I-595 (SR-862)

PROJECT DEVELOPMENT & ENVIRONMENT STUDY

FM No. 409354-1-22-01
FAP No. 5951 539 I
From the I-75 Interchange
To the I-95 Interchange
Broward County, Florida

Prepared for:
FDOT District Four
3400 West Commercial Boulevard
Fort Lauderdale, FL 33309

Prepared by:

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville, Florida 32216

In association with:

Reynolds, Smith and Hills, Inc.
300 South Pine Island Road, Suite 300
Plantation, Florida 33324

March 13, 2006

Table of Contents

Section	Title	Page
1.0	INTRODUCTION	1-1
2.0	PROJECT DESCRIPTION	1-1
2.1	EXISTING TYPICAL SECTION	1-6
2.2	PROPOSED TYPICAL SECTION	1-6
3.0	EXISTING ROADWAY DRAINAGE	1-6
3.1	EXISTING DRAINAGE CONDITIONS	1-6
3.2	EXISTING CROSS DRAINS	1-11
3.3	EXISTING DRAINAGE BASINS	1-11
3.4	FLOODPLAIN	1-12
3.5	SOILS	1-23
4.0	PROPOSED DRAINAGE	1-27
4.1	SFWMD DESIGN CRITERIA	1-27
4.2	FDOT DESIGN CRITERIA	1-28
4.3	PROPOSED DRAINAGE SYSTEMS	1-28

5.0 POND SITING ANALYSIS 1-30

5.1 EVALUATION OF POTENTIAL PONDS 1-30

5.2 SOUTH POND ALTERNATIVES 1-31

5.2.1 Basin 1 (136th Avenue to Flamingo Rd.) 1-31

5.2.2 Basin 2 (Flamingo Rd. to Hiatus Rd.) 1-31

5.2.3 Basin 3 (Hiatus Rd. to Nob Hill Rd.) 1-32

5.2.4 Basin 4 (Nob Hill Rd. to Pine Island Rd.) 1-33

5.2.5 Basin 5 (Pine Island Rd. to University Dr.) 1-33

5.2.6 Basin 6 (University Dr. to Florida Turnpike) 1-34

5.2.6.1 Basin 6 West (Station 1449+25 to Station 1489+00) 1-34

5.2.6.2 Basin 6 East (Station 1489+00 to Station 1549+50) 1-35

5.2.7 Basins 7, 8 (Interchange Areas for Florida Turnpike and SR 7) 1-35

5.2.8 Basin 9 (Interchange Area for I-95) 1-36

5.3 NORTH POND SITE ALTERNATIVES 1-36

5.3.1 Basin 1 (136th Avenue to Flamingo Rd.) 1-37

5.3.2 Basin 2 (Flamingo Rd. to Hiatus Rd.) 1-38

5.3.3 Basin 5 (Pine Island Rd. to University Dr.) 1-38

5.3.4 Basin 9 (Interchange Area for I-95) 1-38

6.0 ENVIRONMENTAL 1-50

6.1 CONTAMINATION 1-50

6.2 WETLANDS 1-51

6.3 THREATENED & ENDANGERED SPECIES 1-51

7.0 CONCLUSION 1-52

List of Figures

Figure	Title	
Figure 1:	USGS Quad Map (4 sheets)	1-2
Figure 2:	Existing Typical Sections (2 sheets)	1-7
Figure 3:	Proposed Typical Sections (2 sheets)	1-9
Figure 4:	FIRM Maps (10 sheets)	1-13
Figure 5:	Soils Map (3 sheets)	1-24
Figure 6:	Project Drainage Map (10 sheets)	1-39
Figure 7:	North Pond Drainage Schematic	1-49

List of Tables

Table	Title	Page
Table 1:	Existing Permits	1-12
Table 2:	Project Basin Summary	1-29
Table 3:	Pond Sizing Analysis Summary	1-53

Appendices

Appendix Title

A Permit Data

SFWMD Meeting Minutes

Research of Existing Permits Adjacent to I-595 Corridor

I-595 Port Everglades Expressway – Environmental Permits List (August 31, 1991)

B Pond Sizing Methodologies

Curve Number Calculations

ICPR Data

Typical Pond Detail

C Pond Site Evaluation

Pond Site Alternatives Matrix

Pond Site Parcel Information

1.0 INTRODUCTION

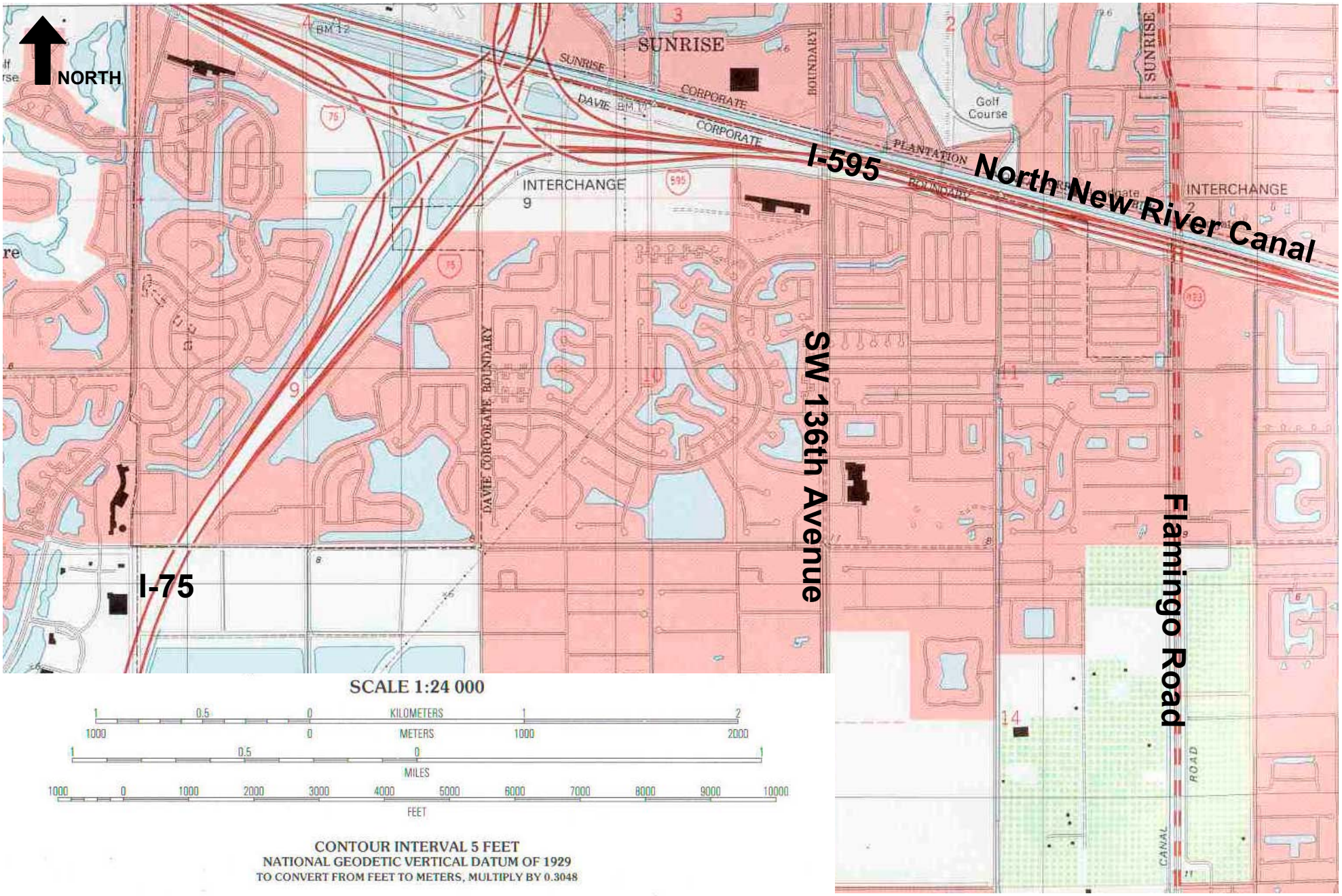
Interstate 595 (I-595) is a limited access freeway located in Broward County, Florida. The interstate is on an east-west alignment and has a functional classification of principal arterial. True to its classification, I-595 provides a direct connection between I-75, the Florida Turnpike and I-95. These connections make I-595 an important link between the highly urbanized areas of southeast Florida with the areas of the Gulf Coast and Central Florida.

This Pond Siting Report supports the Preliminary Engineering Report as part of the Project Development and Environment (PD&E) process. This report utilizes the methods and procedures established by the Florida Department of Transportation to document and justify the selection of specific sites for the construction of stormwater management facilities. The process includes an analysis of existing drainage patterns, a review of drainage design criteria and of the project's permit history, and an evaluation of available alternatives for meeting stormwater management requirements. The evaluation includes exploring the possibility of expanding existing facilities within the right-of-way and identifying potential properties outside of the right-of-way for construction of new facilities. The results of the research and evaluation of the alternatives are listed in a qualitative summary matrix located in *Appendix C*.

2.0 PROJECT DESCRIPTION

The western limits of this study begin at I-75 and end east of I-95 for a total project length of 12 miles. The I-595 corridor passes through or lies adjacent to six municipalities. These municipalities include the City of Sunrise, Town of Davie, City of Plantation, City of Ft. Lauderdale, City of Weston, and City of Dania Beach, as well as unincorporated areas of Broward County. The majority of the project corridor is comprised of two facilities: I-595 and SR-84. The I-595 portion of the corridor is a six-lane, limited access facility, with interchanges at 11 intersecting cross-roads. The SR-84 highway serves as a parallel collector-distributor system to the I-595 mainline between I-75 and SR-7. SR-84 has a functional classification of a one-way collector road. Refer to the USGS Quad Maps shown in *Figure 1*.

The proposed project involves widening of I-595 from the I-75/Sawgrass Expressway interchange to east of the I-95 interchange. The proposed widening includes adding reversible lanes serving express traffic between I-75/Sawgrass Expressway and SR 7, adding a continuous connection of SR-84 between Davie Road and SR 7, adding a collector/distributor system between I-95 and Davie Road, and adding various lane improvements as needed at various interchange locations. The project also allows for areas within the right-of-way for a potential future transit system.

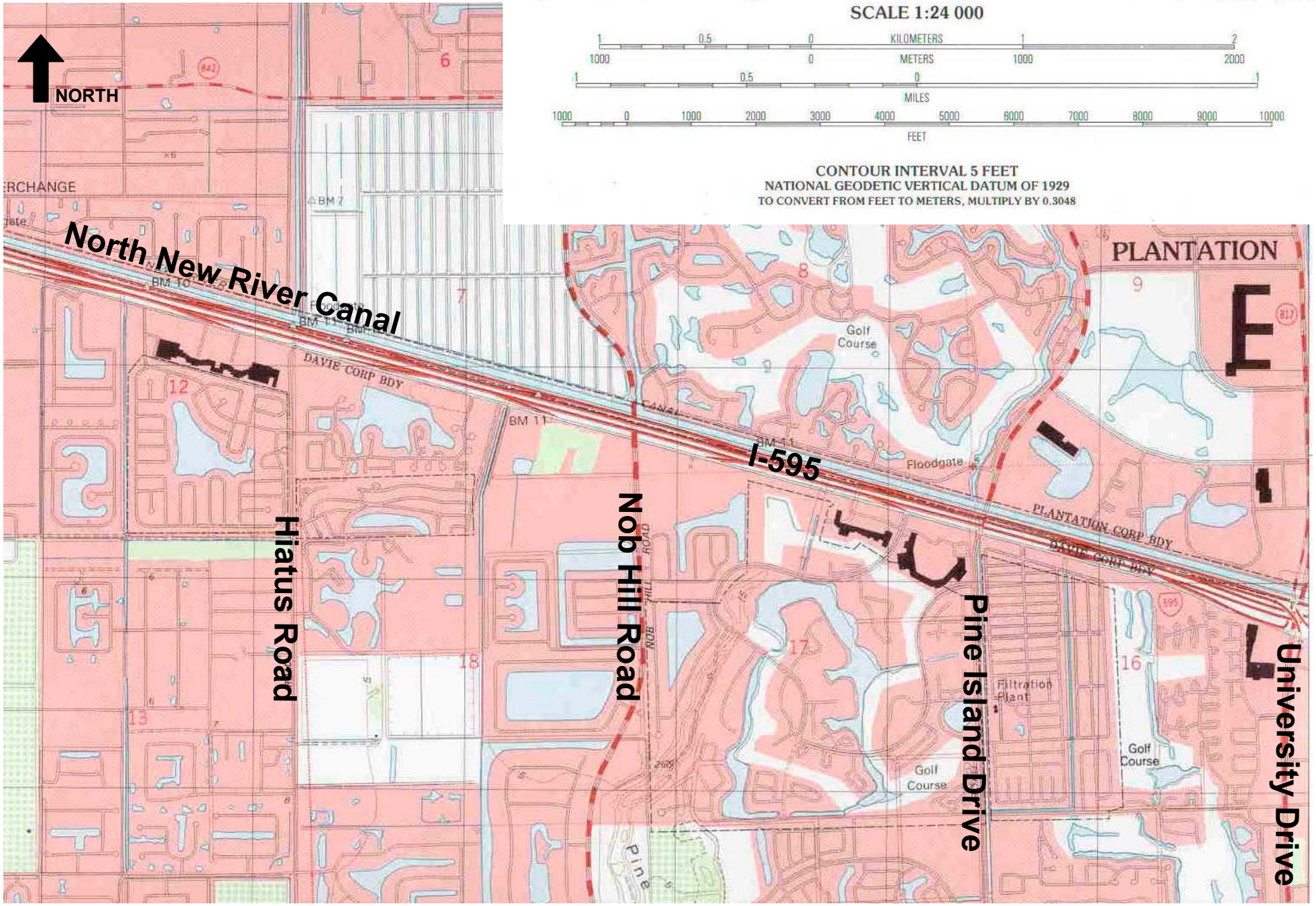


BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

I-595 PD&E Study

FIGURE 1: QUAD MAP (1 of 4)

Source: Cooper City USGS Quadrangle Map Dated: 1994

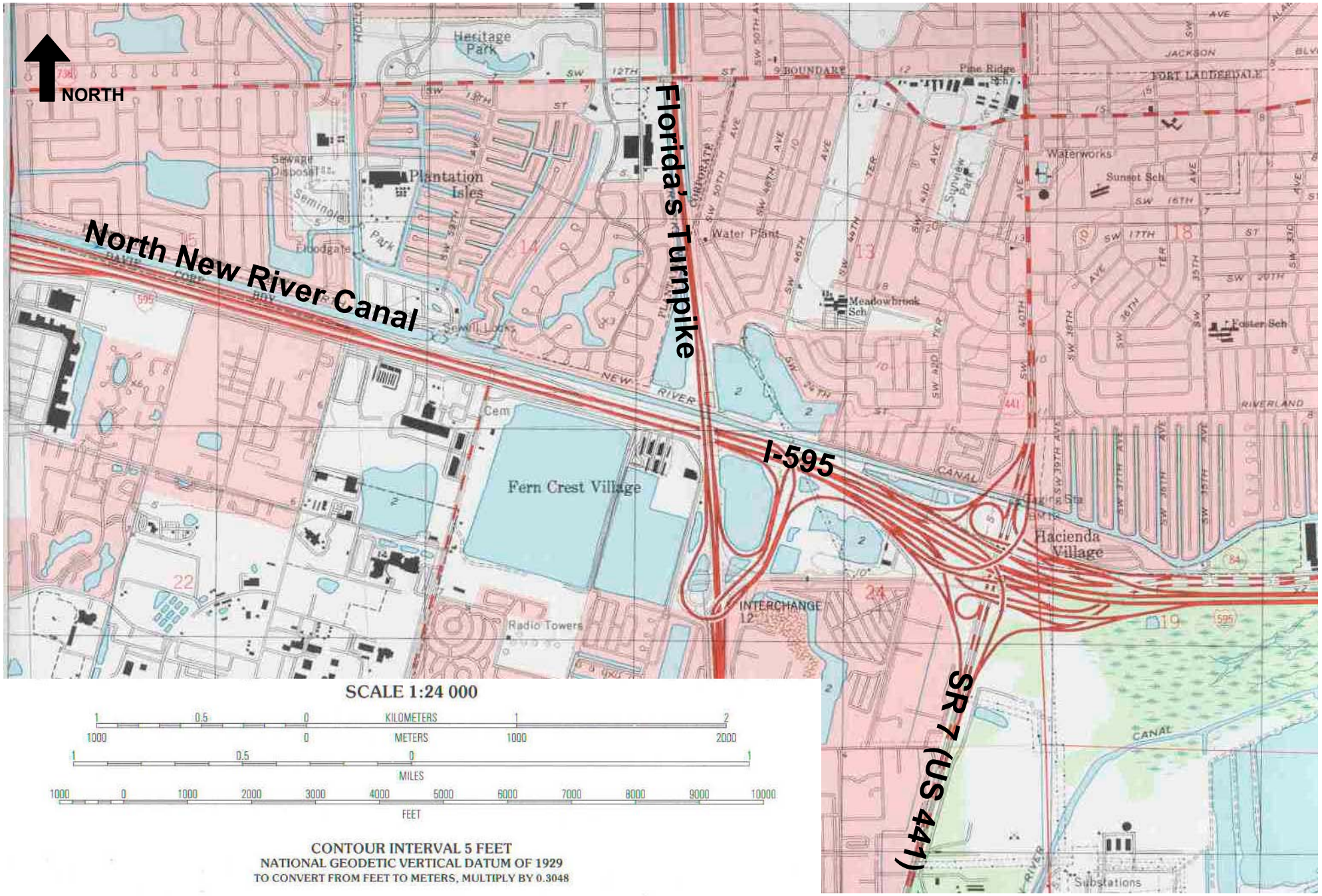


BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

I-595 PD&E Study

FIGURE 1: QUAD MAP (2 of 4)

Source: Cooper City USGS Quadrangle Map Dated: 1994

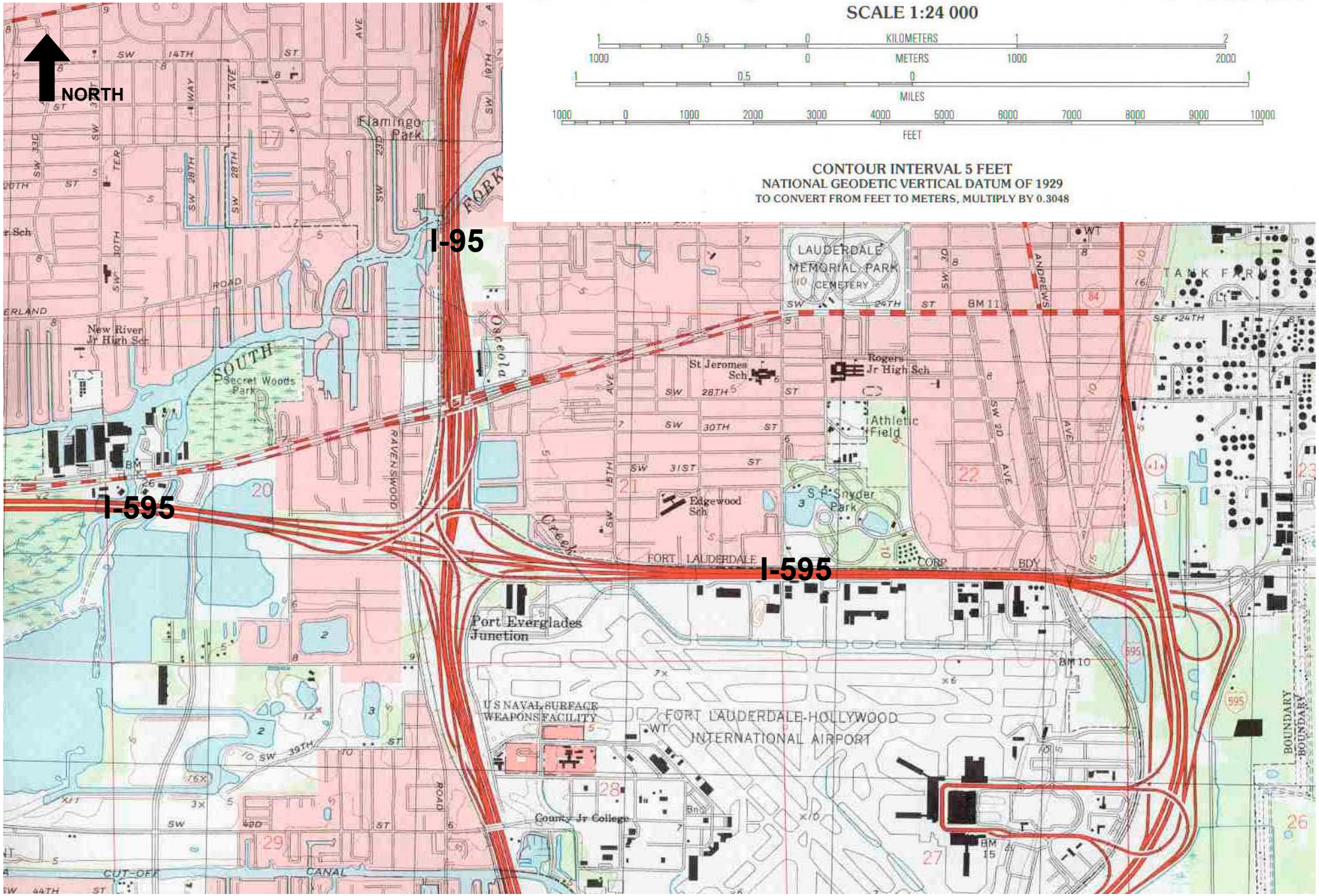


BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

I-595 PD&E Study

FIGURE 1: QUAD MAP (3 of 4)

Source: South Fort Lauderdale USGS Quadrangle Map Dated: 1994



BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

I-595 PD&E Study

FIGURE 1: QUAD MAP (4 of 4)

Source: South Fort Lauderdale USGS Quadrangle Map Dated: 1994

2.1 Existing Typical Section

Four main typical sections exist along the I-595 transportation corridor. All four typical sections include three general purpose lanes in each direction of I-595. One or two-lane auxiliary lanes border the mainline in between various interchange locations. The SR-84 frontage road system serves the corridor from I-75 to SR-7. The Existing Typical Sections are shown in *Figure 2*.

2.2 Proposed Typical Section

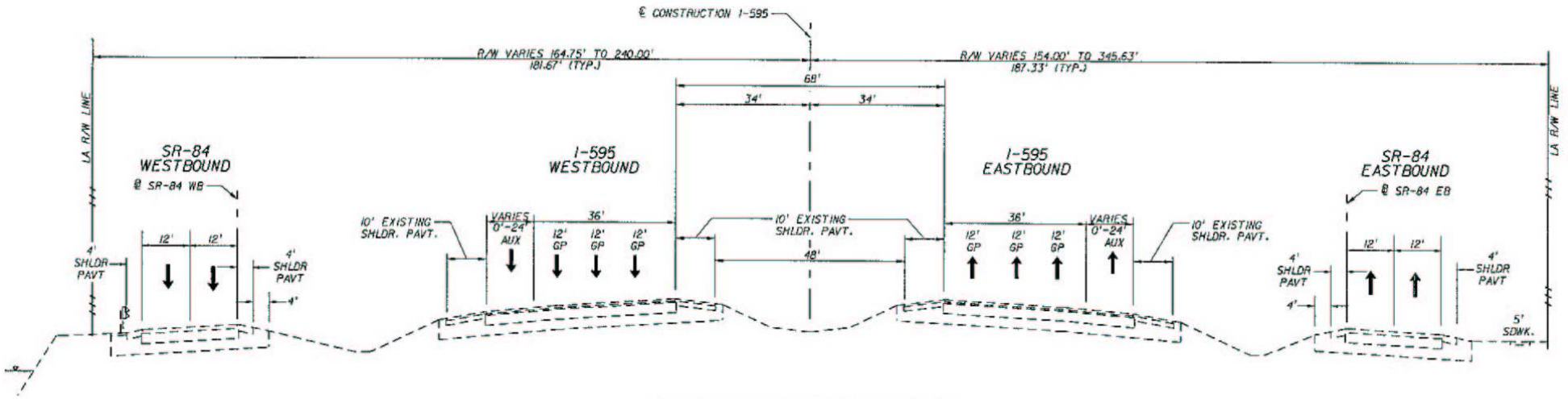
Four alignment alternatives were developed for the I-595 corridor. These alternatives were evaluated and analyzed as a part of the value engineering/design review process. Two alternatives were eliminated due to extensive R/W impacts, visual impacts and high construction costs. Two alternatives – Alternative 1B & Alternative 2A have been selected for further development and evaluation through the I-595 PD&E process.

The typical section for both alternatives (1B and 2A) would provide six 12 ft. wide general purpose lanes (three in each direction) and 12 ft. auxiliary lane(s) between interchanges. SR-84 would have two 12 ft. wide lanes, Type F curb and gutter, and an outside sidewalk that varies in width from 6 ft. to 12 ft. The configuration of the reversible lanes is where the two alternatives vary. Alternative 1B has two 12 ft. at-grade reversible lanes in the median. Alternative 2A has three 12 ft. elevated reversible lanes on a proposed bridge structure in the median. The Proposed Typical Sections for Alternative 1B and 2A are shown in *Figure 3*.

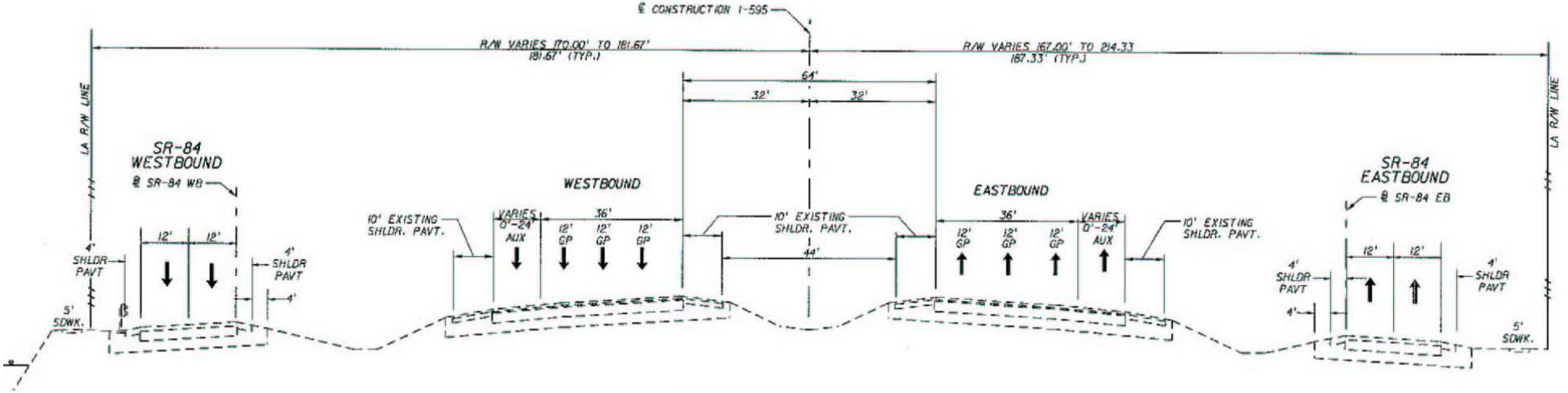
3.0 EXISTING ROADWAY DRAINAGE

3.1 Existing Drainage Conditions

The I-595 project corridor lies within the South Florida Water Management District (SFWMD) North New River Canal Basin (NNRC). The North New River Canal is aligned parallel with the interstate along the northern limited access right-of-way line. The North New River Canal begins west of the project limits (at the main Everglades dike) and continues eastward until its confluence with the South Fork of the New River (between SR-7 and I-95). The canal exhibits a depth of approximately 7 ft. and flows east where it eventually discharges into the South Fork of the New River. The New River ultimately drains into the Intracoastal Waterway and Atlantic Ocean.



I-595 (SR-862) EXISTING TYPICAL SECTION 2
FROM UNIVERSITY DR. TO FLORIDA'S TURNPIKE
(68' EXISTING MEDIAN)



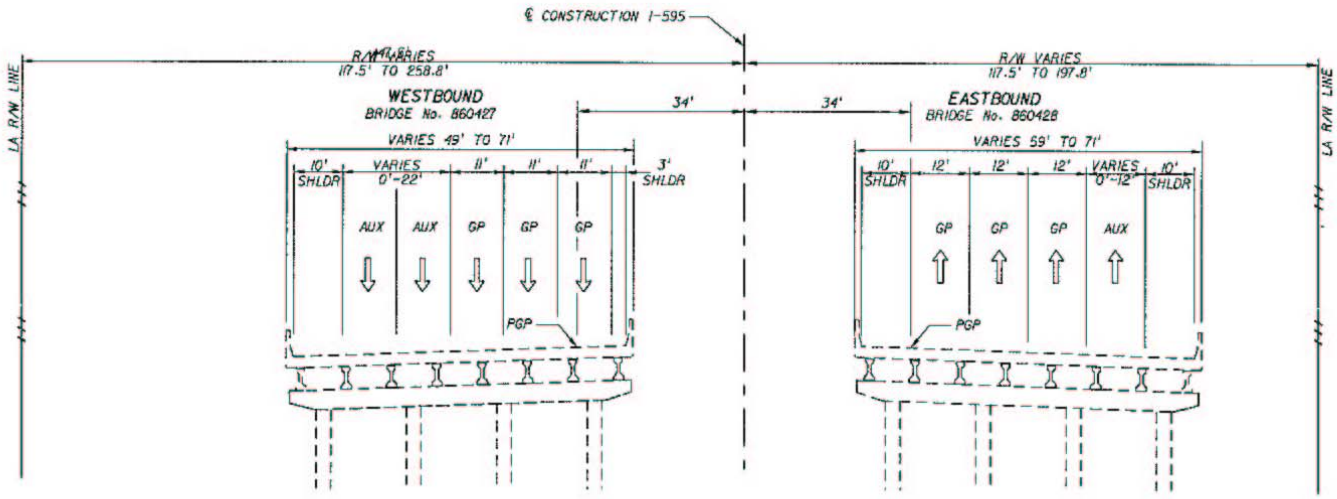
I-595 (SR-862) EXISTING TYPICAL SECTION 1
FROM SW 136th AVE. TO UNIVERSITY DR.

BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

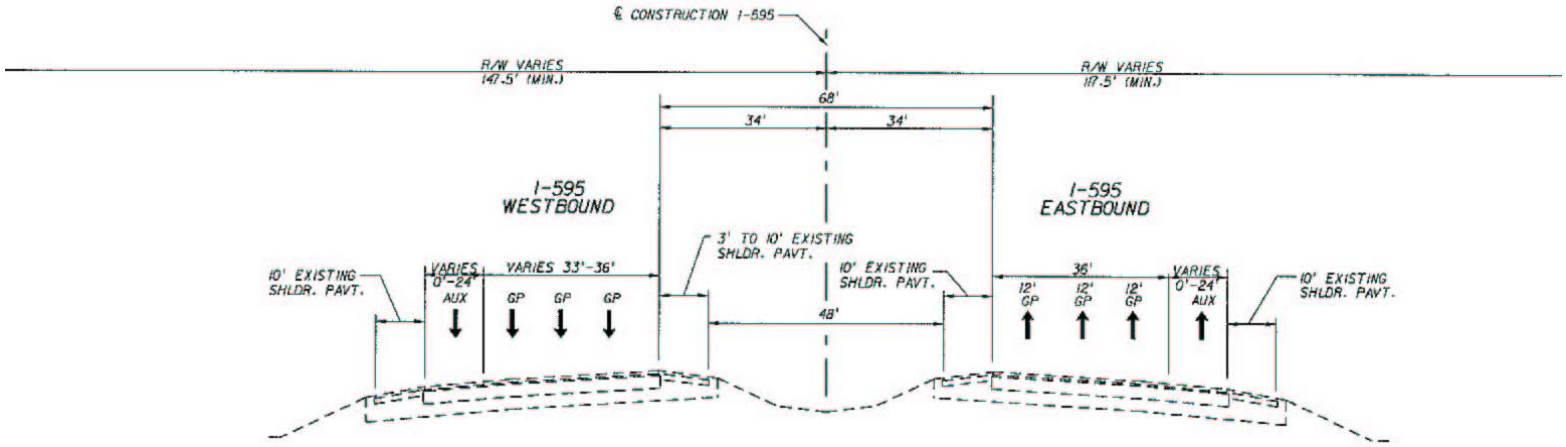
I-595 PD&E Study

FIGURE 2: EXISTING TYPICAL SECTIONS (1 of 2)

Source: Reynolds Smith & Hills, Inc. Dated: October 2005



I-595 (SR-862) EXISTING BRIDGE TYPICAL SECTION 4
FROM WEST OF SR-7 TO I-95



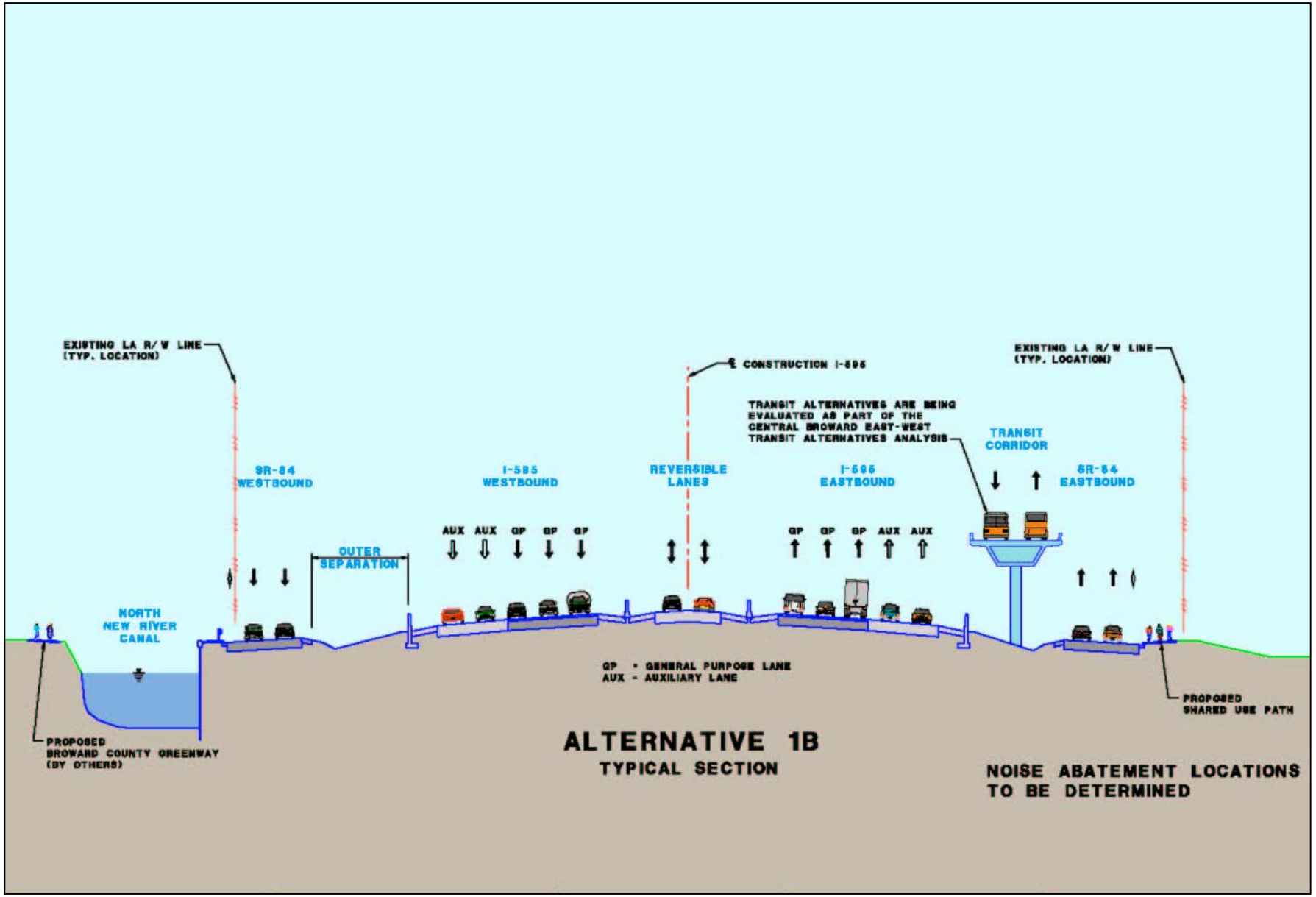
I-595 (SR-862) EXISTING TYPICAL SECTION 3
FROM FLORIDA'S TURNPIKE TO WEST OF SR-7

BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

I-595 PD&E Study

FIGURE 2: EXISTING TYPICAL SECTIONS (2 of 2)

Source: Reynolds Smith & Hills, Inc. Dated: October 2005

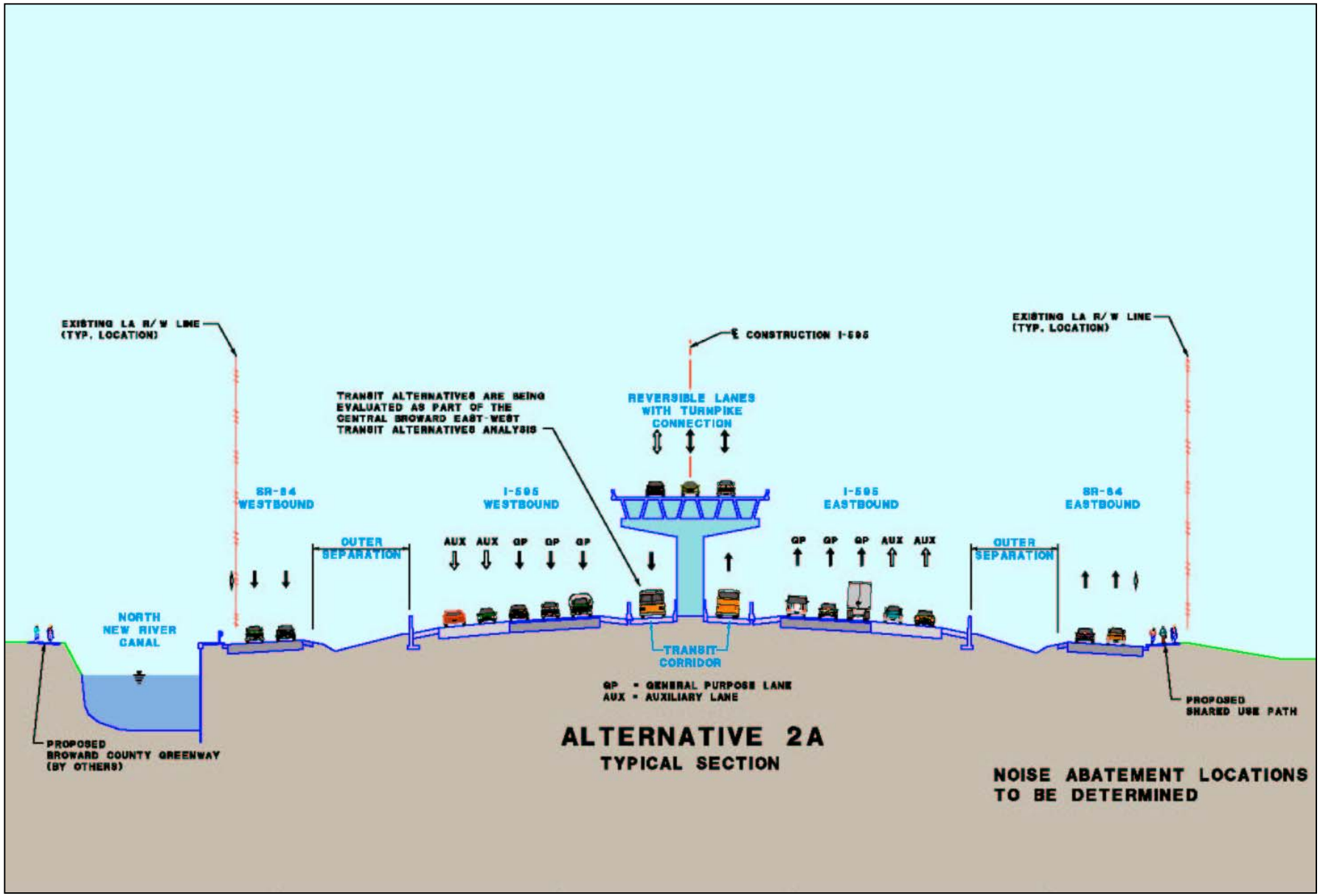


BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

I-595 PD&E Study

FIGURE 3: PROPOSED TYPICAL SECTIONS (1 of 2)

Source: Reynolds Smith & Hills, Inc. Dated: October 2005



BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

I-595 PD&E Study

FIGURE 3: PROPOSED TYPICAL SECTIONS (2 of 2)

Source: Reynolds Smith & Hills, Inc. Dated: October 2005

The existing drainage within the project limits involves a series of separate, independent stormwater management systems consisting of various inlets, structures, swales, wet detention ponds, and exfiltration trenches. Typically throughout the corridor, stormwater runoff sheet flows off the roadway pavement to swales located within the median and outside the shoulders, where it is treated and attenuated before discharging into the North New River Canal. In addition, permitted exfiltration trenches scattered throughout the project corridor, as well as detention and retention facilities at the major interchanges, provide a substantial amount of the treatment and attenuation.

SFWMD Lock Structure G-54, also known as the Sewell Lock, is located approximately 1 mile west of the Turnpike and regulates discharge from the North New River Canal to the tidewaters. G-54 consists of a 45 ft. flashboard spillway (with a total of 8 bays) at a weir elevation of -3.6 ft. NGVD. The resulting, design headwater (HW) is 3.5 NGVD. This elevation should be used for the design tailwater of all proposed drainage systems that outfall to the west of G-54. The design tailwater (TW) of the North New River Canal immediately downstream of G-54 is 3 ft. NGVD. Thus, this elevation should be used for the design tailwater of all proposed drainage systems that outfall to the east of G-54.

3.2 Existing Cross Drains

Although there are no major cross drains or box culverts within the I-595 corridor, approximately thirty small circular culverts (less than 48 in. in diameter) provide conveyance of runoff from the I-595 corridor into the North New River Canal. Several of these culverts are regulated by control structures located within the limited access right-of-way.

3.3 Existing Drainage Basins

The I-595 corridor acts as a drainage divide with runoff from I-595 flowing north to the North New River Canal and areas south of I-595 flowing south into the eastern and western basins of the C-11 canal. Although the project is divided into several basins, the entire project limits is located within the North New River Canal basin. Therefore, it is possible to compensate for treatment and attenuation within adjacent basins. The basin boundaries within the project limits are marked by the elevated sections of I-595 over local roads and at interchange areas.

The original design and permitting of this project was performed in the mid-1980's, when the regulations governing stormwater runoff were less stringent than today. The predominate method of stormwater treatment within each basin has exfiltration systems or french drains with shallow swales. A study of the original permit documents has revealed that the existing treatment facilities were originally permitted to treat one inch of runoff over the existing impervious surface areas, while the current permitting criteria calls for the treatment of 2.5 inches of runoff over impervious surface areas.

Table 1 identifies the limits of each basin and the original stormwater permit number issued for the construction of I-595.

Table 1: Existing Permits

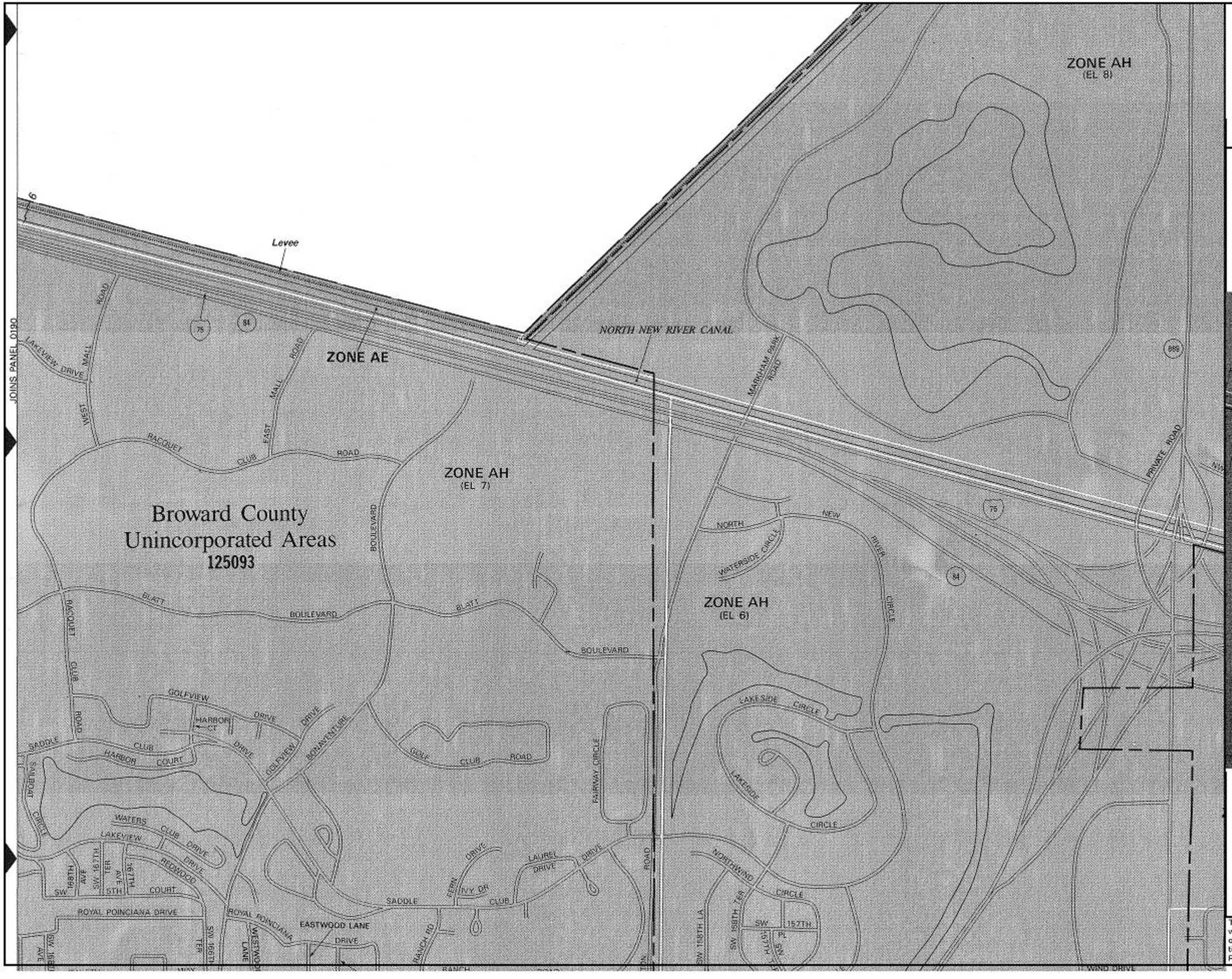
Existing Permits	Drainage Basin	Date Issued	FDOT Contract Package	Construction Package Description
85-100151-S GP85-51	1, 2	12/23/1985	Q	I-595-SW 136th Ave. to Hiatus Road
06-00788-S	3, 4, 5	8/22/1986	P	I-595- Hiatus Road to University Drive
06-00858-S	6	11/5/1987	N	I-595-University Drive to Turnpike
87000009-S GP87-9	7	2/5/1987 6/24/1986	L, M	Turnpike/I-595 Interchange I-595/US-441 Interchange
0600797 S(MOD)	7	12/17/1986	K	Turnpike and Bridges over I-595
06-00774-S	8	2/5/1987 6/24/1986	L, M	Turnpike/I-595 Interchange I-595/US-441 Interchange
83-00038-S GP83-38	9	2/10/1984	J	I-595 Bridges over South Fork New River
06-00810-S	9	12/11/1986	D/F, E, V	I-595/I-95 Interchange & Ramps, SR-84 Bridges & Ramps and CFR Bridge
06-00479-S	9	5/25/1985	B	I-595-Viaduct Section

3.4 Floodplain

The ground surface remains nearly level throughout with elevations averaging less than 10 ft. NGVD. According to the Flood Insurance Rate Map (FIRM) of Broward County, Florida, Community Panel numbers 12011C0195F, 12011C0214F, 12011C0215F, 12011C0302F, and 12011C0306F, the entire project is located within the 100 Year Floodplain with the Base Flood Evaluation (BFE) ranging from elevations 6.0 to 7.0 NGVD. The I-595 alignment is elevated well above the BFE with its PGL elevations ranging from 11.0 ft. to over 30.0 ft. NGVD. Therefore, the 100-year flood elevation will not affect the functioning of the I-595 evacuation route.

The proposed widening of I-595 will take place almost entirely within the existing right-of-way with the use of Mechanically Stabilized Earth (MSE) vertical walls. This method of construction will minimize the fill encroachment to the 100-year floodplain. However, any minor encroachment to the 100-year floodplain will be mitigated for inside the infield areas of the interchanges and in the proposed ponds.

Refer to *Figure 4* for FIRM Maps along the I-595 corridor.



APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY,
FLORIDA AND
INCORPORATED AREAS

PANEL 195 OF 319
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIE, TOWN OF	120035	0195	F
PLANTATION, CITY OF	120054	0195	F
SUNRISE, CITY OF	120328	0195	F
UNINCORPORATED AREAS	125093	0195	F

PANEL LOCATION

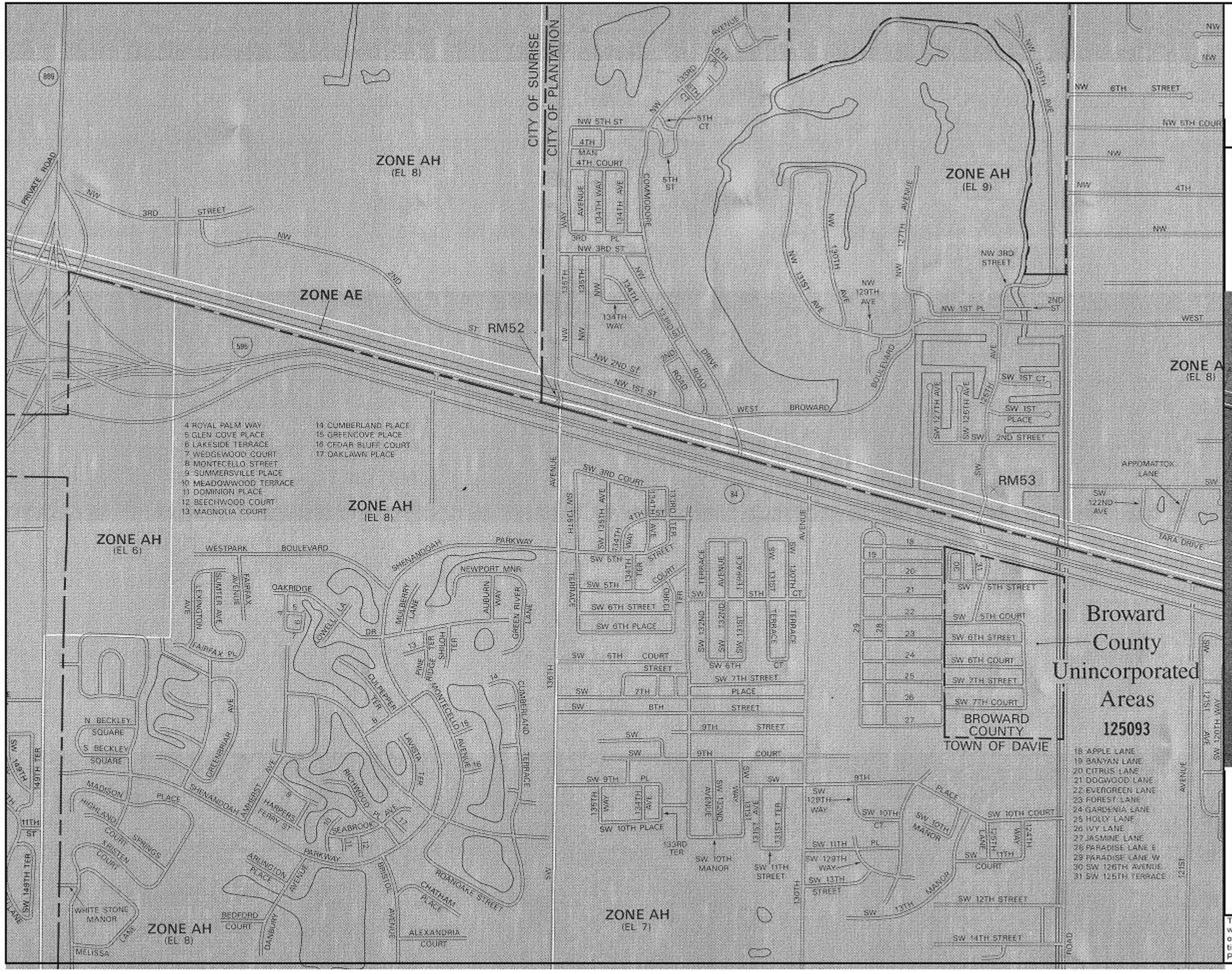
MAP NUMBER:
12011C0195 F
EFFECTIVE DATE:
AUGUST 18, 1992

Federal Emergency Management Agency

FIGURE 4

Page 1 of 10

Source: FEMA Map Service Center
(www.fema.gov)
Date: March 2005



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 195 OF 319
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIE, TOWN OF	120035	0195	F
PLANTATION, CITY OF	120054	0195	F
SUNRISE, CITY OF	120028	0195	F
UNINCORPORATED AREAS	125093	0195	F

PANEL LOCATION

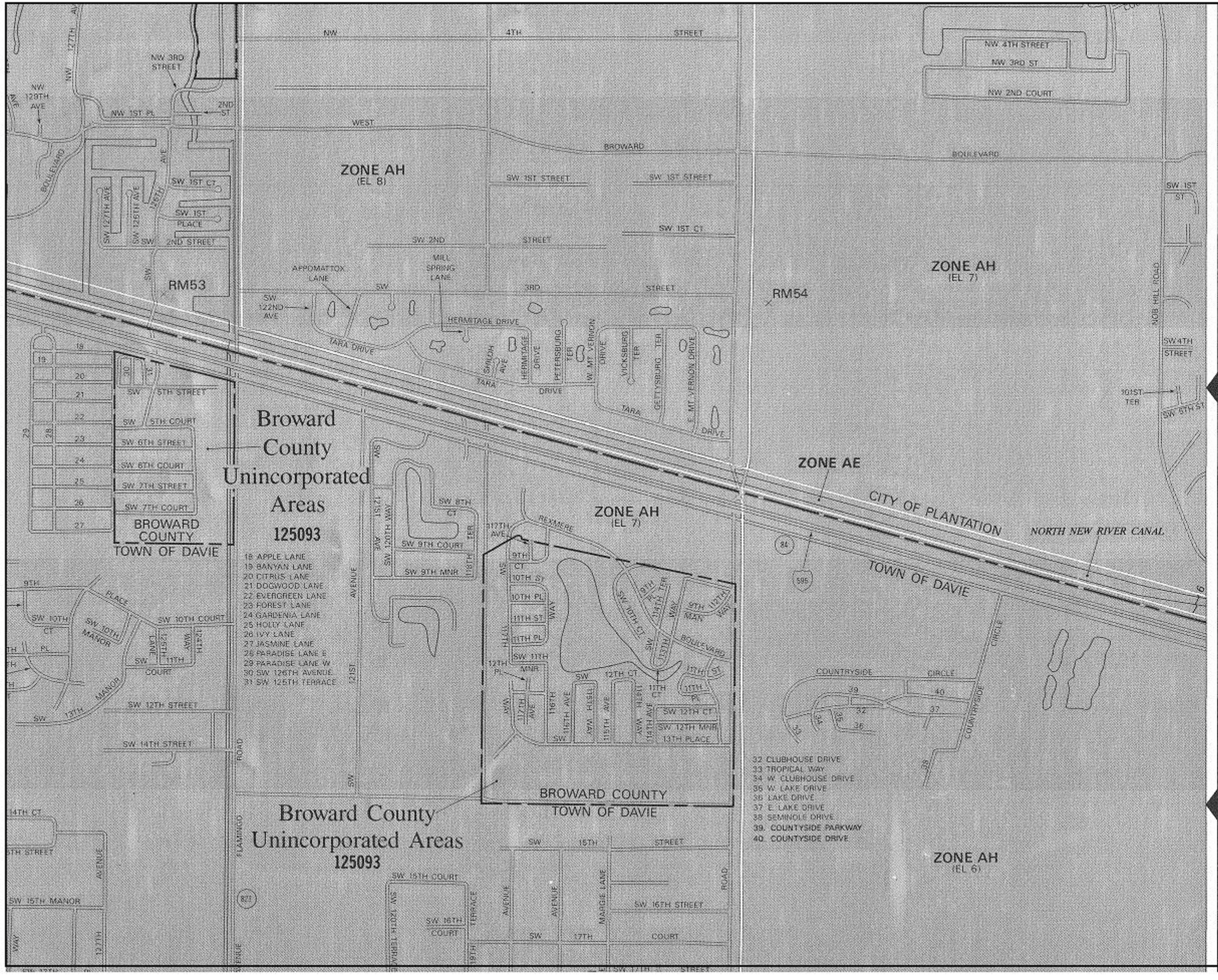
MAP NUMBER:
12011C0195 F
EFFECTIVE DATE:
AUGUST 18, 1992

Federal Emergency Management Agency

FIGURE 4

Page 2 of 10

Source: FEMA Map Service Center
(www.fema.gov)
Date: March 2005



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 195 OF 319
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIE, TOWN OF	120035	0195	F
PLANTATION, CITY OF	120054	0195	F
SUNRISE, CITY OF	120328	0195	F
UNINCORPORATED AREAS	125093	0195	F

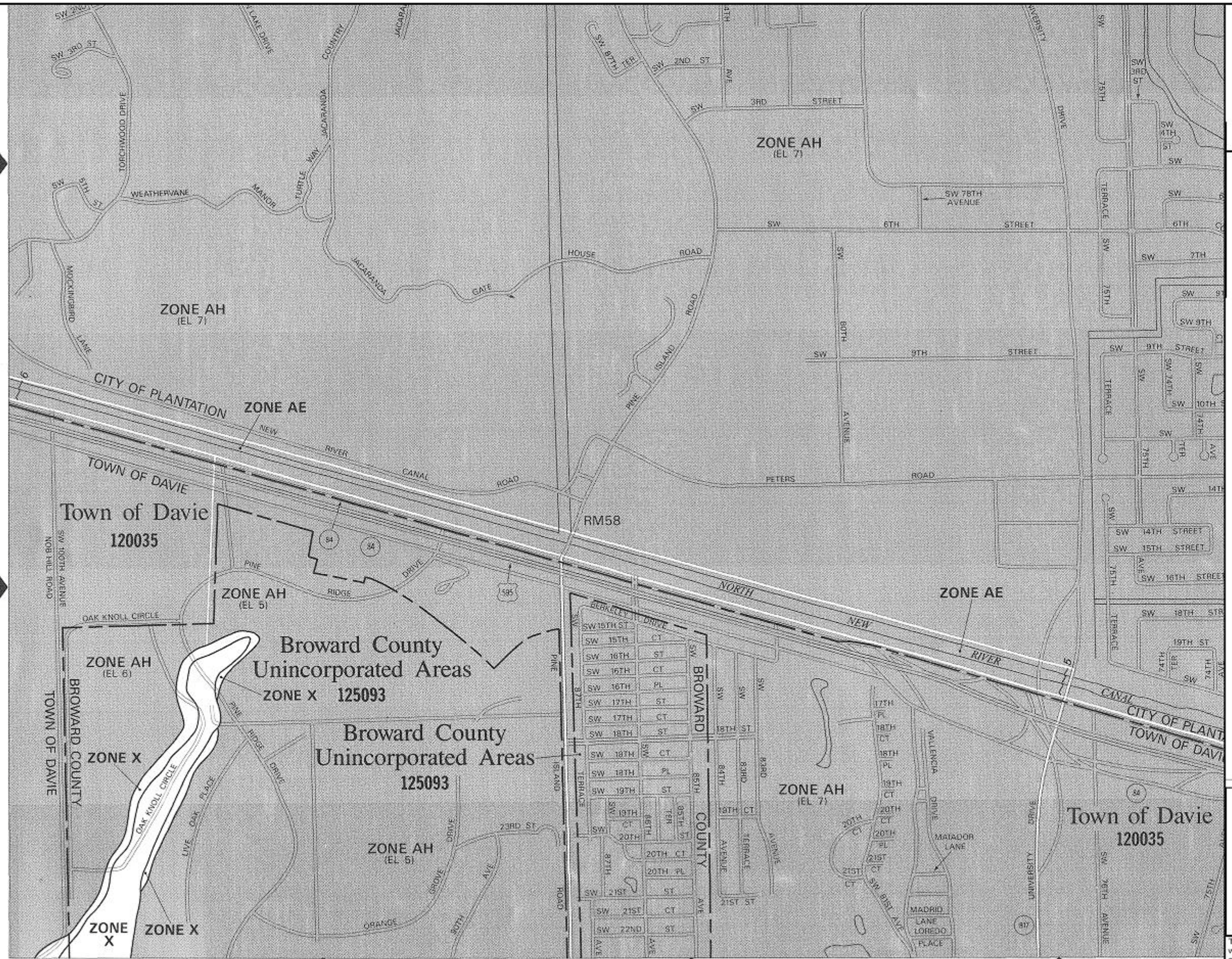
PANEL LOCATION

MAP NUMBER:
12011C0195 F
EFFECTIVE DATE:
AUGUST 18, 1992

Federal Emergency Management Agency

FIGURE 4

Source: FEMA Map Service Center (www.fema.gov)
Date: March 2005



APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

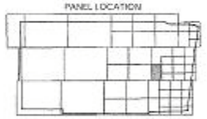
BROWARD COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 215 OF 319
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIE, TOWN OF	120035	0215	F
PLANTATION, CITY OF	120054	0215	F
SUNRISE, CITY OF	120328	0215	F
UNINCORPORATED AREAS	125093	0215	F

PANEL LOCATION



MAP NUMBER:
12011C0215 F

EFFECTIVE DATE:
AUGUST 18, 1992

Federal Emergency Management Agency

FIGURE 4

Page 4 of 10

Source: FEMA Map Service Center (www.fema.gov)
Date: March 2005

APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY,
FLORIDA AND
INCORPORATED AREAS

PANEL 215 OF 319
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIE, TOWN OF	120035	0215	F
PLANTATION, CITY OF	120054	0215	F
SUNRISE, CITY OF	120328	0215	F
UNINCORPORATED AREAS	125093	0215	F

PANEL LOCATION

MAP NUMBER:
12011C0215 F

EFFECTIVE DATE:
AUGUST 18, 1992

Federal Emergency Management Agency

FIGURE 4

Page 5 of 10

Source: FEMA Map Service Center (www.fema.gov)
Date: March 2005

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 4

Page 6 of 10

Source: FEMA Map Service Center (www.fema.gov)
Date: March 2005

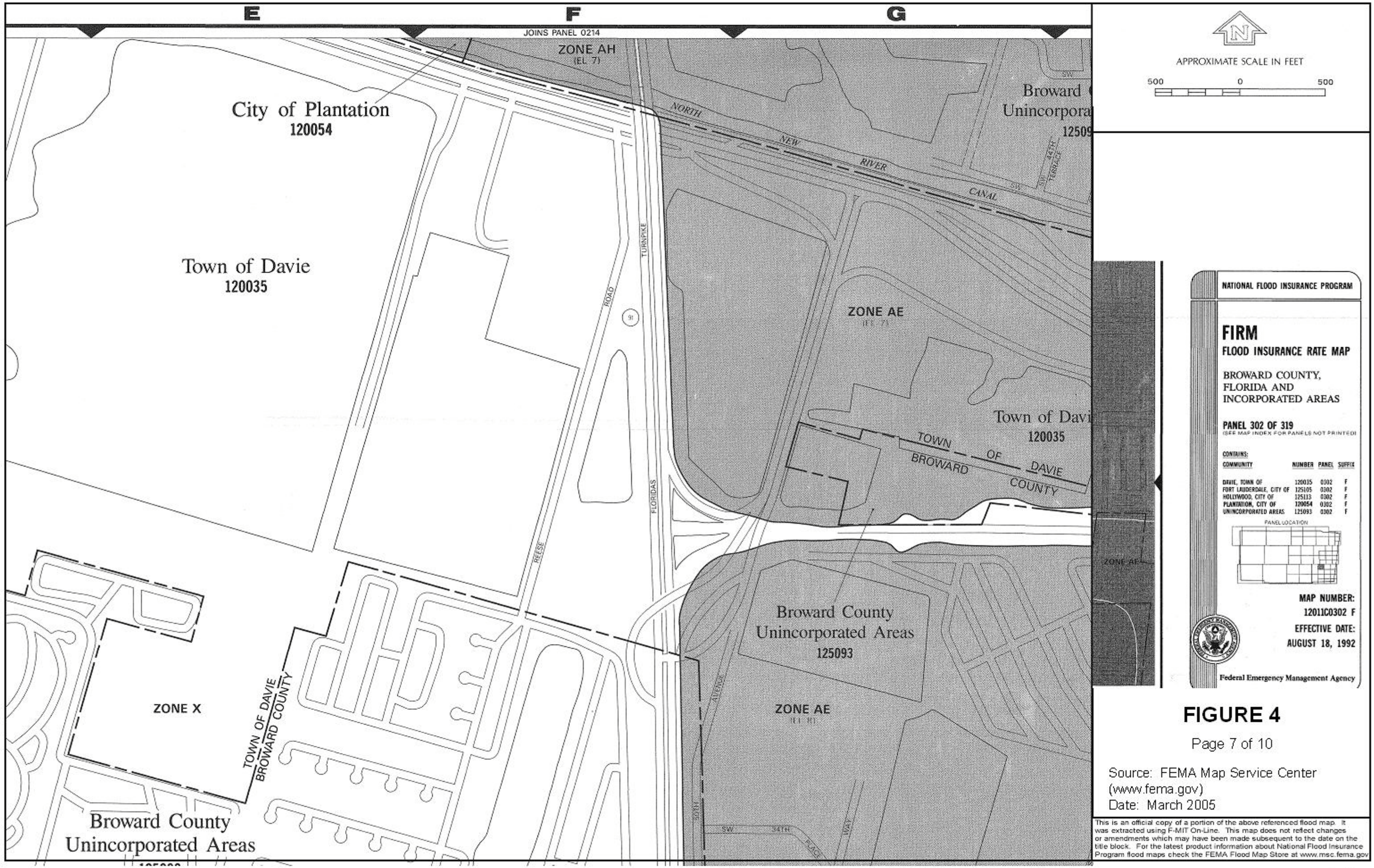
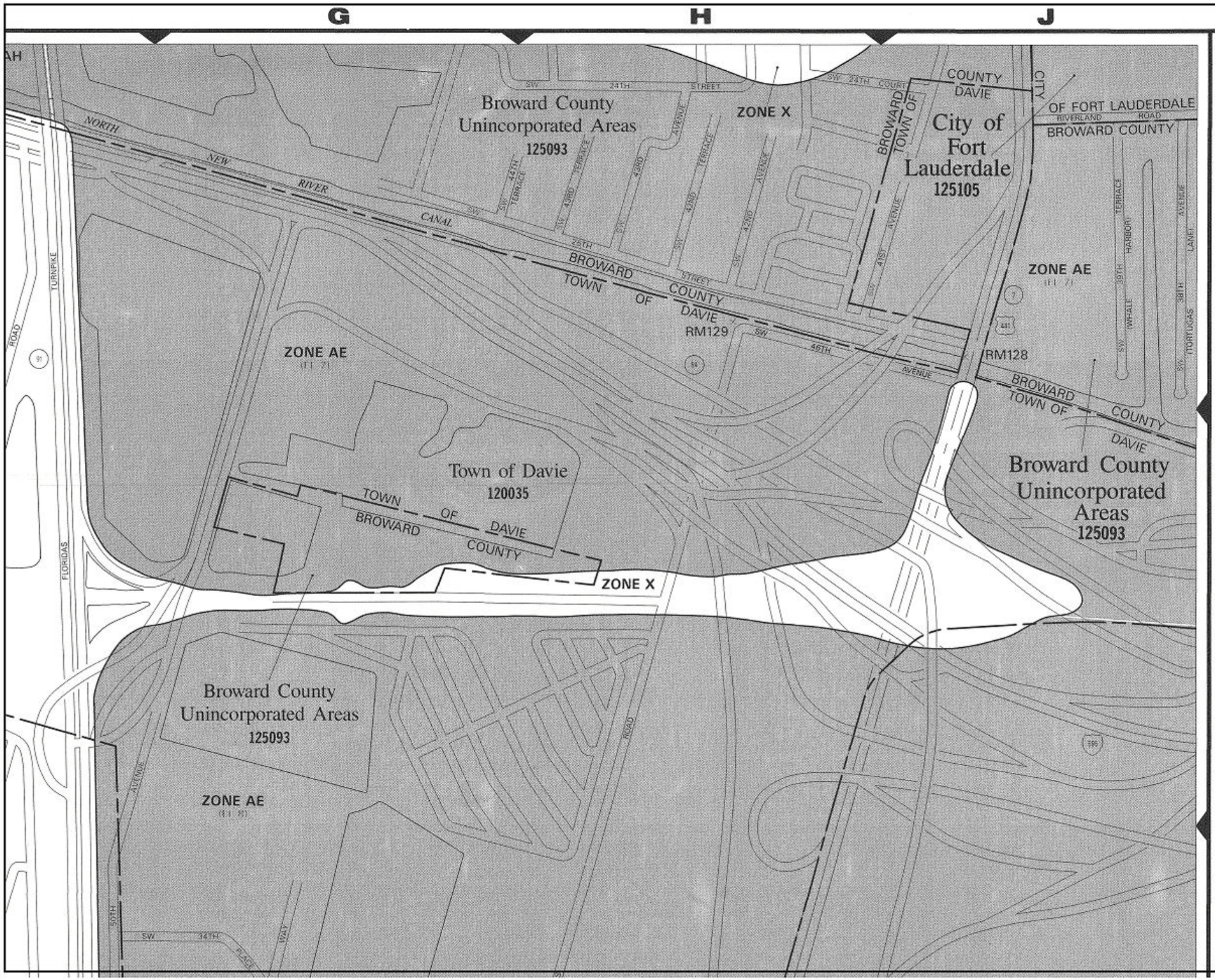


FIGURE 4

Source: FEMA Map Service Center (www.fema.gov)
Date: March 2005



APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY,
FLORIDA AND
INCORPORATED AREAS

PANEL 302 OF 319
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAVIE, TOWN OF	120035	0302	F
FORT LAUDERDALE, CITY OF	125105	0302	F
HOLLYWOOD, CITY OF	125113	0302	F
PLANTATION, CITY OF	120054	0302	F
UNINCORPORATED AREAS	125093	0302	F

PANEL LOCATION

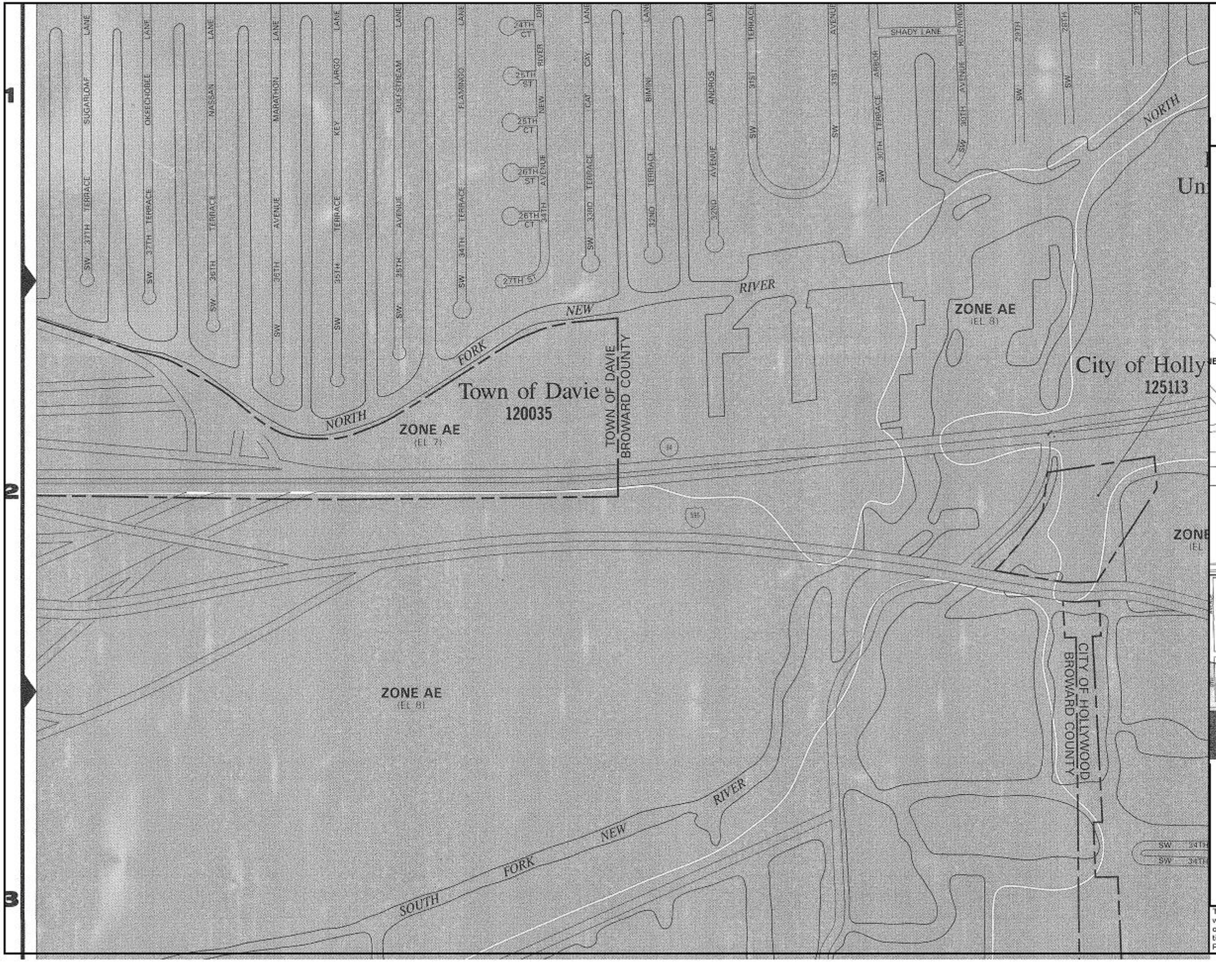
MAP NUMBER:
12011C0302 F
EFFECTIVE DATE:
AUGUST 18, 1992

Federal Emergency Management Agency

FIGURE 4

Page 8 of 10

Source: FEMA Map Service Center
(www.fema.gov)
Date: March 2005



APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

BROWARD COUNTY,
FLORIDA AND
INCORPORATED AREAS

PANEL 306 OF 319
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DANIA, CITY OF	120034	0306	F
DAVIE, TOWN OF	120035	0306	F
FORT LAUDERDALE, CITY OF	125105	0306	F
HOLLYWOOD, CITY OF	125113	0306	F
UNINCORPORATED AREAS	125093	0306	F

PANEL LOCATION

MAP NUMBER:
12011C0306 F
EFFECTIVE DATE:
AUGUST 18, 1992

Federal Emergency Management Agency

FIGURE 4

Page 9 of 10

Source: FEMA Map Service Center
(www.fema.gov)
Date: March 2005

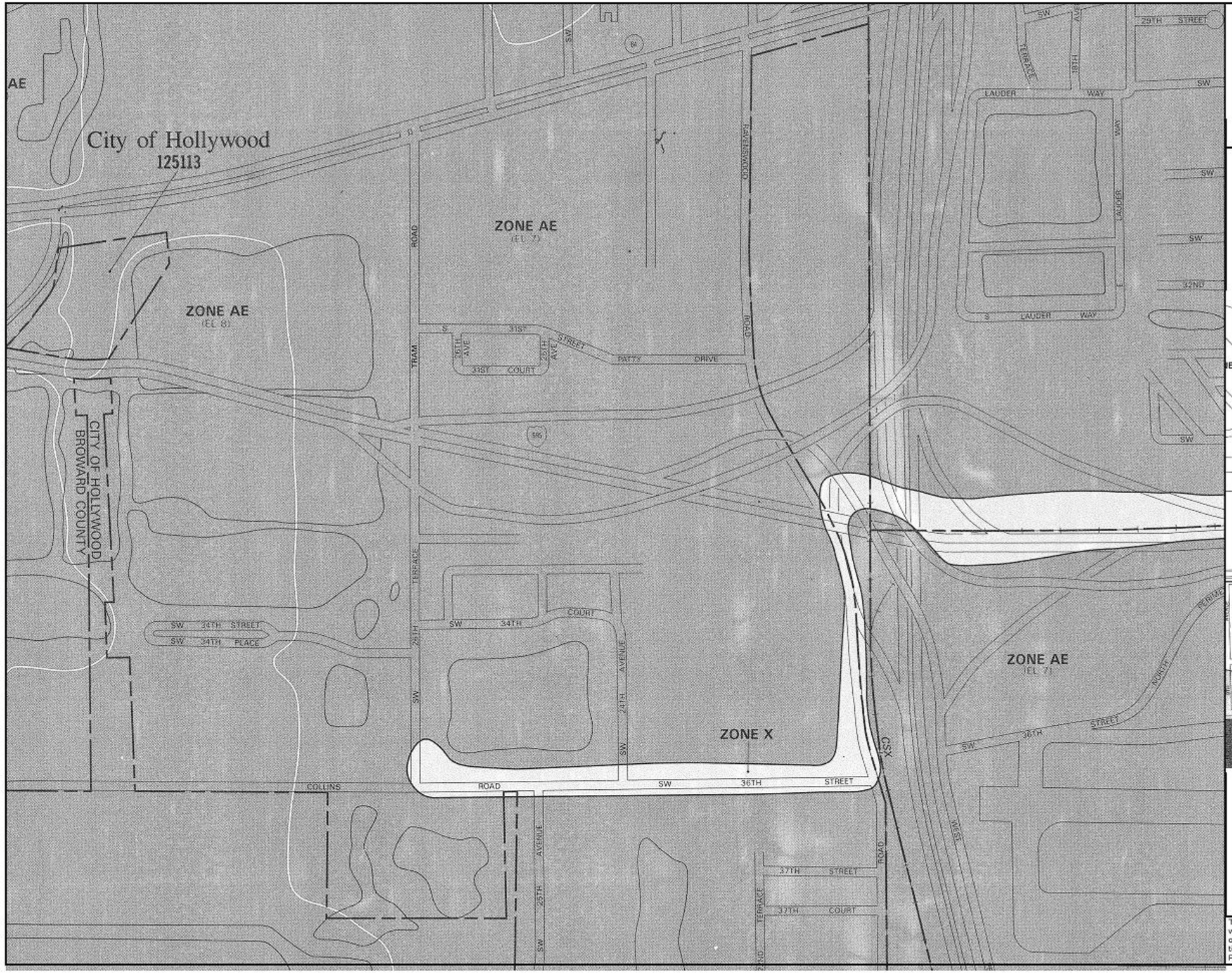


FIGURE 4

Page 10 of 10

Source: FEMA Map Service Center (www.fema.gov)
Date: March 2005

3.5 Soils

Research of the U.S. Department of Agriculture, Soil Conservation Service (SCS) maps for Broward County, Florida, shown in *Figure 5*, indicates the following mapping units underlie the potential pond sites along the project corridor:

- Hallandale fine sand
- Margate fine sand
- Sanibel muck
- Udorthents
- Urban land

Hallandale fine sands are nearly level and poorly drained with seasonal ground water depth of 0 to 1 ft below grade. They are hydrological Type B/D soils with a permeability rate of 0.6 to 20.0 in/hr. Hallandale fine sands are typically found in broad flats of the Everglades and west of the Atlantic Coastal Ridge.

Margate fine sands are hydrological Type B/D soils and are described as nearly level, poorly drained soils with a permeability rate of 6 to 20 in/hr. They can be found on low terraces between the Everglades and the low, sandy Atlantic Coastal Ridge. Their seasonal ground water depth is 1 ft. above to 1 ft. below grade.

Sanibel muck is a nearly level, deep, very poorly drained soil that has a muck surface layer of sandy mineral material. They are hydrological Type B/D soils with a permeability rate of 6 to 20 in/hr and a seasonal ground water depth of 1 ft. above to 1 ft. below grade. They are typically found in ponds, drainage ways, and low, broad flats in the eastern part of Broward County.

Udorthents soils consist of diverse geologic material removed in the excavation of ditches, canals, lakes, and ponds. It is commonly piled along banks and has slopes of 2 to 40 percent. This hydrological Type B soil is moderately well drained with a seasonal ground water depth of 2 to 4 ft. and a permeability rate of 6 to 20 in/hr.

Urban lands consists of areas that are more than 70 percent impervious. Pervious areas, mostly lawns, parks, vacant lots, and playgrounds, consist of soils in the Hallandale, Margate, Immokalee, and Basinger series that have been altered by fill material spread on the surface. The fill Is mostly sandy which contains limestone and shell fragments.

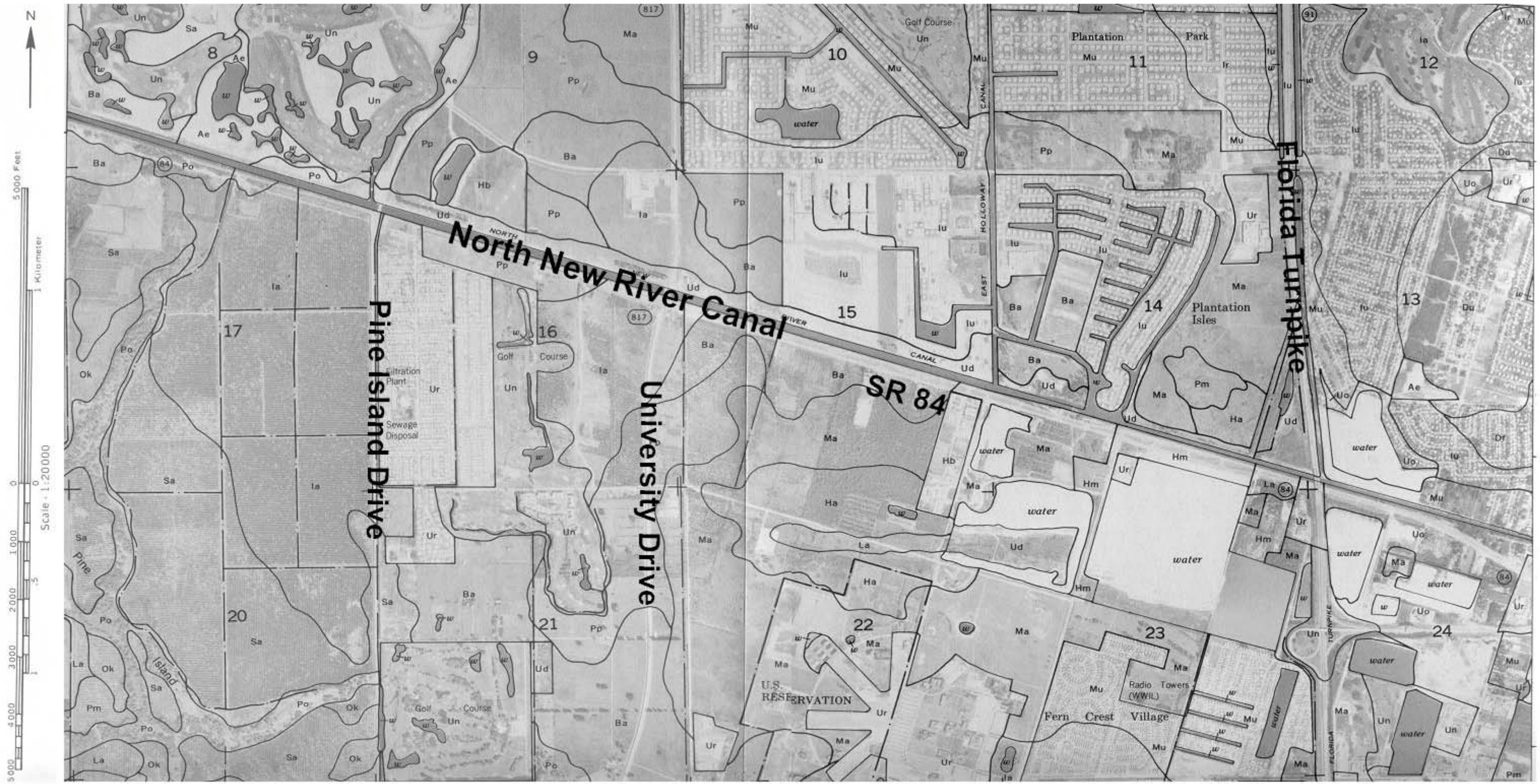
BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax 904.737.0040

Source: USGS Soils Survey of Brevard County, Florida

Date: Published 1976

I-595 PD&E Study

FIGURE 5: SOILS MAP (1 of 3)



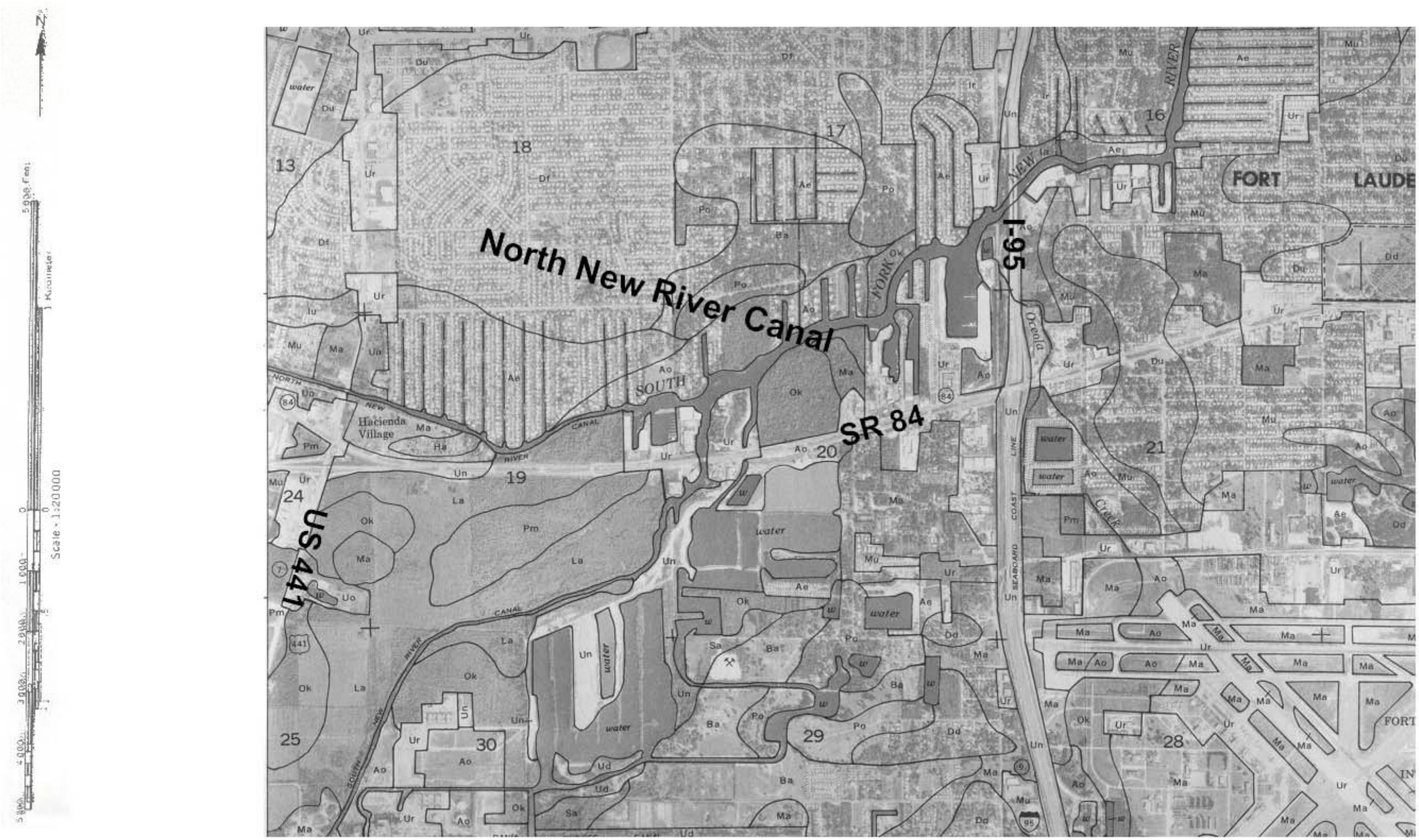
BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax 904.737.0040

Source: USGS Soils Survey of Brevard County, Florida

Date: Published 1976

I-595 PD&E Study

FIGURE 5: SOILS MAP (2 of 3)



BOWEN CIVIL ENGINEERING, INC.
6885 Belfort Oaks Place • Suite 110
Jacksonville, Florida 32216-6242
Telephone: 904.737.0090 • Fax: 904.737.0040

Source: USGS Soils Survey of Brevard County, Florida

Date: Published 1976

I-595 PD&E Study

FIGURE 5: SOILS MAP (3 of 3)

4.0 PROPOSED DRAINAGE

4.1 SFWMD Design Criteria

The stormwater management system will be designed to meet both discharge attenuation and pollution abatement requirements established by the South Florida Water Management District (SFWMD). With the elimination of the leftover original treatment systems, limited right-of-way and high seasonal groundwater elevations, it was assumed that wet detention pond systems would be utilized where possible to meet the required design criteria. A meeting was held with representatives of the SFWMD to determine what the governing design criteria would be for this project. SFWMD recognizes this project to be within the controlled drainage basin of the North New River Canal with specific design criteria enforced by SFWMD. The proposed improvements discussed in this report are recognized by SFWMD as a "Public Roadway Project". The required attenuation volume will be determined by limiting the post-development discharge to the pre-development discharge for the 25-year, 72-hour design storm using SCS design methodologies.

Wet detention treatment criteria requires that the larger volume between the first inch of runoff over the entire basin area or the total runoff of 2.5 inches over the impervious surface area be retained within the stormwater management system. The impervious area criteria dictates the treatment volume needs for this project. Utilizing the wet detention design criteria, the required treatment volume should be determined by taking 2.5 inches over the proposed additional pavement area while providing a level of water quality to the existing lanes that is equal to what is currently being provided. The provided treatment volume to the existing lanes is currently 1 inch over the total pavement area.

SFWMD indicated it will allow overtreatment for the existing pavement areas of the project to serve as compensation for other areas that may be left untreated. This is allowed because the entire project outfalls to the same receiving water body. To bring the original lanes to current treatment design criteria, an additional 1.5 inches of treatment volume could be provided to the existing pavement area which will serve as compensatory treatment for other areas that can not be treated. Refer to *Appendix A* for minutes of the meeting with the SFWMD on February 11, 2005.

4.2 FDOT Design Criteria

The stormwater collection system will be designed as per FDOT criteria utilizing a 10-year storm event that maintains a hydraulic gradient clearance of 1.0 ft from the theoretical gutter elevation, not considering minor energy losses. If all minor energy losses are calculated, it is acceptable for the hydraulic gradient to reach the gutter elevation.

The stormwater management facility will also be designed to allow for a one-foot freeboard over the design high water elevation for the 25-year, 72-hour SCS design storm event.

4.3 Proposed Drainage Systems

The proposed drainage conveyance system for the I-595 widening project will be composed of curb and gutter sections with piped collection systems in some segments in addition to segments that will utilize rural roadway sections captured by drainage swales. The lane additions proposed in the widening of I-595 will require that most of the existing exfiltration trenches and treatment swales be eliminated. It is recommended that these stormwater management facilities be replaced by a series of off-site wet detention systems where feasible. Exfiltration systems and/or swale treatment systems may be re-introduced in areas where off-site ponds are not an option and compensatory treatment in other basins is not available. New exfiltration trenches should only be considered as a last measure due to the high costs associated with long term maintenance of these facilities. All basins will continue to outfall to the North New River Canal.

The topography of I-595 is defined by the major interchanges that traverse the project. These interchanges divide the corridor up into nine basins. The surrounding urban developments contribute minimal offsite runoff to the project corridor. As a result, the right of way limits generally coincide with the northern and southern project drainage basin lines.

Table 2 summarizes the required treatment volumes and anticipated pond sizes for the nine basins. Wet detention criteria, in lieu of exfiltration or swale treatment criteria, was used in the sizing of the stormwater ponds. Treatment volumes were calculated by applying 2.5-inches to the proposed additional impervious and 1-inch to the existing impervious areas. Pond sizes listed are for minimum requirements only and do not reflect additional compensatory treatment. Potential compensatory treatment is further discussed in Section 5.0 of this report.

Table 2: Project Basin Summary

Basin	FROM (STA.)	TO (STA.)	Req. Trtmt. Vol. (ac ft)	Req. Pond Area (ac)
1	136th Ave. (1180+90)	Flamingo Rd. (1235+80)	5.86	8.2
2	Flamingo Rd. (1235+80)	Hiatus Rd. (1290+00)	5.69	8
3	Hiatus Rd. (1290+00)	Nob Hill Rd. (1343+30)	5.48	7.7
4	Nob Hill Rd. (1343+30)	Pine Island Rd. (1399+40)	5.91	8.3
5	Pine Island Rd. (1399+40)	University Dr. (1449+25)	5.28	7.4
6	University Dr. (1449+25)	FL Turnpike (1549+50)	11.49	16.1
7	Fl Turnpike Interchange (1549+50)	(1565+25)	2.55	3.57
8	State Road 7 Interchange (1565+25)	(1630+00)		
9	State Road 7 (1630+00)	I -95 (1697+50)	3.7	5.2

Pond area requirements were estimated by assuming that the treatment and attenuation volumes would be contained within one foot of depth. Because the surface water of the North New River Canal is 1.0 to 1.5 ft. below the land adjacent to the corridor, it is reasonable to assume that the proposed ponds will require some amount of berming above natural grade. This will achieve the minimum slope requirement for positive drainage between the proposed pond and outfall. These berms, in conjunction with landscaping and maintenance access, will decrease the actual area of a parcel that can be used for a pond and should be anticipated during final selection of the pond site. This estimated pond area was then multiplied by a factor of 1.4 to account for freeboard, berming, setbacks and maintenance buffers. An example hydraulic model was performed for Pond Site No. 3 within Basin 2 to verify that this methodology is acceptable as a means of estimating pond sizes. The results of the model and a typical section of the pond can be found in *Appendix B* of this report.

In the design of outfall pipes from the new pond locations it should be considered to utilize the existing cross drains where possible to help minimize construction costs and traffic disruption. These pipe systems already discharge to the North New River Canal and their flows could be controlled by introducing a new weir structure prior to discharging into the canal. A typical section that shows this concept is included in Appendix B of this report. It should be noted that these cross drains are relatively small to serve as pond outfalls. Some segments may need to be enlarged or new cross drains introduced to handle increased flows from the stormwater management facilities.

5.0 POND SITING ANALYSIS

5.1 Evaluation of Potential Ponds

A total of 32 pond sites were analyzed using aerial photographs and field verification for the nine project drainage basins. Refer to the Drainage Maps in *Figure 6* (located at the end of this section) for a plan view of the corridor and the location of the pond sites. The selected parcels were evaluated based on:

- Right of Way
- Land Use - zoning, future use
- Drainage
- Contamination Risk
- Utilities Involvement
- Cultural Resources
- Threatened / Endangered Species Involvement
- Wetland Considerations
- Construction / Maintenance / Accessibility
- Community Impacts
- Wellfields

There was no involvement noted from endangered species or wetlands for any of the pond sites. See Section 6.0 of this report for an environmental assessment of the pond sites. Concerns exist among only a few of the sites that relate to contamination risk and community impacts. Therefore, the main focus of this analysis relates to land use, drainage, and maintenance considerations.

In general, the pond sites share many of the same qualities, which are desirable for a stormwater pond location. All sites are hydraulically accessible, have similar distances to a receiving water body, and are in the same proximity to the project improvements. The pond sites discussed in this report are all suitable candidates from a hydraulic standpoint.

Larger pond sites should be considered where possible to offset the lack of stormwater treatment in other basins. This would maximize the utilization of the parcel and minimize the number of pond sites required in other areas of the corridor. For a brief summary of the individual pond sites, refer to the Pond Sizing Alternatives Matrix and the Pond Site Parcel Information worksheets found in *Appendix C*.

Table 3 summarizes the required treatment volumes, potential compensatory treatment volumes and available pond options for each basin. This table reflects that sufficient compensatory treatment volumes will offset areas where pond options are limited.

5.2 South Pond Alternatives

A total number of 23 pond sites were evaluated south of the I-595 corridor. A few of the sites contain existing ponds serving other development. Research of the stormwater permits for these off-site ponds was performed to determine if excess storage capacity was available. It appears that the existing ponds generally do not have sufficient capacity to serve as a primary alternative in any of the basins. However, these existing facilities could be altered to provide a partial amount of the required treatment. This option represents an inexpensive way to reduce the amount of new / expanded pond area required for the project. The weir of the control structure to these ponds could be raised to provide additional treatment volume. Additional treatment volume could also be gained by lowering the bleed-down device of the control structure to promote a lower normal water elevation. Raising the weir or lowering the bleed-down device of a 1-acre pond by just 2-inches will provide an additional 7,260 ft^3 of treatment storage. Refer to Appendix A for a summary of the research performed on these existing ponds.

5.2.1 Basin 1 (136th Avenue to Flamingo Rd.)

Pond Area Requirement = 8.2 acres
Compensatory Treatment Available = 3.45 ac-ft

Pond Sites 1 and 2 are both located within Basin 1. Pond Site 1 is an existing wet detention pond that is currently serving a mobile home park. Pond Site 2 is located on undeveloped property on the same parcel that contains Pond Site 1. Enlarging the existing pond by joining Pond Sites 1 and 2 is recommended to provide stormwater treatment in Basin 1. Pond Site 2 has an approximate area of 1-acre with Pond Site 1 encompassing 2.3 acres at normal water level. Joining pond sites 1 and 2 will optimize the existing facility and allow for more treatment capacity than if each site was utilized separately. Pond Sites 1 and 2 are not large enough to provide the required treatment volume for Basin 1. Compensatory treatment in other basins will need to be relied upon to completely meet the stormwater requirements for this basin. Further expansion into adjacent mobile home parcels which border Pond Site 2 to the south could also be considered in order to meet the treatment requirements in Basin 1.

5.2.2 Basin 2 (Flamingo Rd. to Hiatus Rd.)

Pond Area Requirement = 8.0 acres
Compensatory Treatment Available = 3.35 ac-ft

Basin 2 contains Pond Sites 3 through 7. Pond Site 3 is a vacant parcel zoned residential with a total area of approximately 9-acres. This pond site proves to be favorable for Basin 2 because it is undeveloped and costs associated with site demolition would not be encountered. Pond Site 3 is large enough to provide full treatment for Basin 2 and also provides compensatory treatment with its excess capacity.

Pond Site 4 is an existing pond that serves the Lake Pine Village subdivision. Modification of this 5.8-acre pond to provide an additional 2 inches of treatment depth would generate nearly 1 ac-ft of additional treatment volume. Construction costs associated with conveying I-595 runoff to Pond Site 4 will likely be high because the pond is currently surrounded by developed residential lots.

Pond Site 5 appears to also be favorable because it encompasses a large amount of land area. Pond Site 5 is made up of two parcels containing a combined area of 5.7 acres. These parcels are undeveloped and are currently zoned commercial and mobile home park. These parcels could be interconnected and used to provide a 4-acre pond capable of generating the 3.35 acre-ft of available compensatory treatment in Basin 2 if used in conjunction with Pond Site 3.

Pond Site 6 is an undeveloped portion of the Plaza II Shopping Center. Pond Site 6 can provide a maximum of 0.7 acres of pond area but it will likely be less due to landscaping requirements of the commercial property. Pond Site 6 is adjacent to the corridor and has excellent accessibility to the right of way. Pond Site 7 is a 0.9 acre undeveloped parcel that lies adjacent to SR 84. Landscaping requirements will likely reduce the area available for a pond site as well. Pond Sites 6 and 7 are much smaller in size than Sites 3 and 5. There is little benefit to developing these sites when much larger sites are available which are capable of fulfilling all treatment requirements as well as compensatory treatment possibilities.

5.2.3 Basin 3 (Hiatus Rd. to Nob Hill Rd.)

Pond Area Requirement = 7.7 acres
Compensatory Treatment Available = 3.21 ac-ft

Pond Site 8 is an existing pond that currently serves a multi-family residential development. Research of existing permit data shows that Pond Site 8 has 192 ac-ft of excess treatment volume. However, the existing facilities of Pond Site 8 only have 0.15 ft^3/sec of excess discharge capacity into Canal C-11. It may be possible to add a second outfall to this existing stormwater facility which would discharge north into the North New River Canal Basin (NNRC). Pond Site 8 contains a vast reserve of treatment volume for the project if the attenuation issues can be addressed.

Pond Site 9 is located in Basin 3 and is comprised of vacant properties zoned residential and commercial. Total land area of this site is 5.1 acres. Meetings with representatives from the Town of Davie suggest that a telecommunications tower is located on this site. Developing a pond on this site would not fully meet the 7.7-acre pond area requirement for Basin 3. It could be sufficient if compensatory treatment were utilized in other basins.

Pond Site 10 is located one parcel east of Pond Site 9. Pond Site 10 has a larger total area of 14.3 acres and includes vacant residential and commercial property as well as crop and pasture fields. Although Pond Sites 9 and 10 are similar in land value, Pond Site 10 is favorable because it is large enough to satisfy the stormwater requirements for the entire basin. Pond Site 9 may still be considered to serve as compensatory treatment from other basins. Pond Sites 9 and 10 could also be designed together as an equalized system. This would improve conveyance to the ponds by reducing the length of the collection system along the corridor.

5.2.4 Basin 4 (Nob Hill Rd. to Pine Island Rd.)

Pond Area Requirement = 8.3 acres
Compensatory Treatment Available = 3.46 ac-ft

Pond Sites 11 and 12 are both located on a Broward County Public Schools facility. Pond Site 11 is an existing 5.49 acre wet detention system for the school and Pond Site 12 is an open field located in the northeast corner of the school property. Pond Site 12 is 4.7 acres and conveniently located adjacent to the right of way. Minor modifications to the control structure of the pond at Pond Site 11 could generate an additional .92 acre-feet of treatment volume. Alternatively, the existing pond on site 11 could be expanded and interconnected with Pond Site 12 to completely meet the treatment requirements for Basin 4. However, to build a pond on school property would result in major impacts to the school system and the local community.

The remaining pond sites within Basin 4 are 11a and 13. Both of these sites are existing ponds that serve a single-family residential neighborhood and a golf course community, respectively. Expansion of either of these ponds to provide the required pond area for Basin 4 would require purchasing nearby residential lots. Insufficient data is available for Pond Sites 11a and/or 13 to determine if excess capacity is available to fully meet stormwater treatment for this basin. Therefore, it appears that Basin 4 contains no clear preferred pond site option. Compensatory treatment may be needed to satisfy the 8.3-acre pond requirement of Basin 4. Modification of the control structures to pond sites 11a and 13 could allow for a partial amount of treatment that would offset the amount of compensatory treatment likely required for Basin 4.

5.2.5 Basin 5 (Pine Island Rd. to University Dr.)

Pond Area Requirement = 7.4 acres
Compensatory Treatment Available = 3.11 ac-ft

Pond Site 14 encompasses a portion of Park City Mobile Home Park located just south of the corridor on Pine Island Road. This mobile home park has been alleged to experience drainage problems in the past. The site itself is a section of a 173-acre contiguous block of mobile home properties. Pond Site 14 proves to be favorable for

stormwater management in Basin 5. Site 14 can easily provide the 7.4 acres of pond area for Basin 5 as well as 3.11 ac-ft of compensatory treatment available in Basin 5 by treating an additional 1.5 inches over existing pavement areas. Alternatively, Pond Site 14 could possibly serve as a regional stormwater facility for the neighboring developments. A regional facility could gain compensatory treatment for previously untreated areas within its basin limits. As with all pond sites, the pond configuration shown on the Drainage Maps (see *Figure 6* located at the end of this section) is shown schematically and will be refined through ultimate right of way takes and final engineering design.

Pond Site 15 is an existing pond serving a nearby golf course development. Pond area could be gained by expanding the ponds further into the fairways. The golf course has expressed an interest in selling its drainage flow rights to FDOT. The control structure to this pond could be modified to provide at least a partial amount of the required treatment volume. This Pond Site option deserves attention because of the expansion opportunities associated with the existing ponds and the cooperation of the property owner.

5.2.6 Basin 6 (University Dr. to Florida Turnpike)

Basin 6 exhibits a length that is nearly double the length of the other project basins to the west. Pond Sites located on the western end of this basin will not be able to accept flows from the eastern portion of Basin 6 due to hydraulic limitations. As a result, the pond siting analysis for Basin 6 was performed separately for the western and eastern portions of the basin.

5.2.6.1 Basin 6 West (Station 1449+25 to Station 1489+00)

Pond Area Requirement = 9.1 acres
Compensatory Treatment Available = 3.75 ac-ft

Pond Site 16 is an undeveloped portion of a shopping center located adjacent to the University Drive interchange. The Pond Site has good accessibility and could potentially provide 1.7 acres of pond area. Pond Site 17 is composed of an existing 6.5 acre pond that serves the above-mentioned shopping center, 1.36 acres of adjacent vacant land that is part of the shopping center parcel, and a 2.0 acre pond adjacent to the shopping center pond that is currently serving a Carmax dealership. The vacant land and the ponds could be combined and optimized to create a regional stormwater facility that accepts flows from the roadway in addition to the areas the facilities are currently serving. Pond Site 18 exhibits excellent accessibility, is vacant commercial property. The 2.1 acre parcel could provide 1.50 ac-ft of treatment volume.

Basin 6 West will require an estimated 1.14 ac-ft of compensatory treatment even if Pond Sites 16, 17, and 18 are all utilized for stormwater management.

5.2.6.2 Basin 6 East (Station 1489+00 to Station 1549+50)
Pond Area Requirement = 7.0 acres
Compensatory Treatment Available = 2.89 ac-ft

Pond Site 19 is currently zoned as vacant industrial and light manufacturing property that could support a 6.9-acre pond. Site 19 is located immediately south of the corridor and exhibits excellent accessibility. The property is currently owned by the adjacent funeral home located to the east. Pond Site 19 is centrally located within Basin 6 and could directly treat areas from the western portion of Basin 6. Therefore, Pond Site 19 could be utilized to mitigate for the required treatment volume deficit present in Basin 6 West in addition to providing treatment to Basin 6 East.

Pond Site 20 is an existing pond that appears to be serving as a regional facility for the surrounding commercial, industrial and institutional developments. It is unlikely that any appreciable amount of expansion can be performed to this pond without purchasing adjacent property. Research of existing permits show this existing facility has 18.60 ac-ft of excess treatment volume but exhibits no excess discharge capacity into the NNRC. As with the other existing pond systems, there is the option of modifying the control structure to provide a modest level of additional treatment volume.

Pond Site 21 is an existing privately owned 100-acre lake. FDOT has easement rights to this lake and is currently utilizing it as an outfall for I-595. The owner of this property is in the process of backfilling the lake but the easement rights state that 7 acres of the lake will remain for FDOT use. This pond option should be considered to meet pond area requirements in Basin 6 since it is already dedicated for FDOT use.

Utilization of all three Pond Sites in Basin 6 East provide adequate pond area to meet the basin treatment requirements and would also provide 2.9 ac-ft of compensatory treatment credit.

5.2.7 Basins 7, 8 (Interchange Areas for Florida Turnpike and SR 7)
Pond Area Requirement = 3.6 acres
Compensatory Treatment Available = 1.95 ac-ft

Pond Site 22 represents the collection of storage areas located within the infield areas of the Florida Turnpike interchange and the State Road 7 interchange. These areas are already serving as stormwater management facilities but can be expanded and/or have modifications performed to the control structures to provide additional treatment for proposed improvements. Some of the infield areas are serving as dry storage areas which could possibly be converted to wet detention in conjunction with expansion. The

infield areas are hydraulically capable of accepting flows from both Basins 7 and 8 due to the considerable elevation difference between the ground and the raised sections of the interstate in this area.

5.2.8 Basin 9 (Interchange Area for I-95)

Pond Area Requirement = 5.2 acres
Compensatory Treatment Available = 2.99 ac-ft

There are no south pond alternatives for Basin 9. Refer to Section 5.3.4 for analysis of the north pond alternatives in Basin 9.

5.3 North Pond Site Alternatives

Eight parcels located north of the subject interstate have been recognized as possible Pond Site alternatives. These areas were evaluated to determine if they could offer compensatory treatment of other adjacent lands or if they could receive direct discharge of surface water from the I-595 corridor.

Five of the eight Pond Sites located north of the corridor are also north of the North New River Canal. Similar to the south Pond Site alternatives, these Pond Sites all possess positive outfalls to the North New River Canal and are in close proximity to the corridor.

Ponds constructed at the sites north of the North New River Canal will require conveyance under the canal in order to receive surface water from the I-595 corridor. The canal has an approximate bottom elevation of –4 NGVD. A drainage pipe sized to convey stormwater from the corridor into the pond is estimated to be 36 inches in diameter. The pipe will need to be placed under the canal in order to avoid obstructing the flow of water in the canal. The pipe would outfall into a pond on the north side at approximately –10 NGVD. Refer to *Figure 7* (located at the end of this section) for a schematic of this conveyance design alternative.

Further study is required to determine constructability issues with this concept. This analysis will need to consider the geologic and hydrologic properties of the canal. If further investigation reveals that this concept is feasible, it will likely still be very costly. Higher excavation and dewatering costs would be expected because ponds north of the canal will require greater pond depths than normal in order to accommodate the deep pipe under the canal at –10 NGVD. Installation of pipe will require jacking and boring under the canal.

Another conveyance alternative would be to pump stormwater discharge through a pipe positioned above the canal. Costs associated with operation and maintenance of a pump sized for flow typical of a 36-inch pipe as well as a backup generator would need to be considered when evaluating this concept.

In order for the north pond sites to be able to provide compensatory treatment for the project, several conditions must be in place. The area treated must be in the same watershed as the area being compensated. The land use, pollutant characteristics, and pollutant removal volumes must be similar. In the situation with regard to areas north of the North New River Canal, it should first be noted that most of this property was only recently developed. This is evident in the aerial photographs available in the Broward County Soils Survey which was published in 1976.

It can be concluded that much of the development, certainly any development after the mid '80's, is already receiving treatment and therefore is not a candidate for compensatory treatment. Areas which would be good candidates for compensatory treatment would be older streets near the North New River Canal. They would have to be relatively large areas to compare to the I-595 corridor. These would then be seen as similar in land use and pollutant production. It would be necessary to convey stormwater runoff from these streets to the proposed Pond Sites. This implies significant modifications to the collection systems which are already in place. Unless there were to be a vacant site adjacent to or near the outfalls for these streets, the concept of compensatory treatment for I-595 in ponds north of the corridor promises to be extremely involved and expensive.

5.3.1 Basin 1 (136th Avenue to Flamingo Rd.)

Pond Area Requirement = 8.2 acres
Compensatory Treatment Available = 3.45 ac-ft

Pond Site 1N is bounded on the south by the North New River Canal and on the north by Broward Boulevard. This parcel contains a land area of 8.3 acres. The property is 300 ft. east of the Commodore Drive bridge crossing. The inflow pipe to a pond on this parcel could be attached to the bridge and stormwater conveyed across the canal into the pond with a pump. The property is currently owned by Way of Life Assembly of God Church and is most likely planned for future expansion of the existing facilities. Selection of this site as a pond location may have a negative community response.

Pond Site 2N is located 400 ft. east of Pond Site 1N and is also bounded by Broward Boulevard and the canal. A land area of 9.36 acres is contained within the parcel boundaries. The southern half of the property is an undeveloped piece of 4.5 acres which lies adjacent to the canal. First Presbyterian Church of Plantation is also located on this property, and it appears that the southern half is planned for future development.

5.3.2 Basin 2 (Flamingo Rd. to Hiatus Rd.)

Pond Area Requirement = 8.0 acres
Compensatory Treatment Available = 3.35 ac-ft

Pond Site 3N is located 250 ft. east of Flamingo Road and just north of the North New River Canal. A vacant shopping center (Plantation Acres Plaza) is currently occupying the 2.2-acre parcel. The combination of expensive retail land costs, demolition costs, and the difficulty in connecting this pond across the North New River Canal may ultimately prohibit this parcel as being used for a Pond Site.

5.3.3 Basin 5 (Pine Island Rd. to University Dr.)

Pond Area Requirement = 7.4 acres
Compensatory Treatment Available = 3.11 ac-ft

Pond Sites 14N and 15N are both undeveloped parcels zoned commercial and located adjacent to the canal and just east of Pine Island Road. These parcels are part of Cornerstone Business Park located at the corner of Pine Island Road and Peters road. Sites 14N and 15N possess land areas of 3.6 acres and 2.5 acres respectively.

Pond Site 25N is found at the northeast corner of the University Boulevard interchange with I-595. This 4.89-acre tract of vacant commercial property is neighbored by shopping centers to the north and an office park to the west.

5.3.4 Basin 9 (Interchange Area for I-95)

Pond Area Requirement = 5.2 acres
Compensatory Treatment Available = 2.99 ac-ft

Pond Sites 26N, 27N, and 28N are located north of I-595 about 500 ft. east of the State Road 7 Interchange. The North New River Canal begins to veer north at the State Road 7 Interchange with I-595 and is actually north of these pond site locations. Constructing a pond on these sites would not involve the difficulty of conveyance under the canal. The I-595 corridor is elevated within this section as it passes over Pond Apple Slough making a pipe connection fairly easy. Sites 26N and 27N currently contain marine commercial properties. Pond Site 28N is zoned vacant commercial with a land area of 2.5 acres. Sites 26N and 27N have areas of 2.3 and 3.2 acres respectively. Creeks that flow to the North New River Canal separate the Pond Sites from each other, and thus could serve as a convenient outfall for facilities placed on the properties. Utilizing any two of the three north Pond Sites in this basin will be adequate to fulfill the basin's treatment volume requirement. Utilizing all three sites will generate 1.57 ac-ft of compensatory treatment credit for use in other basins that exhibit a deficit in provided treatment volume.

LEGEND:

- EXISTING SFWMD PERMITS
- EXISTING POND
- PROPOSED POND LOCATIONS
- FDOT PONDS TO BE EXPANDED

BASIN 1 FROM SW 136TH AVE. TO FLAMINGO RD.
TREATMENT VOLUME REQUIRED = 5.9 AC. FT

STATE PROJ. NO. 86095-3464
ORIGINAL CONSTRUCTION OF I-595
DESIGNED 1985

POND SITE # 3N
8.3 AC.

POND SITE # 2N
9.4 AC.

STATE PROJ. NO. 86095-3462
ORIGINAL CONSTRUCTION OF I-595
DESIGNED 1985

EXISTING CROSS DRAINAGE (TYP.)

FLAMINGO ROAD

SW 138TH AVENUE
NW 136TH AVENUE

1160 1170 1180 NORTH NEW RIVER CANAL 1190 1200 1210

SR-84 WESTBOUND
I-595 WESTBOUND
I-595 EASTBOUND
SR-84 EASTBOUND

SW 136TH AVENUE

POND SITE # 1
2.3 AC.

POND SITE # 2
1.0 AC.

MATCHLINE - SEE FIG. 5

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

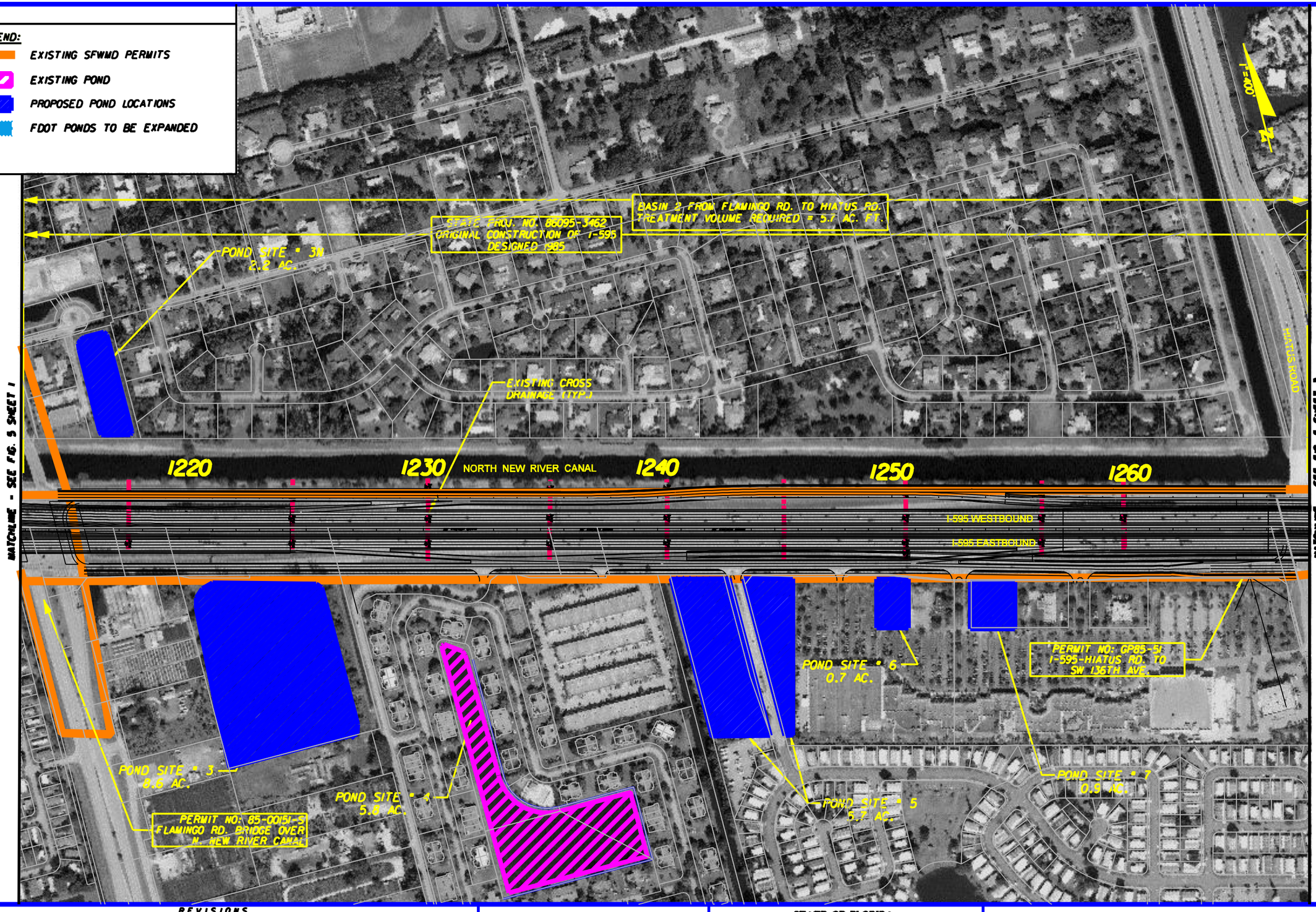
PROJECT DRAINAGE MAP
FIGURE 6

SHEET NO.
FIG. 6
1 OF 10

...\drmprd200.dgn 10/7/2005 1:26:51 PM

LEGEND:

- EXISTING SFWMD PERMITS
- EXISTING POND
- PROPOSED POND LOCATIONS
- FDOT PONDS TO BE EXPANDED



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

1-40

SHEET NO.
FIG. 6
2 OF 10

...\drmprd201.dgn 10/7/2005 1:27:45 PM

LEGEND:

- EXISTING SFWMD PERMITS
- EXISTING POND
- PROPOSED POND LOCATIONS
- FDOT PONDS TO BE EXPANDED

BASIN 3 FROM HIATUS RD. TO NOB HILL RD.
TREATMENT VOLUME REQUIRED = 5.5 AC. -FT.

STATE PROJ. NO. 86095-3421
ORIGINAL CONSTRUCTION OF I-595
DESIGNED 1986

I-595

NOB HILL ROAD

EXISTING CROSS DRAINAGE (TYP.)

MATCHLINE - SEE FIG. 5 SHEET 2

1270 1280 NORTH NEW RIVER CANAL 1290 1300 1310

MATCHLINE - SEE FIG. 5 SHEET 4

SR-84 WESTBOUND

I-595 WESTBOUND

I-595 EASTBOUND

SR-84 EASTBOUND

POND SITE # 8
10.1 AC.

POND SITE # 9
5.1 AC.

POND SITE # 10
14.3 AC.

PERMIT NO: 06-00788-S
EAST OF HIATUS RD. TO
WEST OF UNIVERSITY DRIVE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

1-41

SHEET NO.
FIG. 6
3 OF 10

...\drmprd202.dgn 10/7/2005 1:28:36 PM

LEGEND:

- EXISTING SFWMD PERMITS
- EXISTING POND
- PROPOSED POND LOCATIONS
- FDOT PONDS TO BE EXPANDED

BASIN 4 FROM NOB HILL RD. TO PINE ISLAND RD.
TREATMENT VOLUME REQUIRED = 5.9 AC. FT.

STATE PROJ. NO. 86095-3421
ORIGINAL CONSTRUCTION OF I-595
DESIGNED 1986

1"=200'

GOLF COURSE

EXISTING CROSS DRAINAGE (TYP.)

MATCHLINE - SEE FIG. 5 SHEET 3

1330 1340 NORTH NEW RIVER CANAL 1350 1360 1370

SR-84 WESTBOUND

MATCHLINE - SEE FIG. 5 SHEET 5

POND SITE # 12
4.7 AC.

POND SITE # 13
0.5 AC.

NOB HILL ROAD

POND SITE # 11
5.49 AC.

GOLF COURSE

POND SITE # 11A
5.6 AC.

PERMIT NO: 06-00788-S
EAST OF HIATUS RD. TO
WEST OF UNIVERSITY DRIVE.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

1-42

SHEET NO.
FIG. 6
4 OF 10

...\drmprd203.dgn 10/7/2005 1:29:10 PM

LEGEND:

- EXISTING SFWMD PERMITS
- EXISTING POND
- PROPOSED POND LOCATIONS
- FDOT PONDS TO BE EXPANDED

BASIN 5 FROM PINE ISLAND RD. TO UNIVERSITY DR.
TREATMENT VOLUME REQUIRED = 5.3 AC. FT.

STATE PROJ. NO. 86095-3421
ORIGINAL CONSTRUCTION OF I-595
DESIGNED 1986

POND SITE # 15N
4.2 AC.

PERMIT NO: 06-00788-S
I-595 INTERSTATE (PACKAGE P)
FROM HIATUS TO WEST OF UNIVERSITY

POND SITE # 25N
4.9 AC.

POND SITE # 1N
2.0 AC.

EXISTING CROSS DRAINAGE (TYP.)

MATCHLINE - SEE FIG. 5 SHEET 4

MATCHLINE - SEE FIG. 5 SHEET 6

1380 1390 1400 1410 1420

NORTH NEW RIVER CANAL

SR-84 WESTBOUND

I-595 WESTBOUND

I-595 EASTBOUND

SR-84 EASTBOUND

PINE ISLAND ROAD

TRAILER PARK

GOLF COURSE

POND SITE # 1A
11.7 AC.

POND SITE # 1S
3.8 AC.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

...\drmprd204.dgn 10/7/2005 1:29:38 PM

LEGEND:

- EXISTING SFWMD PERMITS
- EXISTING POND
- PROPOSED POND LOCATIONS
- FDOT PONDS TO BE EXPANDED

1"=400'

BASIN 6 WEST FROM UNIVERSITY DR. TO FLORIDA'S TURNPIKE
TREATMENT VOLUME REQUIRED = 6.5 AC. FT.

STATE PROJ. NO. 86095-3401
ORIGINAL CONSTRUCTION OF I-595
DESIGNED 1987

PERMIT NO: 13-00244-S
STATE PROJ. #86220-1501
UNIVERSITY DR. FROM S. OF SR-84

1430 1440 1450 1460 1470 1480

PERMIT NO: 06-00858-S(1)(0)
REESE RD. RETENTION AREA

NORTH NEW RIVER CANAL

EXISTING CROSS DRAINAGE (TYP.)

PERMIT NO: 06-00858-S(1)(0)
REESE RD. RETENTION AREA

SR-84 WESTBOUND

SR-84 EASTBOUND

MATCHLINE - SEE FIG. 5 SHEET 5

UNIVERSITY DRIVE

1.71 AC.

8.48 AC.

PERMIT NO: 06-00858-S
I-595 PACKAGE "N" FROM
WEST OF UNIVERSITY TO
WEST OF TURNPIKE

POND SITE # 17

POND SITE # 16
1.7 AC.

NOVA VILLAGE

POND SITE # 18
2.1 AC.

PERMIT NO: 06-00858-S
I-595 PACKAGE "N" FROM
WEST OF UNIVERSITY TO
WEST OF TURNPIKE

MATCHLINE - SEE FIG. 7 SHEET 7

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Bellori Oaks Place, Suite 110
Jacksonville Florida 32216-8242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

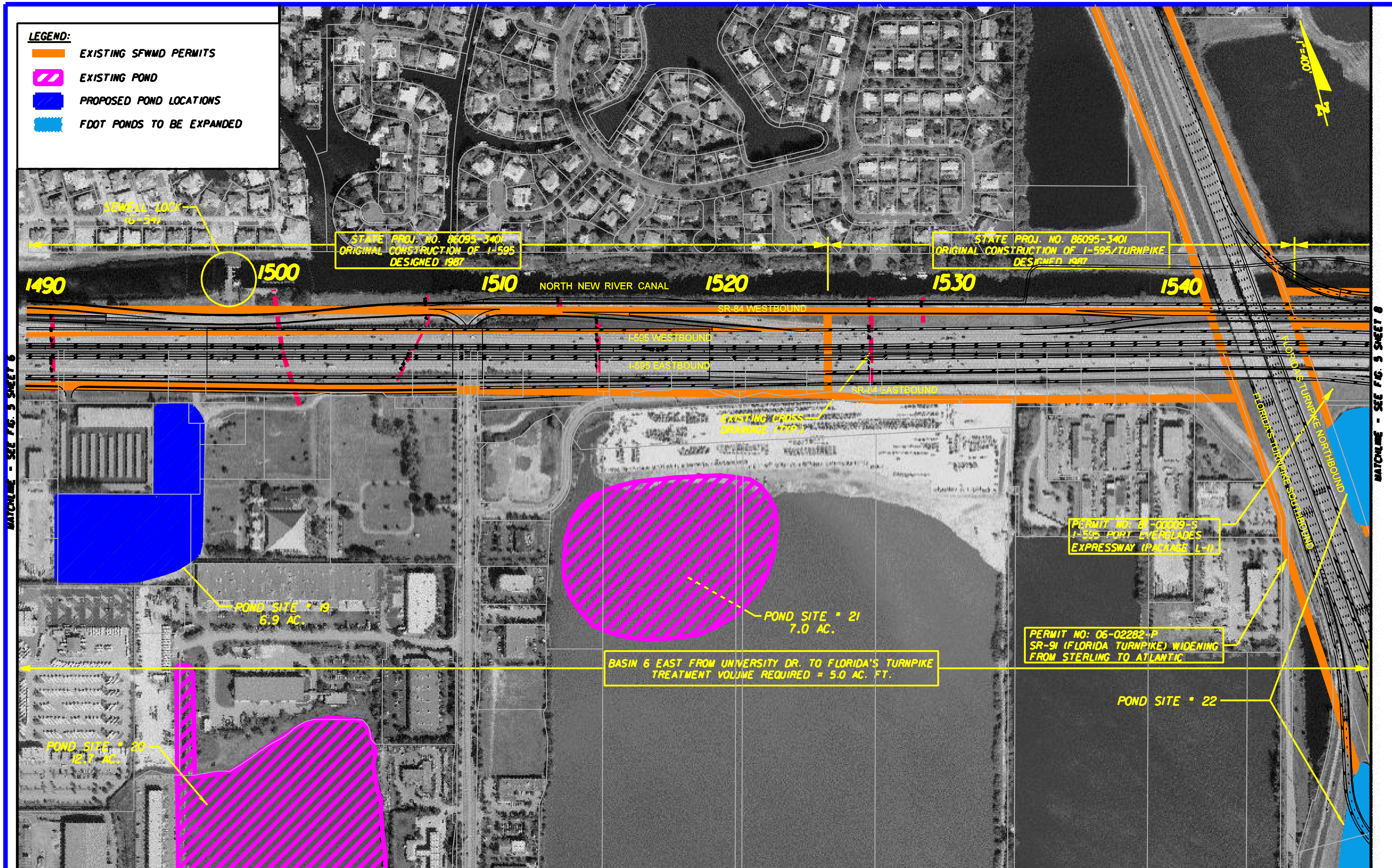
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

SHEET NO.
FIG. 6
6 OF 10

...\drmprd205.dgn 10/10/2005 10:41:22 AM



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

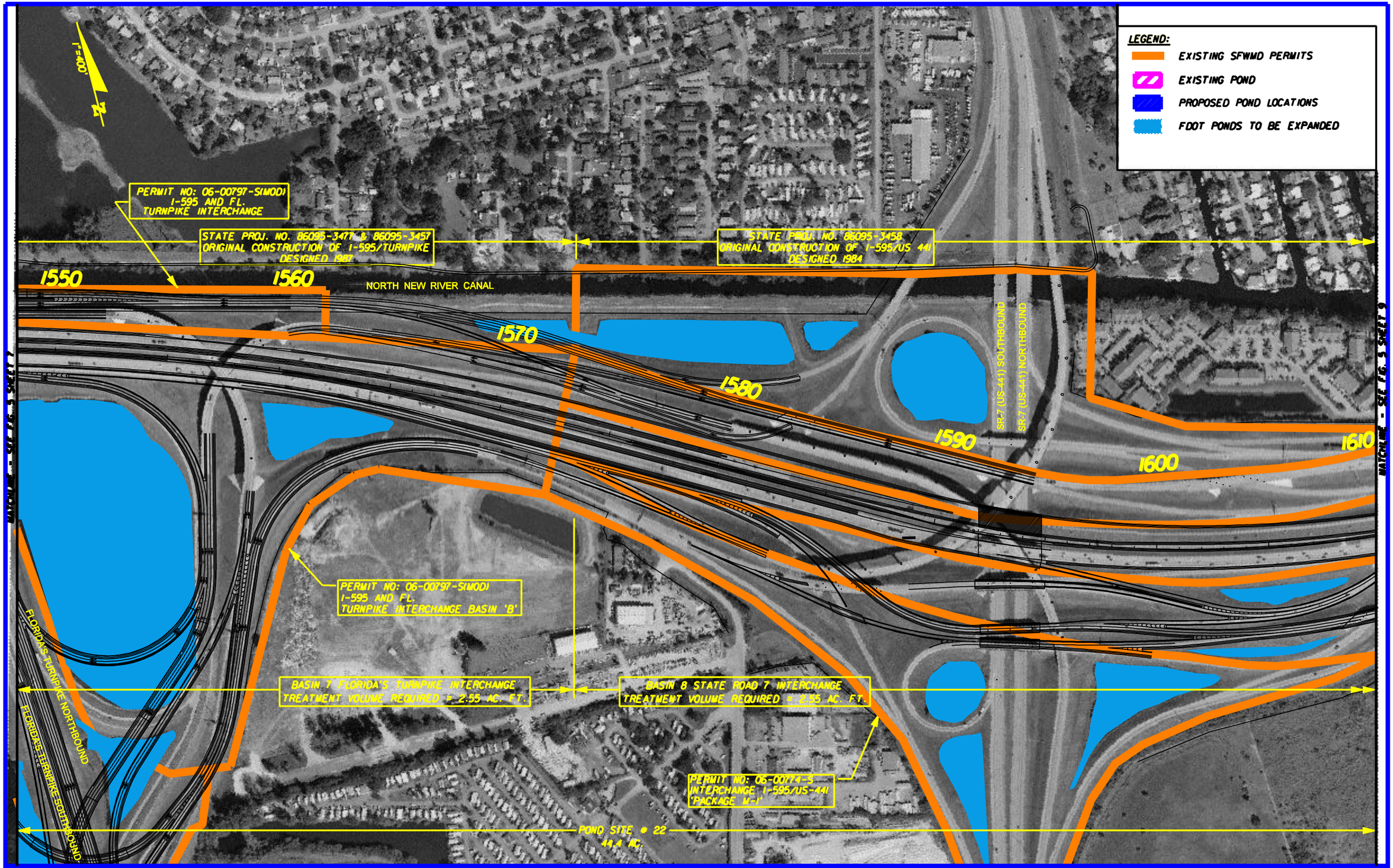
Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

SHEET NO.
FIG. 6
7 OF 10



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

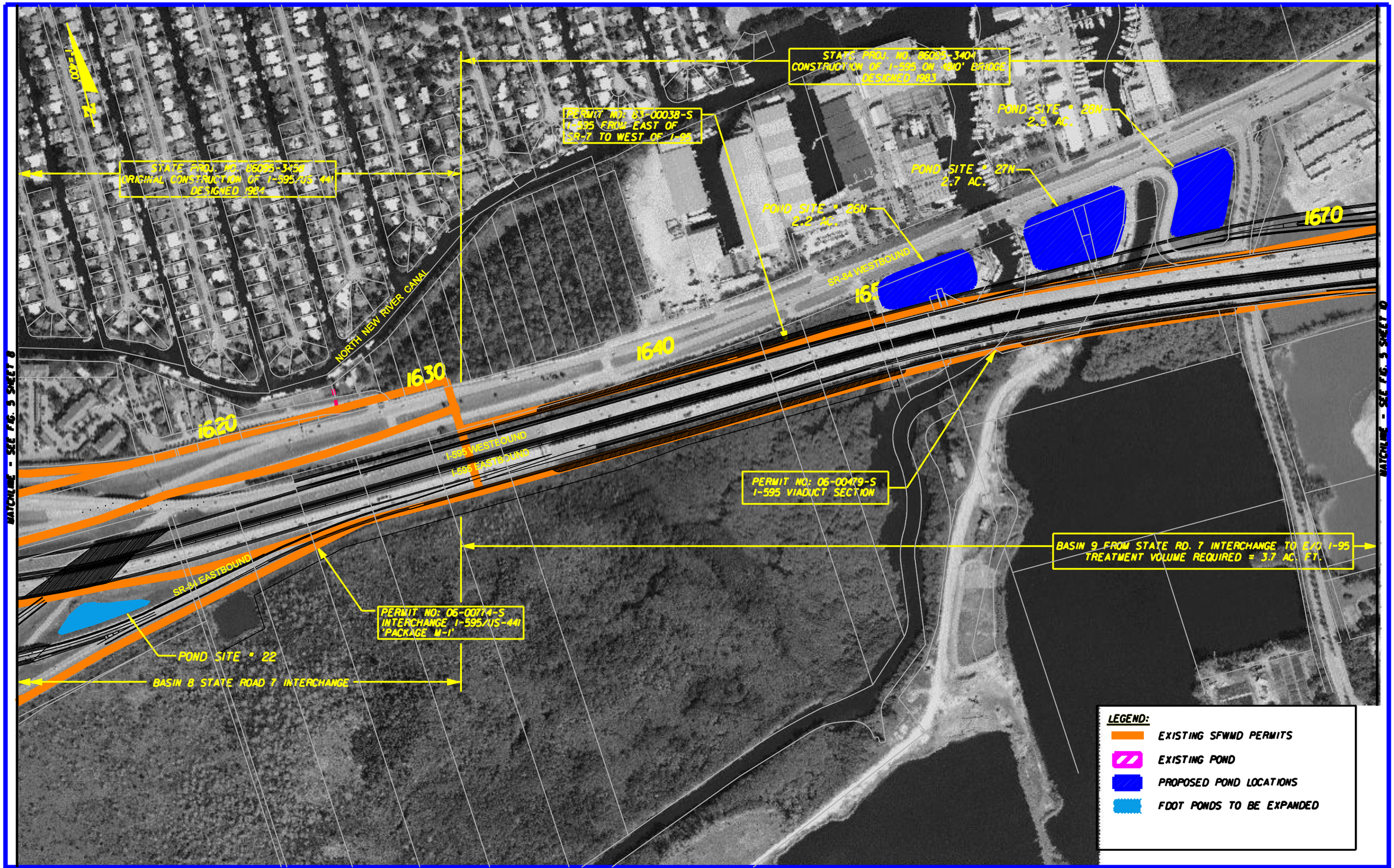
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

1-46

SHEET NO.
FIG. 6
8 OF 10

...\drmprd207.dgn 10/7/2005 1:31:05 PM



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

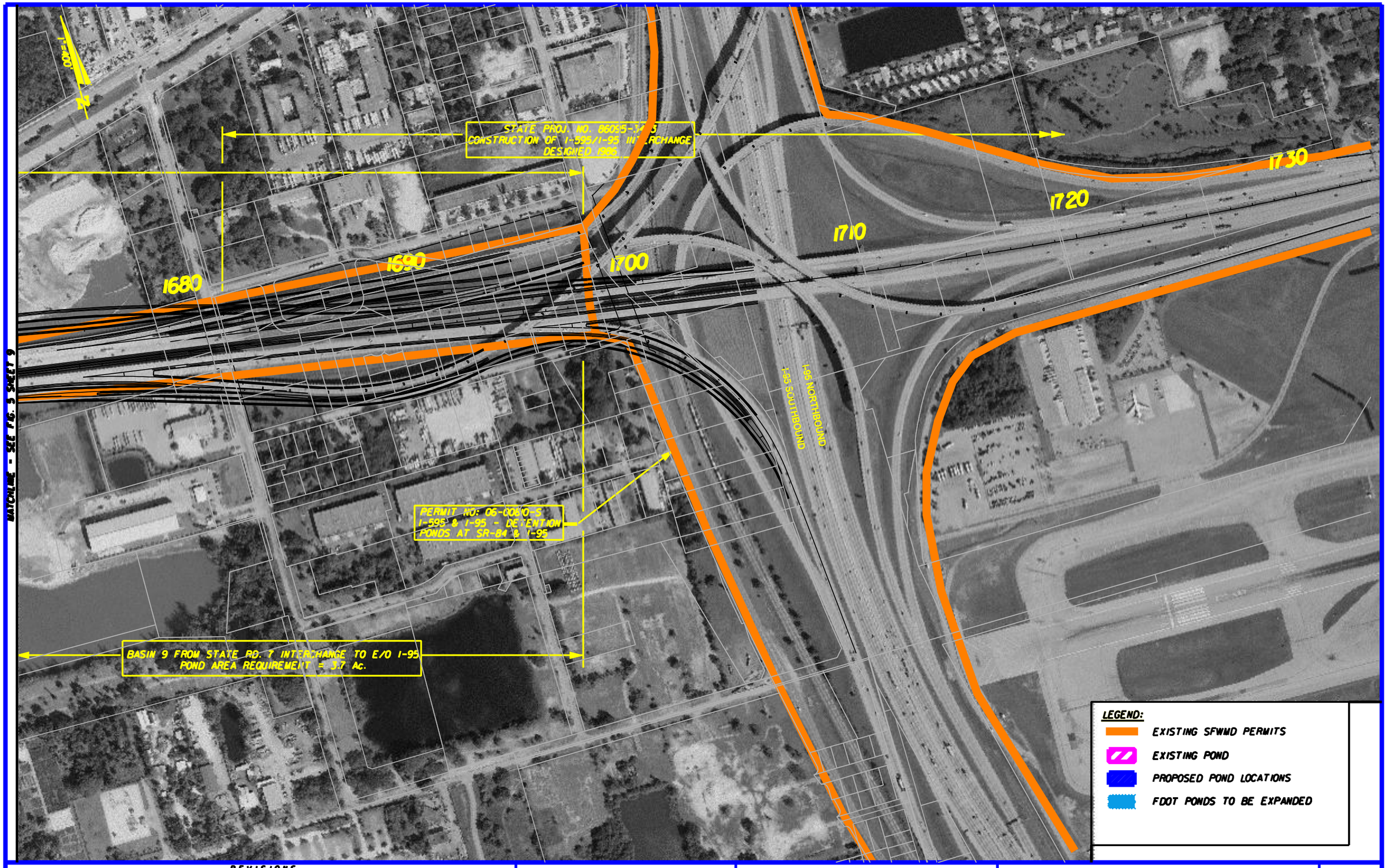
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

1-47

SHEET NO.
FIG. 6
9 OF 10

...\drmprd208.dgn 10/7/2005 1:31:34 PM



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

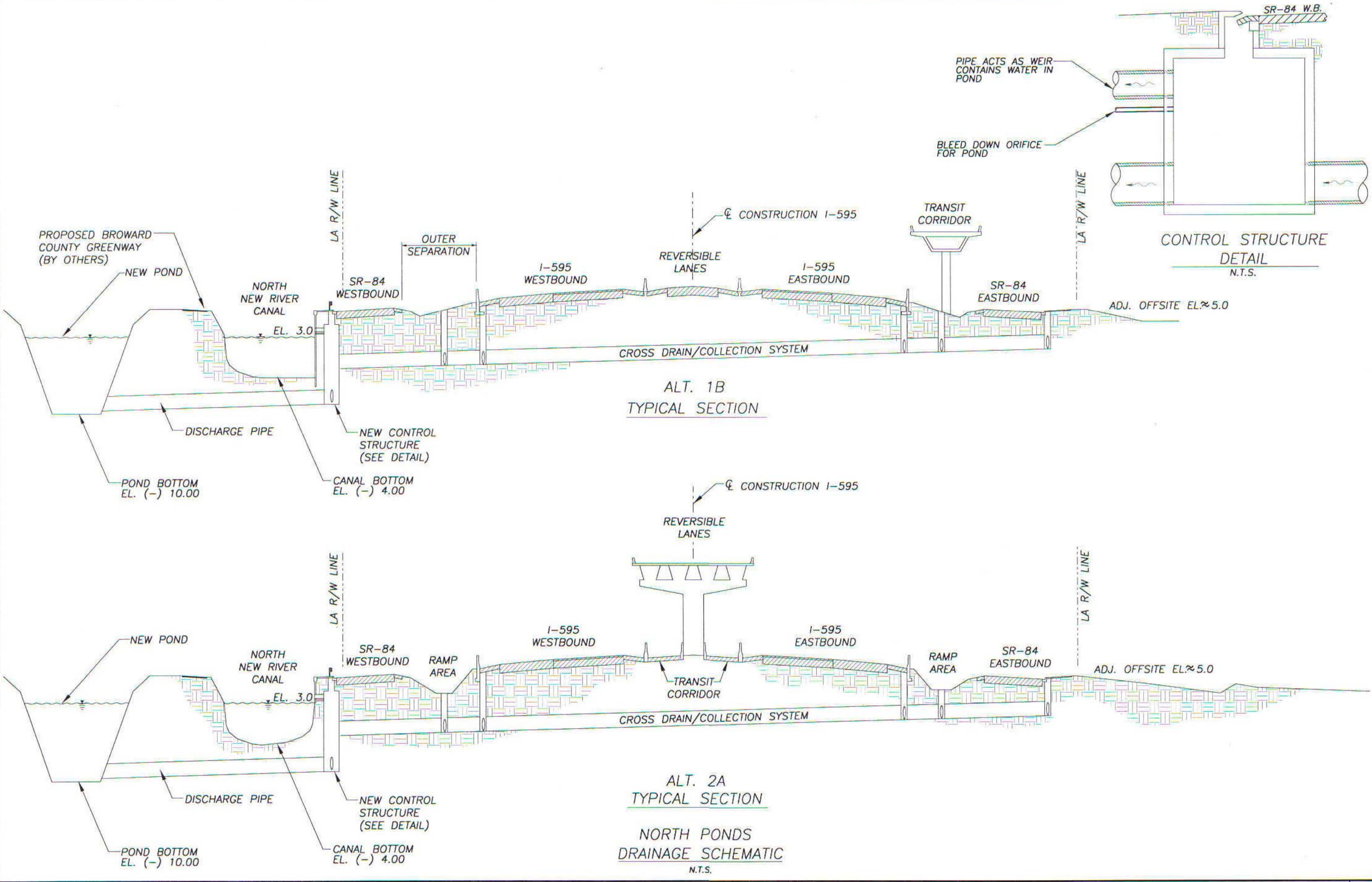
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

PROJECT DRAINAGE MAP
FIGURE 6

SHEET NO.
1-48
FIG. 6
10 OF 10

...\drmprd209.dgn 10/7/2005 1:32:01 PM



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
5885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

I-595 POND SITING REPORT
FIGURE 7

SHEET NO.
FIG. 7
1 OF 1

...\Figure 7.dgn 11/2/2005 4:35:06 PM

6.0 ENVIRONMENTAL

6.1 Contamination

Pond Site 3 is located on the Andreas Holdings Property/Former Dairy Site (12200 State Road 84). It was assigned a medium risk for contamination involvement because a complete Tank Closure Assessment was not performed for the removal of the storage tank and underground piping.

Pond Site 7 is located on the Texaco/Mobil Station property (11400 State Road 84). It was assigned a high risk for contamination involvement because of documented contamination.

Pond Sites 11 and 12 are on the Fox Trail Elementary School property (1250 Nob Hill Road). It was assigned a low risk for contamination involvement because although it has a regulatory record, no contamination has been documented at this site.

Pond Site 14 is not located on a parcel with contamination concern. However, to convey water from the corridor to it, the pipe will need to run through the high risk parcel containing Dry Clean USA/Warrickleen (8622 State Road 84) and 7-Eleven Food Store (8630 State Road 84 and 8690 State Road 84), both of which have documented contamination; or the low risk parcels containing Tire Kingdom (8410 State Road 84) and Meineke Discount Mufflers (8392 State Road 84), both of which have regulatory records but no contamination has been documented at them.

Pond Site 19 is located on the Forest Lawn Cemetery-South (2401 SW 64 Avenue). It was assigned a low risk for contamination involvement because the contamination previously documented at this site was addressed and a Site Rehabilitation Closure Order was issued.

Pond Site 20 is located on the SFWMD-Fort Lauderdale Field Station property (2535 Davie Road). It was assigned a low risk for contamination involvement because although it has a regulatory record regarding three (3) active storage tanks, no contamination has been documented at this site.

Pond Site 26N is located on a parcel occupied by Artmarine, Easton Power Marine Specialists, and several other small marine-related manufacturers and service businesses (3100 State Road 84). It was assigned a low risk for contamination involvement because although it has a regulatory record, no contamination has been documented at this site.

Pond Site 27N is located on a parcel occupied by Harddrives Dump, Lauderdale Sand & Fill, New River Marina, and several other small marine-related manufacturers and service businesses (3100 State Road 84). The parcel has a long history of contamination issues and both Harddrives Dump and Lauderdale Sand have independent files in the EPA CERCLIS (Superfund) program, though neither is currently listed on the National Priorities List (NPL).

6.2 Wetlands

None of the proposed stormwater pond sites contain wetlands; however, some of the existing stormwater management systems that are being proposed for expansion contain hydrophytic vegetation. It is anticipated that there will be a net gain of hydrophytic vegetation associated with the stormwater management system for I-595 since the system is being expanded. The only wetland impacts, which are not related to any of the pond sites, are within the I-595 limited access right of way located adjacent to Pond Apple Slough Natural Area and are addressed in the Wetland Evaluation Report.

6.3 Threatened & Endangered Species

None of the proposed stormwater pond sites contain listed species. Although listed birds such as the woodstork may currently forage at the edges of the existing stormwater ponds, it is anticipated that they will continue to forage in them and any stormwater ponds constructed in the future.

7.0 CONCLUSION

This Pond Siting Report supports the Preliminary Engineering Report provided as a part of the Project Development and Engineering (PD&E) process. The primary objective of this report is to provide a summary of the data collection, research and evaluation of various pond sites along the I-595 corridor. Several pond site options prove to be available for this project which will accomplish both replacement of the existing stormwater management system and provide additional treatment and attenuation requirements for the planned improvements. Because of limited right-of-way and the long-term maintenance and operation expense associated with exfiltration systems, off-site wet detention ponds are recommended to meet stormwater management criteria. The use of exfiltration systems should be considered only as a last resort in areas where treatment options are not available.

There are several segments along the corridor where it appears that a suitable pond option is not apparent. To offset the loss of treatment within these areas, it is recommended to utilize compensatory treatment of the originally paved areas within other basins. The SFWMD has agreed to allow for 1.5 inches of credit to be given over these areas for compensatory treatment in other basins where land options are more prevalent. It is recommended to utilize a multiple pond system within a basin to reduce excess hydraulic gradient concerns and to maximize opportunities for compensatory treatment.

The design of outfall pipes from the new pond locations should consider the possibility of utilizing the existing cross-drains that currently collect and route drainage to the North New River Canal. Control structures could be installed at the downstream end of these cross drains. It should be noted again that these cross drains are relatively small and many will need to be enlarged to accommodate attenuated flows from future ponds.

A summary of the required treatment volumes, potential compensatory treatment volumes and available pond options for each basin is located in *Table 3* on the following page. This table reflects that sufficient compensatory treatment volumes will offset areas where pond options are limited. The Pond Site Alternatives Matrix located in *Appendix C* further outlines each pond option site with regards to the evaluation criteria.

Table 3: Pond Sizing Analysis Summary

Basin	Total Area (acres)	Existing Impervious Area (acres)	New Impervious Area (acres)	Total Impervious Area (acres)	Required Treatment Volume[A] (ac-ft)	Pond Area* for Req. Treatment Volume (ac)	Comp Treatment Available[B] (ac-ft)	Pond Area* for Full Comp Treatment[C] (ac)	Treatment Volume (ac-ft) Provided In Pond Sites[D,**]		Comp Treatment Required (ac-ft)	Comp Treatment Available In Pond Sites[E] (ac-ft)
									Pond Site	TV Prov.		
1	55.1	27.6	17.1	44.7	5.86	8.20	3.45	4.83	1	0.38	4.76	--
									2	0.71		
									Total=	1.10		
2	49.6	26.8	16.6	43.4	5.69	7.97	3.35	4.69	3	6.14	--	3.35
									4	0.97		
									5	4.07		
									6	0.50		
									7	0.64		
									Total=	12.32		
3	47.8	25.7	16	41.7	5.48	7.67	3.21	4.49	8	1.68	--	3.21
									9	3.64		
									10	10.21		
									Total=	15.53		
4	49.5	27.7	17.3	45	5.91	8.27	3.46	4.84	11	0.92	0.45	--
									11A	1.10		
									12	3.36		
									13	0.08		
									Total=	5.46		
5	51.9	24.9	15.4	40.3	5.28	7.39	3.11	4.35	14	6.35	--	1.70
									15	0.63		
									Total=	6.98		
6 West	68.42	29.98	19.14	49.11	6.48	9.08	3.75	5.25	16	1.21	1.14	--
									17	2.63		
									18	1.50		
									Total=	5.35		
6 East	52.73	23.12	14.76	37.88	5.00	7.00	2.89	4.05	19	4.92	--	2.89
									20	2.12		
									21	7.00		
									Total=	14.04		
7,8	168.8	15.60	6.00	21.60	2.55	3.57	1.95	2.73	22	7.40	--	1.95
									Total=	7.40		
9	59.8	23.9	8.2	32.10	3.70	5.18	2.99	4.18	26N	1.57	--	1.57
									27N	1.92		
									28N	1.78		
									Total=	5.27		
					45.96	64.34	28.15	39.42		73.44	6.36	14.67

Notes:

* Pond Areas assume 1 ft. depth for treatment, a factor of 1.4 for additional setbacks and maintenance berms.

** Table reflects south pond alternatives only with the exception of 26N-28N. These pond sites were included because they are south of the NNRC and do not require pumping across the canal.

[A] "Required Treatment Volume" represents the treatment volume needed to fully meet SFWMD water quality requirements in each basin.

[B] "Comp Treatment Available" represents the maximum possible amount of compenstory treatment to be gained in each basin and was estimated by multiplying 1.5 in. over existing impervious area.

[C] "Pond Area for Full Comp Treatment" represents the pond area needed to hold the maximum compensatory treatment volume in each basin. This pond area does not include the additional area to hold the required treatment volume in the basin. A pond area big enough to provide the required treatment volume and generate the maximum amount of compensatory treatment in each basin would be the sum of the columns "Pond Area for Required Treatment Volume" and "Pond Area for Full Comp Treatment".

[D] "Treatment Volume Provided in Pond Sites" was estimated by assuming that the treatment volume would be contained in 1 foot of depth and applying a factor of 1.4 to account for berms and setbacks. See Appendix for sample calculation which verifies these assumptions. For existing ponds this number was estimated by assuming the facility could accept an additional 2 inches of treatment volume depth.

[E] "Comp Treatment Available In Pond Sites" represents the maximum possible amount of compensatory treatment to be generated by the pond sites in the basin. Some basins exhibit available treatment volume in excess of this number, however only 1.5 inches over the existing pavement area in each basin can be counted as compensatory treatment.

APPENDIX A

Permit Data

- SFWMD Meeting Minutes
- Research of Existing Permits Adjacent to I-595 Corridor
- I-595 Port Everglades Expressway – Environmental Permits List (August 31, 1991)

MEETING MINUTES

Reynolds, Smith and Hills, Inc.
Architectural, Engineering, Planning and Environmental Services

Copies to:	Participants Steve Braun, FDOT Jeff Bowen, RS&H File D.5	**Date:**	March 9, 2005
Project:	I-595 PD&E (DOT Dist. 4) Plantation, Florida	**Project Nos:**	
Meeting Place:	SFWMD West Palm, Florida	**Meeting Date:**	February 11, 2005
		Meeting Time:	8:45 AM
Participants:	Tony Waterhouse, SFWMD Carlos Derojas, SFWMD Pat Webster, FDOT Shandra Davis, FDOT Phil Schwab, RS&H Hamid Ashtari, RS&H Erik Neugaard, RS&H		
Purpose:	SFWMD Pre-Application Meeting		
Prepared By:	Hamid Ashtari, RS&H		

After project introduction by Shandra Davis and Phil Schwab, Hamid Ashtari talked about RS&H's understanding of permitting requirements. Hamid explained that the permits for the original construction of the I-595 were issued in the mid nineteen eighties. A review of the existing permits indicates that treatment one inch of runoff over the impervious surface areas has been provided for most of the I-595 corridor, utilizing French Drains and shallow swales. RS&H's understanding of the criteria is to provide treatment for 2.5 inches of runoff over the proposed impervious surface areas, in addition to providing treatment volume for the existing paved areas based on their construction permit. Compensatory treatment could be provided by providing 2.5 inches of treatment over both existing and proposed paved areas in lieu of not treating some proposed pavement where it is not feasible to do so. SFWMD agreed with concept indicating that the arithmetic needs to work such that we are not taking compensation credit for treating more than 2.5 inches of runoff. We may also provide treatment for the existing untreated areas of SR 84 in lieu of providing treatment for the proposed widening.

On attenuation, Hamid explained that the outfall for the entire project is the North New River Canal, and that attenuation volume could be provided in the infield areas of the interchanges within the project limits. SFWMD agreed with the concept saying that it is possible to compensate for attenuation of runoff for segments of roadway between the interchanges by providing extra attenuation within the interchange areas.

Erik Neugaard addressed the unavoidable wetland impacts. He stated that the only wetland impacts would occur at Pond Apple Slough, and would entail approximately 4 acres of permanent shading impacts from the viaduct widening and approximately 0.6 acres of impact from the construction road that

would be required on the south side of the viaduct. Rob Robbins asked if the construction road impacts would be temporary. Erik stated that at this time, FDOT was planning to leave the road for bridge maintenance and the total unavoidable impacts would be approximately 4-1/2 acres.

Erik stated that FDOT was still in the Project Development and Environment (PD&E) phase and that they were currently in the process of identifying conceptual wetland mitigation options. He stated that FDOT was still considering participation in Broward County Environmental Protection Department's hydrological restoration plans for Pond Apple Slough to offset some of the wetland impacts, and was looking for areas to provide the minimum 2:1 replacement ratio also requested by Broward County Environmental Protection Department at an inter-agency meeting previously held for the project. He also stated that FDOT was interested in holding another inter-agency meeting, possibly at Pond Apple Slough, next month.

Erik stated that a portion of the project was within the horizontal extent of the Florida Petroleum Reprocessors Superfund Site, but FDOT had coordinated with the EPA and EPA is allowing FDOT to manage stormwater from I-595 within the horizontal extent of the Superfund plume. He also stated that most of the contamination was deep due to the higher specific gravity of the contaminants and that natural attenuation was being used for remediation.

Carolyn Farmer asked if FDOT was still interested in obtaining a conceptual permit for this project, as discussed at the previous inter-agency meeting. Pat Webster stated that they would probably not request one. Rob Robbins noted that even though Erik stated the wetland impacts had been minimized to the maximum extent practicable, the SFWMD would still look for additional minimization possibilities.

The meeting concluded at approximately 9:30 AM

Research of Existing Permits Adjacent to I-595 Corridor

Pond Site No.	Permit No.	Project Name	Applicant	SWM Type	SWM Size (ac)	SHGWT El. (ft NGVD)	Treatment El. (ft NGVD)	Req'd Treatment Volume (ac-ft)	Provided Treatment Volume (ac-ft)	Available Treatment Volume (ac-ft)	Allowable Discharge (cfs)	Design Discharge (cfs)	Available Discharge (cfs)	Pond Data		Comments
														Stage (ft)	Storage (Ac-Ft)	
4	06-00201-S	Lake Pine Village	A.D. Griffin 6143 SW 45th St. Davie, FL 33314	Wet Pond	7.20	5.50	6.05	4.00	5.00	**1.00**	34.00	32.00	**2.00**	5.50	0.00	Design Storm - 25yr1day; Outfall - CBWCD Canal; North New River Canal Basin
														6.00	3.60	
														6.50	7.20	
														7.00	10.80	
														7.50	14.40	
														8.00	18.00	
8	06-00543-S	Cameron Palms/Scarborough I, II, III	Security Capital Atlantic, Inc.	Wet Pond	23.77	4.00	8.80	8.27	200.00	**191.73**	3.18	3.03	**0.15**	4.00	0.00	Basin - C-11 West; Maintenance Responsibility - CBWCD
														4.50	11.88	
														5.00	23.76	
														5.50	35.64	
														6.00	47.52	
														6.50	59.40	
														7.00	71.28	
														7.50	83.16	
														8.00	103.17	
														8.50	139.43	
														9.00	183.81	
--	06-00190-S	Nova Village	Lincoln Developers, Inc. 3752 S. Pine Island Road Fort Lauderdale, FL 33323	Wet Pond		3.50	4.50	2.30	2.60	**0.30**	N/A	2.50	**Unknown***	3.50	0.00	Basin - C11 East; Outfalls to CBWCD N-9 Canal; *1.5 in/day runoff formula was criteria for design discharge
														5.79	6.60	
														6.25	8.16	
														6.75	10.33	
														7.00	12.29	
														7.50	19.61	
														8.00	30.43	
														8.50	41.25	
20	06-01219-S-05	Modification - University Commons	College Business Park, LLC 1096 E. Newport Center Dr. Suite 100 Deerfield Beach, FL 33442	Exfiltration Trench / Rock Pit	12.00	See Westport Business Park, Phase I Permit for masterplan data.										Basin - North New River; 1/2" dry pretreatment provided in exfiltration trench and dry retention areas; Basin A of THISCD.
20	06-01219-S-04	Modification - Westport Plaza	Westport Plaza, L.L.C. 2454 McMullen Booth Road Bldg. B, Suite 428 Clearwater, FL 33759	Exfiltration Trench / Rock Pit	12.00	See Westport Business Park, Phase I Permit for masterplan data.										Basin - North New River; 1/2" dry pretreatment provided in exfiltration trench and dry retention areas; Basin A of THISCD.
20	06-01219-S	Modification - Westport Lake Fill	Austin & Hamilton Forman 888 SE 3rd St. Suite 501 Ft. Lauderdale, FL 33302	Exfiltration Trench / Rock Pit	12.00	See Westport Business Park, Phase I Permit for masterplan data.										Basin - C-11 East; Receiving Waterbody - North New River; Basin A of THISCD; Permit to fill 13 of the 25 acres of existing rock pit. Only 10.9 of the allowable 13 acres of rock pit have been filled at this time…
20	06-01219-S	Modification - Westport Business Park, Phase I	Westport Business Park LP 1100 Park Central Blvd. South Suite 240 Pompano Beach, FL 33064	Exfiltration Trench / Rock Pit	25.00	See Westport Business Park, Phase I Permit for masterplan data.										Basin - C-11 East; Receiving Waterbody - North New River; Basin A of THISCD; 1/2" dry pretreatment provided in exfiltration trench and dry retention areas.
20	06-01219-S	Modification - Miami Subs	Westport Business Park LP 1100 Park Central Blvd. South Suite 240 Pompano Beach, FL 33065	Exfiltration Trench / Rock Pit	25.00	See Westport Business Park, Phase I Permit for masterplan data.										Basin - C-11 East; Receiving Waterbody - North New River; Basin A of THISCD; 1/2" dry pretreatment provided in exfiltration trench and dry retention areas.
20	06-01219-S	Modification - Maintenance & Administration Building for BFI	American Marketing Westport LTD 888 SE 3rd St. Suite 501 Ft. Lauderdale, FL 33316	Exfiltration Trench / Rock Pit	25.00	See Westport Business Park, Phase I Permit for masterplan data.										Basin - North New River; Receiving Waterbody - North New River; Basin A of THISCD; 0.5 acres of dry detention is being utilized for water quality treatment
20	06-01219-S	Westport Business Park, Phase I	Westport Business Park LP 1100 Park Central Blvd. South Suite 2400 Pompano Beach, FL 33065	Exfiltration Trench / Rock Pit	25.00	2.50	4.00 (Pump Elevation)	19.35	37.95	**18.60**	33.40	33.40	**0.00**	3.50	0.00	Basin - North New River; Receiving Waterbody - North New River; Basin A of THISCD; 0.5 acres of dry detention is being utilized for water quality treatment
														5.79	6.60	
														6.25	8.16	
														6.75	10.33	
														7.00	12.29	
														7.50	19.61	
														8.00	30.43	
														8.50	41.25	
11A	06-00218-S	Oak Knoll II and III at Pine Island Ridge	Peninsula Federal Savings & Loan 101 SE 2nd Ave. Miami, FL 33131	Wet Pond	**61.79**	Retrieve earlier Masterplan Permit for overall volume/discharge info										**59 Acres of Ponds Required**
11, 12	06-01353-S-03	Fox Trail Elementary School (aka Elementary School K-91)	School Board of Broward County 1700 SW 14th Court Fort Lauderdale, FL 33312	Wet Pond	6.00	Retrieve earlier Masterplan Permit for overall volume/discharge info										Basin - C-11 East; CBWCD
17	06-02392-P	Carmax	Carmax Auto Superstores, Inc. 9950 Mayland Drive Deep Run 1 Richmond, VA 23233	Exfiltration Trench / Wet Pond	2.48	Retrieve earlier Masterplan Permit for overall volume/discharge info										Basin - C-11 East; Outfalls to City of Davie SWM system

I-595 PORT EVERGLADES EXPRESSWAY
ENVIRONMENTAL PERMITS

DATE: AUGUST 28, 1991

CONTR PKG	STATE PROJECT NUMBER	AGENCY	DESCRIPTION	PERMIT I.D.	DATA RECEIVED BY PERMITS DEPARTMENT	APPLICATION SENT TO AGENCY	PERMITS RECEIVED BY FDOT	EXPIRATION DATE
A	3408	COE	FILL, REVISED FOR HAUL ROAD	83D-2016	20-Jan-83	24-Jan-83	20-Oct-83	01-Nov-88
	3451	DER	DREDGE/FILL, REVISED FOR HAUL ROAD	060652619	20-Jan-83	24-Jan-83	16-Dec-83	01-Sep-88
		DER	LANDFILL, DER APPROVED FDOT WORK PLAN		03-Aug-83	09-Aug-83	09-Nov-83	
		SFWMD	DRAINAGE	06-00479-S	20-Jan-83	31-Mar-83	09-Jun-83	30-Jun-85
B	3406	COE	FILL	83D-2016	20-Jan-83	24-Jan-83	20-Oct-83	10-Nov-88
	3440	DER	DREDGE/FILL	060652617	20-Jan-83	24-Jan-83	16-Dec-83	01-Sep-88
		SFWMD	DRAINAGE, FILE UPDATE AND EXTEND	06-00479-S	07-Mar-85	21-Mar-85	25-Apr-85	31-Dec-87
C	3422	SFWMD	DRAINAGE	GP84142	22-Oct-84	14-Nov-84	29-Nov-84	29-Nov-89
D/F	3453	SFWMD	DRAINAGE	06-00810-S	19-Dec-85	29-Jul-86	11-Dec-86	11-Dec-91
E	3454	DER	DREDGE/FILL, (OSCEOLA CANAL)	061053529	06-Jun-85	07-Jun-85	03-Feb-86	31-Jan-91
V	3467	COE	FILL, (OSCEOLA CANAL)	85IPG-20624	06-Jun-85	07-Jun-85	30-May-86	31-May-91
		COE	FILL, (DANIA CUT OFF CANAL)	NA	11-Oct-84	01-Feb-85	15-Feb-85	N/A
		USCG	BRIDGE, (DANIA CUT OFF CANAL)	16591/3096 (18-85-7)	11-Oct-84	01-Feb-85	04-Mar-86	19-Feb-95
		DER	BRIDGE CROSSING AND DREDGE FILL (DANIA CUT OFF CANAL)	060992746	11-Oct-84	01-Feb-85	23-Apr-85	17-Apr-88
G	3463	SFWMD	DRAINAGE - Request for add'l info w/ letter of 10-26-90	06-00810-S (MOD)	26-Apr-90	12-Jun-90	21-Feb-91	
	3488							
H	3441	COE	FILL, (REVISED)	83D-2187	07-Jul-83	29-Jul-83	22-Apr-85	06-Feb-89
		DER	BRIDGE CROSSING & DREDGE FILL	060736519	07-Jul-83	29-Jul-83	01-Jun-85	04-Mar-89
		SFWMD	DRAINAGE, REVISED	GP83-166	07-Jul-83	07-Jul-83	02-May-85	19-Oct-88
		USCG	BRIDGE, WITHOUT FENDER SYSTEM	11847	07-Jul-83	07-Jul-83	24-May-84	21-May-93
		USCG	BRIDGE/FENDER SYSTEM	11847A	07-Jul-83	07-Jul-83	28-Jan-85	21-May-93
J	3404	COE	WETLAND FILL	83D-0325	07-Jan-83	26-Jan-83	02-Aug-83	22-Aug-86
		DER	BRIDGE CROSSING & DREDGE/FILL	060653979	07-Jan-83	26-Jan-83	10-Feb-84	01-Dec-86
		SFWMD	DRAINAGE	GP83-38	07-Jan-83	26-Jan-83	25-Feb-83	25-Feb-88
		USCG	BRIDGE	16591/3621	07-Jan-83	26-Jan-83	29-Sep-83	29-Sep-92

I-595 PORT EVERGLADES EXPRESSWAY
ENVIRONMENTAL PERMITS

DATE: AUGUST 28, 1991

CONTR PKG	STATE PROJECT NUMBER	AGENCY	DESCRIPTION	PERMIT I.D.	DATA RECEIVED BY PERMITS DEPARTMENT	APPLICATION SENT TO AGENCY	PERMITS RECEIVED BY FDOT	EXPIRATION DATE
K	3456	DER	BRIDGE CROSSING & DREDGE / FILL	061003766	20-Feb-85	28-Feb-85	26-Apr-85	23-Apr-88
	3477	SFWMD	DRAINAGE	06-00797-S	17-Feb-86	14-Mar-86	09-Oct-86	09-Oct-91
	3301	USCG	BRIDGES	16591/2184-3735	20-Feb-85	28-Feb-85	07-May-86	07-May-95
		T-H	DRAINAGE(GES-KE/HNTB)		14-Mar-86	18-Mar-86	17-Dec-86	N/A
L	3457/3302	COE	FILL (BRIDGES), PERMIT NOT REQUIRED					
M	3458	DER	DREDGE/FILL, BRIDGES	061003766	20-Feb-85	28-Feb-85	26-Apr-85	23-Apr-88
		USCG	(BRIDGES)	16591/2184-3735	20-Feb-85	28-Feb-85	07-May-86	07-May-95
				5-86-7 & 6-86-7				
		SFWMD	DRAINAGE	06-00774-S	17-Feb-86	18-Feb-86	19-Jun-86	20-Jun-91
		SFWMD	DRAINAGE	GP87-9	26-Sep-86	03-Oct-86	05-Feb-87	05-Feb-92
		DER	DREDGE/FILL, WETLANDS AREA	061110329	30-Sep-85	07-Oct-85	20-Jun-86	20-Jun-91
		COE	FILL, WETLANDS AREA	851PG-21113	30-Sep-85	07-Oct-85	24-Jun-86	
		CBDD	DRAINAGE(GES-KE/HNTB) --PERMIT NOT REQUIRED--		26-Feb-86	27-Feb-86	N/A	
		T-H	DRAINAGE(GES-KE/HNTB)		10-Mar-86	12-Mar-86	16-Apr-86	N/A
		T-H	DRAINAGE(GES-KE/HNTB)		10-Mar-86	12-Mar-86	17-Dec-86	N/A
N	3401	COE	FILL (OUTFALLS) ,NO PERMIT REQUIRED	N/A	16-Jan-87	12-Mar-87	N/A	N/A
		DER	WATER QUALITY, GENERAL PERMIT		16-Jan-87	12-Mar-87	11-Jun-87	16-Mar-92
		DER	NORTH NEW RIVER CANAL DREDGE / FILL	061396496	21-Sep-87	22-Sep-87	05-Nov-87	29-Oct-90
		SFWMD	DRAINAGE	06-00858-S	16-Jan-87	10-Mar-87	09-Jul-87	09-Jul-92
		CBDD	DRAINAGE (KSY-KE/HNTB)	N/A	04-Feb-87	05-Feb-87	06-Apr-87	06-Oct-88
		T-H	DRAINAGE (KSY-KE/HNTB)	N/A	04-Feb-87	05-Feb-87	07-Oct-87	N/A
P	3421	CBDD	DRAINAGE (PRCE-KE/HNTB)		14-Mar-86	14-Mar-86	27-May-86	
	3480	DER	DREDGE/FILL, NOB HILL BRIDGE OVER NNRC	061079356	30-Jul-85	06-Aug-85	11-Dec-85	25-Nov-88
		SFWMD	DRAINAGE	06-00788-S	19-Mar-86	11-Jun-86	14-Aug-86	14-Aug-91
Q	3462	SFWMD	DRAINAGE	GP 85-151	20-Aug-85	06-Sep-85	23-Dec-85	23-Dec-90
		CBDD	DRAINAGE (KE/HNTB)		30-Oct-85	31-Oct-85	19-Nov-85	

I-595 PORT EVERGLADES EXPRESSWAY
ENVIRONMENTAL PERMITS

DATE: AUGUST 28, 1991

CONTR PKG	STATE PROJECT NUMBER	AGENCY	DESCRIPTION	PERMIT I.D.	DATA RECEIVED BY PERMITS DEPARTMENT	APPLICATION SENT TO AGENCY	PERMITS RECEIVED BY FDOT	EXPIRATION DATE
R	3449	COE	FILL (OUTFALLS)	GP80-1493(MOD)			06-Mar-84	
		DER	DREDGE/FILL	06309056E			06-Mar-84	16-Dec-86
		SFWMD	DRAINAGE	GP82-09			06-Mar-84	06-Mar-89
S	3450	COE	FILL WETLANDS	87NWH-20040	12-Jan-87	23-Jan-87	06-Mar-87	
		SFWMD	DRAINAGE	G-P86-123	28-Jul-86	09-Sep-86	08-Dec-86	
		DER	BRIDGE CROSSING & DREDGE/FILL		14-Apr-86	11-Sep-86	25-Sep-86	
		DER	DREDGE FILL, WETLANDS AT OAKS RD	061260236	12-Jan-87	23-Jan-87	05-May-87	
		USCG	BRIDGE/ADVANCED APPROVAL			22-Jun-84	20-Jul-84	
		CBDD	DRAINAGE (GES-KE/HNTB)	981	01-Jul-86	02-Jul-86	01-Oct-86	N/A
S-1	3485	SFWMD	DRAINAGE - PERMIT MODIFICATION	(MOD)06-00774-S	14-Mar-89	03-Apr-89	27-Apr-90	27-Apr-93
T	3464	DER	DREDGE/FILL (OUTFALLS)	EXISTING I-75 PERMIT				
		SFWMD	DRAINAGE	EXISTING I-75 PERMIT				
U	3443	COE	FILL, COE STATED PERMIT IS NOT REQUIRED					
	3447	DER	DREDGE/FILL (BRIDGES)	060956246	11-Oct-84	14-Nov-84	25-Jan-85	
		SFWMD	DRAINAGE	GP 82-200	11-Oct-84	23-Sep-85	09-Dec-85	03-Dec-90
V	3467	SFWMD	DRAINAGE	06-00823-S	31-Oct-86	06-Nov-86	13-Jan-87	
X	3350	DER	DREDGE / FILL	DF06-140961	02-Oct-87	12-Oct-87	15-Jan-88	11-Jan-91
	3491	COE	DREDGE / FILL	N/A	02-Oct-87	12-Oct-87	09-Nov-87	N/A
		SFWMD	DRAINAGE	GP 88-35	16-Sep-87	05-Oct-87	15-Apr-88	15-Apr-91
		CBDD	DRAINAGE (GES-KE/HNTB)	N/A	09-Nov-87	02-Dec-87	13-Jan-88	N/A
Y	3460	SFWMD	DRAINAGE	GP 88-50	09-Dec-87	27-Jan-88	24-Jun-88	23-Jun-91
	3422	DER	DREDGE / FILL DANIA CUT-OFF (CANAL NOT REQUIRED)		09-Dec-87			

I-595 PORT EVERGLADES EXPRESSWAY
ENVIRONMENTAL PERMITS

DATE: AUGUST 28, 1991

CONTR PKG	STATE PROJECT NUMBER	AGENCY	DESCRIPTION	PERMIT I.D.	DATA RECEIVED BY PERMITS DEPARTMENT	APPLICATION SENT TO AGENCY	PERMITS RECEIVED BY FDOT	EXPIRATION DATE
J95	3464	SFWMD	DRAINAGE	4335 (MOD)	03-Oct-90	26-Oct-90	15-Nov-90	
	3465	USCG	BRIDGE (ADVANCE AUTHORIZATION)	G.P.	UNKNOWN	UNKNOWN	17-Oct-87	
		DER	DREDGE & FILL, BRIDGES NO. 1 THRU 5	061876436	21-Sep-90	19-Dec-90	15-Feb-91	15-Feb-96
PNR	3496	SFWMD	DRAINAGE	06-01469-S	26-Sep-90	09-Nov-90	26-Nov-90	
WNF	3493	SFWMD	DRAINAGE & WETLANDS	06-01465-S	03-Oct-90	26-Oct-90	15-Nov-90	
		COE	WETLANDS (NATIONWIDE PERMIT)		26-Sep-90	11-Oct-90	29-Oct-90	
		DER	WETLANDS	061909246	26-Sep-90	11-Oct-90	14-Jan-91	

LEGEND:

COE	U.S. ARMY CORPS OF ENGINEERS
DER	DEPARTMENT OF ENVIRONMENTAL REGULATION
SFWMD	SOUTH FLORIDA WATER MANAGEMENT DISTRICT
USCG	UNITED STATES COAST GUARD
T-H	TINDALL-HAMMOCK IRRIGATION & SOIL CONSERVATION DISTRICT
CBDD	CENTRAL BROWARD DRAINAGE DISTRICT

APPENDIX B

Pond Sizing Methodologies

- Curve Number Calculations
- ICPR Data
- Typical Pond Detail

Project	*I-595 Pond Siting Report*	By	*CS*	Date	*10/6/2005*
Location	*Basin 2*	Checked	*DL*	Date	*10/6/2005*
Developed		*BASIN 2 EXISTING*			

1. Runoff curve number (CN)

Soil name and hydrologic group	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN			Area	Product of CN x area
		Table 2-2	Fig. 2-3	Fig. 2-4	*X* acres ☐ mi^2 ☐ %	
D	*Leon soils, poor condition*	*93*			*24.90*	*2316*
	Pavement	*98*			*26.80*	*2626*
			Totals =		*51.70*	*4942*

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{4942}{51.7} = 95.59 \quad \text{Use CN} = 96.0$$

Project	*I-595 Pond Siting Report*	By	*CS*	Date	*10/6/2005*
Location	*Basin 2*	Checked	*DL*	Date	*10/6/2005*
Developed		*BASIN 2 Undeveloped*			

1. Runoff curve number (CN)

Soil name and hydrologic group	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN			Area X acres ☐ mi^2 ☐ %	Product of CN x area
		Table 2-2	Fig. 2-3	Fig. 2-4		
D	*Leon soils, poor condition*	*93*			*51.70*	*4808*
	Pavement	*98*			*0.00*	*0*
			Totals =		*51.70*	*4808*

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{4808}{51.7} = 93.00 \quad \text{Use CN} = 93.0$$

Project	*I-595 Pond Siting Report*	By	*CS*	Date	*10/6/2005*
Location	*Basin 2*	Checked	*DL*	Date	*10/6/2005*
Developed		*BASIN 2 PROPOSED*			

1. Runoff curve number (CN)

Soil name and hydrologic group	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area X acres ☐ mi^2 ☐ %	Product of CN x area
D	*Leon soils, poor condition*	*93*			*8.30*	*772*
	Pavement	*98*			*43.40*	*4253*
			Totals =		*51.70*	*5025*

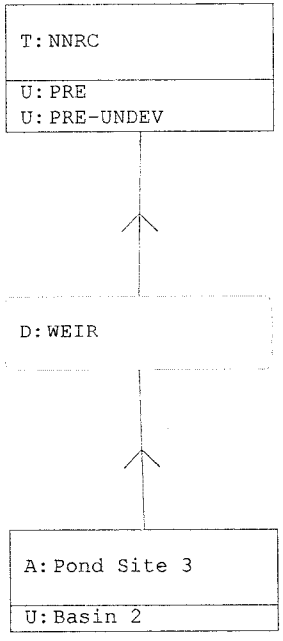
$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{5025}{51.7} = 97.20 \quad \text{Use CN} = 97.0$$

Node Diagram

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit Hydro
S Santa Barbara

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach



I-595 Pond Siting Report
Pond Site 3 Calcs
Node Max Conditions

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
NNRC	BASE	25yr,72hr	36.00	4.300	6.000	0.0022	0	60.66	374.950	0.00	0.000
Pond Site 3	BASE	25yr,72hr	60.45	5.987	6.200	-0.0050	265480	60.08	235.086	60.45	126.725

I-595 Pond Siting Report
Pond Site 3 Calcs
Basin Max Conditions

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
25yr,72hr	Basin 2	BASE	60.13	236.518	10.493	*********
25yr,72hr	PRE	BASE	60.80	126.381	10.372	*********
25yr,72hr	PRE-UNDEV	BASE	60.80	125.469	10.003	*********

==== Basins ====

Name: Basin 2 | Node: Pond Site 3 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:		Storm Duration(hrs):	0.00
Rainfall Amount(in):	0.000	Time of Conc(min):	30.00
Area(ac):	51.700	Time Shift(hrs):	0.00
Curve Number:	97.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Post-development.

Name: PRE | Node: NNRC | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:		Storm Duration(hrs):	0.00
Rainfall Amount(in):	0.000	Time of Conc(min):	90.00
Area(ac):	51.700	Time Shift(hrs):	0.00
Curve Number:	96.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

This basin represents the pre-development condition of Basin 2 with existing pavement areas present.

Name: PRE-UNDEV | Node: NNRC | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph

Unit Hydrograph:	Uh484	Peaking Factor:	484.0
Rainfall File:		Storm Duration(hrs):	0.00
Rainfall Amount(in):	0.000	Time of Conc(min):	90.00
Area(ac):	51.700	Time Shift(hrs):	0.00
Curve Number:	93.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

This basin represents the Pre-development condition for Basin 2.
The curve number assumes no impervious surfaces exist in the basin.

==== Nodes ====

Name: NNRC | Base Flow(cfs): 0.000 | Init Stage(ft): 3.000
Group: BASE | Warn Stage(ft): 6.000
Type: Time/Stage

This is an approximated tailwater curve for the North New River Canal based off of information provided in "An Atlas of Eastern Broward County Surface Water Management Basins" by Richard M. Cooper Nov. 1987.

Time(hrs)	Stage(ft)

0.00	3.000
30.00	3.500
36.00	4.300
72.00	3.000

Name: Pond Site 3 Base Flow(cfs): 0.000 Init Stage(ft): 3.700
Group: BASE Warn Stage(ft): 6.200
Type: Stage/Area

Area at NWL was determined by taking the required treatment volume of Basin 2
and dividing by 1 foot of depth. The pond exhibits 4:1 side slopes.

Stage(ft)	Area(ac)
3.700	5.6800
4.700	5.8600
5.700	6.0400
6.700	6.2300
7.450	6.3700

Drop Structures

Name: WEIR From Node: Pond Site 3 Length(ft): 600.00
Group: BASE To Node: NNRC Count: 2

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	48.00	48.00
Rise(in):	48.00	48.00
Invert(ft):	1.500	1.000
Manning's N:	0.013000	0.013000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.000
Exit Loss Coef: 0.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 1 for Drop Structure WEIR ***

TABLE

Count: 1 Bottom Clip(in): 0.000
Type: Vertical: Mavis Top Clip(in): 0.000
Flow: Both Weir Disc Coef: 3.200
Geometry: Rectangular Orifice Disc Coef: 0.600

Span(in): 500.00 Invert(ft): 4.700
Rise(in): 999.00 Control Elev(ft): 4.700

Hydrology Simulations

```
================================================================================

        Name: 25yr,72hr
    Filename: S:\PROJECTS\I595 PD&E\ICPR\25yr,72hr.R32

     Override Defaults: Yes
   Storm Duration(hrs): 72.00
         Rainfall File: Sfwmd72
   Rainfall Amount(in): 10.87

Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          5.00

--------------------------------------------------------------------------------
        Name: 5yr,24hr
    Filename: S:\PROJECTS\I595 PD&E\ICPR\5yr,24hr.R32

     Override Defaults: Yes
   Storm Duration(hrs): 24.00
         Rainfall File: Flmod
   Rainfall Amount(in): 7.50

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00

================================================================================
==== Routing Simulations ======================================================
================================================================================

        Name: 25yr,72hr          Hydrology Sim: 25yr,72hr
    Filename: S:\PROJECTS\I595 PD&E\ICPR\25yr,72hr.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                   Delta Z Factor: 0.00500
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                   End Time(hrs): 72.00
    Min Calc Time(sec): 0.5000              Max Calc Time(sec): 60.0000
       Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          5.000

Group           Run
--------------- -----
BASE            Yes


--------------------------------------------------------------------------------
        Name: 5yr,24hr           Hydrology Sim: 5yr,24hr
    Filename: S:\PROJECTS\I595 PD&E\ICPR\5yr,24hr.I32
```

Execute: No Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

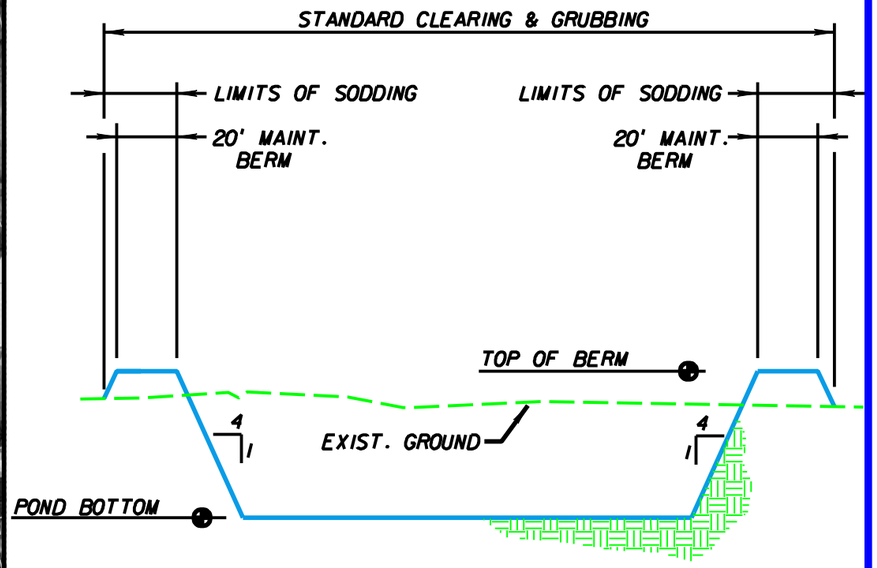
Time(hrs)	Print Inc(min)
24.000	5.000

Group	Run
BASE	Yes

==== Boundary Conditions ====

Basin 2 Pre-development Discharge	125.5 ft ^{3}/sec
Pond Site 3 Post Development Discharge	126.7 ft ^{3}/sec
Normal Water Level Elevation	3.7 feet
Pond Site 3 Design High Water Elevation	5.99
Pond Top of Bank Elevation	7.2 feet
Design Storm Event	SCS 25 Year, 72 Hour
Total Pond Area Including Maintenance Berm	7.3 acres
Pond Site 3 Provided Treatment Volume	5.77 acre-feet
Basin 2 Treatment Volume Requirement	5.69 acre-feet
Ratio of Pond Area to Treatment Volume Provided	1.3*

*Ration of 1.4 used in pond siting analysis to be conservative.



TYPICAL POND SECTION
N.T.S.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Bowen Civil Engineering, Inc.
6885 Belfort Oaks Place, Suite 110
Jacksonville Florida 32216-6242
(904) 737-0090
Florida Professional Engineers
License No. 00006980

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 862	BROWARD	409354-1-22-01

TYPICAL POND DETAIL

SHEET NO. 1 OF 1

...\Typical Pond Detail.dgn 10/7/2005 1:36:45 PM

APPENDIX C

Pond Site Evaluation

- Pond Site Alternatives Matrix
- Pond Site Parcel Information

Pond Siting Evaluation Matrix
I-595 Pond Siting Report

	BASIN 1			
Pond Location No.	**1**	**2**	**1N**	**2N**
DESCRIPTION				
Location	Existing pond adjacent to I-595	Adjacent to I-595	North of canal	North of canal
Station	1191+00 - 1192+00	1195+00 - 1198+00	1179+00 - 1186+00	1192+00 - 1194+00
CRITERIA				
Technical				
Pond Area Required	◄---------- 8.2 ----------►			
Type of Treatment	Wet Detention	Wet Detention	Wet Detention	Wet Detention
Hydraulically Accessible	Yes	Yes	Yes	Yes
Offsite Contributions	Yes	No	No	No
Joint Use - Property Owner	Yes	No	No	No
Joint Use - Agency	Yes	No	No	No
Mitigation Opportunities	Yes	Yes	Yes	Yes
Noise Abatement Opportunities	Yes	Yes	Yes	Yes
Environmental/Permittability				
Conventional BMP's	Yes	Yes	Yes	Yes
Wetlands	No	No	No	No
Farmlands	No	No	No	No
Social/Cultural Effects	Yes	Yes	Yes	Yes
Landscaping/Aesthetics	No	No	Yes	Yes
Threat. End. Species	No	No	No	No
Section 4(f)	No	No	No	No
Archeological/Historical	No	No	No	No
Contam./Hazard. Mat'l	Low	Low	Low	Low
Wellfields	No	No	No	Yes
ACQUISITION				
Folio/Property ID Nos.	5040-11-01-0150	5040-11-01-0150	5040-02-15-0020	5040-02-19-0010
Total Parcel(s) Area (ac)	12.2	12.2	8.3	9.4
Cost of Parcel	$1,573,630	$1,573,630	$1,449,650	$2,492,860
Land Use	02 - Mobile Homes	02 - Mobile Homes	71 - Churches	71 - Churches
Easement	No	No	No	No
CONSTRUCTION				
Temp Const Easement	No	No	No	No
Soil Type	Ha - Arents-Urban land complex (B/D)	Ha - Arents-Urban land complex (B/D)	Ha - Arents-Urban land complex (B/D)	Ha - Arents-Urban land complex (B/D)
Utility Coordination	Low	Low	Low	Low
Overall Cost	Typical	Typical	High	High
MAINTENANCE				
Accessibility	Good	Good	Good	Good
O&M Responsibility	Others/FDOT	FDOT	Others/FDOT	Others/FDOT
FDOT Cost for O&M	Low	Low	Low	Low
RECOMMENDATION				
Area Required for Pond (ac)	2.3	1.0	8.3	9.4
Recommend Site	Yes	Yes	Yes	Yes
Comments	Preferred pond site; Does not provide full treatment	Preferred pond site; Does not provide full treatment	Located on Church Property	Located on Church Property Wellfield Nearby

NOTES:

Landscaping/Aesthestics: anticipated requirement of landscaping for aesthetic purposes.

Cost of Parcel: amount based 2004 Total Assessed Value of affected parcels (source: Broward County Property Appraiser Website)

Land Use: source: Broward County Property Appraiser Website

Pond Siting Evaluation Matrix
I-595 Pond Siting Report

	BASIN 2					
Pond Location No.	**3**	**3N**	**4**	**5**	**6**	**7**
DESCRIPTION						
Location	Adjacent to I-595	North of canal	Existing pond	Adjacent to I-595	Adjacent to I-595	Adjacent to I-595
Station	1221+00 - 1226+00	1216+00 - 1218+00	1231+00	1240+00 - 1245+00	1250+00	1254+00 - 1255+00
CRITERIA						
Technical						
Pond Area Required	← 8.0 →					
Type of Treatment	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention
Hydraulically Accessible	Yes	Yes	Yes	Yes	Yes	Yes
Offsite Contributions	No	No	Yes	No	No	No
Joint Use - Property Owner	No	No	Yes	No	No	No
Joint Use - Agency	No	No	Yes	No	No	No
Mitigation Opportunities	Yes	Yes	Yes	Yes	Yes	Yes
Noise Abatement Opportunities	Yes	Yes	No	Yes	Yes	Yes
Environmental/Permittability						
Conventional BMP's	Yes	Yes	Yes	Yes	Yes	Yes
Wetlands	No	No	No	No	No	No
Farmlands	No	No	No	No	No	No
Social/Cultural Effects	No	No	No	Yes	No	No
Landscaping/Aesthetics	Yes	Yes	No	Yes	Yes	No
Threat. End. Species	No	No	No	No	No	No
Section 4(f)	No	No	No	No	No	No
Archeological/Historical	No	No	No	No	No	No
Contam./Hazard. Mat'l	Medium	Low	Low	Low	Low	High
Wellfields	No	No	No	No	No	No
ACQUISITION						
Folio/Property ID Nos.	5040-12-47-0010	5040-12-42-0050	5040-12-39-2300, 5040-12-39-2301, 5040-12-39-2302	5040-12-03-0011, 5040-12-03-0010, 5040-12-41-0010	5040-12-41-0010	5040-12-40-0020
Total Parcel(s) Area (ac)	11.7	2.2	7.5	17.4	12.6	1.9
Cost of Parcel	$1,601,340	$1,025,490	$30	$13,524,360	$7,673,060	$1,359,040
Land Use	00 - Vacant Residential	10 - Vacant Commercial	95 - Rivers, Lakes, submerged lands	16 - Community shopping centers	16 - Community shopping centers	26 - Service stations
Easement	No	No	Yes	No	No	No
CONSTRUCTION						
Temp Const Easement	No	No	Yes	No	No	No
Soil Type	Ha - Arents-Urban land complex (B/D)	Ha - Arents-Urban land complex (B/D)	Iu - Immokalee-Urban land complex (B/D)	Ha - Hallandale fine sand (B/D)	Ha - Hallandale fine sand (B/D)	Ma - Margate fine sand (B/D)
Utility Coordination	Low	Low	High	Low	Low	Low
Overall Cost	Low	High	High	Low	Low	Low
MAINTENANCE						
Accessibility	Good	Good	Limited/Poor	Good	Good	Good
O&M Responsibility	FDOT	FDOT	Others/FDOT	FDOT	FDOT	FDOT
FDOT Cost for O&M	Low	Low	Low	Low	Low	Low
RECOMMENDATION						
Area Required for Pond (ac)	8.6	2.2	5.8	5.7	0.7	0.9
Recommend Site	Yes	Yes	Yes	Yes	Yes	Yes
Comments	Preferred pond site; Consider comp treatment opportunities	Expensive real estate north of canal	Requires modification of existing lake to gain additional capacity	Preferred pond site; Consider comp treatment opportunities	Small, inefficient site	Small, inefficient site

NOTES:

Landscaping/Aesthestics: anticipated requirement of landscaping for aesthetic purposes.
Cost of Parcel: amount based 2004 Total Assessed Value of affected parcels (source: Broward County Property Appraiser Website)
Land Use: source: Broward County Property Appraiser Website

Pond Siting Evaluation Matrix
I-595 Pond Siting Report

	BASIN 3			BASIN 4			
Pond Location No.	**8**	**9**	**10**	**11**	**12**	**11a**	**13**
DESCRIPTION							
Location	Existing pond	Adjacent to I-595	Adjacent to I-595	Existing pond	Adjacent to I-595	Existing pond	Existing golf course pond
Station	1278+00 - 1290+00	1296+00 - 1300+00	1304+00 -1314+00	1325+00 - 1332+00	1335+00 - 1340	1340+00	1345+00
CRITERIA							
Technical							
Pond Area Required	← 7.7 →			← 8.3 →			
Type of Treatment	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention
Hydraulically Accessible	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Offsite Contributions	Yes	No	No	Yes	No	Yes	Yes
Joint Use - Property Owner	Yes	No	No	Yes	No	Yes	Yes
Joint Use - Agency	Yes	No	No	Yes - BC School Board	No	Yes	Yes
Mitigation Opportunities	Yes	Yes	Yes	Yes	No	Yes	Yes
Noise Abatement Opportunities	No	Yes	Yes	No	Yes	No	No
Environmental/Permittability							
Conventional BMP's	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wetlands	No	No	No	No	No	No	No
Farmlands	No	No	No	No	No	No	No
Social/Cultural Effects	No	No	No	No	Yes	No	No
Landscaping/Aesthetics	No	No	No	No	No	Yes	Yes
Threat. End. Species	No	No	No	No	No	No	No
Section 4(f)	No	No	No	No	No	No	No
Archeological/Historical	No	No	No	No	No	No	No
Contam./Hazard. Mat'l	Low	Low	Low	Low	Low	Low	Low
Wellfields	No	No	No	No	No	No	No
ACQUISITION							
Folio/Property ID Nos.	5041-07-11-0010, 5041-07-13-0060	5041-07-11-0020, 5041-37-01-2390	5041-18-07-0020, 5041-18-07-0030, 5041-18-07-0010, 5041-37-01-2350, 5041-37-01-2351, 5041-37-01-2340, 5041-07-16-0010	5041-17-20-0010	5041-17-20-0010	5041-17-21-1070	5041-17-00-0131
Total Parcel(s) Area (ac)	27.5	11.4	49.4	26.2		11.6	10.0
Cost of Parcel	$3,679,210	$2,657,290	$6,999,450	$5,144,920	$5,144,920	$10	$10
Land Use	00 - Vacant Residential	10 - Vacant commercial	10 - Vacant commercial	83 - Public county schools	83 - Public county schools	95 - Rivers, lakes, submerged lands	38 - Golf courses, driving ranges
Easement	Yes	No	No	Yes	No	Yes	Yes
CONSTRUCTION							
Temp Const Easement	Yes	No	No	Yes	No	Yes	Yes
Soil Type	Sa - Sanibel muck (B/D) Ma - Margate fine sand (B/D)	Ud - Udorthents (A) Ma - Margate fine sand (B/D)	Ud - Udorthents (A)	Ba - Basinger fine sand (B/D) Sa - Sanibel muck (B/D)	Sa - Sanibel muck (B/D)	Sa - Sanibel muck (B/D)	Ia - Immokalee, fine sand (B/D)
Utility Coordination	High	High	Low	Medium	Low	Low	Medium
Overall Cost	Typical	Low	Low	Low	Low	Low	Low
MAINTENANCE							
Accessibility	Limited/Poor	Good	Good	Good	Good	Limited	Limited/Poor
O&M Responsibility	Others/FDOT	FDOT	FDOT	Others/FDOT	FDOT	Others/FDOT	Others/FDOT
FDOT Cost for O&M	Low	Low	Low	Low	Low	Low	Low
RECOMMENDATION							
Area Required for Pond (ac)	10.1	5.1	14.3	5.5	4.7	6.6	0.5
Recommend Site	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Comments	Requires modification of existing lake to gain additional capacity	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities	Pond located on school property	Pond located on school property	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities

NOTES:

Landscaping/Aesthestics: anticipated requirement of landscaping for aesthetic purposes.
Cost of Parcel: amount based 2004 Total Assessed Value of affected parcels (source: Broward County Property Appraiser Website)
Land Use: source: Broward County Property Appraiser Website

Pond Siting Evaluation Matrix
I-595 Pond Siting Report

	BASIN 5				
Pond Location No.	**14**	**14N**	**15**	**15N**	**25N**
DESCRIPTION					
Location	Mobile home park	North of canal.	Existing pond at golf course	North of canal	North of canal.
Station	1378+00 - 1398+00	1379+00 - 1386+00	1400+00 - 1406+00	1389+00 - 1393+00	1420+00 - 1426+00
CRITERIA					
Technical					
Pond Area Required	← 7.4 →				
Type of Treatment	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention
Hydraulically Accessible	Yes	Yes	Yes	Yes	Yes
Offsite Contributions	Yes	No	Yes	No	No
Joint Use - Property Owner	No	No	Yes	No	No
Joint Use - Agency	No	No	Yes	No	No
Mitigation Opportunities	Yes	Yes	Yes	Yes	Yes
Noise Abatement Opportunities	No	Yes	No	Yes	Yes
Environmental/Permittability					
Conventional BMP's	Yes	Yes	Yes	Yes	Yes
Wetlands	No	No	No	No	No
Farmlands	No	No	No	No	No
Social/Cultural Effects	Yes	Yes	Yes	No	No
Landscaping/Aesthetics	Yes	No	No	Yes	No
Threat. End. Species	No	No	No	No	No
Section 4(f)	No	No	No	No	No
Archeological/Historical	No	No	No	No	No
Contam./Hazard. Mat'l	Medium	Low	Low	Low	Low
Wellfields	Yes	No	No	No	No
ACQUISITION					
Folio/Property ID Nos.	Approx 70 parcels needed to meet requirements, sample properties include 5041-16-05-1580, 5041-16-05-0660, 5041-16-05-1560	5041-16-29-0010	5041-16-00-0050	5041-16-29-0042	5041-16-30-0010
Total Parcel(s) Area (ac)	9.0	3.6	66.5	5.8	4.9
Cost of Parcel	$50,000 - 150,000 per parcel	$1,547,340	$765,210	$2,409,260	$1,918,840
Land Use	02 - Mobile Homes	10 - Vacant Commercial	38 - Golf courses, driving ranges	10 - Vacant Commercial	10 - Vacant Commercial
Easement	Yes	No	Yes	No	No
CONSTRUCTION					
Temp Const Easement	Yes	Yes	Yes	Yes	No
Soil Type	Ur - Urban land	Pp - Pompano fine sand (B/D)	Un - Udorthents, shaped (B)	Ha - Hallandale fine sand (B/D)	Ia - Immokalee fine sand (B/D)
Utility Coordination	Medium	Low	Medium	Low	Low
Overall Cost	Typical	High	Low	High	High
MAINTENANCE					
Accessibility	Limited	Limited	Limited/Poor	Limited	Good
O&M Responsibility	FDOT	Others/FDOT	Others/FDOT	Others/FDOT	FDOT
FDOT Cost for O&M	Low	Low	Low	Low	Low
RECOMMENDATION					
Area Required for Pond (ac)	8.9	2.0	3.8	5.8	4.9
Recommend Site	Yes	Yes	Yes	Yes	Yes
Comments	Preferred pond site; wellfield nearby; consider comp treatment opportunities	Expensive real estate north of canal	Preferred pond site; cooperative property owner; requires modification of existing lake to gain additional capacity	Expensive real estate north of canal	Expensive real estate north of canal

NOTES:

Landscaping/Aesthestics: anticipated requirement of landscaping for aesthetic purposes.

Cost of Parcel: amount based 2004 Total Assessed Value of affected parcels (source: Broward County Property Appraiser Website)

Land Use: source: Broward County Property Appraiser Website

Pond Siting Evaluation Matrix
I-595 Pond Siting Report

	BASIN 6					
Pond Location No.	**16**	**17**	**18**	**19**	**20**	**21**
DESCRIPTION						
Location	Adjacent to I-595	Existing ponds and adjacent parcel	Adjacent to I-595	Adjacent to I-595	Existing pond	Existing pond adjacent to I-595
Station	1431+00 - 1433+00	1444+00 - 1446+00	1460+00 - 1463+00	1491+00 - 1497+00	1496+00 - 1504+00	1512+00 - 1542+00
CRITERIA						
Technical						
Pond Area Required	← 16.1 →					
Type of Treatment	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention	Wet Detention
Hydraulically Accessible	Yes	Yes	Yes	Yes	No	Yes
Offsite Contributions	No	Yes	Yes	Yes	Yes	Yes
Joint Use - Property Owner	No	Yes	No	No	Yes	Yes
Joint Use - Agency	No	Yes	No	No	Yes	Yes
Mitigation Opportunities	Yes	Yes	Yes	Yes	Yes	Yes
Noise Abatement Opportunities	Yes	No	Yes	Yes	No	No
Environmental/Permittability						
Conventional BMP's	Yes	Yes	Yes	Yes	Yes	Yes
Wetlands	No	No	No	No	No	No
Farmlands	No	No	No	No	No	No
Social/Cultural Effects	No	No	No	No	No	No
Landscaping/Aesthetics	No	Yes	No	No	No	No
Threat. End. Species	No	No	No	No	No	No
Section 4(f)	No	No	No	No	No	No
Archeological/Historical	No	No	No	No	No	No
Contam./Hazard. Mat'l	Low	Low	Low	Low	Low	Low
Wellfields	No	No	No	No	No	No
ACQUISITION						
Folio/Property ID Nos.	5041-16-00-0087, 5041-16-28-0010	5041-16-28-0010, 5041-15-19-0010	5041-15-17-0010	5041-37-01-1731, 5041-14-31-0010	5041-23-01-0030	5041-37-01-1540, 5041-37-01-1570, 5041-37-01-1573, 5041-37-01-1510, 5041-37-01-1440
Total Parcel(s) Area (ac)	67.6	85.2	2.1	7.4	21.5	110.3
Cost of Parcel	$32,931,200	$42,890,930	$563,830	$1,261,680	$52,150	$451,070
Land Use	16 - Community shopping centers	16 - Community shopping centers	10 - Vacant commercial	10 - Vacant commercial	40 - Vacant industrial	95 - Rivers, lakes, submerged lands
Easement	No	Yes	No	No	Yes	No
CONSTRUCTION						
Temp Const Easement	No	Yes	No	No	Yes	Yes
Soil Type	Ia - Immokalee fine sand (B/D) Ba - Basinger fine sand (B/D)	Pp - Pompano fine sand (B/D) Ma - Margate fine sand (B/D)	Ba - Basinger fine sand (B/D) Ma - Margate fine sand (B/D)	Ma - Margate fine sand (B/D)	Ud - Udorthents (A)	Water
Utility Coordination	Low	High	Low	Low	High	Low
Overall Cost	Low	Typical	Typical	Typical	Low	Low
MAINTENANCE						
Accessibility	Good	Good	Good	Good	Limited/Poor	Good
O&M Responsibility	FDOT	Others/FDOT	FDOT	FDOT	Others/FDOT	Others/FDOT
FDOT Cost for O&M	Low	Low	Low	Low	Low	Low
RECOMMENDATION						
Area Required for Pond (ac)	1.7	9.9	2.1	6.9	12.7	7.0
Recommend Site	Yes	Yes	Yes	Yes	Yes	Yes
Comments	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities	Preferred pond site; FDOT currently owns drainage rights

NOTES:

Landscaping/Aesthestics: anticipated requirement of landscaping for aesthetic purposes.

Cost of Parcel: amount based 2004 Total Assessed Value of affected parcels (source: Broward County Property Appraiser Website)

Land Use: source: Broward County Property Appraiser Website

Pond Siting Evaluation Matrix
I-595 Pond Siting Report

	BASINS 7, 8, 9 (Interchange Area)			
Pond Location No.	**22**	**26N**	**27N**	**28N**
DESCRIPTION				
Location	Interchange infields	North of I-595, South of SR 84	North of I-595, South of SR 84	North of I-595, South of SR 84
Station	1542+00 - 1630+00	1650+00 - 1654+00	1657+00 - 1661+00	1663+00 - 1666+00
CRITERIA				
Technical				
Pond Area Required	← 15.2 →			
Type of Treatment	Wet Detention	Wet Detention	Wet Detention	Wet Detention
Hydraulically Accessible	Yes	Yes	Yes	Yes
Offsite Contributions	No	No	No	No
Joint Use - Property Owner	No	No	No	No
Joint Use - Agency	No	No	No	No
Mitigation Opportunities	Yes	No	No	No
Noise Abatement Opportunities	No	No	No	No
Environmental/Permittability				
Conventional BMP's	Yes	Yes	Yes	Yes
Wetlands	No	No	No	No
Farmlands	No	No	No	No
Social/Cultural Effects	No	Yes	Yes	No
Landscaping/Aesthetics	No	No	No	No
Threat. End. Species	No	No	No	No
Section 4(f)	No	No	No	No
Archeological/Historical	No	No	No	No
Contam./Hazard. Mat'l	Low	Low	High	Low
Wellfields	No	No	No	No
ACQUISITION				
Folio/Property ID Nos.	N/A	5042-19-22-0010	5042-20-00-2010 5042-20-00-0240 5042-20-00-0200 5042-20-00-0201	5042-29-40-0010
Total Parcel(s) Area (ac)	Infield	2.2	13.0	2.5
Cost of Parcel	$0		$2,621,760	$891,960
Land Use	95 - Rivers, lakes, submerged lands	27 - Auto sales, repair and storage	27 - Auto sales, repair and storage	10 - Vacant commercial
Easement	No	No	No	No
CONSTRUCTION				
Temp Const Easement	No	No	No	No
Soil Type	Water	Ur - Urban land	Ur - Urban land	Ao - Arants, organic substratum (B)
Utility Coordination	Low	Medium	Medium	Medium
Overall Cost	Low	Typical	Typical	Typical
MAINTENANCE				
Accessibility	Good	Good	Good	Good
O&M Responsibility	FDOT	FDOT	FDOT	FDOT
FDOT Cost for O&M	Low	Low	Low	Low
RECOMMENDATION				
Area Required for Pond (ac)	44.4	2.2	2.7	2.5
Recommend Site	Yes	Yes	Yes	Yes
Comments	Preferred pond site; existing detention areas within infields	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities	Preferred pond site; consider comp treatment opportunities

NOTES:

Landscaping/Aesthestics: anticipated requirement of landscaping for aesthetic purposes.
Cost of Parcel: amount based 2004 Total Assessed Value of affected parcels (source: Broward County Property Appraiser Website)
Land Use: source: Broward County Property Appraiser Website

POND SITE PARCEL LIST

I-595 PD&E Study

Basin No.	Pond Location	Approx STA	Folio/Property ID #	Owner Information			Pond Area Required (ac)	Land Use	2004 Property Assess.Value *	Soils - symbol and name	Hydrologic Group	Take Requirements (ac)
				Name	Mailing Address	City, State Zip						
Basin 1	1	1191+00	5040-11-01-0150	Park Limited	PO Box 8960	Rancho Santa Fe, CA 92067-8960	2.3	02 - Mobile Homes	$1,573,630	Ha	B/D	Joint Use
	2	1195+00	5040-11-01-0150	Park Limited	PO Box 8960	Rancho Santa Fe, CA 92067-8960	1.0	02 - Mobile Homes	$1,573,630	Ha	B/D	Partial
	1N	1179+00	5040-02-15-0020	Way Of Life Assembly Of God Inc	11810 NW 19 St	Plantation, FL 33323-2117	8.3	71 - Churches	$1,449,650	Ha	B/D	Partial
	2N	1192+00	5040-02-19-0010	First Presbyterian Church of Plantation	12700 W Broward Blvd	Ft Lauderdale, FL 33325-2308	9.4	71 - Churches	$2,492,860	Ha	B/D	Partial
Basin 2	3	1221+00	5040-12-47-0010	Broward County	115 S Andrews Ave	Ft Lauderdale, FL 33301	8.6	00 - Vacant Residential	$1,601,340	Ha	B/D	Whole
	3N	1216+00	5040-12-42-0050	JCR Holdings LLC	4450 W Sunrise Blvd Ste C-100	Plantation, FL 33313	2.2	10 - Vacant Commercial	$878,990	Ha	B/D	Whole
	4	1231+00	5040-12-39-2300	Lake Pine Village HOA	1499 W Palmetto Park Rd	Boca Raton, FL 33486-3328	5.8	00 - Vacant Residential	$10	Iu Hm	B/D	Joint Use
			5040-12-39-2301	Lake Pine Village HOA	1499 W Palmetto Park Rd	Boca Raton, FL 33486-3328		95 - Rivers, Lakes, submerged lands	$10			Joint Use
			5040-12-39-2302	Lake Pine Village HOA	1499 W Palmetto Park Rd	Boca Raton, FL 33486-3328		95 - Rivers, Lakes, submerged lands	$10			Joint Use
	5	1240+00	5040-12-03-0010	Realty Income Trust, Rexmere Lake Village Management Inc.	PO Box 8960	Rancho Santa Fe, CA 92067	7.3	02 - Mobile Homes	$5,121,020	Ha	B/D	Partial
			5040-12-03-0011	Realty Income Trust, Rexmere Lake Village Management Inc.	PO Box 8960	Rancho Santa Fe, CA 92067		02 - Mobile Homes	$730,280			Partial
			5040-12-41-0010	Konover & Associates South Inc	7000 W Palmetto Park Road, Suite 408	Boca Raton, FL 33433-3430		16 - Community shopping centers	$7,673,060			Partial
	6	1250+00	5040-12-41-0010	Konover & Associates South Inc	7000 W Palmetto Park Road, Suite 408	Boca Raton, FL 33433-3430	0.7	16 - Community shopping centers	$7,673,060	Ha	B/D	Partial
	7	1255+00	5040-12-40-0020	Deem, C & Marilyn	2664 N Dixie Hwy	Ft Lauderdale, FL 33334-3725	0.9	26 - Service stations	$1,359,040	Ma	B/D	Partial
Basin 3	8	1285+00	5041-07-11-0010	Alliance Rt Limited Partnership	200 E Randolph Dr, Suite 6900	Chicago, IL 60601	10.1	00 - Vacant Residential	$3,679,200	Sa Ud Ma	B/D A B/D	Joint Use
			5041-07-13-0060	Scarborough HOA, Summit Property Management Company	6289 W Sunrise Blvd Rm 202	Sunrise, FL 33313-6181		00 - Vacant Residential	$10			Joint Use
	9	1298+00	5041-07-11-0020	Scarborough Land Dev Inc	3001 W Hallandale Bch Blvd #300	Pembroke Park, FL 33009	5.1	00 - Vacant Residential	$452,490	Ud Ma	A B/D	Whole
			5041-37-01-2390	Prstige Duke Joint Venture	9155 Dadeland Blvd #1502	Miami, FL 33156		10 - Vacant Commercial	$2,204,800			Partial
	10	1310+00	5041-18-07-0020	95 Warehouse Inc	3001 W Hllndale Bch Blvd #300	Pembroke Park, FL 33009	14.3	00 - Vacant Residential	$188,630	Ud	A	Partial
			5041-18-07-0030	95 Warehouse Inc	3001 W Hllndale Bch Blvd #300	Pembroke Park, FL 33009		00 - Vacant Residential	$283,150			Whole
			5041-18-07-0010	95 Warehouse Inc	3001 W Hllndale Bch Blvd #300	Pembroke Park, FL 33009		63 - Grazing land soil capability class IV	$3,718,440			Partial
			5041-37-01-2350	Samra, Kameljit & Bartolome, Delilah	4100 Galt Ocean Dr Unit 910	Ft Lauderdale, FL 33308		11 - Stores, 1 story	$375,410			Whole
			5041-37-01-2351	95 Warehouse Inc	3001 W Hllndale Bch Blvd #300	Pembroke Park, FL 33009		10 - Vacant Commercial	$840,060			Whole
			5041-37-01-2340	N O B Hill Commerce Center LLC	7951 SW 40 St #206	Miami, FL 33155		52 - Cropland soil capability class II	$767,500			Whole
			5041-07-16-0010	Diamond III LLC	3900 SW 30 Ave Suite 3	Ft Lauderdale, FL 33312		10 - Vacant Commercial	$826,260			Whole
Basin 4	11	1328+00	5041-17-20-0010	School Board of Broward County	600 SE 3rd Ave	Ft Lauderdale, FL 33301-3125	1.9	83 - Public county schools	$5,144,920	Ba Sa	B/D	Joint Use
	12	1335+00	5041-17-20-0010	School Board of Broward County	600 SE 3rd Ave	Ft Lauderdale, FL 33301-3125	4.7	83 - Public county schools	$5,144,920	Sa	B/D	Whole
	11a	1340+00	5041-17-21-1070	Nob Hill Palms HOA, Atr Mgmt Corp	1509 S University Dr	Plantation, FL 33324-4018	1.4	95 - Rivers, Lakes, submerged lands	$10	Sa	B/D	Joint Use
	13	1345+00	5041-17-00-0131	Sun First Natl Bank, Pine Island Ridge, Inc.	9400 Pine Ridge Dr	Ft Lauderdale, FL 33324-4425	0.5	38 - Golf courses, driving ranges	$10	Ia	B/D	Joint Use
Basin 5	14	1388+00	*Approx 70 parcels required. A small sample of properties in this vicinity are listed below.*				8.9	*02 - Mobile Homes*	*$50,000 - 150,000*	Ur	--	Whole
			5041-16-05-1580	Orcutt, Vicki L	1620 SW 83 Ave	Davie, FL 33324		02 - Mobile Homes	$64,770			
			5041-16-05-0660	Cutlip, Johnny M	1601 SW 83 Terr	Ft. Lauderdale, FL 33312		02 - Mobile Homes	$96,020			
			5041-16-05-1560	Morin, Thomas A & Pamela	1600 SW 83 Ave	Ft. Lauderdale, FL 33324		02 - Mobile Homes	$130,080			
	14N	1379+00	5041-16-29-0010	Dan Marinos Town Tavern of Plantation Inc	4411 Cleveland Ave	Fort Myers, FL 33901	2.0	10 - Vacant Commercial	$1,547,340	Pp	B/D	Whole
	15	1402+00	5041-16-00-0050	NGP Realty Sub L P	2951 28 St Ste 3000	Santa Monica, CA 90405-2961	2.9	38 - Golf courses, driving ranges	$765,210	Un	B	Joint Use
	15N	1389+00	5041-16-29-0042	PG-Plantation CS Two LLC	1980 Post Oak Blvd #1600	Houston, TX 77056	5.8	10 - Vacant Commercial	$2,409,260	Hb	B/D	Whole
	25N	1420+00	5041-16-30-0010	Unviersity Center Partners LTD	300 SE 2 ST	Ft Lauderdale, FL 33301	4.9	10 - Vacant Commercial	$1,918,840	Ia	B/D	Whole

POND SITE PARCEL LIST

I-595 PD&E Study

Basin No.	Pond Location	Approx STA	Folio/Property ID #	Owner Information			Pond Area Required (ac)	Land Use	2004 Property Assess.Value *	Soils - symbol and name	Hydrologic Group	Take Requirements (ac)
				Name	Mailing Address	City, State Zip						
Basin 6	16	1432+00	5041-16-00-0087	State of Florida, DOT	3400 W Commercial Blvd	Ft Lauderdale, FL 33309-3421	1.7	94 - Right-of-way, streets, roads, ditch, etc.	$665,840	Ia Ba	B/D	FDOT R/W
			5041-16-28-0010	Tri-County Plaza Assoc Ltd, Turnberry Associates	1972 S University Dr 2 FL	Davie, FL 33324-5846		16 - Community shopping centers	$32,265,360			Partial
	17	1450+00	5041-16-28-0010	Tri-County Plaza Assoc Ltd, Turnberry Associates	1972 S University Dr 2 FL	Davie, FL 33324-5846	4.4	16 - Community shopping centers	$32,265,360	Pp Ma	B/D	Joint Use
			5041-15-19-0010	CC-Investors 1997-11, Carmax Auto Supersotres 7108	PO Box 42304	Richmond, VA 23242-2304		27 - Auto sales, repair and storage, etc.	$10,625,570			Joint Use
	18	1462+00	5041-15-17-0010	Shear, Frank & Shear, Gary O & Zacco, Mario & Karon	8761 SW 133 St	Miami, FL 33176-5928	2.1	10 - Vacant Commercial	$563,830	Ba Ma	B/D	Whole
	19	1495+00	5041-37-01-1731	Stillbrooke Corp of FL	PO Box 130548	Houston, TX 77219-0548	6.9	10 - Vacant Commercial	$847,680	Ma	B/D	Whole
			5041-14-31-0010	SCI Funeral Serv of FL Inc	PO Box 130548	Houston, TX 77219-0548		40 - Vacant industrial	$414,000			Whole
	20	1500+00	5041-23-01-0030	Forman, Miles Austin Tr & Forman, Hamilton C Tr	PO Box 292037	Davie, FL 33329-2037	12.7	40 - Vacant industrial	$52,150	Ud	A	Joint Use
	21	1520+00	5041-37-01-1540	Forman Industrial Land LLC	888 SE 3 Ave	Ft Lauderdale, FL 33316	7.0	95 - Rivers, Lakes, submerged lands	$136,730	Water	--	Joint Use
			5041-37-01-1570	Forman Industrial Land LLC	888 SE 3 Ave	Ft Lauderdale, FL 33316		40 - Vacant industrial	$30,830			Joint Use
			5041-37-01-1573	Forman Industrial Land LLC	888 SE 3 Ave	Ft Lauderdale, FL 33316		40 - Vacant industrial	$29,390			Joint Use
			5041-37-01-1510	Forman Industrial Land LLC	888 SE 3 Ave	Ft Lauderdale, FL 33316		95 - Rivers, Lakes, submerged lands	$126,320			Joint Use
			5041-37-01-1440	Forman Industrial Land LLC	888 SE 3 Ave	Ft Lauderdale, FL 33316		95 - Rivers, Lakes, submerged lands	$127,800			Joint Use
Basin 9	26N	1650+00	5042-19-22-0010	Choate, Arthur B	3100 W State Road 84	Ft Lauderdale, FL 33312-4876	2.2	27 - Auto sales, repair and storage, etc.	$921,860	Ur	--	Whole
	27N	1657+00	5042-20-00-0210	New River Boating Center Inc	2640 Riverland Rd	Ft Lauderdale, FL 33312-4412	2.7	27 - Auto sales, repair and storage, etc.	$1,571,580	Ur	--	Whole
			5042-20-00-0240	Elmore, Robert L	900 NW 8th Ave	Ft Lauderdale, FL 33311-7208		40 - Vacant industrial	$365,100	Ur	--	Partial
			5042-20-00-0200	Elmore, Robert L	900 NW 8th Ave	Ft Lauderdale, FL 33311-7208		40 - Vacant industrial	$174,900	Ur	--	Partial
			5042-20-00-0201	Florida Marine Propulsion Corp	2990 State Road 84	Ft Lauderdale, FL 33312		48 - Warehousing, distribution	$510,180	Ur	--	Whole
	28N	1663+00	5042-29-40-0010	Alandco Inc, FPL-Alandco-ALC/GB	PO Box 14000	Juno Beach, FL 33408-0420	2.5	10 - Vacant Commercial	$891,960	Ur	--	Whole

**** NOTE: For agricultural classifications (50-60) value taken from the "Land Value AG" column from 2004 Property Assessment Values; all other values were taken from the "Total" column from 2004 Property Assessment Values.***