

City of Margate Comprehensive Plan



Element VII Conservation Element January 2010

CONSERVATION ELEMENT

MARGATE COMPREHENSIVE PLAN

ELEMENT VII

CONSERVATION ELEMENT JANUARY 2010

Prepared by the Department of Environmental and Engineering Services, of the City of Margate, Florida. The 2009 update of this Conservation Element addresses the requirements of Florida Statute 163.3177(6)(d), and incorporates the City's 10-year water facility work plan.

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I. INTRODUCTION

A. Environmental Setting

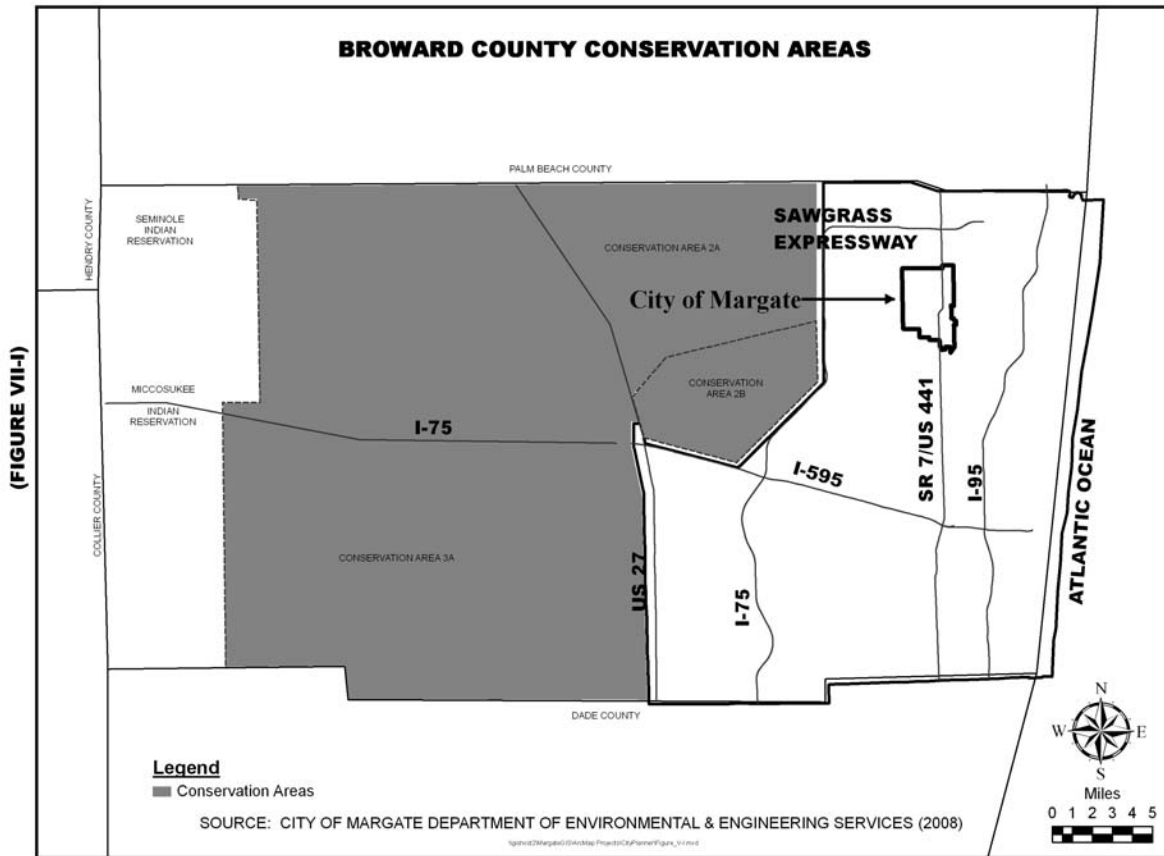
The City of Margate is located within the area of compact urban development of Broward County. Before focusing on the importance of conservation within the City, the user of this element should be aware that the majority of the land area of Broward County is designated as a Conservation Area. These Conservation Areas and the relative location of the City are shown in Figure VII-1

The Conservation Areas contain a total of about 790 square miles and are part of the last remaining freshwater wetlands in South Florida, the Everglades. A system of levees, canals, and dykes running from Lake Okeechobee to the Keys directs water into these large storage reservoirs to control flooding and to provide an aquifer recharge area for the cities of Southeast Florida, including the City of Margate.

Margate experiences a sub-tropical climate with an average annual temperature of about 75 degrees F. The City receives nearly 60 inches of rainfall per year, with the majority occurring during the rainy season lasting from June through October. The City's topography is nearly level, with elevations of 10 or more feet above sea level. This is slightly higher than the majority of Broward County. Soil associations are characterized by poor drainage, and in some areas of the City, hard limestone lies just beneath the surface.

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Figure VII- 1



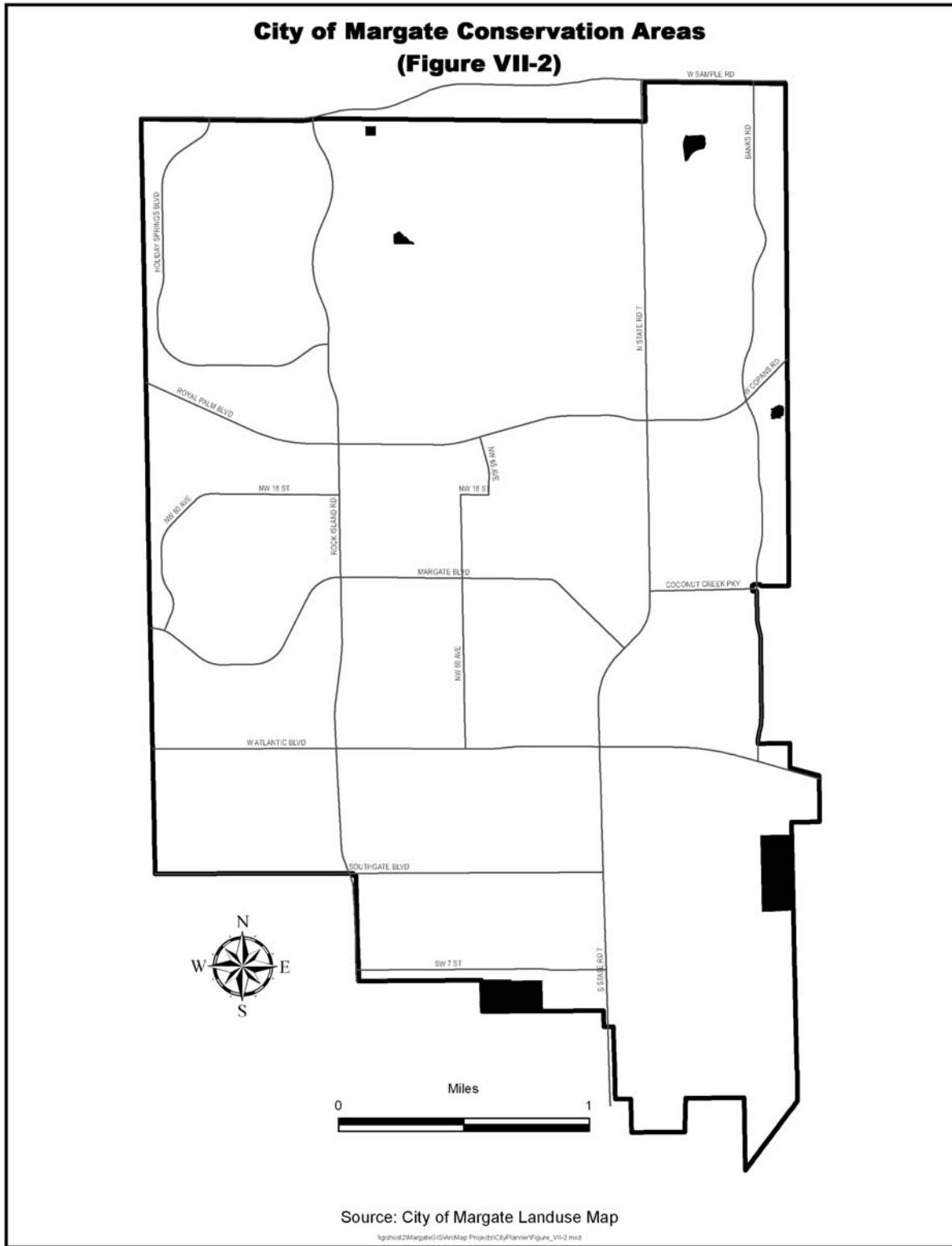
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Prior to urban development, the City contained (3) three different ecological plant communities. The variety stems from the interplay of soil conditions and water levels and movement/stagnation. The dominant community was the South Florida Flatwood. The natural vegetation consisted of scattered slash pine trees with an under story of saw palmetto and wild grasses. Typical animals of the Flatwoods include deer, bobcats, raccoons, squirrels, rattlesnakes, quail, larks, and woodpeckers.

Some southern sections of the City were part of the Cabbage Palm Hammock community. The native tree cover consisted mostly of sabal palms, oaks, and strangler ficus with an under story of myrtles and wild grasses. Wildlife included deer, turkeys, armadillos, raccoons, opossum, owls, hawks, and woodpeckers.

Isolated areas throughout the City are located in the Cypress Swamp community. These are low-lying areas that are under standing water for much of each year. Dominant trees include cypress, willow, and red maple. There are vines running up the trees and ferns covering the ground. Wildlife includes alligators, herons, egrets, storks, and a variety of snakes, turtles, and frogs. In part because the Cypress Swamp is the most difficult to develop, several isolated examples still exist in the city. These areas are shown in Figure VII-2.

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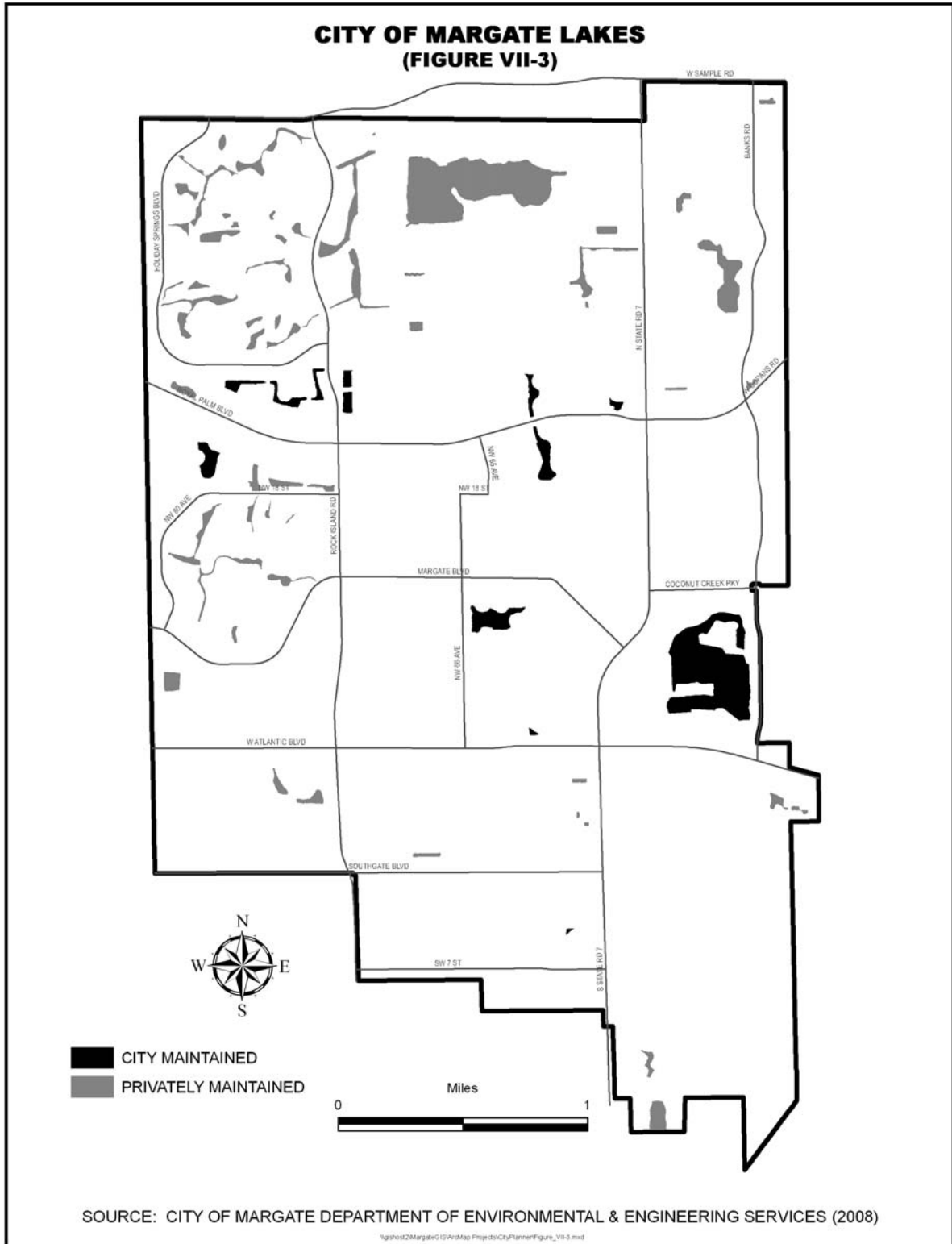
II. EXISTING NATURAL RESOURCES

A. Aquatic

The City of Margate is a non-coastal city. That is to say, it is not located on the shores of the Atlantic Ocean nor is it located abutting waters' of the State with marine species dominating the fauna (Chapter 380.24, Florida Statutes.). Also, the city does not contain any rivers or bays.

Located within the city limits are approximately 262 surface acres of lakes. These lakes were not formed from the processes of nature, but rather are the result of dredging operations. Of this total lake surface, the City of Margate holds ownership of approximately 89 surface acres with the remaining balance of approximately 173 acres being owned by private corporations or homeowner's associations. These lakes are identified in Figure VII-3.

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There are 53 acres of cypress-dominated conservation areas remaining within the City of Margate. These areas are shown graphically in Figure VII-2. The subject conservation areas are protected from development by public ownership, conservation easements, plat designation, tree preservation ordinances, and their use as drainage basins for surrounding developed sites.

These areas had been the lowest in topography in the predevelopment City. However, when present day Margate was an agricultural area, the farmers pumped silt-laden runoff into these naturally occurring low spots. The accumulation of sediments has resulted in an elevation differential of several feet at most. With the development of the surrounding uplands, several of these conservation areas have been cleared of encroaching exotic vegetation and are receiving more water today than they have in years. These factors are expected to stimulate their long-range viability.

The lake – canal - wetland system of the City was developed for the extraction of fill material and to provide flood control. However, this waterway system also functions to provide recreation and the propagation of fish and wildlife. Flood control and recreational use are often competing uses because storm water runoff is the principal source of pollutants that impact recreational use and fish and wildlife habitat. The use of pollutant retardant on-site drainage systems, including treatment through retention areas prior to discharge into the receiving water body, can help to reconcile these uses. The City also participates in an interlocal agreement with Broward County to meet NPDES, MS4 Permit requirements to further reduce pollutant levels.

The Broward County Environmental Protection Department (EPD) maintains a water sampling station at State Road 7 and the C-14 Canal. This is the primary receiving canal for all of the laterally branching secondary canals that have been constructed throughout the City. It is an intercity waterway that runs from the Conservation Area to the Atlantic Ocean. It is the most appropriate sampling location for the City.

The City maintains an interlocal agreement with EPD to analyze and report water quality parameters.

The recreational use of canals and lakes includes small-wake boating, fishing, and shoreline activities. However, it must be noted here that the Broward County Health Department has long promulgated a policy of discouraging bodily contact with inland bodies of water, i.e., no swimming. This policy should be heeded as a precautionary measure due to the uncertainty involved. It should also be noted that these canals and lakes drop off precipitously below the water surface.

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B. Floodplains

Floodplains are areas that are inundated below a certain elevation during the 100-year storm event. These areas are identified as an, "AH" zone by the Flood Insurance Rate Map of the National Flood Insurance Program. This program is administered by the U.S. Department of Housing and Urban Development. There is one such area located in the southeast quadrant of the City of Margate.

The Federal Emergency Management Agency revised the floodplains of Broward County on August 18, 1992. As mentioned previously, the majority of the land in Margate is classified as an "AH" zone on the Flood Insurance Rate Map, and has base flood elevations between 10 and 14 feet, depending upon the area. The remaining area within the City (See Figure I-18 in the Future Land Use Element) is designated as an "X" zone. These areas have been determined to be outside the 100-year floodplain. The City enforces minimum building slab grades at or above the appropriate base flood elevation. Margate participates in the National Flood Insurance Program, which makes flood insurance available to all residents. The City also maintains a Level 8 for the NFIP's Community Rating System. This program gives credit, in the form of discounted flood insurance rates, for Cities that go above and beyond the minimum flood criteria set forth by the NFIP.

The floodplain of the City of Margate has already been heavily urbanized. Because of the extensive man-made drainage system and re-contouring of the natural land, there is little left to demarcate the floodplain. Its potential for conservation and preservation is nil.

C. Valuable Resources

The only commercially valuable resource that is extracted from within the City limits is water. As detailed in Element III of this plan, the Margate Utilities Department has a wellfield in the approximate center of the City. The City's (12) twelve wells have a rated withdrawal capacity of 24 million gallons per day.

There is no mining activity at present in existence within the City of Margate. Since the City is relatively built out, an analysis of the location and nature of vacant lands within the City indicates that such commercial activity is not economically feasible.

Broward County is fortunate to be situated over the shallow, porous limestone formation called the Biscayne Aquifer. This proximity to the surface and high porosity make it easy to extract water for public consumption. However, this high transmissivity also allows contaminants to be quickly transported should they be spilled or leak onto the ground.

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The cone of influence of the Margate well field is identified on the Map of Land Uses in Element I. Land uses within this zone of influence have been kept to those which have a relatively low potential for groundwater contamination, e.g. single family homes, municipal baseball fields, houses of worship. In addition, Broward County administers a Well field Protection Ordinance that limits the storage and use of certain toxic chemicals within this zone.

To prevent the introduction of contaminants into the aquifer, the EPD has several programs. These include the storage tank-licensing program, which provides for monitoring wells; overfill protection, and secondary containment for all in-ground tanks. There is also a hazardous waste assessment program that requires special handling and containment of hazardous materials and an emergency cleanup plan. There are 3 authorized disposal sites for hazardous materials in Broward County, and there are several firms that temporarily store these materials before shipping them to the EPA approved site in Livingston, Alabama. These transfer stations are licensed by the EPD.

D. Soil Erosion

There are no areas in the City that have experienced soil erosion problems.

E. Wildlife Habitats

Urbanization has destroyed most major fish and animal habitats. However, the City has not been developed to an intensity that has eliminated all species.

The City's canal and lake system contains largemouth bass, gar, bream, and other small freshwater game fish. Fishing is generally good until a particular location becomes popular and is over fished. When left alone for a period, the fish population rebounds.

The canals are fertile breeding grounds for tadpoles, freshwater oysters, and a myriad of larvae. There are abundant numbers of Muscovy duck and an occasional alligator can be seen sunning along a canal bank or seawall. Alligators are removed on a complaint basis by agents licensed by the Florida Fish and Wildlife Conservation Commission.

Commonly seen birds include dove, mockingbird, cattle egret, and snake bird. Owls, vultures, and blue heron are still seen on a regular basis. Still living in the vacant areas and in parks and preserves are small animals such as raccoon, opossum, armadillo, and skunk. There are no known species within the City limits that are endangered, threatened, or of special concern.

In recent times, the City has been particularly aggressive with the preservation of indigenous trees. A combined effort of the City administration, Broward County, and the South Florida Water Management District has preserved thousands of slash pine, cypress, sabal palm, and other trees in the City. In 1991, Broward County's Tree

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Preservation Ordinance was strengthened to further restrict and penalize destruction of natural vegetation. This policy has also accrued commercial benefits to developers in the form of water management credits, reduced landscaping costs, and lowered irrigation costs.

The use of native tree and shrub species in landscaping and re-landscaping projects is required because they are adapted to the hydrological cycle of South Florida and are generally pest tolerant.

Broward County has review authority countywide, including within the City of Margate over an environmentally sensitive area if the area has been designated as a Local Area of Particular Concern (LAPC), a Unique Natural Area, or has been included on the Urban Wilderness Inventory. Prior to development, designated sites are reviewed to determine if adverse environmental impact exists. There are no Urban Wilderness Areas within the City.

Preservation of environmentally sensitive areas is accomplished through designation as a Local Area of Particular Concern LAPC. There are currently no designated LAPC's within the City.

The Tree Preservation Ordinance (Chapter 12 ½, Article II), City of Margate Code of Ordinances, is a mechanism for protecting habitats and preserving native vegetation. There is a permit system for tree removal based on this ordinance. The Development Review Committee conducts a review of the site plan submitted to determine whether removal of any trees is necessary for construction of the proposed development. If it is determined that tree removal is permissible under the conditions of the Ordinance, the Department of Environmental and Engineering Services (DEES) issue a permit.

Broward County adopted a countywide (including Margate) protective land-clearing ordinance to regulate removal of native vegetation in designated areas. Clearing may only occur in these areas in accordance with Broward County Ordinance No. 89.6. This ordinance protects the under story vegetation until such time as appropriate development permits have been issued.

F. Water Use

The City of Margate Department of Environmental and Engineering Services serves all of Margate and a portion of the City of Coconut Creek with potable water. Please refer to Figure III-1 in Element III for a map of the service area.

There are no residences or businesses within the service area that use on-site wells as their source of potable drinking water.

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The current potable water use within the service area is equal to 6.3 mgd, average daily consumption. The maximum one-day's water use in 2007 was 8.2 mgd.

A detailed description of the City of Margate water facilities, existing and future, is provided in Element III, Part I of this Comprehensive Plan. The 10-year water supply facilities work plan provided in Element III addresses the potable water needs of the residents within the City's service area through the year 2018.

As a conservation measure, the City has adopted, by reference, Chapter 40E-21 of the Rules of the South Florida Water Management District (SFWMD), the "Water Shortage Plan". SFWMD can declare water shortages of various degrees of severity. Depending on the phase of water shortage declared, the City will impose voluntary domestic limitations, mandatory system pressure reduction, line flushing, car washing, street cleaning, lawn sprinkling, and other use restrictions.

The purpose of the Plan is to raise public awareness of water resources and to emphasize the importance of water conservation.

Aquifer recharge primarily occurs as a result of rainfall, though during the dry winter months the canal system recharges the Aquifer with fresh water released from the Conservation Areas (see Drainage and Natural Groundwater Aquifer Recharge Elements). While the County receives an average of sixty inches of rainfall a year, because of evapotranspiration and other losses, such as runoff discharged directly from canals to the Atlantic Ocean, only fifteen to twenty inches actually reaches the Aquifer.

G. Air Quality

The Broward County Environmental Protection Department maintains air quality monitoring stations throughout the County and publishes a daily pollution standards index (PSI) rating for air quality. Air quality is typically in the "very good" range due to the County's flat terrain, nearly constant air movements, and abundant rainfall. However, two areas of concern regarding air quality exist: 1) Carbon monoxide caused by vehicular traffic, 2) Airborne particulate matter from excavation and construction activities.

III. ANALYSIS OF EXISTING CONDITIONS

Surface water quality declines during the summer months. Urban runoff caused by rainfall, when combined with high water temperature, creates a concentrated nutrient environment that promotes the growth of aquatic pests such as bacteria, algae and hyacinth, which deplete water of dissolved oxygen. Urban runoff also transports toxic materials such as pesticides, heavy metals, and hydrocarbons and dissolved inorganic materials.

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As development activity increases, the total amount of polluted urban runoff concurrently increases. Therefore, urban development and the drainage waters it produces have a serious negative impact on surface water quality (See Drainage and Natural Groundwater Aquifer Recharge Elements).

Lake excavation in the City is regulated by SFWMD, EPD, and the City's Department of Environmental and Engineering Services.

In general, the County, including Margate, has been managing floodplains successfully since 1977 through the review and permitting process. Even with the existence of flood control regulations and structures, however, flooding as a result of a natural disaster is still a major issue. As a result, the City of Margate is a recognized participant community in the National Flood Insurance Program.

The U.S. Department of Agriculture, Soil Conservation Service (SCS) has indicated that inland erosion is minimal with the exception of siltation at construction sites.

Depletion of habitat necessary to support species of plants and wildlife is a serious concern.

The Tree Preservation and Abuse Ordinance has been effective in protecting trees, habitat to native vegetation throughout the County. Enforcement of the Ordinance is performed by EPD, and permits are issued after a thorough review by County staff.

Preservation of habitats and native vegetation may be accomplished by developing mechanisms for controlling the clearing of lots. A land clearing ordinance, which prohibits clearing until a site plan has been approved by the appropriate unit of local government; and a vegetation protection ordinance, which requires developers to utilize existing native vegetation and plant communities in site plans wherever feasible, are both useful mechanisms. The SFWMD has developed a Model Landscape Code, which incorporates both methods.

Maintenance of good water quality in Broward County, including Margate, is dependent upon proper management of the Biscayne Aquifer. Saltwater intrusion is one of Broward County's most serious water quality problems. The saltwater intrusion line has been moving steadily westward for the past four decades. This has been caused by the drainage of freshwater wetlands and by increased pumping for potable water, irrigation, and other purposes.

Another serious water quality problem is wellfield contamination by industrial/commercial pollution. The EPD operates a groundwater monitoring system, which, aids in the detection of chemical contamination. The system consists of several wells, which are used to monitor the quality of groundwater surrounding the major wellfields and in undeveloped areas of high aquifer recharge.

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The Broward County Board of Commissioners adopted the Wellfield Protection Ordinance in August 1984. The purpose of the Ordinance is to safeguard public health by providing criteria for the regulation of storage, handling, use, or production of hazardous or toxic substances within the zones of influence of water supply wells. Enforcement of that Ordinance has reduced the possibility of future chemical contamination wells.

The City of Margate Department of Environmental and Engineering Services has an ongoing Water Conservation Plan, which is updated periodically to reflect the latest conservation measures and policies in the water supply industry. Water conservation is promoted through a host of measures, which are targeted at specific industries, the general population, and within the water treatment plants themselves.

In-house conservation measures include the reduction of water distribution system pressures during the off peak hours, and the reuse of in-plant process water.

In addition, the Margate City Commission has adopted FAC Chapter 40E-21 by reference at such time the South Florida Water Management District declares a water shortage condition exists. Graduated, detailed and specific water reductions are mandated in such an emergency, and are fully enforceable by law enforcement agencies.

The City of Margate Building Department included in its inspection procedures the requirement that new construction have water conservation flow control devices installed as required by Florida Energy Code (FEC).

EPD has adopted Hazardous Material Regulations and Storage Tank Regulations; these EPD regulations apply Countywide and also help to safeguard the County's water supply.

The Florida Department of Environmental Protection (FDEP) considers Broward, Dade, and Palm Beach counties as a single air shed. The Air shed is designated as an "attainment/maintenance" area for ozone.

The third area of concern centers on the potential impact of the two resource recovery facilities scheduled for construction on the ambient air quality in Broward County. In response, Broward County has agreed to install "scrubbers" in the new incinerators to reduce the level of air pollution expected from the facilities (See Element III).

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IV. GOALS, OBJECTIVES, AND POLICIES

GOAL TO CONSERVE, PROTECT, AND MANAGE THE NATURAL AREAS, MAN-MADE WATER AND LANDSCAPE FEATURES, AND THE BUILT ENVIRONMENT OF THE CITY OF MARGATE IN ORDER TO OBTAIN THE HIGHEST ENVIRONMENTAL QUALITY POSSIBLE.

Objective 1 The city shall protect and enhance air quality.

Effectiveness measure: Lower numbers on the Pollutant Standards Index.

Policy 1.1 The City shall continue to implement performance standards to limit industrial emissions, in accordance with FDEP and EPD standards.

Policy 1.2 Automobile emissions should be reduced by implementing capital improvement projects set forth in Element II thereby providing for better traffic flow and encouraging alternate travel modes.

Policy 1.3 Require any new facilities which is a source of air emissions to obtain an appropriate license from the Broward County EPD.

Policy 1.4 During land development, air pollution should be minimized through the use of environmentally approved mulching, spraying or grassing of exposed land areas.

Policy 1.5 Demolition/renovation projects shall comply with all asbestos regulations.

Policy 1.6 The City of Margate shall cooperate with Broward County and the Florida Department of Environmental Protection to maintain acceptable air quality standards.

Objective 2 The city shall protect the quality and quantity of its potable water source.

Effectiveness measure: Clean groundwater and lower per capita consumption.

Policy 2.1 Work with Broward County in the implementation of the Wellfield Protection Ordinance.

Policy 2.2 Work with FDEP and the EPD to insure the proper handling and disposal of hazardous substances.

Policy 2.3 Continue to implement SFWMD's "Water Shortage Plan" during periods of drought.

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Policy 2.4 The City Commission shall adopt Resolutions urging the public to conserve water by using specified conservation measures prior to declaration of an emergency water shortage by the SFWMD.

Policy 2.5 Prohibit storm water discharge from commercial and industrial facilities, other than dry detention, within zone (1) one of wellfield zones of influence as designated on the Future Land Use Map.

Policy 2.6 Reduce per capita water demand by implementation of a year-round public information and education program promoting residential water conservation.

Policy 2.7 Continue to require installation of water conservation flow devices as required by the Florida Energy Code as a condition for the receipt of Certificates of Occupancy

Objective 3 The city shall protect the quality of surface waters.

Effectiveness measure: Purity of lake and canal water.

Policy 3.1 All development activities shall be required to meet the standards of the SFWMD for quantity and quality of storm water runoff.

Policy 3.2 Work with FDEP and EPD to control point source discharges.

Policy 3.3 The City shall adopt and implement land development regulations requiring a minimum of 15 percent of net parcel area to be preserved as landscaped open space.

Objective 4 Protect and preserve remaining vegetative communities, and wildlife and marine habitats from destruction.

Effectiveness measure: Numbers of trees, plants, animals, and fish.

Policy 4.1 Remaining wetlands should serve as drainage basins for surrounding upland development and be protected from physical and hydrological alterations by the use of Best Management practices (BMP) of drainage system, such as routing treated runoff to adjacent wetlands in accordance with regulations of the SFWMD and EPD.

Policy 4.2 Require the preservation and integration of existing trees into new development and redevelopment by continuing to implement the Tree Preservation ordinance.

Policy 4.3 City shall continue to implement land regulations that are consistent with SFWMD regulations regarding littoral areas in lakes and canals.

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Policy 4.4 Prohibit hunting and trapping of animals within city limits.

Policy 4.5 The City shall utilize existing coordinating mechanisms identified on Table VIII-1 of the Intergovernmental Element to continue cooperation with adjacent cities for the conservation and protection of vegetative communities that extend to neighboring municipalities.

Policy 4.6 The City shall continue to implement landscaping regulations which address the use of xerotypic landscaping requiring minimal water, fertilizers, and pesticides.

Policy 4.7 The City, in conjunction with the County, shall protect and conserve, using the existing LAPC and UWA (Urban Wilderness Area) programs, those areas known to be reproduction, nesting and feeding areas for endangered and threatened animals.

Objective 5 The City shall continue to implement lake excavation regulations and require coordination with SFWMD, U.S. Army Corps of Engineers, and EPD, as appropriate, to ensure that excavation activities do not adversely affect the quality of air, groundwater, surface water, land, or wildlife.

Policy 5.1 The City shall ensure compatibility with the objective of developing littoral areas around lakes, and borrow pits consistent with the design standards promulgated by the SFWMD and the U.S. Army Corps of Engineers, at a minimum.

Policy 5.2 The City shall identify formerly mined areas and existing deposits of limestone sand and gravel and consider these in the Future Land Use Element to avoid incompatible land use activities.

Policy 5.3 A mining operation water use plan must be prepared and approved before new mining operations are permitted.

Policy 5.4 Phasing of extractive activities shall be used as a device to assure that only small areas are affected by such activities at one time.

Policy 5.5 Buffers shall be established and maintained between mining activities and adjacent existing and future uses to achieve an aesthetically pleasing landscape compatible with those land uses.

Policy 5.6 A reclamation plan shall be approved by the City before mining activities are permitted.

Objective 6 The City shall continue to implement regulations and monitoring techniques to protect and conserve areas considered sensitive or vulnerable to destruction.

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Policy 6.1 Areas known to include native vegetative communities shall be recommended for protective status as LAPC's. These are areas containing native plant communities of unique character and/or rare, or species of special concern and identified as remaining conservation areas on Figure VII -2.

V. IMPLEMENTATION AND MONITORING PROCEDURES

A. Implementation Procedures

The City Planner shall prepare a compendium of goals, objectives, and policies (GOP); achievement monitoring procedures; and updating procedures to be distributed to all departments, committees and agencies participating in plan implementation.

Those agencies shall be required to incorporate GOP's, under their authority, into their annual work programs and to request appropriations for operations and capital facilities necessary, to implement the GOP's during the annual operating and capital programming process of the office of the City Manager.

B. Monitoring Procedures

All objectives are monitored on a continuous basis. Achievement of Objectives may be evaluated based on continued cooperation with Broward County and the Florida Department of Environmental Protection and the adoption of vegetation preservation and other ordinances to protect quality of surface waters; well field protection; and preservation of wetlands. Average daily per capita water demand is the performance measure by which Objective 2 will be monitored.

The Department of Environmental and Engineering Services will be responsible for implementing the public information program and for monitoring the per capita demand on a yearly basis.

All objectives and policies of this element should be reviewed annually and revised to reflect easier methods of compliance.