STRUCTURE 20F

This structure is a reinforced concrete, gated spillway with discharge controlled by three cable operated, vertical lift gates. Operation of the gates is automatically controlled so that the gate hydraulic operating system opens or closes the gates in accordance with the operational criteria. The structure is located near the mouth of Canal 103 at its junction with Levee 31E and about 2000 feet from the shore of Biscayne Bay.

PURPOSE

This structure maintains optimum water control stages upstream in Canal 103; it passes the design flood (40 percent of the Standard Project Flood) without exceeding upstream flood design stage, and restricts downstream flood stages and discharge velocities to non-damaging levels; and it prevents saline intrusion during periods of high flood tides.

OPERATION

This structure will operate to maintain an optimum headwater elevation which varies seasonally from a low during the dry season of 1.4 feet to a maximum during the wet season of 2.2 feet, when sufficient water is available to maintain this level. The automatic controls on gates will function as follows:

High Range

When the headwater elevation rises to 2.2 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 2.0 feet, the gates will become stationary;

When the headwater elevation falls to 1.8 feet, the gates will close.

Intermediate Range

When the headwater elevation rises to 1.7 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 1.5 feet, the gates will become stationary;

When the headwater elevation falls to 1.3 feet, the gates will close.

Low Range

When the headwater elevation rises to 1.40 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 1.20 feet, the gates will become stationary;

When the headwater elevation falls to 1.00 feet, the gates will close.

The selection of the operational range will be based on the field conditions and agricultural activity. The approximate periods for the three modes of operation are:

High Range Operation (April 30th to October 15th)

Intermediate Range Operation (December 30th to April 30th)

Low Range Operation (October 15th to December 30th)

Note: As long as rainfall persists within the basin, the low range setting will remain in effect until the water table within the basin recedes below the root zone of seasonal crops. This operating criteria is used for seasonal agriculture. It does not provide any protection for year-round agriculture below the high range settings, from April 30th to October 15th.

Salinity Regulation

In addition to maintaining optimum upstream fresh water control, as described above under Flood Control Regulation, the automatic controls on this structure have an over-riding control which closes the gates, regardless of the upstream level in the rare event of a high tide, whenever the differential between the head and tailwater pool elevations reaches 0.3 feet.

FLOOD DISCHARGE CHARACTERISTICS

	Design	Standard Project Flood
Discharge Rate	2900 cfs	4900 cfs
	40 % SPF	100 % SPF
Headwater Elevation	1.9 feet	3.0 feet
Tailwater Elevation	1.4 feet	2.5 feet

Type Discharge	uncontrolled submerged	uncontrolled submerged
Estimated Maximum Hurricane Tide	15.6 feet m.s.l.	

DESCRIPTION OF STRUCTURE

Type Fixed crest, reinforced concrete gated spillway

Weir Crest

Net Length 75.0 feet

Elevation -9.0 feet

Service bridge elevation 7.0 feet

Water level elevation which will by-pass structure 7.0 feet

Gates

Number 3

Size 13.0 feet high X 25.0 feet wide

Type vertical lift

Bottom elevation of gates full open 3.3 feet Normal

Top elevation of gates full closed 4.0 feet

Control: Automatic, on-site upstream control with over-ride differential water surface control sensed by bubbler system and remote computer control.

Lifting mechanism

Normal power source commercial electricity

Emergency Power source L.P. gas driven generator

Type hoist hydraulic cylinder actuated by electric motor driven pump, with emergency hand pump; connected to gate by steel cables.

Date of Transfer: May 10, 1967

ACCESS from Six-mile Road via access road on left bank C-103

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level: Remote digital upstream and downstream recorders.

Gate Position Recorder: Remote digital recorders on all gates.

Rain Gauge: Remote digital recorder

DEWATERING FACILITIES

Storageneedles at Homestead Field Station

beams at West Palm Beach Field Station

Type needle beams & vertical aluminum needles

Size and number (per bay)

Upstream & Downstream

Number 1 beam; needles, 5 @ 4', 1 @ 3', 1 @ 2' wide

Size beam 33WF200 with 24" flange end sections, length 26' -11" needles 20' long