

## 2.0 DATA COMPILATION AND REVIEW

The data compilation included water quality data as well as management and geographic data on the canals. These data historically had been developed on a project by project basis that included only small sections of the Keys. The data compilation effort was performed to attempt to bring all this information together so the water quality could be addressed in a Keys-wide perspective.

The first task performed consisted of the review and compilation of information of relevance to the water quality of the Keys canals. The information was obtained from existing sources of data including:

1. CH<sub>2</sub>MHill – Wastewater Master Plan
2. CDM – Storm water Management Master Plan
3. Dames & Moore – Carrying Capacity Study
4. Florida Department of Environmental Protection
5. Florida Marine Resources Institute – Existing Analytical Data
6. Baywatch – Quarterly Reports, QAPP and Water Quality Data
7. Florida International University – Water Quality and Seagrass Monitoring Data
8. Site Characterization for the Florida Keys National Marine Sanctuary and Environs
9. Outstanding Florida Water Study
10. Local, State and Federal Databases - electronic GIS environmental and geographic data sets pertaining to the Florida Keys

Numerous other reports were reviewed and included, if relevant, in this compilation. The data obtained from each source is presented in the Final Bibliography Database provided as a separate deliverable. An electronic format of the Final Bibliography Database, dated October 19, 2001, is included on the attached CD ROM and in hard copy in **Appendix A**. The information compiled includes electronic GIS environmental and geographic data, which were incorporated into the GIS basemap projection, as well as water quality data. Extensive computer time was required to produce the final deliverable (**Figure 2-1**).



**Figure 2-1:** Development of spatial datasets using GIS from compiled information and imagery

Detailed documentation of sources of data was provided in the Bibliography. A description of summary headings tracking all of the reference information in the Bibliography is presented below.

Document Number: Assigned to each document for easy reference in a format that allows multiple layers. For example, The Wastewater Master Plan is document 001.00, and the four datasets within this plan are 001.01 through 001.04.

Document Name: The name that appears on the document, CD or file.

Date: The document date.

Originator: The name that appears on the document or if there are multiple originators, the name that appears on the dataset.

Dataset/Layer: File name of electronic data. This is only applicable for documents we have obtained in electronic format.

Description: A brief description of information in document/dataset.

Type of Data: Describes the data contained within the document/dataset.

Available Electronically: If checked, the data is available electronically.

GIS Compatible: If checked, the data is available in GIS format.

Basemap Compatible: If checked, the data projects correctly on the base map.

Source: The name of the entity that provided the document.

An additional heading has been added since the publication of the Final Bibliography Database to indicate which water quality data were incorporated into the final 100% GIS deliverable included on the attached CD ROM. A description of the additional heading is presented below. Numerous water quality data were merged into this database including the data collected from Sunset Acres (**Figure 2-2**). **Table 2-1** presents the portion of the bibliography indicating the sources of the water quality data. Refer to **Appendix A** for the full bibliography database.



**Figure 2-2:** Water quality monitoring in the Florida Keys

Water Quality Data on CD Rom: If checked, the data is included on the attached CD Rom, A check indicates that the data are only included on the monitoring station location map. If the data are also included in the water quality summaries linked to the canal systems there is also a note stating that the water quality sampling results are available electronically.

Sections 3 and 4 of this report give a detailed description of the data that were included in the GIS layers.

Table 2-1 - Water Quality Data Bibliography for Monroe County Residential Canal Study

Document Name	Date	Originator	Data Set/Layer	Description	Type of Data	Available electronically	GIS Compatible	Basemap Compatible	Water Quality Data on CD Rom	Source
Florida Keys National Marine Sanctuary, Water Quality Protection Program, Data Integration System, Version 1.0	1999	Boyer, J. N., P. Sterling, and R. D. Jones	jones	Water Quality Monitoring Project for the Florida Keys National Marine Sanctuary	Surface and bottom temp, salinity, DO, NO2, NO3, NH4+, total N, total organic N, total P, soluble reactive P, TOC, total silicate, chlorophyll a, alkaline phosphatase activity, turbidity, and light extinction at marine and coastal sampling points	√	√	√	√ WQ Sampling Results Available Electronically	Monroe County
Florida Baywatch Annual Report 1997	1997	The Nature Conservancy		Nearshore fixed station water quality monitoring, monthly aerial fly-over and algal bloom sampling, anecdotal and physical water quality parameter sampling, July 96 - June 97	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Florida Baywatch Quarterly Report - July, August, September 1997	1997	The Nature Conservancy		Nearshore fixed station water quality monitoring	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Florida Baywatch Quarterly Report - October, November, December 1997	1997	The Nature Conservancy		Nearshore fixed station water quality monitoring	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Florida Baywatch - Quarterly Report, January, February, and March 1998	1998	The Nature Conservancy		Nearshore fixed station water quality monitoring	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami

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Florida Baywatch Quarterly Report - July, August, September 1998	1998	The Nature Conservancy		Nearshore fixed station water quality monitoring	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Florida Baywatch Quarterly Report - October, November, December 1998	1998	The Nature Conservancy		Nearshore fixed station water quality monitoring	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Florida Baywatch Annual Report 1999	1999	The Nature Conservancy		Nearshore fixed station water quality monitoring, July 1998 - June 1999	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Florida Baywatch Quarterly Report - July, August, September 1999	1999	The Nature Conservancy		Nearshore fixed station water quality monitoring	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami

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Florida Baywatch Quarterly Report - January, February, March 2000	2000	The Nature Conservancy		Nearshore fixed station water quality monitoring	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Florida Baywatch Annual Report 2000	2000	The Nature Conservancy		Nearshore fixed station water quality monitoring, July 1999 - June 2000	Tide, wind/sea state, wind dir, current, current dir, rain, temp, salinity, Tot N, Tot P, chlorophyll-a, Secchi depth. Latitudes/longitudes for nearshore water quality monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	University of Miami
Baywatch Data Sets	1994-2001	Florida International University		Excel files for Baywatch data sets (Oct 94 - Apr 01).	TP, TN, and chl-a. Station numbers are provided but the locations for the stations are not.	√			√ WQ Sampling Results Available Electronically	SERC
Baywatch Data Sets	1994-2001	The Nature Conservancy		Excel files for Baywatch data sets (Jun 94 - Jul 01).	Tide, Beaufort, wind dir, current strength & dir, rain, temp, salinity, TN, TP, chla, Secchi code, Secchi depth, Secchi time, water color, station, location, type, ocean/bay. Lat/longs for monitoring stations are provided.	√			√ WQ Sampling Results Available Electronically	TNC
Florida Keys National Marine Sanctuary Water Quality Monitoring Program, 1996 Annual Report	1996	Florida International University		Water quality data for 150 stations within the FKNMS collected from Mar 95 - Oct 96	NOX, NO3, NO2, NH4, TN, TIN, TON, TP, SRP, APA, CHLA, TOC, SAL T, SAL B, DO T, DO B, TEMP T, TEMP B, TURB, KD. Lat/longs for monitoring stations are provided.				√ WQ Sampling Results Available Electronically	University of Miami

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Florida Keys National Marine Sanctuary Water Quality Monitoring Program, 1997 Annual Report	1997	Florida International University		Water quality data for 150 stations within the FKNMS collected from Mar 95 - Oct 97	NOX, NO3, NO2, NH4, TN, TIN, TON, TP, SRP, APA, CHLA, TOC, SAL T, SAL B, DO T, DO B, TEMP T, TEMP B, TURB, KD. Lat/longs for monitoring stations are provided.				√ WQ Sampling Results Available Electronically	University of Miami
Florida Keys National Marine Sanctuary Water Quality Monitoring Program, 2000 Annual Report	2000	Florida International University		Water quality data for 154 stations within the FKNMS collected from Mar 95 - Jul 00	NO3, NO2, NH4+, TON, TP, SRP, APA, CHLA, TOC, Si(OH)4, TURB, SAL, T, Kd, DOsat. Lat/longs for monitoring stations are provided. Data are georeferenced. Requested GIS files from FIU.	√			√ WQ Sampling Results Available Electronically	SERC
Proposed Designation of the Waters of the Florida Keys as Outstanding Florida Waters	3/1/85	State of Florida, Department of Environmental Regulation		Appendix C contains water quality charts for various locations including John Pennekamp Park. Appendix K contains water quality monitoring data for 81 stations along the oceanside of the Keys and 84 stations along the bayside	APP C: Turb, color, SS, SD, vcol, vcoli, DI, VDO, DO, VPH, pH, NH3, TKN, NO3, orgn, TP, CHLA, TOC (lat/long cannot be correlated). APP K: condpH, DO, cond, temp, fecal coliform, salinity, Secchi D, TKN, TP, NO3-NO2/N, NH3/N, org N, depth (no lat/long)				√	FDEP
Water Quality Assessment of Five Selected Pollutant Sources in Marathon, Florida Keys, Florida Keys Monitoring Study: 1984-1985 (205(j) Study)	July 1987	Heatwole, Douglas W.		32 water quality parameters monitoring results for 12 stations at 5 sources for a period of one year beginning Feb 84	T, pH, DO, cond, Secchi D, turb, fecal coliform, TSS, BOD, chlorophyll a, NO3, NO2, TKN, NH3, P, ortho-P, algae, tox, Cu, Fe, Hg, Zn, silt/clay frac, vol frac, petroleum cmpds. Lat/longs provided. Data in graphic format.				√	FDEP
Recommendations for Action Concerning Boot Key Harbor, Monroe County, Florida	12/7/90	Rios, Gus, David Bischof, and Steven Kent		Water quality parameters monitoring results for 12 stations at Boot Key Harbor and 2 control stations	pH, DO, cond, temp, fecal coliform, turb, chlorophyll a, TKN, TP, NO3-NO2, bioassay, sed part size & vol frac, petroleum cmpds, Cd, Cr, Cu, Pb, Hg, Zn. Lat/longs provided. Data in graphic format.				√	FDEP

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Nutrient inputs from the watershed and coastal eutrophication in the Florida Keys	1992	Lapointe, Brian E. and Mark W. Clark		Characterization of watershed nutrient inputs, transformations, and effects along a land-sea gradient stratified into four ecosystems (manmade canal systems, seagrass meadows, patch reefs, and offshore bank reefs)	Graphic SRP, DON, DIN, P data. Monitoring point locations (lat/long) have been provided.				√	Monroe County
Environmental Analysis, Canals and Quarries, Lower Florida Keys	1973	Chesher, Richard H.		Study of water quality and biological communities in man-made canals and rock quarries in the Lower Florida Keys.	Water quality data, biological parameters, and canal dimensions for Summerland Key Cove. Water quality data and biological communities established in rock quarries at Rockland Key.				√	Monroe County
Survey of water quality in waterways and canals of the Florida Keys	1973	Department of Pollution Control		Issuance of a moratorium on dredge and fill permits in order to preserve the status quo and prevent irreparable harm to the Florida Keys and the associated marine habitat. Announcement of a study of the effects of dredging and filling.	Depth, temp, DO, cond, pH, Secchi depth for 8 stations. No sampling locations provided.				√	Monroe County
Islamorada Water Quality Data	Apr-01	Village of Islamorada		Excel spreadsheets of water quality sampling results collected for					√ WQ Sampling Results Available Electronically	Village of Islamorada
Cahill Pines and Palms Canal Studies	1993, 1995 and 1996	Environmental Tactics Inc.		Water quality sampling in the Cahill Pines and Palms Canal System to document conditions	Dissolved oxygen, temperature, salinity, conductivity, turbidity, pH, ORP, chloride, ammonia, nitrate, total nitrogen, total phosphorous, coliform, metals, PAHs				√	
Draft Sunset Acres Case Study	2002	LAW Engineering and Environmental Services, Inc.		Compilation of water quality data collected from 1979 through 1999 in the canal system at Sunset Acres to evaluate the changes in water quality due to canal modifications.	Dissolved oxygen, temperature, conductivity, pH, salinity, turbidity				√ WQ Sampling Results Available Electronically	

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Finger-Fill Canal Studies, Florida North and North Carolina	1975	U.S. Environmental Protection Agency		Comparison of water quality in different canal systems	Dissolved oxygen, temperature, salinity, conductivity, pH, NH3, Total P, sulfide, metals, total and fecal coliform				√	