Engineering Report
LEVEL OF SERVICE EVALUATION OF WORKS OF THE DISTRICT

Prepared for
BIG CYPRESS BASIN
SOUTH FLORIDA WATER
MANAGEMENT DISTRICT
Naples, Florida

FINAL REPORT
December 1990

Prepared through
COLLIER COUNTY WATER MANAGEMENT DEPARTMENT

By

PBS&J
POST, BUCKLEY, SCHUH & JERNIGAN
Consulting Engineers and Planners
6323 Presidential Court
Ft. Myers, Florida 33919

TABLE OF CONTENTS

Section 1
INTRODUCTION

1.1 BACKGROUND

During 1990, Post, Buckley, Schuh and Jernigan, Inc. (PBS&J) completed a comprehensive Stormwater Management Master Plan for Collier County that will guide the County's Stormwater Management efforts for the next 10 to 20 years. The master plan served to inventory and map the primary stormwater systems, analyze the available capacity and service demands placed on individual system structures and channel segments in the primary drainage basin systems, assess the attainable level(s) of service in the systems, develop remedial solutions and formulate Capital Improvement Projects for the identified watersheds and basins in the County.

In the summer of 1990 the contractual agreement for the Collier County Stormwater Management Master Plan was modified to include an analysis of the Level of Service (LOS) for flood control as defined by the South Florida Water Management District (SFWMD) for a network of primary canals and water control structures known as the "Works of the Big Cypress Basin/District."

1.2 SCOPE

The scope of work consists of three major tasks to evaluate the LOS for flood protection provided by the "Works of the Big Cypress Basin/District." The hydrologic and hydraulic assessment for evaluating the LOS of each channel segment and structure listed as part of the "Works" utilizes the database inventory and analysis developed as part of Collier County's Stormwater Management Master Plan and other previous hydrologic-hydraulic studies.

The first task in the scope requires a review of the SFWMD LOS definitions. The second task requires a compilation of the "planning level" hydrologic and hydraulic assessments and an evaluation of the conveyance capacity for each channel segment and water control structure for the specified recurrence interval storms identified by the SFWMD LOS definitions under existing and future land use conditions. Task 3 requires an estimation of the LOS attained by each channel segment and water control structure under existing and future land use conditions in their respective drainage basins.

1.3 AUTHORIZATION

The contract authorizing the development of the Collier County Master Plan was executed June 13, 1989 and the Notice to Proceed was received June 15, 1989. Purchase Order No. 2571 issued by Collier County and SFWMD on August 2, 1990 authorizes the amendment to the original contract for the Level of Service evaluation of the "Works of the Basin/District."

Section 2
METHODOLOGY

2.1 HYDROLOGY

The recurrence intervals selected in the Maser Plan by Collier County for evaluation in the LOS estimates are the 2-year, the mean annual (2.33-year), the 3, 5, 10, 25, 50 and 100-year events. The flows for these recurrence intervals were estimated using the planning level techniques, as listed in Table 2-1, and as follows:

1. Most of the basins where development has occurred have regression equations developed specifically for these basins for 2 or 3 different storm events and/or have detailed studies utilizing synthetic hydrograph techniques. The flows generated by these regression equations and flows taken from the detailed studies were utilized in conjunction with statistical techniques to estimate flow rates for other recurrence intervals.

2. The Soil Conservation Service (SCS) area/discharge equation was used where detailed studies provided peak flow rates for various storm events. The SCS area/discharge equation calculates peak flow rates for upstream channel locations given the peak flow rates near the basin outfall.

3. Future peak flow rates were estimated using a growth factor for each basin which varied from 10% to 13% depending on identified future land use. This factor was applied to the existing peak flow to predict the anticipated future peak flow.

Table 2-1

HYDROLOGIC METHODOLOGY

"WORKS" Segment	Basin*	Method
1	Main Golden Gate (MGG)	Regression Equations
2	Main Golden Gate (MGG)	Regression Equations
3	Main Golden Gate (MGG)	Regression Equations
4	Main Golden Gate (MGG)	Regression Equations
5	Cypress Canal (CYC)	Regression Equations
6	Cypress Canal (CYC)	Regression Equations
7	Green Canal (GCB)	Detailed Study
8	Harvey Canal (D1C)	Detailed Study
9	I-75 Canal (D2C)	Detailed Study
10	I-75 Canal (D2C)	Detailed Study
11	I-75 Canal (D2C)	Detailed Study
12	Pine Ridge Canal (PRC)	Detailed Study
13	Cocohatchee River (CRB)	Detailed Study & Equation
14	Airport Road Canal South (ARS)	Regression Equations
15	Airport Road Canal North (ARN)	Regression Equations
16	Henderson Creek (HEC)	Detailed Study
17	Haldeman Creek (HCB)	Detailed Study
18	Gordon River Extension (GRE)	Detailed Study
19	West Branch Cocohatchee River (WBC)	Detailed Study
20	East Branch Cocohatchee River (EBC)	Detailed Study
21	C-4 Canal (C4C)	Detailed Study
22	Faka-Union Canal/(FKC)	Detailed Study & SCS Equation

*Abbreviations shown in parentheses refer to the basin identification nomenclature used in the Collier County Stormwater Management Master Plan (1990).

2.2 HYDRAULICS

Each "Works" segment in Collier County may consist of several identified channel reaches, channel crossings or structures, and water control structures. The individual channel reaches and structures were evaluated to determine their conveyance capacity independent of any interaction between reaches/structures. Channel capacities were determined at the planning level assuming uniform flow and bank-full conditions. Drainage structure capacities were determined assuming full flow conditions with an allowable head difference of one-half foot across the structure, while the water level control structure or weir capacities were rated based upon the capacity of the downstream channel segment.

Since interaction between structures and channels, backwater effects and water surface profiles were not included as part of the analysis, the predicted capacity may not accurately reflect actual flooding conditions. Downstream conditions may create flooding in systems which otherwise could adequately convey the flow. A complete flooding analysis involves detailed study and modeling of each system and its connecting systems which is beyond the scope of this "planning level" assessment.

2.3 LEVEL OF SERVICE DETERMINATION

After the capacity of each individual reach and structure had been evaluated, a Level of Service in terms of a recurrence interval was determined for each reach/structure. This was done by comparing the capacity of each reach or structure to the expected peak flows at that location for the various recurrence intervals. The level of service of the

reach/structure was the highest recurrence interval that would generate a flow that was equal to, or less than, the capacity of the reach/structure.

As an example, if a channel segment was determined to have a conveyance capacity of 115 cfs and the expected 10-year event at that location was 100 cfs while the 25-year event was 120 cfs, then the level of service delivered by that channel reach was a 10-year LOS.

Section 3
HYDRAULIC PERFORMANCE

A summary of the hydraulic performance of each channel reach and water level control structure that is a part of the "Works of the Basin/District," is shown in Table 3-1. The minimum channel and structure capacities shown in the table are based upon the previous discussion of methodology in Section 2. The water level control structures or weirs were rated based upon the capacity of the downstream channel segment, while the pipes, culverts, and bridges were rated based on full flow conditions with an allowable head difference of one-half foot across the structure.

The channel reaches defined by SFWMD as part of the "Works of the Basin/District" consist of several segments and drainage structures. A description of the segments and drainage structures within each reach are contained in Appendix II. The hydraulic performance for each channel reach shown in Table 3-1 is based upon the most restrictive structure or channel segment within that reach. For example, the channel reach for the Golden Gate Canal between Weirs 1 and 2 consists of two channel segments and one drainage structure. Appendix III of this report, which gives the complete data set for all channel reaches and water level control structures, indicates that channel segment MGG-00-C0015 is the most restrictive with a channel capacity of 1095 cfs.

Table 3-1 also indicates the flood control performance level associated with each channel reach and water level control structure based upon existing and future basin conditions. The flood control performance levels are based upon the criteria in Section 2.2 and are reflected in terms of a recurrence interval flood frequency. All flood control performance levels of

Table 3-1

HYDRAULIC PERFORMANCE

"Works" Segment Number	Description Structure/Channel Number	Minimum Estimated Structure/Channel Capacity	Estimated Flood Control Performance Level	
			Current	Future
1	Main Golden Gate Canal Weir No. 1	2277	5	5
1	Main Golden Gate Canal between Weir Nos. 1 & 2	1095	1	1
2	Main Golden Gate Canal Weir No. 2	1512	5	3
2	Main Golden Gate Canal between Weir Nos. 2 & 3	1512	5	3
3	Main Golden Gate Canal Weir No. 3	1669	25	10
3	Main Golden Gate Canal between Weir Nos. 3 & 4	1116	3	3
4	Main Golden Gate Canal Weir No. 4	1116	5	5
4	Main Golden Gate Canal Weir No. 5	1071	100	50
4	Main Golden Gate Canal between Weir Nos. 4 & 5	1083	10	10
5	Cypress Canal downstream of Weir No. 1	329	1	1
6	Cypress Canal Weir No. 1	330	5	3
6	Cypress Canal upstream of Weir No. 1	386	10	5
7	Green Canal Entire channel	445	10	10
8	Harvey Canal Weir No. 1	424	100	100
8	Harvey Canal between Weir Nos. 1 & 2	104	5	5

Note: Flood control performance levels are in recurrence interval years.
Structure/channel capacities are in cfs.

Table 3-1

HYDRAULIC PERFORMANCE

"Works" Segment Number	Description Structure/Channel Number	Minimum Estimated Structure/Channel Capacity	Estimated Flood Control Performance Level Current	Future
8	Harvey Canal Weir No. 2	214	100	50
9	I-75 Canal Weir No. 1	1547	100	100
9	I-75 Canal between Golden Gate Canal & Pine Ridge Rd	778	50	50
10	I-75 Canal Weir No. 2	778	100	100
10	I-75 Canal between Pine Ridge Rd & Vanderbilt Beach Rd	298	25	10
11	I-75 Canal Weir No. 3	298	50	50
11	I-75 Canal between Vanderbilt Rd & CR 846	153	25	25
12	Pine Ridge Canal Weir No. 1	185	25	25
12	Pine Ridge Canal Weir No. 2	185	25	25
12	Pine Ridge Canal	185	25	25
13	Cocohatchee Canal West of CR 951	127	2	1
14	Airport Road Canal Weir No. 1	633	25	100
14	Airport Road Canal between Golden Gate Canal & Vanderbilt Beach Rd	15	1	1
15	Airport Road Canal Weir No. 2	668	100	50
15	Airport Road Canal between Vanderbilt Rd & CR 846	123	1	1

Note: Flood control performance levels are in recurrence interval years.
Structure/channel capacities are in cfs.

Table 3-1

HYDRAULIC PERFORMANCE

"Works" Segment Number	Description Structure/Channel Number	Minimum Estimated Structure/Channel Capacity	Estimated Flood Control Performance Level Current	Future
16	Henderson Creek Weir No. 1	1800	25	25
16	Henderson Creek	49	1	1
17	Haldeman Creek Weir	443	10	10
18	Gordon River Weir	123	1	1
19	West Branch Cocohatchee Weir	421	100	100
20	East Branch Cocohatchee Weir	33	5	5
21	Eagle Creek Weir	725	100	100
22	Faka Union Canal Weir No. 1	2222	2.3	1

Note: Flood control performance levels are in recurrence interval years.
Structure/channel capacities are in cfs.

a 2-year flood frequency or less are shown as a 1-year flood frequency in Table 3-1. The flood control performance levels can range from a 1-year flood frequency up to a 100-year flood frequency.

Table 3-2 indicates the restrictive channel segments and structures within each "Works" segment number shown in Table 3-1. The location of each channel reach can be obtained by cross-referencing the channel segment number (i.e., MGG-00-C0015) shown in Table 3-2 with the structure location designation in Appendix 2. The location of each channel reach and structure is also shown on the drainage atlas sheets that were prepared as part of the Collier County Stormwater Management Master Plan. The drainage atlas sheets are not part of this report but can be obtained by contacting the Water Management Department of the Collier County Government and the offices of the South Florida Water Management District (SFWMD) Big Cypress Basin in Naples, Florida.

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment 1: Golden Gate Canal between Weir #1 & #2, including Weir #1.			
1	MGG-00-S0100	2277	5	5
1	MGG-00-C0015	1095	1	1
1	MGG-00-S0110	3861	50	25
1	MGG-00-C0025	1512	3	2
	Minimum Current LOS of Segment 1:			1
	Minimum Future LOS of Segment 1:			1
	Works Segment 2: Golden Gate Canal between Weir #2 & #3, including Weir #2.			
2	MGG-00-S0120	1512	5	3
2	MGG-00-C0035	1512	5	3
2	MGG-00-S0130	29700	100	100
2	MGG-00-C0045	1512	5	3
2	MGG-00-S0140	30000	100	100
2	MGG-00-C0055	1587	5	3
2	MGG-00-S0150	5040	100	100
2	MGG-00-C0065	1587	5	3
2	MGG-00-S0160	6720	100	100
2	MGG-00-C0075	1669	10	5
	Minimum Current LOS of Segment 2:			5
	Minimum Future LOS of Segment 2:			3
	Works Segment 3: Golden Gate Canal between Weir #3 & #4, including Weirs #3.			
3	MGG-00-S0170	1669	25	10
3	MGG-00-C0085	1116	3	3
3	MGG-00-S0180	6324	100	100
3	MGG-00-C0095	1116	5	3
3	MGG-00-S0190	4092	100	100
3	MGG-00-C0105	1116	5	3
3	MGG-00-S0200	2080	100	50
3	MGG-00-C0115	1116	5	3
	Minimum Current LOS of Segment 3:			3
	Minimum Future LOS of Segment 3:			3

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channnel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment 4: Golden Gate Canal between Weir #4 & #5, including Weirs #4 & #5.			
4	MGG-00-S0210	1116	25	10
4	MGG-00-C0125	1083	10	10
4	MGG-00-S0220	4836	100	100
4	MGG-00-C0135	1083	100	50
4	MGG-00-S0230	4290	100	100
4	MGG-00-C0145	1071	100	50
4	MGG-00-S0240	1071	100	50
	Minimum Current LOS of Segment 4:			10
	Minimum Future LOS of Segment 4:			10
	Works Segment 5: Cypress Canal downstream of Weir #1.			
5	CYC-00-C0005	329	1	1
5	CYC-00-S0100	1323	100	100
5	CYC-00-C0015	485	3	2.33
5	CYC-00-S0110	426	3	1
5	CYC-00-C0025	330	2	1
	Minimum Current LOS of Segment 5:			1
	Minimum Future LOS of Segment 5:			1
	Works Segment #6: Cypress Canal upstream of Weir #1, including Weir #1.			
6	CYC-00-S0120	330	5	3
6	CYC-00-C0035	386	10	5
	Minimum Current LOS of Segment 6:			5
	Minimum Future LOS of Segment 6:			3

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channnel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment #7: Green Canal			
7	GCB-00-C0005	445	10	10
7	GCB-00-S0100	2100	100	100
7	GCB-00-C0015	549	100	50
7	GCB-00-S0110	2100	100	100
7	GCB-00-C0025	856	100	100
7	GCB-00-S0120	2790	100	100
7	GCB-00-C0035	1079	100	100
	Minimum Current LOS of Segment 7:			10
	Minimum Future LOS of Segment 7:			10
	Works Segment #8: Harvey Canal, including Weirs #1 & #2.			
8	D1C-00-C0005	473	100	100
8	D1C-00-S0100	1827	100	100
8	D1C-00-C0015	311	100	100
8	D1C-00-S0110	1728	100	100
8	D1C-00-C0025	424	100	100
8	D1C-00-S0120	424	100	100
8	D1C-00-C0035	339	100	100
8	D1C-00-S0130	104	5	5
8	D1C-00-C0045	214	100	50
8	D1C-00-S0140	214	100	50
	Minimum Current LOS of Segment 8:			5
	Minimum Future LOS of Segment 8:			5
	Works Segment #9: I-75 Canal between Golden Gate Canal and Pine Ridge Road, including Weir #1.			
9	D2C-00-C0005	1547	100	100
9	D2C-00-S0100	25536	100	100
9	D2C-00-C0015	1547	100	100
9	D2C-00-S0104	1547	100	50
9	D2C-00-C0025	778	50	50
	Minimum Current LOS of Segment 9:			50
	Minimum Future LOS of Segment 9:			50

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channnel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment #10: I-75 Canal between Pine Ridge and Vanderbilt Beach Roads, including proposed Weir #2.			
10	D2C-00-S0110	778	100	100
10	D2C-00-C0035	298	25	10
	Minimum Current LOS of Segment 10:			25
	Minimum Future LOS of Segment 10:			10
	Works Segment #11: I-75 Canal between Vanderbilt Beach Road and CR 846, including Weir #3.			
11	D2C-00-S0120	298	50	50
11	D2C-00-C0045	313	100	100
11	D2C-00-S0130	153	25	25
11	D2C-00-C0055	230	100	50
	Minimum Current LOS of Segment 11:			25
	Minimum Future LOS of Segment 11:			25
	Works Segment #12: Pine Ridge Canal, including Weirs #1 & #2.			
12	PRC-00-C0005	185	25	25
12	PRC-00-S0100	472	50	50
12	PRC-00-C0015	185	25	25
12	PRC-00-S0110	185	25	25
12	PRC-00-C0025	185	25	25
12	PRC-00-S0120	185	50	50
	Minimum Current LOS of Segment 12:			25
	Minimum Future LOS of Segment 12:			25

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channnel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment #13: Cocohatchee Canal west of CR951			
13	CRB-00-C0015	1432	100	100
13	CRB-00-S0120	1688	100	100
13	CRB-00-C0025	648	10	5
13	CRB-00-S0130	4176	100	100
13	CRB-00-C0035	910	50	25
13	CRB-00-S0140	5276	100	100
13	CRB-00-C0045	957	100	50
13	CRB-00-S0150	340	3	3
13	CRB-00-C0055	587	10	10
13	CRB-00-S0160	1560	100	100
13	CRB-00-C0065	478	10	5
13	CRB-00-S0170	5400	100	100
13	CRB-00-C0075	566	10	10
13	CRB-00-S0180	5400	100	100
13	CRB-00-C0085	667	25	10
13	CRB-00-S0190	302	3	3
13	CRB-00-C0095	524	10	10
13	CRB-00-S0200	294	3	3
13	CRB-00-C0105	687	50	25
13	CRB-00-S0210	328	5	3
13	CRB-00-C0115	311	5	5
13	CRB-00-S0220	290	5	3
13	CRB-00-C0125	182	2.3	2
13	CRB-00-S0230	194	3	3
13	CRB-00-C0135	139	2	2
13	CRB-00-S0240	217	3	3
13	CRB-00-C0145	127	2	1
13	CRB-00-S0250	890	100	100
13	CRB-00-C0155	90	2	1
13	CRB-00-S0260	190	5	3
13	CRB-00-C0165	95	2	1
13	CRB-00-S0270	119	3	3
13	CRB-00-C0175	109	3	3
13	CRB-00-S0280	380	100	100
13	CRB-00-C0185	73	5	3
13	CRB-00-S0290	380	100	100
13	CRB-00-C0195	221	100	100
13	CRB-00-S0300	194	100	100
13	CRB-00-C0205	144	100	100
13	CRB-00-S0310	380	100	100
13	CRB-00-C0215	103	100	100
13	CRB-00-S0320	399	100	100
13	CRB-00-C0225	115	100	100
	Minimum Current LOS of Segment 13:			2
	Minimum Future LOS of Segment 13:			1

Table 3–2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channnel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment #14: Airport Road Canal between Golden Gate Canal and Vanderbilt Beach Road, including Weir #1.			
14	ARS-00-C0005	555	10	5
14	ARS-00-S0100	600	10	5
14	ARS-00-C0015	633	10	10
14	ARS-00-S0110	633	25	10
14	ARS-00-C0025	752	50	50
14	ARS-00-S0120	1483	100	100
14	ARS-00-C0035	471	10	5
14	ARS-00-S0130	3000	100	100
14	ARS-00-C0045	377	5	3
14	ARS-00-S0140	347	3	3
14	ARS-00-C0055	423	10	5
14	ARS-00-S0150	371	10	5
14	ARS-00-C0065	423	10	30
14	ARS-00-S0160	361	10	5
14	ARS-00-C0075	355	10	5
14	ARS-00-S0170	199	1	1
14	ARS-00-C0085	282	5	3
14	ARS-00-S0180	207	2	1
14	ARS-00-C0095	244	5	2.33
14	ARS-00-S0190	77	1	1
14	ARS-00-C0105	215	3	1
14	ARS-00-S0200	236	5	3
14	ARS-00-C0115	123	3	2.33
14	ARS-00-S0210	37	1	1
14	ARS-00-C0125	124	1	1
14	ARS-00-S0220	49	1	1
14	ARS-00-C0135	159	1	1
14	ARS-00-S0230	216	5	3
14	ARS-00-C0145	169	2	1
14	ARS-00-S0240	196	5	3
14	ARS-00-C0155	149	1	1
14	ARS-00-S0250	41	1	1
14	ARS-00-C0165	142	1	1
14	ARS-00-S0260	40	1	1
14	ARS-00-C0175	153	10	5
14	ARS-00-S0270	40	1	1
14	ARS-00-C0185	128	5	3
14	ARS-00-S0280	94	1	1
14	ARS-00-C0195	106	10	5
14	ARS-00-S0290	15	1	1
14	ARS-00-C0205	112	100	100
14	ARS-00-S0300	40	1	1
14	ARS-00-C0215	122	100	100
	Minimum Current LOS of Segment 14:			1
	Minimum Future LOS of Segment 14:			1

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channnel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment #15: Airport Road Canal between Vanderbilt Beach Road and CR 846, including Weir #2.			
15	ARN-00-C0005	359	2.3	1
15	ARN-00-S0100	1767	100	100
15	ARN-00-C0015	419	5	3
15	ARN-00-S0120	431	10	5
15	ARN-00-C0025	668	100	50
15	ARN-00-S0130	668	100	50
15	ARN-00-C0035	336	5	2.33
15	ARN-00-S0140	216	1	1
15	ARN-00-C0045	123	1	1
15	ARN-00-S0150	123	1	1
15	ARN-00-C0055	123	1	1
15	ARN-00-S0160	224	1	1
15	ARN-00-C0065	289	1	1
15	ARN-00-S0170	144	1	1
15	ARN-00-C0075	202	1	1
	Minimum Current LOS of Segment 15:			1
	Minimum Future LOS of Segment 15:			1

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channnel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Works Segment #16: Henderson Creek, including Weir #1.			
16	HEC-00-C0015	602	1	1
16	HEC-00-S0110	2520	100	100
16	HEC-00-C0025	590	1	1
16	HEC-00-S0120	1800	25	25
16	HEC-00-C0035	1050	25	10
16	HEC-00-S0130	145	1	1
16	HEC-00-C0045	990	25	5
16	HEC-00-S0140	289	1	1
16	HEC-00-C0055	961	25	10
16	HEC-00-S0150	223	1	1
16	HEC-00-C0065	374	1	1
16	HEC-00-S0160	1620	100	100
16	HEC-00-C0075	363	1	1
16	HEC-00-S0170	255	1	1
16	HEC-00-C0085	342	1	1
16	HEC-00-S0180	410	1	1
16	HEC-00-C0095	342	1	1
16	HEC-00-S0190	163	1	1
16	HEC-00-C0105	331	1	1
16	HEC-00-S0200	1263	100	100
16	HEC-00-C0115	369	1	1
16	HEC-00-S0210	1152	100	100
16	HEC-00-C0125	408	1	1
16	HEC-00-S0220	169	1	1
16	HEC-00-C0135	393	3	2.33
16	HEC-00-S0230	265	1	1
16	HEC-00-C0145	49	1	1
16	HEC-00-S0240	227	1	1
16	HEC-00-C0155	56	1	1
16	HEC-00-S0250	209	1	1
16	HEC-00-C0165	218	1	1
	Minimum Current LOS of Segment 16:			1
	Minimum Future LOS of Segment 16:			1

Table 3-2

RESTRICTIVE CHANNEL SEGMENTS AND STRUCTURES

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/Channel Capacity (in cfs)	Estimated Level of Service (in recurrence interval years) Current	Future
	Work Segment #17: Haldeman Creek Weir			
17	HCB-00-S0130	443	10	10
	Work Segment #18: Gordon River Weir			
18	GRE-00-S0100	123	1	1
	Work Segment #19: West Branch Cocohatchee Weir			
19	WBC-00-S0110	421	100	100
	Work Segment #20: East Branch Cocohatchee Weir			
20	EBC-00-S0110	33	5	5
	Work Segment #21: Eagle Creek Weir			
21	C4C-00-S0110	725	100	100
	Work Segment #22: Faka Union Canal Weir #1			
22	FKC-00-S0114	2222	2.3	1

Section 4
LEVEL OF SERVICE

4.1 LOS DEFINITIONS

The South Florida Water Management District (SFWMD) has proposed a level of service (LOS) scale for flood protection to be used as a measure of the degree of flood protection available to inhabited regions of the District. This scale is intended to be used throughout the District for consistent identification of flood-prone areas for planning purposes.

The District has established definitions for the following five Levels of Service:

Service Level	Performance Level
A	Superior
B	Exceeds Standards
C	Standard
D	Sub-Standard
E	Unacceptable

The flood control performance level definitions for each LOS are based on criteria established by the District in three major categories. These categories are (1) Buildings, (2) Roads, and (3) Sites. The LOS for each of these categories is based upon the flood frequency requirements shown in Table 4-1.

Table 4-1

SFWMD LEVEL OF SERVICE FLOOD CONTROL CRITERIA

REFERENCE	LEVEL OF SERVICE				
	A	B	C	D	E
1. BUILDING FLOORS					
A. Emergency Shelters/Service	>100	>100	>100	100	<100
B. Habitable	>100	100	100	100	<100
C. Employment/Service	>100	100	100	100	<100
2. ROADS					
A. Evacuation	>100	>100	>100	100	<100
B. Emergency Service	>100	>100	>100	100	<100
C. Arterials	>100	100	100	10	<10
D. Collectors	>100	25	25	5	<5
E. Neighborhood	>100	25	5	3	<3
3. SITES					
A. Urban	>100	25	5	3	<3
B. Rural	>100	25	3	<3	<3

4.2 LIMITATIONS IN APPLICATION

The LOS matrix proposed by the SFWMD addresses water quality as one of the performance levels of a system that should be analyzed when making an LOS determination. Water quality issues are considered under Category III when assessing urban and rural sites. However, recognizing the lack of available water quality data in the basins to be analyzed, the LOS determinations shown in this report are reflective of flood control performance levels only.

The LOS for the "Works" segments shown in this report are based primarily upon the flood control performance level as it relates to roadways and sites. Category I, Building Floors, were not included as part of the determination since the location, building type and building floor elevations are not readily available for the watershed basins in Collier County. The fact that the building floor category was not analyzed in this report should not minimize the importance of this category in an overall LOS assessment of the "Works" segments. However, the scope of work for this project did not provide for detailed assessments of building locations and floor elevations.

4.3 LOS ATTAINMENT

In the scope of this project, the SFWMD identified 16 channel reaches and 22 water control structures for which LOS attainments were to be made. A summary of the LOS attainments for each "Works" channel segment and water control structure are shown in Table 4-2, the LOS attainments were made based upon the matrix adopted by the SFWMD as shown in Table 4-1.

The determination of the LOS of the channel segments and water control structures relative to their flood control performance levels were based on limited data and analyses, including

elevations of the referenced roadway facilities. These determinations are qualitative judgment calls. The actual LOS can only be determined through detailed basin hydrologic/hydraulic studies and field verifications.

Table 4-2

LOS ATTAINMENT SUMMARY

Works	Name	Applicable Measures		Level of Service	
		Category	Criteria	Current	Future
1	Main Golden Gate Canal	II	NA	--	--
	Weir No. 1	III	A	C	C
1	Main Golden Gate Canal	II	A	E	E
	between Weir Nos. 1 & 2		B	E	E
			C	E	E
		III	A	E	E
2	Main Golden Gate Canal	II	NA	--	--
	Weir No. 2	III	A	C	D
2	Main Golden Gate Canal	II	A	E	E
	between Weir Nos. 2 & 3		B	E	E
			C	E	E
			D	D	E
		III	A	C	D
3	Main Golden Gate Canal	II	NA	--	--
	Weir No. 3	III	B	B	C
3	Main Golden Gate Canal	II	D	B	D
	between Weir Nos. 3 & 4		E	B	C
		III	B	B	C
4	Main Golden Gate Canal	II	NA	--	--
	Weir No. 4	III	B	C	C
4	Main Golden Gate Canal	II	NA	--	--
	Weir No. 5	III	B	A	B
4	Main Golden Gate Canal	II	D	A	B
	between Weir Nos. 4 & 5		E	A	B
		III	B	A	B
5	Cypress Canal	II	D	E	E
	downstream of Weir No. 1		E	E	E
		III	B	E	E
6	Cypress Canal	II	NA	--	--
	Weir No. 1	III	B	C	C

Table 4-2

LOS ATTAINMENT SUMMARY

Works	Name	Applicable Measures		Level of Service	
		Category	Criteria	Current	Future
6	Cypress Canal	II	NA	--	--
	upstream of Weir No. 1	III	B	C	C
7	Green Canal	II	B	E	E
	Entire channel		C	D	D
			D	D	D
		III	A	C	C
8	Harvey Canal	II	NA	--	--
	Weir No. 1	III	B	A	A
8	Harvey Canal	II	D	D	D
	between Weir Nos. 1 & 2		E	C	C
		III	B	C	C
8	Harvey Canal	II	NA	--	--
	Weir No. 2	III	B	A	B
9	I-75 Canal	II	NA	--	--
	Weir No. 1	III	B	A	A
9	I-75 Canal	II	NA	--	--
	between Golden Gate Canal & Pine Ridge Rd	III	B	C	C
10	I-75 Canal	II	NA	--	--
	Weir No. 2	III	B	A	A
10	I-75 Canal	II	D	B	D
	between Pine Ridge Rd & Vanderbilt Beach Rd	III	B	B	C
11	I-75 Canal	II	NA	--	--
	Weir No. 3	III	B	B	B
11	I-75 Canal	II	D	B	B
	between Vanderbilt Rd & CR 846		E	B	B
		III	B	B	B
12	Pine Ridge Canal	II	NA	--	--
	Weir No. 1	III	B	B	B

Table 4-2

LOS ATTAINMENT SUMMARY

Works	Name	Applicable Measures		Level of Service	
		Category	Criteria	Current	Future
12	Pine Ridge Canal	II	NA	--	--
	Weir No. 2	III	B	B	B
12	Pine Ridge Canal	II	NA	--	--
		III	B	B	B
13	Cocohatchee Canal	II	A	E	E
	West of CR 951		B	E	E
			C	E	E
			D	E	E
			E	E	E
		III	A	E	E
			B	D	D
14	Airport Road Canal	II	A	E	E
	Weir No. 1		B	E	E
			E	B	C
		III	A	B	C
14	Airport Road Canal	II	A	E	E
	between Golden Gate Canal		B	E	E
	& Vanderbilt Beach Rd		E	E	E
		III	A	E	E
15	Airport Road Canal	II	A	A	E
	Weir No. 2		B	A	E
			E	A	B
		III	B	A	B
15	Airport Road Canal	II	A	E	E
	between Vanderbilt Rd & CR 846		B	E	E
			E	E	E
		III	B	E	E
16	Henderson Creek	II	A	E	E
	Weir No. 1		B	E	E
			D	B	B
			E	B	B
		III	B	B	B

Table 4-2

LOS ATTAINMENT SUMMARY

Works	Name	Applicable Measures Category	Criteria	Level of Service Current	Future
16	Henderson Creek	II	A	E	E
			B	E	E
			D	E	E
			E	E	E
		III	B	E	E
17	Haldeman Creek Weir	II	A	E	E
			B	E	E
			C	D	D
		III	B	C	C
18	Gordon River Weir	II	A	E	E
			B	E	E
			C	E	E
		III	A	E	E
19	West Branch Cocohatchee Weir	II	A	A	A
			B	A	A
			C	A	A
		III	A	A	A
20	East Branch Cocohatchee Weir	II	A	E	E
			B	E	E
			C	E	E
		III	A	C	C
21	Eagle Creek Weir	II	E	A	A
		III	B	A	A
22	Faka Union Canal Weir No. 1	II	A	E	E
			B	E	E

Appendix I
HYDROLOGY

Flows in "Works" segments 1, 2, 3, 4, 5 and 6 which are located in the Main Golden Gate (MGG) Basin and the Cypress Canal (CYC) Basin, were computed for the 10-year and 25-year events using regression equations modified by Johnson Engineering from equations developed by Black, Crow & Eidsness, Inc. in their 1975 report *Hydrologic Study of G.A.C. Canal Network*. Flows for other recurrence intervals were established using a log-log linear relationship between the 10 and 25-year events. The specific equations used for the two events are:

$$Q_{10} = 139\ (A)^{0.639}$$

$$Q_{25} = 157\ (A)^{0.667}$$

Where A is the drainage area in square miles.

Flows for "Works" segments 7,8,9,10 and 11, located in the Green Canal (GCB) Basin, the Harvey Canal (D1C) Basin and the I-75 Canal (D2C) Basin, were taken from the report *D-2 Canal Drainage System Study* by Hole, Montes et. al. for the 2.33-year (mean annual) and the 25-year events. Flows for other recurrence intervals were established using a log-log linear relationship between the 2.33 and 25-year events.

Flows for "Works" segments 12,19 and 20, which are located in the Pine Ridge Canal (PRC) Basin, the West Branch of the Cocohatchee River (WBC) and the East Branch of the Cocohatchee River (EBC), were taken from the preliminary report (September 1989) *Cocohatchee River Diversion System Feasibility Analysis* by Hole, Montes & Associates for the 10-year,25-year and 100-year events. Flows for other recurrence intervals were established using a log-log linear relationship between the 10-year and 25-year events.

Flows for "Works" segments 14 and 15, located in the Airport Road South (ARS) Basin and the Airport Road North (ARN) Basin, were computed for the 10-year and 25-year events using regression equations taken from the *Hydrologic Study of G.A.C. Canal Network* by Black, Crow & Eidsnessm, Inc. Flows for other recurrence intervals were established using a log-log linear relationship between the 10-year and 25-year events. The specific equations used for the two events are:

$$Q_{10} = 182\ (A)^{0.639}$$

$$Q_{25} = 210\ (A)^{0.667}$$

Where A is the drainage area in square miles.

Flows for "Works" segment 13, located in the Cocohatchee River Canal (CRB) Basin, were taken from the *Cocohatchee Canal Salinity Control Structure Hydrologic Report* by Gee & Jensen (1981) for the 2.33-year (mean annual), the 25-year and the 100-year events at Palm River Road. Upstream flows were computed using the SCS Area/Discharge equation. Flows for other recurrence intervals were established using a semi-log linear relationship between the 2.33-year and 25-year events. The SCS Area/Discharge equation is:

$$Q_1 = Q_2 * [A_1^x/A_2^y]$$

Where:
- Q_1 = Discharge at desired location
- Q_2 = Known discharge at known location
- A_1 = Drainage area at location of Q_1
- A_2 = Drainage area at location of Q_2
- $x = (0.894/A_1^{0.048})-1$
- $y = (0.894/A_2^{0.048})-1$

Flows for "Works" segment 16, located in the Henderson Creek (HEC) Basin, were provided

by Johnson Engineering for the 5-year and the 25-year events in their study of Henderson Creek. Flows for other recurrence intervals were established using a log-log linear relationship between the 5-year and 25-year events.

Flows for "Works" segments 17 and 21, located in the Haldeman Creek (HBC) Basin and the C-4 Canal (C4C) Basin, were taken from the report *Master Plan Update for Water Management District No.6* by Wilson, Miller, et. al. for the 25-year and the 100-year events. Flows for other recurrence intervals were established using a log-log linear relationship between the 25-year and the 100-year events.

Flows for "Works" segment 18, located in the Gordon River Extension (GRE) Basin, were taken from the report *Gordon River Watershed Study* by CH2M Hill for the 25-year and the 100-year events. Flows for other recurrence intervals were established using a log-log linear relationship between the 25-year and the 100-year events.

Flows for "Works" segment 22, located in the Faka-Union Canal (FKC) Basin, were taken from the *Golden Gate Estates Feasibility Report* by the Corps of Engineers. The report gave flows for the 10-year and 25-year storm events at Weir No. 24 along with the stage information for the weirs in the system. The stage information at each weir was used to calculate the flows for the 10-year and the 25-year events. Estimates for flows at upstream locations were obtained using the SCS Area/Discharge equation. Flows for other recurrence intervals were established using a log-log linear relationship between the 10-year and the 25-year events.

HYDRAULICS

The capacity of each channel segment in the systems analyzed was computed using the Manning's equation for uniform flow. An average cross-section was taken from the geometry at the upstream and downstream structures. A "bank-full" flow depth was assumed to estimate the channel capacity. Manning's equation for uniform flow is :

$$Q = (1.49/n)\, A\, R^{2/3}\, S^{1/2}$$

Where: Q is the flowrate in cfs
n is a "roughness" coefficient.
A is the cross-sectional area of flow in square ft.
R is the hydraulic radius in ft.
S is the friction slope in ft/ft.

For the purpose of establishing the LOS in this study, n was taken as 0.06 which indicates a "normal" maintenance schedule. The n value of .06 was mutually agreed upon by Post, Buckley, Schuh & Jernigan, Inc. and Collier County, Florida during the preparation of the stormwater master plan. Minor variations in the n value of .06 may result in changes to the estimated flood control performance levels of a channel segment but would most likely not result in any change to the LOS attainment definition for a channel segment as shown in this report. The friction slope (S) varied from 0.0001 ft/ft, or 1 foot fall in 10,000 feet of run to 0.0002 ft/ft based on regional characteristics. The cross-sectional area (A) and the hydraulic radius (R) were computed from the channel geometry assuming full channel flow.

Structures were evaluated based upon their physical characteristics. Full pipe flow was assumed with an allowable head loss across the structure of one-half foot. Manning's equation was used to compute the frictional loss in the structure. An entrance loss and an exit loss were added to the frictional loss to compute the head loss across the structure. For

the purpose of establishing the LOS in this study, n was taken as 0.025. The friction slope (S) was computed as the allowable one-half foot of head loss across the length of the structure. The cross-sectional area (A) and the hydraulic radius (R) were computed from the structure geometry assuming full pipe flow. The entrance loss was computed as 0.7 times the velocity head and the exit loss was computed as 1.0 times the velocity head.

APPENDIX 2

"Works" Segment Number	Structure Location	Description
		Works Segment 1: Golden Gate Canal between Weir #1 & #2, including Weir #1.
1	MGG-00-S0100	Golden Gate Main Canal @ Bear's Paw Golfcourse
1	MGG-00-C0015	
1	MGG-00-S0110	Airport Road Bridge @ Golden Gate Main Canal
1	MGG-00-C0025	
		Works Segment 2: Golden Gate Canal between Weir #2 & #3, including Weir #2.
2	MGG-00-S0120	Golden Gate Main Cnal @ 66th St. SW
2	MGG-00-C0035	
2	MGG-00-S0130	Golden Gate Main Canal @ I-75 southbound bridge
2	MGG-00-C0045	
2	MGG-00-S0140	Golden Gate Main Canal @ I-75 northbound bridge
2	MGG-00-C0055	
2	MGG-00-S0150	Santa Barbara Blvd @ Golden Gate Main Canal
2	MGG-00-C0065	
2	MGG-00-S0160	Golden Gate Main Canal @ CR 951
2	MGG-00-C0075	
		Works Segment 3: Golden Gate Canal between Weir #3 & #4, including Weirs #3.
3	MGG-00-S0170	17th Avenue @ Golden Gate Main Canal
3	MGG-00-C0085	
3	MGG-00-S0180	White Blvd @ Golden Gate Canal
3	MGG-00-C0095	
3	MGG-00-S0190	5th Street SW @ canal
3	MGG-00-C0105	
3	MGG-00-S0200	10th Street @ Golden Gate Boulevard
3	MGG-00-C0115	
		Works Segment 4: Golden Gate Canal between Weir #4 & #5, including Weirs #4 & #5.
4	MGG-00-S0210	10th Street @ Golden Gate Canal
4	MGG-00-C0125	
4	MGG-00-S0220	18th Avenue NE @ Golden Gate Canal
4	MGG-00-C0135	
4	MGG-00-S0230	Randall Boulevard @ Golden Gate Canal
4	MGG-00-C0145	
4	MGG-00-S0240	Randall Boulevard @ Golden Gate Canal
		Works Segment 5: Cypress Canal downstream of Weir #1.
5	CYC-00-C0005	
5	CYC-00-S0100	White Boulevard @ Cypress Canal
5	CYC-00-C0015	
5	CYC-00-S0110	31st Street @ Golden Gate Boulevard
5	CYC-00-C0025	
		Works Segment #6: Cypress Canal upstream of Weir #1, including Weir #1.
6	CYC-00-S0120	21st Street @ Cypress Canal
6	CYC-00-C0035	

APPENDIX 2

"Works" Segment Number	Structure Location Description	
	Works Segment #7: Green Canal	
7	GCB-00-C0005	
7	GCB-00-S0100	Santa Barbara Blvd north of 18th Avenue SW
7	GCB-00-C0015	
7	GCB-00-S0110	Sunshine Blvd south of Green Blvd
7	GCB-00-C0025	
7	GCB-00-S0120	18th Avenue SW @ 41st Street SW
7	GCB-00-C0035	
	Works Segment #8: Harvey Canal, including Weirs #1 & #2.	
8	D1C-00-C0005	
8	D1C-00-S0100	Green Blvd @ Sunshine Blvd
8	D1C-00-C0015	
8	D1C-00-S0110	Green Blvd @ Sunshine Blvd
8	D1C-00-C0025	
8	D1C-00-S0120	Green Blvd @ Sunshine Blvd
8	D1C-00-C0035	
8	D1C-00-S0130	Pine Ridge Rd @ Harvey Canal
8	D1C-00-C0045	
8	D1C-00-S0140	Vanderbilt Beach Ext 1/2 mile west of CR951
	Works Segment #9: I-75 Canal between Golden Gate Canal and Pine Ridge Road, including Weir #1.	
9	D2C-00-C0005	
9	D2C-00-S0100	I-75 overpass (eastside) @ Golden Gate Parkway (MP 54.411)
9	D2C-00-C0015	
9	D2C-00-S0104	26th Avenue SW & I-75 Canal
9	D2C-00-C0025	
	Works Segment #10: I-75 Canal between Pine Ridge and Vanderbilt Beach Roads, including proposed Weir #2.	
10	D2C-00-S0110	I-75 overpass (eastside) @ Pine Ridge Rd
10	D2C-00-C0035	
	Works Segment #11: I-75 Canal between Vanderbilt Beach Road and CR 846, including Weir #3.	
11	D2C-00-S0120	I-75 overpass @ Vanderbilt Beach Ext.
11	D2C-00-C0045	
11	D2C-00-S0130	Oaks Blvd @ 12th Avenue NW
11	D2C-00-C0055	
	Works Segment #12: Pine Ridge Canal, including Weirs #1 & #2.	
12	PRC-00-C0005	
12	PRC-00-S0100	CR 846 1/2 mile east of US 41
12	PRC-00-C0015	
12	PRC-00-S0110	100 ft south of CR 846
12	PRC-00-C0025	
12	PRC-00-S0120	Approximately 6,000 ft south of CR 846

APPENDIX 2

"Works" Segment Number	Structure Location Description	
	Works Segment #13: Cocohatchee Canal west of CR951	
13	CRB-00-C0015	
13	CRB-00-S0120	CR 846 @ Palm River Blvd
13	CRB-00-C0025	
13	CRB-00-S0130	CR 846 @ Cypress Way East
13	CRB-00-C0035	
13	CRB-00-S0140	CR 846 @ Euclid @ Willoughby Acres
13	CRB-00-C0045	
13	CRB-00-S0150	CR 846 @ Lakeland Avenue
13	CRB-00-C0055	
13	CRB-00-S0160	CR 846 @ FP&L Easement
13	CRB-00-C0065	
13	CRB-00-S0170	I-74 @ CR 846 MP 611.602
13	CRB-00-C0075	
13	CRB-00-S0180	I-75 @ CR 846 MP 61.602
13	CRB-00-C0085	
13	CRB-00-S0190	1/4 mile east of I-75 on CR 846
13	CRB-00-C0095	
13	CRB-00-S0200	1/2 mile east of I-75 on CR 846 @ entrance to Quail Creek
13	CRB-00-C0105	
13	CRB-00-S0210	2.5 mile west of intersection of CR 951 & CR 846 (Longshore Lake)
13	CRB-00-C0115	
13	CRB-00-S0220	2 mile west of intersection of CR 951 & CR 846 (Longshore Lake)
13	CRB-00-C0125	
13	CRB-00-S0230	1 mile west of intersection of CR 951 & CR 846
13	CRB-00-C0135	
13	CRB-00-S0240	7/8 mile west of intersection of CR 951 & CR 846
13	CRB-00-C0145	
13	CRB-00-S0250	3/4 mile west of intersection of CR 951 & CR 846
13	CRB-00-C0155	
13	CRB-00-S0260	Intersection of CR 951 & CR 846
13	CRB-00-C0165	
13	CRB-00-S0270	CR 846 @ entrance to Florida Rock Naples Quarry
13	CRB-00-C0175	
13	CRB-00-S0280	CR 846 1/4 mile east of Florida Rock Naples Quarry
13	CRB-00-C0185	
13	CRB-00-S0290	CR 846 3/4 mile east of Florida Rock Naples Quarry
13	CRB-00-C0195	
13	CRB-00-S0300	CR 846 1.25 miles east of Florida Rock Naples Quarry
13	CRB-00-C0205	
13	CRB-00-S0310	On CR 846
13	CRB-00-C0215	
13	CRB-00-S0320	10.3 miles east of US 41 on CR 846
13	CRB-00-C0225	

APPENDIX 2

"Works" Segment Number	Structure Location Description	
	Works Segment #14: Airport Road Canal between Golden Gate Canal and Vanderbilt Beach Road, including Weir #1.	
14	ARS-00-C0005	
14	ARS-00-S0100	Airport Road Canal @ Golden Gate Parkway
14	ARS-00-C0015	
14	ARS-00-S0110	Airport Road Canal @ 26th Avenue - Coach House
14	ARS-00-C0025	
14	ARS-00-S0120	Airport Road Canal @ Pinewoods Blvd (World Tennis Center)
14	ARS-00-C0035	
14	ARS-00-S0130	Airport Road Canal @ Timberwood Circle
14	ARS-00-C0045	
14	ARS-00-S0140	Airport Road Canal @ CR 896
14	ARS-00-C0055	
14	ARS-00-S0150	Airport Road Canal @ YMCA Drive
14	ARS-00-C0065	
14	ARS-00-S0160	Airport Road Canal @ Cougar Drive
14	ARS-00-C0075	
14	ARS-00-S0170	Airport Road Canal @ Ardisial Lane (entrance to Tall Pines)
14	ARS-00-C0085	
14	ARS-00-S0180	Airport Road Canal near Corporation Blvd
14	ARS-00-C0095	
14	ARS-00-S0190	Airport Road Canal @ Corporation Blvd
14	ARS-00-C0105	
14	ARS-00-S0200	Airport Road Canal near Corporation Blvd
14	ARS-00-C0115	
14	ARS-00-S0210	Airport Road Canal near Temple Drive
14	ARS-00-C0125	
14	ARS-00-S0220	Airport Road Canal @ Gulfcoast Farms
14	ARS-00-C0135	
14	ARS-00-S0230	Airport Road Canal south of Lone Oak Blvd
14	ARS-00-C0145	
14	ARS-00-S0240	Airport Road Canal @ Lone Oak Blvd entrance to Walden Oaks
14	ARS-00-C0155	
14	ARS-00-S0250	Airport Road Canal @ Tree Wizard Nursery
14	ARS-00-C0165	
14	ARS-00-S0260	Airport Road Canal @ Orange Blossom Drive
14	ARS-00-C0175	
14	ARS-00-S0270	Airport Road Canal @ Lakeside Construction Site
14	ARS-00-C0185	
14	ARS-00-S0280	Airport Road Canal @ Lakeside of Naples
14	ARS-00-C0195	
14	ARS-00-S0290	Airport Road Canal @ Gulfcoast Farms
14	ARS-00-C0205	
14	ARS-00-S0300	Airport Road Canal south of Vanderbilt Beach Ext. Rd
14	ARS-00-C0215	

APPENDIX 2

"Works" Segment Number	Structure Location Description	
	Works Segment #15: Airport Road Canal between Vanderbilt Beach Road and CR 846, including Weir #2.	
15	ARN-00-C0005	
15	ARN-00-S0100	Airport Road Canal @ CR 846 Canal
15	ARN-00-C0015	
15	ARN-00-S0120	Airport Road Canal on Curling Avenue
15	ARN-00-C0025	
15	ARN-00-S0130	Airport Road Canal south of Curling Avenue
15	ARN-00-C0035	
15	ARN-00-S0140	Airport Road Canal @ Cresent Lake Gardens
15	ARN-00-C0045	
15	ARN-00-S0150	Airport Road Canal south of Cresent Lake Estates
15	ARN-00-C0055	
15	ARN-00-S0160	Airport Road Canal @ entrance to DT Farms
15	ARN-00-C0065	
15	ARN-00-S0170	Airport Road Canal @ Vanderbilt Beach Ext. Rd
15	ARN-00-C0075	
	Works Segment #16: Henderson Creek, including Weir #1.	
16	HEC-00-C0015	
16	HEC-00-S0110	US 41 over drainage canal @ MP 20.682
16	HEC-00-C0025	
16	HEC-00-S0120	Henderson Creek Weir
16	HEC-00-C0035	
16	HEC-00-S0130	CR 951 @ Sabal Palm Road
16	HEC-00-C0045	
16	HEC-00-S0140	CR 951 north of Sabal Palm Rd (Stoats Crossing)
16	HEC-00-C0055	
16	HEC-00-S0150	CR 951
16	HEC-00-C0065	
16	HEC-00-S0160	CR 951
16	HEC-00-C0075	
16	HEC-00-S0170	Entrance to Kountree Kampground on CR 951
16	HEC-00-C0085	
16	HEC-00-S0180	CR 951 @ Rattlesnake Hammock
16	HEC-00-C0095	
16	HEC-00-S0190	CR 951 north of Rattlesnake Hammock
16	HEC-00-C0105	
16	HEC-00-S0200	CR 951
16	HEC-00-C0115	
16	HEC-00-S0210	CR 951 @ entrance to Lee 's Place Tavern
16	HEC-00-C0125	
16	HEC-00-S0220	CR 951 @ Highway Pavers, Inc.
16	HEC-00-C0135	
16	HEC-00-S0230	CR 951
16	HEC-00-C0145	
16	HEC-00-S0240	Old State Road 84
16	HEC-00-C0155	
16	HEC-00-S0250	I-75
16	HEC-00-C0165	

APPENDIX 2

"Works" Segment Number	Structure Location Description	
	Work Segment #17: Haldeman Creek Weir	
17	HCB-00-S0130	US 41
	Work Segment #18: Gordon River Weir	
18	GRE-00-S0100	CR 886 @ bridge #030172
	Work Segment #19: West Branch Cocohatchee Weir	
19	WBC-00-S0110	Near west bridge Cocohatchee River @ CR 846
	Work Segment #20: East Branch Cocohatchee Weir	
20	EBC-00-S0110	30 ft south of CR 846 (east bridge)
	Work Segment #21: Eagle Creek Weir	
21	C4C-00-S0110	Eagle Creek @ Tower Blvd
	Work Segment #22: Faka Union Canal Weir #1	
22	FKC-00-S0114	US 41

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
	Works Segment 1: Golden Gate Canal between Weir #1 & #2, including Weir #1.																				
1	MGG-00-S0100	2277	5	5	12%	1530	1714	1594	1765	1706	1911	1956	2191	2356	2639	3013	3374	3628	4063	4370	4894
1	MGG-00-C0015	1095	1	1	12%	1508	1689	1571	1760	1681	1883	1927	2158	2319	2597	2963	3318	3565	3993	4291	4806
1	MGG-00-S0110	3861	50	25	12%	1485	1663	1547	1733	1654	1852	1896	2124	2281	2555	2913	3262	3504	3924	4216	4722
1	MGG-00-C0025	1512	3	2	12%	1323	1482	1377	1542	1471	1648	1680	1882	2013	2255	2556	2863	3063	3431	3669	4109
	Minimum Current LOS of Segment 1:		1																		
	Maximum Current LOS of Segment 1:		50																		
	Minimum Future LOS of Segment 1:		1																		
	Maximum Future LOS of Segment 1:		25																		
	Works Segment 2: Golden Gate Canal between Weir #2 & #3, including Weir #2.																				
2	MGG-00-S0120	1512	5	3	12%	1159	1298	1205	1350	1284	1438	1462	1637	1743	1952	2199	2463	2622	2937	3126	3501
2	MGG-00-C0035	1512	5	3	12%	1159	1298	1205	1350	1284	1438	1462	1637	1743	1952	2199	2463	2622	2937	3126	3501
2	MGG-00-S0130	29700	100	100	12%	1159	1298	1205	1350	1284	1438	1462	1637	1743	1952	2199	2463	2622	2937	3126	3501
2	MGG-00-C0045	1512	5	3	12%	1159	1298	1205	1350	1284	1438	1462	1637	1743	1952	2199	2463	2622	2937	3126	3501
2	MGG-00-S0140	30000	100	100	12%	1159	1298	1205	1350	1284	1438	1462	1637	1743	1952	2199	2463	2622	2937	3126	3501
2	MGG-00-C0055	1587	5	3	12%	1155	1294	1201	1345	1280	1434	1457	1632	1737	1945	2191	2454	2612	2925	3113	3487
2	MGG-00-S0150	5040	100	100	12%	1151	1289	1196	1340	1275	1428	1451	1625	1730	1938	2182	2444	2601	2913	3101	3473
2	MGG-00-C0065	1587	5	3	12%	1133	1269	1178	1319	1255	1406	1428	1599	1701	1905	2144	2401	2554	2860	3042	3407
2	MGG-00-S0160	6720	100	100	12%	1115	1249	1159	1298	1235	1383	1404	1572	1672	1873	2105	2358	2506	2807	2984	3342
2	MGG-00-C0075	1669	10	5	12%	1088	1129	1047	1173	1114	1248	1264	1416	1499	1679	1879	2104	2228	2495	2643	2960
	Minimum Current LOS of Segment 2:		5																		
	Maximum Current LOS of Segment 2:		100																		
	Minimum Future LOS of Segment 2:		3																		
	Maximum Future LOS of Segment 2:		100																		
	Works Segment 3: Golden Gate Canal between Weir #3 & #4, including Weirs #3.																				
3	MGG-00-S0170	1669	25	10	12%	900	1008	933	1045	992	1111	1121	1256	1325	1484	1652	1850	1952	2186	2306	2583
3	MGG-00-C0085	1116	3	3	12%	896	1004	930	1042	988	1107	1117	1251	1319	1477	1644	1841	1942	2175	2293	2568
3	MGG-00-S0180	6324	100	100	12%	892	999	925	1036	983	1101	1111	1244	1312	1469	1635	1831	1931	2163	2280	2554
3	MGG-00-C0095	1116	5	3	12%	858	961	890	997	945	1058	1068	1196	1260	1411	1568	1756	1850	2072	2182	2444
3	MGG-00-S0190	4992	100	100	12%	826	925	856	959	909	1018	1026	1149	1208	1353	1500	1680	1767	1979	2081	2331
3	MGG-00-C0105	1116	5	3	12%	804	900	834	934	885	991	997	1117	1174	1315	1456	1631	1714	1920	2017	2259
3	MGG-00-S0200	2080	100	50	12%	783	877	812	909	861	964	970	1086	1140	1277	1412	1581	1659	1858	1950	2184
3	MGG-00-C0115	1116	5	3	12%	779	872	807	904	856	959	964	1080	1133	1269	1403	1571	1649	1847	1938	2171
	Minimum Current LOS of Segment 3:		3																		
	Maximum Current LOS of Segment 3:		100																		
	Minimum Future LOS of Segment 3:		3																		
	Maximum Future LOS of Segment 3:		100																		

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
Works Segment 4: Golden Gate Canal between Weir #4 & #5, including Weirs #4 & #5.																					
4	MGG-00-S0210	1116	25	10	12%	777	870	805	902	854	956	962	1077	1131	1267	1401	1569	1647	1845	1937	2169
4	MGG-00-C0125	1003	10	10	12%	626	701	647	725	684	766	767	859	894	1001	1086	1227	1278	1431	1490	1669
4	MGG-00-S0220	4836	100	100	12%	473	530	488	547	514	576	572	641	660	739	798	894	922	1033	1064	1192
4	MGG-00-C0135	1003	100	50	12%	455	510	469	525	494	553	549	615	633	709	764	856	881	987	1016	1138
4	MGG-00-S0230	4290	100	100	12%	437	489	450	504	474	531	526	589	606	679	730	818	841	942	969	1085
4	MGG-00-C0145	1071	100	50	12%	437	489	450	504	474	531	526	589	606	679	730	818	841	942	969	1085
4	MGG-00-S0240	1071	100	50	12%	437	489	450	504	474	531	526	589	606	679	730	818	841	942	969	1085
Minimum Current LOS of Segment 4: 10																					
Maximum Current LOS of Segment 4: 100																					
Minimum Future LOS of Segment 4: 10																					
Maximum Future LOS of Segment 4: 100																					
Works Segment 5: Cypress Canal downstream of Weir #1.																					
5	CYC-00-C0005	329	1	1	12%	423	474	436	488	458	514	509	570	586	656	705	790	812	909	934	1046
5	CYC-00-S0100	1323	100	100	12%	423	474	436	488	459	514	509	570	586	656	705	790	812	909	934	1046
5	CYC-00-C0015	485	3	2.33	12%	407	456	420	470	441	494	489	548	561	628	673	754	773	866	887	993
5	CYC-00-S0110	426	3	1	12%	388	435	400	448	421	472	466	522	534	598	640	717	734	822	842	943
5	CYC-00-C0025	330	2	1	12%	328	367	337	377	354	396	389	436	443	496	526	589	599	671	682	764
Minimum Current LOS of Segment 5: 1																					
Maximum Current LOS of Segment 5: 100																					
Minimum Future LOS of Segment 5: 1																					
Maximum Future LOS of Segment 5: 100																					
Works Segment #6: Cypress Canal upstream of Weir #1, including Weir #1.																					
6	CYC-00-S0120	330	5	3	12%	262	293	269	301	282	316	309	346	349	391	411	460	465	521	525	588
6	CYC-00-C0035	386	10	5	12%	262	293	269	301	282	316	309	346	349	391	411	460	465	521	525	588
Minimum Current LOS of Segment 6: 5																					
Maximum Current LOS of Segment 6: 10																					
Minimum Future LOS of Segment 6: 3																					
Maximum Future LOS of Segment 6: 5																					

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
	Works Segment #7: Green Canal																				
7	GCB-00-C0005	445	10	10	12%	171	192	182	204	202	226	248	278	328	367	475	532	629	704	832	932
7	GCB-00-S0100	2100	100	100	12%	171	192	182	204	202	226	248	278	328	367	475	532	629	704	832	932
7	GCB-00-C0015	549	100	50	12%	113	127	120	134	133	149	162	181	213	239	305	342	401	449	527	590
7	GCB-00-S0110	2100	100	100	12%	54	60	57	64	63	71	75	84	97	109	136	152	175	196	225	252
7	GCB-00-C0025	856	100	100	12%	46	52	49	55	54	60	64	72	82	92	113	126	143	160	183	205
7	GCB-00-S0120	2790	100	100	12%	36	40	38	43	42	47	50	56	64	72	89	100	115	129	147	165
7	GCB-00-C0035	1079	100	100	12%	36	40	38	43	42	47	50	56	64	72	89	100	115	129	147	165
	Minimum Current LOS of Segment 7:		10																		
	Maximum Current LOS of Segment 7:		100																		
	Minimum Future LOS of Segment 7:			10																	
	Maximum Future LOS of Segment 7:			100																	
	Works Segment #8: Harvey Canal, including Weirs #1 & #2.																				
8	D1C-00-C0005	473	100	100	12%	105	118	109	122	116	130	132	148	156	175	196	220	233	261	277	310
8	D1C-00-S0100	1827	100	100	12%	105	118	109	122	116	130	132	148	156	175	196	220	233	261	277	310
8	D1C-00-C0015	311	100	100	12%	105	118	109	122	116	130	132	148	156	175	196	220	233	261	277	310
8	D1C-00-S0110	1728	100	100	12%	105	118	109	122	116	130	132	148	156	175	196	220	233	261	277	310
8	D1C-00-C0025	424	100	100	12%	105	118	109	122	116	130	132	148	156	175	196	220	233	261	277	310
8	D1C-00-S0120	424	100	100	12%	105	118	109	122	116	130	132	148	156	175	196	220	233	261	277	310
8	D1C-00-C0035	339	100	100	12%	91	102	94	105	100	112	113	127	135	151	169	189	200	224	238	267
8	D1C-00-S0130	104	5	5	12%	75	84	78	87	83	93	94	105	112	125	140	157	166	186	197	221
8	D1C-00-C0045	214	100	50	12%	75	84	78	87	83	93	94	105	112	125	140	157	166	186	197	221
8	D1C-00-S0140	214	100	50	12%	75	84	78	87	83	93	94	105	112	125	140	157	166	186	197	221
	Minimum Current LOS of Segment 8:		5																		
	Maximum Current LOS of Segment 8:		100																		
	Minimum Future LOS of Segment 8:			5																	
	Maximum Future LOS of Segment 8:			100																	
	Works Segment #9: I-75 Canal between Golden Gate Canal and Pine Ridge Road, including Weir #1.																				
9	D2C-00-C0005	1547	100	100	12%	218	244	232	260	257	288	318	356	423	474	616	690	819	917	1090	1221
9	D2C-00-S0100	25536	100	100	12%	218	244	232	260	257	288	318	356	423	474	616	690	819	917	1090	1221
9	D2C-00-C0015	1547	100	100	12%	172	193	183	205	203	227	251	281	334	374	487	545	648	726	862	965
9	D2C-00-S0104	1547	100	50	12%	172	193	183	205	203	227	251	281	334	374	487	545	648	726	862	965
9	D2C-00-C0025	778	50	50	12%	172	193	183	205	203	227	251	281	334	374	487	545	648	726	862	965
	Minimum Current LOS of Segment 9:		50																		
	Maximum Current LOS of Segment 9:		100																		
	Minimum Future LOS of Segment 9:			50																	
	Maximum Future LOS of Segment 9:			100																	

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
	Works Segment #10: I-75 Canal between Pine Ridge and Vanderbilt Beach Roads, including proposed Weir #2.																				
10	D2C-00-S0110	778	100	100	12%	126	141	134	150	149	167	184	206	244	273	356	399	474	531	631	707
10	D2C-0Q-C0035	298	25	10	12%	128	143	134	150	145	162	169	189	209	234	276	309	341	382	421	472
	Minimum Current LOS of Segment 10: 25																				
	Maximum Current LOS of Segment 10: 100																				
	Minimum Future LOS of Segment 10: 10																				
	Maximum Future LOS of Segment 10: 100																				
	Works Segment #11: I-75 Canal between Vanderbilt Beach Road and CR 846, including Weir #3.																				
11	D2C-00-S0120	298	50	50	12%	78	87	82	92	90	101	108	121	139	156	195	218	251	281	323	362
11	D2C-00-C0045	313	100	100	12%	78	87	82	92	88	99	102	114	125	140	163	182	198	222	242	271
11	D2C-00-S0130	153	25	25	12%	52	58	55	62	60	67	73	82	93	104	130	146	168	188	216	242
11	D2C-00-C0055	238	100	50	12%	52	58	55	62	60	67	73	82	93	104	130	146	168	188	216	242
	Minimum Current LOS of Segment 11: 25																				
	Maximum Current LOS of Segment 11: 100																				
	Minimum Future LOS of Segment 11: 25																				
	Maximum Future LOS of Segment 11: 100																				
	Works Segment #12: Pine Ridge Canal, including Weirs #1 & #2.																				
12	PRC-00-C0005	185	25	25	12%	11	12	12	13	16	18	27	30	55	62	140	157	284	318	577	646
12	PRC-00-S0100	472	50	50	12%	11	12	12	13	16	18	27	30	55	62	140	157	284	318	577	646
12	PRC-00-C0015	185	25	25	12%	11	12	12	13	16	18	27	30	55	62	140	157	284	318	577	646
12	PRC-00-S0110	185	25	25	12%	11	12	12	13	16	18	27	30	55	62	140	157	284	318	577	646
12	PRC-00-C0025	185	25	25	12%	8	9	10	11	13	15	21	24	42	47	105	118	211	236	424	475
12	PRC-00-S0120	185	50	50	12%	5	6	6	7	8	9	13	15	27	30	70	78	143	160	292	327
	Minimum Current LOS of Segment 12: 25																				
	Maximum Current LOS of Segment 12: 50																				
	Minimum Future LOS of Segment 12: 25																				
	Maximum Future LOS of Segment 12: 50																				

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
	Works Segment #13: Cocohatchee Canal west of CR951																				
13	CRB-00-C0015	1432	100	100	12%	193	216	235	263	305	342	447	501	639	716	893	1000	1085	1215	1277	1430
13	CRB-00-S0120	1688	100	100	12%	190	213	229	256	293	328	422	473	597	669	829	928	1004	1124	1179	1320
13	CRB-00-C0025	648	10	5	12%	190	213	229	256	293	328	422	473	597	669	829	928	1004	1124	1179	1320
13	CRB-00-S0130	4176	100	100	12%	190	213	229	256	293	328	422	473	597	669	829	928	1004	1124	1179	1320
13	CRB-00-C0035	910	50	25	12%	196	220	229	256	284	318	396	444	547	613	747	837	899	1007	1050	1176
13	CRB-00-S0140	5276	100	100	12%	177	198	207	232	256	287	355	398	489	548	666	746	800	896	934	1046
13	CRB-00-C0045	957	100	50	12%	177	198	207	232	256	287	355	398	489	548	666	746	800	896	934	1046
13	CRB-00-S0150	340	3	3	12%	177	198	207	232	256	287	355	398	489	548	666	746	800	896	934	1046
13	CRB-00-C0055	587	10	10	12%	178	199	207	232	255	286	352	394	484	542	658	737	790	885	922	1033
13	CRB-00-S0160	1560	100	100	12%	173	194	202	226	250	280	346	388	477	534	650	728	781	875	912	1021
13	CRB-00-C0065	478	10	5	12%	168	188	197	221	244	273	340	381	470	526	642	719	772	865	902	1010
13	CRB-00-S0170	5400	100	100	12%	164	184	192	215	239	268	334	374	463	519	633	709	762	853	891	998
13	CRB-00-C0075	566	10	10	12%	164	184	192	215	239	268	334	374	463	519	633	709	762	853	891	998
13	CRB-00-S0180	5400	100	100	12%	164	184	192	215	239	268	334	374	463	519	633	709	762	853	891	998
13	CRB-00-C0085	667	25	10	12%	164	184	192	215	239	268	334	374	463	519	633	709	762	853	891	998
13	CRB-00-S0190	302	3	3	12%	164	184	192	215	239	268	334	374	463	519	633	709	762	853	891	998
13	CRB-00-C0095	524	10	10	12%	164	184	192	215	239	268	334	374	463	519	633	709	762	853	891	998
13	CRB-00-S0200	294	3	3	12%	164	184	192	215	239	268	334	374	463	519	633	709	762	853	891	998
13	CRB-00-C0105	687	50	25	12%	168	188	192	215	232	260	313	351	423	474	569	637	679	760	789	884
13	CRB-00-S0210	328	5	3	12%	149	167	170	190	206	231	277	310	375	420	504	564	601	673	698	782
13	CRB-00-C0115	311	5	5	12%	149	167	170	190	206	231	277	310	375	420	504	564	601	673	698	782
13	CRB-00-S0220	290	5	3	12%	149	167	170	190	206	231	277	310	375	420	504	564	601	673	698	782
13	CRB-00-C0125	182	2.33	2	12%	151	169	170	190	201	225	264	296	350	392	463	519	549	615	635	711
13	CRB-00-S0230	194	3	3	12%	122	137	140	157	170	190	231	259	314	352	423	474	506	567	589	660
13	CRB-00-C0135	139	2	2	12%	122	137	140	157	170	190	231	259	314	352	423	474	506	567	589	660
13	CRB-00-S0240	217	3	3	12%	122	137	140	157	170	190	231	259	314	352	423	474	506	567	589	660
13	CRB-00-C0145	127	2	1	12%	122	137	140	157	170	190	231	259	314	352	423	474	506	567	589	660
13	CRB-00-S0250	890	100	100	12%	122	137	140	157	170	190	231	259	314	352	423	474	506	567	589	660
13	CRB-00-C0155	90	2	1	12%	89	100	107	120	136	152	196	220	276	309	383	429	464	520	544	609
13	CRB-00-S0260	190	5	3	12%	92	103	107	120	132	148	183	205	252	282	343	384	412	461	481	539
13	CRB-00-C0165	95	2	1	12%	86	96	97	109	115	129	153	171	203	227	270	302	320	358	370	414
13	CRB-00-S0270	119	3	3	12%	79	88	86	96	98	110	121	136	153	171	196	219	228	255	260	291
13	CRB-00-C0175	109	3	3	12%	80	90	86	96	96	108	115	129	142	159	178	199	204	228	231	259
13	CRB-00-S0280	380	100	100	12%	23	26	31	35	45	50	72	81	110	123	159	178	196	220	234	262
13	CRB-00-C0185	73	5	3	12%	22	25	30	34	44	49	71	80	109	122	158	177	195	218	233	261
13	CRB-00-S0290	380	100	100	12%	6	7	9	10	13	15	22	25	34	38	50	56	62	69	74	83
13	CRB-00-C0195	221	100	100	12%	4	4	6	7	9	10	14	16	22	25	32	36	40	45	47	53
13	CRB-00-S0300	194	100	100	12%	4	4	6	7	9	10	14	16	22	25	31	35	39	44	46	52
13	CRB-00-C0205	144	100	100	12%	4	4	6	7	9	10	14	16	22	25	31	35	39	44	46	52
13	CRB-00-S0310	380	100	100	12%	4	4	6	7	9	10	14	16	22	25	31	35	39	44	46	52
13	CRB-00-C0215	103	100	100	12%	4	4	6	7	9	10	14	16	22	25	31	35	39	44	46	52
13	CRB-00-S0320	399	100	100	12%	3	3	5	6	8	9	13	15	21	24	30	34	38	43	45	50
13	CRB-00-C0225	115	100	100	12%	3	3	5	6	8	9	13	15	21	24	30	34	38	43	45	50

Minimum Current LOS of Segment 13: 2
Maximum Current LOS of Segment 13: 100
Minimum Future LOS of Segment 13: 1
Maximum Future LOS of Segment 13: 100

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
Works Segment #14: Airport Road Canal between Golden Gate Canal and Vanderbilt Beach Road, including Weir #1.																					
14	ARS-00-C0005	555	10	5	12%	393	440	405	454	427	478	475	532	549	615	664	744	767	859	886	992
14	ARS-00-S0100	600	10	5	12%	393	440	405	454	427	478	475	532	549	615	664	744	767	859	886	992
14	ARS-00-C0015	633	10	10	12%	383	429	395	442	416	466	463	519	534	598	646	723	745	834	860	963
14	ARS-00-S0110	633	25	10	12%	372	417	383	429	404	452	449	503	518	580	626	701	722	809	833	933
14	ARS-00-C0025	752	50	50	12%	348	390	359	402	377	422	418	468	481	539	579	648	665	745	765	857
14	ARS-00-S0120	1483	100	100	12%	321	360	331	371	348	390	385	431	442	495	530	594	609	682	699	783
14	ARS-00-C0035	471	10	5	12%	316	354	326	365	343	384	379	424	434	486	520	582	595	666	682	764
14	ARS-00-S0130	3000	100	100	12%	309	346	318	356	334	374	370	414	424	475	508	569	583	653	668	748
14	ARS-00-C0045	377	5	3	12%	295	330	304	340	319	357	353	395	404	452	483	541	553	619	633	709
14	ARS-00-S0140	347	3	3	12%	281	315	289	324	304	340	335	375	383	429	457	512	523	586	597	669
14	ARS-00-C0055	423	10	5	12%	275	308	283	317	297	333	328	367	374	419	446	499	509	570	581	651
14	ARS-00-S0150	371	10	5	12%	268	300	276	309	290	325	319	357	364	408	433	485	494	553	563	631
14	ARS-00-C0065	423	10	30	12%	265	297	273	306	286	320	314	352	358	401	425	476	484	542	551	617
14	ARS-00-S0160	361	10	5	12%	258	289	266	298	279	312	307	344	350	392	416	466	474	531	540	605
14	ARS-00-C0075	355	10	5	12%	249	279	256	287	269	301	295	330	336	376	398	446	453	507	515	577
14	ARS-00-S0170	199	1	1	12%	240	269	247	277	259	290	284	318	322	361	380	426	431	483	489	548
14	ARS-00-C0085	282	5	3	12%	223	250	229	256	240	269	263	295	298	334	352	394	399	447	452	506
14	ARS-00-S0180	207	2	1	12%	206	231	212	237	221	248	242	271	274	307	322	361	364	408	412	461
14	ARS-00-C0095	244	5	2.33	12%	204	228	209	234	219	245	240	269	271	304	319	357	360	403	407	456
14	ARS-00-S0190	77	1	1	12%	203	227	208	233	217	243	238	267	268	300	314	352	355	398	400	448
14	ARS-00-C0105	215	3	1	12%	198	222	204	228	213	239	233	261	263	295	309	346	349	391	394	441
14	ARS-00-S0200	236	5	3	12%	195	218	200	224	209	234	229	256	258	289	303	339	342	383	385	431
14	ARS-00-C0115	123	3	2.33	12%	190	213	196	220	204	228	223	250	252	282	296	331	333	373	376	421
14	ARS-00-S0210	37	1	1	12%	188	211	193	216	202	226	220	246	247	277	288	323	324	363	365	409
14	ARS-00-C0125	124	1	1	12%	185	207	190	213	198	222	215	241	242	271	282	316	317	355	356	399
14	ARS-00-S0220	49	1	1	12%	179	200	184	206	192	215	210	235	236	264	276	309	310	347	349	391
14	ARS-00-C0135	159	1	1	12%	176	197	181	203	188	211	205	230	230	258	268	300	301	337	337	377
14	ARS-00-S0230	216	5	3	12%	171	192	175	196	182	204	199	223	223	250	260	291	292	327	327	366
14	ARS-00-C0145	169	2	1	12%	167	187	171	192	178	199	194	217	217	243	252	282	282	316	315	353
14	ARS-00-S0240	196	5	3	12%	161	180	165	185	172	193	187	209	209	234	243	272	272	305	305	342
14	ARS-00-C0155	149	1	1	12%	167	187	171	192	179	200	194	217	218	244	254	284	284	318	319	357
14	ARS-00-S0250	41	1	1	12%	173	194	177	198	185	207	201	225	226	253	263	295	296	332	332	372
14	ARS-00-C0165	142	1	1	12%	148	166	152	170	158	177	172	193	192	215	222	249	248	278	278	311
14	ARS-00-S0260	40	1	1	12%	123	138	126	141	131	147	141	158	157	176	180	202	200	224	222	249
14	ARS-00-C0175	153	10	5	12%	118	132	120	134	125	140	135	151	149	167	171	191	189	212	209	234
14	ARS-00-S0270	40	1	1	12%	112	125	115	129	119	133	128	143	141	158	161	180	177	198	196	220
14	ARS-00-C0185	128	5	3	12%	108	121	110	123	114	128	122	137	135	151	154	172	169	189	187	209
14	ARS-00-S0280	94	1	1	12%	103	115	105	118	109	122	117	131	129	144	146	164	161	180	177	198
14	ARS-00-C0195	106	10	5	12%	84	94	85	95	88	99	94	105	103	115	116	130	127	142	139	156
14	ARS-00-S0290	15	1	1	12%	63	71	64	72	66	74	70	78	76	85	85	95	92	103	100	112
14	ARS-00-C0205	112	100	100	12%	52	58	53	59	54	60	57	64	62	69	69	77	74	83	80	90
14	ARS-00-S0300	40	1	1	12%	41	46	41	46	42	47	45	50	48	54	53	59	57	64	61	68
14	ARS-00-C0215	122	100	100	12%	41	46	41	46	42	47	45	50	48	54	53	59	57	64	61	68

Minimum Current LOS of Segment 14: 1
Maximum Current LOS of Segment 14: 100
Minimum Future LOS of Segment 14: 1
Maximum Future LOS of Segment 14: 100

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
	Works Segment #15: Airport Road Canal between Vanderbilt Beach Road and CR 846, including Weir #2.																				
15	ARN-00-C0005	359	2.33	1	12%	341	382	352	394	370	414	410	459	471	528	566	634	651	729	748	838
15	ARN-00-S0100	1767	100	100	12%	341	382	352	394	370	414	410	459	471	528	566	634	651	729	748	838
15	ARN-00-C0015	419	5	3	12%	318	356	327	366	344	385	381	427	437	489	524	587	601	673	690	773
15	ARN-00-S0120	431	10	5	12%	295	330	304	340	319	357	352	394	403	451	481	539	550	616	629	704
15	ARN-00-C0025	668	100	50	12%	295	330	304	340	319	357	352	394	403	451	481	539	550	616	629	704
15	ARN-00-S0130	668	100	50	12%	295	330	304	340	319	357	352	394	403	451	481	539	550	616	629	704
15	ARN-00-C0035	336	5	2.33	12%	279	312	288	323	302	338	333	373	380	426	453	507	517	579	590	661
15	ARN-00-S0140	216	1	1	12%	264	296	271	304	285	319	313	351	357	400	424	475	483	541	550	616
15	ARN-00-C0045	123	1	1	12%	262	293	269	301	283	317	311	348	355	398	422	473	482	540	549	615
15	ARN-00-S0150	123	1	1	12%	261	292	268	300	281	315	310	347	353	395	420	470	478	535	545	610
15	ARN-00-C0055	123	1	1	12%	244	273	251	281	263	295	289	324	329	368	390	437	444	497	505	566
15	ARN-00-S0160	224	1	1	12%	228	255	235	263	245	274	269	301	305	342	360	403	408	457	462	517
15	ARN-00-C0065	289	1	1	12%	227	254	233	261	244	273	268	300	304	340	359	402	407	456	461	516
15	ARN-00-S0170	144	1	1	12%	227	254	233	261	244	273	268	300	303	339	357	400	404	452	458	513
15	ARN-00-C0075	202	1	1	12%	227	254	233	261	244	273	268	300	303	339	357	400	404	452	458	513

Minimum Current LOS of Segment 15: 1
Maximum Current LOS of Segment 15: 100
Minimum Future LOS of Segment 15: 1
Maximum Future LOS of Segment 15: 100

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
	Works Segment #16: Henderson Creek, including Weir #1.																				
16	HEC-00-C0015	602	1	1	12%	901	1009	917	1027	944	1057	1000	1120	1082	1212	1200	1344	1298	1454	1404	1572
16	HEC-00-S0110	2520	100	100	12%	901	1009	917	1027	944	1057	1000	1120	1082	1212	1200	1344	1298	1454	1404	1572
16	HEC-00-C0025	590	1	1	12%	803	899	821	920	851	953	915	1025	1010	1131	1150	1288	1269	1421	1400	1568
16	HEC-00-S0120	590	1	1	12%	824	923	838	939	863	967	915	1025	991	1110	1100	1232	1191	1334	1289	1444
16	HEC-00-C0035	1050	25	10	12%	726	813	742	831	770	862	830	930	918	1028	1050	1176	1162	1301	1286	1440
16	HEC-00-S0130	145	1	1	12%	748	836	760	851	782	876	830	930	899	1007	1000	1120	1084	1214	1174	1315
16	HEC-00-C0045	998	25	5	12%	727	814	740	829	764	856	813	911	885	991	990	1109	1078	1207	1173	1314
16	HEC-00-S0140	289	1	1	12%	731	819	744	833	766	858	813	911	881	987	980	1098	1062	1189	1151	1289
16	HEC-00-C0055	961	25	10	12%	694	777	708	793	731	819	781	875	854	956	961	1076	1051	1177	1149	1287
16	HEC-00-S0150	223	1	1	12%	702	786	715	801	736	824	781	875	846	948	941	1054	1020	1142	1105	1238
16	HEC-00-C0065	374	1	1	12%	684	766	697	781	719	805	765	857	833	933	932	1044	1015	1137	1105	1238
16	HEC-00-S0160	1620	100	100	12%	688	771	700	784	721	808	765	857	829	928	922	1033	999	1119	1083	1213
16	HEC-00-C0075	363	1	1	12%	678	759	690	773	711	796	756	847	821	920	916	1026	995	1114	1081	1211
16	HEC-00-S0170	255	1	1	12%	680	762	692	775	713	799	756	847	819	917	910	1019	986	1104	1068	1196
16	HEC-00-C0085	342	1	1	12%	613	687	627	702	649	727	698	782	770	862	876	981	966	1082	1065	1193
16	HEC-00-S0180	410	1	1	12%	628	703	639	716	658	737	698	782	756	847	841	942	911	1020	987	1105
16	HEC-00-C0095	342	1	1	12%	594	665	606	679	626	701	669	749	732	820	824	923	901	1009	986	1104
16	HEC-00-S0190	163	1	1	12%	602	674	612	685	631	707	669	749	725	812	806	903	873	978	946	1060
16	HEC-00-C0105	331	1	1	12%	555	622	566	634	586	656	628	703	690	773	781	875	858	961	942	1055
16	HEC-00-S0200	1263	100	100	12%	565	633	575	644	592	663	628	703	680	762	756	847	819	917	887	993
16	HEC-00-C0115	369	1	1	12%	467	523	478	535	499	559	542	607	607	680	705	790	790	885	884	990
16	HEC-00-S0210	1152	100	100	12%	488	547	497	557	511	572	542	607	587	657	652	730	706	791	764	856
16	HEC-00-C0125	408	1	1	12%	460	515	469	525	485	543	518	580	567	635	638	715	698	782	763	855
16	HEC-00-S0220	169	1	1	12%	466	522	475	532	489	548	518	580	561	628	623	698	675	756	730	818
16	HEC-00-C0135	393	3	2.33	12%	335	375	345	386	363	407	402	450	462	517	554	620	636	712	730	818
16	HEC-00-S0230	265	1	1	12%	362	405	368	412	379	424	402	450	435	487	484	542	524	587	568	636
16	HEC-00-C0145	49	1	1	12%	360	403	366	410	377	422	400	448	433	485	482	540	522	585	566	634
16	HEC-00-S0240	227	1	1	12%	358	401	364	408	375	420	398	446	431	483	480	538	520	582	564	632
16	HEC-00-C0155	56	1	1	12%	353	395	360	403	370	414	393	440	426	477	474	531	514	576	557	624
16	HEC-00-S0250	209	1	1	12%	353	395	360	403	370	414	393	440	426	477	474	531	514	576	557	624
16	HEC-00-C0165	218	1	1	12%	358	401	363	407	373	418	393	440	422	473	464	520	498	558	535	599

Minimum Current LOS of Segment 16: 1
Maximum Current LOS of Segment 16: 100
Minimum Future LOS of Segment 16: 1
Maximum Future LOS of Segment 16: 100

APPENDIX 3

SFWMD Segment Number	Structure/ Channel Number	Estimated Structure/ Channel Capacity	Estimated Level of Service Current	Estimated Level of Service Future	Growth Factor	2-Yr Current	2-Yr Future	2.33-Yr Current	2.33-Yr Future	3-Yr Current	3-Yr Future	5-Yr Current	5-Yr Future	10-Yr Current	10-Yr Future	25-Yr Current	25-Yr Future	50-Yr Current	50-Yr Future	100-Yr Current	100-Yr Future
	Work Segment #17: Haldeman Creek Weir																				
17	HCB-00-S0130	443	10	10	13%	253	286	262	296	278	314	312	353	366	414	451	510	529	598	620	701
	Work Segment #18: Gordon River Weir																				
18	GRE-00-S0100	123	1	1	10%	781	859	805	886	847	932	939	1033	1080	1188	1300	1430	1495	1645	1720	1892
	Work Segment #19: West Branch Cocohatchee Weir																				
19	WBC-00-S0110	421	100	100	12%	5	6	6	7	8	9	13	15	26	29	65	73	131	147	262	293
	Work Segment #20: East Branch Cocohatchee Weir																				
20	EBC-00-S0110	33	5	5	12%	10	11	11	12	15	17	26	29	53	59	139	156	289	324	601	673
	Work Segment #21: Eagle Creek Weir																				
21	C4C-00-S0110	725	100	100	13%	317	358	324	366	335	379	358	405	392	443	442	500	485	548	531	600
	Work Segment #22: Faka Union Canal Weir #1																				
22	FEC-00-S0114	2222	2.33	1	12%	2063	2311	2142	2399	2280	2554	2587	2897	3070	3438	3850	4312	4569	5117	5423	6074