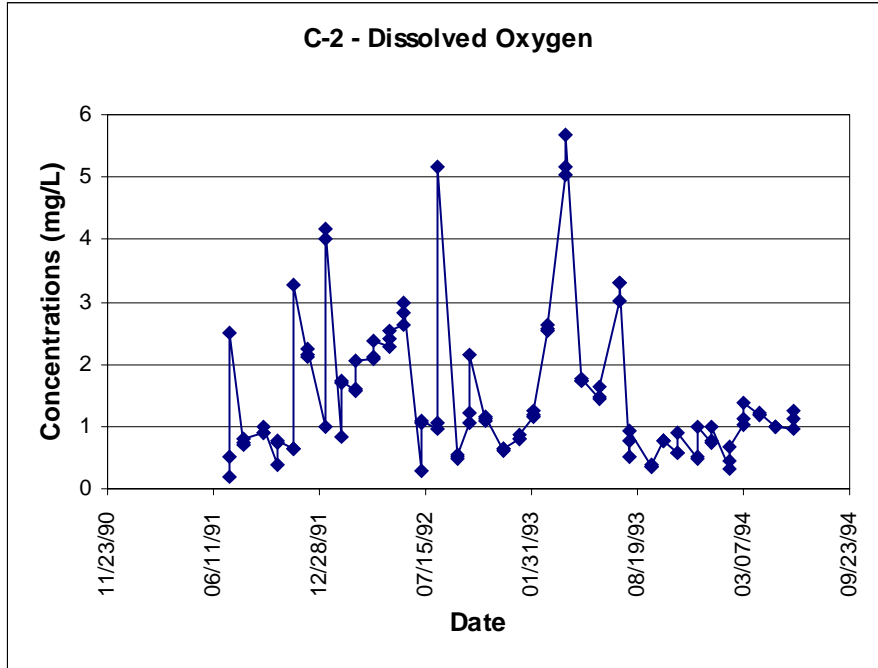


The C-2 Canal was not on the 1998 303(d) list.

According to the State’s Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 5mg/L. For the time period from 1991 to 1994, 96% (104/108) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at station SP08 on the C-2 Canal.



Figure,, Dissolved Oxygen Concentrations in C-2 Canal

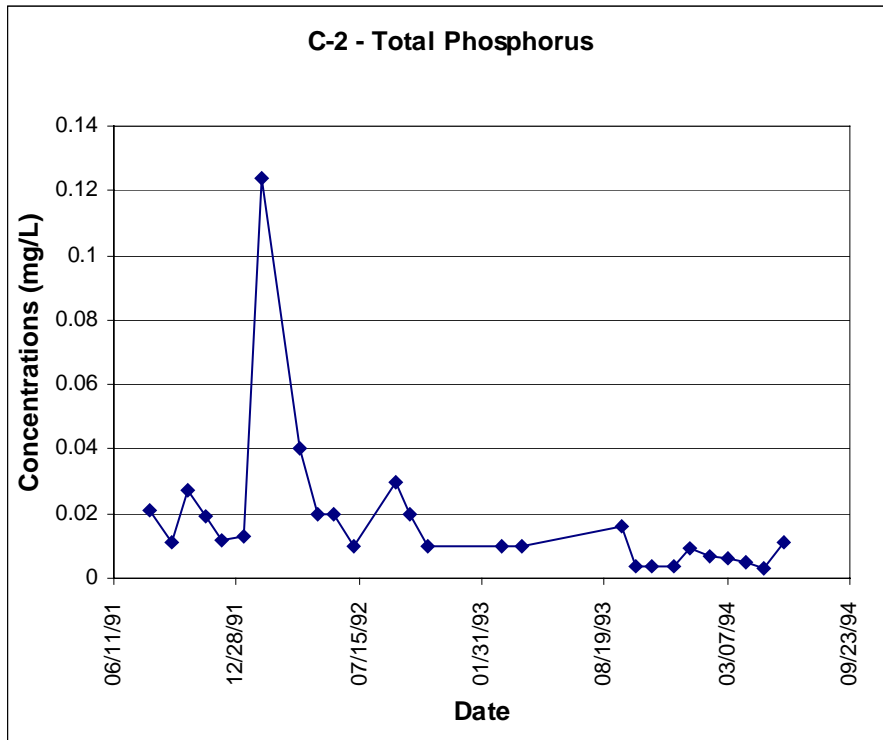
Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on station SP08. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period from 1991 to 1994.

According to this test, all three parameters are decreasing over time. The decreases in dissolved oxygen and total phosphorus are statistically significant at the 95% confidence level and the decrease in turbidity is significant at the 80% confidence level.

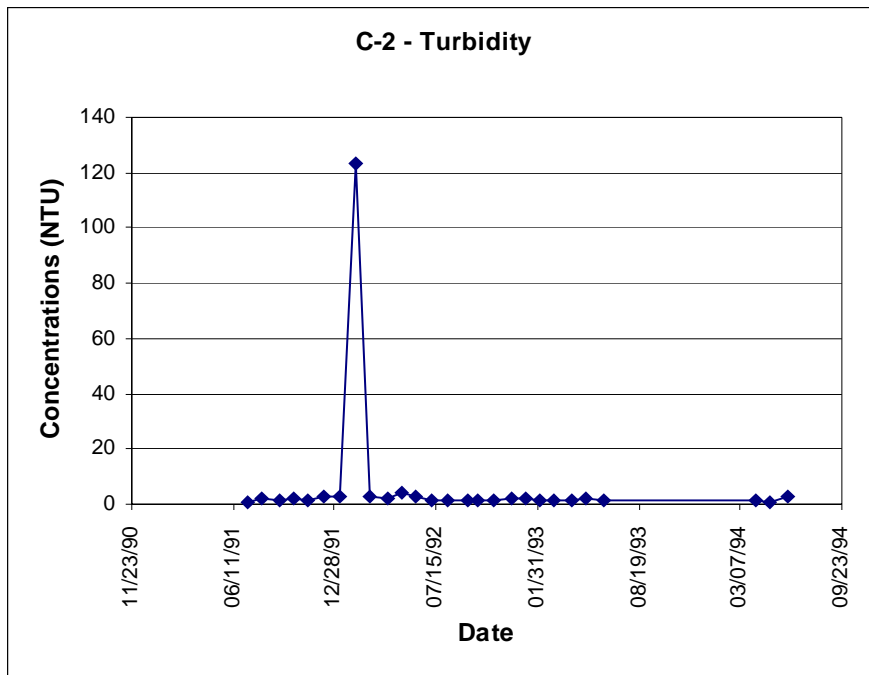
Table,, Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	-2.563 mg/L x year	Yes	Yes	Yes
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-2.860 mg/L x year	Yes	Yes	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	-1.376 mg/L x year	No	No	Yes

Figures.. illustrate total phosphorus and turbidity concentrations over time at station SP08.



Figure,, Total Phosphorus Concentrations in C-2 Canal



Figure,, Turbidity Concentrations in C-2 Canal

**v. Tamiami East Drainage Basin**

*Background*

*Land Use*

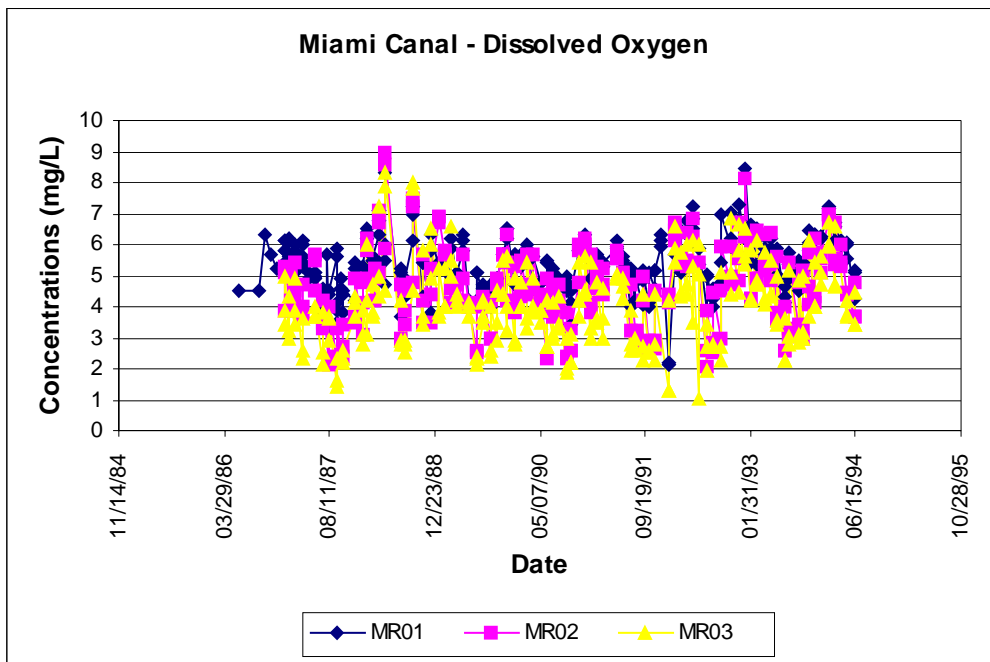
The land use of the Tamiami East Basin consists of urban/built-up (69%), transportation communications and utility (25%), water (4.8%), rangeland (0.24%), upland forests (0.7%), and wetlands (0.02%).

*Drainage Features*

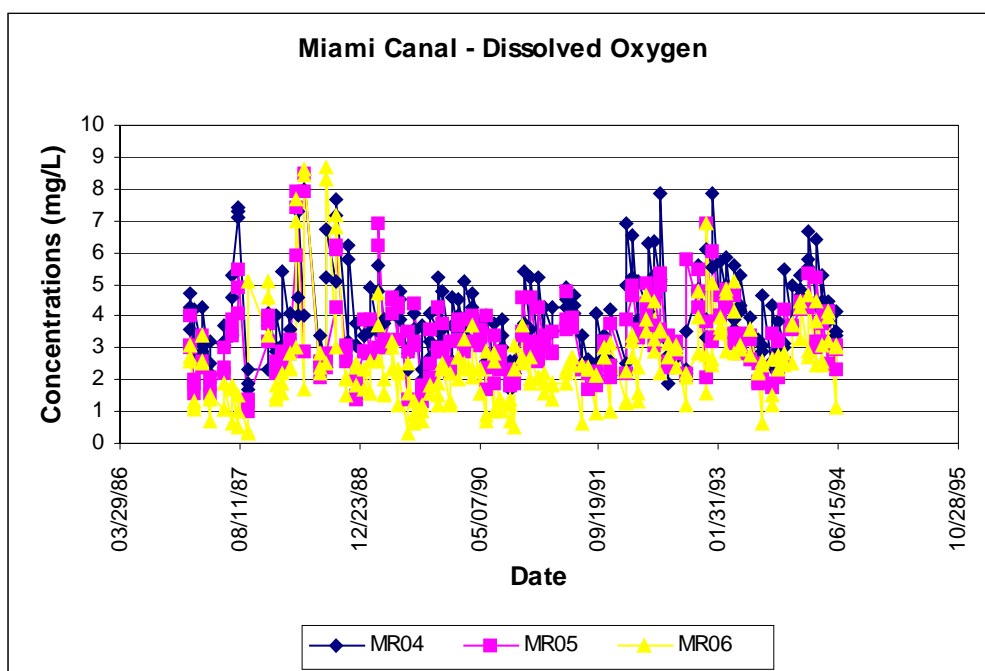
*Water quality summary*

The Tamiami East Basin does not contain any 303(d) waterbodies.

According to the State’s Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 4mg/L. For the time period from 1986 to 1994, 49% (738/1500) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at stations MR01, MR02, MR03, MR04, MR05 and MR06 on the Miami Canal.



**Figure,, Dissolved Oxygen Concentrations in Miami Canal**



Figure,, Dissolved Oxygen Concentrations in Miami Canal

Temporal analyses for dissolved oxygen, total nitrogen, total phosphorus and turbidity were conducted on stations MR01, MR02, MR03, MR04, MR05, MR06. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period from 1986 to 1994.

According to this test, dissolved oxygen is increasing over time, while total nitrogen, total phosphorus and turbidity are decreasing over time. The decrease in total nitrogen is statistically significant at the 80% confidence level and the decrease in total phosphorus is significant at the 95% confidence level.

Table,, Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	0.205 mg/L x year	No	No	No
Total Nitrogen	-1.581 mg/L x year	No	No	Yes
Total Phosphorus	-2.654 mg/L x year	Yes	Yes	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	-0.963 mg/L x year	No	No	No

Figures... illustrate total nitrogen, total phosphorus and turbidity concentrations over time at stations MR01, MR02, MR03, MR04, MR05, MR06.

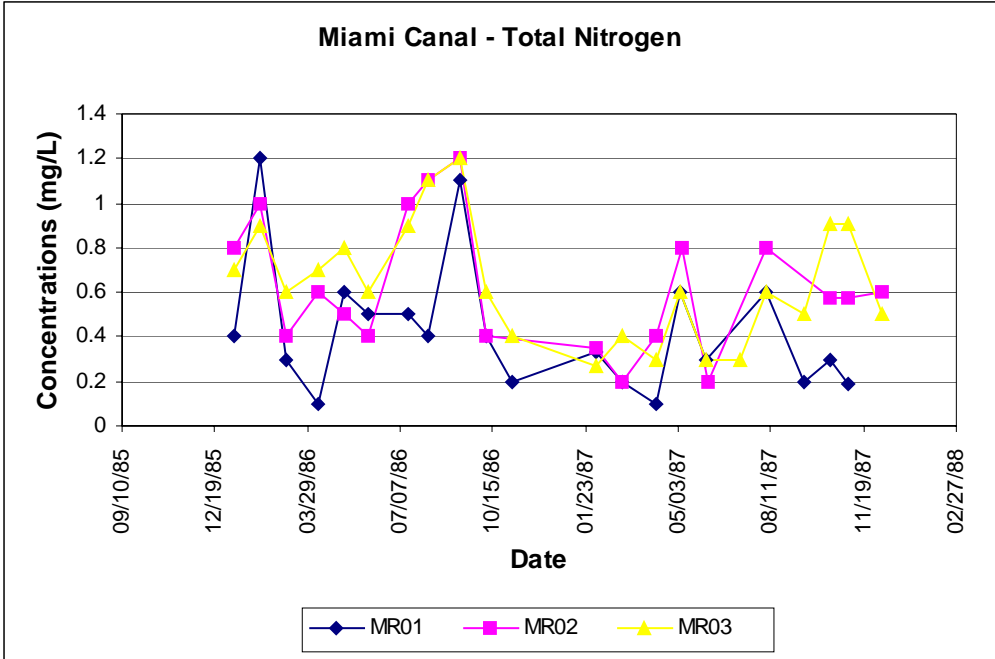


Figure.. Total Nitrogen Concentrations in Miami Canal

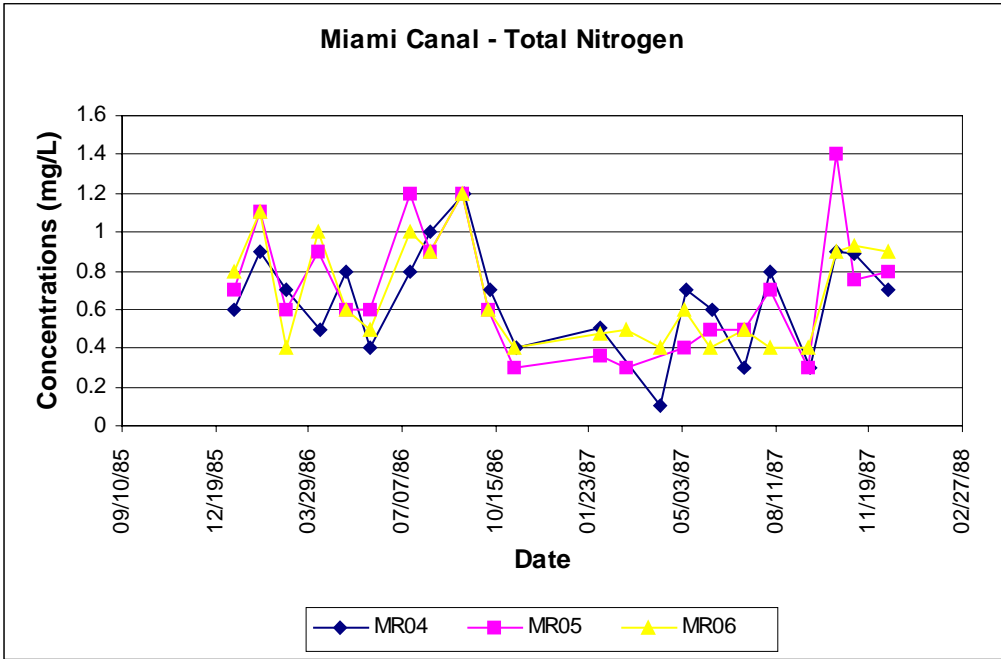
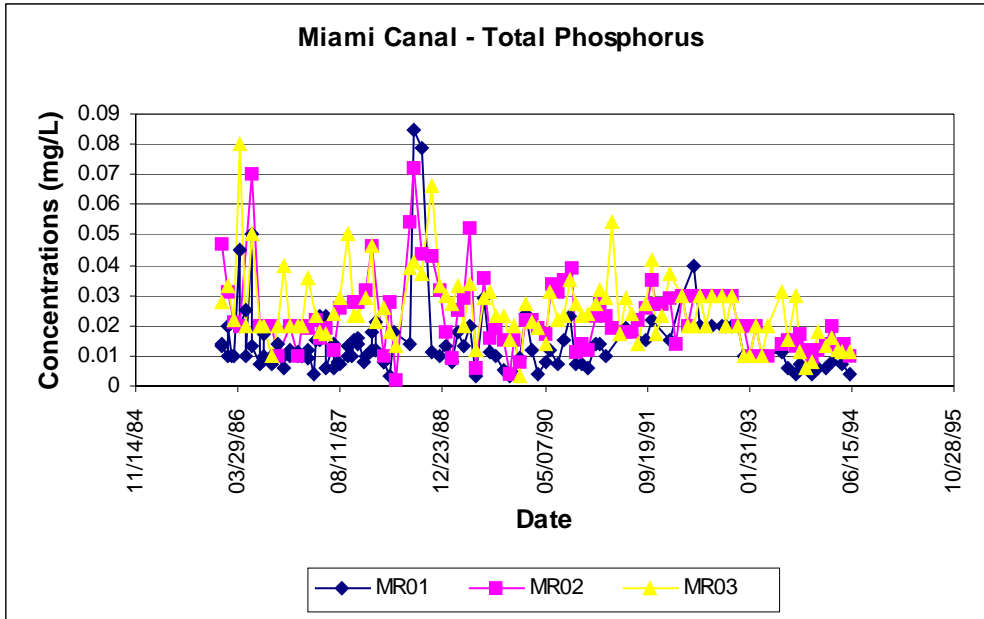
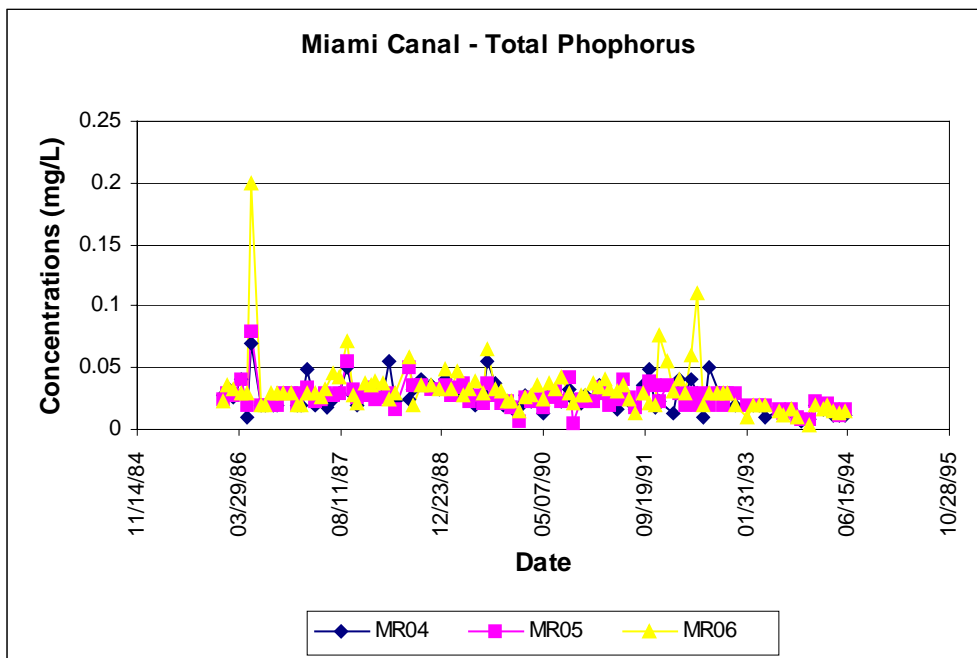


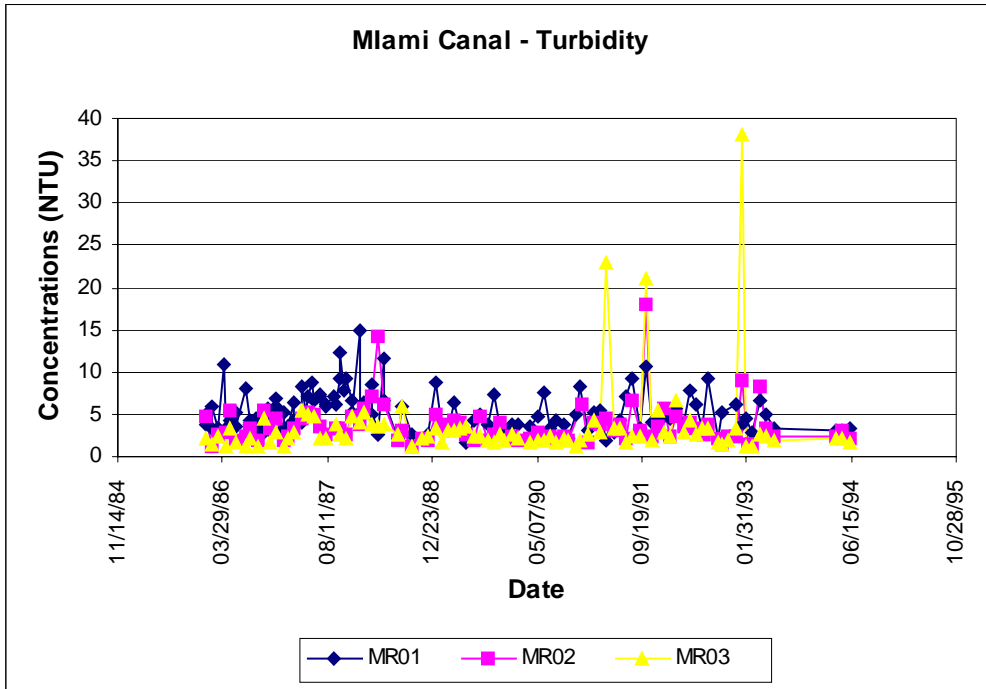
Figure.. Total Nitrogen Concentrations in Miami Canal



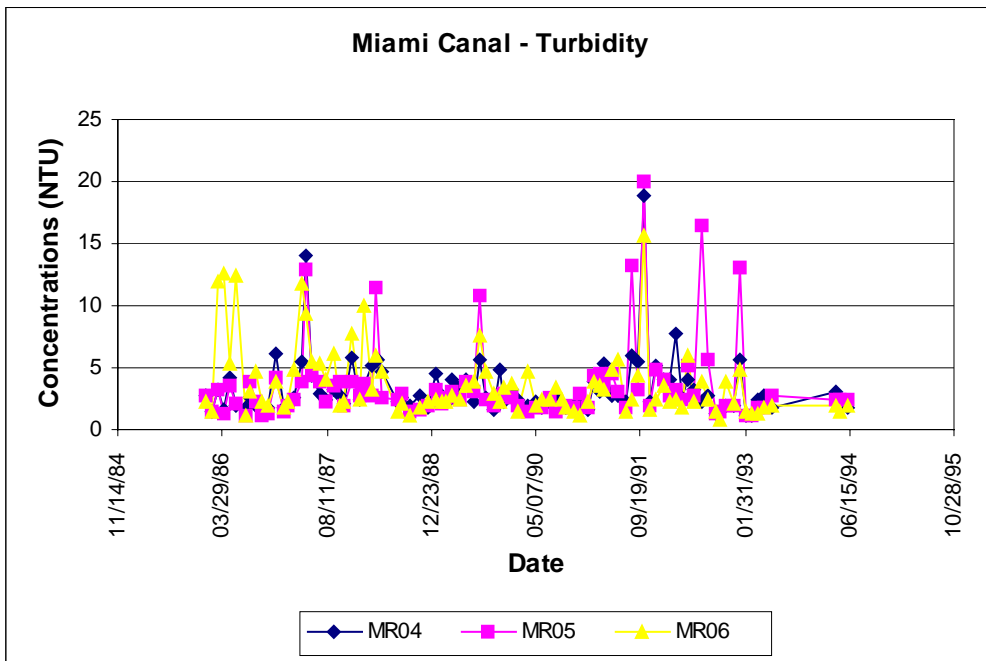
Figure,, Total Phosphorus Concentrations in Miami Canal



Figure,, Total Phosphorus Concentrations in Miami Canal



Figure,, Turbidity Concentrations in Miami Canal



Figure,, Turbidity Concentrations in Miami Canal

## **w. DA-1 Drainage Basin**

### *Background*

#### *Land Use*

The land use of the DA-1 Basin consists of urban/built-up (98%), transportation communications and utility (1.7%), upland forests (.08%) and wetlands (.06%).

#### *Drainage Features*

#### *Water Quality Summary*

The DA-1 Basin does not contain any 303(d) listed waterbodies. No monitoring stations located in this basin.

## **x. Coral Gables Drainage Basin**

### *Background*

The Coral Gables Basin is located in eastern Dade County. C-3 is the only project canal in the Coral Gables Basin. It provides drainage and flood protection to the basin and it maintains a groundwater table elevation adequate to prevent intrusion of saltwater into local ground water.

#### *Land Use*

The land use of the Coral Gables Basin consists of urban/built-up (95%), transportation communications and utility (3.2%), rangeland (0.08%), upland forests (0.03%), water (0.8%), and wetlands (0.6%).

#### *Drainage Features*

The C-3 begins as an open channel connection with C-4 just northeast of the intersection of U.S. Highway 41 and the Palmetto Expressway. Flow is normally to the south from C-4 to C-3. Waterflow in C-3 is to the Southeast, with discharge to Biscayne Bay at Sunrise Harbor. There is one Project control structure in C-3. G-97 is located at the 57<sup>th</sup> Street crossing. G-97 maintains a stage in C-3 adequate to prevent saltwater intrusion into local groundwater.

The C-3 canal was designed to provide 1-25 year flood protection. Design discharge at G-97 is 640cfs which consists of 540cfs from the Coral Gable Canal Basin and 100cfs from C-4. Urban development of the area has probably increased runoff to C-3 and decreased the flood protection although this has not been documented. There are some older urban areas with low lying streets and low floor elevations which flood during heavy rainfalls.

#### *Water Quality*

The Coral Gables Basin does not contain any 303(d) listed waterbodies.

According to the State’s Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 5mg/L. For the time period from 1991 to 1994, 80% (84/105) of the samples exceeded this criteria. Figure., illustrates dissolved oxygen concentrations over time at station CG07 on the C-3 Canal.

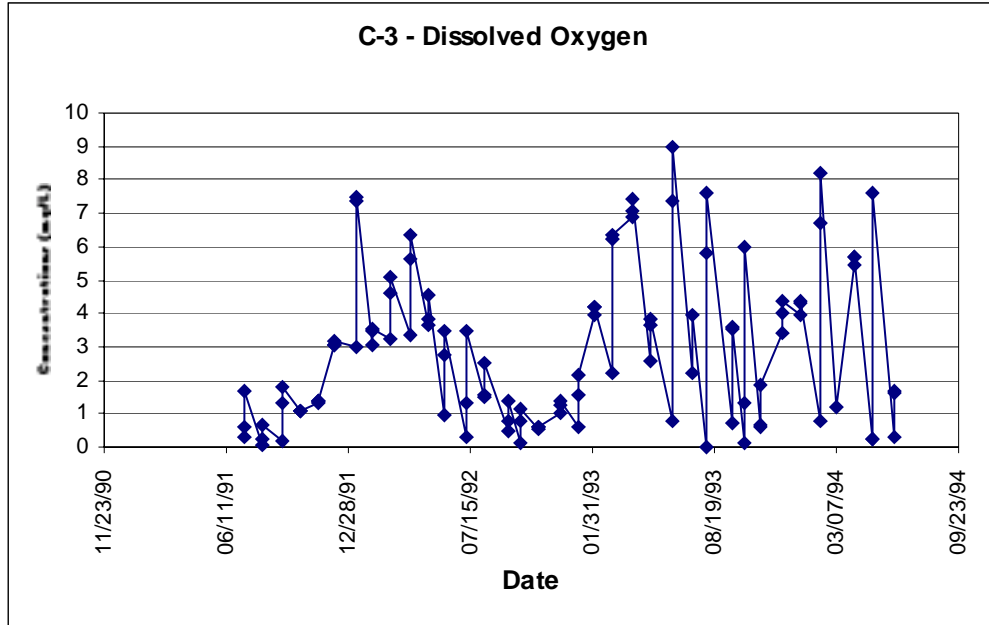


Figure., Dissolved Oxygen Concentrations in C-3 Canal

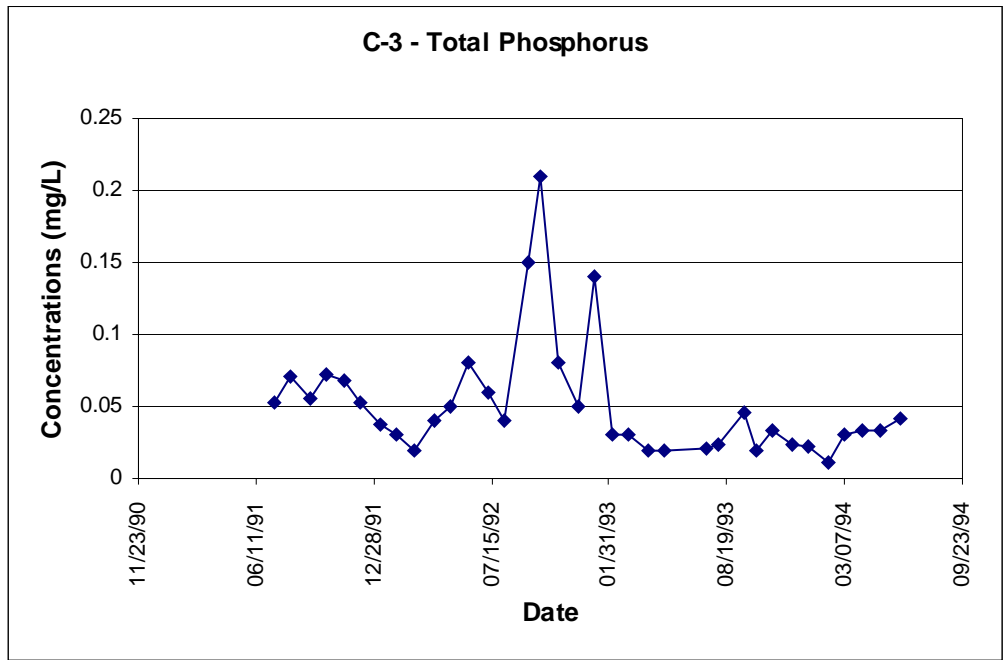
Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on station CG07. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period from 1991 to 1994.

According to this test, dissolved oxygen is increasing over time, while total phosphorus is decreasing. The decrease in total phosphorus is statistically significant at the 95% confidence level.

Table., Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	0.754 mg/L x year	No	No	No
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-2.204 mg/L x year	Yes	Yes	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	0.00 mg/L x year	No	No	No

Figures,, illustrate total phosphorus and turbidity concentrations over time at station CG07.



## **y. C-2 Drainage Basin**

### *Background*

The C-2 Basin is located in eastern Dade County. The C-2 canal is the only Project canal in the C-2 Basin. It has three functions: (1) to provide drainage and flood protection for the basin, (2) to supply water to the C-2 Basin and the C-100 Basins for irrigation and (3) to maintain a groundwater table elevation near the lower reach of C-2 adequate to prevent saltwater intrusion into local groundwater.

### *Land Use*

The land use of the C-2 Basin consists of urban/built-up (88%), water (4.8%), transportation communications and utility (4.2%), wetlands (1.6%), upland forests (0.4%), agriculture (0.3%) and rangeland (0.05%).

### *Drainage Features*

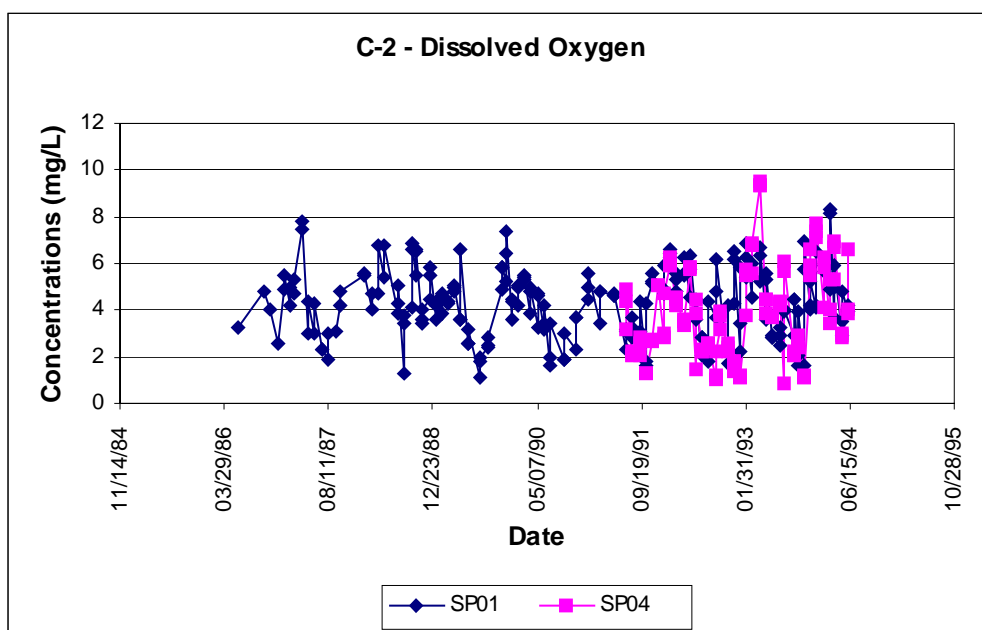
The C-2 canal begins as a bifurcation of C-4 near the intersection of the Homestead Extension of the Turnpike and U.S. Highway 41. From the open channel connection of C-2 and C-4, water flow in C-2 is to the southeast with discharge via S-22 to Biscayne Bay just south of Matheson Hammock Park. C-3 is connected to one other SFWMD canal. C-100 joins C-2 three-quarters of a mile southeast of the sunset Drive crossing of C-2. Normal flows are from C-2 to C-100C.

There are two Project control structures in the C-2 Basin: S-22 and S-121. S-22 is a gated spillway located in C-2 on the east side of Red Road. The structure controls water surface elevations in C-2 and it controls discharges to tidewater. A headwater stage is maintained by S-22 adequate to prevent saltwater intrusion into local groundwater. S-121 is a gated culvert in C-100C at the State Road 94 crossing. There are no specific operational guidelines for this structure. In general, it is closed to prevent flood flows in the C-2 Basin from entering the C-100 Basin and it is opened to supply water from the C-2 Basin to the C-100 Basin for irrigation and to maintain the optimum stage in the lower reaches of canals in the C-100 Basin.

### *Water Quality*

The C-2 Canal was not on the 1998 303(d) list.

According to the State's Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 5mg/L. For the time period from 1986 to 1994, 68% (221/324) of the samples exceeded this criteria. Figure., illustrates dissolved oxygen concentrations over time at stations SP01 and SP04 on the C-2 Canal.



Figure,, Dissolved Oxygen Concentrations in C-2 Canal

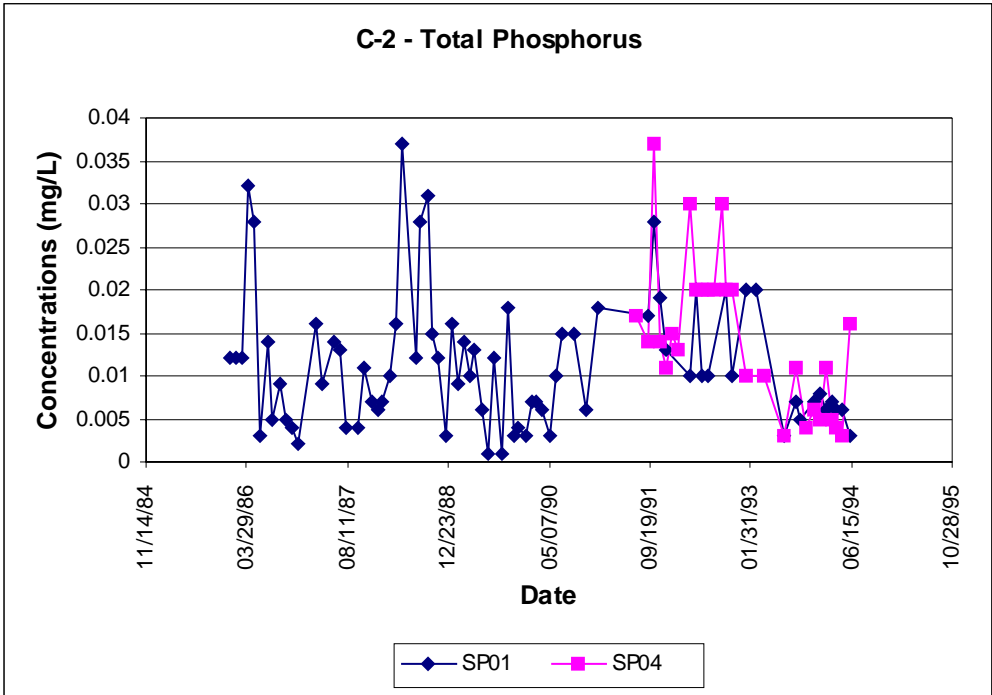
Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on station CG07. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period from 1991 to 1994.

According to this test, dissolved oxygen and total phosphorus are increasing over time, while turbidity is decreasing.

Table,, Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	0.576 mg/L x year	No	No	No
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	0.263 mg/L x year	No	No	No
Chlorophyll A	NA	NA	NA	NA
Turbidity	-0.254 mg/L x year	No	No	No

Figures,, illustrate total phosphorus and turbidity concentrations over time at station s SP01 and SP04.



## **z. DA-2 Drainage Basin**

### *Background*

#### *Land Use*

The land use of the DA-2 Basin consists of urban/built-up (50%), wetlands (32%), transportation communications and utility (12%), upland forests (2%), water (2.9%) and barren land (1%).

#### *Drainage Features*

#### *Water Quality Summary*

The DA-2 Basin does not contain any 1998 303(d) listed waterbodies. No monitoring stations available for this basin.

## **aa. C-100 Drainage Basin**

### *Background*

The C-100 Basin has an area of approximately 40.6 square miles and is located in eastern Dade County. This basin is also known as the Cutler Drainage Basin. There are four project canals in the C-100 Drainage Basin: C-100, C-100A, C-100B and C-100C. These canals have three functions: (1) to provide drainage and flood protection for the C-100 Basin, (2) to supply water to the basin for irrigation and (3) to maintain a groundwater table elevation near the lower reach of C-100 adequate to prevent saltwater intrusion to local ground water. Water is supplied to the basin during periods of low natural flow from C-1 by way of S-122 and C-100B and from C-2 by way of S-121 and C-100C.

#### *Land Use*

The land use of the C-100 Basin consists of urban/built-up (85%), transportation communications and utility (6%), agriculture (2%), rangeland (2%), upland forests (2%), water (2%), wetlands (0.6%) and barren land (0.07%).

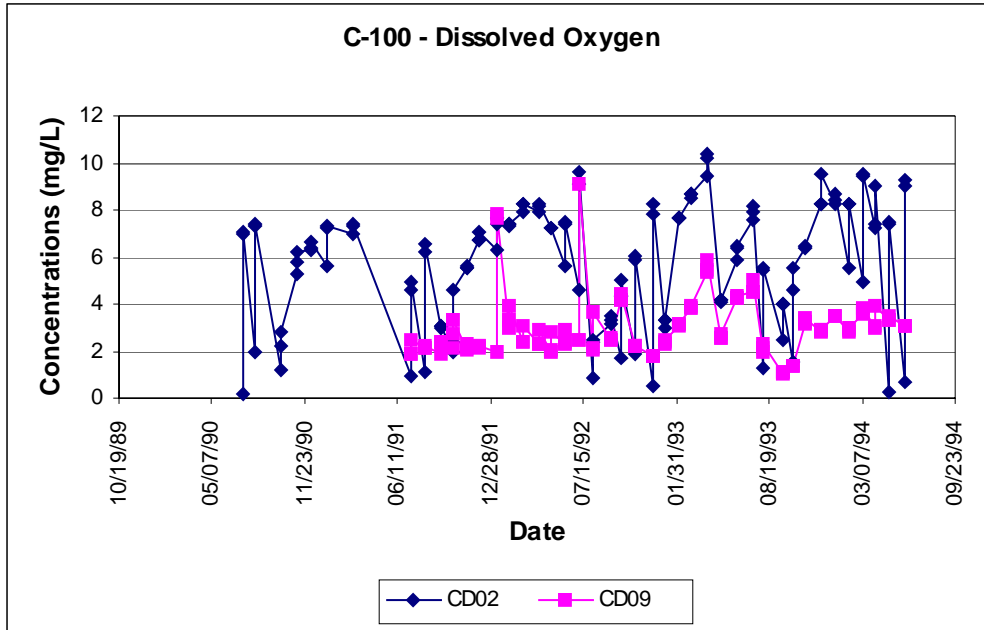
#### *Drainage Features*

C-100 begins just north of the intersection of Killian Road and Lingren Road. Flow in the canal is to the southeast with discharge via S-123 to Biscayne Bay east of Old Cutler Road. C-100A, C-100B and C-100C are tributary to C-100. (1) C-100A begins in Green Mar Acres at U.S. Highway 1. Flow in C-100A is to the south to the canal's confluence with C-100 one-half mile west of Biscayne Bay. (2) C-100B connects C-100 to C-1. C-100B enters the C-100 Basin at S-122 one-tenth of a mile south of the east end of Peters Road. Normal flows in C-100B are to the northeast to the canal's confluence with C-100 one-quarter mile west of Biscayne Bay. (3) C-100C connects to C-2. C-100C enters the C-100 Basin at S-121 at State Road 94. Normal Flows in C-100C are to the southeast to the canal's confluence with C-100A one-quarter mile north of coral reef drive. There are six Project control structures in the C-100 Basin: S-118, S-119, S-120, S-121, S-122 and S-123.

*Water Quality*

The C-100 Canal was not on the 1998 303(d) list.

According to the State's Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 5mg/L. For the time period from 1990 to 1994, 60% (142/235) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at stations CD02 and CD09 on the C-100 Canal.



**Figure,, Dissolved Oxygen Concentrations in C-100 Canal**

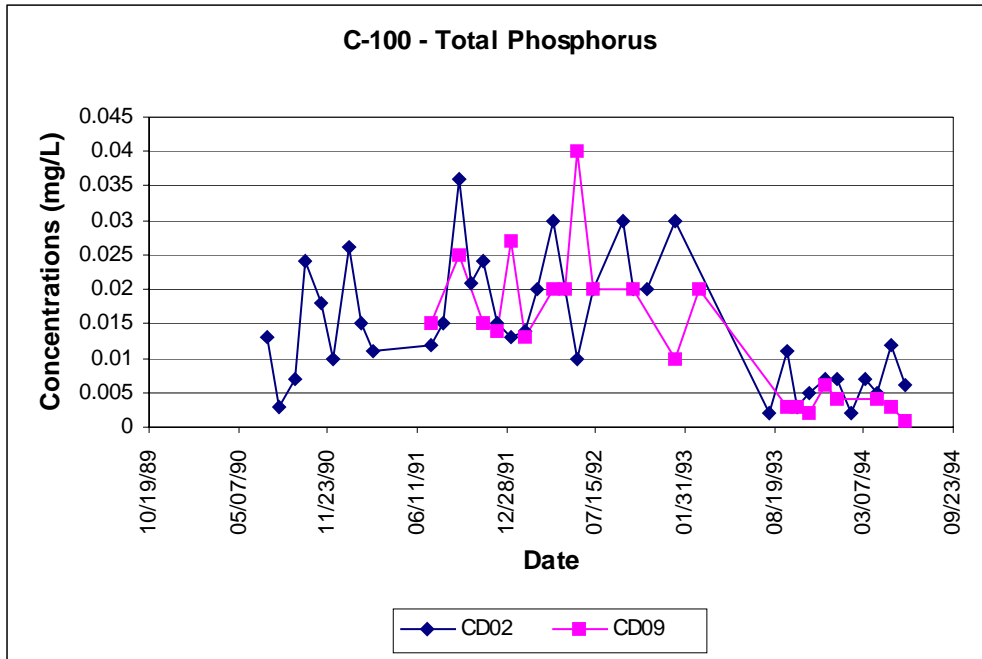
Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on stations CD02 and CD09 in the C-100 Canal. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period from 1990 to 1994.

According to this test, dissolved oxygen and total phosphorus are decreasing over time, while turbidity is increasing. The decrease in total phosphorus is statistically significant at the 95% confidence level.

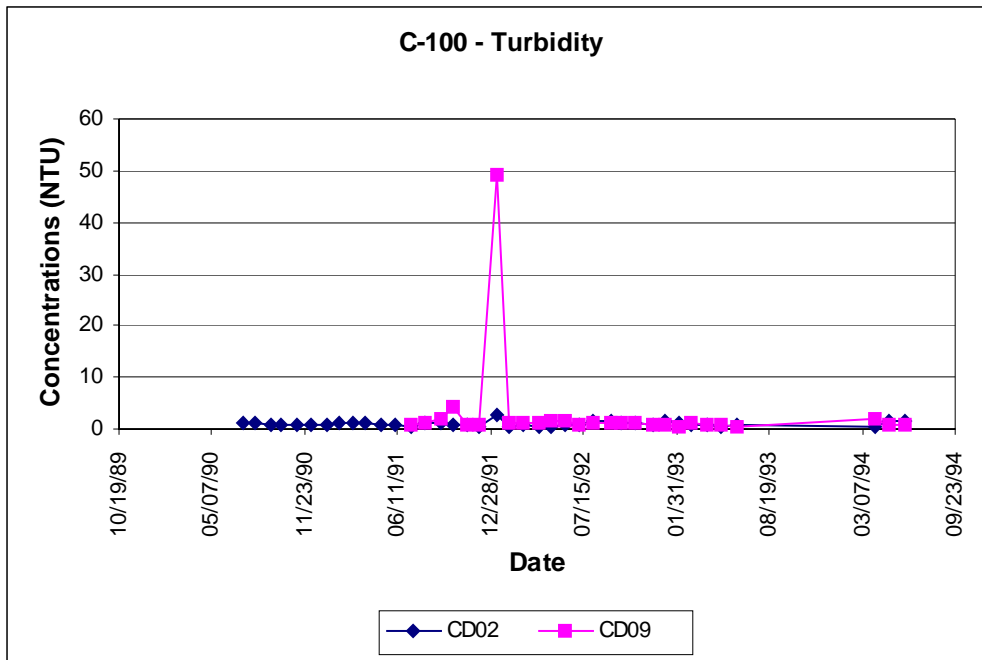
**Table,, Results of Trend Analyses Using the Seasonal Kendall Test**

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	-0.900 mg/L x year	No	No	No
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-2.195 mg/L x year	Yes	Yes	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	0.394 mg/L x year	No	NO	No

Figures,, illustrate total phosphorus and turbidity concentrations over time at stations CD02 and CD09.



**Figure,, Total Phosphorus Concentrations in C-100 Canal**



Figure,, Turbidity Concentrations in C-100 Canal

**bb. DA-3 Drainage Basin**

*Background*

*Land Use*

The land use of the DA-3 Basin consists of urban/built-up (53%), wetlands (25%), upland forests (11%), transportation communications and utility (6%), agriculture (4.1%), barren land (0.6%) and water (0.02%).

*Drainage Features*

*Water Quality Summary*

The DA-3 Basin does not contain any 1998 303(d) listed waterbodies. No monitoring stations available for this basin.

**cc. C-1 Drainage Basin**

*Background*

The C-1 Basin is located in southeastern Dade County. There are four Project Canals in the C-1 Basin: C-1, C-1W, C-1N and the L-31N borrow canal. These canals have three functions: (1) to provide drainage and flood protection for the C-1 Basin, (2) to supply water to the C-1 and the C-100 Basins for irrigation and (3) to maintain groundwater table elevation near the lower reach of C-1 adequate to prevent saltwater intrusion to local groundwater.

### *Land Use*

The land use of the C-1 Basin consists of urban/built-up (50%), agriculture (35%), transportation communications and utility (4.5%), upland forests (4.2%), water (2%), wetlands (3%), rangeland (0.7%) and barren land (0.6%).

### *Drainage Features*

C-1 and C-1W are continuous and make up the main canal (hereafter, designated C-1/C-1W) in the basin. C-1N and the L-31N borrow canal are tributary to C-1/C-1W. C-1/C-1W begins in the east borrow canal of L-31N, one and one-half miles north of Howard Drive. Flow in the canal is to the southeast with discharge via S-21 to Biscayne Bay southwest of Black Point. C-1N begins at the intersection of Ligren Road and Coral Reef Drive. Flow in the Canal is to the south to the confluence of the canal with C-1/C-1W just east of the West Dade Expressway. The L-31 borrow canal is aligned along the west boundary of the basin. This canal is part of the South Dade Conveyance System. When operating to supply water to basins in south Dade County, flow in the canal is to the south. During a storm event, flow in the L-31N borrow canal is to C-1/C-1W.

There is one other project canal associated with the C-1 Basin. C-100B connects C-1N to C-100. C-100B joins C-1N one-half mile downstream of the F.E.C. Railway. The canal leaves the basin at S-122. Normal flows in the canal are to the north to the C-100 Basin.

There are seven Project control structures in the C-1 Basin. Five of these (S-21, S-148, S-338, S-149 and S-122) are directly related to the operation of C-1/C-1W and C-1N. The other two structures (S-173, S-331) along with the L-31 borrow canal are part of the South Dade Conveyance System (SDCS) which supplies water to basins in south Dade County.

S-21 is a gated spillway located in C-1/C-1w and C-1N and it controls discharges to tidewater. A headwater stage is maintained by S-21 adequate to prevent saltwater intrusion to local groundwater.

S-148 is a gated spillway located in C-1W at the Florida East Coast Railway crossing. It controls stages in the upper reach of C-1/C-1W and it regulates discharges to the lower reach of C-1/C-1W.

S-149 is a gated culvert located in C-1N at the Florida East Coast Railway crossing. It controls stages in the upper reach of C-1N and it regulated discharge to C-1.

S-122 is a gated culvert located in C-1000B one-tenth mile south of the east end of Peters Road. There are no specific operational guidelines for this structure. In general it is closed to prevent flood flows in the C-1 Basin from entering the C-100 Basin and it is opened as necessary to supply water from C-1 to C-100 Basin for irrigation and to maintain the optimum stage in the lower reaches of canals in the C-100 Basin.

S-173 is a gated culvert located in the L-31N borrow canal at the divide between the C-1 and C-111 Basins. It is adjacent to pumping station S-331 just north of Richmond Drive. It is closed during storm events to prevent flood flows from passing from one basin to the other. It is also closed when pumps as S0331 are in operation.

S-331 is a pumping station in the L-31N borrow canal at the divide between the C-1 and C-111 Basins. It is adjacent to S-173 just north of Richmond Drive. The pumping station is a component of the SDCS. Its function in conjunction with S-173 is to supply water to South Dade County Basins and Everglades National Park (i.e. Taylor Slough and the Panhandle). It also controls the stage in the L-31N borrow canal and protects the residential area west of L-31N from Flooding. Water is supplied to the south whenever the headwater stage at any downstream structure is more than 1.5 feet below optimum.

#### *Water Quality*

The C-1 Basin does not contain any 1998 303(d) listed waterbodies. No monitoring stations available for this basin.

### **dd.DA-4 Drainage Basin**

#### *Background*

#### *Land Use*

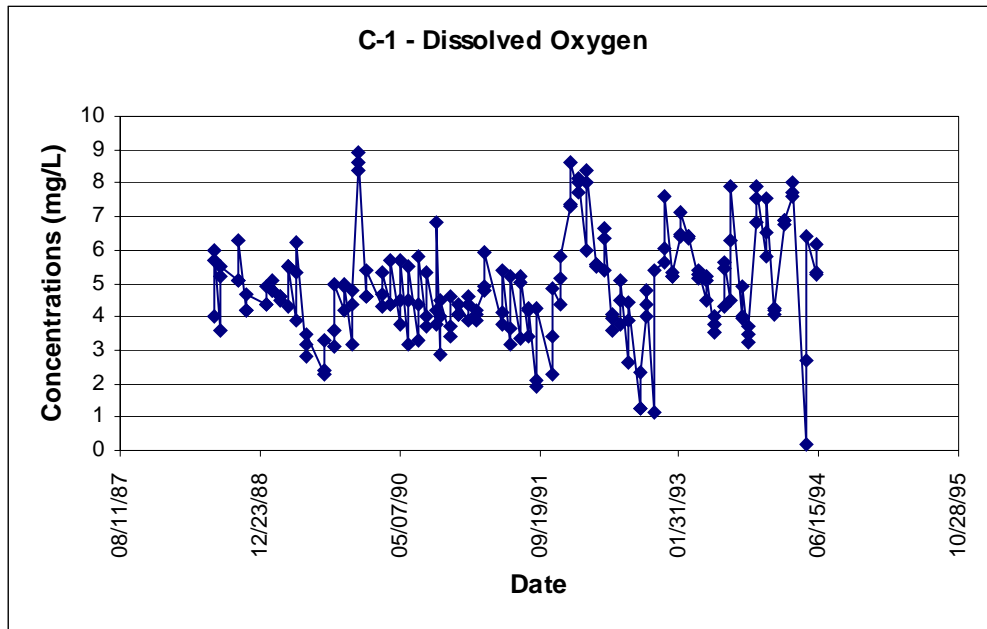
The land use of the DA-4 Basin consists of wetlands (55%), transportation communications and utility (27%), agriculture (10%), urban/built-up (4%), upland forests (2%) and water (2%).

#### *Drainage Features*

#### *Water Quality Summary*

The DA-4 Basin does not contain any 1998 303(d) listed waterbodies.

According to the State's Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 4mg/L. For the time period from 1988 to 1994, 24% (47/194) of the samples exceeded this criteria. Figure., illustrates dissolved oxygen concentrations over time at station BL02 on the C-1 Canal.



Figure,, Dissolved Oxygen Concentrations in C-1 Canal

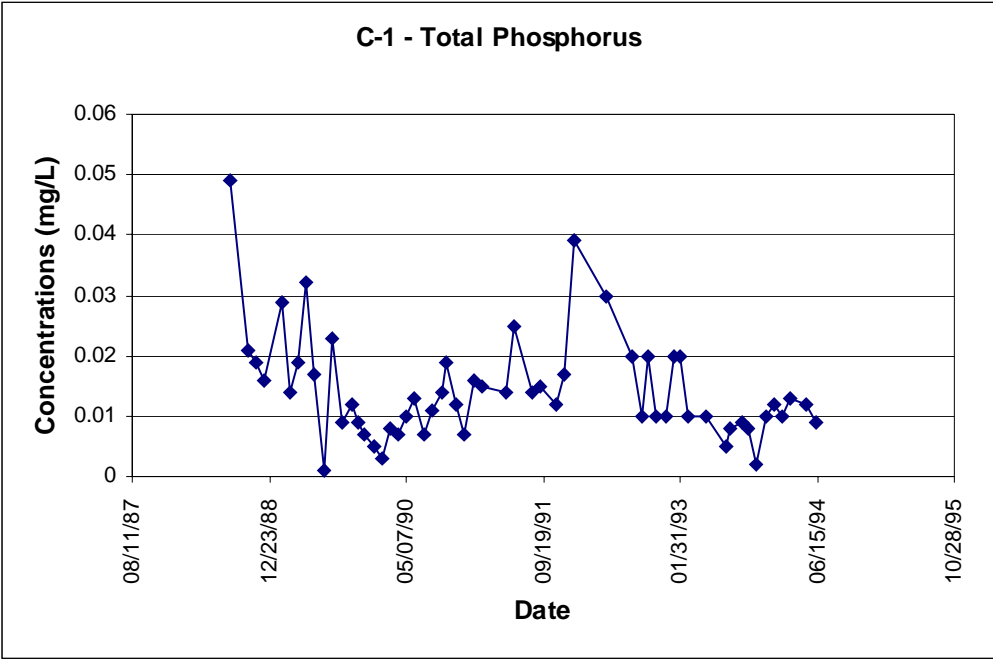
Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on station BL02 in the C-1 Canal. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period from 1988 to 1994.

According to this test, dissolved oxygen and turbidity are increasing over time, while total phosphorus is decreasing. The decrease in total phosphorus is statistically significant at the 90% confidence level.

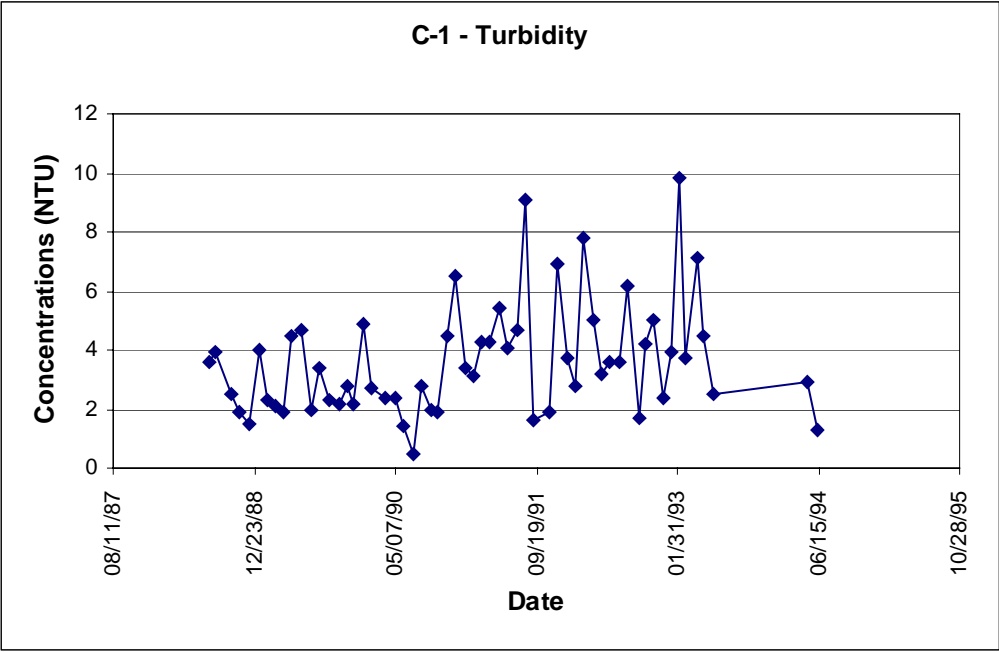
Table,, Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	0.062 mg/L x year	No	No	No
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-1.852 mg/L x year	No	Yes	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	1.142 mg/L x year	No	No	No

Figures,, illustrate total phosphorus and turbidity concentrations over time at station BL02.



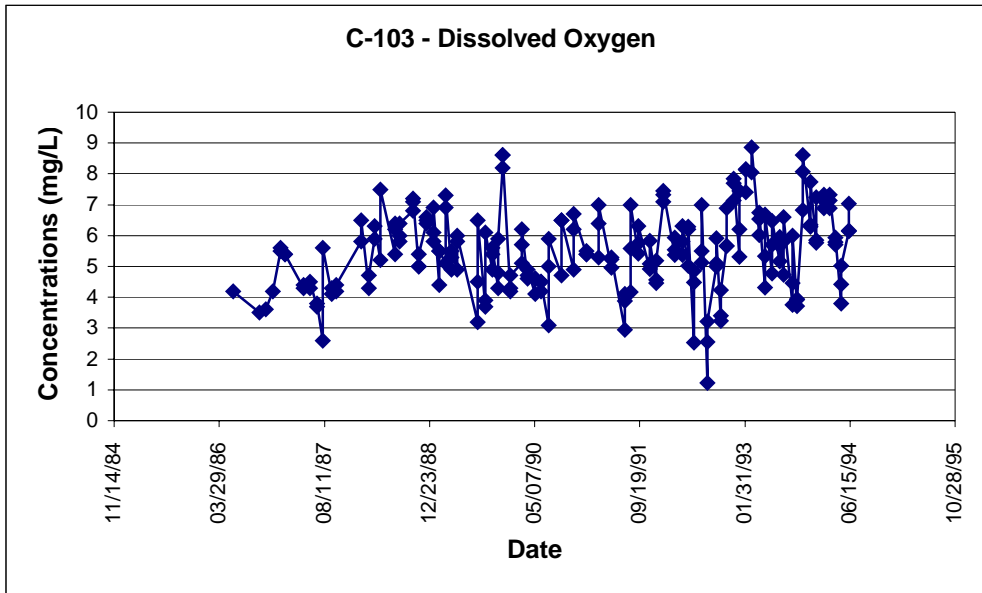
Figure,, Total Phosphorus Concentrations in C-1 Canal



Figure,, Turbidity Concentrations in C-1 Canal

The C-103 Canal was not on the 1998 303(d) list.

According to the State’s Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 4mg/L. For the time period from 1986 to 1994, 16% (35/220) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at station MW01 on the C-103 Canal.



Figure,, Dissolved Oxygen Concentrations in C-103

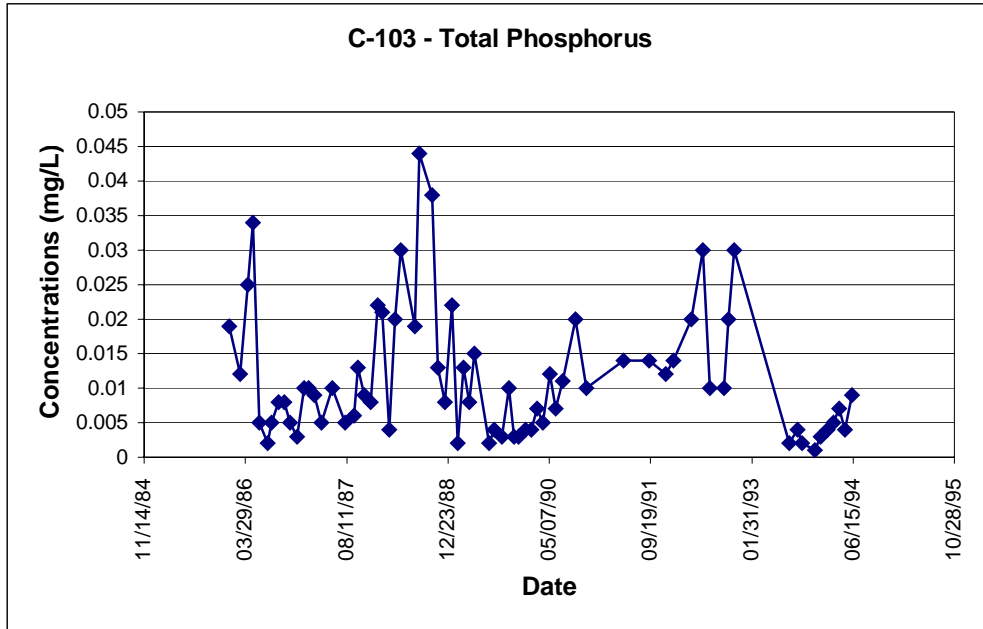
Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on station MW01 in the C-103 Canal. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period from 1986 to 1994.

According to this test, dissolved oxygen and turbidity are increasing over time, while total phosphorus is decreasing. The increases in dissolved oxygen and turbidity are statistically significant at the 95% confidence level.

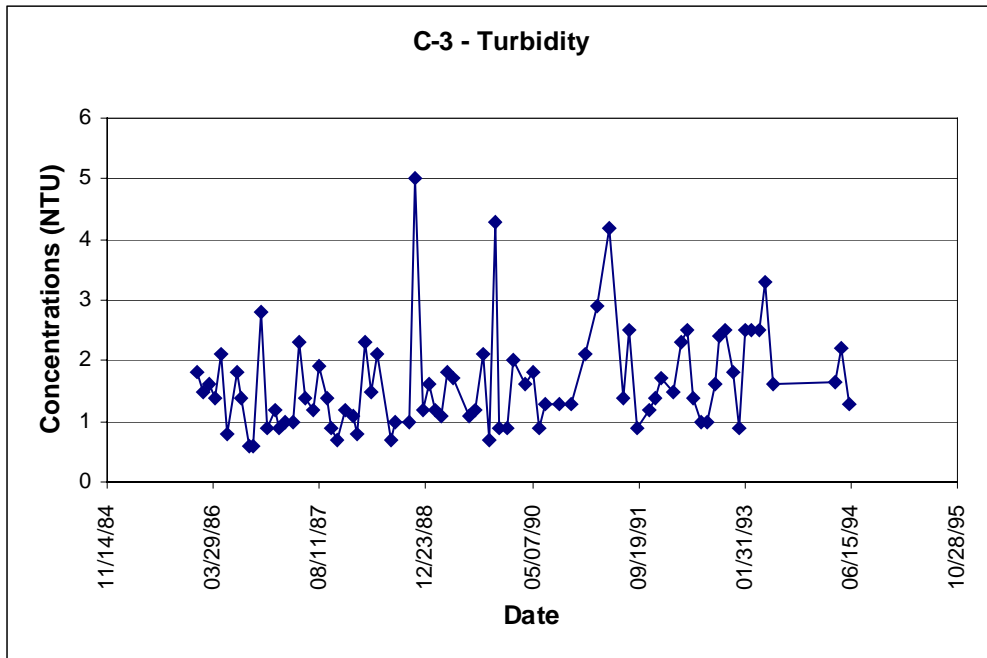
Table,, Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	2.607 mg/L x year	Yes	Yes	Yes
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-1.588 mg/L x year	No	No	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	2.263 mg/L x year	Yes	Yes	Yes

Figures,, illustrate total phosphorus and turbidity concentrations over time at station MW01.



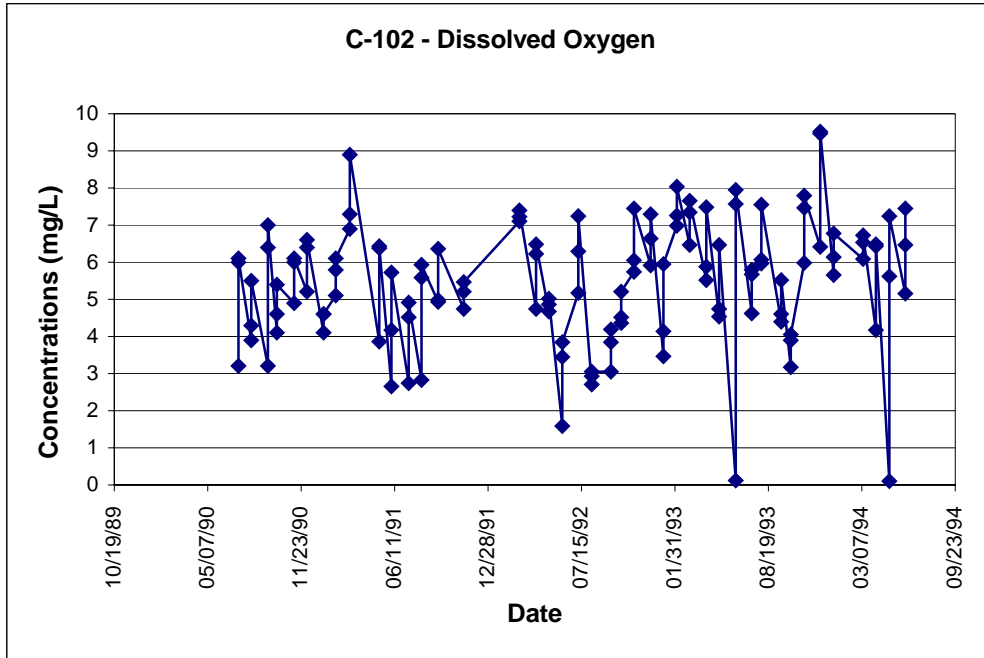
Figure,, Total Phosphorus Concentrations in C-103 Canal



Figure,, Turbidity Concentrations in C-103 Canal

The C-102 Canal was not on the 1998 303(d) list.

According to the State's Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 4mg/L. For the time period from 1990 to 1994, 15% (20/126) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at station PR01 on the C-102 Canal.



Figure,, Dissolved Oxygen Concentrations in C-102 Canal

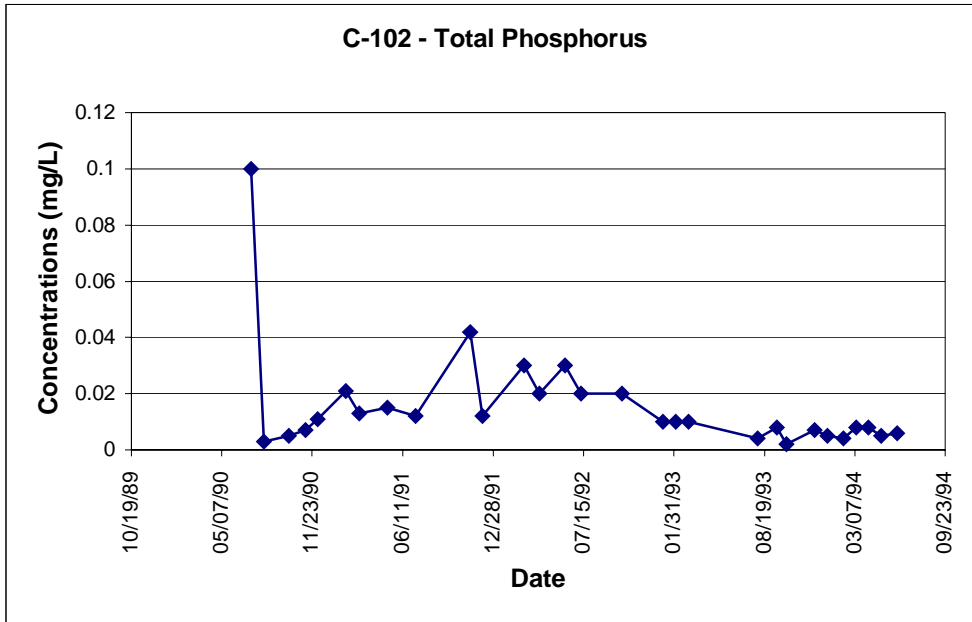
Temporal analyses for dissolved oxygen, total phosphorus, *chlorophyll a* and turbidity were conducted on station PR01. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period 1990 to 1994.

According to this test, total phosphorus and turbidity are decreasing over time. The decrease in total phosphorus is statistically significant at the 95% confidence level.

Table,, Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	0.0 mg/L x year	No	No	No
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-2.031 mg/L x year	Yes	Yes	Yes
Chlorophyll A	0.0 mg/L x year	No	No	No
Turbidity	-0.456 mg/L x year	No	No	No

Figures... illustrate total phosphorus, turbidity and *chlorophyll a* concentrations over time at station PR01 on the C-102 Canal.



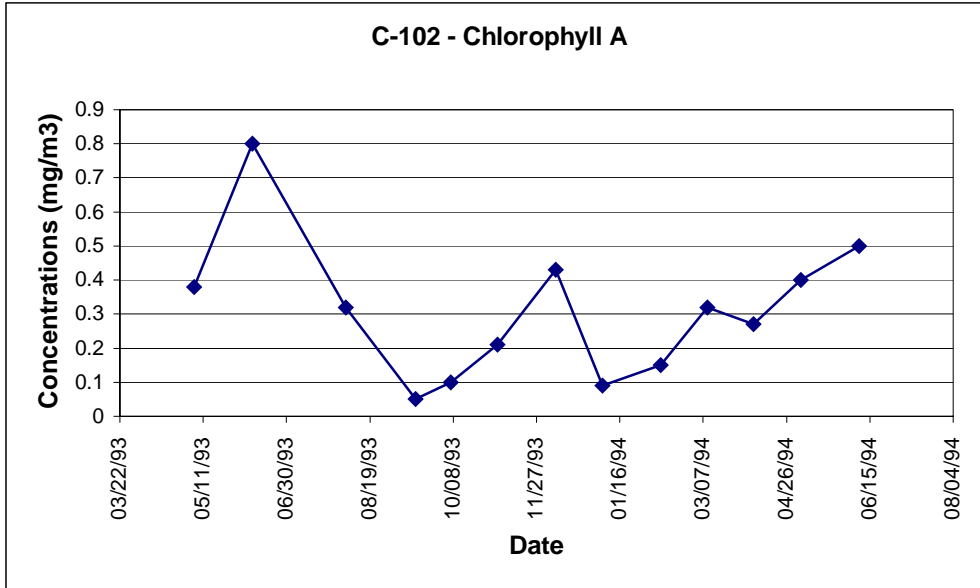


Figure., Chlorophyll a Concentrations in C-102 Canal

**ee. C-102 Drainage Basin**

*Background*

The C-102 Drainage Basin has an area of 34.8 square miles and is located in southeastern Dade County. There are two Project canals in the C-102 Basin: C-102 and C-102N. These canals have three functions: (1) to provide drainage and flood protection for the C-102 Basin, (2) to supply water to the basin for irrigation and (3) to maintain a groundwater table elevation adequate to prevent intrusion of saltwater into local groundwater. Water is supplied to the C-102 Basin from the South Dade Conveyance System (SDCS) during periods of low natural flow.

*Land Use*

The land use of the C-102 Basin consists of agriculture (63%), urban/built-up (25%), wetlands (4%), transportation communications and utility (3%), upland forests (3%), water (1%) and rangeland (1%).

*Drainage Features*

The C-102 begins in the L-31N borrow canal one and one-half miles south of Richmond Drive. Flow in the canal is the southeast with discharge via S-21A to Biscayne Bay north of Fender Point. C-102N is tributary to C-102. It begins at S-195 northwest of the intersection of U.S. Highway 1 and Silver Palm Drive. Flow in the canal is to the south to the canal's confluence with C-102 just south of the West Dade Expressway crossing of C-102N.

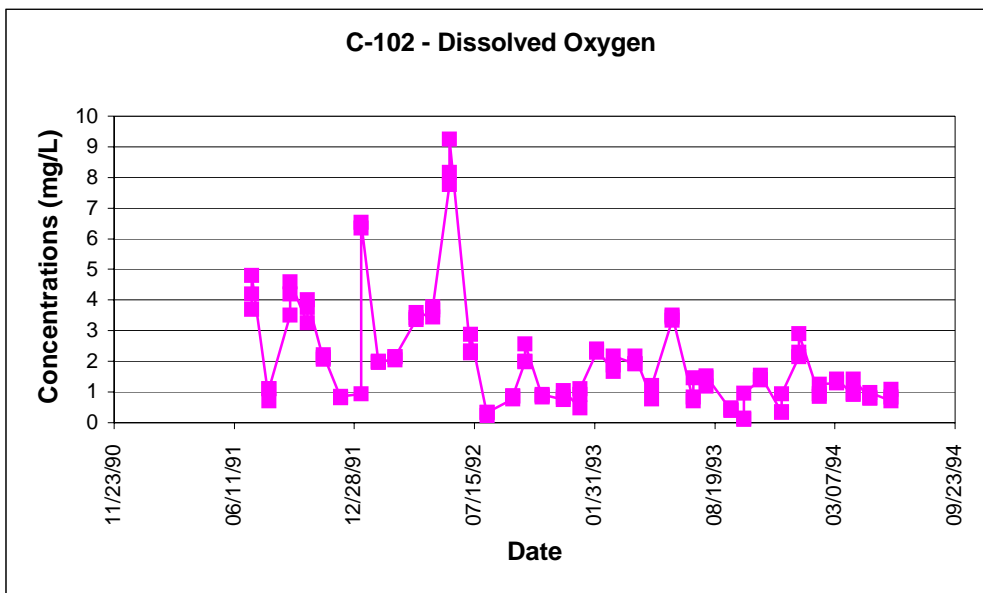
During normal operation, the 9.4 square mile area in western C-102 (West of Crome Avenue) drains to the east via C-102 to Biscayne Bay. During flood conditions S-194 is closed and this area drains to the west to the L-31N borrow canal and the C-111 Basin.

There are four Project control structures in the C-102 Basin: S-21A, S-165, S-195 and S-194. S-21A is a gated spillway located in C-102 one mile west of Biscayne Bay. It controls stages in C-102 and C-102N and it regulates discharges to tidewater. A headwater stage is maintained by S-21A adequate to prevent saltwater intrusion into local groundwater. S-165 is a gated spillway located in C-102 just west of U.S. Highway 1. It controls the stage in the upper reach of C-102 and C-102N. S-195 is a gated culvert located in C-102N at its upper end just west of US Highway 1. It controls inflows to C-102 from local drainage systems. S-194 is a gated culvert located in C-102 just west of Krome Avenue on the divide between the C-111 and C-102 Basins. The structure is normally open to supply water to the C-102 Basin from the L-31N borrow canal. During flooding the gates at S-194 are closed to prevent water from passing from one basin to the other.

*Water Quality*

The C-102 Basin does not contain any 1998 303(d) listed waterbodies.

According to the State’s Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 5mg/L. For the time period from 1991 to 1994, 96% (111/116) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at station PR08 on the C-102 Canal.



Figure,, Dissolved Oxygen Concentrations in C-102 Canal

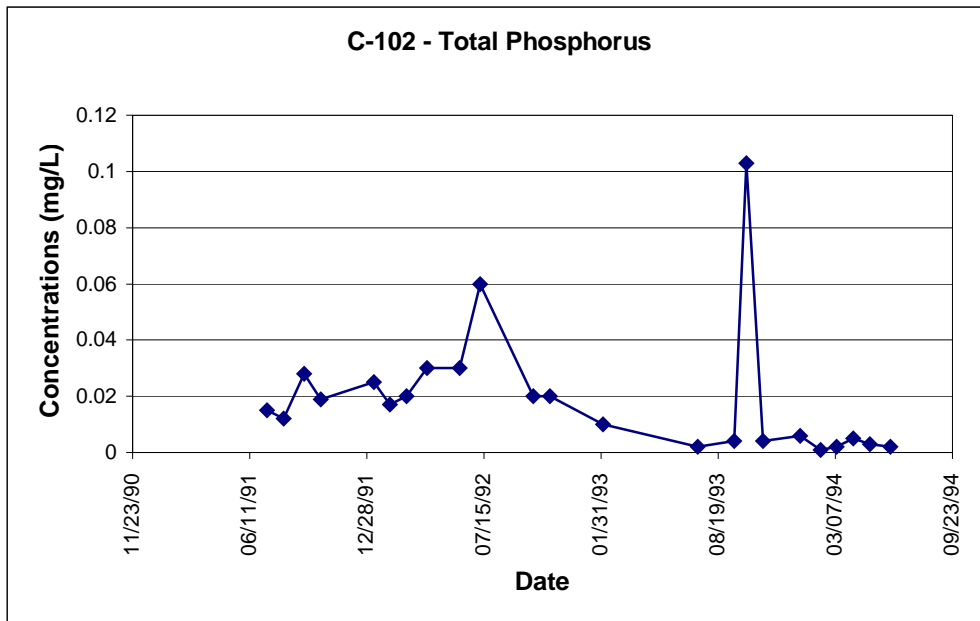
Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on station PR08. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period 1991 to 1994.

According to this test, all three parameters are decreasing over time. The decrease in dissolved oxygen is statistically significant at the 95% confidence level.

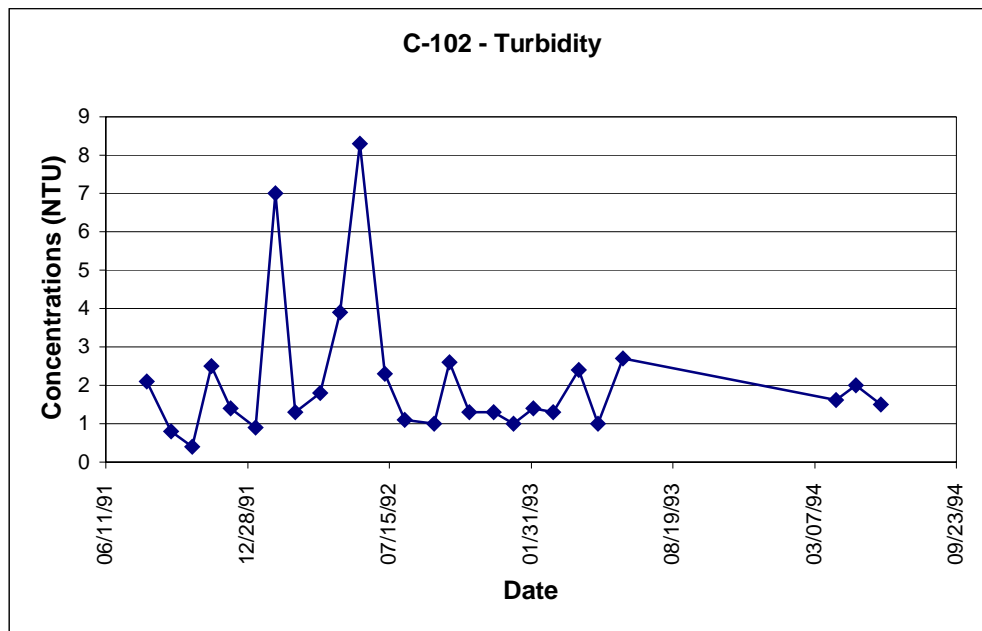
**Table,, Results of Trend Analyses Using the Seasonal Kendall Test**

<b>Parameter</b>	<b>Seasonal Kendall Test Statistic</b>	<b>Significant @ a=0.05</b>	<b>Significant @ a=0.10</b>	<b>Significant @ a=0.20</b>
Dissolved Oxygen	-2.864 mg/L x year	Yes	Yes	Yes
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-1.184 mg/L x year	No	No	No
Chlorophyll A	NA	NA	NA	NA
Turbidity	-1.179 mg/L x year	No	No	No

Figure,, illustrate total phosphorus and turbidity concentrations over time at station PR08 on the C-102 Canal.



**Figure ,, Total Phosphorus Concentrations in C-102 Canal**



Figure,, Turbidity Concentrations in C-102 Canal

**ff. C-103 Drainage Basin**

*Background*

The C-103 Basin is located in southeast Dade County. The C-103 Basin is bordered on the West by the C-111, on the north by C-102 and to the south by the North Canal and Florida City Basins.

There are three project canals in the C-103 Basin: C-103, C-103S and C-103N. These canals have three functions: (1) to provide drainage and flood protection for the C-103 Basin, (2) to supply water to the basin for irrigation and (3) to maintain a groundwater table elevation adequate to prevent intrusion of saltwater into local groundwater. Water is supplied to the C-103 Basin from the South Dade Conveyance System (SDCS) during periods of low natural flow.

*Land Use*

The land use of the C-103 Basin consists of agriculture (50%), urban/built-up (39%), transportation communications and utility (3%), wetlands (3%), rangeland (2%), water (2%) and barren land (0.1%).

*Drainage Features*

C-103 begins in the L-31N borrow canal one mile west of Loveland Road between Bauer Drive and Epmore Drive. Flow in the canal is to the southeast with discharge via S-20F to Biscayne Bay north of Convoy Point. C-103S and C-103N are tributary to C-103. C-

103S begins at North Canal Drive, one-half mile east of Krome Avenue. Flow in the canal is to the east to the canal's confluence with C-103 one-quarter mile south of Campbell Drive. C-103N begins at Tennessee Road south of Plummer Drive. Flow in the canal is to the southeast to the canal's confluence with C-103 one-half mile southwest of the intersection of Campbell Drive and Tallahassee Road.

During normal operation, the 4.5 square mile area in the western portion of C-103 west of Richard Road drains to the east via C-103 to Biscayne Bay. During flood conditions S-196 is closed and this area drains to the west to the L-31N borrow canal and the C-111 Basin.

There are five Project control structures in the C-103 Basin: S-20F, S-179, S-167, S-166 and S-194.

S-20F is a gated spillway located in C-103 one mile west of Biscayne Bay. It controls stages in the lower reach of C-103 and it regulates discharges to tidewater. A headwater stage is maintained by S-21A adequate to prevent saltwater intrusion into local groundwater.

S-179 is a gated spillway located in C-103 just west of Tallahassee Road. It controls the stage in the middle reach of C-103 and in the lower reaches of C-103S and C-103N, and it regulates discharges to the lower reach of C-103.

S-176 is a gate spillway located in C-103 just west of Tennessee Road. It controls stages in the upper reach of C-103 and it controls discharges to the middle reach of C-103.

S-166 is a gated spillway located in C-103N just west of U.S. Highway 1. It controls stages in the upper reach of C-103N and it controls discharges to the middle reach of C-103.

S-196 is a gated culvert located in C-103 just west of Richard Road on the divide between the C-111 and C-103 Basins. The structure is normally open to supply water to the C-103 Basin from the L-31N borrow canal. During flooding the gates at S-196 are closed to prevent water from passing from one basin to the other.

#### *Water Quality*

The C-103 Basin does not contain any 1998 303(d) listed waterbodies.

According to the State's Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 5mg/L. For the time period from 1989 to 1994, 39% (59/152) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at station MI03 on the Military Canal.

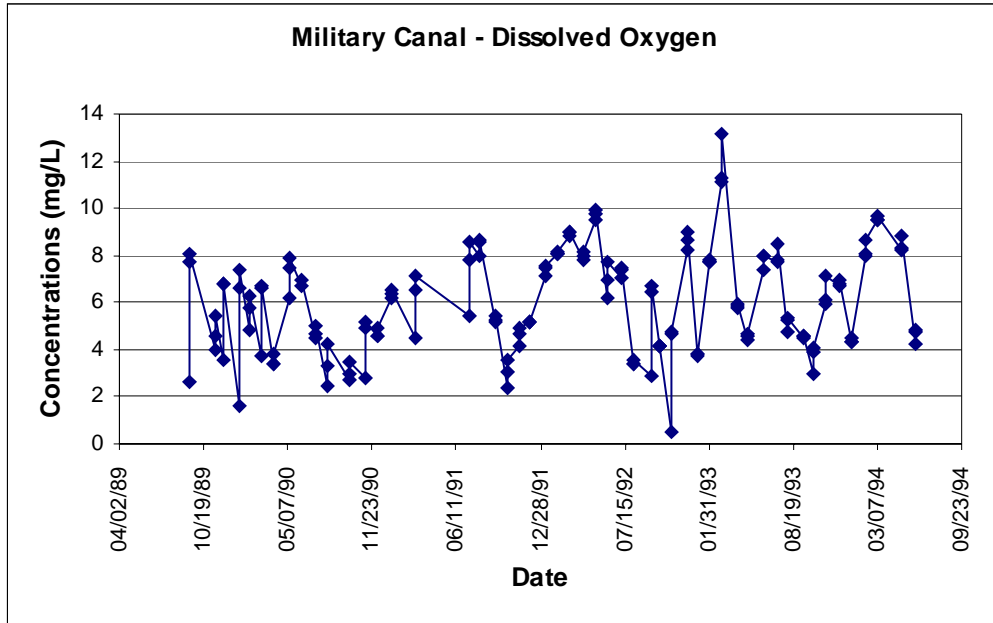


Figure., Dissolved Oxygen Concentrations in Military Canal

Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on station MI03. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period 1989 to 1994.

According to this test, dissolved oxygen is increasing, while total phosphorus and turbidity are decreasing. The increase in dissolved oxygen is statistically significant at the 90% confidence level and the decrease in total phosphorus is significant at the 95% confidence level.

Table ., Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	1.747 mg/L x year	No	Yes	Yes
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-2.200 mg/L x year	Yes	Yes	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	-0.680 mg/L x year	No	No	No

Figures \_\_\_ illustrate total phosphorus and turbidity concentrations over time at station MI03 in the Military Canal.

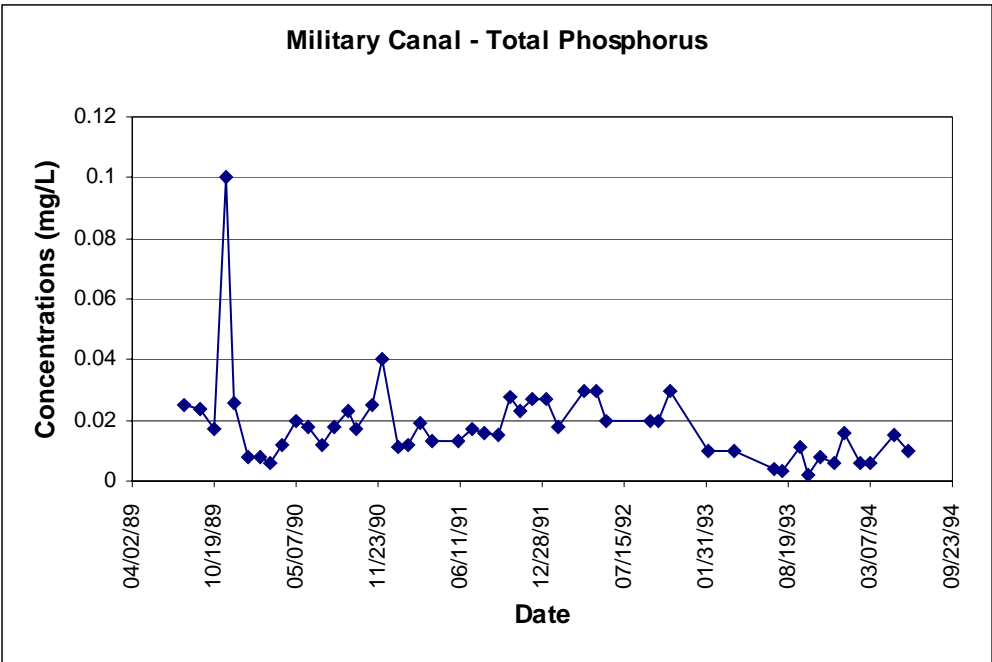
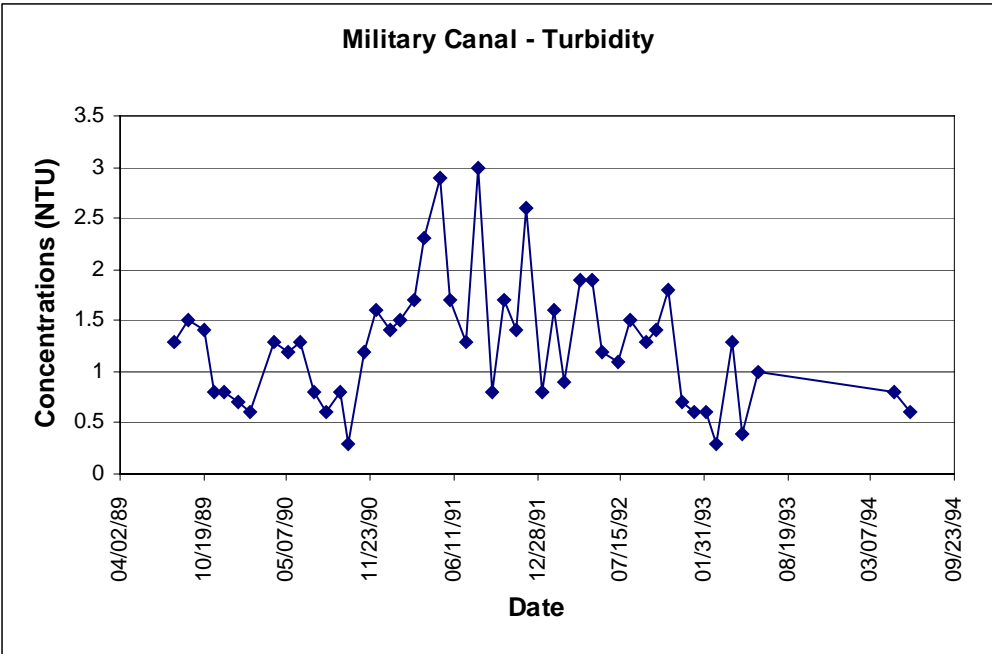
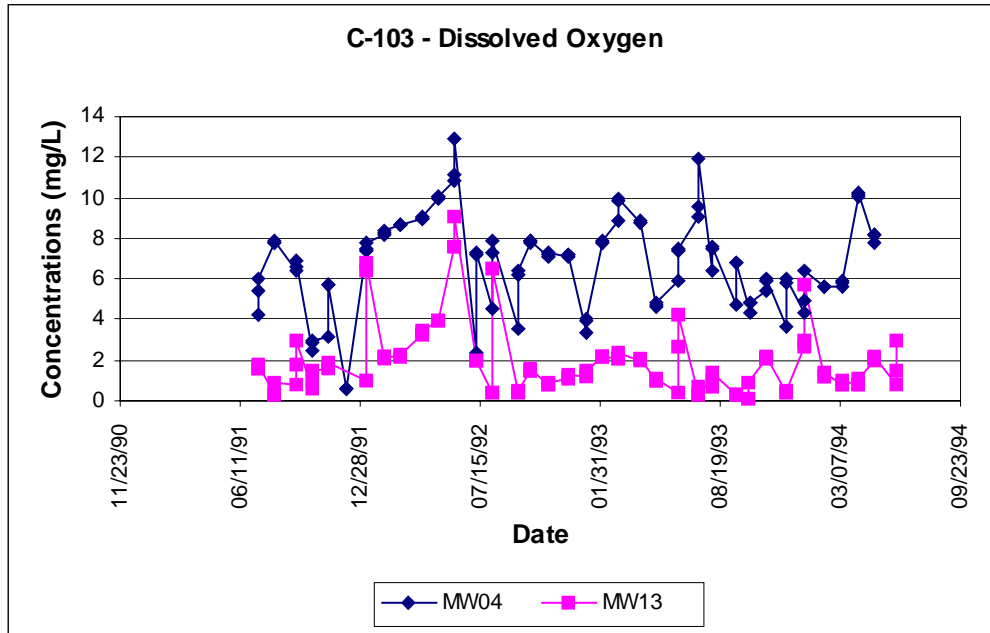


Figure., Total Phosphorus Concentrations in Military Canal



The C-103 Canal was not on the 1998 303(d) list.

According to the State’s Surface Water Quality Standards (Chapter 62-302), dissolved oxygen for this surface water should never fall below 5mg/L. For the time period from 1991 to 1994, 58% (122/210) of the samples exceeded this criteria. Figure,, illustrates dissolved oxygen concentrations over time at stations MW04 and MW13 on the C-103 Canal.



Figure,, Dissolved Oxygen Concentrations in C-103 Canal

Temporal analyses for dissolved oxygen, total phosphorus and turbidity were conducted on stations MW04 and MW13. The data was analyzed using the Seasonal Kendall Test to see if there were significant changes in the above water quality parameters during the time period 1991 to 1994.

According to this test, dissolved oxygen and total phosphorus are decreasing over time. The decrease in total phosphorus is statistically significant at the 95% confidence level.

Table Results of Trend Analyses Using the Seasonal Kendall Test

Parameter	Seasonal Kendall Test Statistic	Significant @ a=0.05	Significant @ a=0.10	Significant @ a=0.20
Dissolved Oxygen	-0.754 mg/L x year	No	No	No
Total Nitrogen	NA	NA	NA	NA
Total Phosphorus	-2.969 mg/L x year	Yes	Yes	Yes
Chlorophyll A	NA	NA	NA	NA
Turbidity	0.00 mg/L x year	No	No	No



## **gg. Homestead Drainage Basin**

### *Background*

#### *Land Use*

The land use of the Homestead Basin consists of transportation communications and utility (68%), urban/built-up (26%), agriculture (5%), upland forests (0.5%) and water (0.5%).

#### *Drainage Features*

#### *Water Quality Summary*

The segment of the Military Canal that is located in this basin was on the 1998 303(d) list for lead, cadmium and copper. It is suggested by DEP in Tallahassee that the source of these heavy metals is the Homestead Airforce Base. The development of TMDLs for these parameters is scheduled for the year 2010, according to the Consent Decree with the USEPA. No monitoring stations located in this basin.

## **hh. North Canal Drainage Basin**

### *Background*

#### *Land Use*

The land use of the North Canal Basin consists of agriculture (38%), wetlands (27%), upland forests (16%), urban/built-up (11%), water (6%), transportation communication and utilities (1%) and barren land (0.7%).

#### *Drainage Features*

#### *Water Quality Summary*

The North Canal Basin does not contain any 303(d) listed waterbodies. No monitoring stations located in this basin.

## **ii. Florida City Drainage Basin**

### *Background*

#### *Land Use*

The land use of the Florida City Basin consists of wetlands (46%), upland forests (24%), agriculture (16%), urban/built-up (7.7%), transportation communications and utility (1.3%), water (3.4%), barren land (0.5%) and rangeland (0.1%).

#### *Drainage Features*

#### *Water Quality Summary*

The Florida City Basin does not contain any 1998 303(d) listed waterbodies. No monitoring stations located in this basin.

### **3. Existing Strategies**

#### **Broward County Urban Environmental Enhancement**

The available sources and methods for distributing surface water to benefit specific wetland restoration systems are being examined in the Broward County Integrated Water Resource Plan. Local environmental demands are being assessed in terms of quantities and timing of deliveries. Once these are identified, the county and SFWMD are prepared to assess the availability of regional and alternative sources of water to meet this demand. Reservation of water will be addresses by the SFWMD, and SFWMD will encourage development of alternative sources, such as the reuse of reclaimed water.

#### **Comprehensive Water Conservation Program**

The SFWMD will develop and implement a comprehensive water conservation program to cultivate a conservation ethic in cooperation with water users, utilities, and local governments to promote water conservation and more efficient use of the water resources in the LEC Planning Area. The conservation program will incorporate continued development and compliance with water conservation ordinances, development and implementation of public education programs, use of alternative water resources, other conservation methods, and document new and existing water conservation efforts. The conservation program will encompass all uses, but should provide emphasis on the outside use of water and Xeriscape principles. This program and position will be implemented district wide and focus on urban areas and outdoor uses.

#### **Lower East Coast Regional Water Supply Plan**

The Lower East Coast Regional Water Supply Plan is a blueprint to meeting the water resource needs of a fast growing region. A technical analysis of the planning area's future water needs and the availability of water supplies indicates that extensive actions are required if a sustainable water supply will be available for the people of South Florida. Recommendations in this plan will achieve these needs. Analysis shows that the recommended projects must be built on schedule or the region will face a significant increase in the risk of water shortages.

#### **Broward County Water Supply Plan**

This document represents the first phase of a county-specific water supply planning study. Such plans are based upon data that are related to the specific needs, sources and environmental features of individual areas. The area-specific information will be evaluated in light of the goals and other directives set forth in the SFWMD Draft Water Supply Document (April 10, 1991). From this evaluation, specific conclusions and recommendations will be developed for direct implementation within the study area.