimum setback shall be 50 feet and the average of all setbacks from the resource shall be 25 feet, or as permitted by an authorized agency. Areas designated as buffers shall preserve all natural vegetative cover, except where drainage-ways and access ways are approved to cross the buffer. Buffers may be supplemented only with native trees, shrubs, and ground covers.

Policy 1.5.8: All subdivision of land shall contain adequate uplands for the permitted use.

- Policy 1.5.9:** Phosphate mining shall be prohibited in those portions of the Peace River, Horse Creek, Joshua Creek and Prairie Creek, which are classified as forested wetlands.
- Policy 1.5.10:** Phosphate mining-related activity, such as dragline, and pipeline crossings and vehicle access, may be allowed under DRI or County mining permit conditions, if also approved by the permitting authority.
- Policy 1.5.11:** The use or storage of hazardous materials or wastes on the Florida Substance List shall be prohibited within wetland and wetland buffer areas. The landowner/developer shall be given an opportunity to define the jurisdictional wetland boundary and where it relates to the storage of substances.
- Policy 1.5.12:** The County shall consider developing a program to acquire critical wetlands for protection, flood storage, and implementation of a future stormwater master plan and restore them, if necessary.
- Policy 1.5.13:** Existing isolated wetlands may be incorporated into development projects in conjunction with SWFWMD criteria and any future County development regulations.
- a) No net loss of wetlands and functions shall be allowed. On-site design of a development shall: Comply with the wetland protection standards of federal, state, regional and local agencies.
 - b) Minimize impacts through innovative design layouts;
 - c) Compensate for impact by enhancing or restoring other degraded wetlands on the site, restore natural functions of other wetlands on-site, create new wetlands on-site, preserve significant upland areas, or off-site mitigation.
 - d) Mitigation through restoration of degraded wetlands on-site or preservation or restoration, if needed, of significant upland areas on-site will be encouraged rather than new wetland creation.
- Policy 1.5.14:** In case of inclusion of wetlands into the surface water management systems, the stormwater shall be pre-treated per the 'Water Management District'
- Policy 1.5.15:** The County shall study and develop criteria and standards for identification of wetlands, evaluating the significance of wetlands and for the proper use and activities allowed in wetlands, in conjunction with other authorized agencies.

Policy 1.5.16: The County shall require the developer to have a qualified professional to identify and certify the limits of all wetlands on the development plan. to identify and certify the limits of all wetlands on the development plans.

Objective 1.6: Floodplains and Floodways. DeSoto County shall ensure long-range protection and restoration of functions of the remaining floodplains.

Policy 1.6.1: The County as part of its development review process shall require the coordination of development plans with the Florida Department of Environmental Protection and the Southwest Florida Water Management District to assist in monitoring land uses which may impact potential floodplains as shown on FEMA Flood Insurance Rate Maps (FIRM) (shown as part of the Conservation Overlay on the FLUM).

Policy 1.6.2: The County shall require that all development proposals be accompanied by evidence that an inventory of soils posing severe limitations to construction; unique habitat; endangered species of wildlife and plants; significant historic structures and/or sites; and areas prone to periodic flooding (areas within the 100 year floodplain) has been conducted.

Policy 1.6.3: DeSoto County shall require that the extent to which any development or redevelopment is proposed to be placed in/on, to disturb, or to alter the natural functions of any of these resources be identified. Such identification shall occur at a phase in the development review process that provides the opportunity for DeSoto County to review the proposed project so that direct and irreversible impacts on the identified resources are avoided. Development other than phosphate mining shall be located away from the 100-year floodplain on the upland portion of the site. Where no upland exists, development may occur so long as all applicable environmental permitting requirements can be satisfied. All future subdivision of land shall contain adequate uplands for the permitted use.

Policy 1.6.4: Phosphate mining shall be prohibited in those portions of the 100 year floodplain of the Peace River, Horse Creek, Joshua Creek and Prairie Creek, which are classified as forested wetlands.

Policy 1.6.5: Phosphate mining-related activity such as dragline and pipeline crossings and vehicle access may be allowed under DRI or County phosphate mining permit conditions. The use or storage of hazardous materials or wastes on the Florida Substance List shall be restricted in the 100-year floodplain or within wetland buffer areas. The landowner/developer shall be given an opportunity to define the exact location of the 100-year floodplain or wetland boundary, where it relates to the storage of substances. Where such substances are otherwise regulated.

Policy 1.6.6: By 2010, DeSoto County shall develop additional rules and standards in its Land Development Regulations to further address the protection,

restoration, and acquisition of the natural and hydraulic functions of the 100-year floodplain in general and to address any specific problem areas which may already exist.

Policy 1.6.7: The County shall require the developer to have a qualified professional identify and certify the limits of the 100-year floodplain on the development plans.

Policy 1.6.8: DeSoto shall continue to participate in the National Flood Insurance Program administered by the Federal Emergency Management Administration (FEMA).

Policy 1.6.9: The County shall consider the acquisition or establishing a conservation easement of floodplains adjacent to surface waters.

Policy 1.6.10: DeSoto County shall continue to encourage flood control through non-structural means for surface water management.

Policy 1.6.11: DeSoto County shall identify and recommend floodplains that warrant acquisition and restoration under public and probate land acquisition programs to FEMA and the Water Management District.

Objective 1.7: Mining/Excavation. The County shall establish as provisions to the Land Development Regulations, procedures to appropriately protect the quality of air, water, land and wildlife resources from mining/excavation.

Policy 1.7.1: Phosphate mining operations, like all other development, shall be subject to the development review process. The following minimum standards shall apply to all phosphate mining in DeSoto County:

- a) Revegetation proposals for reclamation shall be based on the requirements of Chapter 62C-16 F.A.C., as amended from time to time.
 1. Finished slopes for reclaimed areas shall not be greater than one foot vertical to four feet horizontal. Where high surface flow velocities can be expected, suitable erosion protection shall be proposed.
 2. Provision shall be made to protect watercourses and wetlands in or near reclamation areas against siltation until vegetation is well established.

Policy 1.7.2: Reclamation proposals for mines shall provide for the perpetuation and accessibility of monitoring stations.

- Policy 1.7.3:** Relocations or increases in the flow of water coursed leaving the mine property shall not adversely affect downstream property owners or the environment.
- Policy 1.7.4:** Applications for mining developments shall include effective plans for spill emergencies. Such plans shall consist of a Spill Notification, Containment and Safety Plan for the clay settling areas, water recirculation systems, and reagent storage areas addressing such issues as inspection schedules, spill notification procedures, maintenance of warning systems and clean-up responsibilities.
- Policy 1.7.5:** The County shall continue to consider active and permitted mining operations and areas of mineral deposits in future land use decisions in order to avoid incompatible land use activities.
- Policy 1.7.6:** DeSoto County shall require surface mines and excavation pits to be reclaimed in an environmentally sound fashion following the cessation of mining/excavation activities.
- Policy 1.7.7:** Mine/Excavation areas converted to pond or lake areas should be designed to resemble a natural pond with littoral zone shelves and contours; a deep open-water limnetic zone (open water where photosynthesis can occur) free of rooted emergent and submersed vegetation; and, where feasible, a buffer of upland vegetation.
- Policy 1.7.8:** Mine/Excavation areas shall be returned to their natural configuration through the replanting of native trees, shrubs, and understory vegetation.
- Policy 1.7.9:** Mine/Excavation operators shall be required to demonstrate a workable reclamation plan and proof of financial responsibility before excavation permits are issued.
- Policy 1.7.10:** Resource extraction which will result in an adverse effect on environmentally sensitive areas, which cannot be restored shall be prohibited.
- Policy 1.7.11:** Wetlands, rivers, streams, floodplains, habitat of threatened or endangered species and species of special concern, prime agricultural lands, prime groundwater recharge areas, historically significant sites or other environmentally sensitive areas which cannot be restored shall be identified and protected by a prohibition on mining activities within those areas and the establishment of buffer zones around them. Restoration is defined as: “to put back the same thing that had previously existed, i.e., restore the type, nature and function of the ecosystem to the condition in existence prior to mining.”

- Policy 1.7.12:** Mineral extraction reclamation plans shall provide for restoration of pre-mining/pre-excitation pit drainage retention and detention in each affected drainage basin.
- Policy 1.7.13:** Reductions or increases in the flow of water courses leaving the mine/excavation property shall not adversely affect downstream property owners or the environment.
- Policy 1.7.14:** Applications for mining developments shall include effective plans for spill Notification, Containment and Safety Plan for the clay settling areas, water re-circulation systems, and reagent storage areas addressing such issues as inspection schedules, spill notification procedures, maintenance of warning systems and clean-up responsibilities.

Objective 1.8: Soil Management. The County shall appropriately manage soil data and protect against soil erosion and uses inconsistent with soils.

- Policy 1.8.1:** The County's Land Development Regulations shall continue to require that all site developments properly install and maintain erosion and sedimentation control devices, and that developers submit an erosion and sediment control plan before start of construction.
- Policy 1.8.2:** All disturbed soil areas shall be permanently stabilized upon completion of development activities, in order to reduce soil erosion.
- Policy 1.8.3:** Whenever possible, native trees, shrubs and ground cover shall be maintained on development sites to prevent soil erosion.
- Policy 1.8.4:** The County shall notify the local office of the U.S. Soil Conservation Service of any major soil erosion problems that may occur within the County's jurisdiction.
- Policy 1.8.5:** The County shall maintain soils records to be used in determining appropriate development usage.
- Policy 1.8.6:** The County shall not allow septic tanks in soils that do not adequately percolate.

Objective 1.9: Vegetative and Wildlife Communities. DeSoto County shall promote the protection, conservation, restoration, and appropriate use of wildlife and ecological communities.

- Policy 1.9.1:** The County shall work closely with the Florida Fish and Wildlife Conservation Commission (FFWCC) and private landowners to increase the public's knowledge of habitat protection and best management practices to protect endangered and threatened species, as well as species of special concern.

- Policy 1.9.2:** The County shall notify the Florida Fish and Wildlife Conservation Commission of the presence of any roosting, nesting, or frequented habitat areas for endangered or threatened wildlife occurring within its jurisdiction.
- Policy 1.9.3:** DeSoto County shall work with the Florida Fish and Wildlife Conservation Commission and the Soil and Water Conservation District to develop Best Management Practices for the protection of topographic, hydrologic, soil characteristics and vegetative factors in the site plan review process of proposed developments. Best Management Practices will be implemented through the County's Land Development Regulations, and are intended to provide for: erosion control on construction sites; retention and detention of stormwater runoff; and proper land use and buffering standards.
- Policy 1.9.4:** The County shall cooperate with adjacent local governments, as well as regional, state and federal agencies in the identification and management of natural resources. DeSoto County will incorporate comments from adjacent local governments in order to develop a consistent set of criteria for the protection of unique vegetative communities located within more than one local jurisdiction.
- Policy 1.9.5:** The County shall request assistance of the U.S. Soil Conservation Service to verify the County's inventory of unique vegetative communities.
- Policy 1.9.6:** The County shall coordinate during the development review process with the appropriate state and federal agencies for technical assistance in environmental issues regarding wildlife and native wildlife habitat.
- Policy 1.9.7:** By 2010, the County shall regulate and/or prohibit the following activities in areas identified as being environmentally sensitive and in areas containing endangered and/or threatened wildlife, to ensure that such areas are preserved:
- a. The removal, excavation, or dredging of soil, sand, gravel, minerals, organic matter, or materials of any kind;
 - b. The changing of existing drainage characteristics, sedimentation patterns, flow patterns, or flood retention characteristics;
 - c. The disturbance of the environmentally sensitive area's water level or water table by drainage, impoundment, or other means;
 - d. The dumping or discharging of material, or the filling of an environmentally sensitive area with material;

- e. The placing of fill or the grading or removal of material that would alter topography;
- f. The destruction or removal of plant life that would alter the character of an environmentally sensitive area or wildlife habitat; and
- g. The conduct of an activity that results in a significant change of water temperature, a significant change of physical or chemical characteristics of environmentally sensitive area water sources, or the introduction of pollutants.

Policy 1.9.8: Native vegetation protection regulations shall mandate fair and equitable restoration and/or compensatory mitigative measures in order to compensate for loss of vegetation and to enhance stabilization of fragile slopes and/or shorelines.

Policy 1.9.9: The County shall encourage new developments to protect existing native vegetation in common areas and buffer zones by granting credit for the existing vegetation during the development review process.

Policy 1.9.10: The County shall encourage additional planting of native plant species to enhance sparse vegetation in common areas and buffer zones by requiring inclusion of native species in the landscaping plan.

Policy 1.9.11: The County shall cooperate with and assist Federal and State environmental and wildlife preservation agencies in their efforts to protect fish populations within the County's water bodies and to promote environmental management activities, which enhance fish propagation through natural processes or by managed fish restocking.

Policy 1.9.12: Through zoning, site plan, and other local regulations, fisheries, marine habitat, native wildlife and wildlife habitat, including state and federally protected plant and animal species (endangered, threatened and species of special concern), shall be appropriately protected from new development by creating preservation/conservation areas within development areas and referring such issues to the appropriate jurisdiction for further assistance in the protection of this natural resource.

Policy 1.9.13: The County shall request the assistance of the Florida Fish and Wildlife conservation Commission to conduct inventories of State and federally protected plant and animal species in DeSoto county.

Policy 1.9.14: The County shall continue to regulate new development adjacent to the County's surface waters to ensure that such development does not degrade marine habitat such as mangrove and manatee habitat.

- Policy 1.9.15:** The County shall protect plant and animal species, including marine habitats and fisheries. The Land Development Regulations shall provide for clustering, open space, conservation easements, the use of Best Management Practices and mitigation of, or prohibit, the disturbance of said plant and animal species to accomplish their protection.
- Policy 1.9.16:** Developers shall be required to identify wildlife habitat, and endangered and threatened species as part of the development review process, and shall be required to submit mitigation measures for review as part of the County's development review process.
- Policy 1.9.17:** Annually, the County shall maintain updated maps from FFWCC showing the locations of habitat for endangered and threatened species and species of special concern, and unique natural areas.
- Policy 1.9.18:** The County shall coordinate with the City of Arcadia to ensure the protection of environmentally sensitive areas that cross jurisdictional boundaries.
- Policy 1.9.19:** DeSoto County shall require that an ecological survey be performed by a qualified environmental consultant prior to the approval of site clearing activities to determine if populations of endangered, threatened, or plant or animal species of special concern occur.
- Policy 1.9.20:** DeSoto County shall require that, for private development, in which alteration is unavoidable, the developer shall be responsible for establishing a mitigation plan for critical habitat.
- Policy 1.9.21:** DeSoto County shall recognize and allow pastures, groves, and other agricultural uses in the development of a wildlife management system, provided the uses referenced above do not threaten or endanger the survival of the wildlife species.

Objective 1.10: Agriculture. DeSoto County shall promote agricultural practices that produce a minimal disturbance to the County's natural resources.

- Policy 1.10.1:** Agricultural activities shall be conducted in accordance with Best Management Practices, and in a manner compatible with the need to protect, conserve and appropriately use wetlands, uplands and natural resources adjacent to lakes and streams and to ensure the protection of water quality within water bodies.
- Policy 1.10.2:** DeSoto County shall promote viable agriculture in the County's ranchlands and citrus groves.
- Policy 1.10.3:** The County shall adopt land clearing and land alteration regulations that include criteria for the protection and/or conservation of threatened or

endangered habitats or species and shall, at the same time, minimize adverse impacts to the economic viability of agricultural lands on which most of these habitats and species do occur.

Objective 1.11: Public Education. DeSoto County shall promote the education and environmental awareness of its citizens and visitors on issues relating to protection, conservation, restoration, and appropriate use of natural resources.

Policy 1.11.1: The County shall endeavor to educate, through the use of signage, brochures, press releases, and community meetings, the public on conservation issues.

Policy 1.11.2: DeSoto County shall cooperate with SWFWMD and the U.S. Soil Conservation Service to implement water conservation programs and to provide citizen education.

Objective 1.12: Historical, Archeological and Cultural. The County shall conserve significant sites and protect existing historical structures.

Policy 1.12.1: The County shall coordinate with the State Division of Historic Resources in continuing to identify, protect, analyze, and explain the County's historical, archaeological, and cultural resources, (such efforts shall include determination of their worth and vulnerability, as well as determination of specific applicable preservation management policies).

Policy 1.12.2: The County shall prohibit development activities in or adjacent to historic archaeological sites that depreciate or eliminate their historical value.

Policy 1.12.3: The County shall encourage registration of historically significant sites under Federal and State certified historical master files.

Objective 1.13: Sustainable Development. The County shall offer incentives to encourage sustainable development to protect its natural resources and enhance the quality of life.

Policy 1.13.1: DeSoto County shall encourage the use of Florida Green Building Standards for homes, commercial buildings, developments, and communities.

Policy 1.13.2: The County shall develop appropriate procedures for effective communication and for coordination of the planning, design, and construction processes, which include or affect vegetation growing within or to be planted in public rights of way.

Objective 1.14: Nature-Based Tourism. DeSoto County shall promote nature, historic, and cultural tourism practices that produce a minimal disturbance to the County's natural, historic, and cultural resources.

Policy 1.14.1: Tourism activities are to be conducted in accordance with Best Management Practices, and in a manner compatible with the need to protect, conserve and appropriately use resources

Policy 1.14.2: DeSoto County shall promote viable tourism throughout the County.

GOAL 2: Conservation of potable water resources. The County shall take steps to reduce potable water consumption and to conserve this natural resource by providing efficient supply and delivery

Objective 2.1: Reduce Consumption. DeSoto County shall reduce per capita water usage from a current 118 GPD identified in SWFWMD Regional Water Supply Plan to 95 GPD, by 2015.

Policy 2.1.1: The County shall evaluate and implement strategies to achieve a reduction in water consumption through various water conservation measures, consumer education, and develop programs to identify and repair leaking pipes and plumbing fixtures.

Policy 2.1.2: By June 2014, DeSoto County shall amend the Land Development Regulations to require a water conservation plan for new residential and non-residential subdivisions and planned unit developments. Each plan shall include at least one of the following: reuse of stormwater for irrigation or other non-potable water use, installation of low-flow fixtures, conversion of existing on-site well water for irrigation use and supplementation, use of water-wise vegetation, annual water audits performed by a certified water auditor, or other similar measures approved by the County.

Policy 2.1.3: DeSoto County Utilities shall coordinate with public entities, such as the Conserve Florida Water Clearinghouse (University of Florida), to obtain technical assistance in the collection of measurable baseline data that can be used to establish a set of benchmarks from which the effectiveness of the water conservation measures will be evaluated in the future.

Policy 2.1.4: DeSoto County shall encourage conservation of water resources by the enforcement of watering restrictions of customers, monitoring excessive water use and other active measures until non-compliance is corrected.

Objective 2.2: Reuse Water. The County shall continue to evaluate the feasibility of providing a public accessible reuse water supply

Policy 2.2.1: As part of future WSFWP updates, DeSoto County shall evaluate cost-benefit of providing reuse supply to high volume water users, such as agriculture and golf courses. Additional evaluation will include demand from large potable water irrigation users, such as residential developments.