

Chapter 4, Infrastructure Element

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Executive Summary for Stormwater Section

Stormwater management is the planned control of surface water runoff resulting from rainfall in order to prevent flooding and pollution. All development creates an impact to overland flow of rain water, and this element provides direction for ensuring that development impacts are mitigated by stormwater management facilities. This section of the Infrastructure Element establishes a goal for minimizing the flooding of lands and the degradation of water quality caused by storm events to ensure that the county's potable water is drinkable and that recreational water is swimmable and fishable.

A number of factors influence stormwater management in Charlotte County. These include federal, state, and local regulations such as the *Florida Statutes* and Administrative Codes, county stormwater ordinance, the Charlotte Harbor Surface Water Improvement and Management (SWIM) plan, the National Pollutant Discharge Elimination System, the Federal Water Pollution Control Act, and the approved Charlotte Harbor National Estuary Program Management Plan.

Charlotte County lies within two water management districts as shown in Map 4.39, the Southwest Florida Water Management District and the South Florida Water Management District. Both districts review stormwater management applications and issue permits for construction of facilities. The Southwest Florida Water Management District's (SWFWMD) jurisdiction covers the majority of Charlotte County including all of the urbanized areas. The South Florida Water Management District's area of jurisdiction is located in the southeastern portion of the county and includes relatively vacant and large tracts of land such as Babcock Ranch and the Telegraph-Cypress Swamp. These areas are generally designated on the Future Land Use Map as Agriculture and Resource Conservation.

In addition to the water management district permitting process, Charlotte County reviews subdivision plats and development proposals to ensure that development is approved and constructed in accordance with the standards established by the water management districts and the comprehensive plan.

Charlotte County began its development of a Master Stormwater Management Plan in 1996. It included the development and mapping of a drainage basin inventory, structural inventory and condition inspection, survey data, hydrologic and hydraulic analysis, prioritization and ranking of basins needing improvement, and a capital improvement plan.

Map 4.1 identifies the Charlotte County drainage basins. This data is important as the County is responsible for maintaining drainage from surface water run-off and its potential impacts to the existing areas as well as the future development and residents. The County has identified 73 drainage basins and their flows. These 73 drainage basins are located as follows: 19 in West County, 19 in Mid County, 22 in South County, and 13 in East County. The County has over 370 miles of manmade canals for a total area of 1,819,418.25 acres which drain into surface water bodies such as Charlotte Harbor, Lemon Bay, and Shell and Prairie Creeks.

The water quality of Charlotte Harbor is generally good according to the 2002 Southwest Florida

Regional Policy Plan which was prepared by the Southwest Florida Regional Planning Council. The predominant pollution problems are associated with development from accelerated urban runoff. Non-point sources represent the highest percentages of pollution loadings according to the Southwest Florida Water Management District.

The Goals, Objectives, and Policies section proposes that Charlotte County will perform maintenance of existing stormwater facilities and construct new ones according the Urban Service Area strategy with the following priorities: first priority - urban infill areas: second priority - suburban areas: and third priority - rural service areas. The County will also work towards meeting or exceeding the standards of the Federal government's National Pollutant Discharge Elimination System (NPDES). Minimum levels of service are established for new roadways and parking facilities, new construction, subdivision stormwater management facilities, and freshwater canals used for stormwater retention. Finally, in order to meet the concurrency requirement established by Rule 9J-5 of the *Florida Administrative Code*, Charlotte County will not issue a certificate of occupancy until the necessary facilities are in place to mitigate the impact of development or there is an enforceable development agreement or development order has been issued pursuant to the *Florida Statutes*.

Executive Summary for Solid Waste Section

Waste collection is a very important aspect of Charlotte County's service to its citizens. Proper and timely collection and disposal of waste assures protection of the general public's health, safety, and welfare. In order to provide suitable service, the County utilizes a public-private partnership. The County owns and operates a landfill located south of the City of Punta Gorda on Zemel Road, while depending upon private companies to collect and transport waste products to the landfill.

A host of federal, state, and local laws and rules regulate solid waste disposal in Charlotte County. The Federal Resource Conservation and Recovery Act (RCRA), which was adopted by Congress in 1976, regulates the disposal of municipal solid waste by setting minimum standards for waste disposal facilities. It also established resource recovery as a national priority and mandated that local governments make efforts to better utilize and manage the recycling of wastes. Florida's 1988 Solid Waste Management Act (Chapter 403, Part IV, *Florida Statutes*) greatly altered the management of solid waste for local governments within the state. The act required local governments to start recycling programs in order to reduce the amount of waste being deposited into landfills by 30 percent. In addition, counties were required to recycle at least fifty percent (50%) of newspapers, aluminum cans, glass, and plastic bottles. The act also addresses the disposal of various other wastes such as lead, acid, batteries, used oil and tires.

State regulations, including Chapter 62-701, *Florida Administrative Code*, outline specific state requirements regarding the operation and closure of landfills, the issuance of solid waste permits, and the handling of special wastes. Charlotte County has adopted its own local regulations to govern solid waste in order to be consistent with state, federal, and regional guidelines. Chapter 4-4 of the Charlotte County Code establishes sanitation franchise districts for all of unincorporated Charlotte County, excluding the bridgeless barrier islands and agricultural zoned properties. Only one district for the entire unincorporated county currently exists. Chapter 1-12 regulates the operation of the landfill and service collectors within the county. In effect, it implements the programs required by the Federal and State governments, as well as the comprehensive plan.

The Zemel Road Landfill is Charlotte County's only operational Florida Department of Environmental Protection Class I landfill; it is located in South County approximately ten miles south of the City of Punta Gorda and one mile north of the Lee County line. The landfill property spans an entire section of 640 acres, and operates under a Class I permit issued by the Florida Department of Environmental Protection. The five-year permit was issued on July 20, 2004. This permit allows Charlotte County to use 102 acres for disposal cells. The remaining 538 acres are devoted to wetlands mitigation, future disposal cells, temporary holding areas for specific waste, and an administration building. The dominant soils at the site are Boca fine sand and Pineda fine sand, both of which are relatively poorly draining soils. The Zemel Road Landfill has sufficient capacity to serve Charlotte County until the year 2023 (see Table below). Remaining capacity is 4,759,705 cubic yards.

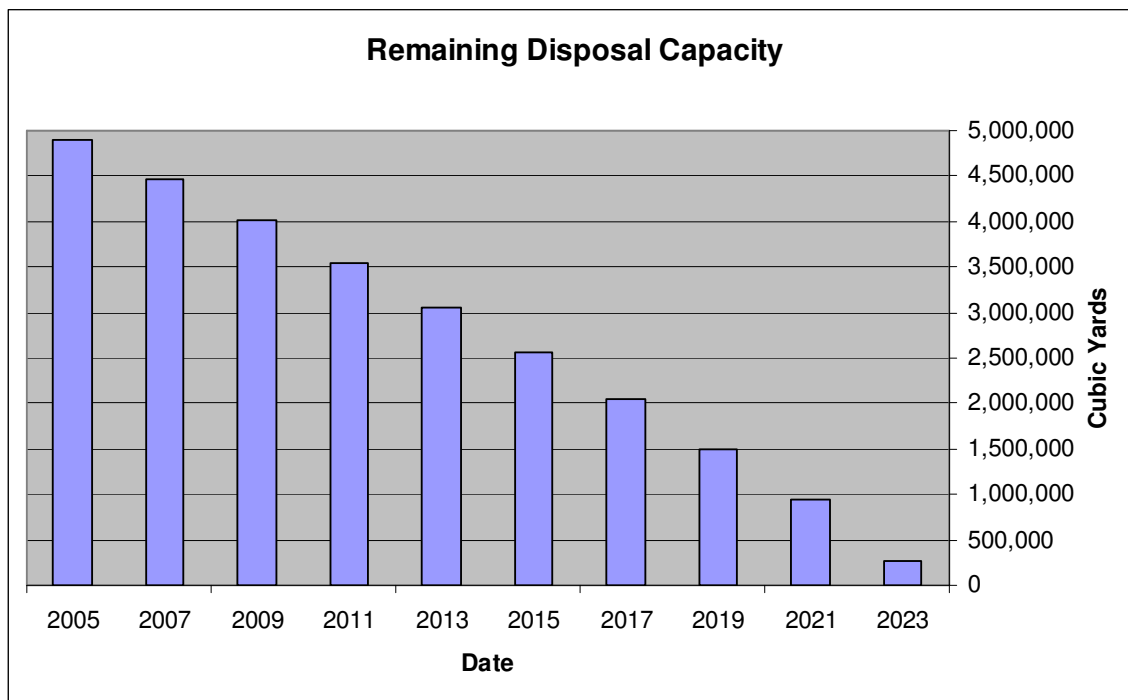
Table 4.1 Estimated Zemel Road Landfill Capacity (In Cubic Yard)	
Remaining Capacity	4,759,705

Source: Remaining Air Space & Site Life Calculations Report, prepared by SCS Engineering, February 2007

Charlotte County has two municipal solid waste collectors: Waste Management Inc., of Florida, for all unincorporated regions of Charlotte County, and the City of Punta Gorda. The City of Punta Gorda hauls waste only from within city limits. A Municipal Service Benefit Unit (MSBU) has been established to collect fees to support the collection of solid waste in the Charlotte County Sanitation District.

There are no major development impacts which will adversely affect solid waste collection within Charlotte County over the next two planning increments of five and ten years. The landfill is a fairly new facility with modern buildings and equipment, and a leachate treatment plant and injection well. Projections indicate that it has sufficient capacity to dispose of solid waste until 2022. The landfill's remaining disposal capacity might be extended beyond 2022 if Charlotte County residents successfully continue to recycle more than 30% of their generated waste effectively keeping large amounts of recyclable materials out of the waste stream.

Chart 4.1



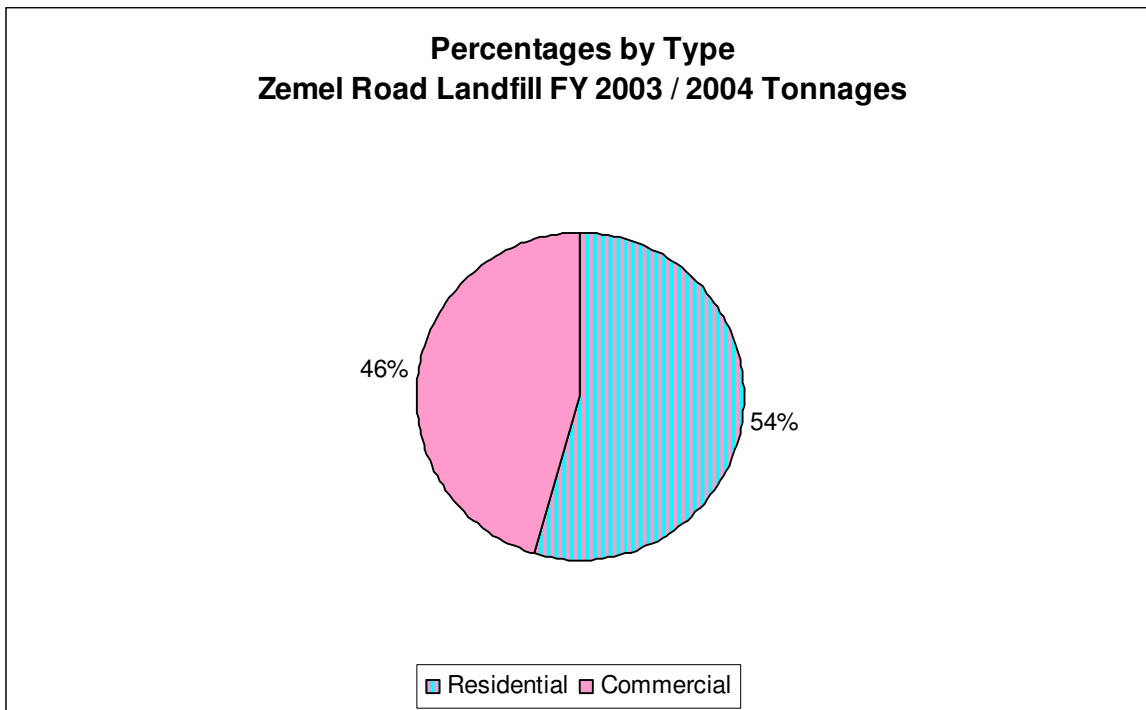
Source: Remaining Air Space & Site Life Calculations Report, prepared by SCS Engineering, February 2005

The Goals, Objectives, and Policies section pledges to maintain the Zemel Road Landfill through the year 2022. After 2022, Charlotte County will implement a closure plan for the existing landfill, and will monitor and maintain the landfill site for a period specified in 62-701 F.A.C. in order to arrest groundwater pollution. Charlotte County will continue to reduce dependence upon the landfill as the

sole method of disposal by promoting alternative processes to make use of the potential resources within the waste stream. Charlotte County will continue its commitment to reduce the volume of solid waste contributed to its landfill by at least 30%, and will use the department's management plan to develop and implement an Engineering Solid Waste Master Plan for directing improvements to the collection, disposal, and recycling of waste products. The County will continue to maintain the Zemel Road Landfill as a temporary storage site drop off point for harmful domestic waste.

Charlotte County will enforce its Land Development Regulations to assure that the County is able to collect and dispose of 7.2 pounds of solid waste generated by permanent residents daily, of which 5.0 pounds may be landfilled. Conversely, Charlotte County will continue to recycle. The department will perform periodic waste generation analysis to determine waste generation rates and to ensure that levels of service capacities are maintained. These levels of service standards will apply throughout the county, regardless of Urban Service Area designation.

Chart 4.2



Source: Charlotte County Environmental Services 2002

Executive Summary for Natural Aquifer Recharge Section

The purpose of the Aquifer Recharge section is to ensure the long term quality of water by identifying and protecting the areas of major recharge to subsurface aquifers. Subsurface aquifers provide water which is pumped from wells and treated prior to human consumption.

The groundwater underlying Charlotte County is contained within four distinct aquifers - the surficial aquifer, two intermediate aquifers, and the deep Floridan aquifer. Of these, the surficial aquifer contains the highest quality groundwater, but it is also highly susceptible to contamination because of the high groundwater table. Potential sources of pollution include landfills, percolation ponds for sewage effluent disposal, landspreading of sludge, industrial sites, and underground storage tanks.

Water has historically been a readily available and cheap commodity in Florida. However, as the population continues to increase that situation may change. Therefore, the protection of subsurface water sources is vital to the public interest. The region of prime intermediate aquifer recharge in Charlotte County is located in an approximate 50 square mile area of the northeastern corner bordering DeSoto and Glades Counties. The remainder of the county has limited recharge characteristics. This area of the county should remain relatively undeveloped with very low density in order to protect recharge capabilities.

Executive Summary for Potable Water and Sanitary Sewer Section

The purpose of the Potable Water and Sanitary Sewer section is to ensure that public facilities are available to meet the existing and future needs of Charlotte County. The ability for Charlotte County to provide potable water and sanitary sewer in accordance with the guidelines of Chapter 9J-5 will obviously play an important role in shaping future land use patterns. The availability of sewer and water will influence the timing, location, and intensity of development. Planning for the extension of these services should therefore be considered an integral part of Charlotte County's Urban Service Area strategy identified in the Future Land Use Element.

Potable water is supplied by eighteen individual utilities within Charlotte County. The two largest providers, Charlotte County Utilities and the City of Punta Gorda are publicly owned. The Englewood Water District, which is headquartered in Sarasota County, is also public while the remaining providers are privately owned. Thirteen potable water providers have certificated areas of operation within Charlotte County throughout which they provide water services to their customer bases. The certification grants the authorized right to be the sole provider of a stipulated service within a described area to ensure that certified areas for similar services do not overlap. Further, any area not depicted as a certified area falls under the service of Charlotte County Utilities. This comprehensive plan incorporates a minimum adopted potable water level of service standard of 225 gallons per day per Equivalent Residential Unit (ERU). It should be noted that the level of service of 225 gpd/ERU is intended to provide for maximum day water demands that may be expected to occur within Charlotte County. Actual average day demands have historically been significantly lower (e.g., 156 gpd/ERU). Planning to meet level of service demands is necessary to ensure adequate infrastructure capacity is available to satisfy short-term and instantaneous water supply demands without negatively impacting system performance (e.g., reduction in system pressure). Effectively planning for level of service demands also results in more efficient operation of the systems in Charlotte County and customers utilize a more consistent amount of water because they understand potable water will be available to them when needed. This section of the Infrastructure Element contains projected potable water demands from 2005 to 2030. Those projections are based on the medium University of Florida Bureau of Economic and Business Research (BEBR) population projections for Charlotte County. Each area of the county is projected to have sufficient potable water supplies through 2017 based on current permitted capacity.

The treatment of sewage and the disposal of wastewater within Charlotte County have been historically handled through the provision of central sanitary sewer facilities or by individual on-site treatment facilities consisting of either small privately owned package plants or septic systems. Central sanitary sewer is currently provided in ten different certified franchise areas operated by two publicly owned utilities and eight privately owned utilities.

The Florida Department of Environmental Protection has permitted other wastewater treatment facilities in areas where central sewer is not available. These facilities, more commonly known as package plants, are individual on-site disposal systems provided for entities processing more than 2,000 gallons of raw sewage per day. Package treatment facilities in the county have a combined design capacity of 1,082,550 gallons per day and provide service to an estimated 12,000 people.

Charlotte County adopts a minimum wastewater level of service standard of 190 gallons per day per Equivalent Residential Unit (ERU). The wastewater LOS standard is less than the FDEP standard criteria of 100 gallons per day per capita, which is equivalent to 218 gallons per day per ERU. The County LOS standard is based on actual wastewater flows (164 gallons per day per ERU) and a peaking factor of 1.160 to account for inflow and infiltration resulting from storm events. The majority of potable water used by customers is disposed through a sewage system in the form of wastewater. A portion of it - up to twenty-five percent - may be lost to consumption. This plan acknowledges that a portion is not returned to a wastewater system by indicating a 15% loss. For that reason, the minimum level of service standard is 85% of that for potable water. The eleven existing wastewater treatment plants serving Charlotte County were permitted to treat 9,323,000 gallons of sewage in 1995. Each area of the county had sufficient sewer capacity to serve the population.

This level of service standard was used in conjunction with population projections to determine the future sewer needs for Charlotte County. This section indicates that sanitary sewerage providers should have overall sufficient to serve the future population through 2010 based on current permitted capacity; however, sewer capacities and facilities should be improved during the planning time period.

The Florida Department of Health (FDOH), formerly HRS, has issued over 30,000 septic system permits since 1972 and estimates that there may be as many as 40,000 septic systems operating within the county today. This considerable accumulation of septic systems can be directly attributed to the fact that the County has done little to discourage their use, despite the realization that the soils in Charlotte County have severe limitations for septic system absorption fields. In order to implement a growth management strategy that effectively deals with widespread septic system use, the County must first take a proactive stance with limiting the number of new septic systems being permitted by the FDOH. This can be done by directing growth into areas where central sewers have already been installed and, in general, not extending potable water lines to areas which are not also served by central sewer. However, the sewer extension issue should be evaluated on a case-by-case basis since sewer lines may be quite some distance away from an area primarily served by potable water service. In addition, new septic system permits should be issued on an interim basis and future landowners notified at the time of permit issuance that they will be required to connect to sanitary sewer facilities when they become available.

The implementation of the Urban Service Area strategy should greatly reduce the number of new septic system permits. However, additional provisions must be made to address the potential environmental and health hazards created by the estimated 6,460,000 gallons (based on an estimated 40,000 septic systems at the adopted 190 gallons per day standard) of sewage effluent that is being treated daily by existing septic systems. The development of a septic system management program can alleviate some of these concerns. Operational inspections and periodic maintenance will prevent malfunctions which may contribute to ground water contamination. The management program will require that all systems be pumped out and cleaned on a regular basis and ensure that septage be disposed in an environmentally sound manner. A long-term water ambient quality monitoring program will also provide conclusive data concerning septic system failure and environmental pollution. The analysis of these data will identify areas where the installation of a central sewer is

needed because of soil, groundwater, or surface water pollution resulting from septic system discharge. A septic system management program and a water quality monitoring program are key elements in the County's future sanitary sewer strategy.

This comprehensive plan incorporates an Urban Service Area strategy which identifies the locations in which Charlotte County will spend the majority of its capital improvement dollars in infrastructure and services through 2010. As a component of that infrastructure, potable water and/or sanitary sewerage services are already provided, or will need to be provided, in Infill Areas. Those locations identified within Infill areas have environmental or existing settlement concerns and, in some cases, the engineering for service expansion has been completed. The County is currently exploring ways to reduce the cost of the expansion upon those affected property owners.

I. STORMWATER MANAGEMENT SECTION

A. Purpose of this section

Stormwater management is "the planned control of surface runoff in natural and urban systems to prevent flooding and pollution (*Model Local Government Stormwater Management Program*, DEP, 1993)." The Stormwater Management section guides Charlotte County's existing stormwater management programs and provides a framework for future programs. Stormwater management is very important to the County because it controls surface runoff in the urban and rural environments to prevent flooding and water pollution. The development of land for human use tends to increase the volume and rate of runoff from storm events. Increased runoff is caused primarily by the construction of homes, structures, and other impervious surfaces which prevent water from seeping into the ground. The increase in stormwater runoff may result in flooding, soil erosion, and water pollution on a development site as well as downstream. A sound stormwater management program will reduce the damage caused to our environment resulting from land development.

B. Relationship of this section to the comprehensive plan

All terrestrial alteration creates impacts to stormwater runoff. The comprehensive plan must ensure that stormwater management impacts are reduced. This element, in conjunction with the others in the comprehensive plan, seeks to accomplish this.

The Stormwater Management section of the Infrastructure Element is closely related to several other elements of the comprehensive plan. Stormwater management issues are related to the Future Land Use Element because development creates impervious surfaces and the density and intensity of land use is controlled by that element. The stormwater management system also impacts the Natural Resources Element because of concerns pertaining to flooding and surface and groundwater quality issues. Stormwater management also ties to Intergovernmental Coordination as drainage basins generally extend beyond political boundaries and many agencies are involved in water management. Stormwater management is a major consideration when constructing transportation systems and must be evaluated in this respect.

C. Legislation

This section, as required by Rule 9J-5.011 (1) (h) *Florida Administrative Code*, contains existing regulations and programs which govern land use and development of natural drainage features. The regulations and programs will be identified for their strengths and deficiencies in maintaining the functions of the natural drainage features.

Existing Federal Regulations

- U.S. Public Law 92-500, the "Federal Water Pollution Control Act," commonly referred to as the "Clean Water Act," was amended in 1977 to cover stormwater runoff into the waters of the United States. In 1990 the Federal Environmental Protection Agency issued regulations for implementation of the National Pollution Discharge Elimination System (NPDES), which is discussed in the next section under Federal Programs.

- The “National Water Quality Inventory, 1986 Report to Congress,” provided a general assessment of water quality, based on biennial reports submitted by the states under Section 305(b) of the Clean Water Act. In the assessment, pollution from diffuse sources, such as runoff from agricultural and urban areas, is cited by the states as the leading cause of water quality impairment. Congress responded in 1987 by requiring that the EPA begin dealing with the stormwater runoff pollution problem. The Water Quality Act of 1987 required that the EPA issue or deny permits for industrial and certain municipal stormwater discharges. Permitting responsibility has since been transferred to the states. In Florida, the Department of Environmental Protection has the responsibility of issuing permits.

Existing Federal Programs

- *National Pollutant Discharge and Elimination System (NPDES)*. In 1987, the Federal Clean Water Act required the U.S. Environmental Protection Agency (EPA) to establish the National Pollutant Discharge Elimination System (NPDES) and ensuing Municipal Separate Storm Sewer System (MS4) permitting programs. The program requires local governments to comply with certain conditions in order to obtain permits for existing and future stormwater management systems.

Receipt of a permit requires the preparation of an extensive baseline inventory of stormwater conveyances including ditches, paved channels and manmade canals that discharge into the Waters of the United States. Further, a water quality management plan is required that meets federal standards. Charlotte County is required to map stormwater outfalls. The County is required to develop a comprehensive stormwater quality management program, demonstrate the legal authority to control the quality of stormwater runoff, and fund the implementation of the stormwater quality management programs. An element of the NPDES MS4 program requires that permits be obtained for municipal construction projects of five (5) acres or more, landfills, power plants, airports, mass transit, vehicle maintenance facilities, and wastewater treatment plants. Charlotte County has obtained their Phase II MS4 NPDES Permit on July 1, 2003 and they are in their 5 year implementation phase.

An additional element of the NPDES Program affects local industry. Industries which have been identified by the USEPA as significant contributors to stormwater's pollutant load are required to obtain their own permit from the USEPA. Those industries identified by the USEPA are listed below.

INDUSTRIAL ACTIVITIES

Timber Products

Paper and Allied Products

Chemical and Allied Products

Asphalt Paving and Roofing Materials Manufacturers and Lubricant

Glass, Clay, Cement, Concrete, and Gypsum Products

Primary Metals

Metal Mining (Ore Mining and Dressing)

Coal Mines and Coal Mining-Related Facilities

Oil and Gas Extraction Facilities
 Mineral Mining and Processing Facilities
 Hazardous Waste Treatment, Storage, or Disposal Facilities
 Landfills and Land Application Sites
 Automobile Salvage Yards
 Scrap and Waste Recycling Facilities
 Steam Electric Power Generating Facilities, Including Coal Handling Areas
 Vehicle Maintenance or Equipment Cleaning Areas at Motor Freight Transportation Facilities,
 Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, Rail
 Transportation Facilities, and the United States Postal Service
 Vehicle Maintenance Areas and/or Equipment Cleaning Operations at Water Transportation
 Facilities
 Ship and Boat Building or Repairing Yards
 Vehicle Maintenance Areas, Equipment Cleaning Areas, or Deicing Area located at Air
 Transportation Facilities
 Treatment Works
 Food and Kindred Products Facilities
 Textile Mills, Apparel, and Other Fabric Product Manufacturing Facilities
 Wood and Metal Furniture and Fixture Manufacturing Facilities
 Printing and Publishing Facilities
 Rubber, Miscellaneous Plastic Products and Miscellaneous Manufacturing Industries
 Leather Tanning and Finishing Facilities
 Fabricated Metal Products Industry
 Facilities That Manufacture Transportation, Equipment, Industrial, or Commercial Machinery
 Facilities that Manufacture Electronic and Electrical Equipment and Components,
 Photographic and Optical Goods

- *Charlotte Harbor National Estuary Program (CHNEP)* In 1995, Charlotte Harbor was accepted into the National Estuary Program which is administered locally through the Southwest Florida Regional Planning Council (SWFRPC). The mission of the CHNEP is to assess the condition of Charlotte Harbor and establish requirements and targets for restoration and preservation of its natural resources. These efforts culminated in the development of a Comprehensive Conservation and Management Plan (CCMP) and financing plan for Charlotte Harbor, a blueprint that will prioritize actions and identify the means to complete them. In developing and implementing the plans, the CHNEP coordinates with the Surface Water Improvement and Management (SWIM) program of the Southwest Florida Water Management District (SWFWMD).

Existing State Regulations

Florida Administrative Code

- Chapter 40D-2, *Florida Administrative Code*, “Basis of Review,” includes stormwater system design criteria, as well as technical and administrative information for applicants and permits.
- Chapter 40D-4 and Chapter 40D-40, *Florida Administrative Code*, “Management and Storage of Surface Waters (MSSW),” states that SWFWMD governs surface water permitting and

stormwater runoff. The rule implements the comprehensive surface water management permit system authorized in the Florida Water Resources Act (373 *Florida Statutes*, Part IV), and 62-25, *Florida Administrative Code*. A surface water management permit under 40D-4 must be obtained prior to construction, alteration, abandonment or removal of any dam, impoundment, reservoir, appurtenant work or works. The SWFWMD retains permitting authority for large projects, (over 100 acres) and projects where wetland resource (dredge and fill) applications are required. The rule regulates new surface water management systems and alterations to existing surface water management systems which will have a significant impact on the water resources of the District, including wetlands and other natural resources. This rule specifically does not apply to the use of wetlands for stormwater treatment.

- Chapter 40D-6, *Florida Administrative Code*, “Works of the District Permit,” states that a permit must be obtained prior to connecting with, placing construction across, discharging into or otherwise making use of works of the District. The rule protects existing works, and works for which planning is underway (e.g., canals, water control structures, rights-of-way, lakes and streams) from actions which would impair their ability to function as intended.
- Chapter 40D-8, *Florida Administrative Code*, “Lake Levels Program,” establishes guidelines (primarily in the floodplain) for development bordering lakes, conservation water storage and recharge capabilities of lakes. It also provides levels for operation of lake control structures and a means for providing information on district consumptive use permitting (CUP) activities.
- Chapter 62N-16, *Florida Administrative Code*, “Prohibition of Pollutant Discharges,” covers the powers and duties of the DEP, as they relate to prohibition of pollutant discharges (as defined in *Florida Statutes* 403.803(13), and the removal of prohibited discharges.
- Chapter 62-25, *Florida Administrative Code*, “Regulations of Stormwater Discharge,” implements this statute by providing minimum criteria for discharge into surface waters and groundwater of the State. The rule’s basic objective is to achieve 80-90 percent removal of stormwater pollutants before discharging into receiving waters. The rule states that facilities must treat the runoff from the first one inch of rainfall, or as an option for projects with drainage areas less than 100 acres, facilities which provide retention, or detention with filtration, of the first one-half inch of runoff. The rule also emphasizes that “no discharge from a stormwater discharge facility shall cause or contribute to a violation of water quality standards in waters of the state” and continues by stating that erosion and sediment control “best management practices” shall be used as necessary during the construction to retain sediment on-site. Further, stormwater discharge facilities which receive stormwater from areas which are a potential source of oil and grease contamination will include mechanisms suitable for preventing the contaminants from leaving the stormwater discharge facility in concentrations which would cause or contribute to violations of applicable water quality standards in the receiving water.
- Chapter 62-3, *Florida Administrative Code*, “Water Quality Standards,” provides minimum criteria which govern stormwater drainage necessary to protect the designated uses of State waters. This legislation provides detailed criteria for both surface water and groundwater protection.

- Chapter 62-302, *Florida Administrative Code*, “State Surface Water Quality Standards,” classifies surface waters into one of five different categories based upon the expected uses of each waterbody. Establishes minimum criteria for each surface water classification in order to protect public health and enhance the quality of waters of the State.
- Chapters 62-312, *Florida Administrative Code*, “Dredge and Fill Activities,” requires permits for dredge and fill activities in surface waters of the State. Requires permits for dredging and filling in, on, or over navigable waters. Provides for mitigation criteria and exemptions.
- Chapter 62-340, *Florida Administrative Code*, “Delineation of Wetlands and Surface Waters,” provides the methodology for delineating wetlands and surface waters. Chapter 62-4, *Florida Administrative Code*, “Permits,” DEP/SWFWMD rules regarding permit standards (standards for issuing dredge and fill, stormwater, and water quality permits). Provides for the classification and exemption of certain waterbodies for permitting purposes. Includes water quality standards. The rule also provides that permits cannot be issued for sewage facilities that directly discharge to an Outstanding Florida Water (OFW) which would lower ambient water quality, or for discharges which would degrade a downstream OFW. In order to receive permits, discharges must be in accordance with DEP standards as set out in 62-600 *Florida Administrative Code*
- Chapter 62-40, *Florida Administrative Code*, “State Water Policy,” addresses many different aspects of water resource protection and management. The stormwater and surface water management components are critical to this topic of stormwater utilities and levels of service. The definition of “stormwater management system” covers aspects of the issues that are addressed in the County’s level of service:

“Stormwater management system” means a system which is designed and constructed or implemented to control stormwater, incorporating methods to collect, survey, store, absorb, inhibit, treat, use, or reuse stormwater to prevent or reduce flooding, over-drainage, environmental degradation and water pollution or otherwise affect the quantity and quality of discharges from the system. In 1990, the State Water Policy was revised to include policies relating to stormwater discharge rates, volume, and pollution loads discharged from a site.

- Chapter 62-43, *Florida Administrative Code*, “Surface Water Improvement and Management Act (SWIM),” establishes criteria for: surface water priority lists; approval of priority ranking lists; review of plans for ranked water bodies; and establishment of uniform and consistent water body management plans. The rule directs the Water Management Districts to “design and implement plans and programs for the improvement and management of surface waters.” The program ranks waterbodies of statewide and regional significance for preparation of action-oriented management plans. These plans serve as a guide to local governments and water management districts in protecting and restoring these waterbodies through specific projects. Under this Act, the SWFWMD has prioritized those surface waters most in need of environmental restoration, and is developing plans, along with the respective local governments, for their restoration.
- Chapter 62-600, *Florida Administrative Code*, “Grizzle-Figg Advanced Waste Treatment Act,”

is intended to protect Florida's coastal waters and estuaries by requiring that effluent discharged from waste treatment facilities into certain Florida waters be treated to advanced waste treatment (ATW) standards where deemed necessary by DEP. Establishes criteria for the discharge of wastewater to certain wetlands.

- Chapter 62-620, *Florida Administrative Code*, "Wastewater Facility Permitting," provides for permits for constructing, modifying, or operating a domestic or industrial wastewater facility or activity which discharges pollutants into waters of the State.
- Chapter 62-625, *Florida Administrative Code*, "Pollutant Pre-Treatment Requirements," provides the pre-treatment requirements for existing and new sources of pollution.

Florida Statutes

- Chapter 373, *Florida Statutes*, "Florida Water Resources Act (FWRA)," regulates the construction, alteration, maintenance, operation, and abandonment of dams, appurtenant works, impoundments, reservoirs, and works affecting waters of the State. The goal of the Act is to prevent harm to the water resources of the State. Provides for the permitting of various activities including management and storage of surface waters (Part IV) and consumptive uses of water (Part II). The Act creates Water Management Districts, who together with the DEP are the agencies responsible for implementing the regulatory components of the FWRA. The FWRA establishes minimum flow levels from surface water courses and minimum water levels for lakes and groundwater aquifers.
- Chapter 380, *Florida Statutes*, "The Florida Environmental Land and Water Management Act of 1972," ensures a water management system that will reverse the deterioration of water quality and provide optimum utilization of our limited water resources. The chapter also facilitates orderly and well-planned development and protects the health, welfare, safety, and quality of life of the residents of the state.
- Chapter 403, *Florida Statutes*, "Water Resources Act," provides the Department of Environmental Protection with the authority to establish water quality guidelines and recognizes stormwater runoff as an important resource. The act also sets water pollution permitting conditions, establishment of National Pollution Discharge and Elimination System (NPDES) programs, and the formation of stormwater management programs. In addition, the act gives the County the power to establish and administer a local pollution control program if it complies with this act.

Existing State Programs

- *Surface Water Improvement and Management Plan (SWIM)*. The Surface Water Improvement and Management Act of 1987 (Chapter 373.451-373.4595 *Florida Statutes*) created the Surface Water Improvement and Management Trust Fund for the purpose of providing state appropriated funds for the implementation of SWIM plans (373.459 *Florida Statutes*). Each individual water management district is required to make an annual request for funding of its SWIM plans. These requests may include funds for the purchase of lands and waters for the purpose of protecting surface waters, but may not be used for planning, construction or expansion of treatment

facilities for domestic or industrial waste disposal.

The Charlotte Harbor SWIM program was launched in 1992. The goal of the SWIM program is to protect the 270 square mile Charlotte Harbor estuary by (1) preserving natural and functional components of the ecosystem while, if feasible, restoring degraded portions; (2) preserving or restoring the quantity and quality of water necessary to support biological communities; (3) educating the public of the benefits for conserving and preserving the harbor system; and (4) developing and implementing management plans for each of the harbor's major tributaries.

This goal was accomplished first by analyzing historical data and water quality monitoring reports in order to determine the past and present conditions of the harbor. The SWIM program will then identify water quality targets and pollutant load reduction goals. SWIM administrators will also develop a toxic substances database in order to determine current concentrations so that subsequent discharges can be reduced or eliminated through identification of the source.

The SWIM study analyzed the impacts of the more than 400 linear miles of residential canals which lead to the harbor. In some locations, these canals transport sewage treatment effluent; stormwater runoff; and industrial, agricultural, and other discharges into the harbor. Finally, the program addresses enforcement and compliance monitoring procedures, and provides incentives to local governments for implementation.

The SWIM program is important to the County stormwater management program because it may determine areas stormwater runoff is polluting the harbor and in need of stormwater management. The water quality data obtained through the program may indicate the trouble spots as well as identify the types of pollutants that are affecting the harbor.

The SWIM program was prepared in conjunction with a Charlotte Harbor SWIM Advisory Committee, which included technical personnel from the SWFWMD, SFWMD, FDEP, Florida Game and Fresh Water Fish Commission (FGFWFC), Southwest Florida Regional Planning Council (SWFRPC), Charlotte and Lee County governments, the City of Punta Gorda and other municipalities, the Charlotte County Extension Service, local environmental organizations, and private citizens concerned with the preservation, restoration and protection of the estuary and its watershed. The SWIM Advisory Committee will continue to be used for purposes such as developing and assessing SWIM projects, reviewing progress, and preparing updates of the plan as the management program proceeds.

Funding for the SWIM program comes from the SWIM Trust Fund which distributes funding after approval of projects by the appropriate water management district, DEP, FGFWFC, and advisory committees associated with the SWIM program.

- *Outstanding Florida Waters (OFW)*. The Outstanding Florida Waters program (OFW) is administered by the Florida Department of Environmental Protection. This program provides a special category of water bodies worthy of special protection because of their special attributes (Chapter 17-3.041(1) *Florida Administrative Code*). Water bodies that occur within national parks, wildlife refuges, national preserves, and seashores, wild and scenic rivers, aquatic

preserves, state parks and recreation areas, and national marine sanctuaries automatically receive OFW designation. The rules for an OFW are much stricter with regards to the management of the water body. The rules provide that permits cannot be issued for direct discharges which would degrade a downstream OFW. The rules also require that dredge and fill projects which are located within an OFW, or significantly degrade an OFW, must be clearly in the public interest. Additional water quality protection is provided to an OFW with regard to stormwater discharge facilities, which must treat an additional 50% of the runoff from a site. In 1979 Gasparilla Sound, Charlotte Harbor, and Cape Haze were named OFW. Lemon Bay was named an OFW in 1988. This additional protection is necessary as the County continues to develop. Protection measures upstream from Charlotte County are also important. Efforts to declare Horse Creek, a tributary to Peace River and Charlotte Harbor, an OFW, failed when Charlotte County tried to protect the Harbor from future problems from mining activities that are currently being proposed and permitted by the Department of Environmental Protection.

- *Environmental Resource Permit (ERP).* The ERP combines DEP’s wetland resource permit with the Water Management Districts’ Surface Water Management Permits (SWMP’s). It consolidates review of existing dredge and fill, stormwater management and sovereign lands permits, and is generally issued through the water management districts. It will involve the consolidation of parts of Chapter 403, *Florida Statutes* currently implemented by the SWFWMD and DEP under Chapter 373, *Florida Statutes*
- *Florida Department of Environmental Protection (DEP) Surface Water Sampling Program.* The DEP operates a local surface water sampling program in Charlotte County to maintain public health and safety. The program collects results from samples of water at various locations to determine water quality. Stations are located on the Elkcam Waterway, Pellam Waterway, West Springlake Waterway, Sunrise Waterway, Peace River, and several locations on Charlotte Harbor. The program has been in operation since 1990 and the results are logged into the DEP’s STORET Data System, which allows the data to be shared with other agencies. The data gathered from this program is useful in determining surface water quality and is used as a method to gauge the amount of pollutants a water body receives and when. It is a tool in determining the success of surface water management programs.
- *SWFWMD Flood Protection Initiatives for Charlotte County.* Flood protection initiatives for Charlotte County (see table below) include continuation of current District programs (surface water permitting, land acquisition, aquatic plant management and facility operations); improving public awareness of flood protection issues; completion of an Emergency Management Plan; and Basin funding for the County’s Master Stormwater Management Plan.

Table 4.2 SWFWMD Flood Protection Implementation Strategies	
1 Year Complete	<ul style="list-style-type: none"> • Continue existing programs: <ul style="list-style-type: none"> - Aquatic Plant Management - Surface Water Permitting - Land Acquisition - Facility Operations • Develop strategies for improved public awareness of flood protection issues.

Table 4.2 SWFWMD Flood Protection Implementation Strategies	
	<ul style="list-style-type: none"> • Complete Emergency Management Plan (EMP) • Assist local Governments, RPC's, in plan updates • Continue encouragement and funding of local government stormwater utility projects. • Basin support for the County's Master Stormwater Management Plan.
5 Year	<ul style="list-style-type: none"> • Continue existing programs. • Implement public awareness strategies. • Update EMP as necessary. • Review local and regional plans; assist in plan implementation. • Assess effectiveness of stormwater utility assistance.
20 Year	<ul style="list-style-type: none"> • Continue existing programs. • Continue public awareness efforts. • Review local and regional plans; assist in plan implementation, • Assess effectiveness of stormwater utility assistance. • Monitor and regularly evaluate programs for effectiveness.

Source: *Charlotte County Integrated Plan*. SWFWMD, March, 1995.

- *Community Development Block Grants (CDBGs)*. Community Development Block Grants (CDBGs) are grant monies available from the state for specific purposes. A CDBG for \$750,000 was obtained following the flood in June 1995 for Charlotte County through the efforts of the County's Budget Office. This money was used for re-engineering 104 drainage locations with piped outfalls in the grant areas. If any residual funds are available after the bid has been awarded, additional plans will be considered for improvements to other more minor components of the stormwater conveyance system.

Additional funds are being sought from CDBG program to assist with Hurricane recovery projects.

Existing Local Regulations

- *Charlotte County Stormwater Management Ordinance #89-37*. The Charlotte County Stormwater Management Ordinance was established in order to protect, maintain and enhance the immediate and long term health, safety, and general welfare of the citizens of Charlotte County. The Stormwater Management Ordinance establishes Stormwater Management and Conservation Flood Plan approval as a prerequisite to commencement of any development activity. The ordinance also sets the content, performance standards, and design standards required of stormwater plans.

Local Programs

- *Charlotte County Master Stormwater Management Plan (MSMP)*. As previously stated, Charlotte County has 73 drainage basins (See Map 4.1) and has over 370 miles of manmade canals which drain into surface water bodies such as Charlotte Harbor, Lemon Bay, and Shell and Prairie Creeks. The Charlotte County Stormwater Management Plan (MSMP) assists the Stormwater Division in managing the County's drainage basins and how lands within them are

affected by rainfall events of varying magnitudes. The original study was divided into two Phases; a third phase was added.

Phase 1 included development, mapping, and delineation of the drainage basins in Charlotte County, ranking and prioritizing of basins based on needs, and a pilot study. The pilot study affected two basins in western Charlotte County known as Oyster Creek and Direct to Myakka River and was referred to as Oyster Creek / Newgate Drainage Study. As a result of the pilot study Charlotte County consulted with a technical contractor to perform a detailed hydrologic and hydraulic analysis of the Oyster Creek / Newgate Area. From this analysis, ten capitol projects were recommended. Charlotte County has completed construction of these capitol projects.

A team approach will be utilized for Phase II. Phase II was prepared interactively by the technical contractor, Stormwater Management, and SWFWMD. The Stormwater Management Staff and Public Works staff provided much of the inventory and field reconnaissance needs for this project. The technical contractor developed the hydrologic and hydraulic rainfall – runoff model, project selection criteria and report preparation. SWFWMD provided technical support and oversight during this process. This interactive team approach provided the County with a useful planning tool, one that can be implemented with diminishing permitting problems, and will be adaptable to the changing conditions of the county.

The Phase II MSMP focused on the top ten priority basins identified in Phase I. (See Map 4.2) Those are two basins in West County, five basins in Mid County, and three basins in South County. Of these ten, the following basins received a detailed analysis: two basins in West County (which were identified for the pilot study) Oyster Creek and Direct to Myakka River, and three basins in Mid County, Pellam / Auburn Basin, Fordham / Niagara Basin, and the Little Alligator Basin. The three basins in South County, which were determined to be less dependent on structural controls, were identified as basins which conveyed overland flow to primary drainage ditches, creeks, or rivers, and therefore, any flooding associated within these basins were directly related to the need for a maintenance program. Maintenance of these primary drainage ditches in south Charlotte County can now be addressed and funded through the South Charlotte Stormwater Unit (MSBU).

Work programs for maintenance and capital improvements that were recommended during Phase I, including priorities and phasing, are being implemented. Dialogue regarding target levels of service and funding will determine the scale of this program over the coming years. The overall cost of preparing the MSMP was \$500,000, 45% of which was provided by the SWFWMD. The completed plan:

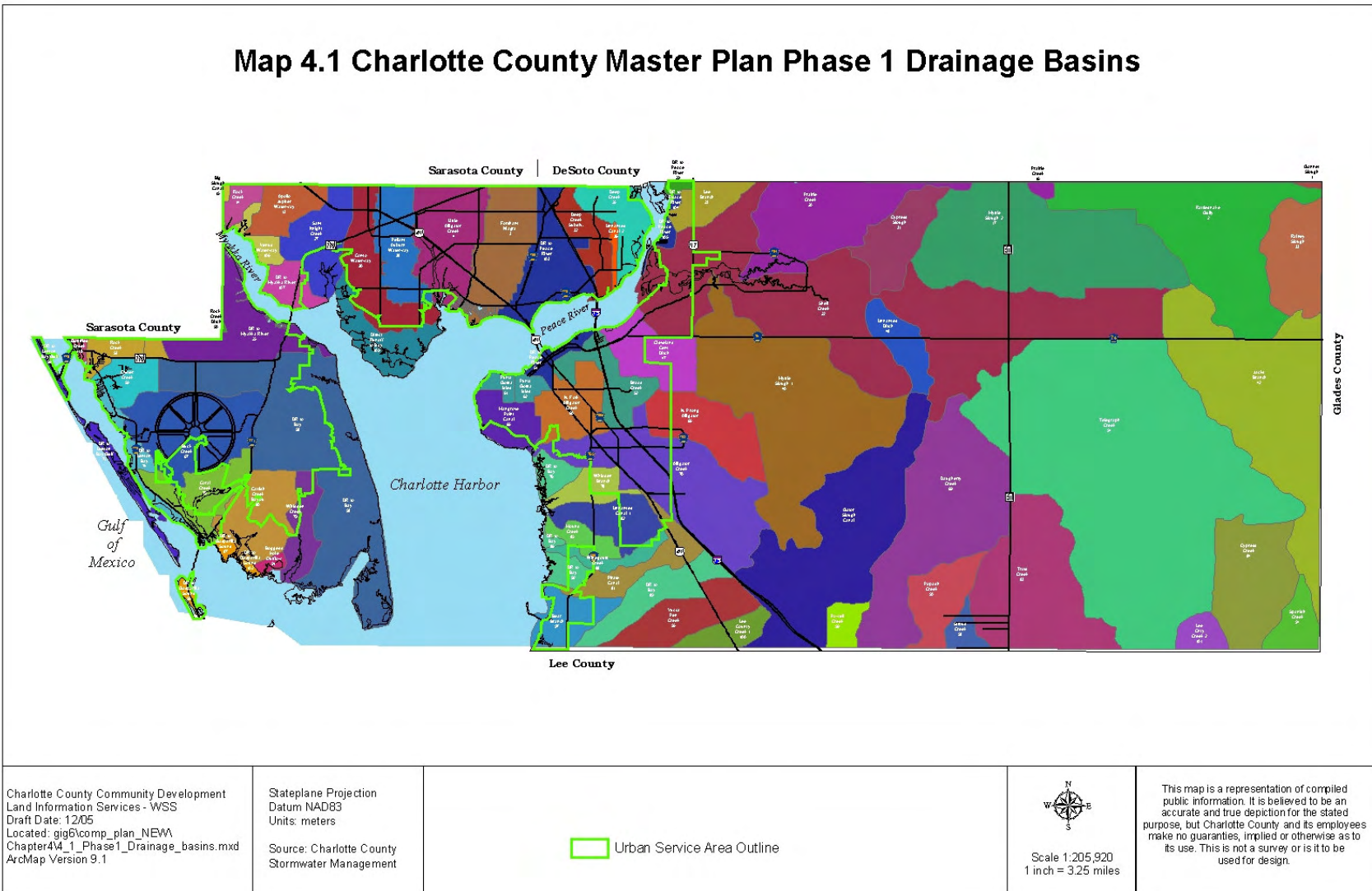
- Prioritized drainage basins for analysis and improvement;
- Utilized computer modeling to simulate stormwater effects resulting from rainfall events;
- Addressed pollutant load and flood reduction techniques;
- Addressed funding;
- Inventoried stormwater management facilities and their condition; and

- Recommends capital improvements projects to address stormwater quantity and quality.

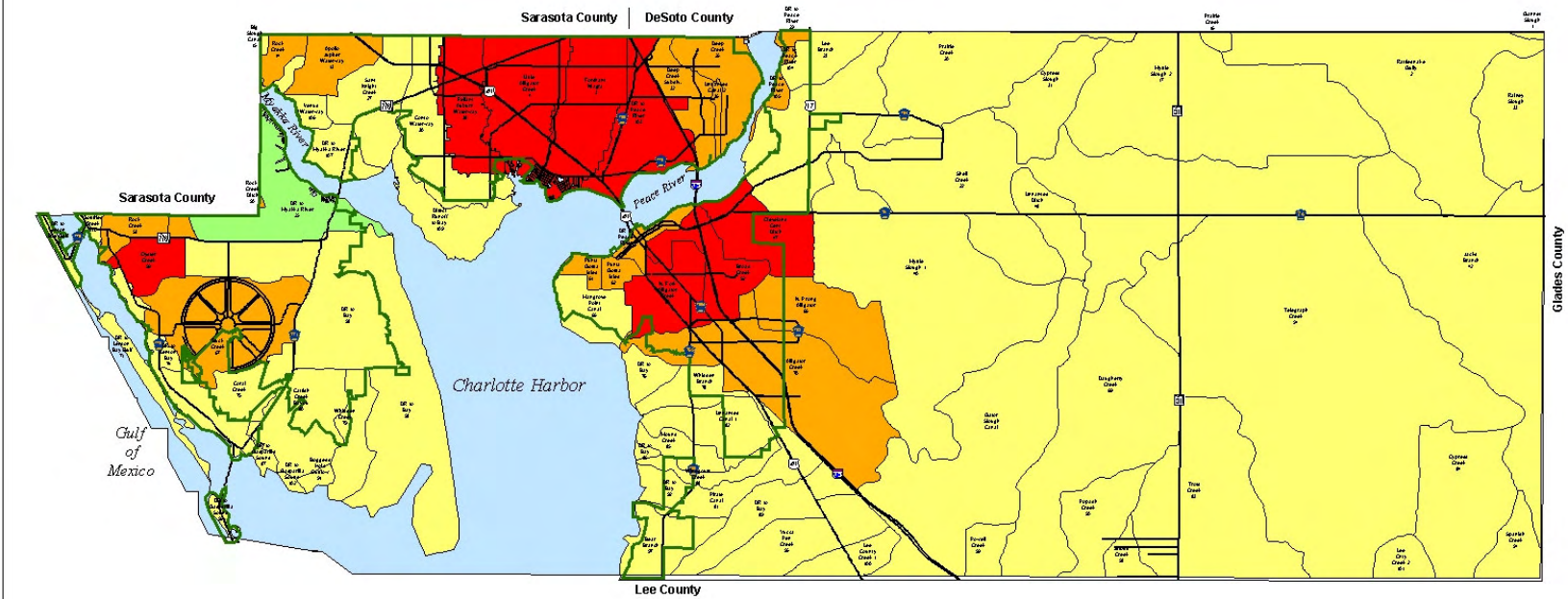
With the exception of the last item all have been completed. The last item listed is ongoing and is reviewed yearly during the Capital Improvement Program

The Infrastructure Element establishes a general direction for stormwater management and provides overall goals, objectives, and policies that need to be satisfied when managing stormwater. The relationship of the MSMP to the Infrastructure Element is very close, but they are not identical. The MSMP is a tool for implementing and achieving those goals, objectives, and policies adopted in the Infrastructure Element. It is more specific and provides a greater detail of analysis regarding the County's drainage basins. The MSMP was completed in December 1997.

Map 4.1 Charlotte County Master Plan Phase 1 Drainage Basins



Map 4.2 Charlotte County Master Stormwater Management Plan Priority Basins



Charlotte County Community Development
 Land Information Services - WSS
 Draft Date: 12/05
 Located: gig6\comp_plan_NEW\
 Chapter4\4_2_Priority_basins.mxd
 ArcMap Version 9.1

Stateplane Projection
 Datum NAD83
 Units: meters

 Source: Charlotte County
 Stormwater Management

- Pilot Basin
- Top Priority Basins
- Medium Priority Basins
- Low Priority Basins
- Hydrology Bodies
- Urban Service Area Outline

Scale 1:205,920
 1 inch = 3.25 miles

This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guaranties, implied or otherwise as to its use. This is not a survey or is it to be used for design.

- *Stormwater Permits and Development Review.* In cooperation with the water management districts, the County's Development Review Division reviews stormwater permits as a part of the building permit application process. Stormwater applications are reviewed for compliance with the County's stormwater management ordinance, #89-37. The County requires, among other things, that stormwater plans describe contributing drainage areas, direction of flow, rate, and volume of stormwater flows; identify any easements of record; contain accurate legal descriptions; and be signed and sealed by a Florida registered Professional Engineer.

The water quality element requires retention of the “first flush” of rainfall runoff which contains the highest quantity of pollutants. The required volume of the first flush can vary depending on the system which is designed to treat that water. That variable volume is typically either one-half (½) inch, one (1) inch, or one and a half (1½) inches. These volumes are usually calculated separately from those volumes as required by stormwater quantity. Typical treatment systems for water quality include, but are not limited to, effluent filtration, wet detention, exfiltration, and retention with natural percolation. The additional water arising from impervious areas is known as the *excess runoff*. In determining excess runoff, calculations must be provided for the storm event being analyzed. This analysis will determine pre-developed runoff rates for flows associated with the 25-year, 24-hour storm event, and post-developed runoff rate or the runoff rate which may be limited through a MSMP or project of regional impact. The reason for limiting the runoff rate to the pre-developed rate is to assure that the downstream receiving system is not overloaded by runoff generated from new development. There is one exception to limiting the runoff to the pre-development rate. If the development’s discharge is draining to unrestricted, tidally influenced water bodies, the post-development runoff rate is permissible and, therefore, quantity is not an issue.

The Development Review Services Division also reviews stormwater management plans for preliminary and final subdivision plat applications. For preliminary plats, County personnel forward recommended changes and comments to the applicant, the Planning and Zoning Board, and the Board of County Commissioners. For final plats, any additional comments and recommendations are forwarded to the applicant and the Board of County Commissioners.

D. Inventory

This section, mandated by Rule 9J-5.010 (1) (e) *Florida Administrative Code*, identifies operating responsibilities of stormwater management facilities, geographic service areas, predominant types of land uses, the design capacity of the stormwater management facilities, current demand, and the level of service provided by the facilities.

1. Hydrologic Cycle

The hydrologic cycle begins with the warming of surface waters from the sun. This causes evaporation whereby water vapor rises into the atmosphere. Precipitation begins when evaporated moisture cools and condenses, forming clouds from which water droplets, ice, or snow fall back to earth. When precipitation reaches the ground, as a liquid, it can take one of three paths which include:

1. running off the land and collecting in water bodies;

2. infiltrating the soil to provide moisture to vegetation or percolating downward into the ground to recharge ground water: or
3. evaporating into the atmosphere.

Water also returns to the atmosphere through transpiration as it passes through the leaves of grass, plants, and trees. The combined process of evaporation and transpiration is called *evapotranspiration*: about half of the precipitation returns to the atmosphere through this process. Approximately twenty percent of precipitation percolates into ground water while about one-third runs off as overland flow into surface waters.

The development of land for buildings, parking lots, streets, and other impervious uses increases the amount of rainwater that runs off as overland flow which eventually flows into surface water bodies. Additionally, land development, or urbanization, removes vegetation and compacts the soil. Water no longer seeps into the ground at that location. This increases the volume of water that moves overland resulting in flooding and soil erosion. Additionally, stormwater becomes more polluted as it collects petroleum wastes from automobiles, fertilizer, chemicals, and other waste products. Therefore, stormwater management programs are necessary to reduce the negative results of land development. Effective stormwater management programs require:

1. Development of a Master Stormwater Management Plan
2. Enactment of regulatory control over development to satisfy the goals of the County's Master Stormwater Management Plan
3. Implementation of non-structural and structural controls of stormwater
4. Allocation of resources to design, construct, and maintain stormwater management facilities.

2. Rainfall Intensity-Duration-Frequency for Charlotte County

The volume of stormwater generated by a rainstorm depends upon the total amount of rainfall, minus that lost by infiltration, transpiration, evaporation, and surface storage. The amount of these losses is a function of climate, soils, geology, topography, vegetative cover, and land use within a watershed. Data on rainfall intensity and duration for the Charlotte County are based on a 2, 5, 10, 50 and 100-year storm frequency as summarized in Table 4.3 and is consistent with Charlotte County’s stormwater level of service objectives outlined in Table 4.6.

These depths are commonly used parameters for analyzing stormwater management systems.

Table 4.3 Rainfall Frequency and Precipitation Depth (in inches)	
Frequency	Precipitation Depth
2 year	4.3-5.2"
5 year	5.5-6.7"
10 year	6.5-8.0"
25 year	7.8-9.2"
50 year	8.7-10.2"
100 year	9.7-11.8"

Source: *Drainage Manual*, Florida Department of Transportation, 1998.

3. Drainage Features in Charlotte County

Within its approximately 832 square miles of surface area, Charlotte County includes roughly 129 square miles of inland surface waters dominated by Charlotte Harbor which is formed by the confluence of the Peace and Myakka rivers. Charlotte Harbor, the Peace River, and the Myakka River divide Charlotte County into three distinct geographic regions. A coastal community, Charlotte County is bisected by the two rivers which form the second largest estuary in Florida (Charlotte Harbor). The floodplains associated with these major waterbodies encompass much of the County's developed area as development has, historically, occurred in proximity to the coast and rivers. Charlotte County's development of manmade canals and the general nature of the County's elevation has made Charlotte County probably the most vulnerable county in the state to the impacts from hurricanes and tropical storms according to the "Southwest Florida Regional Planning Council's Report on Hurricane Evacuation Study 2001". (This vulnerability is discussed in greater detail in the Natural Resources and Coastal Planning Element of the Comprehensive Plan.)

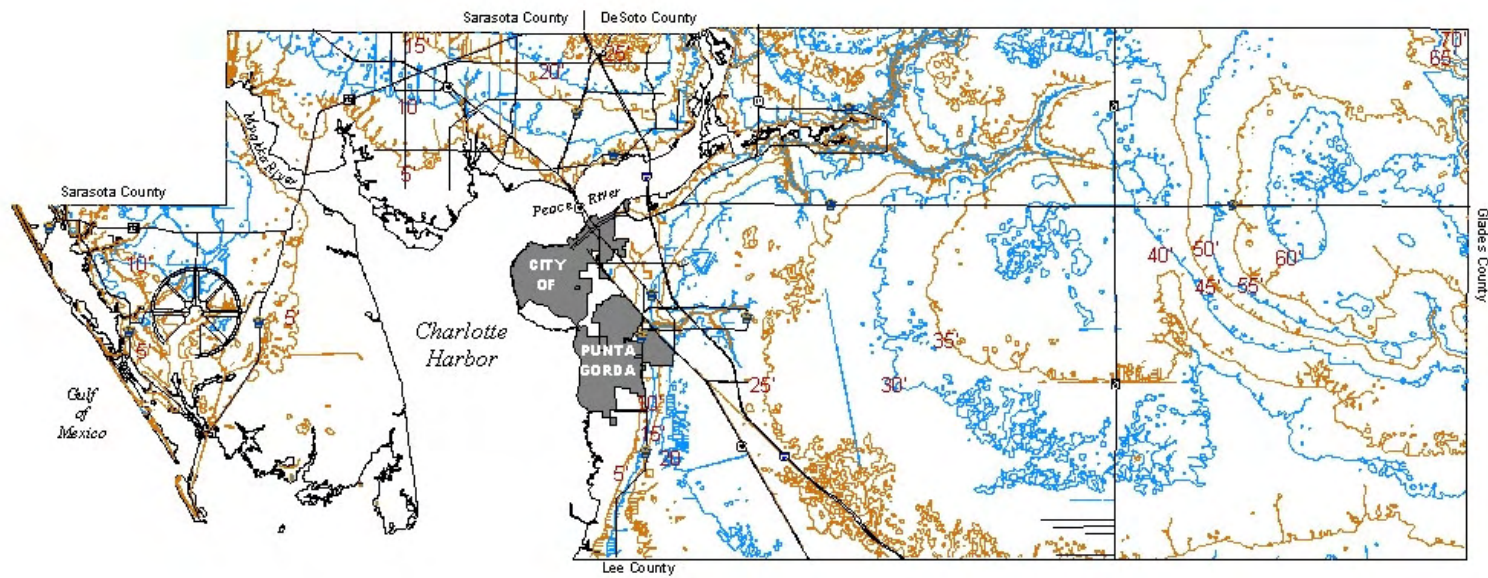
In addition to concerns associated with landfalling storms, Charlotte County has many low lying, poorly draining areas (see Topographic Contours Map 4.3) that are subject to periodic flooding which can result not only from tropical weather, but also from prolonged periods of heavy rains which may inundate the soils and overwhelm natural and manmade drainage systems. Regardless of the storm, Charlotte County is susceptible to flooding and for this reason the Stormwater Division exists.


Charlotte County's surface water generally drains to the nearest surface water feature. During rain events, stormwater is discharged into defined channels such as creeks and rivers, manmade canals or by the slow movement of sheet or concentrated flows covering large areas of flat land. Flooding of lands from the rainfall in Charlotte County can result from two situations: (1) Riverine type flooding which occurs when the canals, creeks, rivers, or ditches exceed the capacity or rainfall event in which it was designed to manage or convey..

Storm surge will be discussed in detail in the Natural Resources and Coastal Planning Element. Flooding and stormwater management issues are not analyzed according to political boundaries; rather, they are analyzed by drainage basin or watershed.

As previously mentioned, Charlotte County is divided into seventy-three distinct drainage basins. This division was based on topography and manmade drainage control features such as dams, dikes, roads, canals, ditches, and other structures. These contributing drainage areas are clarified in the MSMP. The table on Map 4.4 identifies the basins by number and provides the total acreages of the individual basins. Each is important in the maintenance of the County's Stormwater Program as it relates to the flow of the stormwater for each basin to as they drain into the watershed (see Stormwater Basin Flow Map 4.5).

Map 4.3 Topographic Contours

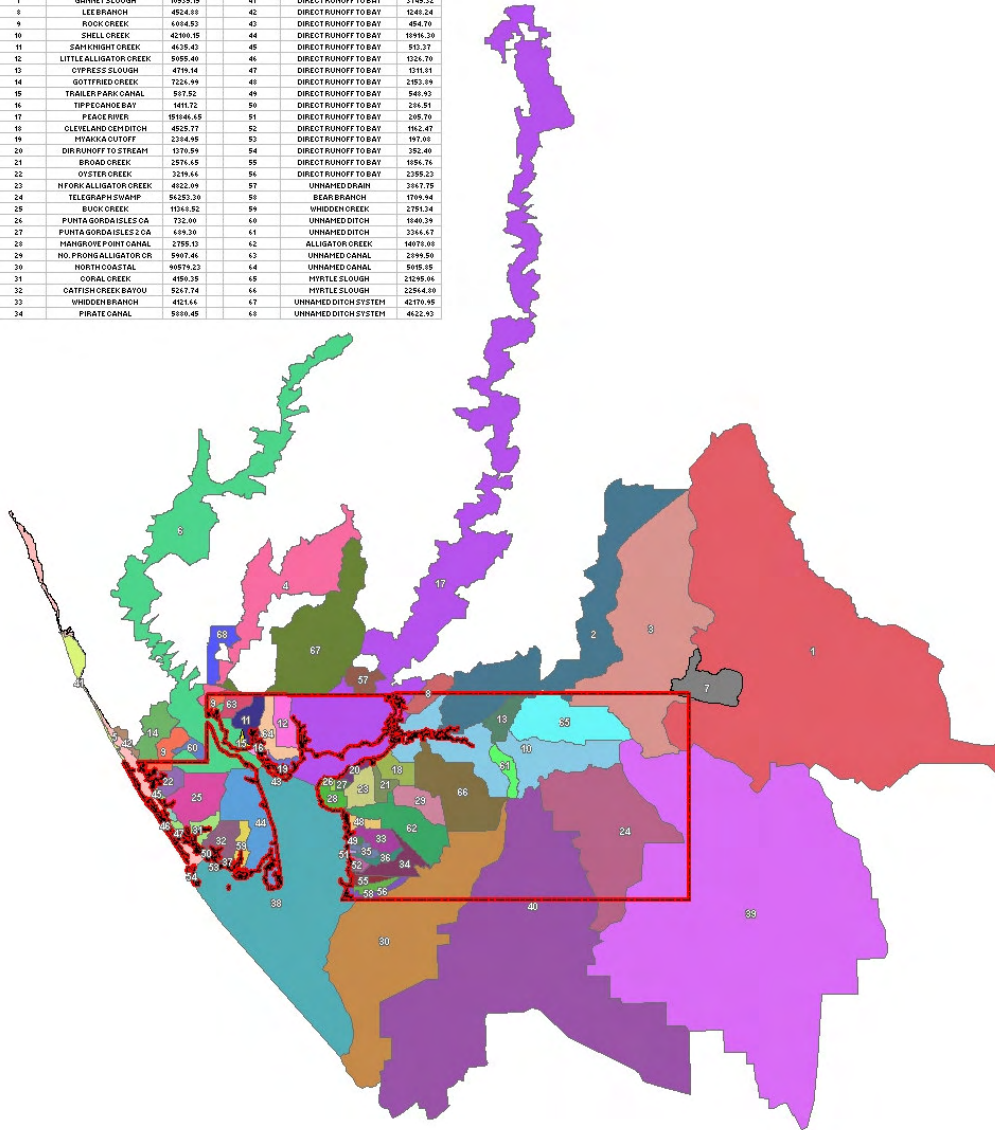


<p>Charlotte County Community Development Land Information Services-MLH Draft Date 11/05 Locate d: g:\g6\comp_plan_NEW\1 Maps\Chapter1\1_10_soil_types.mxd ArcMap Version 9</p>	<p>Stateplane Projection Datum NAD83 Units meters</p> <p>Source: University of Florida Geoplan Center</p>	<p>— Five Foot Intervals</p> <p>— Ten Foot Intervals</p>	<p></p> <p>Scale: 1:320,000 1 inch = 4.9 miles</p>	<p>This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantees, implied or otherwise as to its use. This is not a survey or is it to be used for design.</p>
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Map 4.4 Drainage Basins Directly Affecting Charlotte County

Table 4.3 Total Acreage of Drainage Basins Affecting Charlotte County


Basin Number	Drainage Basin Name	Acreage	Basin Number	Drainage Basin Name	Acreage
1	FISHEATING CREEK	234626.81	35	BIG MOUND CREEK	1299.40
2	FRAMIE CREEK	44695.60	36	WINGOURD CREEK	1626.97
3	DOG SLOUGH	3776.68	37	BIGGESS HOLE OUTFLOW	402.04
4	BIG SLOUGH CANAL	34682.02	38	CHARLOTTE HARBOR	107466.44
5	LEHON BAY	10591.57	39	WEST CALOOSAHATCHEE	325372.03
6	HYAKKA RIVER	35489.77	40	TOTAL CALOOSAHATCHEE	216618.79
7	GANNET SLOUGH	10525.15	41	DIRECT RUNOFF TO BAY	3745.32
8	LEE BRANCH	4524.88	42	DIRECT RUNOFF TO BAY	1248.24
9	ROCK CREEK	4094.53	43	DIRECT RUNOFF TO BAY	454.70
10	SHELL CREEK	4296.15	44	DIRECT RUNOFF TO BAY	19195.20
11	SAM KNIGHT CREEK	4635.43	45	DIRECT RUNOFF TO BAY	513.27
12	LITTLE ALLIGATOR CREEK	5055.40	46	DIRECT RUNOFF TO BAY	1226.70
13	CYPRESS SLOUGH	4714.34	47	DIRECT RUNOFF TO BAY	1211.51
14	GOTTFRID CREEK	7226.99	48	DIRECT RUNOFF TO BAY	2153.39
15	TRAILER PARK CANAL	587.52	49	DIRECT RUNOFF TO BAY	548.93
16	TIPPECANOE BAY	1451.72	50	DIRECT RUNOFF TO BAY	216.51
17	PEACE RIVER	56196.65	51	DIRECT RUNOFF TO BAY	205.70
18	CLEVELAND CEM DITCH	4525.77	52	DIRECT RUNOFF TO BAY	1162.47
19	HYAKKA CUTOFF	2314.95	53	DIRECT RUNOFF TO BAY	197.03
20	DIRECT RUNOFF TO STREAM	1376.59	54	DIRECT RUNOFF TO BAY	352.40
21	BROAD CREEK	2876.65	55	DIRECT RUNOFF TO BAY	1556.75
22	OYSTER CREEK	3219.66	56	DIRECT RUNOFF TO BAY	2355.23
23	N FORK ALLIGATOR CREEK	4822.09	57	UNNAMED DRAIN	3167.75
24	TELEGRAPH SWAMP	51233.30	58	BEAR BRANCH	1709.34
25	BUCK CREEK	11243.82	59	WHIDDEN CREEK	2793.14
26	PUNTA GORDA ISLES CA	732.00	60	UNNAMED DITCH	1840.39
27	PUNTA GORDA ISLES CA	689.30	61	UNNAMED DITCH	3246.67
28	MANGROVE POINT CANAL	2785.03	62	ALLIGATOR CREEK	14076.08
29	N. P. FORK ALLIGATOR CR	5907.46	63	UNNAMED CANAL	2399.50
30	NORTH COASTAL	10579.23	64	UNNAMED CANAL	5015.85
31	CORAL CREEK	4150.35	65	HITTLE SLOUGH	21295.06
32	CATTIES CREEK BAYOU	5251.74	66	HITTLE SLOUGH	22564.20
33	WHIDDEN BRANCH	4121.64	67	UNNAMED DITCH SYSTEM	42170.95
34	PIRATE CANAL	5810.45	68	UNNAMED DITCH SYSTEM	4122.93



Charlotte County Community Development
Land Information Services-MLH
Draft Date 11/05
Location: g:\g\comp_plan_NEW\N\Maps\Chapter11_10_soi_types.mxd
ArcMap Version 9

Stateplane Projection
Datum NAD83
Units meters

Source: Southwest Florida
Water Management District
& Charlotte County
Stormwater Department

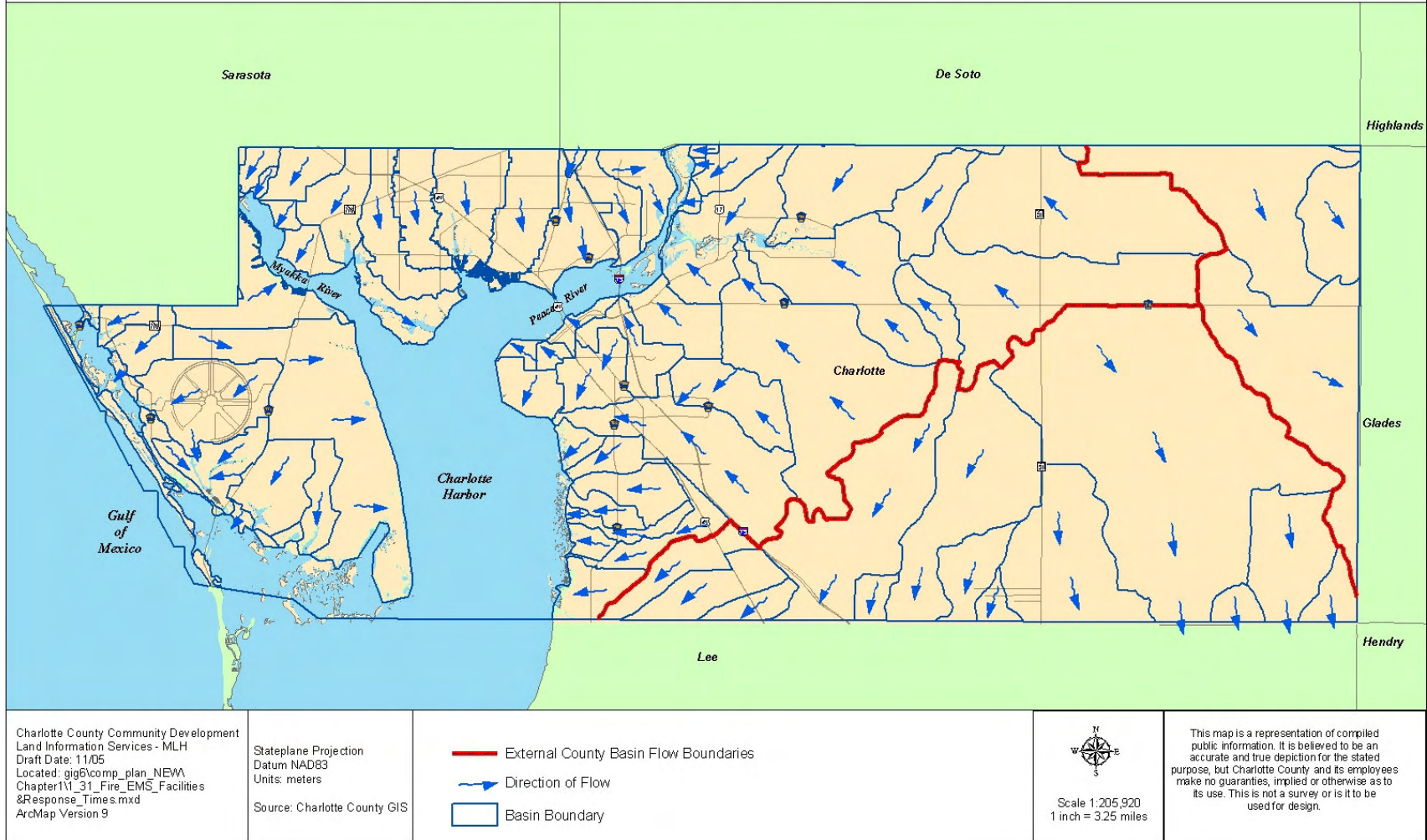
 Charlotte County Boundary



Scale: 1:570,240
1 inch = 9 miles

This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantees, implied or otherwise as to its use. This is not a survey or is it to be used for design.

Map 4.5 Charlotte County Stormwater Basin Flow



Manmade Canals

There are over 370 miles of manmade canals in Charlotte County, all of which were constructed by channeling natural surface water features or excavating uplands. A great number of these canals drain into Charlotte Harbor. The installation of drainage canals alters the hydrology of an area by inducing greater rates of surface runoff and sub-surface flow. The drainage canals typically link into natural creek and river systems, which in turn empty into the saltwater bays and Charlotte Harbor estuary. Thus, the rain falling within the county is transported more quickly to the Gulf than would be the case if there were no canals. As a consequence of the canals, the water table is lowered below natural levels and the estuary systems of the bays and harbor are impacted by changes in freshwater flows. Manmade Canals are included on following table.

The seventy-three drainage basins have the following characteristics:

- Twenty-four (24) estuarine water bodies are designated as Class II surface water bodies;
- Twenty-eight (28) surface water bodies are designated as Outstanding Florida Waters (OFW);
- Twenty-one (21) are located in the county's three State Aquatic Preserves;
- Surface waters designated as Class I waters are designated as potable water sources.
- Drainage basins do not follow the Urban Service Area boundaries

Lemon Bay Stormwater Management Area

The Cape Haze Peninsula (West County) is divided into twenty (20) drainage basins. The topography of the surface ranges from elevations of fourteen (14) feet along ridge lines to sea level. A study by SWFWMD indicated that the original topography and natural drainage patterns had been greatly altered by roads, land filling, manmade lakes, and dead-end canals. These developments, as well as some agricultural uses, contributed to the "wasteloading" of creeks and Lemon Bay. It was reported that flood control structures were affecting historic wet season nutrient laden runoff. This study indicated that it would be difficult for future development of the creek basins to be compatible with the natural topography and drainage patterns of the area. Lemon Bay was named an Aquatic Preserve by the State in 1986.

Charlotte County Drainage Districts

The County contains approximately 823 square miles of surface area of which approximately 129 square miles of inland surface waters are dominated by Charlotte Harbor. Charlotte Harbor is formed by the confluence of the Peace and Myakka rivers. These three water bodies divide Charlotte County into three distinct geographic regions adding to the tidal influence during storm events. The three drainage districts Central Charlotte, Bermont and East Charlotte Drainage Districts are typically wet areas subject to overflow. These districts were established to drain, reclaim and protect the individual areas from the effect of water in an effort to make the lands available for agricultural, settlement, urban and subdivision purposes by draining, reclaiming and improving the individual areas. The districts are established for the purpose of paying the cost of administering the affairs of the district generally, and for the purpose of maintaining, operating, preserving and rendering efficient ditches, canals, drains, dikes, levees, and other improvements.

4. Charlotte Harbor Water Quality

Charlotte Harbor (including the waters around the Cape Haze peninsula and Gasparilla Sound) is

designated as an aquatic preserve, a priority waterbody of the Southwest Florida Water Management District's (SWFWMD) Surface Water Improvement and Management (SWIM) program and, as of 1995, is included in the National Estuary Program administered by the US Environmental Protection Agency. Charlotte Harbor is the second largest estuary in the State of Florida. In addition to being considered one of the State's most productive estuaries for commercial and recreational fishing, it provides habitat for more than 30 endangered species (Hammett, 1988). The information under the Myakka River Basin and the Peace River Basin sections are taken from the 2002 *Southwest Florida Strategic Regional Policy Plan* (SRPP) and the CHNEP water quality report information as of September 2004.

The 2002 *Southwest Florida Strategic Regional Policy Plan*, (SRPP) also identifies the Charlotte Harbor Estuary as one of Florida's largest bays. Fresh water is fed to the system from the north by the Myakka and Peace Rivers and to the east from several small coastal creeks and canals. Charlotte Harbor is significantly influenced by the flows from the Peace River to the north. The northern portion of Charlotte Harbor is also a SWIM body under the jurisdiction of the SWFWMD while the southern portion of the Harbor, which is also under the jurisdiction of the SWFWMD, is not considered a SWIM priority. The Charlotte Harbor National Estuary Program study area covers the entire Charlotte Harbor Ecosystem including Lemon Bay and Estero Bay and their watersheds.

Charlotte Harbor's shoreline is predominantly comprised of mangrove swamps. Urban developments do occur in some areas of the northernmost section of the harbor (Port Charlotte) and at the mouth of the Peace River (Punta Gorda). Along the southern basin boundary large, upscale community developments are being developed. The Charlotte Harbor National Estuary Program (CHNEP) credits rapid urban development for radically changing the character and ecology of river mouth and coastal waters.

Although the SRPP and the CHNEP report that the water quality in the basin is generally good, there are some areas of concern. Nutrient levels such as phosphorus and nitrogen are elevated. Phosphorus levels are also elevated and are believed to originate in the Peace River Basin and are associated with the impacts from mining activities in Polk and Hardee Counties. Most pollution identified within the estuary can be linked to development. This includes bacteria which enters the system from urban runoff through canals and sediments from construction and from reverse osmosis discharges.

Excessive surface water withdrawals from rivers and creeks for purposes of water supply may also degrade estuaries that receive freshwater inflows. Changes in historic/natural duration, seasonality and volume of water may affect important sport and commercial saltwater fisheries and other estuarine species. Reports do indicate that fisheries have declined and shell fishing is periodically closed due to bacterial contamination. Surface water withdrawals from the Peace River and the Myakahatchees Creek are proposed for expansion.

Myakka River Basin

The majority of the headwater marshes and tributaries contributing to the Myakka River occur in Manatee County and to a lesser extent from the marshes in Hardee County. The basin is relatively undeveloped and contains a variety of wildlife. Much of the River is designated as a State Wild and

Scenic River and is also designated as an OFW. The waterway is also a SWIM priority and is recognized by the Charlotte Harbor NEP as an estuary of national significance.

Although the river is sluggish and often does not flow during the dry season, the basin is considered to have very good water quality. Dissolved oxygen levels are typically low: tidal influence on flows and salinity can affect the system 20 miles upstream. As with Charlotte Harbor, nutrient levels are elevated due to the upper basin draining phosphorus rich areas combined with agriculture and rangeland run-off.

The lower basin of the Myakka, which include Deer Prairie Creek and the Myakkahatchee Creek (Big Slough Canal), drains rangelands. Although some areas have been channeled to improve drainage and other portions receive drainage from residential canals, the estuary maintains much of its shoreline in a pristine mangrove state. The Myakkahatchee Creek is a potable water supply and is classified as a Class I body of water. Although little development has occurred within the estuary, it is threatened by encroaching development to the east. The lower basin, specifically the Myakkahatchee Creek, also shows elevated nutrient and coliform levels as a result of the runoff from the existing pastureland and residential development.

Peace River Basin

The Peace River originates in the Green Swamp and central Polk County. It flows southward approximately 105 miles before entering Charlotte Harbor. The system serves as an important recharge area for the Floridan Aquifer. A majority of the basin is lined with cypress and hardwood floodplains limiting development along the corridor. Significant development in Lakeland, Winter Haven and Bartow located upstream of the basin, impacts the system in Charlotte County. At the mouth of the river are Port Charlotte and Punta Gorda. Although agriculture is the dominant land use upstream, extensive phosphate mining activities exist at the headwaters of the Peace River. These land use activities continue to impact the lower basin in the form of nitrogen and phosphorus loading which continue to be elevated within the basin. Others sources of pollution include domestic wastewater, industrial discharges from the phosphate mining, chemical and citrus processing plants, and surface runoff from urban, agricultural, rangeland and mined areas. Monitoring of the system in the upper regions, those areas outside Charlotte County (Lake Parker, Banana Lake, and Lake Hancock and their tributaries Saddle Creek, Banana-Hancock Canal, and Lake Lena Run) are reported to have the poorest water quality in the state. Reports indicate elevated nutrients, periodic low levels of dissolved oxygen, low acidity, high bacterial counts, and severely depressed biological communities due to the mining activities. This activity coupled with the areas citrus groves which use high amounts of pesticides, creates runoff potential that will critically threaten aquatic life.

The SRPP reports that further down stream the nonpoint sources are related to agricultural and rangeland runoff. This less intensive land use and the confluence of Horse Creek (a relatively undisturbed tributary system) contributes to the Lower Peace River exhibiting relatively good water quality as compared to the upper reaches of the river. The only exception as it enters Charlotte Harbor is the high phosphorus content.

Although the main body of Charlotte Harbor and its adjacent estuarine systems are reported to be in relatively good condition compared to severely damaged areas, the watershed reflects the pressure of

human activities. If the watershed's population continues to grow at predicted growth rates, these pressures must be addressed to prevent further threats to natural systems and to protect current uses of resources. The challenge for the county is to assist the CHNEP in the protection of all the basins by implementing the NEP's goals of managing mangrove areas, protecting seagrass areas from boat damage and water pollution, securing new water supply sources for growing populations and businesses, managing waste generated by septic tanks and sewer outfalls, protecting wetland areas for water retention, groundwater recharge, and wildlife habitat, and improving the efficiency of freshwater usage.

The CHNEP states that development in Charlotte County, including the harbor's watershed, will continue to increase over the next 20 years, putting more pressure on the area's resources. Land use decisions may increase hydroperiods (the time it takes rainwater to travel to a water body, such as a river) and increase nutrient concentrations (nitrogen and phosphorus loading rates) and lessen habitat areas. Local governments are facing serious land development and management issues which include securing a reliable water supply, treating residential wastewater, and preserving local habitat. All of which become increasingly difficult to manage as the population increases. It is important to address long term management of the harbor's resources and quality of life. The CHNEP continues that "Given the rate and scale of land use decisions in the study area, a continuing program effort will be needed in the general subject area of land use management. Also, the program must address the problem of incomplete information on particular topics. Certain topics in certain geographic areas may be important but lack definitive data.

5. Stormwater Management Systems

Development increases runoff by increasing flow velocity and flow volume due to the presence of impervious surfaces. Flow velocity and volume increase significantly when the path is changed from rough surfaces, such as woodland, grassland, or natural channels to smoother surfaces, such as parking lots, diversions, storm sewers, gutters, and lined channels. The creation of large expanses of impervious surfaces also prohibits water storage in the soils they cover. The impervious surfaces compound the problem, because runoff rates and volumes are increased while natural water storage capacity is lost.

The majority of the County's drainage swales in residential areas are shallow (6 to 24 inches in depth) and vegetated with a minimal slope. Deeper drainage ditches are located along State Road 776 and County Roads 775 and 771. These ditches effectively function as subdrainage basin dikes and ridges and had discharge points along Gottfried, Ainger, Oyster, and Buck Creeks and Lemon Bay.

One-hundred eleven (111) discharge points are distributed as follows: twenty-four (24) on Lemon Bay: twenty-nine (29) on Gottfried Creek: thirty-four (34) on Ainger Creek: fifteen (15) on Oyster Creek: and nine (9) on Buck Creek. Twenty-one (21) of the discharge points are located in areas not receiving an effective tidal flushing.

Waterway Analysis and Evaluation

There are ten manmade waterways - the Auburn, Courtland, Pellam, Crestview, Lion Heart, Como, Morningstar, Doolittle, Claremont, and Sunset Waterways. The soils in the vicinity of the waterways

are reported as fine to medium with organic materials interspersed with sand. The majority of the surrounding land uses are platted into single-family lots
Any updates Delete Table 4.5

Design Capacity of Roads

According to the Florida Department of Transportation (FDOT), major evacuation routes should be passable (water less than 1.0 foot deep at the roadway crown, with velocity less than 8 feet per second) during the 100-year flood. This criterion applies to Interstate Highway 75; US Routes 17 and 41 (North of State Route (SR) 776); SR 776, and 31, and County Roads 769, 771, 775 and 74. Arterial and collector roadways (4-lane roads) should be flood-free (water does not exceed the lowest pavement elevation) during the 25-year flood. Residential streets and other 2-lane roads should be passable (water does not exceed the centerline) during the 5-year flood. Parking lots could have a maximum depth of 0.75 feet during the 5-year flood.

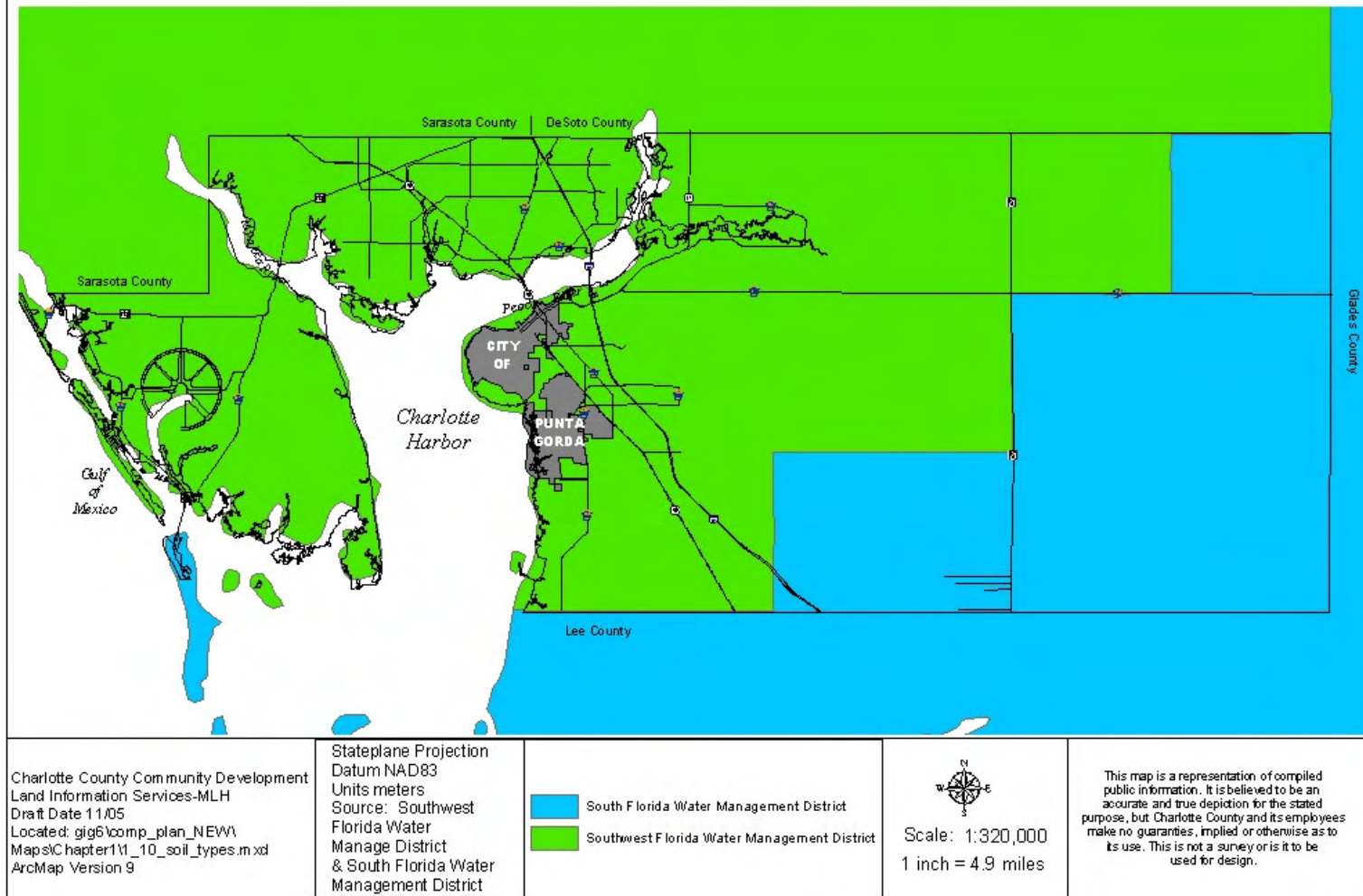
Stormwater Management Facilities in Charlotte County

This section, required by Rule 9J-5.011 (1) (d) *Florida Administrative Code*, identifies the operational responsibility of stormwater management facilities, geographic service area, and the design capacity of the facilities.

The Charlotte County Division of Public Works is responsible for constructing, maintaining, and inspecting the stormwater infrastructure on County property, in public right-of-way, and drainage easements.

Any stormwater facility which had been constructed after 1984 was required to be permitted by the appropriate Water Management District. Charlotte County falls under two water management districts. Map 4.6 identifies those boundaries. A majority of the western portion of Charlotte County lies within the Southwest Florida Water Management District (SWFWMD) boundaries, while a small portion of eastern Charlotte County lies within the South Florida Water Management District (SFWMMD) boundaries. Permits are required when improvements or upgrades to infrastructure are warranted. Charlotte County Public Works is required to operate, maintain, inspect and monitor said infrastructure as a general condition of the Water Management permit. Upon completion of a permitted infrastructure improvement project, A Statement of Completion and surveyed As-builts are required to be submitted to the appropriate Water Management District. Once approved, the project is transferred to operation phase. Infrastructure is then scheduled for regular inspections (and monitoring if required), usually every 18 or 24 months. As a result of the inspection, maintenance may be necessary otherwise, a Statement of Inspection for Proper Operation and Maintenance certified by a registered professional engineer is sent to the Water Management District.

Map 4.6 Water Management Districts Jurisdiction



Service Area

Charlotte County established a stormwater utility in 1992 to perform stormwater management tasks. The utility is funded by special assessment districts (Municipal Services Benefit Units) in three geographic locations: Mid-Charlotte, West Charlotte, and South Charlotte. This section of the Infrastructure Element addresses the role that the Stormwater Utility plays in the County's stormwater management programs.

The Infrastructure element is an integral component of Charlotte County's Urban Service Area (USA) strategy. The Urban Service Area strategy consists of areas where the maintenance and provision of urban infrastructure and services will be concentrated. The idea behind this strategy is that development will locate in areas where infrastructure and services are available. According to the USA strategy, the (1) urban infill areas, (2) suburban service areas, and (3) rural service areas should receive drainage maintenance, improvements, and additional infrastructure in that order.

Population densities will most likely be higher in the urban infill and suburban service areas and therefore, stormwater management infrastructure should be delivered to those areas before the rural service area. Of course other criteria, such as the protection of public health and safety, are also used to guide stormwater management provision within the county.

A stormwater management policy in the Goals, Objectives, and Policies section lists criteria for ranking and evaluating stormwater management priorities; these criteria are to be continued and used in conjunction with the Urban Service Area strategy when determining stormwater management priorities.

- Level One - whether the project is needed to protect health and safety, to fulfill the County's legal commitment to provide facilities and services, or to preserve or achieve full use of existing facilities.
- Level Two - whether the project increases efficiency of use of existing facilities, prevents or reduces future improvement costs, provides service to developed areas lacking full service or promotes in-fill development.
- Level Three - whether the project represents a logical extension of facilities and services within a designated service area.

SWFWMD Facilities

The SWFWMD operates one water management structure in Charlotte County, a salinity barrier within Alligator Creek near Taylor Road in South County. The purpose of a salinity barrier is to prevent saltwater from flowing into freshwater canals. The gates on these structures operate automatically as tides rise to prevent saltwater from moving upstream. During flood events, these gates can be opened in attempt to provide for more storage and conveyance capacity in the channels. Opening the gates and letting the channels flow unrestricted does not always help during flood events, though, since the force of tides can retard or even neutralize the channel flow during major events such as hurricanes.

6. Performance of Stormwater Management Facilities

Evaluation of Levels of Service

Level of service (LOS) standards are important tools for evaluating the performance of storm and surface water management systems and for prioritizing capital improvement needs. Storm water level of service standards is the primary method for ensuring that new development will provide adequate storm water facility capacity to meet demands and to prevent adverse impacts to water resources and private property. Regulatory programs are tied to LOS requirements to ensure maintenance of the level of service through mitigation of development impacts.

The minimum level of service standards have been met by all new development, both public and private, since the adoption of the 1988 Comprehensive Plan. On-site stormwater management facilities are a prerequisite before a developer within Charlotte County can complete a development project on a site (with the exception of one single-family, one duplex, or one tri-plex residences located on a single site and accessory structures for that residence, model homes, fences, various agricultural uses, and any proposed development activity deemed insignificant by the County Engineer).

The level of service standards has two major components: quality of discharge and quantity of discharge. Both of these components must be considered to develop a well-rounded storm and surface water management program.

Quality of Discharge

The County's approach to level of service for quality of discharge should be consistent with the recommendations being developed by the Charlotte Harbor National Estuary Program (CHNEP) and the requirements of State Water Policy.

Level of service criteria for storm water quality should at a minimum maintain water quality consistent with the final pollutant load reduction goals (PLRGs) established by the local State and Federal water quality programs. Pollutant load reduction goals will be implemented according to a schedule provided in the Southwest and South Florida Water Management District's Water Management Plan.

Quantity of Discharge

Establishment of level of service standards for quantity of discharge must account for various magnitudes of storm events and acceptable levels of flooding. In 1993 the Water Management Districts throughout the state prepared draft stormwater level of service standards for consideration. These levels of service standards were based on providing varying degrees of flood protection based on the nature of the facility and the acceptability for potential flooding. The quantity level of service standards advanced by the Water Management Districts is identified in Table 4.4. Roads shall be passable during flooding. Roadway flooding depth <6" depth at the outside edge of pavement is considered passable. Flooding at sites refers to standing water in agricultural land, developed open or green space (yards and parking lots, etc.) and undeveloped lands designated for future development. The Stormwater Division refers to the most recent Water Management Districts levels of service standards.

Table 4.4 Stormwater Quality Level of Service and Design Criteria	
Flooding Reference (buildings, roads, and sites)	Level of Service (flood intervals in years)
Buildings	
Emergency Shelters and essential services	>100
Habitable	100
Employment /Service centers	100
Road Access	
Evacuation Corridors	>100
Arterials	100
Collectors	25
Neighborhood	5
Sites	
Urban (>1 unit/acre)	5
Rural	2
Flow Ways	
Canals	100
Primary Drainage Ditches	25

Source: Public Works, Stormwater Management Department 2005

Using these levels of service standards will allow all emergency structures to be operational during the 100-year storm. Other structures (commercial, residential and public) should be damage-free (water surface below first-floor elevation) during the 100-year flood. According to FDOT, major evacuation routes should be passable (water less than 1.0 foot deep at the roadway crown, with velocity less than 8 feet per second) during the 100-year flood. This criterion applies to Interstate Highway 75; US Routes 17 and 41 (North of State Road (SR 776); SR 771, 776, 31; and County Roads 769, 775 and 74. Arterial and collector roadways (4-lane roads) should be flood-free (water does not exceed the lowest pavement elevation) during the 25-year flood. Canals and open channels should carry the 25-year flood within the banks of the channel. Residential streets and other 2-lane roads should be passable (water does not exceed the centerline) during the 5-year flood. Parking lots should have a maximum depth of 0.75 feet during the 5-year flood.

Drainage basins or canal networks that do not meet the Charlotte County level of service guidelines will be targeted for stormwater management improvement projects. In the Charlotte County MSMP, problem area rankings and alternative improvement projects are directly related to LOS goals.

Impact of Facilities on Natural Resources

As Charlotte County continues to grow, the amount of impervious surfaces will continue to increase.

This increase in impervious surface increases the amount of stormwater runoff. Surface waters, such as creeks, lakes and bays, are the receiving waters of stormwater runoff. Runoff often carries large volumes of litter, automobile wastes, animal wastes, fertilizers, and pesticides. As a result, water quality problems are often found in transmitting and receiving waters. Stormwater runoff from urban and commercial areas typically contains significant quantities of the same general types of pollutants that are found in wastewaters and industrial discharges. These pollutants contain heavy

metals, pesticides, herbicides and synthetic organic compounds such as fuels, waste oils, solvents, lubricants and grease. Surface water that receives runoff from agricultural areas often is subject to pollution associated with concentrations of fertilizers, pesticides, and animal wastes. These pollutants cause problems to both human health and the aquatic ecosystems supported by diverse receiving water bodies.

E. Existing Condition and Projected Stormwater Management Needs for Charlotte County

This section, as required by Rule 9J-5.011 (1) (f) *Florida Administrative Code*, identifies the existing condition, capacity analysis, projected needs, deterioration, problems of stormwater facility development, and expansion of stormwater management facilities.

General Condition

The drainage infrastructure is nearing the end of its design life in many areas of Charlotte County. The MSMP will have an increasingly significant effort placed on replacement of deficient drainage elements. Some drainage ditches and canals have easements for the structure but not for maintenance access, making maintenance of these facilities difficult. In situations where there are no easements at all, facilities cannot be maintained by the County. Without maintenance, drainage conditions can deteriorate and flood hazards can increase.

The continuing operation of the County's existing stormwater management system requires periodic maintenance to remove siltation, debris, and nuisance vegetation. Such maintenance requires access to and along canals, ponds, and lakes. In many cases access is not available, principally because the County's stormwater management system was constructed prior to the establishment of regulations requiring the provision of adequate easements.

Throughout the county there are individual private stormwater management systems with lakes and drainage ways which serve only the on-site drainage requirements of specific developments and are not considered part of the county-wide stormwater management system. Maintenance responsibility for these on-site private facilities lies with private entities. Monitoring to confirm that these private systems are adequately maintained is the responsibility of the private development for SWFWMD and SFWMD permit criteria.

Facility Capacity Analysis

As the population grows, the area covered by impervious surfaces will also increase, increasing stormwater runoff and surface water pollution. As the quantity of stormwater runoff and the public's desire for higher levels of service increases, the ability of current facilities to handle runoff will decrease. Stormwater management techniques, as described in this element, will be used to protect water quality and prevent flooding.

Deterioration and Maintenance of Public Stormwater Management Facilities

The Public Works Maintenance and Operations (M&O) Department is tasked with providing routine maintenance of the County's stormwater conveyance systems, stormwater management facilities, and stormwater infrastructure. The Public Works M&O Department receives service requests from residents who require routine maintenance of their stormwater roadside conveyance system (drainage

swales). These requests are then inspected and scheduled accordingly.

Service life varies for major stormwater management control facilities. Mechanical and steel components have shorter operational lives than do concrete components of storm systems. Mechanical devices generally have a short design life. The following table identifies service life for stormwater management components.

Table 4.5 Service Life for Stormwater Management Components	
Component	Service Life
Collection systems (storm sewers, manholes, and concrete culverts) and Structures (pump stations and wells)	30 years
Equipment used in freshwater	20 years
Equipment used in brackish water	10 years
Auxiliary equipment, control facilities, pumps, and motors	10 years

Source: Charlotte County Stormwater Procedures Manual prepared by Carter-Burgess and CH2M Hill Fall 1994

Problems of Public Stormwater Management Facility Development

The development of stormwater management facilities in Charlotte County is relatively difficult and expensive due to engineering and real estate constraints. The designing and building of such facilities are generally contracted out to private engineering and construction firms. The primary concerns relating to stormwater management facilities mainly relate to capacity and design life.

Expansion & New Facility Siting

Expansion of stormwater facilities will be based upon those drainage basins that have the potential to improve stormwater management for the lowest levels of service for the greatest number of citizens. The goal of the MSMP maintenance is to improve the overall conveyance system. Stormwater management plans for all private development and for projects in the County's Capital Improvement Plan (CIP) are important elements to achieve the MSMP goals.

F. Municipal Services Benefit Units (MSBUs) and Municipal Services Taxing Units (MSTU's)

MSBU's are specific benefit assessment units, established by the Board of County Commissioners. Within a MSBU, revenue is derived from non-ad valorem assessments. These assessments are reviewed and a work program is created. The cost of the annual work program is then divided by the total number of equivalent residential units (ERU) within the MSBU. The result is an assessment per ERU. Typically a single residential lot is equivalent to 1 ERU. The method of calculating the assessments per unit may vary by front footage, lots, and acreage. The method chosen is set forth in the ordinance or resolution.

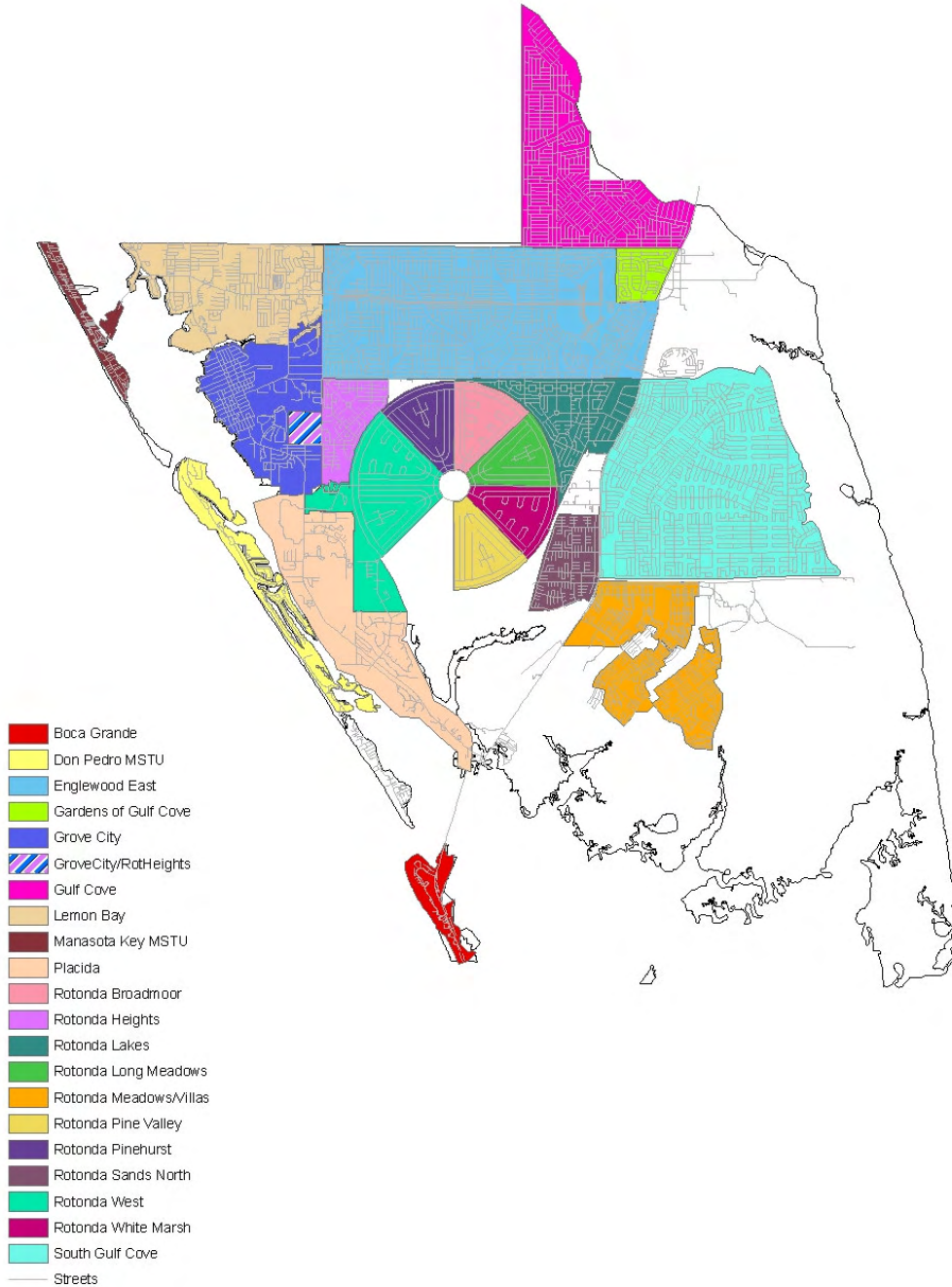
Similar to the MSBU's are the Municipal Services Taxing Units (MSTU's). In this case, revenue is derived from ad valorem taxes. The millage rate is determined by allocating the cost of the annual work program among the taxable value of all property within the unit. The method of calculating the taxes per unit may vary by value. The method chosen is set forth in the ordinance or resolution that

creates the unit.

Both MSBU's and MSTU's are created by ordinance and the annual rate is set by resolution. MSBU's and MSTU's are delineated by specific boundaries through which particular services are provided. The annual budget for both types of units is based on the cost of the adopted work.

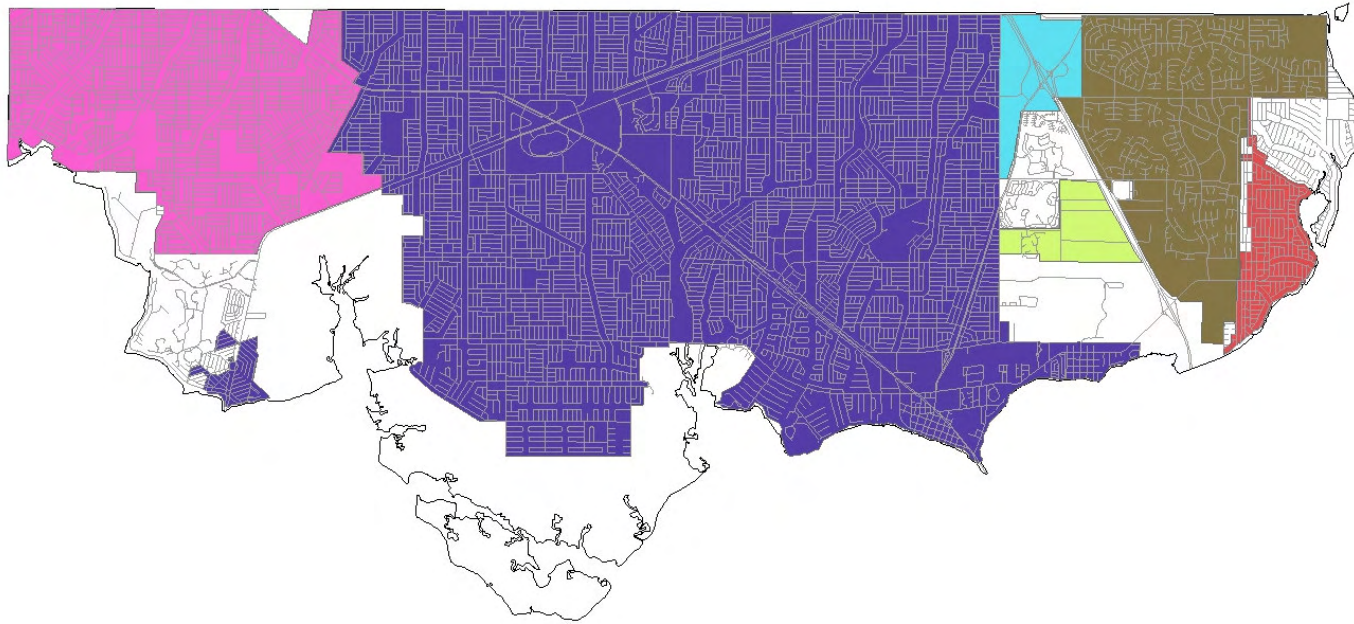
Charlotte County has established MSBU's and MSTU's (shown on Maps 4.7 through 4.9) in order to collect funds for Street and Drainage Districts as well as Waterway Districts (shown on Map 4.10). These funds are used for operation and maintenance of much of the County's stormwater management system. MSBUs and MSTU's are established in many areas of the county. Although other departments use MSBU's and MSTU's as well, the maps identify only those areas that are managed by Charlotte County's Public Works Division. Other departments use the MSBU's and MSTU's system to generate revenue for their stated purposes and these will be discussed in the appropriate sections. Street and drainage units are created for the purpose of maintaining or improving the infrastructure. Typical components of the infrastructure within a unit are roads, drainage swales, stormwater pipes and control structures, and sidewalks and bike paths. Traffic signs and road striping and brush removal to keep lines clear are other associated maintenance activities. Waterway units are created for the purpose of maintaining navigable waterways. This is accomplished through dredging waterways and placing signage for safe navigation and by performing lock maintenance.

Map 4.7 West County Streets & Drainage M.S.B.U.s



<p>Charlotte County Community Development Land Information Services-WSS Draft Date 12/05 Locatext g:\g\comp_plan_NEW\1 Maps\Chapter4\4_7_West_Cnty_Street_Drainage.mxd ArcMap Version 9.1</p>	<p>Stateplane F Projection Datum NAD83 Units meters Source: Charlotte County MSBU & GIS Departments</p>	 <p>Scale: 1:95,040 1 inch = 1.5 miles</p>	<p>This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guaranties, implied or otherwise as to its use. This is not a survey or is it to be used for design.</p>
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Map 4.8 Mid - County Street & Drainage



Charlotte County Community Development
 Land Information Services - WSS
 Draft Date: 12/05
 Located: gig6\comp_plan_NEW\Chapter4\4_8_Mid_Cnty_Street_Drainage.mxd
 ArcMap Version 9.1

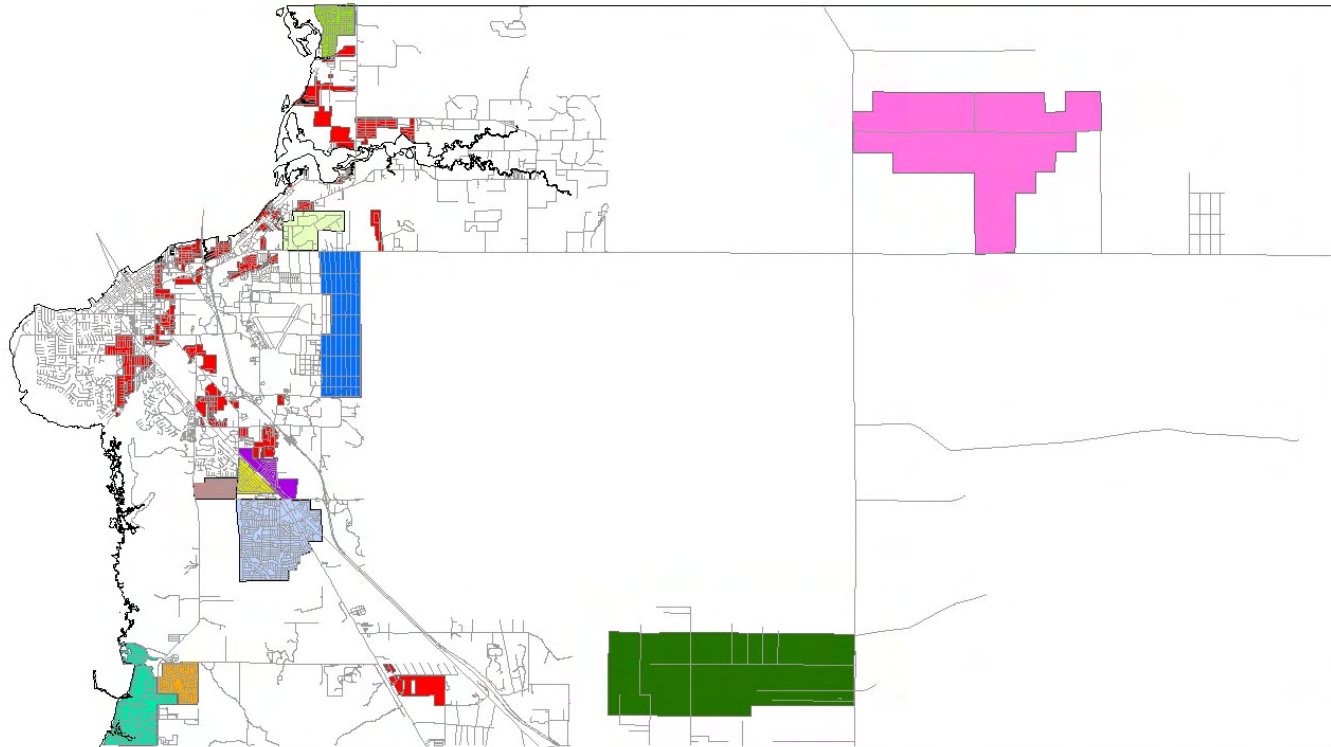
Stateplane Projection
 Datum NAD83
 Units: meters
 Source: Charlotte County
 MSBU & GIS Departments

- Deep Creek
- Greater Port Charlotte
- Harbour Heights
- NW Charlotte
- Sandhill MSTU
- Suncoast
- Streets


 Scale 1:79,200
 1 inch = 1.25 miles

This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantees, implied or otherwise as to its use. This is not a survey or is it to be used for design.

Map 4.9 South & East County Street & Drainage M.S.B.U.s



Charlotte County Community Development
Land Information Services - WSS
Draft Date: 12/05
Located: gig6comp_plan_NEW\Chapter4\
4_9_South_East_Cnty_Street_Drainage.mxd
ArcMap Version 9.1

Stateplane Projection
Datum NAD83
Units: meters

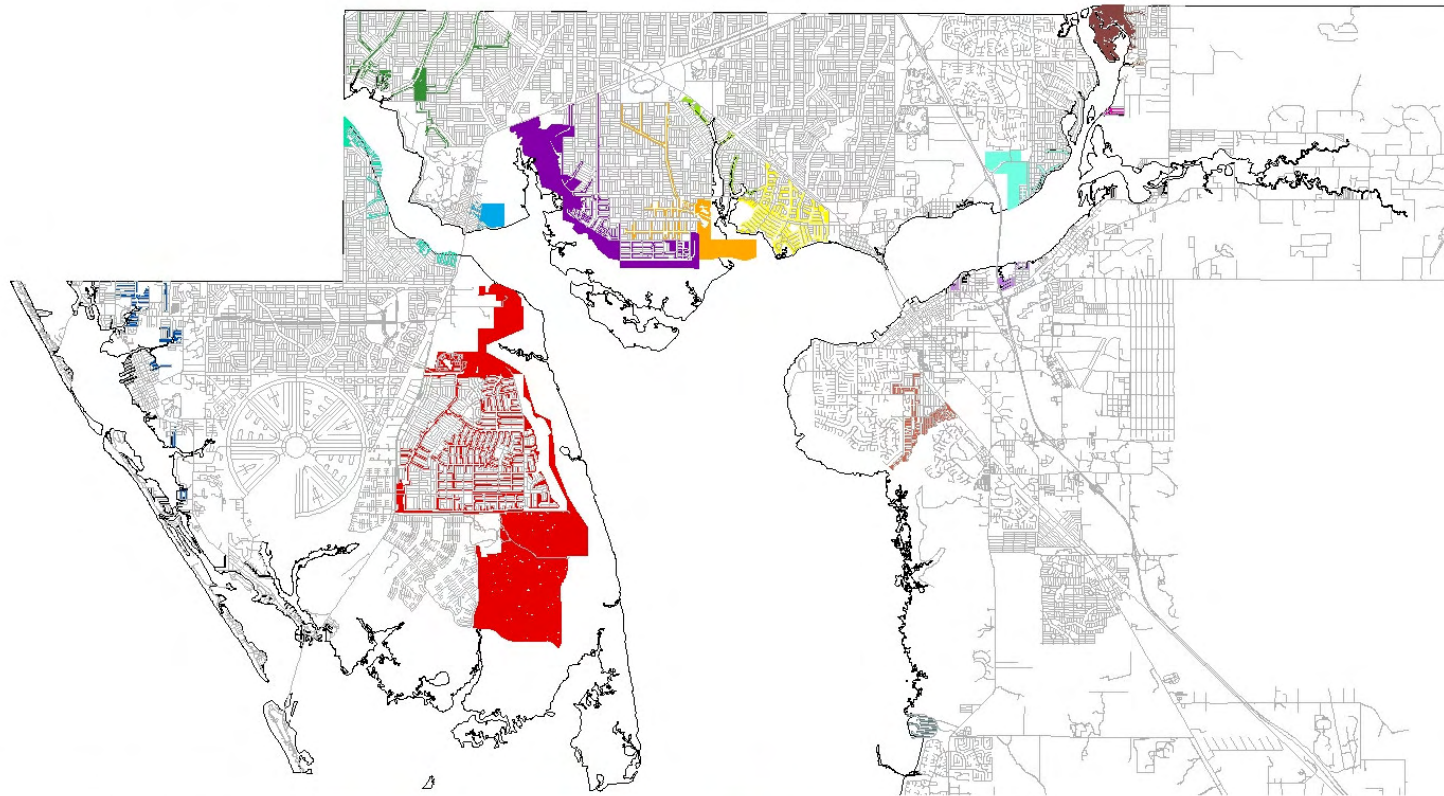
Source: Charlotte County
MSBU & GIS Departments

- | | | |
|----------------------|-------------------------------|--------------------------------|
| Burnt Store Village | Peace River | South Punta Gorda Heights |
| Charlotte Ranchettes | Punta Gorda Non-Urban | South Punta Gorda Heights West |
| Cook Brown | South Burnt Store | Towne Estates |
| Neal Road | South Punta Gorda Height East | Tropical Gulf Acres |
| | | Streets |

Scale 1:158,400
1 inch = 2.5 miles

This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantees, implied or otherwise as to its use. This is not a survey or is it to be used for design.

Map 4.10 Charlotte County Waterway Maintenance M.S.B.U.Areas




Charlotte County Community Development
Land Information Services - WSS
Draft Date: 12/05
Located: gig6\comp_plan_NEW\Chapter4\4_10_Waterway_maintenance_MSBU.mxd
ArcMap Version 9.1

Stateplane Projection
Datum NAD83
Units: meters

Source: Charlotte County
MSBU & GIS Departments

- | | | |
|--|---|---|
| ■ South Gulf Cove | ■ Lemon Bay | ■ Northwest Port Charlotte |
| ■ Ackerman | ■ Manchester | ■ Alligator Creek |
| ■ Buena Vista | ■ Palm Shores | ■ Harbour Heights |
| ■ Greater Port Charlotte | ■ Peace River Shores | ■ Lee Branch |
| ■ Gulf Cove | ■ Pirate Harbor | — LAYERS.GIS.STREETS |
| ■ Hayward Canal | ■ South Peace River | |


Scale 1:142,560
1 inch = 2.25 miles

This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guaranties, implied or otherwise as to its use. This is not a survey or is it to be used for design.

Table 4.6 MSBUs and MSTU's in Charlotte County		
MSBU/MSTU Name/Location	Type	Purpose
Mid-Charlotte	Stormwater Utility District	To provide for financing, design, construction, maintenance and operation of the stormwater Management system.
South Charlotte	Stormwater Utility District	To provide for financing, design, construction, maintenance and operation of the stormwater Management system.
West Charlotte	Stormwater Utility District	To provide for financing, design, construction, maintenance and operation of the stormwater Management system.
Boca Grande	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto, as well as sidewalks, bike paths and beautification projects.
Burnt Store Village	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Charlotte Ranchettes	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Cook and Brown	Street/ Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto
Deep Creek	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Don Pedro/Knight Island	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Englewood East	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of

Table 4.6 MSBUs and MSTU's in Charlotte County		
MSBU/MSTU Name/Location	Type	Purpose
		the platted streets in the Unit, including the necessary appurtenances thereto.
Gardens of Gulf Cove	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Greater Port Charlotte	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Grove City	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto, including beautification and landscaping projects.
Gulf Cove	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Harbour Heights	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Lemon Bay	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto. Right-of-way mowing (4 cycles), grading of marl roads, vegetation control, concrete repair, pavement repair, guardrail repair, sign fabrication and installation, outfall maintenance, ditch maintenance and culvert cleaning.
Manasota Key	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto, as well as sidewalks, bike paths and beautification projects. Completion of decorative street lighting &

Table 4.6 MSBUs and MSTU's in Charlotte County		
MSBU/MSTU Name/Location	Type	Purpose
		signage project, paving Sand Dollar Road, landscaping, vegetation control, concrete repair, pavement repair, street sweeping, sign fabrication and installation, outfall maintenance, ditch maintenance and culvert cleaning.
Northwest Port Charlotte	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto, including beautification and landscaping projects.
Peace River Shores	Street/Drainage Unit Maintenance Fund	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Placida Area	Street/Drainage Unit Maintenance Fund	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Punta Gorda Non Urban ***	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Rotonda Broadmoor *	Street/Drainage Unit	Assessment collection for road paving only.
Rotonda Heights	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Rotonda Lakes	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Rotonda Long Meadow*	Street/Drainage Unit	Assessment collection for road paving only.
Rotonda Meadows**	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Rotonda Pinehurst*	Street/Drainage Unit	Assessment collection for road paving only.
Rotonda Pine Valley*	Street/Drainage Unit	Assessment collection for road paving only.

Table 4.6 MSBUs and MSTU's in Charlotte County		
MSBU/MSTU Name/Location	Type	Purpose
Rotonda Sands	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Rotonda West	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Rotonda White Marsh Street*	Street/Drainage Unit	Assessment collection for road paving only.
Rotonda Villas	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Sabal Palm Drive***	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
South Burnt Store	Street/Drainage Unit Fund	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto, including beautification and landscaping projects.
South Gulf Cove	Non-urban Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto, including beautification and landscaping projects and to provide for acquisition, construction and maintenance of community involvement projects that includes a pedestrian/bikeway system, neighborhoods parks, greenways and open space.
South Punta Gorda Heights	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto. Right-of-way mowing (4 cycles), vegetation control, pavement repair, sign fabrication and installation, outfall

Table 4.6 MSBUs and MSTU's in Charlotte County		
MSBU/MSTU Name/Location	Type	Purpose
		maintenance, ditch maintenance, culvert cleaning and aquatic weed control.
South Punta Gorda Heights East	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
South Punta Gorda Heights West	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Suncoast Boulevard	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Three Rivers	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Town Estates	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Tropical Gulf Acres	Street/Drainage Unit	To provide for the construction, reconstruction, repair, paving, repaving, hard-surfacing, re-hard surfacing, widening, guttering, and draining of the platted streets in the Unit, including the necessary appurtenances thereto.
Ackerman Waterway	Navigable Waterway Unit	To provide for dredging and maintenance of canals and waterways within the Unit.
Alligator Creek Waterway	Navigable Waterway Unit	To provide for dredging and maintenance of canals and waterways within the Unit.
Buena Vista, Grassy Point, ELF Waterway	Navigable Waterway Unit	To provide for dredging and maintenance of canals and waterways within the Unit.
Gulf Cove Waterway	Navigable Waterway Unit	To provide for dredging as well as periodic maintenance and repairs of such canals, waterways and channels and any necessary structures within the Unit.
Harbour Height Waterway	Navigable Waterway Unit	To provide for dredging as well as periodic maintenance and repairs of such canals,

Table 4.6 MSBUs and MSTU's in Charlotte County		
MSBU/MSTU Name/Location	Type	Purpose
		waterways and channels and any necessary structures within the Unit
Haywood Canal Area Waterway	Navigable Waterway Unit	To provide for the dredging, maintenance, clearing, marking for navigable purposes, and for safety devices within the Unit.
Lee Branch Creek Waterway	Navigable Waterway Unit	To provide for the dredging, maintenance, clearing, marking for navigable purposes, and for safety devices within the Unit.
Manchester Waterway	Navigable Waterway Unit	To provide for the dredging, maintenance, clearing, marking for navigable purposes, and for safety devices within the Unit.
Pirate Harbor Waterway	Navigable Waterway Unit	To provide for the dredging, maintenance, clearing, marking for navigable purposes, and for safety devices within the Unit.
South Gulf Cove Waterway	Navigable Waterway Unit	To provide for periodic dredging, any repair, expansion or placement of the waterways, canals, locks or accessory facilities, and operation of the lock.

Source: Charlotte County 2005 MSBU Division

*All were placed under the Rotonda West MSBU as of may 25, 2005

** Rotonda Meadows and Villas were combined and are now identified as Rotonda Meadows/Villas MSBU as of May 11, 2004

***Have been combined and are now identified as Punta Gorda Non-Urban MSBU as of May 11, 2004 Federal Emergency Management (FEMA) Rating

Charlotte County has a rating from the Federal Emergency Management Agency (FEMA) under the Community Rating System (CRS). The Community Rating System encourages and rewards community efforts aimed at reducing flood losses and promoting the awareness of flood insurance.

A major benefit to residents of CRS rated communities is that they may receive flood insurance premium rate credits which lowers insurance costs. FEMA rates each community on a scale from one to ten with one being the best obtainable rating. Currently, Charlotte County has earned a Class 5 rating for its stormwater management efforts.

Future Direction

Charlotte County will continue to work towards the Goals, Objectives, and Policies set forth in this document. The County achieves the GOP's by:

- Developing and implementing Master Stormwater Management Plan;
- Managing stormwater runoff to minimize flooding of lands and the degradation of water quality;
- Ensuring that stormwater management facilities are in place and available to serve all new development;
- Maintaining and working towards improving our Community Rating System certification under the Federal Emergency Management Agency;
- Ensuring stormwater management programs are adequately funded and implemented; and

- Managing development within the Federal Emergency Management Agency 100-year floodplain.

Challenges for the County are associated with the impact of development on the stormwater management system and the large number of vacant platted lots. These prevent the County from implementing a large scale stormwater system. However, the development review process, permit issuance, and level of service standards assist the County in offsetting the impact of development on the stormwater management system.

II. SOLID WASTE SECTION

A. Purpose of this section

The purpose of the Solid Waste section is to ensure that necessary sanitation facilities and services are in place to provide for the needs of future populations in Charlotte County. This section identifies and describes the operations of landfill sites and waste collection companies within the county, and outlines a course for solid waste disposal over the life of the comprehensive plan.

B. Relationship of this section to the comprehensive plan

The Solid Waste section is a key component of the comprehensive plan in that it ensures that infrastructure and services are in place to serve existing and new development. Florida laws and regulations require that, prior to issuance of certificates of occupancy for new homes and other buildings, that solid waste facilities and services be in place and able to manage waste generation. In this respect, it is closely linked to the Future Land Use and Capital Improvements Elements. The Future Land Use Element designates the locations and intensities of development which will generate solid waste. The Capital Improvements Element lists funding which assures that the necessary solid waste infrastructure and services will be in place to serve development.

C. Legislation

Numerous federal, state, and local laws and rules regulate solid waste disposal in Charlotte County. In addition to mandates, organizations such as the Southwest Florida Regional Planning Council have guidelines and policies with which Charlotte County's solid waste operations are consistent. Among these rules and plans are chapters 187 and 403 *Florida Statutes*, the Federal Resource Conservation and Recovery Act, Rules 9J-5 and 62-701, the *Florida Administrative Code*, and the Regional Strategic Regional Policy Plan.

Existing State Regulations

- Chapter 187, of the *Florida Statutes*, is the state's comprehensive plan. A goal of the plan is that all solid and hazardous wastes, as well as wastewater, be managed properly. Its policies call for the reduction of landfilled wastes by thirty percent by 1994; county-wide solid waste collection systems which discourage littering and illegal dumping; initiation of programs to develop or expand recyclable material markets; strengthening and enforcement of regulations regarding generation, storage, treatment, disposal, and transportation of hazardous wastes; establishment of systems for identifying the location, type, and quantity of hazardous materials; encouraging coordination of intergovernmental and interstate waste management efforts: identification, development, and encouragement of environmentally sound wastewater treatment and disposal methods: and encouragement of strict enforcement of hazardous waste laws and swift prosecution of violators.
- Chapter 403, Part IV, *Florida Statutes*, known as the 1988 Solid Waste Management Act, greatly altered the management of solid waste for local governments within the state. The act required local governments to start recycling programs in order to reduce the amount of waste being

deposited into landfills by thirty percent (30%). The act also addresses the disposal of various other wastes such as lead-acid batteries, used oil, and tires. House Bill [HB] 851 passed by the 2002 Florida Legislature and signed by the Governor on May 30, 2002 modifies the solid waste management goals found in Section 403.706, Florida Statutes. Recycling programs shall be designed to recover a significant portion of at least four [4] of the following materials from the waste stream prior to final disposal; newspaper, aluminum cans, steel cans, glass, plastic bottles, cardboard, office paper, and yard trash.

- Rule 9J-5, *Florida Administrative Code*, specifies the requirements for local government comprehensive plans. It requires Charlotte County to include an infrastructure element with a solid waste section and goals, objectives, and policies relating to solid waste. The Rule requires adoption of minimum level of service standards and concurrency requirements indicating that Charlotte County will not issue development orders or building permits unless facilities and services are in place to manage a development's impact.
- Chapter 62-701, *Florida Administrative Code*, outlines specific state requirements regarding the operation and closure of landfills, solid waste permits, and the handling of special wastes. This rule also regulates the disposal and classification of waste, and prohibits the disposal of yard wastes in landfills with liners.

Existing Federal Regulations

- The *Resource Conservation and Recovery Act* (RCRA) was adopted by Congress in 1976 and serves as the Federal legislation which regulates the disposal of municipal solid waste by setting minimum standards for waste disposal facilities. It also established resource recovery as a national priority and mandated that efforts to better utilize and manage the recycling of wastes were needed.

Existing Local Regulations

- The Southwest Florida Regional Planning Council adopted a Strategic Regional Policy Plan (SRPP) in August 1995 with which this plan must be consistent. The SRPP indicates that local governments within the regional should support and establish recycling and hazardous waste disposal programs: transportation of hazardous waste products be regulated: personnel working with hazardous wastes be trained and properly protected: and local governments properly collect solid wastes and operate disposal facilities.
- Charlotte County has adopted local regulations which govern solid waste in order to be consistent with these state, federal, and regional guidelines. Chapter 4-4 of the Charlotte County Code established sanitation franchise districts for all of unincorporated Charlotte County. One district has been established for all of unincorporated Charlotte County, excluding the bridgeless barrier islands and agricultural zoned properties. Chapter 1-12 regulates the operation of the landfill and service collectors within the county. In effect, it implements the programs required by the Federal and State governments, as well as the comprehensive plan.

D. Inventory

Waste collection is a very important aspect of Charlotte County's service to its citizens. Proper and timely collection and disposal of wastes assures protection of the general public's health, safety, and welfare. In order to provide suitable service, the County utilizes a public-private partnership. The County owns and operates a landfill located south of the City of Punta Gorda while private companies collect and transport waste products to the landfill.

1. The Landfill

Charlotte County's only operational Florida Department of Environmental Protection Class I landfill is the Zemel Road Landfill located in the South County area approximately ten miles south of Punta Gorda and one mile north of Lee County Access to Zemel Road is provided by U.S. 41. The landfill spans an entire section of 640 acres (Township 42S, Range 23E, Section 25). The landfill operates under a Class I permit issued by the Department of Environmental Protection. The permit, #00771017-001-S0/01, that was issued on July 20, 2004 expires on July 20, 2009. This permit allows Charlotte County to use 102 acres for disposal cells. The remaining 538 acres are devoted to wetlands mitigation, future disposal cells, temporary holding areas for specific wastes, and an administration building and other facilities.

The natural soils located at the landfill consist primarily of Boca and Pineda loamy siliceous fine sandy soils. Construction at the site has greatly disturbed the soils: only the subsurface materials have remained relatively unaltered. The northeast corner of the site consists of Matlacha sandy siliceous soils. Various pockets throughout the site were originally covered by Felda and Malabar loamy sands.

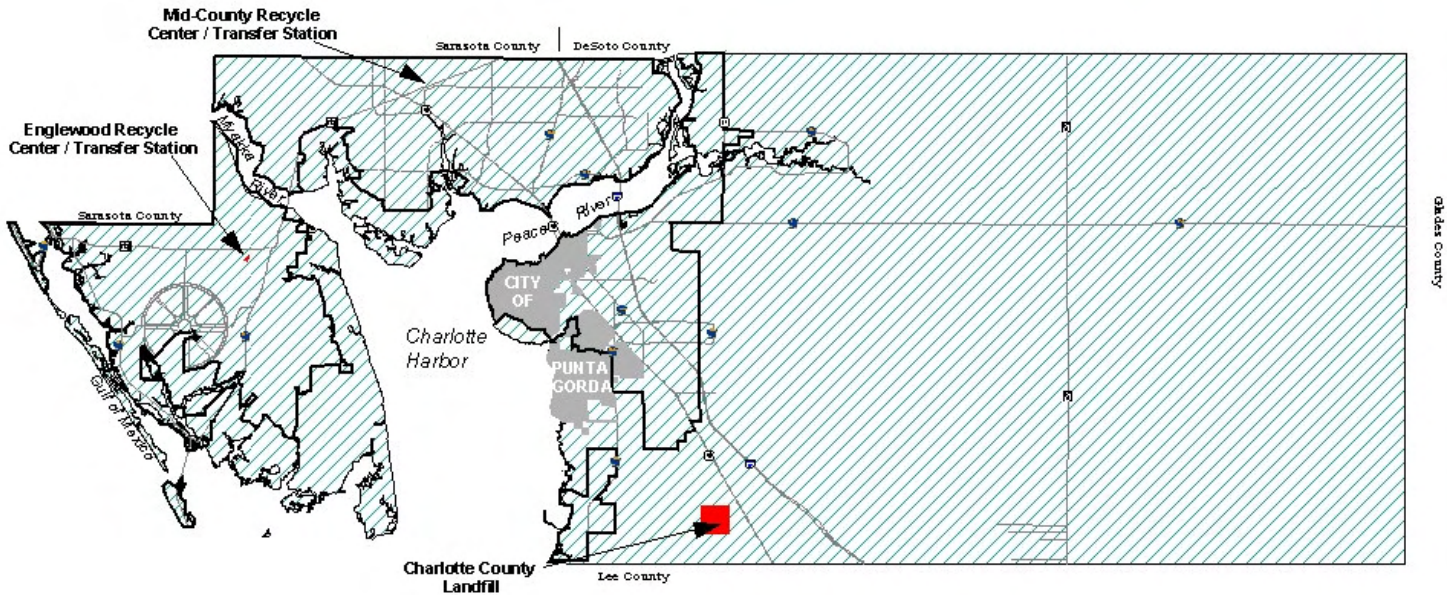
Landfill Design Capacity

The Zemel Road Landfill has sufficient capacity to serve Charlotte County until the year 2023 according to the County's engineering consultant. The projection of landfill site life is based on engineering design, operational techniques, projected population, and the size of the site, average per capita solid waste generation, and the type of lining being used as reported in the landfill's closure application. The landfill's estimated capacity is 4,759,705 cubic yards and is shown in Table 4.7.

Table 4.7 Estimated Zemel Road Landfill Capacity (In Cubic Yards)	
Remaining Capacity	4,759,705

Source: Remaining Air Space & Site Life Calculations Report, prepared by SCS Engineering, February 2005

Map 4.11 Solid Waste Collection Areas



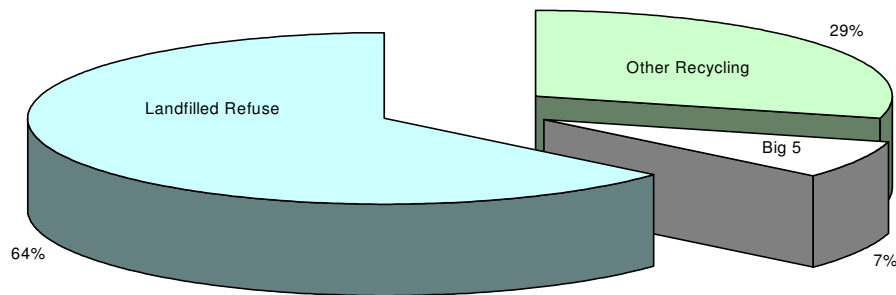
<p>Charlotte County Community Development Land Information Services - WSS Draft Date: 12/05 Located: g:\6\comp_plan_NEVA Maps\Chapter44_11_Solidwaste_collection.mxd ArcMap Version 9.1</p>	<p>Stateplane Projection Datum NAD83 Units: meters Source: Charlotte County Environmental Services / Municipal Solid Waste Division</p>	<p> Solid Waste Site / Transfer Station  Urban Service Area  Charlotte Sanitation, Inc</p>	<p> Scale 1:333,000 1 inch = 5.25 miles</p>	<p>This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantees, implied or otherwise as to its use. This is not a survey or is it to be used for design.</p>
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Landfill Operations

As with other landfills in Florida, the operation of the Zemel Road Landfill is not the typical operation found in states throughout the country. The typical landfill consists of a deep excavation into which solid waste is deposited. This is not possible at the Zemel Road site because of the high water table present in Southwest Florida. Charlotte County's landfill consists of a shallow excavation into which a layer of solid waste is deposited. The waste accumulates over time and is formed into a mound. Upon reaching a design height, the solid waste receives a final cover of soil in accordance with Rule 62-701, *Florida Administrative Code*, which governs landfill site closures.

A county's solid waste management and recycling programs are designed to provide for sufficient reduction of the amount of solid waste generated within the county. The goals provide, at a minimum, that the amount of municipal solid waste within its boundaries is reduced by at least 30 percent. The County's program is designed to recover a significant portion of the following materials from the solid waste stream prior to final disposal at a solid waste disposal facility: newspaper, aluminum cans, steel cans, glass plastic bottles, cardboard, office paper, and yard trash (See Chart 4.3). Charlotte County employs a voluntary recycling program.

Chart 4.3
Charlotte Waste Stream
Based on FDEP State Reports
1996 - 2001



Big 5: Newspaper, Glass, Aluminum Cans, Plastic Bottles & Steel Cans
Other Recycling: Metals, OCC, C&D, Office Paper, Tires and similar items

Source: Charlotte County Environmental Services 2004

The voluntary program consists primarily of the residential curbside collection of recyclables. The County's franchised solid waste hauler, Waste Management of Florida, Inc. provides curbside collection of newspaper; aluminum beverage cans; steel cans; No. 1 and 2 plastics; clear, green, and brown glass, mixed paper, and cardboard. The hauler collects recyclables once each week and then transports the recyclables for marketing.

The County's curbside recycling collection program also includes used oil, used oil filters, lead acid batteries, waste tires and yard waste. Used oil is stored at the landfill's Used Oil Storage Tank until it is recycled. Lead acid batteries, oil filters and tires are stored at the landfill until picked up for recycling. Yard waste is deposited at the landfill's mulch site where it is chipped by a contractor.

During 1995, Charlotte County began a commercial recycling program to supplement the residential one which had been in operation. Businesses throughout the county are asked to voluntarily recycle their recyclable wastes.

The landfill also has holding sites for used automobile tires, white goods, clean construction debris, other construction and demolition debris, and household hazardous waste. Used tires and white goods, such as refrigerators, hot water heaters, stoves and similar appliances, and scrap metals from construction activities are recycled. White goods are divided into two groups - those containing Freon (CFC) refrigerants and also non-freon appliances.

Clean debris, such as concrete, brick, rock, and ceramic tile, is stored at the clean debris holding site and is used as a foundation for service roads within the landfill. Trees, branches, brush, and yard wastes are accepted at the landfill. This material is mulched and then used for erosion control, blended with soils for use as daily cover, and available to County residents. Wood and lumber is shredded into chips and used at the landfill for grading and wet weather operations.

Household hazardous waste, such as paint and potentially hazardous chemicals, are stored at the landfill until picked up by a contractor who removes the material. The County also operates two regional locations (in Murdock and Punta Gorda) where citizens can drop off household hazardous waste.

The primary function of the landfill is disposing of waste products; however, another major function for landfill personnel is education. In order to implement proper waste handling and promote recycling of wastes, the County's Solid Waste Resource Division implements recycling and special waste programs, business waste and monitoring assessments, and educates the public about recycling opportunities. The education program includes presentations made to schools, businesses and civic groups and displays set up at the County fair, shopping malls, and other attractions or events. Additionally, brochures and newspaper advertisements are published, and radio and television stations run public service broadcasts and commercials.

The County has built a Mini-Transfer & Recycling Center in West County, located at 7070 Environmental Way, East Englewood. This provides residents in West Charlotte County convenient solid waste services and promotes proper handling and disposal of wastes and recyclables and helps

eliminate illegal dumping activities. The facility is open to the residential public and they can bring landscaping debris, debris from minor household repairs, waste tires, appliances, furniture, household hazardous wastes, special wastes [motor oil, lead-acid batteries, oil filters] and recyclables. Food wastes are prohibited. The disposal of wastes from non-residential establishments is prohibited. A similar facility is under construction in Mid County; it is located adjacent to the Public Works facility on Veteran’s and is accessed from Kenilworth Boulevard (See Map 4.11)

Solid Waste Collectors

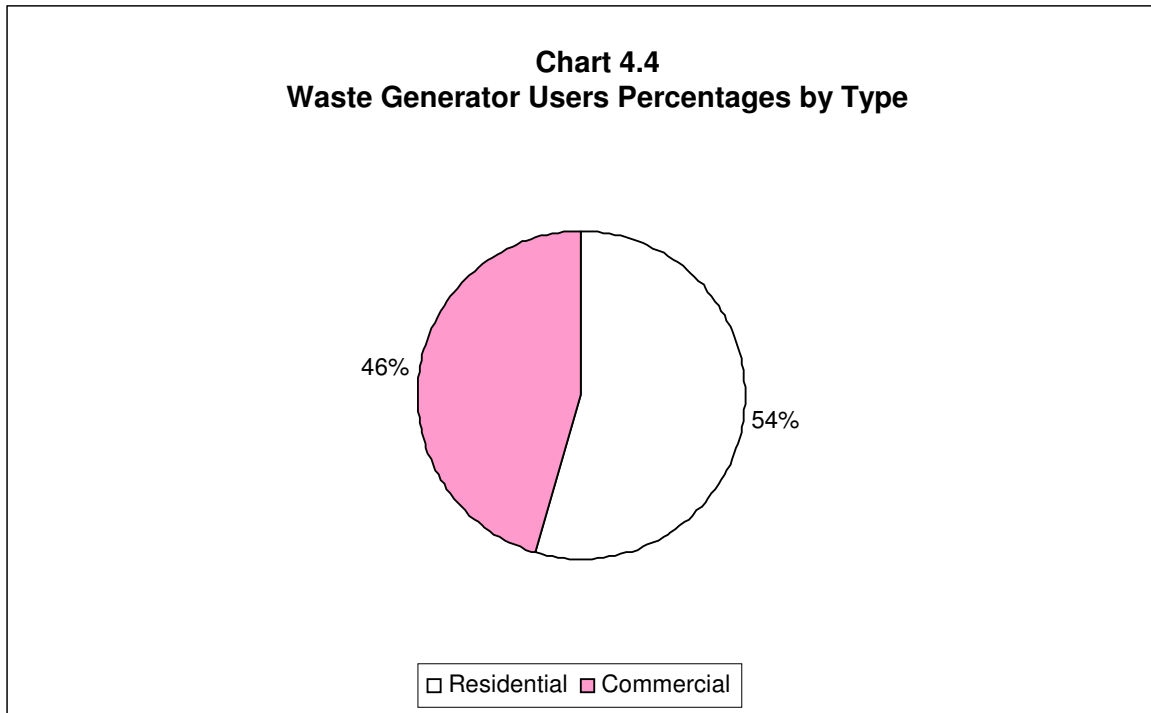
Two entities collect solid waste within Charlotte County – Waste Management, Inc of Florida and the City of Punta Gorda. The Solid Waste Facilities & Collectors Map pg 10 identifies the two solid waste collection service areas within Charlotte County. Waste Management Inc., of Florida collects solid waste in the unincorporated areas, excluding the bridgeless barrier islands and agricultural zoned properties, of Charlotte County and the Lee County area of Gasparilla Island. An interlocal agreement provides that wastes from Gasparilla Island can be disposed of at the Zemel Road Landfill. The City of Punta Gorda’s Public Works Division provides collection within the city limits.

The predominant waste generators served by the landfill and collection services are residential, commercial, and limited industrial. Table 4.8 and Chart 4.4 identify the users which generate waste disposed of by the landfill.

Table 4.8 Percentages by Type in Tons	
Residential	107,610
Commercial	90,045
Total	197,655

Source: Charlotte County Environmental Services 2004

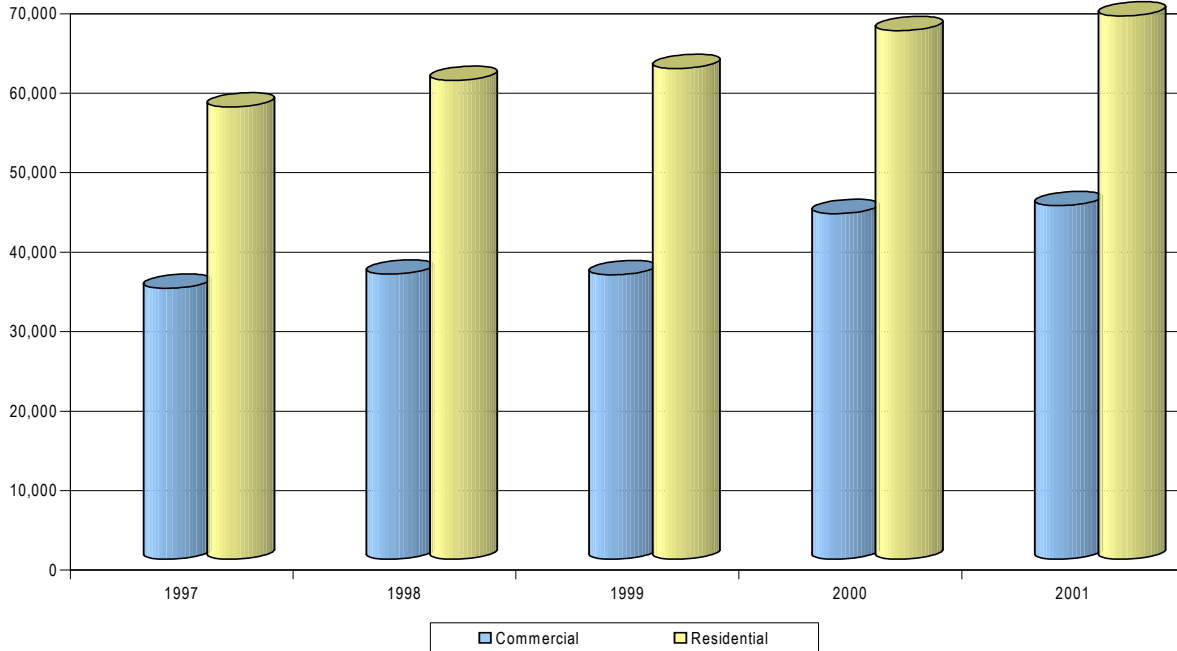
Chart 4.4
Waste Generator Users Percentages by Type



Source: Charlotte County Environmental Services 2004

Residential wastes are generated primarily by single-family homesites. Commercial wastes are primarily generated by retail businesses. The following chart graphs solid waste collection data by the amount of residential and commercial waste generated between 1997 and 2001. This better displays the disposal trends of generated wastes between the residential and commercial over time as opposed to the previously collected data which was displayed in the 1997 Comp Plan. The tonnage data was shown in table format by month and year with the actual monthly amount shown in a residential and commercial column. Chart 4.5 shows the yearly tonnage collected by both generators and the trend is easily identified.

**Chart 4.5
Residential & Commercial Waste
Disposal Trend - Tons**



Fees

County residents pay into one Municipal Services Benefit Unit (MSBU) for their collection service. The MSBU provides service to all unincorporated Charlotte County, excluding the bridgeless barrier islands and agricultural zoned properties. The solid waste residential sanitation districts’ rates are established during annual public budget hearings. The Solid Waste Resource Division receives a portion of the fees for the operation of the department’s programs and landfill operations, a portion is used for administrative costs and the remainder is for collection costs.

Tipping fees at the landfill, which include the cost of the Solid Waste Resource Division’s programs, such as household hazardous wastes and resource management, are set by the Charlotte County Board of County Commissioners through a public hearing process. The landfill charges an out-of-county fee which is double the Charlotte County resident’s fee on a per ton formula. There is an inter-local agreement for Gasparilla Island’s Lee County residents, which includes a \$15.00 surcharge per ton. A disposal fee of \$100.00 per ton for waste tires is charged to all customers delivering waste tires to the landfill.

Hazardous Waste

The Zemel Road Landfill and the West Charlotte County Mini-Transfer & Recycling Center serves as the County’s temporary storage facilities for household hazardous waste. The County operates household hazardous waste and sharps collection points at various locations and times during the year. The location rotates between Murdock and Punta Gorda.

The County has built a Mini-Transfer & Recycling Center in West County, located at 7070 Environmental Way, East Englewood. This provides residents in West Charlotte County convenient

solid waste services and promotes proper handling and disposal of household hazardous wastes. The facility is open to the residential public where they can bring household hazardous wastes and special wastes [motor oil, lead-acid batteries, oil filters]. The disposal of hazardous wastes from non-residential establishments is prohibited. A similar facility is under construction in Mid County; it is located adjacent to the Public Works facility on Veteran’s and is accessed from Kenilworth Boulevard.

Charlotte County operates a small quantity waste generators program whereby non-residential producers of less than 2,200 pounds of hazardous waste are monitored. The County’s Solid Waste Resource Division inspects these producers in order to ensure compliance with hazardous waste regulations. The Solid Waste Resource Division performs annual assessments based on occupational licenses to identify potential generators and these operations are regularly inspected. These small producers include dry cleaning establishments, automotive repair shops, gas stations, and various businesses.

E. Existing and Projected Solid Waste Needs

Existing Needs

There are no major development impacts which will adversely affect solid waste collection within Charlotte County over the next two planning time period increments of five and ten years. The landfill is a fairly new facility with modern buildings and equipment, and a leachate treatment plant and injection well. Projections indicate that it has sufficient capacity to dispose of solid waste until 2023. The solid waste collection operating within the county is franchised to Waste Management Inc., of Florida. They have met the level of service standards that have been adopted since the 1988 comprehensive plan. Waste Management Inc., of Florida will continue to provide more than an adequate level of service over the next planning time period.

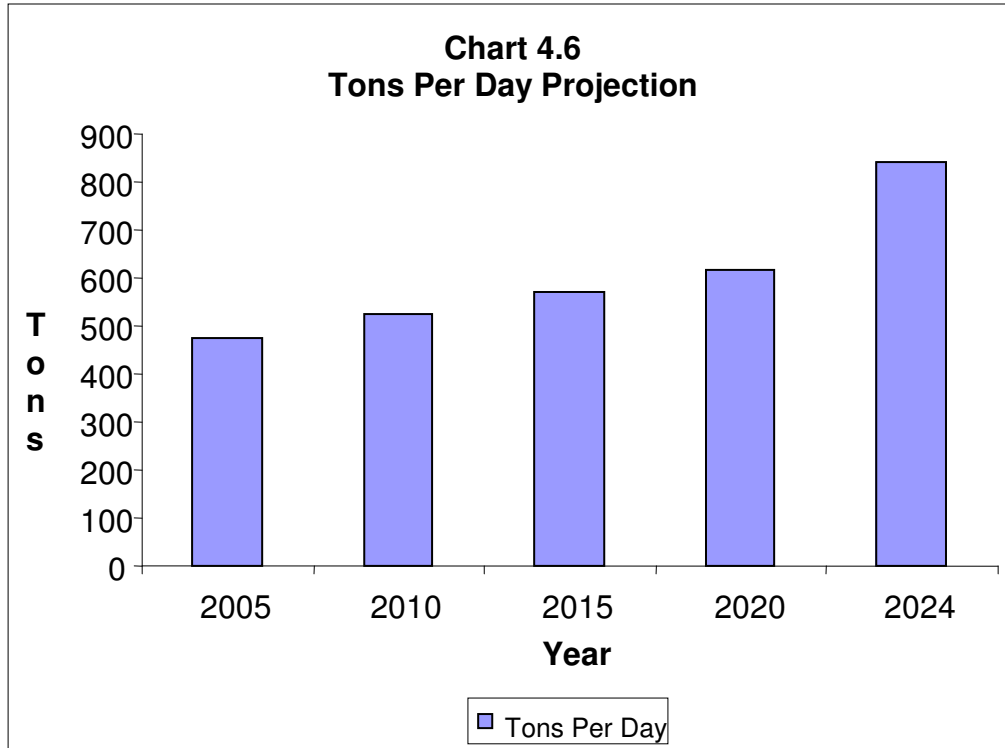
Charlotte County has implemented, and will continue to improve upon, its successful recycling programs. The county will continue to recycle wastes to the greatest extent possible, thereby increasing the lifespan of the landfill and associated infrastructure.

Solid Waste Projections

As Charlotte County’s population continues to grow, so will solid waste that needs to be disposed. Table 4.9 and Chart 4.6 display the projection of solid waste through the year 2024.

Table 4.9 Solid Waste Projections Total Solid Waste Disposal Tons			
Year	Population	Tons of Waste/Year	Tons of Waste/Daily
2005	193,858	180,288	582
2010	213,134	198,215	639
2015	232,532	216,255	698
2020	251,320	233,728	754
2024	341,957	318,020	1026

Source: Remaining Air Space & Site Life Calculation Report, prepared by SCS Engineering



Source: Charlotte County Environmental Services 2002

The projections above only include solid wastes that will be landfilled. In order to more accurately project the life expectancy of the Zemel Road Landfill, recycled waste is not accounted for because they will not take up space in the landfill. In 1995, Charlotte County achieved an adjusted recycling rate of thirty-two percent. The adjusted recycling rate places ceilings on specified categories of recyclables; therefore, actual recyclable percentages may exceed those ceilings. Table 4.10 provides the recycled solid waste diversion tons that Charlotte County may expect between 2005 and 2024.

Year	Tons Recycled	Total Diversion
2005	13,954	13,954
2010	16,177	30,131
2015	18,753	48,884
2020	21,740	70,624
2024	24,469	95,093

Source: Charlotte County Environmental Services 2002

As reported earlier in this element, the existing Zemel Road Landfill is projected to serve Charlotte County until 2022. The following table displays the landfill’s life expectancy.

Year	Waste Landfilled Cubic Yards	Cumulative Total Cubic Yards	Remaining Capacity Cubic Yards
2005	270,846	270,846	4,878,762

2010	262,463	533,309	3,753,906
2015	300,512	833,821	2,327,443
2020	340,706	1,174,527	704,301
2024	374,254	1,548,781	-742,392

Source: Remaining Air Space & Site Life Calculation Report, prepared by SCS Engineering, Feb 2007

A closer look at the capacity level of the landfill is identified in Table 4.15 below. Looking at the following table, the Zemel Road’s Landfill has a remaining capacity of 272,287 cubic yards available at the end of the year 2023.

Table 4.12 Zemel Road Landfill Remaining Capacity	
Year	Remaining Capacity (cubic yards)
2005	4,878,762
2007	4,519,268
2009	4,016,369
2011	3,483,833
2013	2,920,858
2015	2,327,443
2017	1,702,303
2019	1,045,007
2021	355,208
2023	-368,138

Source: Remaining Air Space & Site Life Calculation Report, prepared by SCS Engineering, Feb. 2007

Analysis of Problems and Opportunities for Facility Replacement, Expansion, and Siting

Although the landfill and solid waste collection should be sufficient to serve Charlotte County’s needs for approximately three more decades, the issue of landfill site expansion is of importance. Through the Conservation and Recreation Lands (CARL) program, the state and County has acquired portions of the Charlotte Flatwoods which adjoin the landfill. With this acquisition, the landfill has become landlocked. Charlotte County has plans to continue operating a landfill in South County past the year 2023 and within the existing 640 acre site there is approximately 170 acres, above the existing 102 acres, available for new disposal cells. It is estimated these additional 170 acres will provide 30+ years of disposal space beyond 2023. Future disposal needs beyond this capacity requires investigating and acquiring additional land by 2035. The County plans to complete a needs analysis and financial analysis which would be performed seven or eight years prior to the time the permitted facility reaches capacity. This would present sufficient time for purchasing, permitting, and development of disposal sites. Another issue that can be resolved in the future is the use of the landfill site after it is closed. Potential uses include use of the site for recreational activities, preservation as open space, or limited development. Possible recreational uses include passive park with nature trails, a golf course or driving range, an active park, or other similar uses. Development uses would be limited since structures would be inappropriate.

III. NATURAL AQUIFER RECHARGE SECTION

A. Purpose of this section

The purpose of the Natural Aquifer Recharge Section of the Infrastructure Element is to provide for necessary public facilities and services correlated to future land use projections. These services will be provided by protecting and conserving Charlotte County's natural groundwater aquifer recharge to ensure long term water quality for the future. Aquifer recharge is a relatively minor consideration in this plan because only a small portion of the county lies within an aquifer recharge area.

B. Relationship to the Comprehensive Plan

Development creates an impact on the natural recharge of groundwater into the subsurface aquifer by increasing the amount of impervious surfaces.

The Aquifer Recharge Section of the *Infrastructure Element* is closely related to several other elements of the Comprehensive Plan. Groundwater issues are related to the *Future Land Use Element* because development creates impervious surfaces and the location, density and intensity is controlled by that element. Groundwater is related to the *Natural Resources and Coastal Planning Element* because of concerns pertaining to saltwater intrusion of freshwater aquifers. Aquifer Recharge also ties to the *Intergovernmental Coordination Element* as aquifers generally extend beyond political boundaries and many agencies are involved in groundwater management. Aquifer Recharge is also a major consideration with other sections of the *Infrastructure Element*. The Stormwater Management section of the *Infrastructure Element* is related because stormwater management systems affect recharge of aquifers. Stormwater management systems also channel stormwater away from developed sites.

C. Legislation

This section, as required by Rule 9J-5.011 (1) (h) *Florida Administrative Code*, contains existing regulations and programs which govern land use and development of groundwater recharge areas. The regulations will be identified for their strengths and deficiencies in maintaining the functions of groundwater recharge areas.

Existing Federal Regulations

- U.S. Public Law 92-500, the "*Federal Water Pollution Control Act*," commonly referred to as the "Clean Water Act," was amended in 1977 to cover stormwater runoff into the Waters of the United States.
- The "*National Water Quality Inventory, 1986 Report to Congress*," provided a general assessment of water quality, based on biennial reports submitted by the states under Section 305(b) of the Clean Water Act. In the assessment, pollution from diffuse sources, such as runoff from agricultural and urban areas, is cited by the states as the leading cause of water quality impairment. Congress responded in 1987, by requiring that the EPA begin dealing with stormwater runoff pollution. The Water Quality Act of 1987 required that the EPA issue or deny

permits for industrial and certain municipal stormwater discharges. Permitting responsibility has since been transferred to the states. In Florida, the Department of Environmental Protection (DEP) has the responsibility of issuing permits.

- The *Clean Drinking Water Act of 1972* established criteria and goals concerning the release of pollution into the waters of the United States. The act focused largely on surface waters and provided the greatest protection for wetlands of any federal legislation.

Existing Federal Programs

- In 1987, the *Federal Clean Water Act* required the U.S. Environmental Protection Agency (EPA) to establish the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. NPDES establishes standards for the maximum amount of specific pollutants that can be discharged into the environment. The program requires local governments to comply with certain conditions in order to obtain permits for existing and future stormwater management systems, as well as for effluents from treatment facilities. Therefore, the focus of pollution control has shifted to regulating the amount of pollutants that can be discharged into receiving waterbodies rather than cleaning up a water body after it becomes contaminated.

Existing State Regulations

Florida Administrative Code

- Chapter 40D-8, *Florida Administrative Code*, “Lake Levels Program,” establishes: guidelines (primarily in the floodplain) for development bordering lakes; conservation, water storage, and recharge capabilities of lakes; levels for operation of lake control structures; a means for providing information on district consumptive use permitting (CUP) activities.
- Chapter 62-40, *Florida Administrative Code*, “State Water Policy,” addresses many different aspects of water resource protection and management. The stormwater and surface water management components are critical to this topic of stormwater utilities and levels of service. The definition of “stormwater management system” covers aspects of the issues that are addressed in the County’s level of service:

“Stormwater management system” means a system which is designed and constructed or implemented to control stormwater, incorporating methods to collect, survey, store, absorb, inhibit, treat, use, or reuse stormwater to prevent or reduce flooding, over-drainage, environmental degradation and water pollution or otherwise affect the quantity and quality of discharges from the system.

- Chapter 62-781, *Florida Administrative Code*, “Dry Cleaning Cleanup Rule,” administered by DEP, requires the new and existing dry-cleaning facilities to be equipped with secondary containment vessels installed beneath each machine or item of equipment in which dry-cleaning solvents are used. This ruling will help protect groundwater quality by containing accidental spillage of dry-cleaning solvents.

Florida Statutes

- Chapter 373, *Florida Statutes*, “Florida Water Resources Act (FWRA),” regulates the construction, alteration, maintenance, operation, and abandonment of dams, appurtenant works, impoundments, reservoirs, and works affecting waters of the State. The goal of the Act is to prevent harm to the water resources of the State. The Act provides for the permitting of various activities including management and storage of surface waters (Part IV) and consumptive uses of water (Part II). The Act creates Water Management Districts, which, together with the DEP, are the agencies responsible for implementing the regulatory components of the FWRA. The FWRA establishes minimum flow levels from surface water courses and minimum water levels for lakes and groundwater aquifers. The DEP is additionally directed to establish priorities for the development of a computerized groundwater database upon the following guidelines:
 - Regions deemed prone to groundwater contamination due to land use.
 - Regions that have an identifiable direct connection with any confined aquifer utilized as a drinking water aquifer.
 - Any region dependent on a single-source aquifer.

In addition, the DEP is to identify those areas of the state where saltwater intrusion is a threat to freshwater resources and report its findings to the water management districts, boards of county commissioners, and concerned public.

- Chapter 380, *Florida Statutes*, “The Florida Environmental Land and Water Management Act of 1972,” ensures a water management system that will reverse the deterioration of water quality and provide optimum utilization of our limited water resources. The chapter also facilitates orderly and well-planned development and protects the health, welfare, safety, and quality of life of the residents of the state.
- The *Water Quality Assurance Act of 1983* required DEP to establish a groundwater quality monitoring network designed to detect or predict contamination of the state’s groundwater resources (Chapter 403.063, *Florida Statutes*). The goal of the monitoring program is to establish the background and baseline groundwater quality of major aquifer systems in the state. A background network consisting of 1,600 wells throughout the state was identified from DEP, US Geological Survey (USGS), and water management district wells.

Existing State Programs

Charlotte County is within the jurisdiction of two water management districts- SWFWMD (Southwest Florida Water Management District) and SFWMD (South Florida Water Management District). The SFWMD is responsible for the southeastern portion of the county. This area is within the Caloosahatchee Rivers Watershed area of the SFWMD. This area of the county had a population of approximately 500 persons according to the 1990 US Census. The SWFWMD is responsible for the rest of the county; north and west of the Caloosahatchee Rivers Watershed area (see Map 4.6).

Concerns about saltwater intrusion and over-pumping of wells on a region-wide basis led the SWFWMD to create the Southern Water Use Caution Area (SWUCA) in 1992. The SWUCA encompasses roughly the southern half of the SWFWMD, approximately 7,000 square miles. Other water supply initiatives for Charlotte County include continuation of the Water Resource Assessment Project (WRAP) for the southern groundwater basin (SGWB).

The SWFWMD's Ambient Groundwater Quality Monitoring Program (AGWQMP) has prepared a detailed description of the groundwater quality of the SWFWMD. Information for Charlotte County can be found in the "Southern Region," Section 2 of the report, which provides information on the hydrology and hydrochemistry. Additionally, the report includes information on stratigraphy, structure, hydrostratigraphy, potentiometric surface, aquifer recharge, aquifer use, and groundwater quality.

In 1974, the SWFWMD began the Quality of Water Improvement Program (QWIP) to restore hydrologic conditions altered by well drilling activity. QWIP was initiated in Charlotte County where the problems with free flowing and abandoned artesian wells were the most severe and complex.

The Florida Water Plan (1995) is an integrated, coordinated plan prepared jointly by DEP and the five WMDs. It is intended to guide DEP and the WMDs in implementing current statutory directives prescribed in the Water Resources Act (Chapter 373, *Florida Statutes*), and the Florida Air and Water Pollution Control Act (Chapter 403, *Florida Statutes*), and the State Comprehensive Plan (Chapter 187, *Florida Statutes*). These statutes provide the basic authorities, directives and policies for statewide water management, pollution control and environmental protection (DEP and WMDs, 1995).

Existing Local Regulations

Section 3-9-99 of the Charlotte County Code addresses wellfield protection by requiring that any proposed commercial or industrial facility located within 1,500 feet of a well or a public water supply system provide proposed contamination prevention methodologies to the utility authority. The Board of County Commissioners (BCC) holds public hearings to approve any agreement between the developer and utility, or to provide guidance and ultimate approval to the plan if the two parties cannot agree to terms.

The Charlotte County Code Section 3-9, Zoning Regulations, are crucial to protecting the recharge capability of the aquifer system. The zoning regulations mandate setbacks for structures on land and maximum lot coverage of buildings. Each zoning district has its own setbacks and lot coverage. The zoning regulations include an Environmentally Sensitive (ES) zoning district. This purpose and intent of this district is to preserve and protect certain land and water areas in unincorporated Charlotte County which have an overriding ecological, hydrological, physiographic importance to the public at large. It is intended to preserve and protect open spaces, park lands, wilderness areas, marshlands, watersheds and water recharge areas, scenic areas, beaches and native flora and fauna in those areas designated ES or LD on the zoning map. This district allows limited public/private recreational/educational uses and their incidental accessory uses and structures.

The zoning regulations also include development standards. Development standards include:

- minimum lot requirements for the zoning district
- maximum lot coverage of all buildings as a percent for the lot size
- maximum height of structures
- maximum density of dwelling units per acre

The development standards of this district require pervious surfaces so that water from rainfall events may infiltrate into the ground in order to recharge subsurface aquifers.

Existing Local Programs

Charlotte County is a member of the Peace River/Manasota Regional Water Supply Authority (PR/MRWSA) whose purpose is to ensure necessary development of water resources for public supply (within the territory of the Authority) while managing the resource to minimize negative environmental effects from improper or excessive withdrawals of water in concentrated areas.

Regulations Protecting Recharge Areas

The only discrete areas of groundwater recharge which are readily regulated in terms of permitted land uses and development are wetland systems. Agencies currently involved in regulating uses in wetland areas are DEP, SFWMD, and SWFWMD. DEP regulates the dredging and filling of wetlands which are contiguous with waters of the State, thereby excluding isolated wetland systems. Isolated wetland systems are regulated and protected by the Water Management Districts through a permitting process which includes established performance standards and criteria for consumptive water usage, stormwater management, well drilling, and management of surface waters. Destruction or alteration of such wetland systems is contingent upon demonstrating compliance with minimum standards, and providing satisfactory compensation for wetland loss. Compensation typically consists of the creation of new wetlands or restoration of previously impacted wetlands, thereby maintaining aquifer recharge surface area.

The above described regulation is generally effective in protecting wetland systems and floodplains. Specific inadequacies include: Water Management District exemptions for wetlands below one half acres in size; upland buffer requirements which are insufficient for protection of potable water sources; and exemptions for mining proposals.

D. Inventory

1. Aquifers Underlying Charlotte County

The groundwater underlying Charlotte County is contained within four distinct but stratigraphically complex aquifers. The four aquifers include the *surficial aquifer*, two *intermediate aquifers*, and the deep *Floridan aquifer*. The intermediate and Floridan aquifers are artesian aquifers that each contains several water bearing strata. In general, the water in each aquifer is separated from other aquifers by confining beds (relatively impervious mineral or rock layers). Discontinuities or breaks in the confining beds allow some hydraulic exchange between overlying and underlying aquifers. The major hydrogeologic units and confining beds are shown in the following table.

Table 4.13 Aquifers and Stratigraphic Units Underlying Charlotte County				
Aquifer (hydrogeologic unit)	Yield (gal./min.)	Stratigraphic Unit	Thickness (ft.)	Remarks
Surficial Aquifer (non-Artesian)	30 (10-750)	Surface & Terrance Sand Caloosahatchee Marl	0-20 0-50	Source of water for domestic and supply wells along the coast. Also used for lawn irrigation and watering stock. Wells tapping the shell beds in Caloosahatchee Marl yield as much as 600 gal./min. In Eastern Charlotte County.
Confining Bed	N/A	N/A	N/A	Green Clay
Tamiami-Upper Hawthorn Aquifer (Artesian)	75 (20-250)	Tamiami Formation	75-220	Domestic and irrigation wells tapping limestone beds in this aquifer yield as much as 200 gal./min. Used extensively for irrigation in the eastern part of the county for public water supply on the Cape Haze Peninsula (Rotonda and Englewood wellfields).
Confining Bed	N/A	Hawthorn Formation	200-400	White Clay
Lower Hawthorn-Upper Tampa Aquifer (Artesian)	150 (20-250)	Tampa Limestone	150-300	Widely used for irrigation. Contributes water to wells for public supply at Rotonda and Englewood wellfields. Water is mineralized (saline) and is treated in reverse osmosis treatment plants.
Confining Bed	N/A	N/A	N/A	White to Grey Impermeable Limestone
Floridan Aquifer (Artesian)	2,000 (500-5,000)	Suwannee Limestone Ocala Limestone	200-300 200-300	Most productive aquifer, but not used as a source of water in Charlotte County because of its high mineral content.
Confining Bed	N/A	Avon Park Limestone Lake City Limestone	600-700	Impermeable limestone with intergranular Anhydride and Gypsum.

Source: Sutcliffe, 1975, and Wolansky, 1983

The *surficial aquifer* (also referred to as the water table aquifer or unconfined aquifer) contains potable water and is located across the majority of eastern Charlotte County. It is composed of sand, marl, shell and limestone and has an average thickness of 35 feet. A clay confining layer averaging about 40 feet thick separates the surficial aquifer from the underlying intermediate aquifer, making it difficult for rainfall to penetrate and recharge the aquifer. A 1978 water feasibility report for Charlotte County estimated that over 1 billion gallons of relatively good quality water is stored in Charlotte County's surficial aquifer. The majority of this water is located in the eastern third of the

county, at least 15 miles from the population centers of Port Charlotte, and Punta Gorda. Hundreds of wells tap the surficial aquifer in Charlotte County (see following map), and may be responsible for withdrawal of as much as 4 million gallons of water per day. Many of these wells are used to irrigate vegetable crops and water livestock.

Other wells are located in the Rotonda West and Englewood wellfields and are used for public water supply. Water yields from wells tapping the surficial aquifer average 30 gallons per minute (Wolansky, 1983), but can range as high as 600-700 gallons per minute for wells tapping Caloosahatchee Marl in the eastern part of Charlotte County (see Table 4.31). In the SWFWMD Southern Region, average water levels in the surficial aquifer have increased by an average of 0.07 foot and in the district overall water level has decreased by 0.39 as of May, 1996.

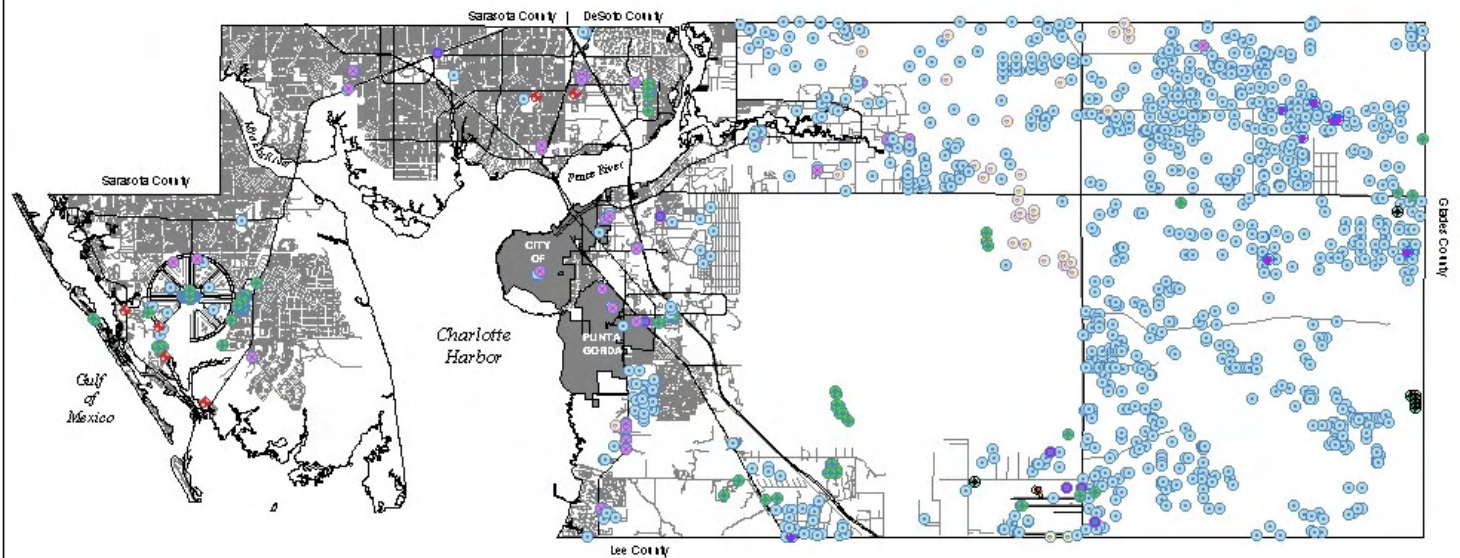
The intermediate aquifers include the Tamiami-Upper Hawthorn aquifer, and the Lower Hawthorn - Upper Tampa aquifer (Wolansky, 1983). These aquifers consist of permeable sand, gravel, shell, limestone and dolomite beds in the Tamiami Formation, the upper and lower portions of the Hawthorn Formation, and the Tampa Limestone (see Chart 4.7).

The thickness of the *intermediate aquifers* and confining beds is approximately 550 feet in Charlotte County. The Tamiami-Upper Hawthorn aquifer is the most highly developed aquifer in western Charlotte County, and supplies most of the water for domestic irrigation. Wells that draw over the entire thickness of this aquifer are capable of producing 200 gallons per minute. The Lower Hawthorn-Upper Tampa aquifer is also used for irrigation, with wells yielding as much as 500 gallons per minute. Both of the intermediate aquifers contribute water to the Englewood and Rotonda West wellfields, but because the water is highly mineralized, it requires desalinization by reverse osmosis before it can be used for public supply.

In Charlotte County, the *Floridan aquifer* consists of permeable layers in the Tampa Limestone, Suwannee Limestone, Ocala Limestone, and Avon Park.

The Punta Gorda Heights deep well, which taps into the Floridan aquifer, posted the greatest water level increase of 10.87 feet in the southern region of SWFWMD as of May, 1996. Chart 4.8, Punta Gorda Heights Intermediate Monitor, illustrates the changes in the water level for the past twenty-five years.

Map 4.16 Wells In Charlotte County




Charlotte County Community Development
Land Information Services - WSS
Draft Date: 11/07/05
Located: g:\comp_plan_NEW\Chapter_4\4_16_wellsheads_potable_water.mxd
ArcMap Version 9.1

Stateplane Projection
Datum NAD83
Units meters

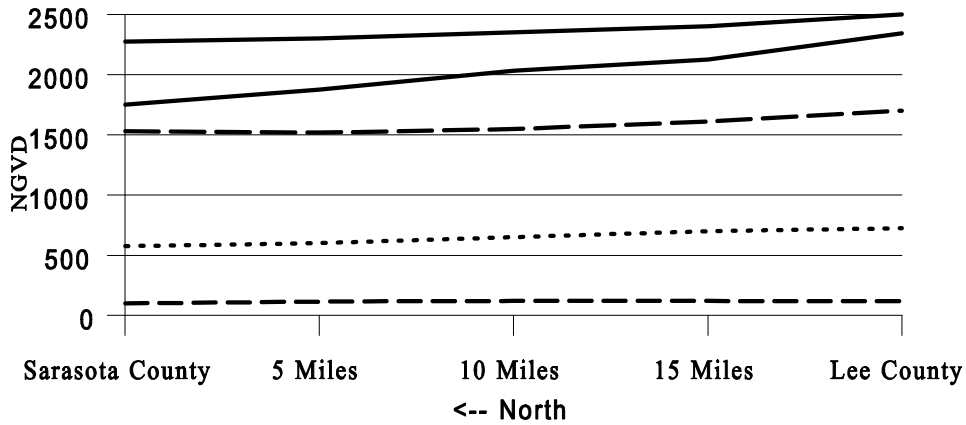
Source: Charlotte County
Community Development
Water Management Websites
(2005)

- | | |
|------------------------|--------------|
| ● Essential Service | ● Other |
| ● Public Supply | ● Dewatering |
| ● Irrigation | ● Monitor |
| ● Augmentation | |
| ● Effluent Waste Water | |
| ● Industrial | |
| ● Livestock | |


Scale 1:333,000
1 inch = 5.25 miles

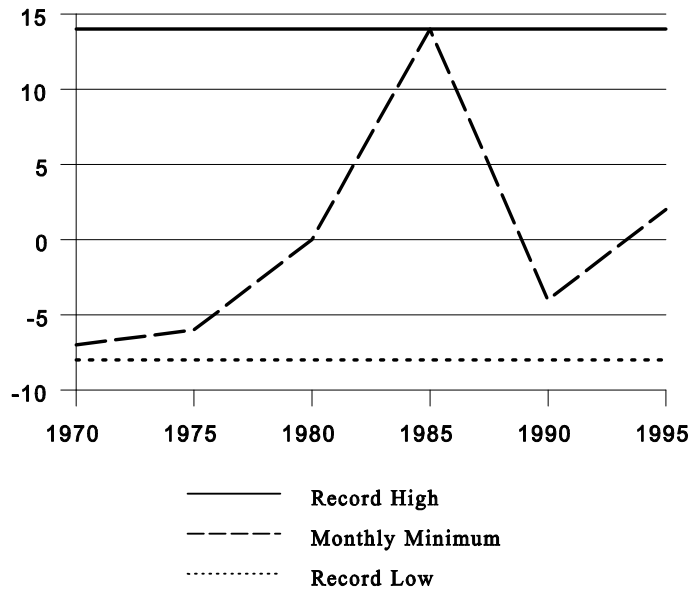
This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantee, implied or otherwise as to its use. This is not a survey or is it to be used for design.

Chart 4.7 Generalized Hydrogeologic Section Showing Charlotte County



- Lower Confining Bed (Y1)
- Floridan Aquifer-Top of Highly Permeable Dolomite (Y1)
- Lower Hawthorn-Upper Tampa Aquifer (Y1)
- Tamiami-Upper Hawthorn Aquifer (Y2)
- Surficial Aquifer (Y1)

Chart 4.8 Punta Gorda Heights Intermediate Monitor



2. Aquifers and Areas of Prime Recharge

Recharge is defined as the depth of water that enters an aquifer per unit area of aquifer. County-wide variations in recharge are dependent on a number of variables, including rates of surface water runoff,

permeability of soils and the underlying confining beds, relative differences between potentiometric and water table levels, precipitation and evapotranspiration rates, and pumpage. Flowing artesian wells are also an artificial recharge variable.

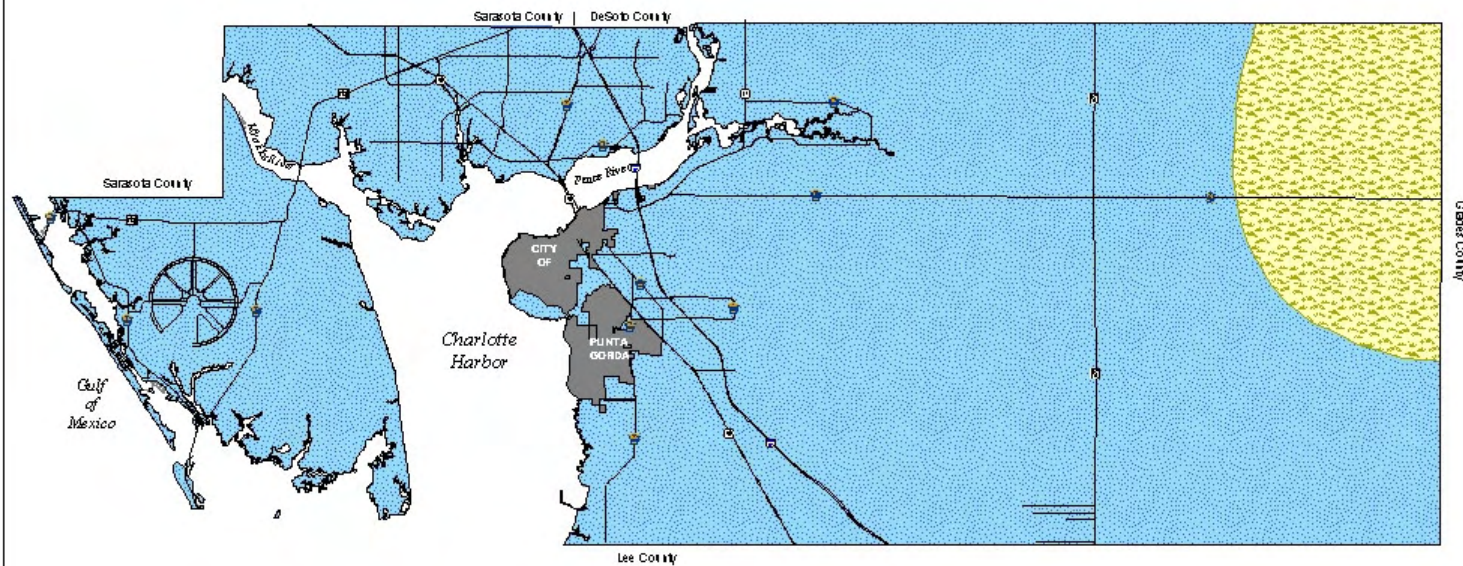
The surficial aquifer is recharged by rainfall that has not been intercepted by evapotranspiration, runoff, foliage, or depression storage; upward leakage from the intermediate and Floridan aquifers; and groundwater flow from outside the county. The majority of recharge is by infiltration of rainfall. Upward leakage and groundwater flow from outside the county contribute minor amounts and flowing artesian wells contribute appreciable amounts. It is estimated that recharge to the surficial aquifer in Charlotte County ranges from less than 1 inch per year to 16 inches per year depending on permeability and thickness of aquifer material and the topography.

In most of Charlotte County, the potentiometric surfaces of the confined aquifers are higher than the water levels in the surficial aquifer, and water generally leaks upward to the surficial aquifer. In an approximately 50 square mile area located in the northeastern corner of the county, the water level of the surficial aquifer is about 10 feet above the potentiometric surface of the intermediate aquifer; therefore, surficial aquifer water is recharging the intermediate aquifer. This area is designated as a natural recharge area and is shown in the following map.

Potable groundwater withdrawal from the Floridan aquifer system is restricted in Charlotte County because of high mineral content. Mineralization increases with depth, towards the south, and towards the coast where the surficial and intermediate aquifer systems are utilized. The intermediate aquifer is the principal potable groundwater source in Charlotte County. Understandably, surface water is the principal water supply in the county.

Several studies indicate groundwater recharge rates are low to the intermediate and Floridan aquifer systems in Charlotte County. The highest recharge rates to the Floridan in the county are less than 2 inches per year and occur in the northeastern upland areas. Generally, discharge occurs from the Floridan aquifer along the coast and in central Charlotte County. The highest recharge rates to the intermediate aquifer system in the county are estimated to be less than two inches per year, but occur in a very limited area of northeastern Charlotte County. However, groundwater is actually discharged from the intermediate system in most of the county. Infiltration rates to the surficial system in the county vary depending on depth to the water table, soil type, soil moisture, topography, vadose zone material, evapotranspiration, and runoff characteristics. Infiltration rates to the surficial system range up to 20 inches per year. Groundwater recharge areas most suitable for protection in Charlotte County include the extreme northeastern area of the county.


Map 4.17 Aquifer Discharge / Recharge Areas




Charlotte County Community Development
Land Information Services - WSS
Draft Date: 12/05
Located: g:\comp_plan_NEW\
Chapter_4\4_17_Aquifer_recharge.mxd
ArcMap Version 9.1

Stateplane Projection
Datum NAD83
Units meters

Source: Charlotte County
Community Development
Water Management Websites
(2005)

 No discharge to very low discharge
(0.0 to 1.0 inches per year) to the
Upper Floridan Aquifer

 No Recharge to very low recharge
(0.0 to 1.0 inches per year) to the
Upper Floridan Aquifer



Scale 1:333,000
1 inch = 5.25 miles

This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantees, implied or otherwise as to its use. This is not a survey or is to be used for design.

Aquifer Recharge Areas

In an area of approximately 50 square miles, located in the northeastern corner of the county, the water level of the surficial aquifer is about 10 feet above the potentiometric surface of the intermediate aquifer; therefore, the surficial aquifer has the potential to recharge the intermediate aquifer. The western three-quarters of Charlotte County generally have zero recharge to the upper Floridan aquifer, while the eastern one-quarter has very low recharge of less than 2 inches per year.

Potable water yielded from the surficial aquifer is low which limits its use as a future supply. The intermediate aquifer provides water for irrigation and some public supply purposes. In Charlotte County, potable water use from the upper Floridan aquifer is generally low because of the poor quality of the water produced. The county's poor groundwater quality is a significant issue to consider when future supply decisions are made to meet the demands of an increasing population.

The Ground Water Index provides a quick reference of the overall health of the District's ground water resources. The Ground Water Index is derived by comparing current ground water levels collected from a regional network of monitor wells located in each ground water basin against historical levels. Twenty-seven monitor wells were selected for the network because each well has a long period of record with reliable data representative of the hydrologic conditions of the area surrounding them. Statistical determination of the Ground Water Index for each of these wells is performed by comparing current levels against the maximum and minimum values recorded for each month of the year. For interpretation purposes, the Ground Water Index is qualified as "Good": (50-100), "Fair" (10-49), and "Poor" (0-9). From April 1995 to April 1996, the southern region was classified as "fair", a decrease in 17 points from 1995's "good" rating.

2. Groundwater Quality

Mineral Content of Groundwater

A groundwater's mineral content is one of the most basic measures of its chemical quality and largely determines its suitability for domestic, agricultural or industrial use. The mineral content of groundwater is determined primarily by the composition and solubility of soil and rock that come into contact with the water and the length of time the water is in contact with these materials. Thus the chemical quality of water from an aquifer usually depends upon lithology of the aquifer. Quartz sand, the major constituent of the surficial aquifer, is relatively insoluble. The sandy and clayey limestone and dolomite of the intermediate aquifers are more soluble than the quartz sand of the surficial aquifer, but less soluble than the limestone and dolomite of the Floridan aquifer (Hydrology of the Sarasota-Port Charlotte Area, Florida. Wolansky, 1983).

Because mineral content can be defined as the sum of all the dissolved inorganic ions and compounds, a measure of the mineral content of groundwater can be obtained by measuring the concentration of major inorganic constituent in the water, such as total dissolved solids (TDS), chloride, sulfate and hardness (calcium and magnesium). Chapter 62-22 of the *Florida Administrative Code* establishes standards for the quality of drinking water distributed by public water systems (standards for private wells have not been developed on a statewide basis, at this time). Florida's secondary drinking water regulations include standards for TDS, chloride and sulfate

in public water supplies is 500, 250 and 250 milligrams per liter (mg/l), respectively. These are identical to the USEPA recommended levels for TDS, chloride and sulfate in drinking water. A standard is not given for hardness, but water having a hardness concentration greater than 180 mg/l is considered very hard and can cause excessive soap consumption and scale build up in boilers.

The mineral content of Charlotte County's four aquifers is expressed as TDS, chloride, sulfate and hardness. TDS and chloride are in excess of State public drinking water standards in the western half of the county. Sulfate concentrations in the surficial aquifer exceed 250 mg/l in the western third of the county and hardness is greater than 180 mg/l for the entire county. Sulfate exceeds State standards in the western half of the county. The Floridan aquifer has the most highly mineralized groundwater of Charlotte County's aquifers.

All parameters are greater than would be allowed under public drinking water regulations, except for sulfate in the eastern half of the county. Except for the surficial aquifer in the eastern half of the county, water chemistry data indicate that, in general, the groundwater quality in Charlotte County is poor. The intermediate and Floridan aquifers have high mineral contents, especially in the western half of the county. The SWFWMD report suggests that the county's low topography (near sea level) and relatively thick confining layers that separate the aquifers may retard the flushing of the salty aquifers by fresh rainwater.

Groundwater Contamination

The surficial aquifer contains the highest quality groundwater in the county, and is also the most susceptible to contamination. Potential point sources of groundwater contamination include landfills, percolation ponds for sewage effluent disposal, land application of sewage effluent and sludge, industrial sites, and underground storage tanks. The majority of these sites are located in the western half of the county. Free flowing artesian wells constitute a point source of contamination of groundwater. Septic systems, agricultural and residential use of fertilizers and pesticides, and salt-water intrusion along the coastal shoreline constitute non-point sources of contamination.

Results utilizing EPA methodology indicate that the surficial aquifer is highly susceptible to groundwater contamination in Charlotte County. This is primarily due to the shallow depth to the water table. Upland areas in northeastern Charlotte County are slightly less susceptible to contamination, because of the greater depths to the water table. The intermediate and Floridan aquifers have a very low susceptibility to contamination due to thick overlying confining layers which impede contamination.

Charlotte County has been identified as an area with major interaquifer contamination and wasteful artesian flow. The loss of potable and agricultural water due to degrading effects of improperly constructed and or deteriorated artesian wells have been recognized by the SWFWMD.

DEP requires point source dischargers to groundwater to perform water quality testing on samples collected from monitoring wells and submit groundwater quality data. Data from point source discharges in Charlotte County have not been compiled at this time.

Chapter 403.063 of the *Florida Statutes* requires groundwater quality monitoring. The DEP, in cooperation with other state and federal agencies, SWFWMD, and Charlotte County government, have established a groundwater quality monitoring network designed to detect or predict contamination of the groundwater resources of the county. The program uses the following criteria to determine the priority of sites to be monitored within the groundwater quality monitoring network:

- The degree of danger to the public health caused or potentially caused by contamination.
- The susceptibility of each site to contamination.

The SWFWMD's Ambient Groundwater Quality Monitoring Program (AGWQMP) has prepared a detailed description of the groundwater quality of the SWFWMD. Information for Charlotte County can be found in the "Southern Region," Section 2 of the report which provides information on the hydrology and hydrochemistry. Additionally, the report includes information on stratigraphy, structure, hydrostratigraphy, potentiometric surface, aquifer recharge, aquifer use, and groundwater quality. The collection of baseline data for this program began in 1985. Currently, 18 wells are located within Charlotte County including 5 in the surficial aquifer; 10 in the intermediate aquifer; and 3 in the Floridan aquifer. These wells are sampled every three years on a phased schedule.

Free flowing wells and plugged wells in Charlotte County are shown on the following map, QWIP continues to inventory and plug artesian wells in order to restore the aquifer system (SWFWMD, 1987). As of 1996, the QWIP has plugged 210 wells in Charlotte County responsible for hydrologic connection between one or more artesian zones, and or wasteful artesian flow (SWFWMD, 1996). In 1994, SWFWMD began a funding assistance initiative designed to serve as an added incentive for property owners to come into compliance with well plugging requirements as stated in Chapter 373.206, *Florida Statutes*.

In central and western Charlotte County, wells drilled into the intermediate and Floridan aquifers are artesian aquifers, since hydrostatic pressure of these confined aquifers is great enough to push water to the ground surface. As discussed in the previous section, the Floridan aquifer has a greater mineral content than the intermediate aquifers, which, in turn, is more mineralized than the surficial aquifer. When a well is drilled into any artesian aquifer and the well is not encased or is improperly constructed, or deteriorates, or free flows at the land surface, the poorer quality water of the deeper aquifers can leak or be injected into the less mineralized water of overlying aquifers. Thus, water quality in the overlying aquifers becomes degraded because it is hydrologically connected to a deeper aquifer of lower water quality. Hydrologic connections between aquifers do occur naturally as evident from artesian springs, such as Warm Mineral Springs in Sarasota County. However, most of the major free flowing artesian wells in Charlotte County are the result of drilling. Artesian wells that free flow at the surface accelerates aquifer contamination in two ways:

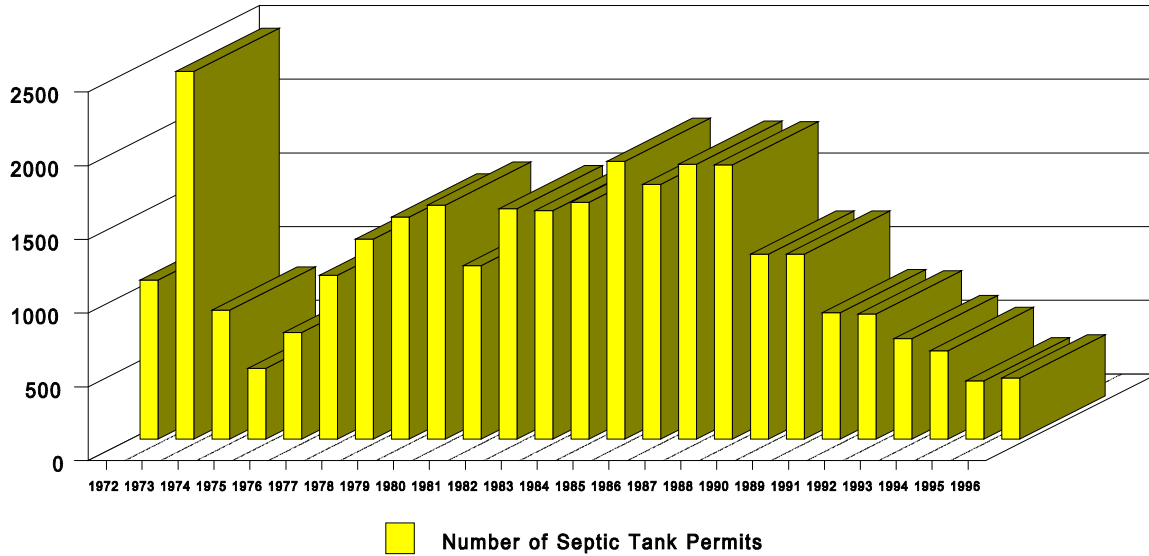
- (1) uncontrolled discharge from the hydrostatic pressure of the artesian aquifer, accelerating the intrusion of even more highly mineralized water from the sea or deeper aquifers; and
- (2) highly mineralized water discharged at the land surface results in artificial recharge of the surficial aquifer with poor water quality.

Reestablishing the separation between aquifers by plugging sections of wells that allow hydrologic connection is crucial in eliminating inter-aquifer contamination.

In 1974, the SWFWMD began the Quality of Water Improvement Program (QWIP) to restore hydrologic conditions altered by well drilling activity. QWIP was initiated in Charlotte County where the problems with free flowing and abandoned artesian wells were the most severe and complex. Free flowing wells and plugged wells in Charlotte County are shown on the following map. QWIP continues to inventory and plug artesian wells in order to restore the aquifer system. As of 1996, the QWIP has inspected 399 wells and plugged 210 wells in Charlotte County responsible for hydrologic connection between one or more artesian zones, and or wasteful artesian flow. There are 142 wells needing to be addressed or are already known in non-compliance. In 1994, SWFWMD began a funding assistance initiative designed to serve as an added incentive for property owners to come into compliance with well plugging requirements as stated in Chapter 373.206, *Florida Statutes*. Wells located on agricultural land qualify for assistance through the Agricultural Stabilization and Conservation Service (ASCS). The ASCS offered 75 percent of the cost to plug a well, not to exceed \$3,500 per year, per property owner. The District would fund the remaining 25 percent (not to exceed \$5,000 per well).

Septic systems are recognized as both polluters of groundwater when not functioning properly and a major alternative to centralized sewage treatment plants. Under non-ideal conditions, septic systems can contaminate the surficial aquifer with nitrate, total dissolved solids, bacteria, and viruses. Since most of the naturally occurring soils in Charlotte County are classified by the US Soils Conservation Service as severe for septic tank use (US SCS, 1984), one must question the suitability of using septic tanks to treat domestic sewage in some of the more densely populated areas of Charlotte County. The Florida Department of Health estimates that the county has in excess of 30,000 septic tanks in use. However, the number of septic tank permit issuances has been decreasing notably since 1990 (See Chart 4.9, Septic Tanks Issued by Department of Health).

Chart 4.9 Septic Tank Permits Issued by Department of Health



In March, 1994, Mote Marine Laboratory was asked to provide a Scope of Services and Ardaman and Associates was asked to implement and design a groundwater screening program and to provide guidance in the design of a long-term groundwater monitoring program. The Mote Study indicated that a statistically defensible relationship of declining water quality with increased septic tanks and number of total dwellings was documented.

Charlotte County’s extensive coastal and estuarine shoreline provides for an equally extensive interface between the brackish surface water of the bays, harbor and tidal creeks and the freshwater of the surficial aquifer. Under natural conditions, the surficial aquifer discharges fresh water into these estuaries. Under extreme drought conditions, saltwater may intrude into the surficial aquifer along the coast. Pumping and draining the surficial aquifer in coastal areas can cause saltwater intrusion. As the water table is lowered by pumping, saltwater can move laterally within the permeable zones of the surficial aquifer. The construction of saltwater canals and drainage ditches has induced the movement of saltwater into the aquifer. Many of the manmade canals in Port Charlotte are now equipped with physical barriers (see Stormwater Management Section) many which limit the inland extent of brackish tidal waters.

E. Water Issues

Water has historically been a readily available and cheap commodity in Florida. In many areas that situation is changing. Population increases, combined with a prolonged SWFWMD-wide drought, have placed greater strain on the resource. The issues of water conservation and irrigation efficiency are essential considerations when planning to meet the expanding demands on the resource.

Charlotte County has limited potable surface and groundwater resources. Currently, approximately 2.7 million gallons per day of the 9.5 million gallons per day of municipal water supply in the county

is derived from groundwater sources. About 1.1 million gallons per day of these 2.7 million gallons per day of groundwater is imported from Englewood Wellfield in Sarasota County. Approximately 7.9 million gallons per day of surface water is imported from the Peace River in DeSoto County and about 3.3 million gallons per day is withdrawn from the Shell Creek Reservoir in Charlotte County.

According to the SWFWMD's Needs and Sources Plan (1992), projected future increases in potable water demand in Charlotte County are likely to be met through a combination of conservation, additional withdrawals from groundwater requiring local desalination and treatment, additional surface water withdrawals requiring conventional treatment, and expansion of an existing Aquifer Storage and Recovery (ASR) facility. The PRMRWSA facilities on the Peace River are projected to provide the major portion of the county's potable water supply. Public supply users of the intermediate aquifer include the Gasparilla Island and Charlotte Harbor Water Association, Rotonda Utilities, and Englewood Water District, all of which treat the water by reverse osmosis. Development of future water supplies from the intermediate aquifer appears most promising in the northeastern portion of the county (see Chart 4.11). Other water supply issues identified through a SWFWMD public input process include: longer Water Use Permit (WUP) terms for public supply (consistent with local government comprehensive plans); no billing for interconnects if they are not used (e.g., Charlotte Harbor Water Association); and, the need for reuse for agricultural users.

Although Charlotte County is not now experiencing an overdraft problem, there are areas of significant groundwater withdrawals. These areas include Rotonda West, Charlotte Harbor, Punta Gorda Isles, and Gasparilla Island Wellfields. These areas should be closely monitored to protect aquifers from saltwater encroachment, increased mineralization, and impacts to the terrestrial environment.

The SWFWMD operates a groundwater monitoring station (see following map) south of Punta Gorda called the Punta Gorda Heights deep well. The deep well had the greatest water level decrease of 9.49 feet relative to 1995's level in the SWFWMD's area (see following chart). District-wide, average intermediate and Floridan aquifer water levels were 0.09 foot lower than April 1995 levels.

The Peace River Reservoir is the only off-stream reservoir in the SWFWMD. Unlike other utilities, the daily river water pumpage is not a reflection of daily water consumed by the public. Built in 1980, the PRMRWSA's Peace River facility ranks fifth in the SWFWMD out of six reservoirs in total volume storage, and supplies water to Charlotte County, City of North Port, and DeSoto County. While all of the available water produced for public supply comes from the Peace River, they have an intricate system for insuring adequate supply throughout the year. The surface reservoir system is used for storing untreated water pumped from the river. The facility also uses an aquifer storage recovery (ASR) system for storing treated water pumped from the river. The current permit restrictions on the PRMRWSA facility state that they may not withdraw water from the Peace River if the river gauging station at Arcadia has declined below pre-established, monthly levels. Also, withdrawals may not exceed 10% of the preceding day's flow level as calculated at the Peace River Arcadia gauge station. To the greatest extent possible, the PRMRWSA fills its reservoir and ASR facilities to full capacity to insure water is available during times they are not permitted to withdraw from the Peace River. The total size of the reservoir is approximately 85 acres and is 31 feet deep.

Total storage capacity is approximately 625 million gallons. The combined daily average withdrawal (withdrawal from the river, its aquifer storage recovery system, and off-stream reservoir) for the PRMRWSA facility is 8.620 mgd, with a maximum daily withdrawal of 22.0 mgd from the river. The maximum daily combined withdrawal from their off-stream reservoir and ASR system is 17.2 mgd.

F. Projections

Projections of population levels indicate that Charlotte County's population will increase to approximately 185,800 by the year 2010 (University of Florida Bureau of Economics and Business Research, 1995.). Consequently, groundwater withdrawal rates are expected to increase to meet these growth demands. Northeastern Charlotte County appears to be the most suitable for future groundwater supply development to meet these demands. Continued growth along with poor water quality, support increased conservation, water reuse, and demineralization as a basic water treatment process as well as a supplemental water source in Charlotte County.

IV. POTABLE WATER AND SANITARY SEWER SECTION

A. Purpose of this section

The purpose of the Potable Water and Sanitary Sewer section is to ensure that potable water and sewer service are available to support development through the planning horizons established within the comprehensive plan. The provision of potable water and sanitary sewer is mandated by Florida growth management legislation under Chapter 9J-5 of the *Florida Administrative Code* (FAC). Specific parameters for this particular element are based on criteria established pursuant to Rule 9J-5.011. This section of Chapter 9J-5 requires that sewer and water services be provided in accordance with future land use projections and also identifies a basic framework for developing a series of goals, objectives, and policies which are formulated to accomplish the desired purpose based on an analysis of available data.

The availability of sewer and water will influence the timing, location, and intensity of development. Planning for the extension of these services should therefore be considered an integral part of Charlotte County's Urban Service Area strategy identified in the Future Land Use Element. In order for the County to effectively utilize infrastructure expansion as a legitimate growth-management tool, the Urban Service Area incorporates a phasing plan for providing facilities to areas targeted for new growth. This will ensure that potable water and sanitary sewer facilities are provided concurrently with future development and that adequate facility capacity will be available to maintain adopted level of service standards.

B. Relationship of this section to the comprehensive plan

The provision of potable water and sanitary sewer service is a major component of the comprehensive planning process. In order to ensure that public facilities are provided in an efficient and cost-effective manner, the County must utilize the availability of infrastructure as one of the tools for determining when and where growth will occur. The goals, objectives, and policies of this element must therefore be consistent with those established for other elements to promote a well-coordinated growth-management strategy for Charlotte County.

The Future Land Use Element must overcome the problems created by the large number of lots that have already been platted. The ability for Charlotte County to extend central sewer and water over a period of time is severely limited, and the County must develop an appropriate methodology to decide which certain areas will receive publicly funded infrastructure and the timing for infrastructure design and construction.

Infrastructure expansion within the Urban Service Area is initially phased in planning periods of five and ten years. The funding for County owned and operated water and sewer improvements proposed over the first five years is identified in the Capital Improvements Element. With the acquisition of General Development Utilities in 1991, Fiveland Utility in 1998, Rampart Utility in 1999, Rotonda West Utility in 1999, and various Florida Water Services facilities in 2003, Charlotte County has assumed fiscal responsibility as the County's largest utility provider. These acquisitions have made it possible for the County to ensure that the necessary capital improvements are scheduled in

accordance with land use projections established for the Urban Service Area.

Other key factors relating to Charlotte County's ability to provide sewer and water are contingent upon interlocal agreements with various governmental entities. The majority of the County's potable water is currently supplied to Charlotte County Utilities by the Peace River/Manasota Regional Water Supply Authority (PR/MRWSA or Authority). The geographic territory of this regional water supply authority includes De Soto, Manatee, and Sarasota counties, and that portion of Charlotte County located within the boundaries of the Southwest Florida Water Management District (SWFWMD). With the acquisition of water and wastewater facilities from Florida Water Services in 2003, Charlotte County Utilities provides water and sewer service in portions of unincorporated Charlotte County located south of the City of Punta Gorda. Sewer and water are also supplied by the City of Punta Gorda within Charlotte County and the Englewood Water District, which is headquartered in Sarasota County. Other smaller utilities also provide water or sewer service in various areas of the County. Currently, two utility providers in Charlotte County also serve portions of Lee County. Interlocal utility agreements between the County and neighboring jurisdictions are reflected in the Intergovernmental Coordination Element.

The Intergovernmental Coordination Element also identifies the various relationships between other agencies of the State of Florida that will affect potable water and sanitary sewer. These agencies include the Department of Environmental Protection (FDEP); Department of Community Affairs (DCA); and Department of Health (DOH). Regional agencies not already listed include the Southwest Florida Regional Planning Council, SWFWMD, and the South Florida Water Management District (SFWM). The two water management districts regulate water usage and also evaluate water resource management issues. These issues are also an important part of the Natural Resources and Coastal Planning Element.

C. Legislation

Charlotte County's utility providers must construct and operate potable water and sanitary sewer facilities in accordance with all applicable federal, state, and local regulations. Most of the existing regulations pertaining to water quality and sewage treatment are based on federal guidelines mandated by the United States Environmental Protection Agency (EPA). Minimum drinking water standards are defined under Public Law 104-182. This law, also known as the "Safe Drinking Water Act Amendments of 1996" establishes Federal water-quality standards for the protection of water for public uses, including operational standards and quality controls for public water systems.

In order to comply with the federal regulations for water quality, the State of Florida has adopted legislation pursuant to Chapter 403.850, Florida Statutes. The "Florida Safe Drinking Water Act" sets forth the same primary and secondary water quality standards required for public health and recommended for aesthetic quality as the federal legislation. The State of Florida has also implemented specific laws for classifying and regulating public drinking water systems under Chapters 62-550, 62-555, 62-699, and 64E-8 of the *Florida Administrative Code*.

The federal regulations governing wastewater treatment are set forth under Public Law 92-500 or the "Water Pollution Control Act Amendments of 1972." This law requires that wastewater treatment

programs be established to regulate water-quality limits for effluent disposal and to control “point source” pollution. These provisions have been implemented at the state level under Chapter 403.086, Florida Statutes, and Chapter 62-600, *Florida Administrative Code*. Separate standards for on site sewage treatment and disposal systems are established in Chapter 64E-6, *Florida Administrative Code*.

State requirements pertaining to the management of water resources and the regulation of consumptive water use have been adopted by regional water management districts pursuant to Chapter 40D-2, *Florida Administrative Code*. The purpose of Chapter 40D-2 is to implement the provisions of Part II of Chapter 373, Florida Statutes, and the State of Florida Water Policy set forth in Chapter 62-40 F.A.C. Additional rules relating to water use are found in Chapter 40D-3, entitled “Regulation of Wells;” Chapter 40D-8, entitled “Water Levels and Rates of Flow”; and, Chapter 40D-21, entitled “Water Shortage.”

In 2007, Charlotte County rescinded jurisdiction over and assumed regulatory authority of for-profit utilities from the Public Service Commission (PSC) (*Ordinance 2007-092*). Town and Country Utilities and Lake Suzy Utilities, which traverse border of Charlotte and Lee counties, remain under the jurisdiction of the PSC. The regulation of all of the remaining utilities within the County is handled by either Charlotte County or the utility’s governing body.

D. Basis of Potable Water and Sanitary Sewer Demands

A number of approaches can be used to project water and sewer demands. The most common approach is to base demands upon population projections derived from the University of Florida’s Bureau of Economic and Business Research (BEBR), US Census forecasting, or traffic analysis zones. The Florida Department of Community Affairs (DCA) recognizes the BEBR population projections as the standard projection methodology for the State. BEBR has been providing County-level population estimates and projections since 1973 based upon historical population growth and building permit patterns. Table 4.14 summarizes population projections for Charlotte County for the period from 2000 to 2030. The population projections are based on the 2006 medium-BEBR projections for Charlotte County. Seasonal population projections are based upon data from the Southwest Florida Regional Planning Council which indicate that the County’s seasonal population increase is approximately 22 percent.

Year	Population	Seasonal Population
2000	141,627	172,785
2001	144,742	176,585
2002	147,856	180,385
2003	150,971	184,185
2004	154,086	187,985
2005	157,200	191,784
2006	160,315	195,584
2007	164,086	200,185
2008	167,858	204,786

2009	171,629	209,387
2010	175,400	213,988
2011	178,880	218,234
2012	182,360	222,479
2013	185,840	226,725
2014	189,320	230,970
2015	192,800	235,216
2016	195,960	239,071
2017	199,120	242,926
2018	202,280	246,782
2019	205,440	250,637
2020	208,600	254,492
2021	211,420	257,932
2022	214,240	261,373
2023	217,060	264,813
2024	219,880	268,254
2025	222,700	271,694
2026	225,340	274,915
2027	227,980	278,136
2028	230,620	281,356
2029	233,260	284,577
2030	235,900	287,798

E. Inventory of Potable Water Service Providers

According to SWFWMD records, potable water is supplied by 18 individual utilities maintaining operations within Charlotte County. The two largest providers, Charlotte County Utilities and the City of Punta Gorda, are publicly owned. Englewood Water District, which is headquartered in Sarasota County, is also public, while the remaining providers are privately owned. Thirteen providers of potable water have a customer base and a certificated area of operation throughout which they provide service to their customer base. The certification grants the authorized right to be the sole provider of a stipulated service within a described area to ensure that certificated areas for similar services do not overlap. Further, any area not depicted as a certificated area falls under the service of Charlotte County Utilities. The 13 certificated potable water supply areas are depicted on Map 4.21.

A detailed analysis of all public and private facilities was conducted pursuant to the criteria established under Rule 9J-5.011 F.A.C. The 18 potable water providers were inventoried by geographic location to identify plant design capacities, current demand, and existing levels of service for each certificated area. The existing and future water needs for Charlotte County were then identified based on the data obtained from the inventory. Future water demands were generated by applying population projections derived from anticipated growth scenarios indicated in the Future Land Use Element to the 225 gallons per day per Equivalent Residential Unit (ERU) level of service

standard established in this element. Demands were equated to per capita water usage by dividing 2.18 persons per household in the County into the 225 ERU standard. After the future water demands were identified, the performance of existing facilities and adequacy of present levels of service was evaluated over time and the need for facility replacement and expansion was determined.

It should be noted that the level of service of 225 gpd/ERU is intended to provide for maximum day water demands that may be expected to occur within Charlotte County. Actual average day demands may be significantly lower (e.g., 156 gpd/ERU). Planning to meet level of service demands is necessary to ensure adequate infrastructure capacity is available to satisfy short-term and instantaneous water supply demands without negatively impacting system performance (e.g., reduction in system pressure). Effectively planning for level of service demands also results in more efficient operation of the systems in Charlotte County and customers utilize a more consistent amount of water because they understand potable water will be available to them when needed.

1. Existing Potable Water Providers

Charlotte County Utilities (CCU) is the largest publicly-owned utility in the County. CCU provides water to the Port Charlotte area, which encompasses most of Mid-County; portions of West County including Gulf Cove, East Englewood, and South Gulf Cove; and the Burnt Store area of South County. In total, CCU supplies potable water to approximately 56,000 service connections. CCU purchases the majority (approximately 95-percent) of its water from the PR/MRWSA. The Authority provides an average of 18 MGD to Charlotte County, DeSoto County, Sarasota County, and the City of North Port. Manatee County is also a member government, but is not currently contracted to receive any water from the Authority. Currently, CCU purchases potable water from the Peace River Water Treatment Plant located in De Soto County at a maximum day contract allocation of 17.861 MGD.

The Peace River is the largest river system in the boundaries of the SWFWMD. Its headwaters are located in Polk County in the Green Swamp and the river flows south through swamps, pine flatwoods, hardwood hammocks, and marshes, before the river discharges into Charlotte Harbor. The Peace River watershed encompasses over 2,300 square miles in Polk, Hardee, DeSoto, and Charlotte Counties.

The Peace River Water Treatment Facility (PRF) is a 24 MGD surface water treatment plant (WTP) located in southwest DeSoto County, approximately 19 miles above the river's mouth in Charlotte Harbor. The PRF includes a diversion structure, a 625 million gallon (MG) off-stream reservoir, aquifer storage and recovery (ASR) wells, and aboveground storage. The Authority is presently expanding the capacity of the PRF to 48 MGD and constructing a 6 billion gallon off-stream reservoir. Upon completion of the expansion in 2009, the PRF is anticipated to be able to provide an annual average of 32.7 MGD to its members. Approximately 16.1 MGD of which will be allocated to Charlotte County Utilities. In addition, CCU has requested an additional 1.658 MGD from the Authority on an annual average day basis starting in 2014 increasing the total potential allocation from the Authority to 17.66 MGD.

CCU currently operates one water treatment facility. The Burnt Store Reverse Osmosis (RO) facility has a current capacity of 1.127 MGD. The Burnt Store facility currently provides service to approximately 2,600 service connections within its certificated area, including a small service area known as the Burnt Store Marina area in the City of Cape Coral in Lee County. Design for expansion of the facility to 3.6 MGD was completed in September 2007 and construction of the upgraded WTP is scheduled for completion by February 2009. The Burnt Store facility provides water to the Burnt Store Service Area; a small, isolated distribution system that reaches into northern Lee County. CCU is a provider of bulk water to three major distribution utilities meeting demands within Charlotte County. The potable water suppliers within Charlotte County are described below and are listed by their region in the County.

Mid-County

- 1) *El Jobean Water Association, Inc.* supplies potable water purchased from Charlotte County Utilities to 600 commercial and private service connection customers. Its certificated service area is located in southwestern Mid-County, north of the Myakka River

- 3) *Riverwood Community Delivery District* supplies potable water purchased from Charlotte County Utilities to more than 850 single family and multi-family service connections in the Riverwood development. Its certificated service area is located in southwestern Mid-County, north and east of the Myakka River.
- 4) The *Charlotte Harbor Water Association, Inc.* operates a reverse osmosis (RO) water treatment plant, located east of Interstate 75 in the vicinity of Harbour Heights. Water drawn from four wells provides service to 1,820 residential and commercial service connections. Most of the service connections represent residential users. The facility has a permitted capacity of 0.750 MGD. The certificated service area for the Charlotte Harbor Water Association is located in the vicinity of Charlotte Harbor. This utility does not purchase water from Charlotte County Utilities but maintains an emergency interconnect with CCU.
- 5) *NHC Utilities Inc.* presently serves 200 service connections with a permitted capacity of 0.09 MGD.

West County

- 6) The *Englewood Water District* encompasses approximately 45 square miles in Southern Sarasota County and Western Charlotte County. The District maintains over 16,400 residential and commercial service connections. The certificated service area includes the Englewood area of Charlotte County as defined in the Englewood Water District's Enabling Act.

There are three (3) fresh water and two (2) brackish water wellfields that provide source water for the Englewood Water District. The following fresh water wellfields provide water to the lime softening facility: Wellfield #1 consists of 24 shallow wells located in the residential area surrounding the Selma Avenue facilities. Wellfield #2 consists of 18 shallow wells located off North Oxford Drive. Wellfield #3 consists of 16 shallow wells located off Keyway Road. These fifty-eight wells are capable of producing 3 MGD. However the water use permit issued by the Southwest Florida Water Management District restricts withdrawal to a maximum of 1.35 MGD.

The District also operates two (2) brackish water wellfields which penetrate the Hawthorn and Floridan Aquifers and provide raw water to the reverse osmosis plant. Wellfield #4 consists of 9 wells located at the Selma Avenue complex. These brackish water wells are capable of producing 4.25 MGD. Wellfield #2-R/O consists of 8 wells installed within and under freshwater Wellfield #2. Each of the 8 wells is of identical construction and has the ability to provide additional raw water supply capacity to the reverse osmosis system. Wellfield #5 is currently being evaluated to determine its potential supply capacity. Raw water from these sources is treated at the reverse osmosis treatment plant which has a permitted capacity of 3.0 MGD; however, expansion of the Reverse Osmosis Plant from 3.0 MGD to 5.0 MGD is scheduled to be completed by November 2008. Finished waters from both plants are blended and sent into the distribution system.

- 7) *Gasparilla Island Water Association* operates an RO water treatment plant and a color removal plant, located east of Rotonda West, with a combined permitted capacity of 1.846 MGD. Water is supplied from a number of shallow wells. The utility purchases potable water from Charlotte County Utilities on a periodic basis. The utility provides service to 1,673 residential and commercial service connections. The certificated service area is located on Gasparilla Island and includes a portion of Lee County.
- 8) *Bocilla Utilities* operates an RO water treatment plant on Little Gasparilla Island. Its permitted capacity is 0.12 MGD, and it serves over 200 residential service connections.
- 9) *Knight Island Utilities Inc.* maintains a private RO treatment plant on the barrier islands. The plant serves over 200 residential and commercial service connections with a design capacity of 0.09 MGD.
- 10) *Little Gasparilla Island Utility* is located on Little Gasparilla Island in West Charlotte County. The utility operates an RO treatment facility serving 220 residential service connections with a design capacity of 0.072 MGD.

South County

- 11) The *City of Punta Gorda* operates a water treatment plant that withdraws surface water from Shell Creek. The facility is located east of Interstate 75 near Washington Loop Road. The plant has a rated treatment capacity of 10 MGD and supplies water to over 11,700 service connections within the incorporated City limits and unincorporated areas of eastern and northeastern Charlotte County. The City water use permit allows withdrawals of 8.01 MGD annual average day and peak monthly withdrawals of 11.73 MGD. The utility is also responsible for the operation and maintenance of the Burnt Store Isles Elevated Tank, Punta Gorda Isles Ground Storage Tank and Booster Pump Station. The City of Punta Gorda is seeking to expand surface water withdrawals from Shell Creek, increase the capacity of their Shell Creek WTP from 10 MGD to 15 MGD, and construct a 1-billion gallon (BG) upland reservoir adjacent to the WTP. The WTP expansion is an effort to meet projected gaps in the City's own future supply, whereas the reservoir is necessary to ensure reliability and water quality of the existing water supply.
- 12) *Town & Country Utilities Company* has been certificated to provide potable water services to the New Town Development. The certificated area is located north of County Road 78, east of State Road 31, and south of State Road 74 in Charlotte and Lee Counties. The proposed water treatment plant will utilize water from the Floridan aquifer. At build-out the proposed RO plant will have a capacity of 7.88 MGD.
- 13) *Sun River Utilities (formerly MSM Utilities)* is a water and wastewater utility operating in Charlotte County that provides service to approximately 54 residential service connections and two general service connections. Raw water is treated at an RO treatment facility with a plant capacity of 0.06 MGD. The major service area consists of the Rivers Edge mobile

home development located on the west side of state route 17.

- 14) *Alligator Park, Tropical Palm MHP, Shell Creek Park, the Oaks at Rivers Edge, and Lake Suzy Utilities* complete the list of community systems authorized by DEP for the provision of water. Collectively, these five utilities are located in South Charlotte County and provide potable water to approximately 835 service connections. Alligator Park has a permitted capacity of 0.06 MGD, Tropical Palm MHP has a permitted capacity of 0.08 MGD, and Shell Creek Park has a permitted capacity of 0.05 MGD. Lake Suzy Utilities purchases water through an interconnection with DeSoto County, and The Oaks at River's Edge is supplied by Sun River Utilities (formerly known as MSM Utilities).

2. Potable Water Quality

The principal law governing drinking water safety in the United States is the Safe Drinking Water Act (SDWA). Primary drinking water standards are health-related criteria that are enforced by the FDEP, which require water utilities to meet specified water quality standards. Secondary Drinking Water Standards include criteria that are intended for control of aesthetic factors. Secondary standards are established as guidelines that are strongly recommended, but not enforceable.

As required by federal and state regulations of all utilities, an annual water quality report or CCR is distributed to all water customers on a yearly basis. The report tabulates the results of water quality testing to identify the level of pollutants that may be in drinking water. The results as reported in the latest CCRs, for calendar year 2006, indicate that the levels of water contaminants for all water utilities within Charlotte County are safely below the maximum contaminant levels allowed by federal and state regulations.

3. Significant Non-Potable Water Users

The SWFWMD and SFWMD authorize significant water use as Individual Water Use Permits (WUPs). Less significant withdrawals, those less than 100,000 gallons per day (GPD) are authorized under General WUPs. All Individual WUPs within Charlotte County were inventoried and are summarized in Table 4.15. The permits summarized in Table 4.15 allocate water for landscape irrigation, recreational/aesthetic use, industrial use, mining/dewatering, and agricultural irrigation. Approximately 95.5 and 26.6 MGD on an average annual basis of water use is permitted by SFWMD and SWFWMD, respectively, from Charlotte County. These significant non-potable water uses comprise a total of approximately 122 MGD of withdrawals on an average annual basis and 277 MGD on a peak month basis. Over 90-percent, on an average annual basis, of the significant non-potable water use is for agricultural purposes.

Table 4.15 Significant Non-potable Water Users

Water Management District	Permit ID	Permitted	Water Use	Avg Day (MGD)	Peak Month (MGD)	Section	Township	Range	Source	Notes
SWFWMD	2010169	Robert M. Taylor, Trustee, MRP Land Trust	R/A	0.352	0.625	20, 21, 28, 29	40S	21E	Surface Water	
SWFWMD	206954	The Oaks Club Corporation	R/A	0.500	1.416	3	38S	18E	Surface Water, Upper Floridan, Upper Intermediate	
SWFWMD	20002593	C&C Investments and J&S Carter, Inc.	AGR	0.885	3.710	23	40S	25E	Groundwater	
SWFWMD	209648	Thomas W. Beddard	AGR	0.781	1.652	36, 35, 25	40S	26E	Surface & Groundwater	
SWFWMD	20009052	Ben Hill Griffin, Inc.	AGR	1.457	5.649	8, 9, 10, 11, 17	40S	26E	Surface & Groundwater	
SWFWMD	208224	David Brown Farms	AGR	4.195	8.766	5, 31, 1, 36, 34, 33,	40, 39,S	26, 25E	Groundwater	
SWFWMD	20003530	American Citrus Products Corp.	AGR	0.917	5.919	23, 13, 24	40S	26E	Surface Water	
SWFWMD	20009476	Citrus Creek Grove, LLC	AGR	1.079	4.547	36, 31, 30	40S	24, 25E	Groundwater	
SWFWMD	201019	Ryals Citrus & Cattle Company	AGR	1.935	3.797	35, 2, 3, 11, 12,	39, 40S	24E	Groundwater	
SWFWMD	20002689	East Charlotte Drainage District	AGR	2.920	14.989	34, 14, 27, 16, 21, 15, 22, 14, 34, 23	40S	26E	Surface & Groundwater	
SWFWMD	20009398	Turner Foods Corporation, LLC	AGR	1.207	6.863	10, 11, 12	40S	25E	Groundwater	
SWFWMD	209926	R & D Cattle Ranch, LLC	AGR	0.888	2.650	32, 33, 29	40S	25E	Groundwater	
SWFWMD	20004589	Hudson Land & Cattle, LLC	AGR	2.030		4	40S	24E	Groundwater	
SWFWMD	20004606	Spanish Trail Land & Cattle Company, LLC	AGR	3.398	15.261	24, 25, 35, 36, 29, 30, 31, 32, 33, 1, 2	39, 40S	26, 27E	Surface & Groundwater	

SWFWMD	20006968	Calvin C. Boggess, Jr	AGR	0.920	2.274	32, 33	39S	24E	Groundwater	
SWFWMD	20009687	Williams Farms Partnership	AGR/IND	1.57	2.980	17, 20, 19,	40S	26E	Surface Water	
SWFWMD	20003275	Adrian R Chapman	AGR	1.102	7.271	34, 1, 33, 2,	39, 40S	25E	Groundwater	
SWFWMD	209727	Friedrich Shciller	AGR	0.498	2.064	30, 25	40S	24, 25E	Surface & Groundwater	
SFWMD	08-00001-W	PACKERS GULF CITRUS, INC - CHIQUITA PRIDE GROVES	AGR	3.84	6.27	16, 17, 20, 21	40	27	On-site lake(s), Floridan Aquifer, Lower Hawthorn Aquifer, Water Table Aquifer	
SFWMD	08-00002-W	Babcock Ranch	AGR	10.41	22.24	1-7,9,12; 4-9,17,18	43S; 43S	26E;27E	Water Table Aquifer, Sandstone Aquifer, Mid-Hawthorn Aquifer, Lower Hawthorn Aquifer,	Permit modification in progress
SFWMD	070725-8*	Babcock Ranch Preserve	AGR	32.61	61.89	1-31,33-36; 1-4,10-15,22-25,36; 19-36; 1-36; 1,2,12; 4-9,17,18	41S; 42S; 41S; 42S; 43S; 43S	26E; 26E; 27E; 27E; 26E; 27E		New Permit * is application number
SFWMD	08-00005-W	VARNER AS CITRUS GROVE/Regina Grove	AGR	0.6	1.4	32	40S	27E	On-site canal(s), Water Table Aquifer, Lower Hawthorn Aquifer, Floridan Aquifer	Permit modification in progress
SFWMD	08-00006-W	CALUSA I	AGR	2.56	5.31	18, 19	40S	27E	On-site reservoir, Intermediate Aquifer System	
SFWMD	08-00008-W	CORAL ROCK (THREE LAKES MINE)	IND	1.73	3.24	25, 27	42S	25E	On-site borrow pit(s), Surficial Aquifer System	
SFWMD	08-00009-W	COOK BROWN FARMS	AGR	0.26	0.64	23, 24	42S	25E	Water Table Aquifer	
SFWMD	08-00011-W	JAY ROCK MINE	IND	2.13	3.24	23, 24	42S	25E	On-site borrow pit(s)	Permit modification in progress

SFWMD	08-00015-W	EAGLE ISLAND CITRUS GROVE	AGR	2.03	4.21	1, 12	40S	27E	Water Table Aquifer, Lower Hawthorn Aquifer, Floridan Aquifer System	
SFWMD	08-00036-W	THREE L GROVES LLC	AGR	0.32	0.68	29	42S	25E	Water Table Aquifer	
SFWMD	08-00045-W	EARTHSOURCE INC	IND	0.85	1.2	30	42S	26E	On-site borrow pit(s)	
SFWMD	08-00069-W	EMERALD ISLES	AGR	6.47	20.7	4-9, 17	40S	27E	On-site canal(s), Lower Hawthorn Aquifer	
SFWMD	08-00074-W	BERRY GROVE CHARLOTTE TRACT	AGR	4.68	8.97	13-15, 22- 26, 35, 36	40S	27E	On-site lake(s), Lower Hawthorn Aquifer, Upper Floridan Aquifer	
SFWMD	08-00076-W	EDENBELLE GROVE	AGR	3.55	7.69	29-32	40S	27E	On-site reservoir, Lower Hawthorn Aquifer	
SFWMD	08-00078-W	EVANS PROPERTIES INC - PAYSON TRACT	AGR	7.72	16.7	1-4, 7-18	41S	27E	On-site canal(s), Lower Hawthorn Aquifer, Floridan Aquifer System, unspecified aquifer	
SFWMD	08-00079-W	TJ & MARY CHASTAIN	AGR	0.25	0.9	35	40S	27E	Floridan Aquifer System	
SFWMD	08-00081-W	TRIANGLE GROVE	AGR	0.24	NA	7,8,18	40S	27E	Lower Hawthorn Aquifer	No documentation available, last permit update was issued in 1993 for 85.87 MGY
SFWMD	08-00082-W	PRI-CAR FARMS	AGR	0.38	NA	34,35	42S	25E	Water Table Aquifer, Sandstone Aquifer	Pending permit modification
SFWMD	08-00108-W	MCNEW RANCH	AGR	0.67	1.65	31-34	42S	24E	On-site reservoir, Lower Hawthorn Aquifer	
SFWMD	08-00110-W	CORAL ROCK DEWATERING	DEW	2.88		26	42S	25E	Water Table Aquifer	No documentation available, permit modified in 2006
SFWMD	08-00125-W	Spanish Trail Land and Cattle Co	AGR	2.79	5.59	13-15, 24- 26, 35, 36	40S	27E	On-site lake(s)	

SFWMD	22-00070-W	SIX L'S/FARM 1	AGR	3.36	6.49	8, 16-18, 20	42S	28E	Surficial Aquifer System, Sandstone Aquifer	Permit is for Glades County, however there are wells that are within Charlotte County
SFWMD	36-00188-W	COUNTY LINE DRAINAGE DISTRICT	AGR	3.25	3.97	1-3, 11-14	43S	27E	On-site lake(s)/pond(s)	
SFWMD	36-01395-W	HERON'S GLEN	LAN	0.7	1.14	4	43S	24E	On-site lake(s), Water Table Aquifer, Lower Hawthorn Aquifer	
SFWMD	36-01460-W	ALVA GROVES	AGR	0.23	1.07	3, 11	43S	27E	Water Table Aquifer	Permit is for Lee County but has wells in Charlotte County
SFWMD	36-05438-W	BURNT STORE MARINA AND COUNTRY CLUB	LAN	0.94	1.54	1; 6	43S; 43S	22E; 23E	On-site lake(s), Lower Hawthorn Aquifer	

4. Existing and Projected Water Facility Needs

The 18 existing potable water suppliers in Charlotte County were permitted to provide 31,899,000 gallons of water in 2007 as shown in Table 4.16.

This plan incorporates an adopted potable water level of service standard of 225 gallons per day per Equivalent Residential Unit (ERU). The ERU data can be converted to gallons per capita per day (gpcd) by using the following formula:

$$1 \text{ ERU} = 225 \text{ gpd} / 2.18 \text{ persons per household} = 103.2 \text{ gpcd}$$

(2.18 is the mean number of persons per household in Charlotte County per 2000 U.S. Census data)

This standard was used in conjunction with the BEBR population projections to determine the future water needs for Charlotte County. BEBR estimates of future population for Charlotte County were divided among the 18 potable water suppliers within Charlotte County proportionally to their FDEP-reported service populations. Future growth in each of those service areas was then estimated based on the anticipated future growth within each of those service areas reported to Charlotte County and the BEBR-estimated population increase for each of the five-year planning periods.

Tables 4.17 and 4.18 depict the annual projected potable water demands from 2005 to 2030 based on the distributed BEBR population projections and estimated seasonal populations, respectively. Projected demands are calculated by multiplying the projected population by the per capita equivalent minimum level of service standard of 103.2 gallons per day and are indicated in million gallons per day (MGD). It should be noted that the information provided in Tables 4.17 and 4.18 pertains only to the future population of Charlotte County and does not include the populations outside the boundaries of Charlotte County that are served by the potable water suppliers identified in the tables.

Table 4.16 Existing Potable Water Service Providers

DEP ID	Community Water Supplier	Certif. Area	County Location	Population (persons)	Permitted Capacity (GPD)	Service Connections (Connections)	Population per Service Connection	Treatment Plants	Water Sources
5084100	Charlotte County Utilities	Yes	All	128,967	12,758,000	57,833	2.49	NA	NA
6080318	CCU – Burnt Store	Yes	South	6,294	1,127,000	2,286	2.75	1	1
6080054	City of Punta Gorda	Yes	South	29,561	10,000,000	11,722	2.52	1	2
6080104	Gasparilla Island Water Assn.	Yes	West	5,104	1,846,000	1,673	3.05	2	2
6080044	Charlotte Harbor Water Assn.	Yes	Middle	4,500	750,000	1,675	2.69	1	4
5084082	Charlotte Correctional Institute	No	South	1,594	300,000	30	53.13	1	1
6084079	Bocilla Utilities, Inc.	Yes	West	410	120,000	204	2.01	1	2
5084110	NHC Utilities, Inc.	Yes	Middle	401	90,000	200	2.01	1	1
6084075	Knight Island Utilities, Inc.	Yes	West	570	90,000	201	2.84	1	1
6080175	Little Gasparilla Utility, Inc.	Yes	West	450	360,000	220	2.05	1	1
6080009	Alligator Park	No	South	400	60,000	199	2.01	1	2
6080324	Tropical Palm MHP	No	South	530	60,000	360	1.47	1	1
6080256	Shell Creek Park	No	South	465	50,000	231	2.01	1	1
6084074	The Oaks at River's Edge	No	South	90	40,000	45	2.00	1	1
5084111	Riverwood Community Dev. Dist.	Yes	Middle	2,133	NA	853	2.50	1	1
6080081	El Jobean Water Association	Yes	Middle	1,338	NA	600	2.23	1	1
6580531	Englewood Water District	Yes	West	48,970	6,000,000	16,403	2.99	2	5
	MSM Utilities	Yes	East		0.006	56		1	
	Town and Country Utilities	Yes	East						

Data From FDEP database and current as of May 8, 2008

TABLE 4.17 WATER SUPPLY UTILITY SERVICE WITHIN CHARLOTTE COUNTY												
UTILILITY SERVICE AREA	POPULATION PROJECTIONS (medium-BEBR)						LOS DEMAND PROJECTIONS (MGD)					
	YEAR	2005	2010	2015	2020	2025	2030	2005	2010	2015	2020	2025
TOTAL County (BEBR)	157,200	175,400	192,800	208,600	222,700	235,900	17.64	19.68	21.63	23.43	25.09	26.66
CCU Burnt Store - SWFWMD	2,903	4,659	6,542	7,938	8,154	8,154	0.30	0.48	0.68	0.82	0.84	0.84
Charlotte County Utilities - SWFWMD	97,879	109,342	118,657	127,798	137,052	145,605	10.10	11.29	12.25	13.19	14.15	15.03
Charlotte County Utilities - SFWMD	1,162	1,312	1,434	1,553	1,672	1,783	0.12	0.14	0.15	0.16	0.17	0.18
Riverwood Community Dev. Dist.	1,638	2,002	2,288	2,560	2,599	2,599	0.17	0.21	0.24	0.26	0.27	0.27
El Jobean Water Association	1,028	1,137	1,225	1,312	1,401	1,483	0.11	0.12	0.13	0.14	0.14	0.15
Charlotte Correctional Institute	1,224	1,224	1,224	1,224	1,224	1,224	0.13	0.13	0.13	0.13	0.13	0.13
City of Punta Gorda (incorporated) ¹	11,351	12,586	13,815	15,204	16,816	18,521	2.59	2.88	3.16	3.47	3.84	4.23
City of Punta Gorda (unincorporated) ²	11,351	12,586	13,815	15,204	16,816	18,521	1.17	1.30	1.43	1.57	1.74	1.91
Gasparilla Island Water Assn.	3,920	3,957	3,989	4,022	4,056	4,088	0.40	0.41	0.41	0.42	0.42	0.42
Charlotte Harbor Water Assn.	3,456	4,064	6,214	7,123	7,168	7,211	0.36	0.42	0.64	0.74	0.74	0.74
Bocilla Utilities, Inc.	315	382	438	492	531	531	0.03	0.04	0.05	0.05	0.05	0.05
NHC Utilities, Inc.	308	308	308	308	308	308	0.03	0.03	0.03	0.03	0.03	0.03
Knight Island Utilities, Inc.	438	438	438	438	438	438	0.05	0.05	0.05	0.05	0.05	0.05
Little Gasparilla Utility, Inc.	346	386	428	468	509	547	0.04	0.04	0.04	0.05	0.05	0.06
Alligator Park	307	307	307	307	307	307	0.03	0.03	0.03	0.03	0.03	0.03
Lake Suzy Utilities	35	35	35	35	35	35	0.00	0.00	0.00	0.00	0.00	0.00
Tropical Palm MHP	269	269	269	269	269	269	0.03	0.03	0.03	0.03	0.03	0.03
Shell Creek Park	357	357	357	357	357	357	0.04	0.04	0.04	0.04	0.04	0.04
Englewood Water District	18,804	19,938	20,908	21,879	22,877	23,810	1.94	2.06	2.16	2.26	2.36	2.46
Sun River Utilities (f/k/a MSM Utilities)	77	77	77	77	77	77	0.01	0.01	0.01	0.01	0.01	0.01
The Oaks at River's Edge	35	35	35	35	35	35	0.00	0.00	0.00	0.00	0.00	0.00
City of Cape Coral ³	1,935	1,935	1,935	1,935	1,935	1,935	0.15	0.15	0.15	0.15	0.15	0.15
Town & Country Utilities ⁴	0	1,413	9,993	26,603	41,771	49,700	0.00	0.14	1.00	2.66	4.18	4.97
TOTAL CALCULATED	159,135	178,748	204,728	237,138	266,406	287,535	17.80	19.98	22.78	26.25	29.42	31.79

- 1 - The incorporated areas of Punta Gorda are subject to the City's LOS standard of 465 gpd per ERU. City of Punta Gorda Census data indicate 2,035 persons per ERU resulting in a LOS of 228 gpd per capita (City of Punta Gorda, Comprehensive Plan, EAR Amendments, April 2008, draft).
- 2 - Although the City of Punta Gorda is planning water system improvements based on a LOS standard of 228 gpd per capita, Charlotte County is only required to verify provision of potable water service based on the Charlotte County adopted LOS of 225 gpd per ERU (103.2 gpd per capita).
- 3 - This population is not included in the medium-BEBR total. Charlotte County Utilities provides service from the Burnt Store WTP to a small area (Burnt Store Marina) in the City of Cape Coral located in Lee County. Demand projections are based on a LOS demand of 200 gpd per ERU and 2.5 persons per ERU (City of Cape Coral, Comprehensive Plan, EAR Amendments, October 29, 2007).
- 4 - As reported in the Town & Country Water Use Permit Application. Demand projections based on a LOS demand of 100 gpd per capita.

TABLE 4.18 SEASONAL WATER SUPPLY UTILITY SERVICE WITHIN CHARLOTTE COUNTY												
UTILITY SERVICE AREA	SEASONAL POPULATION PROJECTIONS						SEASONAL LOS DEMAND PROJECTIONS (MGD)					
	YEAR	2005	2010	2015	2020	2025	2030	2005	2010	2015	2020	2025
TOTAL County (BEBR)	191,784	213,988	235,216	254,492	271,694	287,798	21.52	24.01	26.38	28.59	30.61	32.53
CCU Burnt Store - SWFWMD	3,542	5,685	7,981	9,684	9,948	9,948	0.37	0.59	0.82	1.00	1.03	1.03
Charlotte County Utilities - SWFWMD	119,413	133,397	144,761	155,913	167,203	177,638	12.32	13.77	14.94	16.09	17.26	18.33
Charlotte County Utilities - SFWMD	1,418	1,601	1,749	1,894	2,040	2,175	0.15	0.17	0.18	0.20	0.21	0.22
Riverwood Community Dev. Dist.	1,998	2,443	2,791	3,123	3,170	3,170	0.21	0.25	0.29	0.32	0.33	0.33
El Jobean Water Association	1,254	1,387	1,495	1,601	1,709	1,809	0.13	0.14	0.15	0.17	0.18	0.19
Charlotte Correctional Institute	1,493	1,493	1,493	1,493	1,493	1,493	0.15	0.15	0.15	0.15	0.15	0.15
City of Punta Gorda (incorporated)	13,848	15,355	16,854	18,549	20,516	22,595	3.16	3.51	3.85	4.24	4.69	5.16
City of Punta Gorda (unincorporated)	13,848	15,355	16,854	18,549	20,516	22,595	1.43	1.58	1.74	1.91	2.12	2.33
Gasparilla Island Water Assn.	4,782	4,828	4,867	4,906	4,948	4,988	0.49	0.50	0.50	0.51	0.51	0.51
Charlotte Harbor Water Assn.	4,216	4,958	7,581	8,690	8,744	8,797	0.44	0.51	0.78	0.90	0.90	0.91
Bocilla Utilities, Inc.	384	466	534	600	648	648	0.04	0.05	0.06	0.06	0.07	0.07
NHC Utilities, Inc.	376	376	376	376	376	376	0.04	0.04	0.04	0.04	0.04	0.04
Knight Island Utilities, Inc.	534	534	534	534	534	534	0.06	0.06	0.06	0.06	0.06	0.06
Little Gasparilla Utility, Inc.	422	471	522	572	621	667	0.04	0.05	0.05	0.06	0.06	0.07
Alligator Park	375	375	375	375	375	375	0.04	0.04	0.04	0.04	0.04	0.04
Lake Suzy Utilities	42	42	42	42	42	42	0.00	0.00	0.00	0.00	0.00	0.00
Tropical Palm MHP	328	328	328	328	328	328	0.03	0.03	0.03	0.03	0.03	0.03
Shell Creek Park	436	436	436	436	436	436	0.04	0.04	0.04	0.04	0.04	0.04
Englewood Water District	22,940	24,324	25,508	26,692	27,910	29,048	2.37	2.51	2.63	2.75	2.88	3.00
Sun River Utilities (f/k/a MSM Utilities)	94	94	94	94	94	94	0.01	0.01	0.01	0.01	0.01	0.01
The Oaks at River's Edge	42	42	42	42	42	42	0.00	0.00	0.00	0.00	0.00	0.00
City of Cape Coral	2,361	2,361	2,361	2,361	2,361	2,361	0.22	0.22	0.22	0.22	0.22	0.22
Town & Country Utilities ¹	0	1,413	9,993	26,603	41,771	49,700	0.00	0.14	1.00	2.66	4.18	4.97
TOTAL CALCULATED	194,145	217,762	247,570	283,456	315,826	339,859	21.75	24.37	27.60	31.47	35.01	37.72

1 - The Town & County WUP Application did not include seasonal demands. As such, there is no reported increase in seasonal LOS demand for this utility.

Table 4.19 compares the FDEP-permitted treatment/supply capacity for each of the potable water suppliers within Charlotte County. Where a potable water supplier provides service to some population outside of Charlotte County, the reported seasonal LOS demand does not include that service population and the permitted capacity has been adjusted accordingly.

TABLE 4.19 COMPARISON OF PERMITTED WATER SUPPLY CAPACITY AND WATER DEMAND PROJECTIONS							
UTILITY SERVICE AREA YEAR	PERMITTED CAPACITY (MGD)	SEASONAL LOS DEMAND PROJECTIONS					
		2005	2010	2015	2020	2025	2030
CCU Burnt Store - SWFWMD	3.6	0.37	0.59	0.82	1.00	1.03	1.03
City of Cape Coral ¹		0.22	0.22	0.22	0.22	0.22	0.22
<i>Subtotal Supplied by CCU Burnt Store</i>		0.58	0.80	1.04	1.22	1.24	1.24
Charlotte County Utilities - SWFWMD ²	16.1	12.32	13.77	14.94	16.09	17.26	18.33
Charlotte County Utilities - SFWMD ²		0.15	0.17	0.18	0.20	0.21	0.22
Riverwood Community Dev. Dist. ^{2,3}		0.21	0.25	0.29	0.32	0.33	0.33
El Jobean Water Association ^{2,3}		0.13	0.14	0.15	0.17	0.18	0.19
<i>Subtotal supplied by PR/MRWSA</i>		12.81	14.33	15.56	16.78	17.97	19.07
Charlotte Correctional Institute	0.3	0.15	0.15	0.15	0.15	0.15	0.15
City of Punta Gorda (incorporated)	10	3.16	3.51	3.85	4.24	4.69	5.16
City of Punta Gorda (unincorporated)		1.43	1.58	1.74	1.91	2.12	2.33
<i>Subtotal supplied by Punta Gorda</i>		4.59	5.09	5.59	6.15	6.81	7.50
Gasparilla Island Water Assn.	1.846	0.49	0.50	0.50	0.51	0.51	0.51
Charlotte Harbor Water Assn.	0.75	0.44	0.51	0.78	0.90	0.90	0.91
Bocilla Utilities, Inc.	0.12	0.04	0.05	0.06	0.06	0.07	0.07
NHC Utilities, Inc.	0.09	0.04	0.04	0.04	0.04	0.04	0.04
Knight Island Utilities, Inc.	0.09	0.06	0.06	0.06	0.06	0.06	0.06
Little Gasparilla Utility, Inc.	0.072	0.04	0.05	0.05	0.06	0.06	0.07
Alligator Park	0.06	0.04	0.04	0.04	0.04	0.04	0.04
Lake Suzy Utilities ⁶	NA	0.004	0.004	0.004	0.004	0.004	0.004
Tropical Palm MHP	0.08	0.03	0.03	0.03	0.03	0.03	0.03
Shell Creek Park	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Englewood Water District	3.0 ⁽⁴⁾	2.37	2.51	2.63	2.75	2.88	3.00
Sun River Utilities (f/k/a MSM Utilities)	0.06 ⁽⁵⁾	0.01	0.01	0.01	0.01	0.01	0.01
The Oaks at River's Edge ⁷		0.004	0.004	0.004	0.004	0.004	0.004
<i>Subtotal supplied by Sun River Utilities</i>		0.014	0.014	0.014	0.014	0.014	0.014
Town & Country Utilities	5	0.00	0.14	1.00	2.66	4.18	4.97

Bold and italics values exceed the current permitted capacity.

1 - The Burnt Store Marina service area in the City of Cape Coral receives water from the CCU Burnt Store WTP.

2 - Supplied by Peace River/Manasota Regional Water Supply Authority

3 - Receives PR/MRWSA Authority Water through Charlotte County Utilities

4 - The Englewood Water District has a permitted treatment capacity of 6.0 MGD. Approximately 50% of the EWD service population lies within the boundaries of Charlotte County. The permitted capacity has been adjusted accordingly (6.0 x 0.5 = 3.0)

5 - As reported by the Florida Public Service Commission

6 - Lake Suzy utilities purchases water through an interconnection with DeSoto County.

7 - The Oaks at River's Edge was acquired by and is supplied by Sun River Utilities (f/k/a MSM Utilities)

The analysis presented in Table 4.19 shows that no additional water supplies are needed until 2015. However, Charlotte County Utilities, the City of Punta Gorda, and Charlotte Harbor Water Association are anticipating that population growth may exceed BEBR projections and are planning accordingly. Charlotte County is working with the PR/MRWSA to increase supply capacity and is also evaluating the potential to develop alternative water supplies, such as brackish groundwater, within the boundaries of Charlotte County. The City of Punta Gorda was recently granted an increase in their Water Use Permit allocation from Shell Creek and is intending to expand the treatment capacity of their Shell Creek Water Treatment Plant. Charlotte Harbor Water Association

and Gasparilla Island Water Association are extending water distribution mains to serve projected future growth. Finally, Sun River Utilities was recently granted a request by the Florida Public Service Commission to extend its potable water and wastewater service area in Charlotte County. The PSC concluded that Sun River Utilities had both the financial and technical ability to provide service to their expanded service area. Further, the PSC concluded that Sun River Utilities had sufficient plant capacity to serve the expanded service area or the ability to construct a new plant when needed. The Charlotte County Utilities, Punta Gorda, Charlotte Harbor Water Association, and Gasparilla Island Water Association planned capital projects are discussed further in the Capital Improvements section of this element.

Summary of Future Water Supplies (PR/MRWSA and Babcock Ranch)

Charlotte County's approach to meeting future unmet water demands will follow guidance from SWFWMD and SFWMD and provide potable water supplies that are reasonable and beneficial, will not interfere with any existing legal uses of water, and are consistent with the public interest pursuant to Section 373.223 of the Florida Statutes. Water demands within Charlotte County can be separated into 21 utility service areas. Charlotte County Utilities provides water to the Burnt Store Utility Service Area with groundwater treated from the County's Burnt Store well field and water treatment facility. Additionally, three of the other Utility Service Areas are supplied by water purchased by Charlotte County Utilities from PR/MRWSA.

Demand projects provided for each of the 21 utility service areas are based on BEBR-derived population estimates and established levels of service. Table 4.20 provides the BEBR-derived demand estimates for years 2015 and 2030 as well as the water use permit allocations for each of the utility service areas with existing or pending permits.

Table 4.20 BEBR-derived Demand Estimates from 2015-2030 and WUP Allocations For each Utility Service Area

Community Water Supplier	WUP ID	Permit Expiration	DEP Permitted Capacity (GPD)	WUP Average Day GPD	WUP Peak Day GPD	BEBR-derived 2015 Average Day GPD	BEBR-derived 2030 Average Day GPD	Comments
Charlotte County Utilities wholesale from Peace River Manasota Regional Water Supply Authority	12926 10420	1/30/2013	12,127,000	NA	NA	15,120,000	18,560,000	CCU source by PR/MRWSA
The Oaks at River's Edge	12926	9/26/2012	40,000	NA	NA	4,000	4,000	Water provided by Sun River Utilities (f/k/a MSM Utilities).
Riverwood Community Dev. Dist.	12926	9/26/2012	NA	NA	NA	290,000	330,000	Water provided by CCU as after purchase from PR/MRWSA
El Jobean Water Association	12926	9/26/2012	NA	NA	NA	150,000	190,000	Water provided by CCU as after purchase from PR/MRWSA
NHC Utilities, Inc.	12926	9/26/2012	90,000	NA	NA	40,000	40,000	
Charlotte County Utilities -Burnt Store	3522	9/26/2012	3.6	1,903,200	2,470,800	1,040,000	1,240,000	Includes the Burnt Store Marina service area located in the City of Cape Coral.
City of Punta Gorda	871	7/31/2027	10,000,000	8,088,000	11,728,000	5,590,000	7,500,000	Includes both the incorporated and unincorporated service areas.
Gasparilla Island Water Assn.	718	6/26/2011	1,846,000	1,537,600	1,952,800	500,000	510,000	
Charlotte Harbor Water Assn.	1512	10/30/2011	750,000	712,000	804,600	780,000	910,000	
Charlotte Correctional Institute	08-00047-W	8/31/2014	300,000	148,229	229,970	150,000	150,000	
Knight Island Utilities, Inc.	7768	10/19/2011	90,000	143,300	174,100	60,000	60,000	
Alligator Park	8626	7/19/2014	60,000	55,000	75,000	40,000	40,000	
Tropical Palm MHP	7941	2/1/2001	60,000	NA	NA	30,000	30,000	

								WUP Expired in 2007, Permit renewal in progress. The values represent the 50% of the water from the supplier that is used within Charlotte County. WUP values reflect the expired (2007) WUP.
Englewood Water District	4866	7/29/2007	6,000,000	2,680,000	3,295,000	2,630,000	3,000,000	
Town And Country Utilities	08-00122-W	10/11/2027		5,394,520	6,836,666	1,000,000	4,970,000	
Bocilla Utilities, Inc.	NA	NA	120,000	NA	NA	60,000	70,000	Wells less than 6 inches in diameter do not require WUP
Little Gasparilla Utility, Inc.	NA	NA	360,000	NA	NA	50,000	70,000	Wells less than 6 inches in diameter do not require WUP
Shell Creek Park	NA	NA	50,000	NA	NA	40,000	40,000	Wells less than 6 inches in diameter do not require WUP
Charlotte County Utilities Babcock Ranch	None Issued	NA		NA	NA	NA	NA	WUP application in progress.

NA – Not Applicable.

Population and demand estimates used to establish water use permit allocations frequently utilize methodologies other than BEBR-based projections. As evidenced in the table, these alternative methods can result in demand projections that differ from BEBR methods. It is important to note this inconsistency to provide conservative estimates for potable water demands and justify the incorporation of demand estimation methods other than BEBR-based methods in regional water supply planning documents. Demand projections based on alternative methodologies indicate the need for water supply expansion.

For example, a new utility provider, Town and Country Utilities, has been established to serve the Babcock Ranch development. A water use permit has been obtained by Town and Country Utilities to supply the future residents of the Babcock Ranch development with 5 MGD of potable water for 20-year permit duration. The BEBR-based population and demand projection methods, which are based on historical US census data trends, cannot account for growth resulting from known planned developments such as the Babcock Ranch development. The Babcock Ranch development results in population and demands increases that that would account for over 60% of the BEBR-anticipated growth in the County. If this known planned growth, in an area that was recently rezoned from agricultural use to high density residential and commercial use, were used in the apportioning of the total population growth and demand projections for the County, growth and demands for the rest of the County would be severely underestimated.

The potential future water supplies for Charlotte County are summarized below. Currently, 95% of CCU's water supply is provided by PR/MRWSA. CCU is the largest customer of the Authority and purchases more water than any other member government. Increasing populations in Charlotte County and the other member governments supplied by PR/MRWSA have resulted in water supply deficits that will require the Authority to continuously pursue new water supply sources and expansion projects over the next 20 years. Charlotte County Utilities currently accounts for 49% of the Authority's total demand and is thus liable for an equal proportion of the Authority's revenue and capital improvement expenditures. At this time, Charlotte County is considering two water supply options to meet future demands.

Option 1: Increase reliance on water supplied by PR/MRWSA

Five projects are under consideration by PR/MRWSA for implementation to meet the future water demands of its member governments. Projected finished water supply estimates for these projects are being examined. Each project, the source water type, and finished water estimates developed by PR/MRWSA and SWFWMD are provided in the Table 4.21.

Table 4.21: PR/MRWSA Potential Sources			
Project Name	Water Source Type	Estimated Finished Water Supply Available (MGD)¹	SWFWMD Estimated Finished Water Supply Available (MGD)²
Dona Bay/Cow Pen Slough Restoration	Surface	20	5
Flatford Swamp Restoration	Surface	15	10
Myakkahatchee Creek/Cocoplum Waterway	Surface	10	2
Peace River	Surface	12	24.4
Shell Creek Restoration	Surface	20	10
Total		77	55.2

To determine safe yield quantities, a Source Water Feasibility Study (Study) is currently being conducted to better quantify the estimated finished water supplies available from the proposed Dona Bay/Cow Pen Slough, Flatford Swamp and Shell Creek restoration projects. A draft of the Study is expected to be presented to the Authority's Board for consideration in September 2008.

Several of the potential water supply sources and associated treatment facilities are not owned or controlled by PR/MRWSA. For example, Sarasota County owns two reservoirs and the treatment plant proposed for use in the Dona Bay/Cow Pen Slough project; the Shell Creek restoration project would utilize diversions from Tippen Bay/Long Island Marsh and would be operated by Punta Gorda with the water treated at their Shell Creek facility; and the Myakkahatchee Creek supplies would utilize improvements or additions to the City of North Port's existing facilities. Currently, Sarasota County and the City of North Port operate their own supplies and treatment facilities and purchase water from the Authority when demands cannot be met without aid from the regional system. Water demands for Punta Gorda are currently met through use of the City's own supply, and in addition, the City also desires to sell water to the Authority for redistribution through the regional system. Therefore, although the sources are connected to the regional system, the availability of the referenced source waters to the Authority for regional distribution is not established at this time.

A summary of projected costs as provided in the PR/MRWSA Regional Water Supply Plan (PR/MRWSA, 2006) is provided in Table 4.22.

¹ Finished water estimated established in the PR/MRWSA Draft Regional Water Supply Plan, December 2006.

² Finished water estimates established in the SWFWMD Regional Water Supply Plan, December 2006.

Table 4.22: PR/MRWSA Projected Costs			
Source	Capital Cost (\$M)	Annual O&M (\$M)	Unit Cost (\$/1000 gal)
Dona Bay (A)	245	3.81	2.87
Dona Bay (B)	197	3.34	2.35
Flatford Swamp	174	2.79	2.73
Myakkahatchee Creek	110	1.91	2.64
PRF Expansion	52	1.38	1.14
Shell Creek	158	3	1.93
Total	936		

Option 2: Develop County-owned and operated water supplies

Diversity of supply through the utilization of groundwater to provide drought resistance and improve the reliability of the potable water supplies within Charlotte County is a priority and key objective to meeting future demands. As provided in the schedule of Capital Improvements, the County has invested \$1,282,000 for developing future water supply alternatives. The development of future water supply alternatives will include a feasibility study for siting a reverse osmosis treatment facility and potential brackish groundwater well field in the eastern portion of the County. This treatment plant would receive water from a potential on-site well field, or from Babcock Ranch.

Pursuant to the 2005 Interlocal Planning Agreement between MSKP III, Inc, the Florida Department of Community Affairs, Lee County, and Charlotte County; the Development Agreement Between Board of County Commissioners of Charlotte County, Florida and MSKP III, Inc; and Paragraph 33 entitled Water Resources of the State Contract, Charlotte County is authorized apply for a water use permit from the State Lands of Babcock Ranch provided that the withdrawal of water by Charlotte County is solely for public water supply purposes and not for wholesale or retail sale outside Charlotte County. Under these authorizations, Charlotte County is currently seeking a water use permit from the South Florida Water Management District for approximately 25 MGD of raw water.

Because the water supply from Babcock Ranch is a groundwater supply, it provides the desired water supply diversity, consistent with State of Florida Conjunctive Use objectives, and is anticipated to result in a more reliable and sustainable water supply for all of the potable water suppliers within Charlotte County. Additionally, there are no anticipated environmental impacts associated with this use as the water is proposed to be withdrawn from the highly-confined Floridan aquifer. Order-of magnitude cost estimates for development of the Babcock supply are provided in Table 4.23. Capital costs include construction of the Floridan wells, treatment and storage facilities, and concentrate disposal. Annual O&M costs include labor, chemicals, power, membrane replacement, maintenance materials and spare parts, and sampling and monitoring.

Table 4.23 Babcock Ranch Cost Estimate Summary				
Quantity Available (MGD)	Capital Cost	Cost/MGD	Cost/1,000 gallons*	Annual O&M
25	\$169,000,000	\$6,720,000	\$2.81	\$7,500,000

* Includes annualized capital costs at 5.7% interest and 20 years plus annual O&M divided by an assumed average daily flow of 19.2 MGD (which is 25 MGD divided by a peaking factor of 1.3, which is representative of Charlotte County's current average to maximum day ratio).

Impact of Future Land Use

There are six currently pending applications for land use zoning modifications. These applications, along with their estimated water demands under current and proposed zoning conditions, are summarized in Table 4.24.

Should all of the requested applications be approved as currently proposed, there would be a resultant increase in water demand of approximately 805,000 gallons per day that would have to be provided by one or more of the water suppliers within Charlotte County.

Table 4.24 Impact of Future Land Use on Potable Water Demand

Petition #	Applicant's Name	General Location	Acreage	Change From	Change To	Current Estimated Water Demand (gpd)	Estimated Demand if Land Use Change Approved (gpd)
PA-07-06-39-LS	S.W. Florida Land Twenty L.L.C	Jones Loop Road	40.55	Agricultural/AE	Airport Commerce Park/ECAP	9,000	88,318
Z-07-07-05-29-LS (unified – PA-06-07-52-LS)	Wilder/BN Jones Loop Holdings, LLC	Jones Loop Road bet Taylor Rd. & US 41	204.0 +/-	Low Density Residential, Commercial Corridor, Commercial Center, Low Intensity Industrial	Mixed Use – Planned Develop.	78,264	621,000
PA-07-05-28-LS	Essex Cape Coral LLC	NW corner of I-75 & Tuckers Grade	200.39	Agricultural	Low Density Residential and Commercial Center	45,000	155,550
PA-07-05-28-LS	Cesna, LLC	N. of Poinciana, W of I-75	17.44	Low Density Residential	MDR	11,700	27,125
PA-05-05-28-LS & Z-05-05-29	American Services of SW FL Inc	US 17 and N. of Washington Loop	17.11	Low Density Residential/AE and RSF-3.5	Commercial Center/CG	5,513	8,571
PA-05-05-31-LS	Charlotte Harbor Land Holdings	US 17 and N. of Washington Loop	73.6	Rural Estate Residential	Low Density Residential	16,425	69,920

5. Performance of Existing Facilities

The existing potable water facilities providing service to Charlotte County are generally well maintained and in good condition. Treatment plants and storage systems are regularly inspected, and each utility system has established maintenance programs for pipe, meter replacement, valve inspection and operation, and flow testing of fire hydrants. Most of the older systems are continually being upgraded to improve reliability and increase the expected life of the facilities. These facilities are regulated by numerous agencies, including the SWFWMD, FDEP, and SFWMD.

The current permitted capacity of the combined water treatment plants is adequate to meet current demands, and all of the regulated potable water suppliers provide levels of service that are consistent with those adopted in this element. The analysis indicates, however, that overall Countywide water demands will exceed current countywide water availability around 2017.

This analysis does not allow for distribution of the flow to each area of the County and as such may reflect a significant surplus in capacity in one section while also reflecting a significant shortage in capacity in another section. Therefore, it may be necessary to expand water treatment facilities serving one area of the County at a time when there appears to be a water surplus within the County (e.g., prior to 2017).

6. Problems and Opportunities for Facility Replacement, Expansion, and New Facility Siting

The performance of existing potable water facilities must be constantly monitored to determine the adequacy of the committed treatment capacity and evaluate the ability of the distribution system to meet the future demands of a growing population. Each utility provider must, therefore, plan ahead to ensure that sufficient capacity will always remain available to accommodate anticipated growth within their respective certificated areas. Any new or expanded facilities that are needed must comply with applicable federal, state, and local regulations. These regulations require that all potable water facilities be constructed, operated, and maintained in accordance with the guidelines established by the FDEP.

In addition to these requirements, all potable water providers must obtain water use permits from the appropriate water management district before any new treatment facilities can be constructed or existing treatment facilities can be expanded. The Southern Water Use Caution Area (SWUCA) rules in place within the Charlotte County area limit groundwater pumping in an attempt to stop saltwater intrusion into subsurface aquifers and to prevent depletion of groundwater levels. The caution area designation limits possibilities for expansion of water supply sources for potable water and requires potable water providers to consider alternatives to groundwater when making water supply planning decisions. In order to meet the growing water demand for this area, the County is currently investigating other sources of surface water and possible R.O. alternatives through contracts with private consultants.

The opportunities for facility expansion are also limited by funding constraints. In order to alleviate this problem, potable water providers must maximize the use of existing infrastructure as much as possible. This can be accomplished by directing growth to areas already served by existing facilities. This effort will reduce the cost required for new facility construction.

When the construction of new potable water facilities is warranted, all necessary improvements will be built in an environmentally sound manner, while being economically possible. New facilities will be located within previously developed or developing urban areas to discourage urban sprawl, and construction costs will, in general, be allocated to those members of the general public receiving the benefits. Funding sources for new facilities should be derived from a number of sources including, but not limited to, impact and user fees.

Utilities should evaluate and, where feasible, install interconnects for potable water lines. Interconnects would provide an emergency supply among utility providers and may result in more efficient usage of existing treatment facilities.

The Water Planning Alliance includes representatives of 13 local governments within the Peace River Basin and surrounding area charged with working together toward meeting future water needs for the area. This organization has adopted a “Regional Integrated Loop System” to facilitate resource capacity, improved reliability, and the matching of area supply with demand.

7. Capital Improvements

Many of the certificated water providers in Charlotte County have plans to improve and expand existing facilities to ensure adequate levels of service will continue to be maintained in the future. These plans fall into three broad categories: supply increase, demand reduction, and system improvement.

The most obvious solution to ensuring adequate potable water supplies is to increase the amount of water available for distribution. Based on the water supply inventory and data analysis, Charlotte County Utilities, the City of Punta Gorda, the PR/MRWSA, and others have currently identified the need to expand potable water supply capacity. Accordingly, capital projects involving the expansion of water treatment plants to increase the amounts they can supply, the construction and expansion of surface water reservoirs, and the development of alternative water supplies have been scheduled. These projects are intended to increase the volume of water available to the individual local utilities for distribution. Regional interconnect projects have also been scheduled, between local utilities and with the Peace River Authority. By connecting utility systems that previously were unconnected, or perhaps had only a single connection point, emergency water supplies may become available if and when needed and regional supply may be better balanced with regional demand.

While increasing the overall volume of potable water will produce more water for distribution, reducing demand will relieve strain upon the existing potable water sources, ensuring that their life spans are extended. Through the use of reclaimed water for non-potable uses such as irrigation and certain industrial uses, and the conservation of potable water through more efficient fixtures, overall demand for water may be reduced, which has the effect of increasing the available supply. Capital projects involving the reduction of demand for potable water in Charlotte County include expanding reclaimed water systems and the replacement of outdated home fixtures with more modern, water-efficient ones.

General system upgrades may also have an effect on potable water supplies by replacing

transmission lines to create a more efficient distribution system or to prevent loss due to leakage from older lines, by replacing pumping stations with more efficient machinery and equipment, or by expanding existing service areas to reduce the direct impact on groundwater supplies which may decrease the number of subsurface potable water wells. Capital projects of this nature have been scheduled by many local utilities, involving projects such as water main replacement and relocation, water pumping station improvements, major transmission line extension, and general service area extensions.

Capital projects scheduled by Charlotte County local utilities, including project costs allocated by fiscal year and sources of funding are detailed in Appendix B to the Capital Improvements Element.

F. Inventory of Sanitary Sewer Providers

Historically, the treatment of sewage and the disposal of wastewater within Charlotte County have been handled through the provision of central sanitary sewer or by individual onsite treatment and disposal (OSTD) facilities consisting of either small privately owned package plants or septic systems. An inventory of all existing public and private wastewater treatment facilities was conducted and summarized in the following paragraphs. Package treatment plants were included in this section's analysis, but OSTD systems were not. A summary of OSTD systems usage statistics is discussed later within this section.

Central sanitary sewer service is currently provided in eight different certificated franchise areas operated by two publicly owned utilities, one state facility, and five privately owned utilities. The individual certificated areas are indicated on Map 4.22. The following analyses identified existing sewage treatment plant design capacities for each certificated area. Existing and future sanitary sewer needs for Charlotte County were then determined using data obtained from the existing conditions analysis. Future demands have been generated by applying anticipated population projections to the 190 gallons per day per Equivalent Residential Unit (ERU) level of service standard for sanitary sewer that is established in this element. A comparison of existing capacities and projected demand is used to evaluate the adequacy of existing levels of service over time and indicate the potential need for facility expansion. It is noted that Charlotte County Utilities recently commissioned an area-by-area evaluation of wastewater demands throughout the County. This evaluation determined that each of Charlotte County Utilities' wastewater treatment facilities would need to be expanded no later than 2010. This evaluation has been used in the determination of many projections within this section.

Data used in this section has been compiled from various sources, including the Florida Department of Environmental Protection (DEP); the Florida Department of Health and Rehabilitative Services (HRS); prior comprehensive plan data; the Bureau of Economic and Business Research, University of Florida; the "West County Wastewater Master Plan," May 2004; and "A Strategic Plan for Future Water Demands for Charlotte County Utilities," Sept. 2002.

1. Existing Sanitary Sewer Providers

Charlotte County Utilities (CCU) is the largest sanitary sewer provider in the County. It operates four treatment facilities: one in Mid County, two in West County, and one in South County. The East Port

Water Reclamation Facility (WRF), which is located off Loveland Boulevard in the eastern portion of the Port Charlotte area, has a permitted capacity of 6 MGD. This plant utilizes spray irrigation (with two deep injection wells for backup) and reuse as the primary means of effluent disposal. It is anticipated that this facility will be expanded to 12 MGD. The West Port WRF is located off Cattle Dock Road west of the Myakka River, in the Gulf Cove area of Charlotte County. This facility has a permitted capacity of 0.385 MGD; however, the facility has been expanded to have a physical capacity of 1.2 MGD, pending modification of the operating permit. The West Port WRF disposes effluent by irrigation and the use of deep well injection. Projections indicate that this facility will have to be expanded to 3 MGD. The Rotonda WRF, located off Placida Road, was acquired by CCU from Aqua Utilities and has and interconnects with the West Port facility. The Rotonda facility is presently permitted for a maximum of 0.625 MGD, and plans are being developed to expand the facility to 2.0 MGD. The Burnt Store wastewater treatment facility has a permitted capacity of 0.5 MGD and is located north of the Lee/Charlotte County line. Effluent is disposed of via percolation ponds. The plant splits its capacity between the two counties with an approximate distribution similar to its water distribution. The County is in the preliminary stages of preparing plans to expand this facility.

Mid-County

1. *Riverwood Utilities, Inc.* provides wastewater collection, treatment and effluent disposal service for several developments in the El Jobean area. The water reclamation facility currently has a permitted capacity of 0.499 MGD. The facility utilizes spray irrigation as the primary means of effluent disposal.

South County

2. *The City of Punta Gorda* operates a water reclamation facility that has a permitted capacity of 3.2 MGD. The facility provides for secondary treatment levels with spray irrigation discharge of its effluent for nutrient removal. The City's treatment facility handles waste from both City and County residents. All City residents are also County residents. Therefore, all of the plant capacity may be allocated to the South and East County areas.
3. *Charlotte County Correctional Institution* maintains and operates a treatment facility in eastern Charlotte County for the sole use of the correctional facility. The facility has a design capacity of 0.18 MGD and utilizes percolation ponds for effluent disposal. This plant capacity is documented to serve a set population expected to grow in proportion to the general population growth of the County at large.
4. *Rivers Edge* wastewater treatment plant is permitted under MSM Land Investments, Inc. and is located near Hunter Creek. The facility is permitted for a maximum capacity of 0.06 MGD and is regulated by the Public Service Commission. It accomplishes effluent disposal through the use of percolation ponds.

West County

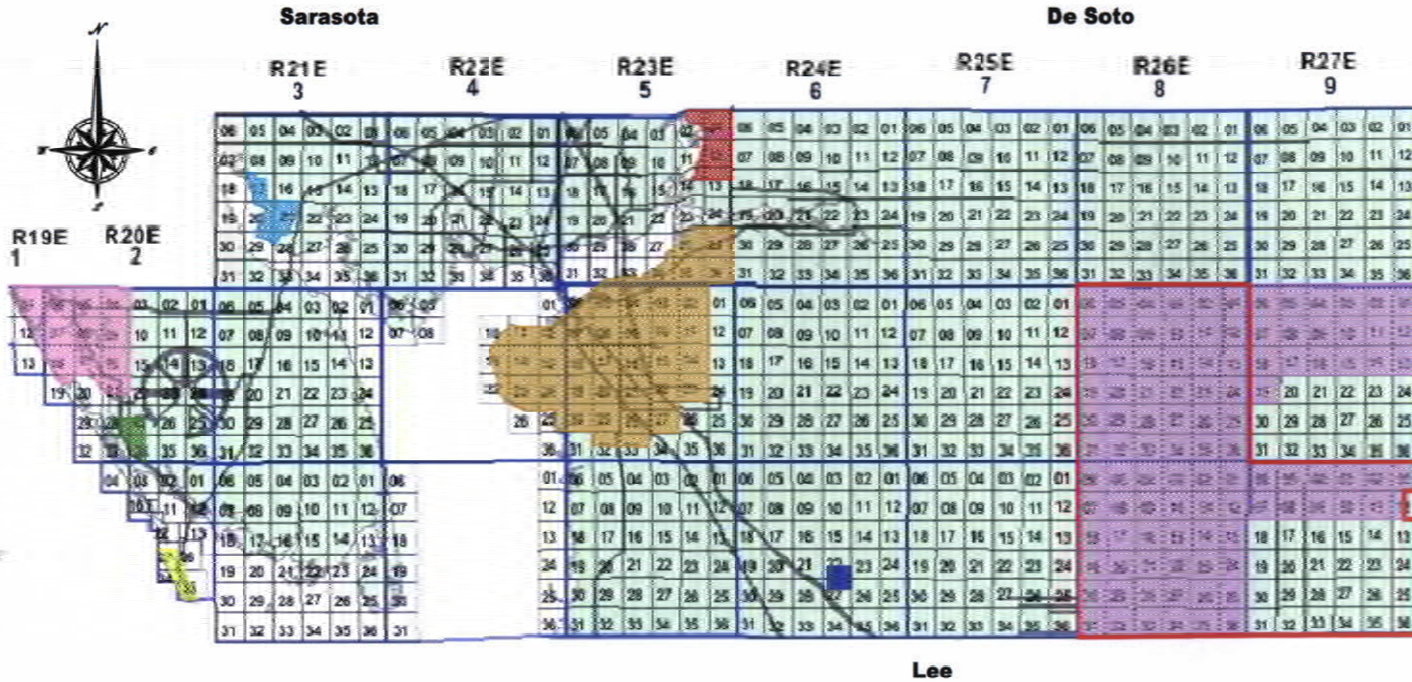
5. *The Englewood Water District (EWD)* provides sanitary sewer service to the Englewood area of Charlotte County. The Water District's south plant is located west of the Rotonda

Heights development and is permitted for a maximum capacity of 2.20 MGD. Like the Burnt Store facility, the EWD plant serves customers in two counties, Charlotte and Sarasota. Distribution of flows between the two counties again closely approximate the utilities' water split.

6. *Sandalhaven Utilities* operates a 0.150 MGD wastewater treatment facility, located between County Road 775 and the Rotonda development. The facility serves private developments within its certificated area southwest of Rotonda along Lemon Bay.
7. *The Gasparilla Island Water Association* operates a water reclamation facility in Boca Grande, which serves the island. The permitted capacity of the plant is 0.705 MGD. This plant also serves residents of Lee County in a similar fashion as the Burnt Store facilities.

In addition to the above-mentioned regulated utilities, Charlotte County is served by more than 18 additional domestic wastewater providers. These are private wastewater treatment facilities serving specific residential and commercial markets within the County and not having certificated areas of operation. Regulated and non-certificated utilities are listed within Table 4.26.

CHARLOTTE COUNTY CERTIFICATED AREAS - SEWER



MAP 4.24

LEGEND
SEWER UTILITY AREAS

UTILITY NAME	UTILITY NAME
<ul style="list-style-type: none"> 1 - CHARLOTTE COUNTY UTILITIES 2 - CITY OF PUNTA GORDA 3 - ENGLEWOOD WATER DISTRICT 4 - GASPARILLA ISLAND WATER ASSOC. 5 - RIVERWOOD UTILITIES 	<ul style="list-style-type: none"> 6 - RIVERS EDGE - MSM 7 - SANDALHAVEN UTILITIES 8 - CHARLOTTE CORRECTIONAL INSTITUTION TOWN & COUNTY UTILITY COMPANY BABCOCK RANCH

TABLE 4.25 CHARLOTTE COUNTY SANITARY SEWER PROVIDERS

UTILITY NAME	REGULATION TYPE	DESIGN CAPACITY (MGD)	% CAPACITY IN CHARLOTTE COUNTY	CHARLOTTE COUNTY CAPACITY (MGD)
MIDDLE CHARLOTTE COUNTY				
CHARLOTTE COUNTY UTILITIES- EASTPORT WWTP	YES - PUBLIC	6.0000	100%	6.0000
RIVERWOOD UTILITIES	YES - PSC	0.4990	100%	0.4990
MID COUNTY TOTAL				6.4990
SOUTH CHARLOTTE COUNTY				
CITY OF PUNTA GORDA WWTP	YES - PUBLIC	3.2000	100%	3.2000
CHARLOTTE CORRECTIONAL INSTITUTION	YES - STATE	0.1800	100%	0.1800
BURNT STORE WWTF	YES - PUBLIC	0.5000	54%	0.2700
RIVERS EDGE WWTP	YES - PSC	0.0600	100%	0.0600
SOUTH COUNTY TOTAL				3.7100
WEST CHARLOTTE COUNTY				
ENGLEWOOD WATER DISTRICT SOUTH	YES - PUBLIC	2.2000	44%	0.9680
WEST PORT WWTP CHARLOTTE COUNTY UTILITIES	YES - PUBLIC	1.2000	100%	1.2000
SANDALHAVEN UTILITIES STP	YES - PSC	0.1500	100%	0.1500
ROTONDA WEST - CHARLOTTE COUNTY UTILITIES	YES - PUBLIC	0.6250	100%	0.6250
ASSOCIATION	YES - PSC	0.7050	31%	0.2186
WEST COUNTY TOTAL				3.1616
TOTAL FOR ALL AREAS				13.3706
OTHER DOMESTIC WASTEWATER UTILITIES				
KNIGHT ISLAND UTILITIES WWTP	NO	0.0550	100%	0.0550
ALLIGATOR MOBILE HOME PARK	NO	0.0600	100%	0.0600
BAY PALMS MOBILE HOME PARK	NO	0.0100	100%	0.0100
BLUE HERON PINES MHP	NO	0.0950	100%	0.0950
BURNT STORE COLONY MOBILE HOME PARK	NO	0.0600	100%	0.0600
GASPARILLA MOBILE ESTATES	NO	0.0250	100%	0.0250
HARBOR VIEW TRAILER PARK	NO	0.0240	100%	0.0240
HIDEAWAY BAY BEACH CLUB CONDO ASSOCIATION INC	NO	0.0210	100%	0.0210
LAZY LAGOON MOBILE PARK	NO	0.0700	100%	0.0700
MERCURY MARINE	NO	0.0083	100%	0.0083
PALM & PINES INC	NO	0.0150	100%	0.0150
PARADISE PARK CONDOMINIUM	NO	0.0240	100%	0.0240
PELICAN HARBOR MHP	NO	0.0200	100%	0.0200
RIVER FOREST VILLAGE	NO	0.0350	100%	0.0350
SHELL CREEK PARK CAMPGROUND	NO	0.0200	100%	0.0200
SUN-N-SHADE FAMILY CAMPGROUND STP	NO	0.0200	100%	0.0200
TROPICAL PALMS OF FT MYERS LTD MHP	NO	0.0600	100%	0.0600
VILLAS DEL SOL WWTP	NO	0.0285	100%	0.0285
OTHER DOMESTIC WASTEWATER TOTAL				0.6508

2. Existing and Projected Sanitary Sewer Facility Needs

Charlotte County adopts a minimum wastewater level of service standard of 190 gallons per day per Equivalent Residential Unit (ERU) as established within the Central and West County Wastewater Master Plan. The majority of potable water used by customers is disposed through a sewage system in the form of wastewater. A portion of water used (up to 25 percent) may be lost to consumption. This plan acknowledges that approximately 15 percent of the water demand will not be returned to the wastewater system. For that reason, the minimum level of service standard is approximately 85 percent of that for potable water. Most of the County utilities' existing level of service data is based on gallons per capita per day (gpcd). The two standards can be equated by using the following formula:

$$1 \text{ ERU} = 190 \text{ gpd} / 2.18 \text{ persons per household} = 87.2 \text{ gpcd}$$

The 11 major existing wastewater treatment plants serving Charlotte County are currently permitted to treat 13.371 million gallons per day (MGD) of sewage. The permitted capacities of the sewage treatment plants for 2004 are shown in Table 4.27. Totals are broken down by geographic area.

TABLE 4.26 MAJOR SANITARY SEWER PROVIDERS - PERMITTED CAPACITY	
AREA	2004 PERMITTED CAPACITY (gallons per day)
Middle Charlotte County	6,499,000
South Charlotte County	3,710,000
West Charlotte County	3,161,600
Total	13,370,600

The level of service adopted for Charlotte County may be used to predict wastewater treatment needs given appropriate population projections. Table 4.28 shows the Projected Sanitary Sewer Demand for the period between 2005 and 2030 in five-year increments.

Table 4.27 Projected Sanitary Sewer Demand 2005 - 2030		
YEAR	PROJECTED SEASONAL POPULATION	PROJECTED SEWER DEMAND (GDP)
2005	191,784	16,723,565
2010	213,988	18,659,754
2015	235,216	20,510,835
2020	254,492	22,191,702
2025	271,694	23,691,717
2030	287,798	25,095,986

Does not include users in other jurisdictions outside of Charlotte County

Level of service based on 190 gallons per ERU

The existing conditions analysis indicates that the current combined permitted capacity of the 11 sewage treatment plants and 18 package treatment plants serving Charlotte County is 13,370,600 GPD plus 650,800 GPD (from package plants) for a total of 14,021,400 GPD. Assuming an

additional range of between 5,218,122 and 6,504,498 gallons of sewage per day is treated by existing OSTD systems (see Table 4.29), the total existing sewage treatment capacity of Charlotte County is between 19,288,998 GPD in 2005 and 20,525,898 GPD in 2030.

Table 4.28 SEWAGE TREATED BY OSTD SYSTEMS 2005 TO 2030				
YEAR	BASE SEPTIC SYSTEMS EXISTING FROM 1956 TO 2004	SYSTEMS ADDED FOR THE PERIOD	TOTAL SYSTEMS AT END OF PERIOD	SEWAGE TREATED BY SEPTIC SYSTEMS (gpd)
2004	39,234	0	39,234	5,218,122
2005		372	39,606	5,267,598
2010		1,860	41,466	5,514,978
2015		1,860	43,326	5,762,358
2020		1,860	45,186	6,009,738
2025		1,860	47,046	6,257,118
2030		1,860	48,096	6,504,498

note: 1 ERU equals 190 GPD
 assumes 70% of all systems installed are still in service
 assumes 372 new systems are created every year in Charlotte County

Table 4.29 CURRENT SEWERAGE CAPACITY VS. PROJECTED DEMAND 2005 - 2025				
SEWAGE FACILITY	YEAR	TREATMENT CAPACITY FOR PERIOD (GPD)	PROJECTED SEWERAGE DEMAND FOR ERCs	AVAILABLE CAPACITY
OSTD (SEPTIC)	2005	5,267,598		
	2010	5,514,978		
	2015	5,762,358		
	2020	6,009,738		
	2025	6,257,118		
PACKAGE PLANTS	2005	650,800		
	2010	650,800		
	2015	650,800		
	2020	650,800		
	2025	650,800		
CENTRAL SEWER	2005	13,370,600		
	2010	13,370,600		
	2015	13,370,600		
	2020	13,370,600		
	2025	13,370,600		
TOTALS	2005	19,288,998	10,932,410	8,356,588
	2010	19,536,378	14,854,200	4,682,178
	2015	19,783,758	20,059,820	(276,062)
	2020	20,031,138	27,058,090	(7,026,952)
	2025	20,278,518	36,430,220	(16,151,702)

Notes: Based upon permitted capacities and known expansions
 No additional treatment capacity in package and central systems are projected in this analysis

This analysis does not allow for distribution of the flow to each area of the County and as such may reflect a significant surplus in capacity in one section while also reflecting a significant shortage in

capacity in another section. CCU has utilized the above information in (1) isolated circumstance to balance flow between the Rotonda and Westport WWTP's located in West County. Further flow balancing is not expected to be cost effective.

3. Performance of Existing Facilities

The existing sanitary sewer facilities providing service to Charlotte County are generally adequately maintained and, for the most part, are in fair condition. Based upon DEP reports, each region of the County had surplus capacities and all of the eight certificated sanitary sewer providers exceed the level of service standards that are adopted in this element. Table 4.30, Current Sewerage Capacity vs. Projected Demand 2005-2025, indicates that total existing capacity of septic systems, package plants, and sewage treatment plants should be adequate to meet the needs of the projected population through 2013. Planning, design, and construction of new treatment facilities must be undertaken in accordance with the Department of Environmental Protection's rule 62-600.405 Florida Statutes and should consider the shortfall time frames presented herein.

Based upon the information presented herein, it appears that both the present and near future overall sewer capacity needs of Charlotte County are being adequately met by existing facilities. This, however, can be somewhat misleading. First, the exact number of septic permits that have been issued is unknown. Furthermore, the number of OSTD systems that have been decommissioned is also unknown. Secondly, several of the sewage treatment plants are already experiencing peak month flows that exceed plant design capacities. While this may be directly attributed to damage from extreme weather events and significant rainfall, it should be noted that several facilities are already close to falling below established level of service standards. Finally, there has been no attempt to evaluate area-by-area wastewater collection and treatment needs within the County. Therefore, a significant surplus in capacity may exist in one area while a significant shortage in capacity exists in another area.

4. Problems and Opportunities for Facility Replacement, Expansion, and New Facility Siting

The 1993 Port Charlotte Utility Unit Master Plan proposed an aggressive sewer expansion plan east and west of Tamiami Trail to meet a management goal of providing wastewater service Countywide to abate alleged pollution of surface water and preserve surface water quality and groundwater resources. Charlotte County Utilities implemented a reduced-scope wastewater expansion plan in 1997 that has resulted in approximately 3,700 additional service connections for existing and future buildings. In December 1999, Charlotte County Utilities acquired water and sewer utilities that serve the Rotonda development. This facility added capabilities when combined with the ownership of the West Port Water Reclamation Facility. Opportunities have been realized in the interconnection of the two facilities. These opportunities have been acted upon and interconnects between the two facilities have been constructed. In 2003, Charlotte County Utilities acquired the Burnt Store water and sewer utilities that serve much of the south County area. The wastewater treatment facility (WWTF) and collection system are not interconnected with any other sewer system. The WWTF was recently expanded to a capacity of 0.5 MGD.

In 2004, Charlotte County Utilities commissioned a Central and West County Wastewater Master Plan. The plan recognizes a growing county and draws the following conclusions:

1. The Central and West portions of Charlotte County will see substantial growth in the next 20 years.
2. In the next 20 years, an estimated 5.5 MGD of additional wastewater treatment capacity needs to be added.
3. The imbalance between reuse demand in west county and reuse availability in Mid-County is expected to be addressed by the proposed re-use main that is to run the length of the County.

A subsequent area-by-area evaluation of overall wastewater demands throughout the County (2005) determined that each of Charlotte County Utilities' wastewater treatment facilities would need to be expanded no later than 2010 to address area wastewater treatment needs.

Previous analysis indicates that, on a countywide basis, there is sufficient capacity to handle short term projected sewerage demands provided that assumptions on septic system usage are correct. Should additional septic systems be taken off line and converted to central systems, capacity may be in need. Current DEP rules require significant planning when demand is more than 80 percent of permitted capacity. By previous analysis, when taking usage of County facilities by demands outside of the County into consideration, such planning efforts should be ongoing at the present time. The master plan for Central and West Charlotte County identifies that limited flexibility exists between the East Port and West Port WRFs. A level of flexibility further extends to the Rotonda WRF through recently implemented interconnections.

Recent modifications and expansion plans for other sewage treatment facilities serving Charlotte County are recognized as follows:

1. Rotonda WRF was acquired by Charlotte County Utilities from Aqua Utilities of Florida. Under the management of CCU, interconnects have been established between the Rotonda WRF and the West Port WRF.
2. The Englewood Water District has completed the expansion of its facility adjacent to the Rotonda Heights subdivision. The Englewood WRF *is to treating* up to 0.4 MGD from the Rotonda WRF should the demand be required. Interconnects have been constructed as necessary to convey sewage and return reuse to the Rotonda system.

Charlotte County has designed a Regional Reclaimed Water Transmission Main as part of its Phase 1 approach to a Cross County Reclaimed Water System. The estimated usage for those users is approximately .649gpd. Future plans of a Phase 2 will complete the connection of the East Port WRF reclaimed water transmission to an existing interconnected system between the West Port WRF and Rotonda WRF. This final phase will provide a Cross County Transmission System capable of serving many users in the future. At full build out of the Phase I project future users will increase on estimated demand of 1.2 million GDP.

Despite the fact that Charlotte County appears to have ample wastewater treatment capacity for the near future, it is important that the Public Service Commission direct the certificated providers to continue to upgrade and expand their respective existing facilities. More than a quarter of the

County's existing sewage treatment is handled by septic systems and package plants. This has decreased in the last 10 years from more than half of the capacity. The provision of additional central sewer services is necessary to decrease the County's dependence on these two methods of sewage disposal. Additional sewer infrastructure should be provided to locations prior to the start of residential, commercial, and industrial development. Such regulation is in place at both the state and local level, discouraging the use of septic systems on lots being platted less than one-half acre in size. As land values escalate and the size of platted lots decrease, the demand for central sewage treatment is growing at a faster pace than previous analyses indicated.

Additionally, existing sewage treatment plants are being monitored for capacity and efficiency to ensure that future demands and regulations are met. The County should study the feasibility of interconnects between existing sewer providers to assist in establishing regional sewage treatment plants. In addition, sanitary sewer providers should improve existing infrastructure to maintain the current level of service and to decrease infiltration and inflow of water into sewer systems. The County should also encourage connections to the proposed re-use main.

Future Direction

Charlotte County's population will continue to grow as reflected in the population projections discussed within the Future Land Use Element and described within portions of this section. Central potable water and sanitary sewer service will need to be available to provide for the health, safety, and welfare of the future population.

The inventory indicates that, overall, utility providers will be looking for additional sources of potable water to support the projected population increase through 2025. Several utilities will need additional permitted capacity before 2025 to meet burgeoning needs for potable water.

The provision of utility service is an important aspect of growth management. Growth and development can be channeled towards certain locations in Charlotte County through the provision of potable water service; the intensity of land use can be determined based upon the provision of central sanitary sewer service.

G. Utility Certification

Water and sewer utilities historically have applied for and, if approved, received an area of certification in which they may provide service. Prior to Charlotte County offering utility services, all certificated areas were regulated by Charlotte County. Regulation was turned over to the Public Service Commission when Charlotte County successfully purchased the assets of General Development Corporation and entered the market as a major provider of services, in competition with other providers. Certificated areas were established for all utilities serving the general public in Charlotte County. CCU established a service area based upon its existing infrastructure inventory and its ability to serve the area. After all certificated areas were established; Charlotte County acquired all remaining rights for certificated areas within Charlotte County. A new utility may request a certificated area from the Public Service Commission; however, it must first request service from CCU, which has first rights of service throughout the non-sewered community of Charlotte

County.

Maps 4.21 and 4.22 (previously introduced in other sections) identify those utilities that have been granted certificated areas. In the case of Charlotte County Utilities, the designated certificated service area includes all lands within the entire County which have not been granted a utility certification, as well as the area designated on the maps.

As part of its growth-management strategy, future utility certifications should not be granted to locations designated a Suburban Area or Rural Service Area unless such a certification would be part of an approved New Community or Development of Regional Impact within West, Mid- or South Counties or a Rural Community within East County or unless, as part of the certification, both water and sewer lines would be extended concurrently in Suburban Areas. Locations identified as Infill within the Urban Service Area are also appropriate for new utility certification. Additional certificated areas may be granted in the future as the County's Urban Service Area is amended. This action coordinates the public and private provision of infrastructure and services with future development. Further, a new certificated area should be granted only when it is not feasible to expand a previously approved area. Efforts should be made to include New Communities, DRIs, or Rural Communities as part of existing certificated areas.

In those locations where certifications already exist, a utility may provide service in accordance with its certification, regardless of its Urban Service Area designation. However, providing additional infrastructure or higher levels of service to those locations will not be a priority for Charlotte County government.

H. Urban Service Area Strategy

This comprehensive plan incorporates an Urban Service Area strategy, which identifies the locations in which Charlotte County will spend the majority of its capital improvement dollars in infrastructure and services through 2025. As a component of that infrastructure, potable water and/or sanitary sewer services are either already provided, or will need to be provided in Infill Areas.

Urban Service Areas

Infill Areas: Many of the lands delineated as Infill have already received central potable water and sanitary sewer service. For those Infill locations not served by central sewers, sewers will either be installed or an approved OSTD system will be utilized. The state has implemented more stringent guidelines for the use of septic systems, providing additional assurance that ground and surface waters are not being degraded due to the use of OSTD systems.

Suburban Areas: Suburban Areas are those locations in which the population is not expected to increase substantially during the planning time period. Therefore, central water and sewer certifications should not be extended into those areas until redesignated as an Infill Zone. This is done so that expenditures for infrastructure can be coordinated between Charlotte County and the utility provider. Furthermore, utilities are discouraged from extending water and sewer service to Suburban Areas; however, utilities that have an approved certification in a Suburban Area are

permitted to extend service in accordance with that authorization. In the case of Charlotte County Utilities (under the direction of the Board of County Commissioners), a landowner may be entitled to request service extensions within Suburban Areas. In such cases, the landowner requesting the extension will be required to bear the full cost of infrastructure and design, permitting, and installation.

Rural Service Areas: Rural Service Areas are those locations in which central potable water and sanitary sewer service should not be extended during the planning time period. This action, along with very low residential densities, reduces the likelihood of major population growth occurring in rural areas of Charlotte County. The Rural Service Area includes the bridgeless barrier islands, all of East County, and much of South County.

Developments, such as New Communities, Developments of Regional Impact, or Rural Communities, may be approved within South County and East County locations based upon a master plan. If a master plan is approved for such a proposal, it should include provisions for central potable water and sanitary sewer service. If central potable water and sanitary sewer service is installed within such development, transmission lines may be extended by a utility provider through the Rural Services Area. In such case, the line extension should not be construed as justification for development at increased urban densities or intensities adjacent to the extended line in land designated as Rural Service Area and which is not part of the approved New Community, DRI, or Rural Community master plan.

I. Water and Sewer Extensions

Besides roads, central potable water lines have had the greatest infrastructure influence on the development pattern of Charlotte County. Much of the urbanized area has been subdivided into low-density lots. This pattern is reflected on the Future Land Use Map where the predominant land use is low-density residential. In addition, many of the commercial and industrial sites have been subdivided into smaller lots. This development pattern enabled many developers to install only potable water lines. They could then rely upon the use of septic systems for treating wastewater.

The County currently requires simultaneous extension and certification of water and sewer utility lines. However, this condition may not be achievable when the water and sewer providers are not the same (i.e., different certificated areas). In these cases, extension of lines simultaneously should be evaluated on a case-by-case basis. The County presently has mandatory connection requirements if water or sewer service is available.

Utilities South of the Peace River. Currently, there are two utility providers in South County. These providers are the City of Punta Gorda and Charlotte County Utilities through the Burnt Store facilities. While most of the City of Punta Gorda is served by central water and sewer service, much of the unincorporated area surrounding the city is not. In order to ensure service provision to unincorporated areas, Charlotte County and the City continue to work towards solutions for providing the necessary infrastructure. These solutions include, for the most part, interlocal agreements for service provision and sharing of expansion plans for meeting growing demands.

New Development. One of the County's objectives continues to be the reduction of dependence on septic systems by reducing the number of new construction projects utilizing them. New development should be directed into areas where central sewer service is available. Additionally, new areas for infrastructure expansion are being identified.

As development of the County continues, infrastructure expansion should continue in an outward trend from existing developed areas. The Urban Service Area map reflects this philosophy - portions of the Infill areas were developed first and, now, other portions are developing. In this regard, the Urban Service Area map reflects development trends within the County.

The cost of infrastructure installation should be borne by those benefiting from its provision. Central water and sewer improvements should increase the value of property, so the landowners receive benefits that are reflected in the market value of their property.

J. Water Conservation

At this time, the SWFWMD has declared a modified Phase II Severe Water Shortage throughout the 16-county district. Lawn and landscape irrigation is limited to once per week. New lawns or plantings may be watered daily for the first 60 days with restrictions. Other water uses may also be restricted. Customers are encouraged to conserve reclaimed water by using it during the specified irrigation hours.

To further promote water conservation, Charlotte County is in the process of revising its landscaping and irrigation ordinance to focus on practices that promote water conservation. Ordinance Number 2003-062, § 1, adopted August 26, 2003 (Article XVIII Section 3-5 Landscaping and Buffers) has been work shopped to encourage the use of drought-resistant plants and reduce the reliance of irrigation systems that use potable water. It is the further intent of this section to require resourceful landscape planning and installation, and water efficient irrigation and to encourage appropriate maintenance measures to promote conservation of water resources. This proposed ordinance will restrict landscape irrigation to the most effective watering periods and promote the Florida Friendly Yards and Neighborhoods program. Landscape requirements for new developments will also be amended to promote efficient landscape designs and utilize stormwater for irrigation.

Several utility providers in Charlotte County have implemented water conservation programs in order to reduce the dependence upon potable water supplies. CCU has updated its conservation plan for the Burnt Store Service Area (BSSA) and is in the process of revising its conservation plan for the CCU area supplied by the PR/MRWSA. CCU already has an exceptional water conservation record, as evident by the low per capita consumption rate of 83 gallons per capita per day (gpcd). This per capita rate exceeds the goals outlined by SWFWMD to reduce per capita water consumption. In comparison, the interim policy the district has established is a 130-gpcd standard; a 110-gpcd standard has been set for 2010.

Conservation measures that were analyzed for the BSSA include: general conservation measures, such as alternative source programs and public education; indoor conservation measures, such as showerhead retrofits and toilet rebates; and finally outdoor conservation measures such as irrigation and landscaping ordinances. The current conservation plan for the BSSA emphasizes maintaining that low consumption rate by continuing to implement existing conservation practices, continued distribution of plumbing retrofit kits, and expanding the distribution of reuse water.

The conservation measures that have been analyzed for the BSSA will also be analyzed for CCU's service area supplied by PR/MRWSA. Tentatively, CCU anticipates continuing to implement existing conservation elements and expanding the following programs in the next 5 years: non-potable irrigation source rebates, non-residential water-use evaluations/implementations, reuse projects, ultra low flush (ULF) toilet rebates. CCU was one of the first municipalities to implement year-round conservation rates to promote responsible water usage. In times of severe water shortages, CCU adopts even stricter emergency rate structures to emphasize to its customers the value of water.

Other water service providers within Charlotte County also participate in water conservation programs. The WUP issued to PR/MRWSA to supplement current water requires that a regional water conservation plan be approved and implemented with subsequent annual reports to demonstrate progress. As part of its water use permit conditions the Charlotte Harbor Water Association must implement general water conservation practices and the governing board reserves the right to institute more specific conservation requirements during the duration of the permit.

Table 4.31 is provided from the Countywide Water Conservation Plan and summarizes the estimated quantifiable water conservation savings from Best Management Practices (BMPs). The specific assumptions associated with this projection are the following:

- **Service Area** – The area analyzed includes the existing certificated service area of CCU, including Burnt Store, but does not include Punta Gorda or other areas outside of the CCU certificated service area.
- **Time Horizon** – Implementation of BMPs was assumed to occur over a ten-year time horizon, out to FY 2017, with demand projections out to FY 2027.
- **Specific Quantifiable BMPs** – The specific programs included in the savings calculation are the use of plumbing 'retrofit kits' (to replace inefficient faucet aerators and showerheads), and a toilet rebate program to upgrade older toilets to a performance level of 1.6 gallons per flush or better. Benefits from 'reuse' programs are not included in this particular calculation. Conservation benefits from non-quantifiable programs, or 'water conservation measures', such as education programs or the use of conservation rates, are not included in the analysis. The effects of water conservation measures are not easily quantifiable, and at this time the state has not proposed a methodology for accounting for the impact on demand related to the use of water conservation measures.

Table 4.30 Projected Planned Demand Reduction for the CCU Service Area (including the Burnt Store Service Area)				
Year	Planned Water Savings Capacity (mgd)	Percent Reduction from Conservation	Forecasted Demand (mgd)	
			Without Conservation	With Conservation
2008	0.019	0.15 %	12.692	12.673
2012	0.176	1.06 %	16.635	16.460
2017	0.375	1.73 %	21.616	21.242
2022	0.375	1.39 %	26.975	26.600
2027	0.375	1.09 %	34.504	34.130

The data from Table 4.31 can be used to update water demand projections for the comprehensive plan. Specifically, from 2017 onwards, a savings of 0.375 MGD can be attributed to water conservation as a direct (1:1) offset of potable water demand.

K. Water Reuse

Ordinance Number 2007-041, § 1 (Article VI Section 3-8 Reclaimed Water System) of the Charlotte County Municipal code was adopted May 22, 2007. It is the intent of this ordinance to make reclaimed water available for irrigation purposes and other authorized non-potable uses in certain areas of the county where the board of county commissioners determines that the construction of a reclaimed water distribution system is desired or requested by customers, and is practical and economical. The reclaimed water distribution system shall be constructed in phases to provide service to designated areas as determined by the board of county commissioners, pursuant to the terms and conditions described in the ordinance. Charlotte County aims to maximize the reuse of treated wastewater and minimize new project impacts on potable water resources. Therefore, it is the responsibility of the project developer to provide for effluent reuse as a condition precedent to wastewater treatment capacity availability if that service is available.

The Englewood Water District, City of Punta Gorda Utilities, and Charlotte County Utilities have implemented water reclamation programs. Many of these programs involve the delivery of treated wastewater effluent to surrounding golf course facilities for use in irrigation.

The Englewood Water District has committed to 100% reuse of its reclaimed water. Previous capital improvements to the reuse system include a new Water Reclamation Pump Station and a new Booster Station. The Englewood Water District will spend \$800,000 between September 2007 and June 2008 to construct a 1 million gallon reuse ground storage tank. When complete, the tank will provide a constant supply of reuse water to the service pumps, which will allow the system to maintain a constant pressure for several hours during the day and improve reuse service to its customers. The Englewood Water District offers reuse water to residential customers and Wal-Mart. Additionally, Eagle Preserve, Myakka Pines Golf Club, Boca Royale Golf Club, Oyster Creek Golf

Course, Lemon Bay High School (Athletic Fields), Oyster Creek Regional Park, the Englewood Sports Complex and Taylor Ranch, either are or will be using reclaimed water for irrigation.

The Charlotte County Utilities 2006 Annual Report (available to the public at the utility’s web site) includes information on the reuse systems at each wastewater reclamation facility including statistics on reclaimed water use. Advisory signs are installed at all reclaim water sites. Charlotte County Utilities’ representatives meet with golf course superintendents and residential managers of reclaimed water systems on a regular basis to apprise them of all reclaimed water use requirements. Charlotte County Utilities performs monthly inspections of all sites to ensure compliance requirements are adhered to. In instances where corrections are required notice is given to site representative for resolution. In addition confirmation of advisory sign placement is performed at each inspection. The information in Table 4.32 was taken from the 2006 Annual Report

Table 4.31 Charlotte County 2006 Annual Reuse Data				
Wastewater Facility	Permitted Capacity (MGD)	Total Water Available for Reuse or Disposal (MGD)	Reuse Sub-Types	Effluent Disposal Methods
East Port WRF	6	3.812	Golf Course Irrigation (3 accounts) Residential Irrigation (304 accounts)	Deep Well Disposal On Site Irrigation
Rotonda WRF	0.625	0.461	Golf Course Irrigation (2 accounts) Residential Irrigation (71 accounts)	Reject Pond
West Port WRF	1.2	0.454	Golf Course Irrigation (3 accounts)	Deep Well Disposal On Site Irrigation
Burnt Store WRF	0.5	0.219	Rapid Infiltration Basins (Including Some Perc Ponds)	Deep Well Disposal
Total	8.325	4.485		

Projections for Reuse

The following approach for estimating the effects of reuse can be utilized. The future impact of reuse programs can be estimated by combining information regarding existing programs and future programs. Table 4.33 summarizes the estimated expected potable water offset associated with reuse programs.

Table 4.32 Summary of Future Potable Water Offset due to Reuse (2030 estimate)	
Reuse Customer Category	Potable Offset (Gals. / day – Yr. 2030)
Golf Courses	No potable water offset
Existing residential customers (2008 - 375 accounts)	No potable water offset from future demand because demand from existing customers is already factored

	into projections.
Current Expansion Program	954,000 gallons / day
Future Offset due to New Developments	2,051,976 gallons / day
TOTAL	3,005,976 gallons / day

CCU’s current reuse program consists mainly of providing reclaimed water to local golf courses, and providing reclaimed water to approximately 375 private residential customers. SWFWMD does not currently associate golf course usage of reclaimed water with an offset of potable water because golf courses typically use ground water to irrigate and not potable water. Therefore, no potable water offset is associated with golf courses in the summary table.

CCU is currently involved in a capital improvement project to expand the transmission and distribution capacity of the existing reuse system. When this project is completed in FY 2009 it will allow CCU to provide reuse service to a much larger customer base, and the expected future offset of potable water has been estimated to be 954,000 gallons per day according to the project funding application.

Charlotte County has made the policy decision to promote the use of reuse water for new developments (Section 3-8-221 through 3-8-225 of the County Ordinances). It is anticipated that the majority of the future growth of the reuse system will come through new developments, as opposed to infill service. For the purposes of estimating future potable offsets associated with reuse, the following calculation can be used:

$$\text{Future Potable Offset (FPO)} = \text{DP} * \% \text{ND} * \% \text{EFF} * \text{AHOR}$$

Where,

DP = “Delta population” or the change in population over a given time period, divided by 2.18 persons per household (to normalize the units as households).

%ND = “Percent New Development”, or the percent in population change attributed to new developments as opposed to infill growth. Past studies estimate future growth to be approximately 80% new development.

%EFF = “Percent Efficiency”, or the expected percentage of new households to utilize reuse service. This assumes that reuse service will not be available for all new developments. An estimate of 70% assumes that some new developments in the future will be built outside of the transmission and distribution network available for reuse service.

AHOR = “Average Household Offset of potable water due to Reuse”, or an estimate of the average use of potable water for residential irrigation. This approach assumes that the average household currently uses approximately 50% of their potable water for irrigation

(based on past studies), and total potable water consumption is based on an estimated average daily consumption of 203 gals/household/day. Therefore, the estimated AHOR for this calculation is 101.5 gals/household/day or 50% * 203 gpd.

Table 4.34 summarizes estimated future potable water offsets for new development for 2030.

Table 4.33 Future Potable Offset (FPO) Calculation Table (New development – Yr. 2030)						
FPO (gals. potable water offset / day)	Start Population (Medium- BEER 2005)	Future Population (Medium- BEER 2030)	DP (Households)	%ND	%EFF	AHOR (gpd/household)
2,051,976	157,200	235,900	36,101	0.8	0.7	101.5

A similar approach can be used to estimate the reuse associated with CCU’s existing 375 reuse customers. However, no potable offset exists because the potable demand from these customers is already factored into existing demand projections.

L. Septic System Management Program

The Florida Department of Health (FDOH) estimates that more than 30,000 (and possibly 40,000) septic systems are in operation within the County (see Table 4.35). Projections produced from FDOH records indicate that an additional 372 systems are placed in service annually. These septic systems require routine periodic maintenance to ensure proper function. A large number of systems fail because of inadequate maintenance. Malfunctioning septic systems may introduce fecal bacteria and viruses into the surface and groundwater supply. Enhanced programs by FDOH have increased the functionality of septic systems by requiring larger areas for installation, maintaining strict separation between drainfields and seasonal high water tables, and requiring inspections on alternative aerobic systems required on projects with more intensive wastewater handling needs.

While the County has a great number of vacant lots with central sewer service available, there are even greater numbers without. A goal of this comprehensive plan is to increase the developability of vacant lots by improving them with central water and sewer service and to channel new development to those locations. This plan also considers financial costs of providing infrastructure, and it recognizes that property owners using septic systems have made a financial investment into those systems. Laws have been adopted by Charlotte County requiring less intensive use of land for septic systems before requiring that alternative systems be employed. This has effectively required more connections to central sewer systems as a more cost effective solution as well as upgraded the standards for the average OSTD system.

TABLE 4.34 SEPTIC SYSTEM PERMITS ISSUED IN CHARLOTTE COUNTY (SINCE 1956)			
YEAR	SEPTIC PERMITS	REPAIR PERMITS	NOTES
1956 to 1980	17,455	0	1
1980 to 1990	15,604	0	2
1991-92	1,179	41	2
1992-93	709	0	2
1993-94	571	185	2
1994-95	497	147	2
1995-96	382	212	2
1996-97	402	160	2
1997-98	400	160	2
1998-99	336	0	2
1999-00	289	75	2
2000-01	325	129	2
2001-02	315	135	2
2002-03	365	144	2
2003-04	405	70	2
AVG. LAST 10 YEARS	372		
TOTAL	39,234	1,458	

Notes:

1. Data acquired from prior comprehensive plan summary
2. Data acquired from state FDOH data

Septic systems installed prior to 1983 are a concern in the County because they were built prior to the more strict septic system regulations that are in existence today. According to Department of Health records, 1,417 septic repair permits were granted between 1994 and 2004. This averages to 142 repairs or documented deficiencies per year. The County has implemented procedures to upgrade deficient systems to current standards where and when possible. Approximately two-thirds of Mid-County's septic systems were installed prior to 1983. In portions of West County, the Englewood Water District has successfully eliminated many of the older septic tanks through the implementation of its regional central sewer program. Many older systems *located in West County* have been decommissioned and replaced *with* vacuum sewer systems. Several Municipal Service Benefit Unit's (MSBU's) and Municipal Service Taxing Units (MSTU's) have been created to finance future sewer expansion projects. The typical design-life of a septic system has been estimated at 15 to 20 years (Proposed Surface and Groundwater Quality Monitoring Program for Charlotte County, Florida, Mote Marine Laboratory, Technical Report #433, July 28, 1995).

M. Sewer Service Availability

As pointed out earlier in this element, septic systems constitute a major component of existing wastewater treatment. While most of the County's platted lots are not fully served by central utility service, there are a number of vacant lots that are ready for development and served by central potable water and sewer service. Over the last 10 years, the percentage of septic system permits has generally declined, indicating that a greater percentage of new construction has occurred on property served by central sanitary sewer service. (Note: The septic system permits may include replacement

septic systems utilized by existing structures.). Table 4.35 defines the number of new septic permits issued between 1956 and 2004. There was almost a 45% reduction in the number of permits issued between 1992 and 1997, the start of the County's original sanitary sewer expansion program. Since 1992, the number of permits has dropped, on average, by an additional 8%.

The three urbanized areas of West County, Mid-County, and South County contain more than 30,000 lots and parcels that have central sewer service available to them yet are vacant and ready to serve new development. Much of the County's new development should be channeled into those areas in order to maximize the infrastructure investment that has been made. Using the County's existing Land Use Map and central sewer line information provided by utility providers, the following information is derived.

N. Charlotte County Utilities

In 1991, Charlotte County acquired the largest utility provider in the County - General Development Utilities. In acquiring the utility, the County secured a valuable growth-management asset that is one of the main tools utilized in the Urban Service Area strategy. The 1993 Port Charlotte Utility Unit Master Plan proposed an aggressive sewer expansion plan east and west of Tamiami Trail. In 1997, Charlotte County Utilities implemented a reduced scope wastewater expansion plan that has resulted in approximately 3,700 additional service connections for existing and future buildings. In December 1999, Charlotte County Utilities acquired water and sewer utilities that serve the Rotonda development. The West Myakka River Utility Unit Master Plan Update Report of 1998 recommended planning levels to serve western Charlotte County with water and sewer service. Further, the application for renewal of the Rotonda Water Reclamation Facility operating permit describes the use of the purchased capacity at the Englewood Water District Wastewater Treatment Plant and the West Port WRF to treat a portion of the Rotonda development's waste. This regional approach to meeting the utility needs of the County represents a wave of the future, whereby resources may be shared to meet need as appropriate for developmental growth.

CCU's service area includes the majority of Mid-County, much of West County, and all areas not currently designated for service by another utility. Because of its acquisition cost, debt service is the largest portion of CCU's expense, and it is reflected in customer rates.

As presented in the Central and West County Wastewater Master Plan, major transmission force main additions will be required for central and western Charlotte County in the near future. Though capacity at the East Port WRF is adequate for current needs, an expansion may be necessary by 2010. By the year 2015, the projected wastewater flow from the East Port WRF service area is anticipated to approach 8.4 MGD, exceeding current capacity by 2.4 MGD.

Similarly, a recent review of projected growth and available infrastructure in the South County (Burnt Store) area indicates that major transmission force main additions will be required in the near future. It is anticipated that many of these force main additions will be constructed by the developers needing service; however, South County will be considered in the recently started sanitary sewer expansion study that is intended to develop a plan for the County to expand sanitary sewer service to

prioritized areas. Also, expansion of the Burnt Store wastewater treatment facility must be considered. Although the facility was expanded to a capacity of 0.5 MGD in 2004, wastewater flow projections indicate that this capacity may be exceeded by 2007, requiring another expansion. By the year 2015, the projected average daily wastewater flow to the Burnt Store wastewater treatment facility is anticipated to approach 1.4 MGD, exceeding current capacity by 0.9 MGD.

O. Utility Reports and the Concurrency Management System

Implementation of this element occurs in many places and by numerous agencies and departments. Charlotte County government itself needs to ensure that infrastructure and services are provided in order to support new development. This can be accomplished through a Concurrency Management System (CMS), a requirement of Chapter 163, Florida Statutes, and Rule 9J-5, Florida Administrative Code. A CMS is used to coordinate the issuance of development orders or building permits with infrastructure and services to support development. For potable water and sanitary sewer infrastructure, the County depends heavily upon monthly Department of Environmental Protection and SWFWMD reports furnished by the utility providers.

V. GOALS, OBJECTIVES & POLICIES SECTION

Stormwater Management

Goal 1: Where practical, Charlotte County will implement best management practices of both non-structural and structural nature that are intended to reduce the impact of stormwater to the receiving water body.

Objective 1.1: Charlotte County will implement the developed Master Stormwater Management Plan (MSMP) and implement the capital improvement projects identified as a result of the areas originally studied.

Policy 1.1.1: Charlotte County will implement Phase II of the MSMP through maintenance of the previously identified priority drainage basins of Phase I. The maintenance of the basins are prioritized by order of those basins that are less dependent on structural controls and that convey overland flow to primary drainage ditches, creeks, or rivers thereby creating flooding situations which can be reduced or improved by establishing a maintenance program.

Policy 1.1.2: Charlotte County will provide maintenance of deficient stormwater management facilities and implement the strategies for the construction stormwater management facilities which will be funded through the appropriate municipal service benefit units.

Policy 1.1.3: The Charlotte County Public Works Division will coordinate with Land Development in reviewing development plans to ensure consistency with the MSMP.

Policy 1.1.4: The maintenance of existing stormwater facilities and the construction of new ones will be implemented in accordance with the following priorities:

- (1) Reduction of building structure flooding;
- (2) Reduction of flooding of highways;
- (3) Reduction of other types of flooding.

The priorities shall also reflect the following Urban Service Area strategy, in descending priority:

- (1) First priority - Urban Infill Areas;
- (2) Second priority - Suburban Areas; and
- (3) Rural Service Areas.

Objective 1.2: Stormwater runoff will be managed to minimize degradation of water quality.

Policy 1.2.1: Charlotte County and the applicable water management district will apply the stormwater management plans to new developments in the county. The appropriate water management district will inspect new facilities prior to the transfer of a permit to the Operation and Maintenance Phase as provided by law (*Florida Administrative Code 62-25*).

Policy 1.2.2: Charlotte County will be responsible for construction, inspection, and maintenance of stormwater management facilities which are located on County owned land. Charlotte County will maintain stormwater management facilities constructed by others, when they are built, operational dedicated, and accepted by Charlotte County.

Policy 1.2.3: Land Development Regulations governing drainage will require the following:

- a. All new development meets or exceeds the policies and regulations of the applicable water management district (*Florida Administrative Code 62-25*);
- b. The engineering, design, and construction standards for on-site stormwater management systems are reviewed by Land Development in the Building Permit Review;
- c. Appropriate devices, whether temporary or permanent, will be in place on a site to control erosion and insure stormwater runoff quality is maintained. All devices will be installed prior to the commencement of any development activity. Disturbed areas of the site will be revegetated and stabilized as soon as possible. Stormwater management facilities will be operated and maintained by the current owner of the property;
- d. Periodic inspections and maintenance of on-site Stormwater Management systems is required as a condition of Southwest Florida Water Management District (SWFWMD) system permit issuance;
- e. A Professional Engineer will certify that the stormwater management systems were built in substantial conformance to plans approved by the appropriate water management district and Charlotte County before issuance of a certificate of occupancy; and
- f. Stormwater runoff is treated as required by State and Federal regulations (*Florida Administrative Code 62-25: Clean Water Act, 1972 and those appropriate re-authorizations of the Act*).
- g. All applicable projects shall obtain a NPDES authority prior to C.O.

Policy 1.2.4: Charlotte County will meet or exceed all requirements of the Federal government's National Pollution Discharge and Elimination System (NPDES)(*USEPA s. 402 of the Clean Water Act, Pub. L. No. 92-500, as amended, and 33 USC ss. 1251 et seq.*).

Policy 1.2.5: Stormwater management facilities which discharge into the waters of the State, including wetlands, will meet or exceed the design and performance standards specified in Chapters 62-25 and 62-4, Florida Administrative Code V. 19, p. 172, Chapter 62-25.025 Design and Performance Standards (5/85).

Policy 1.2.6: The post-development runoff rate of an individual site or a new subdivision (in its entirety) will not exceed the pre-development runoff rate for all new development except as exempted by Policy 1.3.2 (d), or unless applicable County and/or water management district permit(s) issued in accordance with Charlotte County Code #v 3-5-111 and FAC 62-25 provide otherwise.

Policy 1.2.7: Stormwater facilities constructed for new development and the upgrading of existing infrastructure will use both structural and non-structural Best Management Practices

(BMPs)(Handbook, Urban Runoff Pollution Prevention and Control Planning. EPA/625/R-93/004, September 1993).

Policy 1.2.8: Stormwater management facilities and conveyances constructed in Charlotte County shall have easements to enable maintenance around culverts, storm drains, and other enclosed conduit drainage systems.

Objective 1.3: Charlotte County will ensure that stormwater management facilities are in place and available to serve all new development, whether provided by County or by those creating the new development.

Policy 1.3.1: In Charlotte County, a development order or permit will be issued subject to the condition that, at the time of issuance of a certificate of occupancy or its functional equivalent, the necessary facilities and services are in place and available to serve the new development; or at the time the development order or permit is issued, the necessary facilities and services are guaranteed in an enforceable development agreement, pursuant to Section 163.3220, *Florida Statutes*, or an agreement or development order issued pursuant to Chapter 380 Florida Statutes, to be in place and available to serve new development at the time of the issuance of the certificate of occupancy or its functional equivalent.

Policy 1.3.2: Charlotte County adopts the following level of service standards for stormwater management facilities:

- a. New arterial and collector roadways will be designed and constructed to enable not less than one lane of traffic in each direction above the design high water elevation resulting from a 25-year frequency, 24-hour duration rainfall event distributed in accordance with methodologies approved by the appropriate water management district;
- b. Stormwater management facilities for structures in all new subdivisions will manage stormwater resulting from a 25-year frequency, 24-hour rainfall event distributed in accordance with methodologies approved by the appropriate water management district; by either providing individual on-site facilities or a central facility(s).
- c. New parking facilities will be designed and constructed with a maximum temporary detention depth of nine (9) inches resulting from a 5-year frequency, 24-hour duration rainfall event distributed in accordance with methodologies approved by the appropriate water management district;
- d. All new development on existing platted lots (except single-family, duplex, and tri-plex dwelling units within Charlotte County) is required to provide on-site stormwater management for runoff resulting from a 25-year, 24-hour rainfall event distributed in accordance with methodologies approved by the appropriate water management district;
- e. New local residential streets will be designed and constructed with the pavement centerline at or above the design high water elevation resulting from a 5-year, 24-hour rainfall event distributed in accordance with methodologies approved by the appropriate water management district.

Policy 1.3.3: All improvements for the replacement, expansion, or increase in capacity of stormwater management facilities will meet or exceed the level of service standards

described in Policy 1.3.2.

Policy 1.3.4: Charlotte County adopts the water quality standards of Chapter 62-25, Florida Administrative Code. Pollution abatement shall be accomplished by requiring stormwater management systems in accordance with the requirements of that chapter.

Policy 1.3.5: Relatively unaltered drainage features will be protected from disruption of natural hydroperiods, flows and water quality. Natural hydroperiods, flows and water quality will be protected from construction allowed in relatively unaltered drainage features.

Objective 1.4: Charlotte County will support and encourage continued water quality monitoring of major surface water bodies by local, State, and Federal agencies.

Policy 1.4.1: Charlotte County will support the long-term monitoring of the ambient water quality of Charlotte Harbor and its tributaries under the Surface Water Improvement Management (SWIM) program and the National Estuary Program (NEP).

Policy 1.4.2: Charlotte County will coordinate with local, regional, and state governments and agencies in an attempt to develop and implement a long-term ambient water quality monitoring program.

Objective 1.5: Charlotte County will maintain its certification under the Community Rating System (CRS) administered by the Federal Emergency Management Agency (FEMA).

Policy 1.5.1: Charlotte County will continue to implement stormwater management activities in order to be rated by the Community Rating System (*Federal Emergency Management Agency, National Flood Insurance Program Community Rating System Coordinators Manual, July 1996, Government Printing Office #FIA-15*).

Objective 1.6: Charlotte County will work to fund and implement stormwater management programs to achieve the objectives set forth herein.

Policy 1.6.1: Charlotte County will employ a system of Municipal Services Benefit Units (MSBUs), stormwater utility, or other funding mechanism for stormwater management to fund the construction and maintenance of stormwater management infrastructure and associated lands.

Policy 1.6.2: The funding mechanism for property located within Charlotte County may be based on the Equivalent Residential Unit (ERU) or similar measure for all property subject to the Stormwater Management Program.

Policy 1.6.3: Charlotte County will evaluate the drainage benefit districts for the purpose of funding the acquisition of required drainage easements and bonds for required stormwater management improvements within each basin.

Policy 1.6.4: Upon completion of the Master Stormwater Management Plan, Charlotte County will formally adopt and include appropriate implementation projects within the five-year schedule of capital improvements which direct the short-term implementation of stormwater management programs.

Policy 1.6.5: In addition to the priorities set forth herein, the Capital Improvements Coordinating Committees will evaluate and rank proposed stormwater management Capital improvements projects consisting of the following priority level guidelines (Level One priority represents the most important):

Level One - the project:

- a. protects the public's health and safety from flooding;
- b. fulfills a legal commitment (such as required by the National Pollution Discharge Elimination System) to provide facilities and services; or
- c. preserves or achieves the full use of existing facilities.
- d. secures hurricane evacuation routes; and
- e. those categories listed in Policy 1.3.2.

Level Two - the project:

- a. increases the efficient use of existing facilities; or
- b. prevents or reduces the cost of future stormwater management improvements.

Level Three - the project:

- a. represents a logical extension of facilities or services within a designated service area; or
- b. results from a new development activity.

Policy 1.6.6: Projects identified to correct existing deficiencies and to meet future demands shall be the basis for project identification in the Capital Improvements Element.

Objective 1.7: Charlotte County will manage development within the Federal Emergency Management Agency (FEMA) 100-year floodplain.

Policy 1.7.1: For properties within the 100-year floodplain, Transfer of Development Rights (TDR) shall be granted for property owners electing not to develop within the 100-year floodplain. Lands from which a TDR has been granted must remain in perpetuity as undisturbed or unaltered open space.

Policy 1.7.2: All new residential or commercial development located within the FEMA 100-year flood hazard zone will be constructed at or above the base flood elevation, as established by the FEMA Flood Insurance Rate Maps.

Policy 1.7.3: All new development located within the 100-year floodplain should be in good standing with FEMA.

Solid Waste

Goal 2: Solid Waste Management & Disposal: Charlotte County will continue to own, maintain, expand as necessary, and operate the Zemel Road Landfill (ZRL) as a key component of its Integrated Municipal Solid Waste Management System (IMSWMS) and will manage and dispose of municipal solid waste (MSW) in a safe, effective, efficient and environmentally appropriate manner which minimizes financial risk.

Objective 2.1: Landfill Operations: Charlotte County will seek to optimize the remaining useful life of the Zemel Road Landfill (ZRL) site, providing for existing and projected future management and disposal needs.

Policy 2.1.1: Charlotte County will seek to continue to maintain, expand and operate the ZRL to provide for the proper management and disposal of MSW generated within the county.

Policy 2.1.2: Charlotte County will encourage the acceptance of MSW from other political jurisdictions only as part of an interlocal agreement which provides for such acceptance.

Policy 2.1.3: Charlotte County will maintain, expand, and operate the ZRL in accordance with all applicable Federal and State requirements.

Policy 2.1.4: Charlotte County will continue to explore and implement operational improvements which have the potential to effectively and efficiently decrease the consumption of available disposal volume at the ZRL.

Policy 2.1.5: Charlotte County will, at least once per year, conduct an assessment of volume consumption and develop a projection of useful remaining life at the ZRL.

Objective 2.2: Landfill Design: Charlotte County will, within the bounds of accepted engineering and landfill design practice and regulatory constraints, seek to maximize the useful disposal volume of the ZRL and will conform its landfill expansion and closure design to all applicable and appropriate Federal and State regulatory requirements, thereby assuring the environmental integrity of the MSW management facility and minimizing the potential for adverse environmental impacts.

Policy 2.2.1: Charlotte County will continue to conduct environmental monitoring in accordance with applicable Federal and State requirements, including conditions contained within applicable Florida Department of Environmental Protection (FDEP) permits.

Policy 2.2.2: Charlotte County will, in accordance with applicable FDEP permit conditions, implement an approved closure plan for the ZRL.

Policy 2.2.3: Charlotte County will provide closure maintenance and monitoring of the ZRL after facility closure in accordance with applicable Federal and State requirements.

Objective 2.3: Alternative MSW Management and Disposal Options: Charlotte County will continue to employ and to encourage the evaluation and implementation of MSW management and disposal alternatives which will serve to improve the efficiency and effectiveness of its operations and to reduce the amount of waste disposed of at ZRL.

Policy 2.3.1: Charlotte County will continually evaluate alternative methods to improve and expand its currently used MSW management methodologies for vegetative and wood waste that will enhance the County's recycling, reuse and diversion rates.

Policy 2.3.2: Charlotte County will continue to manage selected waste streams, such as vegetative and wood wastes with industry accepted management technologies that benefit the County's overall Comprehensive Management Plan. The County will consider the contribution of other wood waste processing operations which may be operating in Charlotte County to meeting its solid waste management goals and in evaluating the on-going benefit of its existing wood waste management program.

Policy 2.3.3: Charlotte County will continually assess its MSW waste stream components and perform a comprehensive waste stream analysis when changes in the waste stream warrant a study.

Policy 2.3.4: Charlotte County will review and revise its Comprehensive Management Plan annually to meet the needs of the community.

Goal 3: Recycling and Waste Diversion: Charlotte County will maintain a county-wide recycling and waste diversion program which will result in a reduction of the amount of MSW which would have been disposed of at ZRL by at least thirty percent (30%).

Objective 3.1: Recycling: Charlotte County will actively promote the recycling of MSW, the reuse of materials, and the purchase and use of products which contain recycled materials.

Policy 3.1.1: Charlotte County will continue, and will explore means to expand and improve, its county-wide curbside, multi-family and commercial recycling program.

Policy 3.1.2: Charlotte County will continue its public education program to encourage residents to participate in the County's recycling programs.

Policy 3.1.3: Charlotte County will continue to support and encourage the City of Punta Gorda's efforts to improve their recycling, reuse and diversion programs.

Policy 3.1.4: Charlotte County will continue to encourage and support the purchase of products which are reusable and products which contain recycled materials.

Objective 3.2: MSW Management and Recycling Education: Charlotte County will maintain a program to provide general information to the public regarding MSW management and recycling.

Policy 3.2.1: Charlotte County will, through the use of brochures, outreach programs, newspaper articles, television ads and programs, and radio announcements, continue to conduct programs to educate the public on various aspects of MSW management and the benefits of recycling.

Policy 3.2.2: Charlotte County will continue to apply for and utilize State Grant Funds as they become available to advance its recycling and education programs and will encourage the State to provide funding of the recycling and education grant programs.

Goal 4: Solid Waste Collection: Charlotte County will maintain a county-wide MSW collection franchise system designed and operated to assure that MSW is collected and transported to the County's permitted MSW management facilities in an efficient, economical and environmentally sound manner.

Objective 4.1: MSW Delivery to Permitted County Facilities: Charlotte County will maintain its requirement that MSW, generated within its political jurisdiction be properly collected and transported to the County's permitted MSW management facilities.

Policy 4.1.1: MSW generated within the political jurisdiction of Charlotte County is to be properly collected and transported to a permitted County MSW management facility.

Objective 4.2: MSW Acceptable/Unacceptable: Charlotte County will accept for processing, recycling, and disposal only those wastes specifically allowed pursuant to Federal and State regulations and permits and which are compatible with the County's Integrated Municipal Solid Waste Management System (IMSWMS).

Policy 4.2.1: Charlotte County will prepare and provide for public dissemination of brochures and fact sheets that identify the types of solid waste which are acceptable for delivery to the County's permitted MSW management facilities; the types of solid waste which are prohibited for delivery to the County's permitted MSW management facilities; and, alternative waste management options available for prohibited wastes.

Objective 4.3: Collection Services: Charlotte County will provide for a county-wide MSW collection and transportation system.

Policy 4.3.1: Charlotte County will continue to effect collection of MSW through the services of franchise solid waste collection companies or through the use of other public or private sector resources and encourage effective and efficient operations through bulk transport of collected MSW to ZRL.

Policy 4.3.2: Charlotte County will maintain franchised MSW collection contracts or other appropriate service agreements which provide for routine scheduled collection of residential and commercial wastes; special collections of bulky items; separate curbside and bulk collection of recyclable materials; separate collection of vegetative yard wastes; and, such other provisions as may be deemed appropriate by the Board of County Commissioners.

Policy 4.3.3: Charlotte County will continue to accept MSW generated within the corporate limits of any municipality within the county, collected and transported by municipal forces or by private firms under contract with the municipality, provided such collection programs meet the qualitative requirements of the County (i.e., exclusion of prohibited materials, proper separation of waste types).

Objective 4.4: Economic Efficiency: Charlotte County will pursue improved and economically efficient methods for the collection and transportation of MSW within its jurisdiction.

Policy 4.4.1: Charlotte County will continue to evaluate methods to improve the cost-effectiveness of MSW collection operations through its franchised MSW collection contractors.

Policy 4.4.2: Charlotte County will analyze the costs and benefits associated with the development of one or more MSW transfer stations as a component in the preparation of its Comprehensive Management Plan.

Goal 5: Illegal Dumping and Improper Disposal of Solid Waste: Charlotte County will encourage and support programs which encourage the proper management and disposal of MSW and discourage the continuation and proliferation of illegal dumping and improper disposal of solid waste.

Objective 5.1: Illegal Dumping: Charlotte County will identify and implement programs to encourage the use of permitted County MSW management facilities for the proper management of solid wastes generated within the county.

Policy 5.1.1: Charlotte County will continue to place into service regional Citizens' Convenience Centers to service the residents of Charlotte County based on the needs and merits analysis section of the Comprehensive Management Plan.

Policy 5.1.2: Charlotte County will continue to provide a Customer Convenience Center for smaller vehicle commercial customers at the ZRL. In addition, the County will continue the operation of the Mini-Transfer & Recycling Centers located in Mid County & West County specifically designed for homeowners.

Policy 5.1.3: Charlotte County will support and participate as a member of the Keep Charlotte Beautiful, Inc. Chapter of Keep America Beautiful Inc.

Policy 5.1.4: Charlotte County will support and participate as a member of the County's Illegal Dumping Task Force to investigate and address illegal dumping and littering issues within the county.

Goal 6: Hazardous Waste Management: Charlotte County will maintain programs to identify and prevent the improper management and disposal of hazardous and special waste within the county and provide for and encourage the proper management of special wastes, household (HHW) and conditionally exempt small quantity generator (CESQG) hazardous wastes.

Objective 6.1: Household Hazardous Waste: Charlotte County will maintain a program to educate county residents on minimization and proper management of HHW and provide alternative HHW management opportunities.

Policy 6.1.1: Charlotte County will continue to develop and distribute educational materials on the identification, proper handling and management of HHW.

Policy 6.1.2: Charlotte County will continue to offer periodic HHW collection days for the benefit of the county's citizens.

Objective 6.2: Conditionally Exempt Small Quantity Generator Hazardous Waste: Charlotte County will maintain a program to identify and educate CESQG on minimization and proper handling and management of CESQG hazardous wastes.

Policy 6.2.1: Charlotte County Solid Waste Resource Management operates an assessment and inspection program as required by state regulatory agencies regarding the status of its CESQG hazardous waste generators to assure proper handling, storage, and waste minimization and disposal practices.

Objective 6.3: Special Waste: Charlotte County will maintain programs to identify, collect and properly manage special wastes (e.g., used oil, automobile batteries, used paint, etc.) as designated by Federal, State and Local statutes, regulations and ordinances.

Policy 6.3.1: Charlotte County Solid Waste Resource Management will maintain a county-wide program for the curbside collection of residentially generated used automobile oil.

Policy 6.3.2: Charlotte County will support and encourage the establishment and operation of private sector used oil collection locations throughout the county and will provide information to the public on their location.

Goal 7: Levels of Service: Charlotte County will maintain an Integrated Municipal Solid Waste Management System (IMSWMS) and MSW Collection System to serve current and future needs at an acceptable Level of Service (LOS) and a mechanism to control development to ensure that established LOS Standards are met.

Objective 7.1: Level of Service Standards: Charlotte County will maintain its Integrated Municipal Solid Waste Management (IMSWMS) System and MSW Collection System to meet or exceed established LOS Standards.

Policy 7.1.1: Charlotte County's IMSWM and MSW Collection systems will perform periodic waste generation analysis to assure the LOS is maintained to provide for the proper collection and management of Charlotte County's MSW generation rate at no less than 7.2 pounds of MSW per permanent resident per day.

Policy 7.1.2: Charlotte County's IMSWMS will be maintained to provide for the disposal of Charlotte County's MSW generation rate at no less than 5.0 pounds of MSW per permanent resident per day.

Policy 7.1.3: Charlotte County's IMSWMS will be maintained to provide for the recycling of no less than 2.2 pounds of recyclables per permanent resident per day.

Policy 7.1.4: Charlotte County will apply these LOS standards throughout the county, regardless of Urban Service Area designation.

Policy 7.1.5: Charlotte County will meet either of the following two levels of service standards:

- a. As a condition for building permit or development order issuance, the necessary solid waste facilities and services will be in place and available to serve that new development prior to the issuance of a certificate of occupancy; or
- b. As a condition of building permit or development order issuance, the necessary solid waste facilities and services are guaranteed to be in place and available to serve that new development prior to the issuance of a certificate of occupancy. This guarantee may be in the form of an enforceable development agreement, adopted pursuant to Section 163.3220, *Florida Statutes*, or an agreement or development order issued pursuant to Chapter 380, *Florida Statutes*.

Natural Aquifer Recharge

Goal 8: Charlotte County will manage the development of land in areas of prime aquifer recharge so that the long-term quality of groundwater is maintained at safe levels.

Objective 8.1: Charlotte County will protect the function of natural recharge areas and natural drainage features at a level consistent with the long-term public good.

Policy 8.1.1: Land uses within areas of prime aquifer recharge will be limited to those uses which have limited impervious surfaces, thereby allowing for the greatest amount of water to infiltrate to the ground. Allowable uses include very low density residential development and agricultural and resource conservation activities.

Policy 8.1.2: Natural hydroperiods, flows, and water quality will be maintained or improved when development activity occurs upon a site.

Policy 8.1.3: Altered drainage features will be protected from further overall degradation. Development will be permitted which utilizes existing drainage works or which creates new drainage works which on balance mitigate the adverse effects of previous works. This policy specifically allows for the construction necessary to maintain the original use and beneficial use of altered drainage systems.

Policy 8.1.4: Mitigation of impacts to relatively unaltered natural drainage features will be considered and evaluated on a case by case basis by the responsible review and permitting departments.

Policy 8.1.5: Charlotte County shall protect groundwater resources by maintaining a maximum of one dwelling unit per ten acres in areas of prime aquifer recharge.

Objective 8.2: The quality of Charlotte County's groundwater resources shall be maintained or improved and shall not be degraded, either directly or indirectly, by human influences, below Federal or State standards.

Policy 8.2.1: Charlotte County shall request copies of groundwater monitoring data and reports from FDEP and the Water Management Districts for projects within their jurisdiction that require permitting and monitoring by these agencies in order to be apprised of any potential adverse impacts to groundwater quality.

Policy 8.2.2: Charlotte County shall prohibit the construction of all new canals which may result in increased saltwater intrusion.

Policy 8.2.3: Charlotte County shall cooperate with the Water Management Districts to have free flowing artesian wells plugged under the Quality Water Improvement Program (QWIP) or by methods approved by the appropriate Water Management District and County.

Policy 8.2.4: Charlotte County will cooperate with State and Federal regulatory agencies in the monitoring of all closed or abandoned landfills in the county to determine if these sites pose a threat to the quality of groundwater resources.

Policy 8.2.5: Charlotte County will maintain its current policy requiring mandatory connection to sewer and water service when such service is provided, thus reducing the number of septic tanks and wells in use.

Policy 8.2.6: Charlotte County will comply with, and enforce, emergency water conservation measures as required by the Southwest Florida Water Management District and the South Florida Water Management District.

Potable Water and Sanitary Sewer *(many of these policies were amended by Ordinance # 2008-047, adopted on May 20, 2008)*

Goal 9: Charlotte County will review and update its goals, objectives and policies related to potable water supply at least once every five years to coincide with development of the Water Supply Facilities Work Plan.

Objective 9.1: Charlotte County and the utilities serving the County will develop and maintain reliable and environmentally-responsible potable water supplies and treatment facilities.

Policy 9.1.2: Charlotte County will coordinate revisions to the Water Supply Facilities Work Plan with the South Florida Water Management District, the Southwest Florida Water Management District, the Florida Department of Community Affairs, and the potable water suppliers located in and served by Charlotte County.

Objective 9.2: Charlotte County will update the Water Supply Facilities Work Plan into the Charlotte County Comprehensive Plan at least once every five years and within eighteen months of the latest updated Water Management Districts' Regional Supply Plans.

Policy 9.2.1: Charlotte County will update the Water Supply Facilities Work Plan into the Infrastructure, Capital Improvements, Intergovernmental Coordination, and other elements of the Charlotte County Comprehensive Plan as applicable.

Policy 9.2.2: Capital improvements included as part of the Water Supply Facilities Work Plan will be adopted into the Capital Improvements Element.

Policy 9.2.3: The Water Supply Facilities Work Plan is included within the Goals, Objectives, and Policies of the Infrastructure Element.

Goal 10: Charlotte County will encourage public and private utility companies (utilities) to provide well-designed and economically efficient systems of potable water and sanitary sewer service that maximizes the use of existing facilities to meet the needs of a growing population, while protecting the natural environment.

Objective 10.1: Charlotte County and the utilities serving the county will ensure the provision of potable water and sanitary sewer services to new and existing development in conjunction with previously Certificated Service Areas and the Urban Service Area strategy through the planning horizons established within the comprehensive plan.

Policy 10.1.1: Utilities are encouraged to extend central potable water and sanitary sewer services to Infill Areas in accordance with the Urban Service Area strategy.

Policy 10.1.2: In the case of a utility which provides both central potable water and sanitary sewer service, the utility shall extend potable water and sanitary sewer lines concurrently. As an exception to this policy, lines may be extended separately if the service area is primarily

composed of one type of service line and it is determined by the utility to be non-feasible to require concurrent extensions.

Policy 10.1.3: In the case of utilities which provide both central potable water and sanitary sewer service, the Certificated Service Area for one service will not be extended to an area unless the Certificated Service Area for the other service is also extended to the same location.

Policy 10.1.4: Certificated Service Areas will not be extended or expanded for potable water or sanitary sewer service outside of Infill Area boundaries. Exceptions shall be made in the case of New Communities or Developments of Regional Impact in West County, Mid County, or South County or Rural Communities in East County; or in the case of where a utility(s) shall provide both central potable water and sanitary sewer service in a tandem manner within the Urban Service Area Overlay District.

Policy 10.1.5: Utilities which have an approved certification to provide service shall serve their approved areas in accordance with the certification.

Policy 10.1.6: When it is necessary for potable water or sanitary sewer lines to be extended through a Rural Service Area in order to provide service to lands located within another Urban Service Area, the extension of such transmission lines shall not be construed as justification for development at urban intensities in the Rural Service Area adjacent to the extended infrastructure.

Policy 10.1.7: Upon development, landowners are required to connect to central potable water service and/or central sanitary sewer service unless it is determined by the utility to be non-feasible.

Policy 10.1.8: Developed property shall be required to connect to central potable water and/or central sanitary sewer when it becomes available upon written notification by the utility provider unless the utility provider grants a variance.

Objective 10.2: Charlotte County, in making land use decisions, shall utilize the availability of central potable water and sanitary sewer service.

Policy 10.2.1: New lots platted within Charlotte County served by a septic system shall have a minimum lot area consistent with the requirements of the more stringent of Chapter 64E-6, *Florida Administrative Code (FAC)*, or local ordinance.

Policy 10.2.2: Pre-manufactured treatment facilities designed and used to treat sanitary sewer flows of 0.002 MGD to 0.5 MGD in small communities (package treatment plants) may be allowed within the Urban Service Area as a temporary measure and shall be built to the standards specified by the Florida Department of Environmental Protection or of Charlotte County, whichever is more stringent. Once a conventional sanitary sewer treatment facility

and collection system (conventional system) is available for connection, a package treatment plant will be decommissioned and connection to the conventional system will be required.

Policy 10.2.3: Water and sewer availability will not necessarily provide justification for development approval.

Objective 10.3: Charlotte County shall protect its existing and future potable water supplies, such as the Peace River, and wellhead locations in order to continue using those natural resources for drinking water purposes.

Policy 10.3.1: Charlotte County will evaluate the effects of development on wellheads for all proposed land uses within delineated cones of influence for all central potable water supply wellheads used for public consumption. Where a cone of influence is not determined, all proposed development within 1,500 feet of the wellhead will be evaluated. Land uses in which hazardous materials (such as petroleum products or chemical or biological wastes) are produced or stored are not permitted to adversely impact groundwater resources. Landfills, sanitary sewer treatment facilities, or feedlots/concentrated animal facilities shall be prohibited within this area. These areas are designated on the Future Land Use Map series # 5, "Wellhead Protection Areas".

Policy 10.3.2: Land uses in which hazardous materials (such as petroleum products or chemical or biological wastes) are produced or stored or which may have an adverse impact on central potable water supplies for public consumption shall be allowed only in areas where their presence will not adversely impact groundwater resources, recharge areas, or watersheds that drain into surface water supplies.

Policy 10.3.3: Charlotte County will participate in water restriction programs established by the appropriate water management district. This participation shall include, but not be limited to, public notice and educational programs.

Policy 10.3.4: Disposal of sludge shall be allowed only in areas which will not adversely impact groundwater resources, recharge areas, or watersheds that drain into surface water supplies.

Objective 10.4: To maintain residential per capita water use rates consistent with Florida Water Management Districts' (FWMDs) water use rates

Policy 10.4.1: Utilities are encouraged to develop facilities and programs for recycling treated wastewater and to promote water reuse through such methods as irrigation.

Policy 10.4.2: Charlotte County will assist the FWMDs, particularly during times of emergency water shortages and droughts, pursuant to 373.62 and 373.609, Florida Statutes (FS). This assistance shall include, but not be limited to, notices to citizens and public awareness education programs.

Policy 10.4.3: Charlotte County shall utilize Florida friendly landscaping techniques and non-potable water, if available, for landscaping of publicly owned facilities.

Policy 10.4.4: Charlotte County will continue to support public education programs that encourage water conservation, including programs sponsored by Charlotte County Utilities (CCU) and Environmental & Extension Services.

Policy 10.4.5: Through its public education program, Charlotte County shall encourage Florida friendly landscaping techniques in order to reduce water usage for irrigation.

Policy 10.4.6: Water conserving fixtures and devices will continue to be used for all new development constructed within Charlotte County. Charlotte County encourages the use of water- conserving fixtures and devices for renovations and remodeling. All water providers within Charlotte County should be encouraged to follow CCU's lead in this area of water conservation.

Policy 10.4.7: Potable water providers shall adopt a tiered conservation rate structure for users.

Goal 11: Utilities must maintain adequate Levels of Service for potable water and sanitary sewer service to comply with the Charlotte County Concurrency Management Ordinance.

Objective 11.1: Utilities shall provide needed Capital Improvements to maintain existing facilities, to replace obsolete or worn-out facilities and to eliminate existing infrastructure deficiencies in order to serve existing and future development through the planning timeframe of 2030.

Policy 11.1.1: In order to determine adequate facility capacity for concurrency requirements for providers of potable water and sanitary sewer utilities, Charlotte County will rely upon these Levels of Service standards:

- a. Potable Water Facilities: Charlotte County adopts a Level of Service of 225 gallons per day per Equivalent Residential Connection.
- b. Sanitary Sewer Facilities: Charlotte County adopts a Level of Service of 190 gallons per day per Equivalent Residential Connection.

Policy 11.1.2: All improvements for replacement, expansion or increase in capacity of facilities will meet the Level of Service standards adopted by Charlotte County.

Policy 11.1.3: Charlotte County Land Development Regulations will ensure that potable water and sanitary sewer facilities that serve new developments shall meet adopted Level of Service standards.

Policy 11.1.4: For concurrency determination, the adopted Level of Service standards shall be met.

Policy 11.1.5: Charlotte County will meet the following standards for potable water and sanitary sewer concurrency requirements:

- a. prior to the issuance of a development order or building permit, local governments within Charlotte County will consult with the appropriate potable water and sanitary sewer service provider to determine if there are adequate water supplies or sanitary sewer capacity to serve the new development; and
- b. development orders or building permits will be issued subject to the condition that, at the time of the issuance of a certificate of occupancy, the necessary facilities and services are in place and available to serve the new development; or
- c. at the time development orders or building permits are issued, the necessary facilities and services are guaranteed in an enforceable development agreement, or an agreement or development order issued pursuant to Section 163.3220, *FS*, or an agreement or development order issued pursuant to Chapter 380, *FS*, to be in place and available to serve new development at the time of issuance of a certificate of occupancy or its functional equivalent.

Objective 11.2: Utilities shall maintain, operate, and monitor capacity sufficient to satisfy adopted Levels of Service established within this comprehensive plan through the planning timeframe of 2030.

Policy 11.2.1: All utilities located within the County shall provide the Charlotte County Budget Department with monthly Florida Department of Environmental Protection reports of total capacity and facility demand for each utility system to ensure that the adopted Level of Service standards are maintained and the Concurrency Management System is up to date.

Policy 11.2.2: Where deficiencies, or impending deficiencies, are identified within the Charlotte County Utility system, Charlotte County will respond by amending its Capital Improvement Plan to rectify the deficiency.

Goal 12: Charlotte County will attempt to reduce negative impacts to the natural environment and the public health, safety, and welfare resulting from the use of sanitary sewer treatment systems (e.g., septic systems, package treatment plants, and central sanitary sewer systems).

Objective 12.1: Charlotte County and the Environmental Health Unit of the Charlotte County Health Department (CCHD) will continue implementing a septic system management program serving the entire County.

Policy 12.1.1: Charlotte County will assist the CCHD Environmental Health Unit (EHU) in developing a schedule of septic system maintenance. The EHU will ensure that septic systems receive periodic operational inspections and maintenance according to Onsite Treatment and Disposal Systems (OSTDS) Ordinance, 3.8.256.

Policy 12.1.2: The schedule of septic system maintenance will be based on geographic area, size of systems, drain field and groundwater table separation, age of septic systems, reported

failures, soil types, setbacks from surface water bodies, water quality reports, and results of the pilot program.

Objective 12.2: Charlotte County will assist the CCHD in the continued operation of an ambient water quality monitoring program to determine the impacts of pollution resulting from the use of sanitary sewer treatment systems (e.g., septic systems, package treatment plants, and central sanitary sewer systems).

Policy 12.2.1: Charlotte County will assist the CCHD in collecting water and soil samples from various locations within the county to be analyzed for pollutant loadings.

Policy 12.2.2: Charlotte County and the CCHD may seek funding from various sources in order to implement an ambient water quality monitoring program. Sources may include the State of Florida, local governments, regional and federal agencies, and the Charlotte Harbor National Estuary Program.

Policy 12.2.3: When analysis indicates that a sanitary sewer treatment system is adversely impacting the environment according to state water quality standards (Chapter 62-302, FAC, for surface water, Chapter 62-520, FAC, for ground water, and Chapter 64E-9, FAC, for bathing places) and that public health standards are endangered, sanitary sewer treatment systems causing the situation will be repaired or replaced.

Policy 12.2.4: ALLOSTDS, whether new or replacement, that are installed for all development, both existing and proposed, will meet or exceed the treatment standard for onsite disposal systems within Chapter 64E-6, Florida Administrative Code, or local ordinance. Where the provisions of this policy are more stringent than those of Chapter 64E-6, FAC, or section 382.0065, F.S., the provision of this policy shall apply.

Objective 12.3: Developed properties will be connected to central potable water and sanitary sewer service when it is available and within 365 days upon written notification by the utility provider.

Policy 12.3.1: Whenever central potable water service is made available to any developed property, the landowner will connect to the central potable water system within 365 days of written notification by the utility provider. Made available means that a utility line exists within a public easement or right-of-way that abuts a property or is within 100 feet of the property line of a developed establishment. Upon connection, the existing well may be converted to irrigation or other non-potable uses consistent with State law and the rules of the appropriate water management district.

Policy 12.3.2: Whenever central potable water service is available to any residential property with a new structure under construction, the landowner will connect the structure to the potable water system prior to receiving a certificate of occupancy or its functional equivalent.

Policy 12.3.3: Whenever central sanitary sewer service is made available as defined in 381.0065, Florida Statutes, to any developed property utilizing an onsite sewage treatment and disposal system, the landowner will connect to the sanitary sewer system within 365 days of written notification by the utility provider. Upon connection, the existing septic system or necessary parts thereof will be made inoperable consistent with State law unless otherwise determined by the utility provider.

Policy 12.3.4: Charlotte County will encourage sanitary sewer disposal agreements whereby package treatment plants may be inter-connected and replaced by treatment facilities with better economies of scale in order to achieve better operating efficiencies or the installation of on-site treatment and disposal systems that treat effluent to advanced sanitary sewer treatment standards.

Objective 12.4: For non-residential non-potable water purposes, the lowest quality water suitable to the application shall be used.

Policy 12.4.1: To protect potable water supplies, non-potable uses shall be met by non-potable supplies whenever possible.

Objective 12.5: Charlotte County will attempt to reduce the percentage of septic systems serving new development.

Policy 12.5.1: Charlotte County will employ various growth management techniques such as the Urban Service Area and platted lands strategies as identified in the Future Land Use Element to attempt to direct new development into areas served by central potable water and sanitary sewer service.

Policy 12.5.2: Utility facility plans and programs shall be designed and coordinated in a manner which supports the Urban Service Area strategy.

Objective 12.6: To require the OSTDS, specified by the CCHD at time of plan review and site evaluation, be part of the managed OSTDS program in order to safeguard the public health, safety, and welfare.

Policy 12.6.1: For all OSTDS, connection to a central sanitary sewer service is required consistent with Policy 12.3.3 when service becomes available unless the utilities provider grants a variance.

Goal 13: Charlotte County Utilities (CCU) will operate its potable water and sanitary sewer facilities and infrastructure in an efficient and business-like manner to the benefit of the public.

Objective 13.1: CCU will provide adequate Capital Improvements to ensure that Charlotte County Utilities operations fulfill public health standards and that adopted Level of Service standards are maintained or exceeded for potable water and sanitary sewer infrastructure.

Policy 13.1.1: Major capital expenditures to finance the construction of centralized potable water and sanitary sewer facilities for Charlotte County Utilities will be indicated in the Capital Improvements Element of this comprehensive plan and will be updated annually, or more often, in the five-year schedule of Capital Improvements.

Policy 13.1.2: Specific projects needed to rectify existing deficiencies for Charlotte County Utilities will be given priority in formulating annual work programs proposed within the five-year schedule of Capital Improvements.

Policy 13.1.3: CCU shall evaluate the rehabilitation and reuse of existing facilities and structures for Charlotte County Utilities as an alternative to new construction.

Policy 13.1.4: CCU may continue to finance the extension of publicly owned centralized potable water and sanitary sewer facilities for Charlotte County Utilities through Municipal Services Benefit Units (MSBUs) or other funding mechanism.

Policy 13.1.5: CCU may actively seek federal and state assistance for the funding of central potable water and sanitary sewer infrastructure for Charlotte County Utilities.

Policy 13.1.6: CCU is implementing a sanitary sewer expansion program as recommended by the Sanitary Sewer Master Plan.

Policy 13.1.7: CCU shall implement an efficient sewer installation program beginning FY 2008, prioritized to replace septic systems that are located within 150 feet of surface water, as well as high population density areas.