

WATER, SEWER, & SOLID WASTE ELEMENT

Introduction

In the 1988-89 *Dade County Comprehensive Development Master Plan*, the Water and Sewer Element was included with solid waste disposal services in a Water, Sewer and Solid Waste Element. In the 1995 *Evaluation and Appraisal Report for the Water, Sewer and Solid Waste Element of the Dade County Comprehensive Plan*, it was recommended that the existing element be split into a Water and Sewer Subelement and a Solid Waste Disposal Subelement. Toward this end, the contents of the element have been reorganized into two separate subelements. Background material and data relevant to this element can be found in the 1988 *Support Components* report addressing the *Water, Sewer and Solid Waste Element* and in the 1995 and 2003 *Evaluation and Appraisal Reports* addressing the *Water, Sewer and Solid Waste Element*.

These documents include background material and analyses which provide the bases for the goals, objectives, and policies. Together, they present an overview of Miami-Dade County's long history of policy development, planning, and programming for these services; an overview of existing facilities and service systems; an analysis of the capacity of the existing facilities; an analysis of future needs; and, a review of programmed facility improvements. Because Miami-Dade County has the authority to operate and regulate water and sewer services on a countywide basis, i.e., in both the incorporated and unincorporated areas of the County, both are treated as a Countywide system in these analyses.

WATER AND SEWER SUBELEMENT

GOAL

PROVIDE FOR POTABLE WATER, AND SANITARY SEWER FACILITIES WHICH MEET THE COUNTY'S NEEDS IN A MANNER THAT PROMOTES THE PUBLIC HEALTH, ENVIRONMENTAL PROTECTION, OPERATIONAL EFFICIENCY, CDMP-PLANNED LAND USE, AND ECONOMIC OPPORTUNITY.

Objective WS-1

In order to serve those areas where growth is encouraged and to discourage urban sprawl, the County shall plan and provide for potable water supply, and sanitary sewage disposal on a countywide basis in concert and in conformance with the future land use element of the comprehensive plan.

Policies

- WS-1A. The area within the Urban Development Boundary of the adopted Land Use Plan Map shall have the first priority in providing potable water supply, and sanitary sewage disposal, and for committing financial resources to these services. Future development in the designated Urban Expansion Area shall have second priority in planning or investments for these services. Investments in public water and sewer service shall be avoided in those areas designated for Agriculture, Open Land, or Environmental Protection on the Land Use Plan map, except where essential to eliminate or prevent a threat to public health, safety, or welfare.
- WS-1B. All new uses within the Urban Development Boundary shall be connected to a public water supply. Exceptions may be provided for residential uses at a density no greater than two units per acre, where primary drinking water quality standards as specified in the Florida Administrative Code can be met without treatment and the groundwater is free from saltwater intrusion.
- WS-1C. Individual potable water supplies, including private wells, shall be considered interim facilities to be utilized only where no alternative public water supply is available and land use and water resources are suitable for an interim water supply. Such interim water supply systems shall be phased out as service becomes available from municipal or County supply.
- WS-1D. The County shall protect the integrity of groundwater within wellfield protection areas by strict adherence to the Wellfield Protection Ordinances, by rigorous enforcement of sanitary sewer requirements, hazardous waste prohibitions, land use restrictions, and all other applicable regulations, and by supporting system improvements which are designed to protect or enhance the raw water supply. Existing and future wellfields of exceptional quality, such as the Northwest

Wellfield, shall be particularly addressed in the regulations to prevent degradation of water quality.

- WS-1E. Miami-Dade County shall use all legal and reasonable means to assure that any land use, which requires a variance from water, sewer, or environmental protection regulation of Miami-Dade County, is in conformance with the Land Use Plan map.
- WS-1F. Miami-Dade County shall use all practical means to assure that land in the vicinity of water and wastewater treatment facilities is developed for a use that is compatible with the operation of said facilities. The County shall discourage changes to the Land Use Plan map or land development regulations, which would permit land uses that are incompatible with the continued operation or planned expansion of these facilities. Residential uses shall be considered incompatible with these public facilities where spillovers, particularly noise and odor, can reasonably be expected.
- WS-1G. Miami-Dade County shall continue to develop the Countywide water supply and sewage disposal systems by consolidating all existing systems, and by increasing the effectiveness and efficiency of existing public facilities to the maximum extent feasible.
- WS-1H. New water supply or wastewater collection lines should not be extended to provide service to land within areas designated Agriculture, Open Land, or Environmental Protection on the Land Use Plan map. New water or wastewater lines to serve land within these areas should be approved or required only where the absence of the facility would result in an imminent threat to public health or safety. The use of on-site facilities should be given priority consideration. In all cases, facilities should be sized only to service the area where the imminent threat would exist, to avoid inducing additional urban development in the area. This policy will not preclude federal, State or local long-range planning or design of facilities to serve areas within the Urban Development Boundary (UDB) or Urban Expansion Area (UEA). Public health and safety determinations will be made in accordance with Chapter 24 of the Code of Miami-Dade County (Environmental Protection) and Section 2-103.20, et seq., (Water Supply for Fire Suppression) Code of Miami-Dade County.

Objective WS-2

The County will maintain procedures to ensure that any facility deficiencies are corrected and that adequate facility capacity will be available to meet future needs.

Policies

- WS-2A. To assure adequate level of service, potable water and sanitary sewer facilities shall meet the following level of service standards:

1) Potable Water Supply:

- (a) The regional treatment system shall operate with a rated maximum daily capacity no less than 2 percent above the maximum daily flow for the preceding year, and an average daily capacity 2 percent above the average daily system demand for the preceding 5 years.
- (b) Water shall be delivered to users at a pressure no less than 20 pounds per square inch (psi) and no greater than 100 psi. Unless otherwise approved by the Miami-Dade Fire Department, minimum fire flows based on the land use served shall be maintained as follows:

<u>Land Use</u>	<u>Min. Fire Flow (gpm)</u>
Single Family Residential Estate	500
Single Family and Duplex; Residential on minimum lots of 7,500 sf	750
Multi-Family Residential; Semiprofessional Offices	1,500
Hospitals; Schools	2,000
Business and Industry	3,000

- (c) Water quality shall meet all federal, state, and County primary standards for potable water.
- (d) Countywide storage capacity for finished water shall equal no less than 15 percent of the Countywide average daily demand.

2) Sanitary Sewer:

- (a) Regional wastewater treatment plants shall operate with a physical capacity of no less than the annual average daily sewage flow.
- (b) Effluent discharged from wastewater treatment plants shall meet all federal, State, and County standards.
- (c) The system shall maintain the capacity to collect and dispose of 102 percent of average daily sewage demand for the preceding 5 years.

WS-2B. Except as provided by Objective WS-1 and the supporting policies, no development order authorizing new development or a significant expansion of an existing use shall be issued for any area of the County which is served by a potable water or

sanitary sewer facility which does not meet the standards in Policy WS-2A or will not meet these standards concurrent with the completion of the development. In any case where the federal, state, or County standards referenced in Policy WS-2A are revised, a reasonable time for compliance with the new standards shall be allowed.

- WS-2C. Miami-Dade County shall maintain procedures and programs to monitor levels of service of each water supply, water treatment and wastewater treatment facility for use by agencies that issue development orders or permits. Such procedures may include the establishment of water and wastewater allocation processes to assure that adequate water supply, and water and wastewater transmission and treatment capacity is available prior to issuance of development orders or permits.
- WS-2D. All wastewater treatment operations will comply with federal and state regulations for overflows.
- WS-2E. Miami-Dade County shall continue and expand its current practice of installing oversize water and sewer mains and associated facilities in anticipation of future needs consistent with Land Use Element policies which affect the timing, staging, and location of future development, and shall require developers dedicating such facilities to the County to conform with this policy. All applications and proposed agreements for water and/or sewer extensions submitted to the Water and Sewer Department that are inside of and within 330 feet of the Urban Development Boundary and that may involve the installation of oversized water or sewer mains shall be subject to additional review by a designated water and sewer review committee. The installation of oversized water and sewer mains will be consistent with engineering requirements to protect the public health and safety of the area residents and Land Use Element policies.
- WS-2F. The Miami-Dade Water and Sewer Department (WASD) shall continue the expansion of existing regional water and wastewater treatment plants to meet demand through the year 2025. The efficiency of existing plants will be increased wherever feasible to avoid building new plants.
- WS-2G. In order to further assure high water and sewer service standards throughout the County, the County should maintain countywide design standards for all improvements and extensions of water distribution and sewer collection systems.

Objective WS-3

The County will provide an adequate level of service for public facilities to meet both existing and projected needs as identified in this plan through implementation of those projects listed in the Capital Improvements Element. All improvements for replacement, expansion, or increase in capacity of facilities shall conform with the adopted policies of this Plan including level of service standards for the facilities.

Policies

WS-3A. Public facility improvements will be evaluated for funding in accordance with the following general criteria:

- 1) Improvements necessary to protect the health, safety, and environmental integrity of the community, consistent with the policies of this Plan and applicable federal, state, and County regulatory requirements.
- 2) Improvements necessary to meet any deficiencies that may exist in capacity or in performance. These include the retrofit of deteriorating facilities which fail or threaten to fail to meet health, safety, or environmental standards.
- 3) Improvements extending service to previously unserved developed areas within the Urban Development Boundary.
- 4) Improvements identified in adopted functional plans and addressing system details that are beyond the scope of the comprehensive plan for wastewater and potable water facilities, and that are consistent with the goals, objectives, and policies of the comprehensive plan.
- 5) Cost-effective improvements to expand capacity, maximize operational efficiency, and increase productivity.
- 6) In providing improvements to the potable water supply system, the following additional criteria shall also be considered:
 - (a) Improvements associated with the protection of existing and future wellfields identified in the Land Use Element.
 - (b) Elimination of fire flow deficiencies, and otherwise improving system pressures.
 - (c) Connection of all County-owned facilities and expansion of capacity at regional facilities to accommodate these connections.
 - (d) Provision of water supply capacity to existing development and redevelopment.
 - (e) Provision of water supply capacity to new development.
 - (f) Development of a new wellfield or other facilities to provide supplemental water supply.
- 7) In providing for improvements to the sanitary sewer collection system, the following additional criteria shall also be considered:
 - (a) Location within a public water supply wellfield protection zone.
 - (b) Potential for the disposal of waste other than domestic waste.
 - (c) Designation on the Land Use Plan map for a use more intense than estate density residential.
 - (d) Potential for impacts on existing private wells.

- (e) Location within areas of low land elevation in conjunction with high water table.
 - (f) Locations with poor soil conditions.
 - (g) Proximity to existing sewer mains.
- WS-3B. Potable water supply and sanitary sewage facility improvements will be undertaken in conformity with the schedule included in the Capital Improvements Element.
- WS-3C. All potable water supply and sanitary sewerage improvement projects will be undertaken in accordance with applicable state, federal, and County environmental regulations.
- WS-3D. Improve the administration of planning and development activity, and coordinate significant private and public planning activities in Miami-Dade County. Miami-Dade County shall maintain procedures and requirements to assure that all development, regardless of size, contributes its proportionate share of the cost of providing water and sewer facilities necessary to accommodate the impact of the proposed development.
- WS-3E. Fully implement wastewater system improvements pledged in agreements made between Miami-Dade County, the Florida Department of Environmental Protection and the United States Environmental Protection Agency, maintain a regular and ongoing program for inspection and repair of existing sewers, and maintain a schedule for the rehabilitation or replacement of substandard collector systems.
- WS-3F. The Miami-Dade County Wastewater Facilities Plan, the primary vehicle for planning for sewer facilities, shall continue to be updated on a regular basis.

Objective WS-4

Miami-Dade County shall protect the health of its residents and preserve its environmental integrity by reducing the proportion of residences and commercial establishments within the County using private wastewater treatment facilities. Miami-Dade County shall discourage the new or continued use of such facilities through the strict application of the CDMP and land development regulations.

Policies

- WS-4A. Interim wastewater treatment plants shall be permitted only where no sewer connection is available upon consideration and approval, on a case-by-case basis, by the Environmental Quality Control Board (EQCB) at a public hearing. In evaluating permit requests the EQCB shall consider alternative methods of sewage disposal, environmental suitability, risks to wellfield and potable water supplies, impacts on proximate land uses, the potential for creating a present or future nuisance, and conformance of requested use with Land Use Element of the

Comprehensive Development Master Plan (CDMP). Within the Urban Development Boundary, interim wastewater treatment facilities should be permitted for commercial uses only where a special taxing district for sewers has been approved.

- WS-4B. Interim wastewater treatment plants within the Urban Development Boundary shall continue to be phased out as sewer service becomes available, with highest priority given to phasing out existing industrial wastewater plants in accord with regulations and procedures established by the Board of County Commissioners. The Department of Environmental Resources Management shall use its administrative, enforcement, and permitting authority to implement these regulations.
- WS-4C. Within the Urban Development Boundary, Miami-Dade County shall strongly discourage the use of septic tanks. Throughout the County, additional septic tanks should not be permitted for the disposal or discharge of industrial or other non-domestic waste nor should they be permitted where seasonally high water table will impair proper functioning. Septic tanks should be avoided in wellfield protection areas or where private wells are in use. Under the regulations and procedures established by the Board of County Commissioners, septic tanks may be permitted outside of the Urban Development Boundary and where connection to a public sewer is not feasible.
- WS-4D. Anywhere that the use of existing private wells, interim wastewater treatment plants, or septic tanks pose a threat to the public health or the environmental integrity of Miami-Dade County, the County shall assert its authority to create a special taxing district to finance connections to the public water supply or to the public sewer system.
- WS-4E. Miami-Dade County shall encourage the use of special taxing districts to eliminate the use of septic tanks and private wells within the Urban Development Boundary.
- WS-4F. Miami-Dade County shall take all necessary steps to ensure compliance with the 1994 Grease Trap Ordinance to prevent the build-up of grease in the sewer collection system that could result in sewer backups and overflow.
- WS-4G. It is the policy of the County to mandate the connection of existing developments to the regional wastewater system upon extension of the wastewater collection system proximate to said developments. However, the County shall not require connections to be made in areas with gravity systems that are surcharged at any time of the day, for more than 30 days per year. Connections will not be required if the system is subject to overflows, discharge or exfiltration of sewage at any time during the year under any storm event of five years or less.

Objective WS-5

Develop and implement a comprehensive water conservation program to ensure that a sufficient, economical supply of fresh water is available to meet current and future demand for potable water without degrading the environment.

Policies

- WS-5A. All potable water distribution systems shall reduce unaccounted for water loss to less than 10 percent of the water entering the system.
- WS-5B. Where feasible, all potable water treatment plants and sewage treatment plants shall adopt methods which reuse water that would otherwise be consumed in the treatment process.
- WS-5C. Miami-Dade County shall seek to reduce potable water consumption by domestic, industrial and institutional consumers through the continued examination and implementation of incentives such as conservation season and marginal cost-based rate structures.
- WS-5D. Promote an educational program for residential, commercial and industrial consumers which will discourage waste and conserve water.
- WS-5E. Enforce requirements, and establish new requirements and procedures, as needed, to assure that low water usage plumbing fixtures are used in all new buildings or in conjunction with permitted renovations in accord with Florida's Water Conservation Act, Section 553.14, F.S. Improved procedures for plumbing inspections and mechanisms for approving products for installation shall be considered.
- WS-5F. Miami-Dade County shall take all necessary steps to ensure compliance with the 1995 Miami-Dade County Landscape Ordinance, and shall establish mechanisms to monitor and measure the effectiveness of the ordinance and its major provisions.

Objective WS-6

Miami-Dade County shall undertake timely efforts to expand traditional sources of raw water and develop new alternative raw water sources and projects to meet the County's water supply needs.

Policies

- WS-6A. Miami-Dade County shall continue to utilize, expand and pursue the development of new potable water wellfields and alternative water supplies to meet the County's existing and future water supply needs. After 2013, Miami-Dade County will meet all water supply demands associated with new growth from alternative water supply sources, which may include: withdrawals from the Floridan Aquifer, implementation

of water conservation methods, and development of reclaimed and wastewater reuse strategies.

- WS-6B. Miami-Dade County shall take the steps necessary to assure that all viable potable water wellfields in the County remain available for use and possible future expansion. Such steps may include, but shall not be limited to, the renewal of withdrawal permits and the extension of the County's wellfield protection measures.
- WS-6C. Miami-Dade County shall continue to implement Aquifer Storage and Recovery (ASR) techniques as a method of increasing supplies to the extent that such techniques have been established to be safe, feasible, and compatible with the protection of natural ecosystems.
- WS-6D. In the development of its future potable water supplies, Miami-Dade County shall, to the maximum extent feasible, utilize methods which preserve the integrity of the Biscayne Aquifer, protect the quality of surface water and related ecosystems, consider and are compatible with the South Florida Water Management District's Lower East Coast Regional Water Supply Plan and the current Water Use Permit, and comply with the land use and environmental protection policies of the Miami-Dade County CDMP, the Strategic Regional Policy Plan for South Florida, and the State Comprehensive Plan.
- WS-6E. Miami-Dade County shall develop and implement reclaimed water use strategies to augment the water supplies of the Biscayne Aquifer. The Miami-Dade Water and Sewer Department shall be responsible for implementing any reuse that is deemed by the County to be economically feasible. Miami-Dade County will continue to participate in pilot projects that are a part of the Comprehensive Everglades Restoration Plan (CERP) and explore the utilization of reuse as a way to augment water flows to Biscayne Bay and also to meet the demands for: (1) the Bird Drive Recharge Area; (2) the South Dade Conveyance System; and (3) the Northeast Shark River Slough. If feasible, the County, in cooperation with state and federal agencies, will utilize the results of these pilot programs to develop future large-scale water reuse projects.
- WS-6F. It is the policy of Miami-Dade County that the distribution of potable water from the proposed reverse osmosis water treatment plant located in proximity to the area encompassing Application No. 5 in the April 2005-2006 CDMP Cycle [area bounded by NW 154 Street on the south, NW 97 Avenue on the east, and the Homestead Extension of the Florida Turnpike (HEFT) on the northwest], using the Floridan Aquifer as its source, shall be dedicated first to satisfying the total potable water demand from development of the site of Application No. 5. In no event shall a Certificate of Occupancy (CO) for development in the area encompassed by Application No. 5 be issued until it is served by the proposed reverse osmosis water treatment plant or by another water supply source authorized under the County's Consumptive Use Permit from the South Water Management District or as otherwise agreed upon with the District and incorporated into the County's CIE Schedules of Improvements.

Objective WS-7

Miami-Dade County shall create a Water Supply Facilities Work Plan that identifies and develops those water supply projects necessary to meet the County's projected water demands for a 20-year period.

Policies

WS-7A The Miami-Dade County Water Supply Facilities Work Plan (Work Plan), as prepared by the Miami-Dade County Department of Water and Sewer and dated March 2008, is incorporated by reference into the CDMP. This document is designed to: assess current and projected potable water demands; evaluate the sources and capacities of available water supplies; and, identify those water supply projects, using all available technologies, necessary to meet the County's water demands for a 20-year period. The Work Plan shall remain consistent with the County's Water Use Permit renewals and with the goals of the South Florida Water Management District's *Lower East Coast Regional Water Supply Plan*. The Work Plan will be updated, at a minimum, every 5-years and within 18 months after the South Florida Water Management District's approval of an updated *Lower East Coast Regional Water Supply Plan*. The potable water supply facilities necessary to satisfy projected water demands during the 2007-2030 period are shown in Table 1, below.

WS-7B The County shall consider the most recent approved version of South Florida Water Management District's *Lower East Coast Regional Water Supply Plan* in developing and updating its 20-Year Work Plan.

**Table 1
Alternative Water Supply and Wastewater Reuse Projects 2007- 2030**

Project No/ CIE Table. ¹	Project Name ²	Project Description	Construction Timeframe	Estimated Cost (\$million)
Alternative Water Supply Projects				
17, Table 12	South Miami Heights WTP and Wellfield (20 mgd)	Reverse osmosis and ultra-filtration membranes provide treatment of 20 mgd of Biscayne aquifer water from 10 wells.	2007-2012	158.7
	Hialeah Floridan Aquifer R.O. WTP	A new upper Floridan aquifer reverse osmosis water treatment plant is to be constructed in the northern part of the County (i.e., Hialeah). The WTP will directly utilize the Floridan Aquifer as the alternative water supply using the RO treatment to remove salt.	2007-2012	93
20D, Table 12	Phase 1 (10 MGD)		2015-2018	25
22, Table 12	Phase 2 (5 MGD)		2025-2028	9.7
23, Table 12	Phase 3 (2.5 MGD)			
20A, Table 12	Floridan Aquifer Blending (and ASR) at Alexander Orr, Jr. Water Treatment Plant (7.4 MGD)	This project uses the brackish Floridan Aquifer water to blend with the fresh Biscayne Aquifer raw water. Also these wells will be used for storage of fresh Biscayne Aquifer water in the Floridan Aquifer during the wet season for extraction and use in the dry season.	2007-2007	6.4
20C, Table 12	Floridan Aquifer Blending at Hialeah-Preston WTP (4.8 7 MGD)	Construction of two Floridan Aquifer blending wells to supply raw water to the Hialeah-Preston WTP complex. This project will blend Floridan Aquifer water with the raw water supply.	2006-2010	10.3
Wastewater Reclamation Projects				
28, Table 8	North District WWTP Reuse Projects (7.0 MGD)	Five MGD of this reclaimed water (e.g. purple pipe) irrigation project will be pumped to the City of North Miami Beach and 2 MGD will be used to replace current potable water irrigation in the service area.	2007-2012	26.8
29, Table 8	Central District WWTP Reuse Project (1.0 MGD)	This reclaimed water (e.g. purple pipe) irrigation project will replace potable water irrigation at Crandon Park and certain areas of Key Biscayne.	2007-2014 2	15.3
30, Table 8	South District WRP Groundwater Recharge Phase 1 (18.6 mgd)	This Groundwater Replenishment project provides advanced treatment to secondary effluent. Technologies include micro-filtration, reverse osmosis and UV light for disinfection. The highly treated reclaimed water would be piped to areas upgradient of the South Miami Heights wellfield and discharged into the groundwater through underground trenches.	2007-2013	357.5
31, Table 8	West District W.R.P. Canal Recharge Phase 2 (21 mgd)	This water reclamation plant project includes the construction of a new wastewater plant incorporating technologies capable of achieving those	2015-2020	298

¹ CIE Table References are per CIE adopted on March 28, 2007 and revised by Ordinance No 07-73 adopted on June 5, 2007.

² Project Names are per Water Use Permit approved November 15, 2007.

**Table 1
Alternative Water Supply and Wastewater Reuse Projects 2007- 2030**

Project No/ CIE Table.¹	Project Name²	Project Description	Construction Timeframe	Estimated Cost (\$million)
32, Table 8	West District W.R.P. Canal Recharge Phase 3 (16 mgd)	treatment levels required for canal recharge or any other alternative discharge that may be approved. This plant will be expanded for Phase 3.	2021-2025	217.5
26, Table 8	Biscayne Bay Coastal Wetlands Rehydration (1 mgd)	The Biscayne Bay Coastal Wetland Rehydration program and Aquifer Recharge Pilot studies are projects that will help the County reach its effluent reuse goals. The wetland rehydration process requires thorough removal of nutrients from the reuse water. Results of the pilot project, which will test different treatment technologies and to gain insights into the biological and ecological response of typical wetlands to highly treated effluent, will help to optimize the treatment system and the preferred areas for rehydration to maximize the benefits to the wetlands and to the Bay. The pilot project will lay the foundation for the full scale rehydration project.	2006-2011	19.2
27, Table 8	Aquifer Recharge Pilot Study (20,000 gpd)		2006-2010	1.02
33, Table 8	Biscayne Bay Coastal Wetlands Rehydration Demonstration Project (75.7 mgd)		2010-2021	621

Monitoring Program

In order to enable the preparation of the periodic Evaluation and Appraisal Report (EAR) as required by Section 163.3191, *Florida Statutes*, Section 9J-5.005(1)(c)(5), and 9J-5.005(7), *Florida Administrative Code*, (F.A.C.) require that local comprehensive plans contain adopted procedures for monitoring and evaluating the Plan and its implementation. In addition, successful implementation of level of service standards, and requirements that services be available at the time of development, are dependent on the establishment or enhancement of monitoring and reporting programs.

This section of the Element outlines the substantive components of Miami-Dade County's monitoring program pertinent to the objectives, policies and parameters referenced elsewhere in this Element.

The administrative requirements for monitoring and preparation of the EAR as provided in Section 9J-5.005(7), F.A.C. are outlined in the Land Use Element and are not repeated here to avoid redundancy. The reader is referred to the Land Use Element for a summary of those procedural requirements.

Water and Sewer Monitoring and Evaluation Program

In practice, the use of quantitative measures of objective implementation is preferred to individual policy evaluation. The following measures are recommended for use in monitoring the objectives proposed in this report for the Water and Sewer Subelement. These measures were selected based on their ability to represent overall achievement of an objective and on their ease and economy in collection, recording, and evaluation. At least one measure is recommended for each objective, and one alternative measure is recommended for several objectives. The alternative measure is recommended for those objectives where none of the primary measurements recommended are available from existing data sources in Countywide circulation at the time of the report. The alternative measurement, if suggested, will always be based on an existing data source.

Objective WS-1. Planning and provision of water and sewer services in concert and conformity with the County's Land Use Element of the CDMP.

Recommended measurement for potable water and sanitary service: geographic area outside of the Urban Development Boundary (UDB) served by water and sewer each year.

Alternative measure for potable water: miles of water mains greater than 6 inches in diameter which exist outside of the UDB. Alternative measure for sanitary sewer: miles of sewer force mains which exist outside of the UDB. Source of alternative measure: Miami-Dade Water and Sewer Department Water and Sewer Atlases. It should be noted that the alternative measurements will overestimate system development outside of the UDB, as they will count water and sewer mains located outside the UDB, but not used for local service. The use of the alternative measurements will have to correct for this bias.

Objective WS-2. Implementation of procedures to ensure adequate facilities and correct system deficiencies, including Level of Service (LOS) standards for Water and Sewer services.

The achievement of the LOS standards is their own monitoring measures. For the entire objective, the following measures are recommended: treatment plant capacity for the system (water and sewer); reserve capacity of raw and treated water (water); amount of areas of inadequate fire flow (water). Treatment plant capacity is monitored and published by WASD regularly, and does not require an alternative. Other alternative measures include percent water unaccounted for, ratio of peak demand to average demand, treatment plant capacity for individual treatment plants.

Objective WS-3. Provision of capital improvements to the water and sewer systems in conformity with applicable plans and the Capital Improvements Element (CIE) of the CDMP.

The measurements recommended are the list of capital projects included in the Capital Improvements Element and completed projects.

Objective WS-4. Reduction in the use of septic tanks and other private wastewater treatment facilities.

Recommended measurements include: proportion of septic tank permits issued that are for new septic tanks as opposed to septic tank abandonments; number of non-residential septic tanks and other private treatment facilities, unsewered and developed areas with wellfield protection areas; number of IW (industrial wastewater) permits; number of conversions by permit from septic tank system to central system per year or any given period.

Objective WS-5. Initiation and maintenance of water conservation programs.

Recommended measurements include: average water use per capita; percent water unaccounted for; peak day to average day water demand ratio; amount of water and wastewater that is reused or reclaimed within Miami-Dade County on an annual basis. This data is published annually by WASD so no alternative measure is recommended.

Objective WS-6. Expansion of traditional and innovative sources of raw water.

Recommended measures include: reserve capacity of raw water and capacity of the aquifer storage and recovery system. No alternative measurements are recommended.

Objective WS-7. Development and maintenance of a Water Supply Facilities Plan.

Recommended measurements include: Consistency between the water supply projects identified in the Water Supply Facilities Work Plan and those listed in Miami-Dade County's Water Use Permit(s), the *Lower East Coast Regional Water Supply Plan*, and the Capital Improvements Element of the CDMP. A second measure would be a comparison of the projected 20-year water demands with the projected water supply projects identified in the Work Plan.

SOLID WASTE SUBELEMENT

GOAL

PROVIDE AN INTEGRATED SOLID WASTE MANAGEMENT SYSTEM IN CONFORMITY WITH FEDERAL, STATE AND COUNTY LAW WHICH PROMOTES THE PUBLIC HEALTH, SANITATION, ENVIRONMENTAL PROTECTION, OPERATIONAL EFFICIENCY, BENEFICIAL LAND USE AND GROWTH PATTERNS AND IS FUNDED THROUGH FAIR AND EQUITABLE MEANS.

Objective SW-1

In order to serve those areas where growth is encouraged and to discourage urban sprawl, the County shall plan and provide for solid waste disposal services on a countywide basis as provided for in this subelement in conformance with the future land use element of the comprehensive plan.

Policies

- SW-1A. The area within the Urban Development Boundary of the adopted Land Use Plan Map shall have the first priority in the provision of county solid waste management, and for committing financial resources to these services. Future development in the designated Urban Expansion Area shall have second priority in planning or investments for these services. Provision of County solid waste facilities outside of these areas shall be avoided, except where essential to eliminate or prevent a threat to public health, safety, or welfare.
- SW-1B. Groundwater protection systems shall be incorporated into the design of new solid waste disposal facilities to ensure the protection of groundwater quality. When locating new solid waste disposal facilities, sites over salt-intruded groundwater shall be preferred to sites over potable groundwater. New facilities may be permitted to locate over groundwater of potable quality where it can be shown that the use of sites over salt-intruded areas is precluded because of existing development, environmental protection requirements, and economic or logistical constraints.
- SW-1C. Miami-Dade County shall use all practical means to assure that land in the vicinity of solid waste disposal facilities is developed for a use that is compatible with the operation of said facilities. The County shall discourage changes to the Land Use Plan Map or land development regulations which would permit land uses that are incompatible with the continued operation or planned expansion of these facilities. Residential uses shall be considered incompatible with these public facilities where spillovers, particularly noise and odor, can reasonably be expected.

Objective SW-2

The County will implement procedures to ensure that any existing solid waste facility deficiencies that may exist are corrected and that adequate solid waste facility capacity will be available to meet future needs.

Policies

- SW-2A. The County Solid Waste Management System, which includes County-owned solid waste disposal facilities and those operated under contract with the County for disposal, shall collectively maintain a solid waste disposal capacity sufficient to accommodate waste flows committed to the System through long-term interlocal agreements or contracts with municipalities and private waste haulers, and anticipated non-committed waste flows, for a minimum of five (5) years.
- SW-2B. Except as provided by Objective SW-1 and the supporting policies, no development order authorizing new development or a significant expansion of an existing use shall be issued for any area of the County which is served by a solid waste facility which does not meet the standard in Policy SW-2A or will not meet these standards concurrent with the completion of the development. In any case where the federal, state, or County standards referenced in Policy SW-2A are revised, a reasonable time for compliance with the new standards shall be allowed.
- SW-2C. Miami-Dade County shall maintain procedures and programs to monitor levels of service of each facility for use by agencies which issue development orders or permits.

Objective SW-3

The County will provide an adequate level of service for solid waste facilities to meet both existing and projected needs as identified in this plan through implementation of those projects listed in the Capital Improvements Element. All improvements for replacement, expansion or increase in capacity of facilities shall conform with the adopted policies of this Plan including level of service standards for the facilities.

Policies

- SW-3A. Solid Waste improvements will be evaluated for funding in accordance with the following general criteria:
- 1) Improvements which are necessary to protect the health, safety and environmental integrity of the community, consistent with the policies of this Plan and applicable federal, state and County regulatory requirements.

- 2) Improvements which are necessary to meet existing deficiencies in capacity or in performance. These include the retrofit of deteriorating facilities which fail or threaten to fail to meet health, safety or environmental standards.
- 3) Improvements which promote the recycling or reuse of materials prior to disposal.
- 4) Improvements which extend service to previously unserved developed areas within the Urban Development Boundary.
- 5) Improvements which have been identified in adopted functional plans and address system details which are beyond the scope of the comprehensive plan for solid waste and are consistent with the goals, objectives and policies of the comprehensive plan.
- 6) Cost-effective improvements to expand capacity, maximize operational efficiency, and increase productivity.

SW-3B. All capital improvements to the County's solid waste management system will be undertaken in conformity with the schedule included in the Capital Improvements Element.

SW-3C. All capital improvements to the County's solid waste management system will be undertaken in accordance with applicable state, federal, and County environmental regulations.

SW-3D. Miami-Dade shall maintain procedures and requirements as needed to assure that all development, regardless of size, contributes its proportionate share of the cost of providing solid waste facilities necessary to accommodate the impact of the proposed development.

Objective SW-4

Miami-Dade County shall provide for the management of solid waste in a manner which places a high priority on the maintenance of environmental quality and community quality of life.

Policies

SW-4A. All Miami-Dade County solid waste disposal facilities shall be developed and operated to:

- 1) Meet all applicable federal, state, and County environmental health and safety rules and regulations;

- 2) Minimize adverse human and natural environmental impacts;
- 3) Optimize capital and operating efficiencies;
- 4) Minimize environmental and economic risk.

SW-4B. Unless economically prohibitive, Miami-Dade County shall reduce the amount of waste requiring disposal through reliance on recycling programs or other alternative solid waste management strategies. The County Waste Management system shall reduce the amount of municipal solid waste that would be disposed of within the County and maintain a recycling rate consistent with the requirements of the Florida State Solid Waste Management Act.

SW-4C. Miami-Dade County shall promote the establishment and expansion of markets for products and materials created from recycled wastes through cooperative state and federal efforts, County purchasing policies, and by encouraging the purchase of such products by County vendors, clients and citizens.

SW-4D. Miami-Dade County shall provide for the reduction of per capita production of solid waste by encouraging the use of waste reduction technologies and recyclable packaging materials, to the extent possible.

SW-4E. Miami-Dade County shall minimize the amount of yard trash disposed of in landfills through the development of alternative means that include encouraging, among other innovative programs, diversion or composting of biodegradable materials other than yard waste.

SW-4F. To facilitate recycling and the proper disposal of solid waste by the general public, the County's Neighborhood Trash and Recycling Centers for receiving trash and recyclables should be conveniently located throughout the unincorporated area. Such facilities should be located within a five-mile distance of residential areas within the UDB and, where feasible, concentrations of exurban populations. Such sites are preferably located in industrial areas convenient to residential users but may be located in any Land Use Plan map category, except Environmental Protection areas, consistent with the Land Use Element. When located in the immediate proximity of residential neighborhoods, sites for such facilities should include sufficient additional area to buffer the residential area from impacts.

Objective SW-5

Miami-Dade County shall provide for the safe and efficient disposal of wastes through the development and maintenance of an integrated solid waste disposal system utilizing proven technologies, appropriate regulation, and equitable and responsible financing practices.

Policies

- SW-5A. Miami-Dade County shall seek to achieve a balanced program of solid waste disposal which will include recycling, resources recovery, and landfilling.
- SW-5B. Miami-Dade County shall provide for solid waste disposal facilities within the County through the continued development and management of a single consolidated system and shall discourage the establishment of disposal facilities not integrated into this system.
- SW-5C. To assure that the capacity of the solid waste disposal system is used in a manner that will maximize the benefits for all of Miami-Dade County, the Department of Solid Waste Management shall not permit such capacity to be diminished by accepting waste generated outside the disposal system unless authorized by formal agreement when acceptance of such waste is in the best interests of the citizens of Miami-Dade County.
- SW-5D. Miami-Dade County shall provide for equitable and responsible financing of disposal system costs, to be met through a combination of direct user fees, environmental protection fees, and capacity-related fees, in accord with benefits received, without County general fund subsidy. The exception would be when the solid waste services provide a corresponding benefit to the general community, rather than exclusively or principally to the solid waste system users paying the fees, in which case the general community should fund the cost. In addition, revenues may be bonded as needed to maximize financial benefits to the entire community.

Objective SW-6

Substantially reduce or minimize the amount of household hazardous wastes and used motor oil that are disposed of in an unsafe or improper manner.

Policies

- SW-6A. Develop and implement a household hazardous waste management program to achieve compliance with the provisions of Section 403.7265, F.S.
- SW-6B. Miami-Dade County shall promote the installation of sufficient facilities into the County's Neighborhood Trash and Recycling Centers to accommodate the safe deposit of used motor oil by households in moderate quantities.
- SW-6C. Miami-Dade County shall seek funding and cooperation from the Florida Department of Environmental Protection to conduct semi-annual amnesty days to provide a means for disposal of small quantities of household hazardous wastes.

- SW-6D. Miami-Dade County shall seek to develop funding to establish a comprehensive public education program to highlight the problems of household hazardous waste and improper solid waste disposal.
- SW-6E. Miami-Dade County shall encourage public and private organizations which currently collect and recycle used motor oil to accept moderate quantities of used motor oil from households for recycling.

Monitoring Program

In order to enable the preparation of the periodic Evaluation and Appraisal Report (EAR) as required by Section 163.3191, *Florida Statutes*, Sections 9J-5.005(1)(c)(5), and 9J-5.005(7), *Florida Administrative Code*, (F.A.C.) require that local comprehensive plans contain adopted procedures for monitoring and evaluating the Plan and its implementation. In addition, successful implementation of level of service standards, and requirements that services be available at the time of development, are dependent on the establishment or enhancement of monitoring and reporting programs.

This section of the Element outlines the substantive components of Miami-Dade County's monitoring program pertinent to the objectives, policies and parameters referenced elsewhere in this Element.

The administrative requirements for monitoring and preparation of the EAR as provided in Section 9J-5.005(7), F.A.C. are outlined in the Land Use Element and are not repeated here to avoid redundancy. The reader is referred to the Land Use Element for a summary of those procedural requirements.

Solid Waste Monitoring and Evaluation Program

Monitoring. The collection and update of appropriate baseline data to evaluate performance against the level of service standard and to measure the achievement of objectives is an existing process administered by the Solid Waste Disposal Program in its day-to-day operations.

Data regarding the volumes of waste processed at the various facilities and facility types is collected as an integral part of the accounting and billing function. All waste delivered to Solid Waste Disposal is charged a fee based on tonnage through the use of fully automated electronic scales at all sites. In addition, all intra-system transfer deliveries are also recorded. This data is available on a continuous monthly basis. Where demonstration projects have been undertaken, decisions to continue, expand, or curtail such projects should be made only after a thorough assessment of each project has been made. Existing solid waste demonstration projects should be evaluated over a minimum of two years, before the project is discontinued or alternative projects are considered.

In practice, the use of quantitative measures of objective implementation is preferred to individual policy evaluation. The following measures are recommended for use in monitoring the objectives proposed in this report for the Solid Waste Subelement. These measures were selected based on their ability to represent overall achievement of an objective and on their ease and economy in collection, recording, and evaluation. At least one measure is recommended for each objective, and one alternative measure is recommended for several objectives. The alternative measure is recommended for those objectives where none of the primary measurements recommended are available from existing data sources in Countywide circulation at the time of the report. The alternative measurement, if suggested, will always be based on an existing data source.

Objective SW-1. Planning and provision of solid waste services in concert and conformity with the County's Land Use Element of the CDMP.

Recommended measurements include: identification of solid waste disposal sites or fixed capital assets such as Landfills or Trash & Recycling Centers located outside the Urban Development Boundary (UDB); and, number and/or percentage of special collection events such as Household Hazardous Waste collections conducted outside of the UDB.

Alternative measure for solid waste: area outside of the UDB served by Miami-Dade County collection services. Source of alternative measure: Miami-Dade Department of Solid Waste Management atlas of solid waste collection routes.

Objective SW-2. Implementation of procedures to ensure adequate facilities and correct system deficiencies, including Level of Service (LOS) standards for solid waste management services.

The achievement of the LOS standards is their own monitoring measures. For the entire objective, the following measures are recommended: annual amount of waste disposed of through the County disposal system in comparison with the capacity analysis of County disposal facilities prepared by the DSWM; per capita waste generation estimates; annual amount of waste disposed of or processed at each County disposal facility; annual amount of waste disposed of or processed at each County transfer facility; and, amount of waste disposed of or processed at private disposal facilities or exported out of the County. Because this information is monitored in the course of routine operations by the Department of Solid Waste Management, no alternative measures are proposed.

Objective SW-3. Provision of capital improvements to the solid waste management system in conformity with applicable plans and the Capital Improvements Element (CIE) of the CDMP.

The measurements recommended are the identification and value of solid waste management capital projects, including source of funding, listed in the Miami-Dade County Capital Budget and in the CIE.

Objective SW-4. Use of the solid waste management system to promote environmental quality and community quality of life.

The measurements recommended are: quantity of each major class of waste product recycled within the County, quantity of compost and/or mulching products generated by the waste system, or explanation of reasons why such products were not generated, such as danger of the spread of citrus canker; quantity of products purchased by the County containing recycled material; CO₂ reduction as measured by the Department of Environmental Resources Management; and, energy created through the incineration of refuse derived fuel.

Alternative measurements include: quantity or proportion of the County waste stream diverted from landfilling through recycling, composting, resources recovery, and alternative packaging.

Objective SW-5. Initiation and maintenance of an integrated solid waste system.

The measurements recommended include: the relative amounts of waste managed through recycling, incineration, and landfilling, by both the public and private sectors, used as a measure of the level of “integration” of the solid waste management system; relative amounts of funding, provided by direct user fees, environmental fees, and capacity-related fees, as a measure of financing equity; solid waste management operating budget schedule of revenues and expenses for disposal system (available in DSWM annual financial report); and, proportion of operating and capital development costs of current and planned solid waste disposal facilities generated through user fees and sources other than County general fund revenues or fees or charges to County residents or firms for services other than solid waste collection and disposal. Because this information is available each year in the County's Annual Capital Budget and Annual Operating Budget, no alternative measurements are proposed.

Objective SW-6. Promote safe disposal of household hazardous wastes.

The measurements recommended include: number of customers using household hazardous waste drop-off (including used motor oil) at the Permanent Collection Center, other satellite sites including Neighborhood Trash and Recycling Centers, and special collection events, and the amount of each major category of household hazardous waste disposed of.

As a surrogate measure, the quantity of used motor oil recycled in the county can be used as a proxy for all hazardous waste disposed in a proper manner.

Evaluation. Available data regarding volumes processed at the various facilities and facilities types will be used to assess performance. For instance, in order to measure achievement of an objective concerning increasing the volumes and/or percentages of waste being handled by Resources Recovery and recycling methods, waste volumes received at the Resources Recovery Plant and by private recycling operators can be compared with volumes received at the landfills.

Results of these calculations and measures regarding performance against objectives or the standard will be analyzed and changing circumstances and technologies or other problems will be considered. Any deviation from the stated objectives will be addressed.