City of Hialeah Comprehensive Plan 2015-2025

Sanitary Sewer Element

DATA, INVENTORY, AND ANALYSIS

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A. INTRODUCTION

The Miami-Dade Water and Sewer Department (WASD) is the designated regional supplier of sanitary sewer service for Miami-Dade County. In that capacity, WASD accepts all wastewater generated by the City of Hialeah. The City of Hialeah owns, operates and maintains a central sanitary sewer collection and transmission system. The City's collection and transmission system provides service to both residential and non-residential users.

In partnership with WASD, the City of Hialeah has historically been able to provide adequate sanitary sewer service to meet the demands within the City's boundaries. The City of Hialeah is currently in a 30-year contract with WASD for the provision of wastewater treatment. This contract is set to expire on September 6, 2007. A schedule for the renewal of this contract has not been set by either party.

1. Terms and Concepts

Pursuant to Chapter 9J-5.003, Florida Administrative Code (F.A.C), the following definitions are used for assigning classifications for sewer collection systems:

- Effluent – the treated sewage that flows out of a treatment plant.
- Sanitary Sewer Facilities - means structures or systems designed for the collection, transmission, treatment, or disposal of sewage and includes trunk mains, interceptors, treatment plants and disposal systems.
- Sanitary Sewer Interceptor - means a sewage conduit that connects directly to, and transmits sewage to, a treatment plant.
- Sanitary Sewer Trunk Main - means a sewage conduit that connects directly to, and transmits sewage to, an interceptor.
- Sludge – the solid residue resulting from the sewage treatment process.

B. SANITARY SEWER DATA AND INVENTORY

The City of Hialeah does not own, operate or maintain any sanitary sewer wastewater treatment plant facilities. The City relies on the terms of a long-term contract with Miami-Dade County for the provision of wastewater treatment for its residents. The City's does own, operate and maintain a central sanitary sewer collection and transmission system. The collection system, which collects wastewater generated by Hialeah's residents, is comprised of gravity collection mains of various diameters and pipe materials, lift stations and transmission forcemains. Once collected, the City's network of sanitary sewer lift stations and forcemains pumps the collected wastewater to the Miami-Dade wastewater treatment facilities. The following information details the sanitary sewer facilities servicing the residents of Hialeah.

1. Miami-Dade WASD Wastewater Treatment Facilities

a. Operational Responsibility

The Miami-Dade Water and Sewer Department (WASD) is responsible for the operation and maintenance of the County's regional sanitary sewer wastewater treatment facilities. WASD's main office is located at 3071 S.W. 38th Avenue in Miami, Florida. The Director of the Water and Sewer Department is responsible for the overall operation and provision of services of this department.

b. Service Area and Predominant Users

The current geographic service area for the Miami-Dade WASD sanitary sewer treatment facilities includes all of Miami-Dade County. WASD currently provides sanitary sewer service to approximately 391,000 retail customers within the County and large-scale wholesale sanitary sewer service to 18 municipalities. The predominant user of the sewer treatment facilities is predominantly residential, but includes commercial and industrial customers as well.

c. Sanitary Sewer Facility Design and Capacity

The City of Hialeah is one of the 18 municipalities, which relies on Miami-Dade WASD for wastewater treatment and disposal services. WASD owns, operates and maintains 3 regional wastewater treatment plants servicing all of Miami-Dade County. These facilities, the North, Central and Southern District Plants, treat all the raw sewage generated in their respective districts. The 3 plants utilize the same basic treatment process, providing primary and pure oxygen activated sludge treatment. Map IV- 1: Miami-Dade Wastewater Treatment Plants and Service Areas identifies the location of the three regional wastewater treatment plants and their corresponding service area.

(1) North District Wastewater Treatment Plant

The North District Wastewater Treatment Plant (WWTP), constructed in 1979, is located at 2575 N.E. 151 Street in North Miami. The plant is located on the same site containing the Oleta River State Recreation Area and the North Miami Campus of Florida International University. This plant services the cities of Hialeah, Opa-locka, North Miami, North Miami Beach, North Bay Village and other unincorporated areas of the County. This Class 1 reliability facility had a basic design capacity of 80 million gallons per day (MGD). In December of 1992 and again in 2000, this facility received a 20 MGD upgrade/expansion of its treatment capacity. Currently, the facility has a design capacity of 120 MGD. The permitted capacity of this facility is 112.5 MGD according to FDEP permit number FL0032182-001, which was issued on June 25, 1997. The facility uses a pure oxygen activated sludge treatment process. The facility is designed to provide an average level of service of 100 gallons per capita per day. Treated effluent disposal is provided via a 90-inch diameter discharge force main into the Atlantic Ocean. The sludge generated

at this plant is pumped via a sludge force main to the Central District WWTP on Virginia Key for treatment, dewatering and disposal. The current average annual daily flow to the facility is 96.89 MGD. Therefore, the facility is operating at approximately 80.7% of its design capacity. The average daily flows for the past year are indicated in Table IV-2.

(2) Central District Wastewater Treatment Plant

The Central District Wastewater Treatment Plant, constructed in 1956, is located on Virginia Key in Miami, Florida. The service area for this plant is depicted on Map IV-1. This Class 1 reliability facility has a design capacity of 143.0 MGD. The permitted capacity of this facility is 143.0 MGD according to FDEP permit number FL0024805, which was issued on April 16, 1999. The facility uses a pure oxygen activated sludge treatment process. The facility uses a pure oxygen activated sludge treatment process. The facility is designed to provide an average level of service of 100 gallons per capita per day. Treated effluent disposal is provided via a 120-inch diameter discharge force main into the Atlantic Ocean. The sludge generated at this plant is hauled to landfills or land application sites. The current average annual daily flow to the facility is 103.04 MGD. Therefore, the facility is operating at approximately 72.0% of its design capacity. The average daily flows for the past year are indicated in Table IV-2.

(3) Southern District Wastewater Treatment Plant

The Southern District Wastewater Treatment Plant, constructed in 1983, is located at 8950 SW 232nd Street. The service area for this plant is depicted on Map IV-1. This Class 1 reliability facility had a design capacity of 112.5 MGD. The permitted capacity of this facility is 97.0 MGD according to FDEP permit number FLA042137-002, which was issued on March 9, 1999. The facility uses a pure oxygen activated sludge treatment process. The facility uses a pure oxygen activated sludge treatment process. The facility is designed to provide an average level of service of 100 gallons per capita per day. Effluent disposal is provided via deep well injection. The sludge generated at this plant is hauled to landfills or land application sites. The current average annual daily flow to the facility is 93.46 MGD. Therefore, the facility is operating at approximately 83.0% of its design capacity. The average daily flows for the past year are indicated in Table IV-2.

(4) Reclaimed Water System

The reuse irrigation method of reclaimed wastewater disposal is presently encouraged by the FDEP. The broad category of reuse of reclaimed wastewater may include such uses as agricultural irrigation, landscape irrigation, make up water for electrical power generation facilities, industrial cooling water make up and other industrial uses.

In association with the County's Consent Decrees and Settlement Agreements (CD/SA) program with the Environmental Protection Agency (EPA), the County has embraced the reclaimed water concept to provide for effluent disposal capacity. The benefits of a reuse program include:

1) Cost efficiencies for wastewater customers.

2) More efficient use of land area for development activity rather than dedicated public land application methods.

3) Promotion of reuse water for irrigation purposes rather than use of potable water for irrigation.

4) Support of State and Regional goals and policies directed toward water conservation, surface water quality protection, and efficient use of land resources.

In recent years, the majority of improvements completed at the County's WWTP's were associated with effluent reuse upgrades. The recently completed reuse systems are expected to provide approximately 16.0 MGD of reclaimed water. The reclaimed water generated at the North District WWTP is now being used for landscape irrigation (5.651 MGD) with an additional 0.44 MGD being provided to other users. The reclaimed water generated at the Central District, 7.84 MGD, and the South District, 0.443 MGD, WWTP's is currently consumed by in-plant uses, mostly for landscape irrigation.

2. City of Hialeah Wastewater Facilities

a. Operational Responsibility

The City of Hialeah Department of Water and Sewers is responsible for the operation and maintenance of the City's central sanitary sewer collection and transmission system. The City does not own or operate any wastewater treatment plant facilities. The Director of the Department of Water and Sewers is responsible for the operation and provision of services of this department.

b. Service Area and Predominant Users

The current geographic service area of the City's central sanitary sewer collection and transmission system is limited to the municipal boundaries of the City of Hialeah and small area just outside of the City limits. Map IV- 2: City of Hialeah Sewer Collection and Transmission Service Area indicates the service area of the City's sewer collection and transmission system.

As of April 2003, the City is providing sanitary sewer service to approximately 43,413 residential connections and 7,910 non-residential connections, for a total of 51,323 connections. Of the total customers, 51,177 are within the City of Hialeah and the remaining 146 customers, mostly non-residential, are outside the City limits. The predominant land use serviced by the central system is low and medium density

residential. The City is currently in negotiations with Miami-Dade to turn over the service of this area. It is anticipated that this process will be complete in approximately 6 months.

c. Sanitary Sewer Facility Design and Capacity

The City's sanitary sewer facilities are limited to those facilities associated with the collection and transmission of sanitary sewage as generated in the service area of the City of Hialeah. The City's gravity system collects untreated sewage and flows by gravity to the City's various sanitary sewer lift stations which typically pump the untreated sewage to the County's North District Wastewater Treatment Plant. The following information details the various elements of the City's sanitary sewer facilities.

(1) Public Wastewater Collection and Transmission System

The existing wastewater collection system provides service to approximately 98.98% of the City's 72,395 households. The remainder of City's residents (551 customers) utilize septic systems for wastewater treatment as central sewer is not available. The City's collection system consists of 140 miles of sewer laterals, 316 miles of gravity sewer mains, 6,338 sewer manholes, 24.5 miles of sewer force mains, and 84 sewer lift stations. The predominant materials comprising the collection system consists of verified clay pipe and P.V.C. pipe. The average age of the system exceeds 40-years. The predominant force main material is C-900 PVC and ductile iron piping and is approximately 30 to 40 years old. The remaining useful life of the collection and transmission system is approximately 20-years.

(2) Reclaimed Water Facilities

Currently, the City of Hialeah does not own, operate of maintain any reclaimed water facilities. In conjunction with Miami-Dade WASD, the City of Hialeah, to the extent possible, will explore the possibilities of providing a reclaimed water distribution system. This system would connect to a Miami-Dade WASD's reclaimed water distribution system when available.

3. Private Sanitary Sewer Facilities Design

a. Private Sanitary Sewer and Package Treatment Plant Facilities

There are no private sanitary sewer providers or package sewer treatment plants within or around the City of Hialeah, which currently provide sanitary sewer service to the residents of Hialeah.

b. Septic Tank Suitability

Septic tank systems provide on-site wastewater treatment for both residential and small-scale commercial development. Effluent from septic tank systems is discharged to a drainfield, where it is allowed to percolate into the soil. As such, soil

permeability and the localize depth to the water table are the limiting factors on septic tank performance.

The general soil types present within the City of Hialeah, as identified in the Soil Survey of Miami-Dade County by the U.S. Department of Agriculture (USDA) Soil Conservation Service, can be found in Map IX-3 of the Conservation Element. Accordingly, the predominant soil association in the area west of the Palmetto Expressway (State Road 826), is number 17. This soil association presents very severe limitations for septic tank absorption fields. The soil associations present in the area east of the Palmetto Expressway are numbers 14 (the predominant soil association), 15, 6 and 12. According to the Miami-Dade County Soil Survey, all these associations present severe limitations for septic tank absorption fields. This information is presented for general information purposes only, because there are currently no septic tanks in the area east of the Palmetto Expressway. Since there are no longer any septic tanks in the city, contamination is not considered to be a likely problem. Furthermore, the City does not allow new septic tank systems to be constructed. New development is required to connect to the central wastewater system.

C. SANITARY SEWER FACILITY ANALYSIS AND RECOMMENDATIONS

The City of Hialeah will continue to rely on Miami-Dade WASD for the provision of sanitary sewer treatment service. Based upon the demand projections by Miami-Dade County, the County's wastewater treatment facilities shall have adequate capacity to meet the sewer treatment demands of the City of Hialeah throughout the 2015 planning period. A brief synopsis of the future operating capacities of the WASD wastewater treatment facilities utilized by the City of Hialeah, as well as an analysis of the City's collection and transmission system, is provided in the text below.

1. Miami Dade WASD Wastewater Treatment Facilities

a. Performance and Condition of Existing Facilities

As previously stated, the North District, Central District and South District wastewater treatment plants were constructed in 1979, 1956 and 1983 respectively. Each of these facilities has undergone regular maintenance and upgrading over the course of time and is currently considered to be in generally good operating condition.

b. Existing Demand Surpluses and Deficiencies

Each of Miami-Dade's wastewater treatment plants is operating approximately between 70% to 80% of their design capacities.

c. Future Demand, Sewer Faciltiy Expansion and New Siting

Future sewage generation projections for each of Miami-Dade three main WWTP's are indicated on Table IV-3. These projections indicate that the design capacity for the North District and Central District WWTP's is adequate to meet the demands of Miami-Dade County, inclusive of the City of Hialeah, through the 2015-planning

period. Sewage projections for the South District WWTP indicate that the plant will reach maximum capacity at year 2013 and as such will require additional capacity expansions to accommodate projected future flows beyond this time frame.

The North District and the Central District WWTP's have adequate design capacity, and as such, facility upgrades are not currently scheduled for either of these facilities. The South District WWTP is expected to reach maximum capacity past year 2013 based upon demand projections by Miami-Dade WASD. To meet the projected demands, Miami-Dade WASD has planned a future facilities upgrade to the plant. The planned expansion to the plant is scheduled for 2013 and will increase the maximum design capacity of the plant by 18.75 MGD. This will result in a total design capacity for the South District WWTP of 131.25 MGD.

Presently, Miami-Dade WASD has no plans for new WWTP's. Based upon Miami-Dade's Comprehensive Development Master Plan, the County will discourage the provision of public sewer services within areas designated for agricultural, open space or environmental protection. Within the County's Urban Service Boundary, existing interim WWTP's shall continue to be phased out as central sewer service becomes available. Likewise, new interim WWTP's will only be permitted where no sewer connection is available.

2. City of Hialeah Sanitary Sewer Facilities

a. Performance and Condition of Existing Facilities

During 1999, the City's collection system experienced three overflows of raw sewage during periods of heavy rainfall. The overflows resulted in the discharge of raw sewage into Waters of the State via storm drains that discharged into the Little River Canal and eventually the Biscayne Bay. These overflows identified the existence of various deficiencies within the City's sanitary sewer system. As such, the City of Hialeah recently completed a Sanitary Sewers Evaluation Survey (SSES) as required by County Ordinance 96-166 and a Consent Order with the Florida Department of Environmental Protection associated with the overflows. The intent of the survey was to establish the general condition of the sewer system including the severity and intensity of inflow/ infiltration to the system. Additionally, the City completed the following studies to evaluate the sewer system:

- Smoke Testing: Smoke tested 316 miles of gravity sewer throughout the City to determine the area within the City's system most affected by Inflow/ Infiltration;
- Manhole Inspections: Physical inspection of the 6,388 manholes within the City's central system was completed in October of 2002. The inspections determined the physical integrity of the structures and the amount if inflow into the system via the manholes, as well as identifying feasible alternatives to correct the systems deficiencies; and

- Flow Studies: The City is divided into 84 basins associated with each of the City's 84 lift stations. For each basin, nighttime flows, and dry and wet weather flows were measured.

The existing sanitary sewer collection and transmission system servicing the City of Hialeah has an average age of over 40-years. In addition, due to the age of the system, major portions of the existing system are constructed of pipe materials no longer accepted as a standard for a public sewer collection and transmission system. As such, portions of the system are rated in excellent conditions while other portions, typically the older portions, are rated in poor condition. The age and condition of the existing system is assumed to contribute a large percentage of the inflow/infiltration (I/I) currently discharging into the gravity system. Based upon the results of the SSES, the following repairs were determined to be needed:

- Pump Stations: City Pump Station 106 requires complete rehabilitation to the pumps, control panels, and installation of a stand-by generator. Total costs for the planned rehabilitation is approximately $2,000,000. In addition, the City's Department of Water and Sewers has estimated that an additional$3,910,000 is required for upgrades and rehabilitations to the City's remaining eighty-three lift stations.
- Gravity Sewer Mains: Based upon the study, it was estimated that approximately 30% of the City's gravity sewer mains were in need of repair or replacement. The City determined that the most cost effective method of repair/replacement would be the trenchless lining system. The anticipated cost for the repairs is estimated to be $16,283,000.
- Gravity Sewer Laterals: There are approximately 50,000 sewer service laterals within the City's collection system. It is estimated that approximately 15% of the City's laterals are in need of repair/replacement. The City has approximated the cost of repairing these laterals at $28,500,000.

b. Existing Demand Surpluses and Deficiencies

Currently, the City's central system has a remaining useful design life of approximately 10-years, and is generally expected to provide adequate capacity beyond the current 2015 planning period. Due to the complete build-out of the City, the existing configuration of the central system represents the final system design. The existing system is deemed to be adequate to meet the existing demands on the system. Future development within the City's service area will be required to connect to this system.

c. Future Demand Capacity

The City is divided into 7 planning areas for the purposes of assessing future planning needs. These planning areas are detailed on Map I-12 of the Future Land Use Element. To assist the Hialeah Department of Water and Sewers in future planning and analysis of the existing sewer system, the City has developed a

standardized method for calculating sewer demand. Resident and seasonal population projections are provided by the University of Florida Bureau of Economic and Business Research and the Miami-Dade County Planning Department respectively. Assignment of these population figures to the seven planning areas within Hialeah is provided by the Hialeah Planning and Development Department. Average sewer demand is then estimated by applying the level of service standards of 150 gallons per day per capita (gpdpc) to the total population. The total population is derived as the sum of the resident population and 80% of the transient population. These average flows are then converted to peak flows using a peaking factor of 2.5 as recommended by Miami-Dade County.

Due to the built-out nature of the City, future demand on the City's collection and transmission system is not expected to significantly increase the demands on the current facilities. As such, additional expansions/improvements to the system to service future growth are not anticipated.

(1) Newly Annexed Areas

The City of Hialeah is currently pursuing the annexation of approximately 3.0 square-miles (1,920-acres) of undeveloped property located to the northwest of the existing City boundary. The property is defined by NW 170th Street to the north, I-75 to the east, NW 138th Street to the south and NW 107th Street to the west. The land is currently used to quarry limestone and for the dumping and disposal of construction and demolition debris. The land includes one large lake and several smaller water bodies. The City's analysis of the area estimates that approximately 15,000 potential residents could be accommodated within the annexation property. This level of development would generate an estimated 1.6 MGD of raw sewage. Currently, there are no sanitary sewer facilities within the area. It is estimated that the cost to construct the gravity collection system over a period of time to service this area would be approximately $13.46 million. The proposed collection system would tie into the City's collection system via an 18-inch gravity main located at NW 97th Avenue and NW 130th Street. Sewage collected in this portion of the City is transmitted by Miami-Dade owned and operated Pump Station 418 which connects to the North District Wastewater Treatment Facility. This station has a capacity of 50 MGD. Current flows at this station are approximately 17 MGD. Therefore, this station has adequate capacity to service the annexation area. Both private developers and the City of Hialeah, will share in the capital costs associated with the construction of the sanitary sewer collection system.

d. Sanitary Sewer Facility Replacement, Expansion and New Siting

The City will continue to rely on Miami-Dade WASD for the provision of sewage treatment and disposal services. As such, facility replacement, expansion, and/or improvements by the City's Water and Sewers Department are solely related to its collection and transmission systems. As the City is completely built-out, new sanitary

sewer facilities to service new development is not a factor. To meet future demand and level of service requirements, a list of sewer related capital improvements is presented in Table IV-4.

Table IV- 1: Miami-Dade WASD Wastewater Treatment Plants Capacities

Waste Water Treatment Plant	Location	Current Demand	Maximum Design Capacity
North District	2575 NE 151 Street, North Miami	96.89 MGD	120 MGD
Central District	Virginia Key, Miami	103.04 MGD	143 MGD
Southern District	8950 SW 232 Street, Miami	93.46 MGD	112.5 MGD

Source: Miami-Dade Water and Sewer Department, 2003

Table IV- 2: Miami-Dade WASD Wastewater Treatment Plant Annual Demands

Year	North WWTP (Million Gallons)	Central WWTP (Million Gallons)	Southern WWTP (Million Gallons)
1992	31,668	47,877	32,527
1993	31,856	49,634	34,311
1994	32,549	48,106	33,808
1995	35,693	51,038	32,598
1996	35,679	47,403	33,346
1997	37,594	45,741	34,536
1998	35,042	46,766	29,817
1999	36,468	44,017	33,041
2000	34,988	44,858	32,398
2001	36,463	44,061	33,479

Source: Miami-Dade Water and Sewer Department – 2001 Annual Financial Report

Table IV- 3: Miami-Dade WASD Wastewater Treatment Plant Demand Projections

WWTP	2005	2010	2015
North District	104.0 MGD	124.0 MGD	98.0 MGD
Central District	108.0 MGD	129.0 MGD	102.0 MGD
Southern District	112.0 MGD	130.0 MGD	119.0 MGD

Source: Miami-Dade Water and Sewer Department, 2003

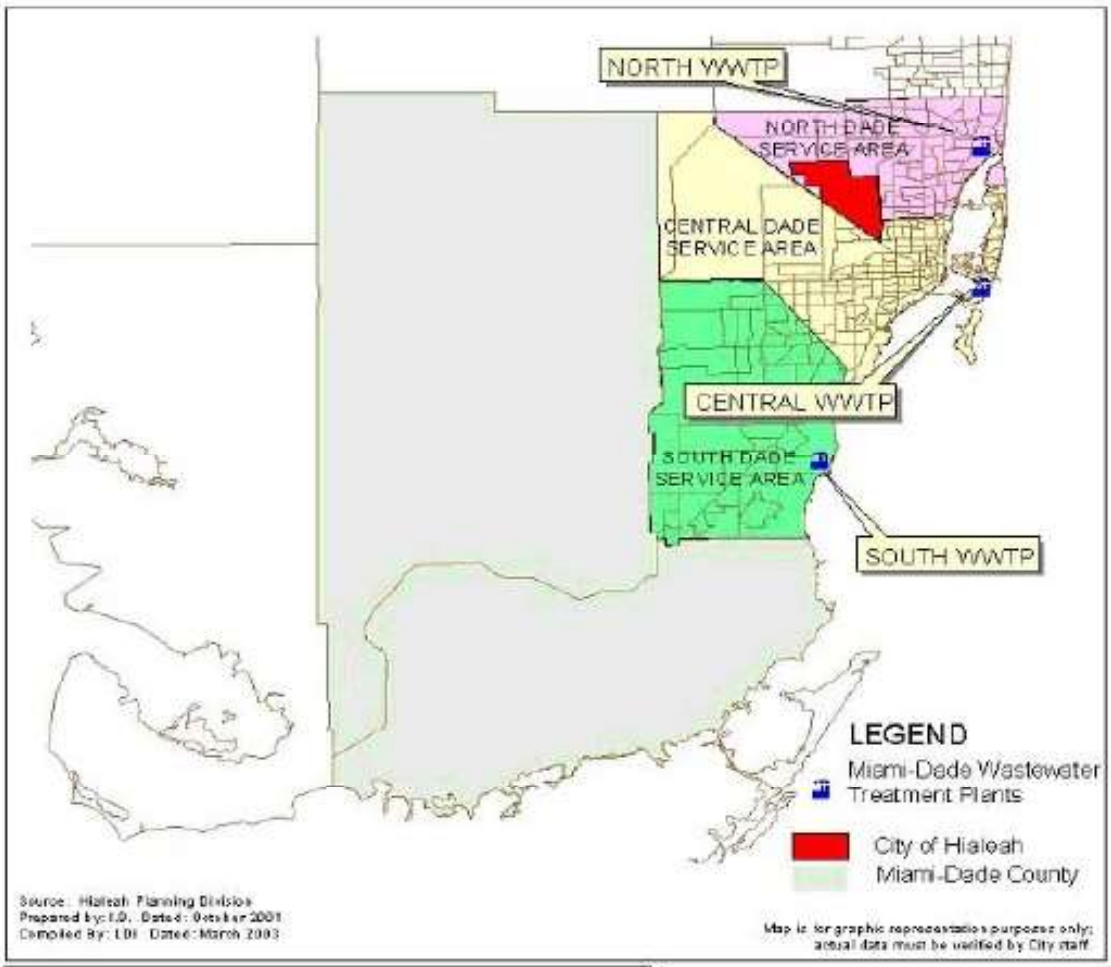
Table IV- 4: City of Hialeah Planned Sanitary Sewer Capital Improvement Projects

Project Description	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Environmental Project	$360,000	-	-	-	-
P.S. 106 - Rehabilitation	$1,500,000	-	-	-	-
P.S. 6 – Rehabilitation	-	$1,500,000	-	-	-
Regional Pump Station – Northwest	-	-	$2,000,000	$2,000,000	-
Upgrade & Rehabilitation Sewer Program	$4,700,000	$4,700,000	$4,700,000	$4,700,000	$4,700,000
P.S. Rehabilitation/Up-Grade program	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Totals	**$7,560,000**	**$7,200,000**	**$7,700,000**	**$7,700,000**	**$5,700,000**

Source: Hialeah Department of Planning and Development

Map IV- 1: Miami-Dade Wastewater Treatment Plants and Service Areas

HIALEAH COMPREHENSIVE PLAN 2003-2015
HIALEAH, FLORIDA



Map IV-1: Miami-Dade Wastewater Treatment Plants & Service Areas

N

2 0 2 4 6 8 10 Miles

LAND DESIGN INNOVATIONS

Map IV- 2: City of Hialeah Sewer Collection and Transmission Service Area