

***Miami River Basin Water Quality Improvement
Report***

Based on Upper Wagner Creek Pilot Program

Miami River Commission
Stormwater Subcommittee

Approved by the Miami River Commission
February 4, 2002

Miami River Basin Water Quality Improvement Report

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Executive Summary

In 1996, the former Miami River Coordinating Committee adopted the Upper Wagner Creek Water Quality Improvement Plan. At that time, water quality in Wagner Creek was among the worst in the State of Florida. The plan described a rationale for focusing resources in high priority areas such as this to be most effective. The causes of water quality degradation in the highly urban Wagner Creek basin were complicated and difficult to attack. The plan consisted of a strategic management and technical approach to locate root causes and correct them.

Less than half of the plan has been deployed, however, significant success has been documented. Several governmental organizations directed resources at the problems and took on specific tasks. Effective partnerships in this effort have been key. Water quality in Wagner Creek has improved.

Water quality has not improved to the point that experts believe the job is complete. Bacteria densities, for example, are still a major concern. Conditions, results and processes were examined to find a new set of strategic action items to improve water quality throughout the Miami River. Several opportunities were identified to improve management and direct technical resources to solutions. Thirty-three recommendations are proposed to the Miami River Commission (MRC). Recommendations fall within six categories:

Stormwater

- ⌚ New Treatment Infrastructure
- ⌚ Strategic Maintenance

Wastewater

- ⌚ Diagnostics
- ⌚ New Infrastructure

Enforcement, Compliance & Education

- ⌚ Ensure Total Compliance
- ⌚ Monitoring
- ⌚ Educational Strategies

Water Monitoring & Research

- ⌚ Systematic Monitoring
- ⌚ Diagnostics
- ⌚ Reporting

Management

- ⌚ Teamwork
- ⌚ Project Management
- ⌚ Reporting

Land Planning

- ⌚ Reporting

One model that developed out of work in the upper Wagner Creek area was the Allapattah Market Place Merchants Association. This type of organization is believed to have several potential benefits throughout the Miami River basin, if deployed widely.

To be most successful, nineteen of the recommended actions will require funding above the normal operating budgets of the agencies involved. Costs are summarized as follows:

Stormwater.....	\$15,581,600
Wastewater.....	\$900,000
Enforcement, Compliance.....	\$1,454,000
Water Monitoring & Research.....	\$255,000
Management.....	\$20,000
Land Planning.....	\$155,000
TOTAL COST.....	\$18,365,600

Funds should be directed to the organization best suited to administer a project once an approved project plan is in place. Progress reports can be provided to the MRC each month if sufficient resources are made available to administer and prepare documentation.

Acknowledgements

The Stormwater Subcommittee was established by the Miami River Coordinating Committee (MRCC) in 1994 and was co-chaired by Lundy Clarke, P.E. and Arsenio Milian, P.E. Staff support was provided by Betty Fleming, Executive Director, MRCC. The Miami River Commission (MRC), which was established by the State Legislature in 1998, maintained the Stormwater Subcommittee. Arsenio Milian continued his volunteer service, with co-chair Sallye Jude, a member of the MRC. Staff support is provided by David Miller, Managing Director, and Brett Bibeau, Assistant Managing Director of the MRC.

Regular participants in the Stormwater Subcommittee include representatives of the following government organizations: City of Miami Neighborhood Enhancement Team (NET) offices, City of Miami Public Works Department, Miami-Dade Department of Environmental Resources Management, Miami-Dade Water and Sewer Department, South Florida Water Management District, Florida Department of Environmental Protection, Florida Department of Health, Miami-Dade State Attorney's Office, and the U.S. Environmental Protection Agency. Also participating have been numerous private sector interests including the Miami River Marine Group, environmental engineering and consulting firms, local business owners, and neighborhood associations.

This report has been prepared through the collective effort of the Stormwater Subcommittee. It largely draws from a report entitled "A Water Quality Improvement Plan for: Upper Wagner Creek and Other Areas in the Miami River Basin", which was prepared by staff of the South Florida Water Management District. The Stormwater Subcommittee acknowledges the contributions of Richard Alleman, Murray Miller, and Trisha Stone to this report.

Background

Stormwater Runoff: Making the Connection

Improving water quality has been the common goal of recent Miami River advocates and state and local programs. The Miami River is the historical heart of greater Miami. Pollution in the River is associated with old drainage and sewer systems as well as the intense industrial and urban development in the vicinity of the River. Modern drainage systems provide on-site retention and treatment for most stormwater runoff to prevent pollutants from reaching the River. Old systems are gradually replaced through redevelopment and County and City drainage improvement projects. However, portions of the area that drains into the Miami River still have old positive drainage systems, which allow runoff to flow directly from street catch basins to drainage outlets on the River or overland into the River or its tributaries. Trash, litter, oil and grease, soil, fertilizers, pesticides, or other substances spilled on or applied to the ground are carried along with the stormwater runoff into the River. Studies have also documented cross-contamination of the storm drainage system with sewage from improperly connected buildings, leaking or broken sewage pipes, and backups or overflows of sewage systems during flooding. Additionally, illegal discharges and dumping also introduce pollutants into the storm sewer system.

Pollution from the stormwater system affects ecological, economic, recreational and aesthetic values of the Miami River and downstream areas of Biscayne Bay. The River and Bay are a state aquatic preserve, and provide important habitat for fisheries and wildlife, which are impacted by poor water clarity, nutrient enrichment, and potentially harmful substances, such as trace metals, in the water and sediment. Pollutants from urban stormwater runoff have contributed to the build up of contaminated silt, which limits navigation and has increased the costs of maintenance dredging. Bacteria levels exceed concentrations considered safe for recreational uses such as swimming or fishing. Litter and trash degrade the aesthetic experience of River neighborhoods and businesses. Improving stormwater quality is thus a critical link in improving not just the environmental health, but also the quality of life in waterfront communities and the economic potential of the River.

Figures 1-4 illustrate the stormwater outfall basins that are found along the Miami River. The points represent areas along the River where stormwater runoff and other pollutants enter the River from the drainage outlets.

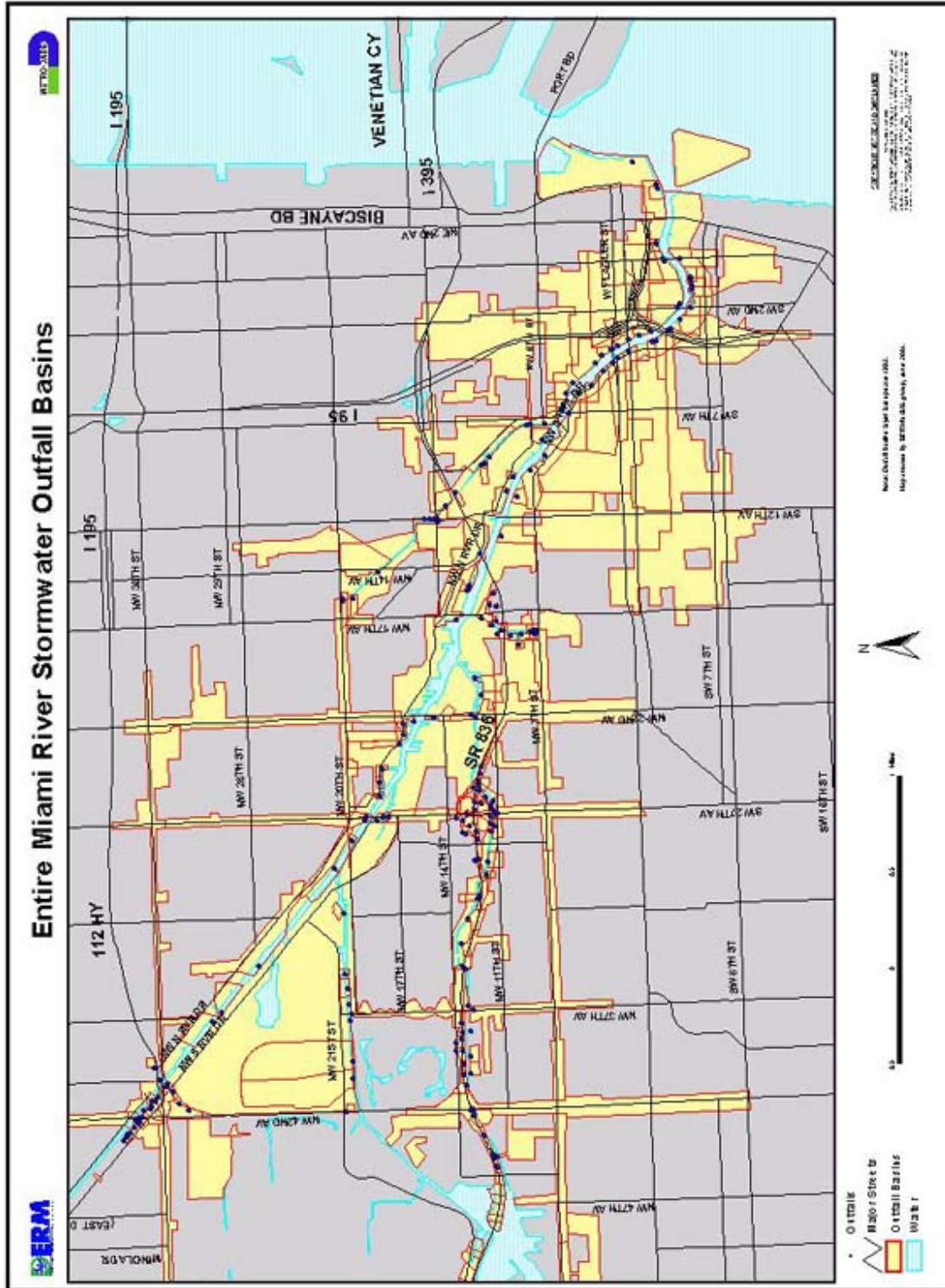


Figure 1

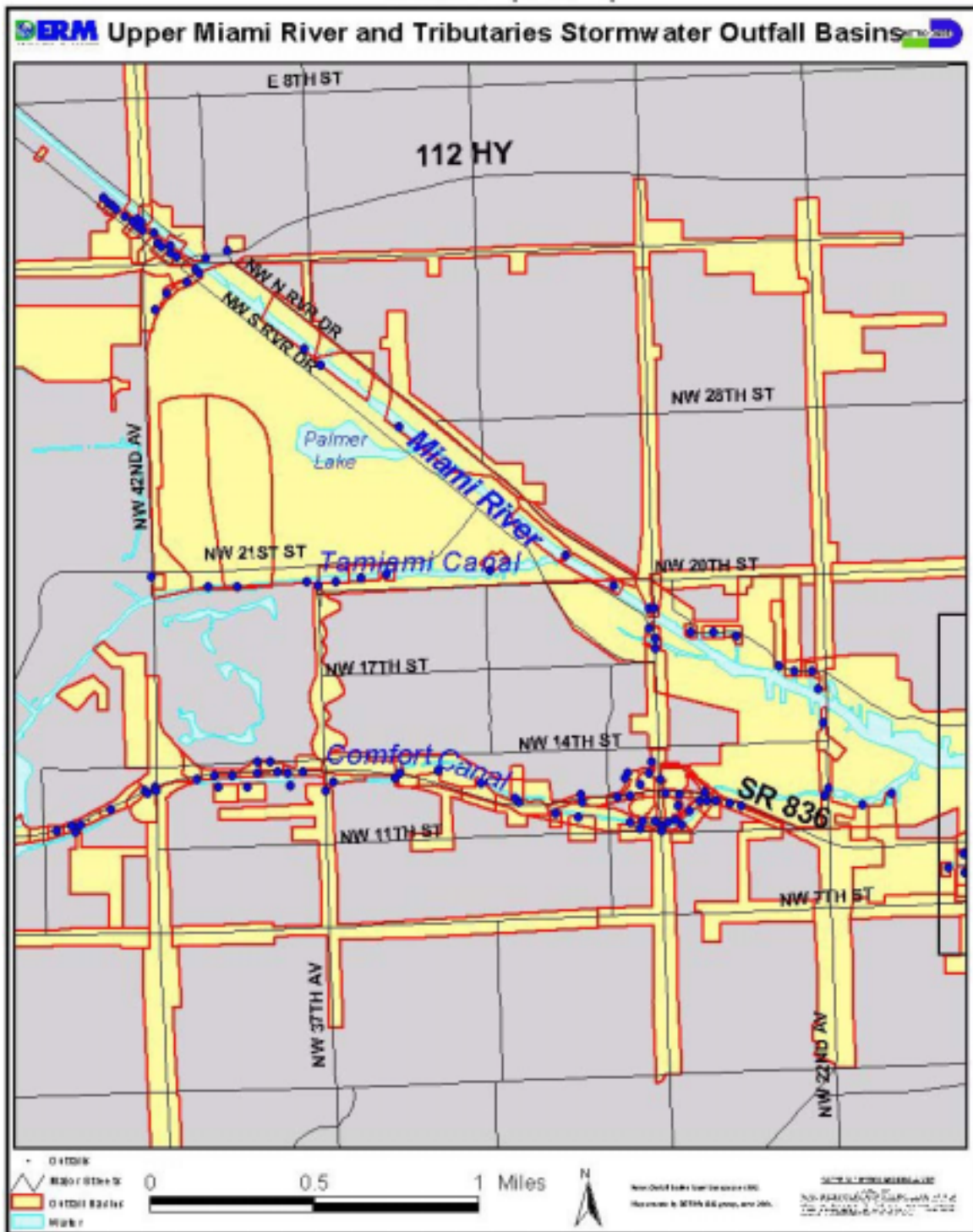


Figure 2



Figure 3

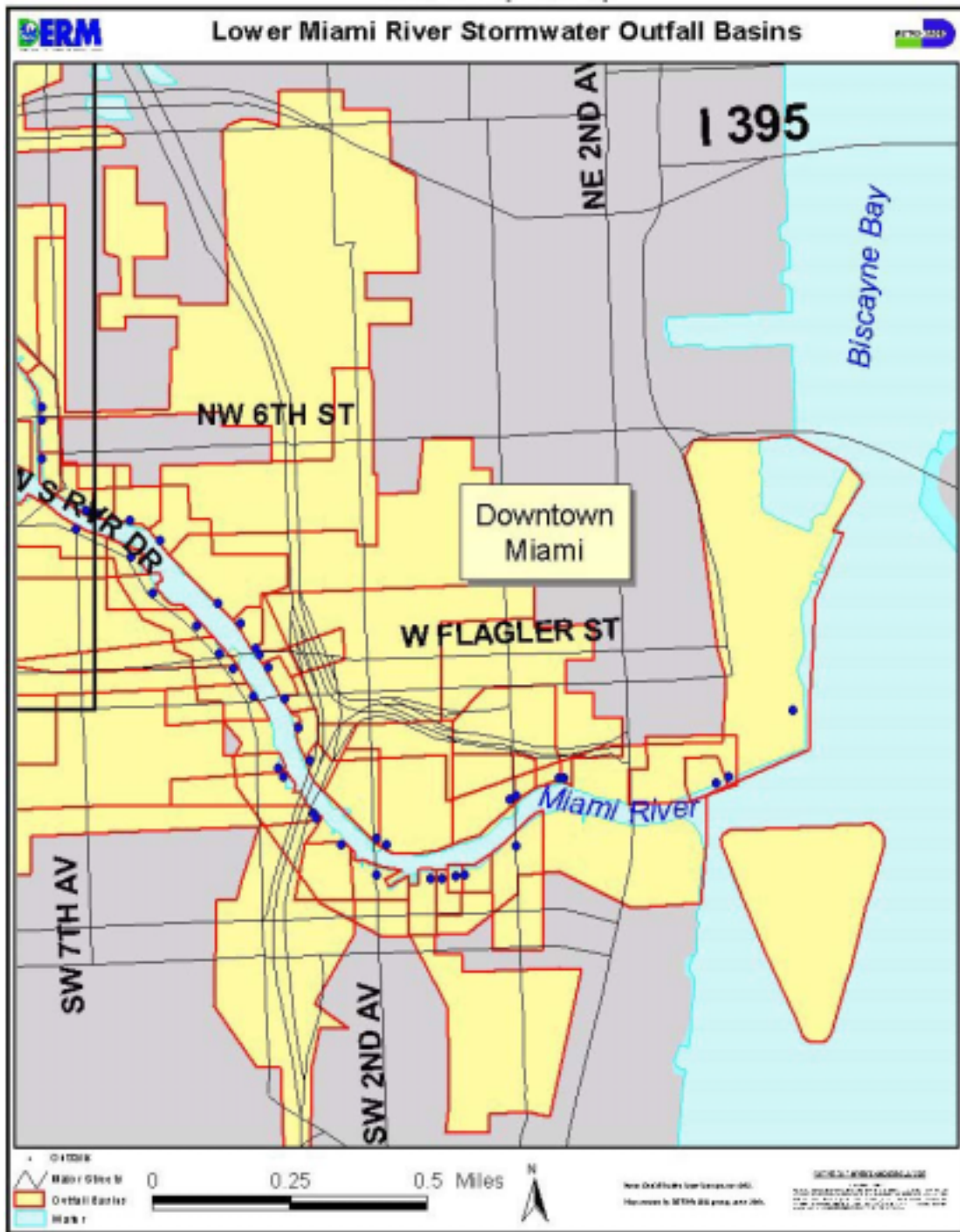


Figure 4

Taking Action

Taking action to improve stormwater quality is the responsibility of numerous government agencies, as well as the private sector. The U.S. Environmental Protection Agency (EPA) regulates stormwater discharges under the Clean Water Act. Certain industrial facilities and municipal governments are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit to discharge stormwater runoff to surface waters. The general goal of the program is to reduce pollutant loading and degradation to protect water quality of streams, lakes, rivers, and coastal waters. The EPA has delegated authority for implementing and enforcing this regulatory program to the Florida Department of Environmental Protection. The City of Miami and Miami-Dade County have implemented independent stormwater utility programs in their respective jurisdictions, in part to assure compliance with NPDES permits. Likewise, private property owners must comply with NPDES requirements and improve drainage systems to meet modern standards during development or redevelopment. Additionally, the County and City have been steadily upgrading old drainage systems, with assistance from the South Florida Water Management District (SFWMD), to improve water quality and reduce flooding. State and local agencies regulate construction of drainage systems and also conduct extensive monitoring, compliance inspections, and other investigations to identify and eliminate illegal discharges to the ground or stormwater systems. The Miami-Dade Water and Sewer Department has an extensive program to improve sanitary sewer capacity and eliminate cross-connections, which could allow raw sewage to enter the storm sewers.

Because numerous agencies are involved in activities related to stormwater quality, and because of the relationship between stormwater and economic, community, and environmental values, Miami River management committees have been actively engaged in the issue. The Miami River Coordinating Committee (MRCC), which was established by executive order of the Governor, established the Stormwater Subcommittee in 1994, co-chaired by two MRCC members and attended by representatives of state and local agencies. The Stormwater Subcommittee chose to focus their efforts on Wagner Creek, an area with the most serious water quality problems. It adopted an action plan called the Upper Wagner Creek Water Quality Improvement Plan, to improve water quality and living conditions in the upper Wagner Creek drainage basin in 1996. This action plan was a consensus-based guide for moving forward to address longstanding problems of Wagner Creek. The original goal of the plan was to transform the upper reach of Wagner Creek from an unhealthy, smelly drainage ditch, littered with trash, into an amenity, embraced by the community, increasing property values, and supporting a native Florida creek habitat with excellent water quality. The plan consisted of a system of processes and action items. It was essentially an initial attempt to establish and deploy elements of a comprehensive environmental management system that integrates basic process and project management techniques with expert technical approaches to increase the effectiveness of solving stubborn environmental problems.

The plan was not self-executing, however, and no new authority or appropriations were created. To that end, the Miami River Coordinating Committee established an

interagency Stormwater Subcommittee to coordinate effective water quality improvements within the Miami River basin.

The Miami River Commission (MRC) has since been established by the Florida Legislature, and has assumed the duties of its predecessor MRCC. The MRC has maintained the function of the Stormwater Subcommittee. The Stormwater Subcommittee has continued to emphasize Wagner Creek and has assessed progress made on tasks in the 1996 plan.

Purpose of the Stormwater Status Report

The Stormwater Subcommittee has used the Upper Wagner Creek Plan as a model for problem solving, using it as a guide to identify issues still in need of attention and successful strategies that could be applied to other parts of the Miami River. The objective of this report is to emphasize the significance of stormwater quality issues, identify opportunities for improving effectiveness of the Subcommittee's efforts, and provide specific recommendations for action to the MRC. This report also includes an itemized update of activities initiated to address the objectives of the 1996 Upper Wagner Creek plan.

To assess what has been completed, and the effectiveness of the work, documents were obtained and reviewed (see inventory list). Most of these were in the possession of the Director of the Miami River Commission. Information provided orally was used for clarification of documented activities, but anecdotal information was generally avoided. This was to assess the degree and quality of documentation, and focus on factual information.

The Appendix lists the two objectives from the 1996 plan, twelve strategies and a series of tasks that were thought at the time would be effective for achieving the goal of improving the water quality of the area. After each task is a brief commentary or clarification, and a description of how the task was addressed. Please visit www.miamirivercommission.org if you would like more information.

Summary of Results and Accomplishments

Water Quality

An impressive quantity of work has been completed that addresses one or more tasks outlined in the 1996 Upper Wagner Creek Water Quality Improvement Plan. The purpose of the plan was to improve water quality in the upper reach of Wagner Creek and to sustain the improvement. Five key water quality measures were identified in the

plan. Water quality as measured by three of these measures appears to have improved. No data were collected for the oil and grease measure, so no comparison can be made. A large gap exists in the record for suspended solids, so more data will be needed to use it as an indicator.

Pollutant concentrations appear to have been trending downward prior to 1996. The trend has continued while variability may have declined since 1996. Reduced variability suggests that some periodic causes of pollution may have been eliminated. A major assumption here is that water flows have remained about the same over time. To have better confidence in the trends, actual loading data, that is, information about water flows, are required. A more sophisticated trend analysis method could then be applied. Figures 1, 2 and 3 indicate that water quality is improving, but does not yet meet targets proposed in the 1996 plan. Coliform bacteria concentrations in the Miami River have improved in recent years in part as a result of increased capacity of the

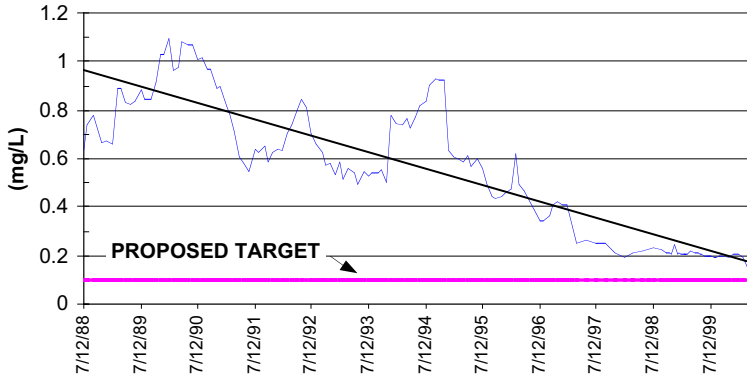


Figure 1. Twelve-month moving average of **ammonia nitrogen** concentration at monitoring station WC04.

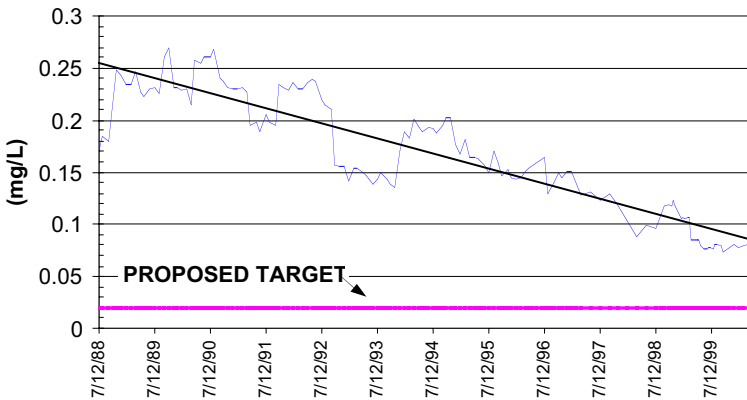


Figure 2. Twelve-month moving average of **phosphate phosphorus** concentration at monitoring station WC04.

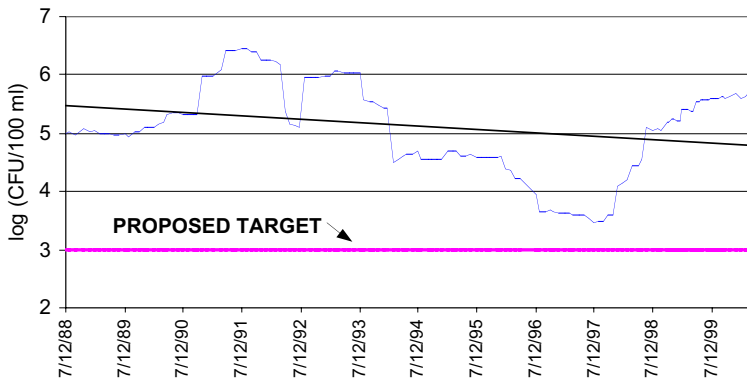


Figure 3 Twelve-month moving average of **total coliform bacteria** densities at monitoring station WC04.

sanitary sewer system. However, coliform bacteria are still at excessive levels in Upper Wagner Creek, particularly during rainy periods. This is an indication of continuing cross-contamination of the storm and sanitary sewer systems. Despite extensive efforts, local agencies have not been able to identify all sources of contamination.

Action Tasks

The 1996 plan contained 37 tasks related to storm and sanitary sewers, water quality, compliance and enforcement, education, land use, and coordination. Substantial work has been completed on 40% of the tasks. Work has been mostly completed on six tasks. Overall, tasks are most complete for the sanitary sewer improvements and enforcement. Some excellent examples of interagency cooperation and coordination are apparent and contributed to significant improvement at the Allapattah Market in solid waste management, aesthetics, public health, and neighborhood concerns. State funding was secured for intensive monitoring of the Wagner Creek system and data on additional pollutants was also collected to support development of water quality targets or performance measures. During some periods, government organizations took the plan quite seriously, and demonstrated excellent cooperation by reporting on activities and accepting specific responsibilities. Opportunities can be identified to improve some aspects of the plan and processes. Opportunities for improvement are discussed in a later section.

Opportunities for Improvement

This review and assessment of the 1996 Upper Wagner Creek Water Quality Improvement Plan is an opportunity to complete an improvement cycle for realigning goals and making the processes more effective. The following list of opportunities is not intended to be prescriptive, nor exhaustive. Items believed to be the most critical to success of the plan are listed. Recommendations are contained in the next section.

- ⌚ Reporting and participation was intermittent. A system of more automated or standardized reporting will help document progress. Defining responsibilities of participating organizations and setting performance measures should also assist in accomplishing objectives.
- ⌚ The Miami River Coordinating Committee and Miami River Commission serve as a clearinghouse for discussing stormwater management issues, but government officials with authority to allocate funding or implement recommended activities have not been an integral part of the Stormwater Subcommittee. Leaders need to be aware of barriers and opportunities to facilitate the work.
- ⌚ Four years passed before a review of the goals of the plan was undertaken, perhaps in part because of the transition from the Miami River Coordinating Committee to the Miami River Commission. An annual review should be conducted to reassess priorities and identify federal, state, and local funding needs and opportunities for partnership.

Recommendations and Discussion

A substantial degree of success has been achieved at improving environmental quality in the Upper Wagner Creek basin in the City of Miami. It is unlikely that the improvements happened by chance. Several public organizations committed resources and know-how to solve stubborn problems identified in the basin. The 1996 plan combined a system of management processes and technical approaches to direct resources effectively. The plan was imperfect and deployment was not complete, but it was a beginning. Several strategic recommendations can be identified based on a current analysis of the situation. The recommendations fall under either management processes that include practices and techniques to increase the probability of success, or technical approaches that apply tools and techniques to diagnose environmental problems or resolve them.

A large part of the success may be attributable to local NPDES stormwater permit requirements. The NPDES program has set a minimum standard for local stormwater management. Many of the actions taken under the 1996 plan were required by NPDES permits. The U.S.E.P.A., and now the Florida Department of Environmental Protection (FDEP), imposes annual compliance reporting requirements on local jurisdictions. Annual reports are an important assessment tool and guide to local performance. The report identifies both the strengths and weaknesses of the City's stormwater program and prioritizes modifications in order to improve those weaknesses. The City of Miami also works with the FDEP, Miami-Dade DERM and Miami-Dade WASD for specific functions. For example, the City of Miami has contracted the MRC to provide public education and public awareness program elements.

The Miami River Commission Stormwater Subcommittee's February 2002 "Miami River Basin Water Quality Improvement Report" has expanded the focus to address stormwater management concerns throughout the Miami River watershed, building upon experience gained in the Wagner Creek project. However, because some of the original tasks identified in the plan have not been completed and because serious water quality problems persist, it is also necessary to maintain an emphasis on the Upper Wagner Creek basin. In particular, efforts to identify and eliminate sources of sewage pollution must continue, and specific concerns, along with compliance, enforcement, and public awareness activities should be brought to the attention of existing committees and task forces that are working on Miami River issues. Examples of actions that could be applied elsewhere in the Miami River watershed are removal of on-site wastewater systems wherever they occur, exporting the Allapattah Market Place Merchants Association idea to other geographic areas where it can be beneficial, and upgrading public and private stormwater drainage systems to comply with NPDES requirements.

Many studies conducted throughout the State of Florida have documented surface water degradation caused by on-site wastewater disposal systems or septic tanks, especially when these systems are located in areas of poor soils, high groundwater elevations and close to surface waters. All of these conditions apply to properties adjacent to the Miami

River. Eliminating these systems along the Miami River should be a high priority. The expected result of this activity is an improvement of water quality in the Miami River; however, detecting a change in water quality with the existing monitoring program maintained by DERM is unlikely. Many variables affect water quality in the Miami River that cause "noise" or variation in the data. Small, isolated improvements are difficult to see, but over the long-term, the monitoring program has proven its ability to show trends from cumulative impacts.

The Allapattah Market Place Merchants Association may be useful as a model to improve involvement of business owners, education, and economics in other business neighborhoods of the Miami River basin while indirectly improving water quality. The Social and Economics Subcommittee of the Miami River Commission may want to examine how some of the concepts can be transferred, and develop an approach to locate suitable areas and partners. Organizations that have been active in the Allapattah Market area such as the City of Miami's Allapattah NET office, Miami-Dade Health Department and DERM could provide consultation to the subcommittee.

Retrofitting of stormwater drainage systems throughout the Miami River to provide on-site retention and treatment should be a priority for public and private facilities. In the past, the City of Miami and Miami-Dade County have upgraded some basins and have obtained NPDES permits for discharges into the Miami River. Remaining basins should be upgraded, with assistance from the State of Florida. Coordinated NPDES compliance inspections, such as those conducted at the Allapattah Market area, should be routinely conducted at private facilities throughout the Miami River watershed.

Action Plan

An action plan is proposed. The action plan is to be completed within a **five-year** time frame. Order does not denote level of importance. Where no cost estimate is given, costs are presumed to be included in existing agency requirements. *_Costs are equal to 1x10³*

Action Item	*Lead Agency	Total Cost	Funding Source	Funding Status				
				2002	2003	2004	2005	2006
1. Stormwater								
a. Retrofit drainage in remaining areas of Miami River starting with Pinehurst neighborhoods. TOTAL: \$1,500,000.	CoM(PW)	\$1,500	\$450 SFWMD/ \$1,050 CoM(SUF)	\$1,500	\$0	\$0	\$0	\$0
b. Little Havana Storm Sewer Rebuilding	CoM(PW)	\$54.2	CoM FY '02 Budget CIP Pr.# 352293	\$54.2	\$0	\$0	\$0	\$0
c. Allapattah Storm Sewers	CoM(PW)	\$93.4	CoM FY '02 Budget CIP Pr # 352214	\$93.4	\$0	\$0	\$0	\$0
d. Downtown Storm Sewer Rebuilding	CoM(PW)	\$1,152	CoM FY '02 Budget CIP Pr # 352291	\$1,152	\$0	\$0	\$0	\$0
e. Wagner Creek Dredging, Phase IV	CoM(PW)	\$366	CoM(SUF)	\$366	\$0	\$0	\$0	\$0
f. Wagner Creek Dredging, Phase V	CoM(PW)	\$416	CoM(SUF)	\$416	\$0	\$0	\$0	\$0
g. Install solid waste interceptors at all Miami River outfalls	CoM(PW)	\$8,000	Possibly CoM '02 CIP Budget, '02 Bond, or TIF	\$2,000	\$2,000	\$2,000	\$2,000	\$0
h. Collect, compile, analyze and report of solid waste data from catch basins	CoM(PW) MD(PW)	\$4,000	Possibly CoM(SUF) CoM FY '02 CIP Budget, '02 Bond, TIF	\$800	\$800	\$800	\$800	\$800
i. Report of on-site stormwater treatment alternatives and BMP's	CoM	-		In Kind Services of Lead Agency				
2. Wastewater								
a. Report on alternatives to find and eliminate leaking or improper laterals	WASD	-		In Kind Services of Lead Agency				
b. Eliminate septic tanks with the highest potential risk	* DoH DERM FDEP	-		In Kind Services of Lead Agency				
c. Conduct "dye flood" study	WASD CoM	\$900- \$1,050		In Kind Services of Lead Agency				
d. Maintain transmission capacity in Miami River Watershed	WASD	-		In Kind Services of Lead Agency				

Action Item	*Lead Agency	Total Cost	Funding Source	Funding Status				
				2002	2003	2004	2005	2006
3. Enforcement, compliance and education								
a. Set priorities and monitor “high risk NPDES stormwater facilities”	*FDEP EPA MRC	-		In Kind Services of Agencies				
b. Conduct periodic NPDES permit compliance inspections to include public and private facilities	*FDEP EPA DERM	-		In Kind Services of Agencies				
c. Implement active inspection of sanitary sewer connections and stormwater drainage during construction	*CoM DERM WASD			In Kind Services of Agencies				
d. Achieve compliance with all permits that may affect water quality <ul style="list-style-type: none"> ▪ Hazardous Waste ▪ Underground Storage ▪ Sewage Overflows ▪ Solid Waste ▪ Industrial Waste ▪ Dumping and Littering ▪ NPDES Stormwater Permits 	*FDEP DERM EPA	-		In Kind Services of Agencies				
e. Continue surveillance and inspections	DERM	\$75	DERM	\$15	\$15	\$15	\$15	\$15
f. Provide Environmental Education	*SSC MRC,EEP SFWMD	\$50	MRC and FYN grant awards	\$10	\$10	\$10	\$10	\$10
g. Point Park Environmental Center	*SGCA CoM TPL MRC	\$1,329	MDC/ State of Florida/ CDBG	\$1,329	\$0	\$0	\$0	\$0
4. Monitoring and Research								
a. Continue monthly monitoring for water quality of Wagner Creek, Miami River, and adjoining Biscayne Bay	DERM	\$180	State of Florida	\$36	\$36	\$36	\$36	\$36
b. Complete special studies required under NPDES	CoM	-		In Kind Services of Lead Agency				
c. Extend the stormwater bacterial survey farther upstream	*DERM CoM WASD	\$35	CoM(SUF)	\$0	\$35	\$0	\$0	\$0
d. Research to determine the source of <i>Escherichia coli</i> bacteria in Wagner Creek	SFWMD DERM	\$35	FL Leg.	\$0	\$35	\$0	\$0	\$0
e. Generate “user-friendly” water quality reports for the Miami River and Wagner Creek	*SSC DERM	\$5	MRC (grant award)	\$0	\$5	\$0	\$0	\$0
f. Finalize water quality targets for key parameters	DERM SFWMD FDEP	-		In Kind Services of Agencies				

Action Item	*Lead Agency	Total Cost	Funding Source	Funding Status				
				2002	2003	2004	2005	2006
5. Management								
a. Enhance the authority and leadership role of the Stormwater Subcommittee	MRC	-		In Kind Services of Lead Agency				
b. Identify specific action tasks and responsible parties	SSC	-		In Kind Services of Lead Agency				
c. Integrate stormwater management goals and Upper Wagner Creek tasks and objectives into the activities of related Miami River committees	SSC	-		In Kind Services of Lead Agency				
d. Establish standardized water quality tracking for key characteristics	DERM	-		In Kind Services of Lead Agency				
e. Standardize reporting format and publish results regularly	SSC	\$10	MRC (grant awards)	\$2	\$2	\$2	\$2	\$2
f. Conduct an annual evaluation and "report card"	SSC	\$10	MRC (grant awards)	\$2	\$2	\$2	\$2	\$2
6. Land Planning								
a. Report on "green" overlay with current and expected level of commitment	MRC	\$155	DCA \$50/ MDC \$50/ EZ \$25/ EPA \$20/ MRC \$10	\$155	\$0	\$0	\$0	\$0
TOTAL	\$18,365							

CFABSF	Citizens for a Better South Florida
CoM	City of Miami
CoM(PW)	City of Miami Public Works
CoM(SUF)	City of Miami Stormwater Utility Fund
DERM	Miami Dade Department of Environmental Resources Management
DCA	Department of Community Affairs
DoH	Department of Health
EEP	Environmental Education Providers
EPA	Environmental Protection Agency
EZ	Empowerment Trust
FDEP	Florida Department of Environmental Protection
MDC	Miami-Dade County
MD(PW)	Miami Dade Public Works
MRC	Miami River Commission
SFWMD	South Florida Water Management District
SGCA	Spring Garden Civic Association
SSC	Stormwater Subcommittee
TPL	Trust for Public Land
WASD	Miami Dade Water and Sewer Department

Unallocated City of Miami Revenue Accounts in the FY 2002 Capital Budget contain available funding for Stormwater and Sanitary Sewer Systems.

The City of Miami FY 2002 Budget, Page 143, states, “Capital Budget: Summary of Unallocated Funds in Revenue Accounts as of 6-29-01. Unallocated funds in revenue accounts are Capital Fund Resources which have not been appropriated to any capital projects.” The “purpose” of the following projects is listed as, “Construction of Sanitary Sewers, pumping stations, outlets, culverts, other local drainage facilities, resurfacing of damaged streets and sidewalks, acquisition of any necessary land.”

<u>Project Number</u>	<u>Description</u>	<u>Unallocated Funds</u>
37110	1995 Sanitary Sewer Bonds	\$19,861,966
399001	1976 and 1978 Storm Sewer Bonds	\$4,790,474
355001	1988 Sanitary Sewer Bonds	\$278,464
370100	1991 Sanitary Sewer Bonds	\$102,133
355002	Interest on 1998 Sanitary Sewer Bonds	\$85,966
366001	Interest on 1997 Sanitary Sewer Bonds	\$12,299

The City of Miami FY 2002 Budget, Page 143, “Capital Budget: Summary of Unallocated Funds in Revenue Accounts as of 6-29-01.” states the purpose of the following projects is, “Expansion of existing storm drainage; Pollution abatement devices constructed on stormwater systems.”

<u>Project Number</u>	<u>Description</u>	<u>Unallocated Funds</u>
360001	Stormwater Utility Trust Fund	\$1,128,572
360002	Interest on Stormwater	\$622,331

The City of Miami FY 2002 Budget, Page 143, “Capital Budget: Summary of Unallocated Funds in Revenue Accounts as of 6-29-01.” states the purpose of the following projects is “Sanitary Sewer System Improvements”.

<u>Project Number</u>	<u>Description</u>	<u>Unallocated Funds</u>
366002	1988 Sanitary Sewer Bonds	\$44,519

Environmental Recommendations

1. Stormwater Infrastructure

- A. **Retrofit** the remaining drainage areas within the Miami River watershed, including the Upper Wagner Creek area, with stormwater quality treatment. The Pinehurst neighborhood retrofit project should be started immediately. The Pinehurst retrofit was ranked high in the City of Miami's master plan update, and is within the Upper Wagner Creek basin. Since it usually takes from two to three years to complete a project like this, the activities will extend beyond the first year. Total project cost is estimated at \$1,500,000. Estimated three-year cost share is \$750,000. The South Florida Water Management District has \$450,000 in matching funds for this City of Miami Stormwater project. The State of Florida should continue to provide matching funds for stormwater system improvements in the Miami River watershed to encourage the City of Miami to give these projects higher priority in the stormwater program.
- B. **Little Havana Storm Sewer Rebuilding.** The approved City of Miami FY 2002 Budget, pg. 142, "Capital Budget, Fund 352, Storm Sewers" has \$54,201 available, from 6/29/01 thru 9/30/02, under project #352293.
- C. **Allapattah Storm Sewers.** The approved City of Miami FY 2002 Budget, pg. 142, "Capital Budget, Fund 352, Storm Sewers" has \$93,400 available, from 6/29/01 thru 9/30/02, under project #352214.
- D. **Downtown Storm Sewer Rebuilding.** The approved City of Miami FY 2002 Budget, pg. 142, "Capital Budget, Fund 352, Storm Sewers" has \$1,152,921 available, from 6/29/01 thru 9/30/02, under project #352291.
- E. **Wagner Creek dredging Phase IV.** The City of Miami has contracted a consultant to engineer the dredging of Wagner Creek, between 12th and 14th Ave. Wagner Creek dredging Phase IV costs \$366,000.
- F. **Wagner Creek dredging Phase V.** The City of Miami has contracted a consultant to engineer the dredging of Wagner Creek between 12th Ave and the Seybold canal (approximately parallel to NW 8th Street). Wagner Creek dredging Phase V costs \$416,000.
- G. **Install a device that intercepts solid waste** before water emerges from the Upper Wagner Creek box culvert. While the quantity of solid wastes on the streets may have been reduced, it is likely that some will always get into the storm drains. To keep the wastes out of the Miami River and lower long-term maintenance costs, the Stormwater subcommittee recommends the installation of devices that intercept and hold solid wastes, so that the waste may be collected and eliminated. This is a good "best management" practice, which would be a great benefit to the River's water quality.

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- H. **Collect, compile and analyze data regarding solid waste** accumulation in catch basins to increase the effectiveness of the City of Miami's maintenance program. The maintenance program is currently designed to clean out all catch basins on a regular schedule. The installation of solid waste interceptor devices, (Action Item “1, F”) will require an increased maintenance program to empty the solid debris collected by the proposed solid waste interceptors. This will reduce the quantity of solid waste in the Miami River. The estimated cost for collecting the solid waste is \$800,000 per year.
- I. **Report to the MRC on alternatives** and BMP's for on-site treatment of stormwater runoff from private property. New developments and redevelopment trigger implementation of current standards to protect water quality. The NPDES program has targeted a limited number of specific land use types in the upper Wagner Creek basin such as produce packers, certain industries, and public right-of-way. However, much of the existing development in the basin was constructed prior to requirements for on-site treatment of stormwater runoff. Increasing the amount of runoff treated on-site reduces the burden for public facilities and should reduce the intensity of runoff. A feasibility report to the MRC should explain and rank all possible alternatives that can increase on-site treatment of stormwater runoff in the Upper Wagner Creek basin.

2. Wastewater Infrastructure

- A. **Report to the MRC on alternatives to find and eliminate leaking or improper laterals.** Much work has been completed to locate and eliminate connections to the sanitary sewer system that were illegal or leaking. Since coliform bacteria levels remain relatively high in Wagner Creek, although obvious problems with the sanitary sewer mains have been fixed, degraded laterals are still suspect. Evaluated alternatives should include some type of certification from property owners that their sewer connections are sound. Plumbing permits could indicate those that have not been replaced recently. WASD is planning a comprehensive countywide pilot study to evaluate alternatives for a lateral evaluation and repair program. Currently this study is in the planning stage, and must be approved by the United States Environmental Protection Agency (USEPA), as part of the Peak Flow Study.
- B. **Eliminate septic tanks** near the Miami River with the highest potential risk. On-site wastewater disposal systems (septic tanks) are still in use in some areas adjacent to the Miami River. While none of these occurs within the Upper Wagner Creek basin, eliminating these systems is a high priority. Many studies throughout the State of Florida have documented surface water quality degradation from nearby on-site wastewater treatment systems.
- C. **Conduct “dye flood” study.** Since 1992, the Miami-Dade Water and Sewer Department (WASD) has been involved in an investigation in order to determine the location of illegal connections between the storm water and sanitary sewer systems.

To date, WASD smoke tested 100% of the sewer collection system and identified 115 illegal connections. Through enforcement actions, these connections have been disconnected. By utilizing dye flooding we have identified a small number of illegal connections (via p-traps), which make these connections impossible to detect through smoke testing.

The “Dye-Flood” procedure involves the flooding of stormwater inlets and catch basins with dye water, while an observer monitors the adjacent down stream sanitary sewer manhole to determine if dye has been transferred from the storm water system into the sanitary sewer system. If dye water is observed, this process has proved that dye has found its way into the sanitary sewer system. A closed circuit television camera is then installed in the sanitary sewer line in order to establish the point of entry. And finally, this information is documented and forwarded to the Department of Environmental Resources Management (DERM) for

c o r r e c t i v e a c t i o n .

We suspect there are still many storm/sanitary sewer connections that have not yet been located. Therefore, we are proposing a comprehensive evaluation of the entire Miami River watershed. The cost of a dye flood study is approximately \$35,000 per square mile, estimating 40 to 45 crew days. Therefore the 25 –30 square mile Miami River watershed would cost approximately \$900,000 - \$1,050,000 and will require between 840 -1,260 crew days to complete.

D. Continue to improve transmission capacity in Miami River Watershed.

WASD will continue its I/E/I program. This program provides for the evaluation of the sewer collection system by video review, smoke testing and visual inspection on a 10- year cycle. Any defects identified during the evaluation will be repaired. Future work has not been defined, as repairs from the previous evaluation have just been completed. Any future evaluation and resulting repairs will be funded by WASD.

WASD also monitors pump station performance on a countywide basis. Currently, all pump stations with the Miami River Watershed are in compliance, so there are no pending repairs. Any future pump station upgrades required to comply with the Consent Decree will be the responsibility of a developer, or by WASD, if there is no pending development.

3. Enforcement, Compliance and Education

- A. **Prioritize and monitor “high risk industrial facilities”.** Some facilities are discharging into the City of Miami's public infrastructure. The activity is a significant NPDES stormwater permit non-compliance issue.
- B. **Conduct periodic NPDES compliance inspections throughout the entire Miami River watershed,** to include public and private facilities required to have permits. This should be followed by regular reports on the rate of compliance and status of any resulting enforcement actions.

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- C. Implement active inspection of sanitary sewer connections and stormwater drainage infrastructure during the construction period.** As the Miami River Corridor continues through this phase of development on vacant land, and redevelopment of older structures, it is critical to regularly inspect the sanitary sewer connections, and stormwater drainage infrastructure, during construction. WASD inspects the public side of the sanitary sewer system, City or County inspects the private side, DERM inspects the stormwater system hookups.
- D. Achieve compliance with all permits** that may affect water quality. Some NPDES and grease trap permits were out of compliance. Several other environmental violations in the basin were documented. Setting a goal for a high compliance rate and tracking results will help indicate effectiveness of educational and compliance programs.
- E. Continue surveillance and inspections,** and improve centralized documentation and reporting of enforcement activities. Coordinated, continuous compliance surveillance and monitoring will ensure preservation of gains achieved, and should be designed to detect and correct deficiencies before they can cause serious water quality problems. Estimated annual cost is \$15,000.
- F. Provide Environmental Education-** The Miami River Commission, in conjunction with the Stormwater Subcommittee (SSC), and the Environmental Education Providers (EEP), (including its numerous agencies such as Florida Yards and Neighborhoods, Citizens for a Better South Florida, Officer Snook Water Pollution Program, etc.) will provide environmental education. The environmental education programs will include Miami River boat tours, environmentally safe gardening practices in the East Little Havana Riverside Garden and Spring Garden Point Park, environmental education workshops and events such as the annual Miami Riverday festival, flyers, and web-sites.
- G. Point Park Environmental Center.** SGCA, the Miami River Commission and the Trust for Public Land have created the Spring Garden Point Park at the confluence of Wagner Creek and the Miami River. This Park is designed to be a major environmental, historic and ecological education center, involving citizenry, students at nearby schools, and the general public in understanding the environmental issues of the Miami River and Wagner Creek. SGCA is raising the funds, with significant help by the Miami River Commission, to make this facility a major educational interpretive center on the River for environmental issues. So far, the SGCA, the Miami River Commission, and the Trust for Public Land have raised over \$1 million dollars to support this environmental education project.

4. Monitoring and Research

- A. The State of Florida should continue to provide funding for monthly water quality monitoring** of Wagner Creek, the Miami River, and adjoining portions of Biscayne Bay. The outfall near N.W. 20th Street should be included in monthly sampling and oil & grease and flow monitoring should be added. Water quality will continue to be the key measure of success. These activities are necessary

to detect change and to measure effectiveness of management strategies in protecting the River and Bay from point and nonpoint source discharges in the Wagner Creek watershed. Flow estimates are needed to calculate pollutant loading. There are currently eight water quality stations to test in the River. The current monthly frequency of sample collection should be adequate to compare to historical data. Estimated cost of routine sampling is \$10,000 annually. Additional funding is required to measure flow.

- B. Conclude special studies required or suggested under NPDES** and ensure that the implications for stormwater management are incorporated into implementation strategies. Some uncertainties still exist about items such as pollutant removal rates and soil infiltration rates. Obtaining this information and utilizing it strategically could increase the efficiency of the City of Miami's stormwater management system.
- C. Extend the storm sewer survey** for bacterial contamination farther upstream into the basin. A carefully designed and systematic monitoring program to determine bacterial concentrations in the stormwater system within the upper Wagner Creek basin may reveal geographical hotspots. Locating hotspots of contamination can make the search for sources more efficient. The results should be managed within a geographic information system. Estimated cost is \$35,000.
- D. Determine the source of *Escherichia coli* bacteria** through advanced techniques, or conduct surveys for pathogens in the surface water of Wagner Creek. Continued high concentrations of coliform bacteria in the surface waters of Wagner Creek seem to suggest contamination from human derived fecal matter, but that is not necessarily true. Organic wastes can also be a source of coliform bacteria. To ensure that resources are used to find and eliminate the primary problems, obtaining information about the likely sources of the bacteria are needed. DNA testing can sometime be useful in demonstrating if bacteria are derived from human feces. Examining the presence and densities of enterococcus or of specific pathogens can also provide clues about sources. It may also be possible that a careful analysis of the existing data could yield some clues about relationships of rainfall events to densities. Estimated cost is \$35,000.
- E. Generate user-friendly water quality reports for the Miami River and Wagner Creek.** Water quality results are the primary means of determining success for this project. Currently, data are maintained in standardized, electronic spreadsheet formats and reported to state and federal agencies. Although the data are public record and are available, they could be reported in a graphic or map format that is more accessible and easy to understand. A system that provides monthly updates displayed in a way that is easily interpreted would be ideal to keep leaders informed. While graphs could be generated manually each month, it would be more efficient to have this largely automated. Some computer programming and other procedures would need to be completed by a public employee or a consultant. Estimated cost is \$5,000.

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- F. **Water quality targets should be finalized for key parameters.** Targets have already been proposed for nutrients and bacteria. Pending collection and analysis of additional data, targets could also be established for additional parameters of interest. It is recommended that targets be developed that are protective of downstream waters.

Management Recommendations

Management recommendations are intended to address opportunities for improvement listed in a previous section. The items address leadership and process management.

5. Management

- A. **Enhance the authority and leadership role of the Stormwater Subcommittee.** The effectiveness of the group could be improved by participation of leaders from key agencies and from the Miami River Commission. Participants must include decision makers, or staff with access to decision makers, so that priority tasks can be identified and implemented, and impediments to progress can be removed. It is recommended that the subcommittee include two members of the Miami River Commission, senior staff from the City of Miami, South Florida Water Management District (SFWMD), Miami-Dade County, Department of Environmental Resource Management (DERM), Environmental Protection Agency (EPA), and the Florida Department of Environmental Protection (FDEP). Participation should be recorded and reflected in an annual report.
- B. **Identify and track specific action tasks and responsible parties.** The Stormwater Subcommittee should define specific objectives and tasks required to achieve objectives. This could include short-term actions, such as reports for upcoming meetings, or longer-term projects such as construction of improvements to sewer infrastructure or collection of monitoring data. Specific deliverables or milestones should be defined, along with projected timelines for completion. Lead agency or responsible party should be identified and made accountable for written tracking of the task.
- C. **Integrate stormwater management goals and Upper Wagner Creek tasks and objectives into the activities of related Miami River committees.** There are a number of existing committees, such as the Quality of Life Working Group, the Greenway Subcommittee, which bring together agencies and representatives of the community that can address Wagner Creek and stormwater tasks through their ongoing programs. Incorporating relevant tasks and reports into these committee activities should help promote awareness, improve coordination, and reduce duplication. It would also raise the profile of Wagner Creek with leaders of public and private organizations and take advantage of recognition and leadership already generated by the Miami River Commission.

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- D. Establish standardized water quality tracking for key characteristics.** Monthly monitoring results for the Miami River watershed should be reported in an easy to read graphical format that is automatically updated as soon as results are available and verified for quality assurance. The tracking report should compare the results to water quality criteria or agreed upon targets. Targets have already been suggested for nutrients and for bacteria. As additional targets are established, results for these parameters could be added to the standardized report.
- E. Standardize reporting format and publish results regularly.** A standardized reporting form should be developed for each specific task or objective identified. Lead agency or responsible party should complete the report, which should be maintained in an electronic database, or automated tracking system. The results of project performance and water quality should be available through a variety of channels for stakeholders and leaders to see. They could be posted on the MRC web site, distributed at regular MRC meetings, or contained in regular newsletters or summary reports that are distributed to top leadership in participating organizations and interested stakeholders. Outstanding accomplishments could be highlighted.
- F. Conduct an annual evaluation and “report card”.** To ensure that activities remain aligned and resources are allocated to priority issues, the process of evaluating performance and developing new action plans should be completed annually. This should be synchronized to be completed when information is needed for State and local fiscal planning. The evaluation should rely on documented results. Key performance measures (e.g. rate of compliance with permits) could serve as the basis for a “grade” on the “report card”. Upper Wagner Creek should have its own section on the report card. Participation or attendance of committee members could be included in the report card. Estimated annual cost to prepare a report is \$2,000.

6. Land Planning

In response to the State Legislature’s 2000 Miami River Improvement Act request to create a Miami River Corridor Urban Infill Plan, the City and County entered into a Joint Planning Agreement. The “Miami River Corridor Plan: An Urban Infill Planning Initiative” will address the environment, green space, housing, crime prevention, education, transportation and commerce. A professional Planning Firm was contracted to assist the City and County in their Urban Infill Planning efforts. The planning process includes 9 public planning workshops. The Urban Infill Plan was funded by several grant awards in 2001.

Appendix

(The following appendix is a status report of the Tasks set forth in the 1996 Upper Wagner Creek Water Quality Improvement Plan.)

Objective 1: Improve water quality in upper Wagner Creek to meet water quality standards and protect biological resources in the Creek, Miami River and Biscayne Bay, and prevent accumulation of sediments in the Miami River.

Strategy 1.1 Sewage Infrastructure

Implement a sewage infrastructure improvement program.

Task 1.1.A

Complete a comprehensive inspection program for each parcel consisting of on site compliance audits with testing and visual inspection of all stormwater and sanitary piping.

This task can be broken down into three activities: Finding and eliminating sewage contamination from individual properties, locating and correcting illicit connections to the stormwater conveyance system, and finding and eliminating leaks from the wastewater collection system. Based upon enforcement activities before or during 1996, it was thought that illegal or accidental plumbing practices might be causing sanitary wastes to enter stormwater systems directly or indirectly. Systematic inspection and testing of plumbing on each property would identify cross connections, and existing regulations could be used to require repairs. In addition, the state of the public owned wastewater collection system was not documented. Cracks and holes in pipes or manholes could be either allowing stormwater or groundwater to enter the collection system overloading it, or allowing wastewater to escape.

Status

Several businesses in the area of Wagner Creek were found to be out of compliance with the County's grease trap ordinance. Most of these problems have yet to be corrected. Excessive grease in the collection system can cause blockages and result in overflows. Miami-Dade Water and Sewer Department has reported that, between the period from November 1994 to November 1995, there were four overflows at Pump Station No. 54 related to blockages. No blockages have occurred at the Pump Station No. 54 Basin after November 1995, as evidenced by the fact that there have been no sanitary sewer overflows after that date.

The box culvert containing Upper Wagner Creek north of N.W. 20th Street was inspected, and in 1997, an interagency inspection task force found 12 to 14 illicit connections to the stormwater system. All of these have been corrected.

An extensive inspection and repair program has been completed to date for the central wastewater collection system. This portion of the task is nearing 100% completion. All pipes and manholes have been inspected and most have been repaired. Good documentation exists.

Task 1.1.B

Increase conveyance capacity in the sanitary basins. Prepare a complete implementation plan for the necessary downstream improvements.

In 1996, much of the sanitary sewer system in this area of the Miami River was stressed. Demand was exceeding capacity. Improvements in an upstream area, like Upper Wagner Creek, could not be performed until capacity was increased downstream. When demand was close to or exceeded capacity, overflows and exfiltration incidence increased, leading to contamination of stormwater systems and surface waters.

Status

Pumping capacity is adequate at this time. Pumping capacity was increased at one location (Pump Station No. 1) not previously identified in this plan, but known to be serving part of the Upper Wagner Creek basin. Capacity at Pump Station No. 54 has not changed, but operational changes during peak loads are adequate to eliminate potential overflows based on an 18-hour criterion. Records indicate that the average volume pumped at No. 54 has remained approximately the same since 1996. Overflows within the Miami River area have occurred nineteen (19) times since 1996, but none of these were located within Upper Wagner Creek area.

Several downstream improvements to improve capacity have been implemented. The improvements are adequate at this time, since the incidence of overflows in the upper Wagner Creek basin has been minimized.

The criteria for implementation of the improvements to the conveyance system are described in detail in Paragraph 16.C of the First Partial Consent Decree (FPCD). Each pump station must achieve a specific operating level or will be considered inadequate, requiring an upgrade for additional conveyance capacity.

Task 1.1.C

Decrease the rate of sanitary sewage flows in Basin No. 54, by identifying large users of water and promoting water conservation and use of water saving devices. Review municipal ordinances governing water conservation and recommend any changes.

Pump station No. 54 serves much of the Upper Wagner Creek area. It was noted in 1996 that the pump was running most of the day on the average indicating that

wastes were accumulating within the collection system during peak times. This situation was thought to potentially contribute to exfiltration of sewage leading to contamination of the stormwater system. One way to decrease demand on the pump was to reduce inflows by identifying large water users and working with them to conserve, thus decreasing the volume of wastewater stored in the collection system.

Status

No large users of water could be identified, however one organization (the Miami-Dade Community Action Agency) was to work with low-income residents to promote water conservation. An existing County water conservation ordinance will result in reduced wastewater flows over time. No estimate of potential flow reduction by conservation is available, however, flows have been reduced by an estimated 3,000 gallons per minute by eliminating groundwater infiltration caused by cracks and holes in the sewer collection system. It is not known if the Miami-Dade Community Action Agency has a timeline for conservation activities or performance measures.

Task 1.1.D

*Complete and maintain a status tracking matrix of Tasks 1.1.A-C.
Recommend future projects and funding.*

A project team consisting of wastewater experts was to create a project plan that included a timeline, milestones, and performance measures. Ideally, this would be maintained in project management software that could be easily managed. The team was to provide annual recommendations to funding entities for projects or activities necessary to achieve objectives of the plan.

Status

Miami-Dade Water and Sewer Department (MDWASD) continues to track pump station conveyance adequacy with regards to the Wagner Creek area. If pump stations require upgrading, a fund has been established to provide for this on-going work. Additionally, MDWASD maintains a database to track collection system performance and this information provides the basis for continuing upgrades. A fund has been established for this work.

Strategy 1.2 Compliance and Enforcement

Implement a comprehensive compliance and enforcement program.

Task 1.2.A

Conduct a comprehensive, pollution control inspection program on each parcel and street within the Target Area. This will be coordinated with the sewage and pipe inspection program.

In addition to plumbing anomalies that were thought to be causing pollution, poor housekeeping and stormwater management practices were thought to be contributing to water quality problems. Thorough inspections by trained law enforcers were to identify noncompliance and improvements for individual property owners.

Status

Much work to date has focused on businesses within an area called the Allapattah market and produce area. One reference indicated that this area was responsible for causing 90% of the pollution to Upper Wagner Creek. Confirmation of this could not be found. Work to clean up and improve compliance in the Allapattah market area has been extensive by many government organizations.

The U.S. Environmental Protection Agency (U.S.E.P.A.) targeted the Allapattah market area for compliance with the National Pollution Elimination System (NPDES) program in 1996. The permit program is intended to require minimum treatment for stormwater runoff. Representatives from the City of Miami, Miami-Dade DERM, Florida Department of Environmental Protection, and the E.P.A. inspected a total of 24 properties in April 1996. Most of the businesses have complied. Another task force led by the Florida Department of Health targeted the Allapattah market area. Consequently, significant improvements in reducing solid wastes were reported, and a railroad right-of-way was cleaned and fenced. This effort also led to regular clean-up activities led by the City of Miami's NET office.

An enforcement sweep, including 65 businesses within the Upper Wagner Creek basin, was conducted in 1997. Many violations were documented. Most of the businesses have apparently complied, but it is not clear exactly how many. Since 1997, other commercial facilities as well as residential properties along Wagner Creek have been inspected by DERM to verify compliance with pollution control laws. As part of the effort to identify potential sources of sewage contamination, a characteristic subset of large multifamily properties was inspected and dye-tested, to confirm connection to sanitary sewer systems. DERM and WASD also performed inspections in various areas of the watershed to verify the extent of sanitary sewers and accuracy of sewer atlases, and samples have been collected from the storm drainage system. These inspections confirmed that sanitary sewers are present throughout the area. There was no indication that there are

any significant unsewered areas in the watershed that could account for surface water contamination (although the possibility of isolated properties still operating on septic tanks cannot be ruled out). However, bacteria contamination of the storm drain system is widespread, suggesting further efforts to identify illegal discharges in the upstream portion of the watershed are required. Recently, discussions have occurred between the City of Miami and Miami-Dade County to coordinate dye flood testing of storm drains in the Wagner Creek area, in an effort to identify problems not discernable using conventional dye and smoke testing techniques.

Task 1.2.B

Compile and analyze the results of Task 1.2.A. Develop a plan that utilizes the results to prioritize future and continuing compliance activity and to develop Task 1.2.C.

Compliance monitoring and enforcement was costly and time consuming. To be efficient, a team of experts was to optimize an enforcement program to achieve the most improvement of water quality with the fewest resource expenditures. The results of the analysis were to also be used to optimize public education in this area.

Status

The Florida Department of Environmental Protection was delegated authority for the NPDES program by the U.S.E.P.A. in 1995, but became operational in May 2000. FDEP currently has plans to follow-up the inspection program, and issue permits to many of the Allapattah market businesses. The permits require each property to create and implement stormwater pollution prevention plans. Some permits require monitoring of water quality. It is not known if this has been completed.

The City of Miami was reported to have identified and inventoried industrial and high-risk dischargers of stormwater runoff. A plan to prioritize these facilities for regular inspections is to be completed.

Task 1.2.C

Develop a compliance education program based upon Task 1.2.B to identify target audience issues and methods.

Education of property owners, business managers and residents in the Upper Wagner Creek basin about specific issues identified during the inspection program was believed to be an effective way to improve compliance and reduce water pollution. Well thought-out strategies were to be based on an analysis of the results.

Status

Interagency cross training and establishment of communication processes reportedly improved response and coordination among enforcement agencies.

Government employees apparently worked with business operators during inspections to improve the level of awareness. No specific results of this effort are available.

Two proposals were initiated in 1998 to obtain funding and establish educational programs for business owners in the Allapattah market area, and issues related to operating grease traps. It is not known if these were implemented.

Task 1.2.D

Complete and maintain a status tracking matrix of Tasks 1.2.A-C. Recommend future projects and funding.

A project team consisting of law enforcement experts was to create a project plan that included a timeline, milestones, and performance measures. Ideally, this would be maintained in project management software that could be easily managed. The team was to provide annual recommendations to funding entities for projects or activities necessary to achieve objectives of the plan.

Status

No overall project plan could be found. Project team membership varied, depending on the activity. Some recommendations were made for enforcement and educational projects.

Strategy 1.3 Water Quality Targets

Establish numeric surface water quality targets for Wagner Creek.

Task 1.3.A

Adopt numeric water quality concentration targets based upon the best available information for the purpose of design and success tracking.

The plan called for establishing specific water quality objectives to keep activities focused. Monitoring water quality in Wagner Creek provided critical information to resource managers about overall effectiveness of tasks. A team of experts was to look at the proposed targets, parameters and rationale to decide if a better approach needed to be developed.

Status

Some work on this task was completed. A project team concluded in August 1997 that existing data was inadequate to establish targets, and that for some contaminants of interest, no data had been collected at all. Additional monitoring was recommended, and further efforts to establish targets were suspended, pending compilation of additional results. In 1999, DERM staff provided a report to the Stormwater Subcommittee, which suggested an approach for setting water quality targets that was based upon protecting downstream waters from degradation. Proposed targets for total ammonia and total phosphorus were included. Specific water quality objectives for Upper Wagner Creek were not used in a study to design stormwater treatment systems for the City of Miami.

Task 1.3.B

Develop pollutant load reduction goals based on Task 1.3.A. and compare to existing expected load reductions. Recommend additional necessary monitoring (Task 1.5.A).

Monitoring actual loading was believed to provide more information about conditions than concentration data alone. Calculating loads required measuring water flow volume from the basin. An organization would have to install a measuring device, maintain it, obtain the data and calculate results.

Status

Theoretical pollutant loads were estimated by DERM in a report presented to the Stormwater Subcommittee in 1997 based on a method that assumed certain statistical rainfall patterns and pollutant loads on general land use types. Storm event and flow monitoring that could be used for actual loading analysis was discussed in 1997 by a team of experts, but apparently not implemented.

Task 1.3.C

Develop success criteria based on the water quality targets.

Success criteria for the entire program were to be based on actual water quality results in the upper reach of Wagner Creek. The criteria were to be as simple, yet effective at defining the intent of the goal.

Status

No additional success criteria have been developed, since water quality target development was deferred until additional data were available. Interim criteria in the original Upper Wagner Creek plan and existing water quality criteria have been utilized to evaluate water quality.

Task 1.3.D

Complete and maintain a status tracking matrix of Tasks 1.3.A, B & C. Recommend future projects and funding.

A project team consisting of water quality experts was to create a project plan that included a timeline, milestones, and performance measures. Ideally, this would be maintained in project management software that could be easily managed. The team was to provide annual recommendations to funding entities for projects or activities necessary to achieve objectives of the plan.

Status

No overall project plan could be found. A project team was formed at one point, including representatives from DERM, SFWMD, City of Miami, and FDEP. This team was nearly identical to the team working on monitoring, so the two were merged. Some recommendations were made for funding specific projects thought to enhance the water quality database.

Strategy 1.4 Stormwater Runoff

Improve stormwater runoff water quality to meet water quality targets and loads.

Task 1.4.A

Complete a design for public stormwater treatment systems that, combined with private treatment systems, will meet adopted water quality targets (Task 1.3.A) and community amenity objectives (Objective No. 2).

Stormwater engineers were to use the water quality objectives established in this process to design treatment systems. Stormwater treatment system design tended to be standardized, but in this area, more innovation was believed to be needed to achieve specific criteria. On-site treatment or lack of on-site treatment was to be considered in the design. Information from the site-by-site inspection program, and expected results were to be included to assist designers understand the quantity and types of loading. The use of green space and multi-purpose land treatment areas was encouraged.

Status

Pollutant loads were estimated in 1999 based on land use. Theoretical load reductions were calculated using a system of best management practices. Load reductions were related to State guidelines, but not specific water quality targets for Upper Wagner Creek. New hydrologic boundaries were determined for the Upper Wagner Creek basin based on potential sheet flow or groundwater flow from adjacent areas.

Sub-basins in the Wagner Creek area were ranked for retrofitting using combined criteria based on flood protection and water quality. Cost estimates were also provided. At least one sub basin in the upper reach of Wagner Creek ranked very high.

The City has apparently adopted a policy to utilize regional types of best management practices to treat stormwater runoff. Regional facilities are more amenable for multiple purpose activities such as hydric parks. An inventory of vacant parcels in the Wagner Creek area was completed, but it is not clear how these data were used.

Task 1.4.B

Review municipal and county ordinances governing private, on site stormwater runoff discharge criteria. Recommend any changes to ensure balanced sharing of responsibilities within a reasonable time frame.

Stormwater runoff from individual properties in the upper Wagner Creek basin was thought to be contributing a significant part of the pollutant load to the Creek. Sole reliance on public treatment facilities was to be evaluated for cost effectiveness. If on-

site treatment was deemed more effective, existing government policies required modification to create a mechanism for retrofitting existing systems on private property.

Status

The City of Miami's Wagner Creek/Seybold Canal Stormwater Master Plan Update, Final Report (July 1999) contains an analysis of the advantages and disadvantages of regional versus onsite structural best management practices. The plan advocates a regional approach for structural BMPs.

Task 1.4.C

Assess sources and secure cost share funding for the construction of the public stormwater infrastructure improvements (Task 1.4.A).

Once the stormwater experts determined the most cost effective approach to meet treatment standards, it was expected that they would develop cost proposals and look for strategic partners to complete the work.

Status

Preliminary cost proposals were completed in 1999 for retrofitting priority stormwater systems in the Wagner Creek area. To date, the only funding identified are revenues in the City of Miami's stormwater utility program.

Task 1.4.D

Construct the public stormwater treatment improvements (Task 1.4.A).

Highest priority construction projects that were funded should have been implemented immediately.

Status

The last projects implemented in any of the Upper Wagner Creek basins were completed in 1995. These projects included (Morris Park) Phase I & II and Wagner Creek, Phase III. The Wagner Creek Phase IV and V projects are under design and scheduled for construction in 2002.

Task 1.4.E

Development of a long-term system maintenance program.

Maintenance of stormwater treatment systems was a critical, but costly activity. A cost effective and systematic maintenance program was to be designed by the experts that would have increased the probability treatment systems retained effectiveness.

Status

A maintenance program was developed and implemented under requirements of the City of Miami's National Pollution Discharge Elimination System permit prior to 1996. This program was re-evaluated in 1999, and compared to a more proactive program. It is not known how potential changes to the maintenance program would affect water quality in Upper Wagner Creek. Modifications to the

maintenance program results in a higher cost. The City has prioritized the Wagner Creek Area for maintenance of the storm sewer infrastructure.

Task 1.4.F

*Complete and maintain a status tracking matrix of Tasks 1.4.A-E.
Recommend future projects and funding.*

A project team consisting of stormwater construction experts was to create a project plan that included a timeline, milestones, and performance measures. Ideally, this would be maintained in project management software that could be easily managed. The team was to provide annual recommendations to funding entities for projects or activities necessary to achieve objectives of the plan.

Status

No evidence of a team or project plan was found, however the City of Miami maintains an implementation and funding plan for capital stormwater projects subject to annual review.

Strategy 1.5 Water Quality Monitoring

Implement and maintain an appropriate level of water quality monitoring for evaluating the success of the plan.

Task 1.5.A

Evaluate the existing water quality-monitoring program for its effectiveness in providing reasonable assurance of status tracking. Develop a methodology to gauge program effectiveness. Recommend any changes and funding requirements.

The frequency and types of parameters of the monitoring program were to be evaluated to ensure that resulting data were effective for tracking success criteria. Experts may have examined items like serial correlation, confidence intervals and targeted pollutants to determine the most effective approach. The experts were to produce a proposal that links objectives with required methods and costs.

Status

This task was partially addressed through the completion of some related activities. An attempt was made to determine the relationship between coliform bacteria densities and sanitary sewer overflows during rainfall events. An apparent assumption was that rainfall events caused overflows, therefore the density of bacteria should increase in the surface waters of Upper Wagner Creek after such events. A rudimentary analysis was conducted, but results were inconclusive.

Limited dye studies were conducted to test the integrity of the sanitary sewer system, but not in the area of Upper Wagner Creek. It cannot be determined whether these types of dye studies in the Upper Wagner Creek basins would be useful.

The project team determined that additional data was needed to develop water quality targets. Frequency of surface water quality monitoring in Upper Wagner Creek was doubled from once per month to twice per month for a period of time in order to expand the database as quickly as possible and to provide greater potential for evaluating short term effects. Parameters monitored were the same as the routine monitoring program. The results of bacteria sampling data from this effort confirmed conclusions in the 1996 plan. In a State appropriation recommendation, it was stated that enhanced monitoring with more parameters and higher frequency would be used to compare to water quality criteria, establish baseline conditions, trend detection, and source identification.

Some team members were concerned that there was little or no water quality data on potential toxicants, including synthetic organic chemicals and metals that have been detected in the sediments of the Creek. It was recommended that limited sampling be conducted to screen for these types of pollutants. This type

of analysis is costly, and specific funds were not available. DERM agreed to contribute to the effort by collecting and analyzing two sets of samples from Upper Wagner Creek stations. Results could be used for determining whether routine water sampling for any of the chemicals is warranted. Not surprisingly, the sampling results for most parameters were below detection limits, therefore additional routine sampling was not recommended.

Wet weather storm event monitoring requirements were modified for the City of Miami's NPDES permit. The City is to compile water quality data from Wagner Creek, conduct biological integrity analyses and sediment analyses. The purpose of the monitoring is to document the degree of improvement that results from BMP implementation. The City has completed the required testing for the first four years of the NPDES permit.

Task 1.5.B

Maintain the water quality-monitoring program. Re-evaluate as necessary.

At a minimum, the existing water quality monitoring being conducted at the time by Miami-Dade DERM was to be maintained. This program was to be examined regularly to ensure that it was meeting objectives of the plan.

Status

Water quality monitoring in Upper Wagner Creek established prior to 1996 was mostly maintained to date. Some variance occurred in the frequency of sampling during the period. It is apparent that some re-evaluation was conducted, but the results of any evaluation are not available.

Task 1.5.C

Complete and maintain a status tracking matrix of Task 1.5.A.

A project team consisting of water quality monitoring experts was to create a project plan that included a timeline, milestones, and performance measures. Ideally, this would be maintained in project management software that could be easily managed. The team was to provide annual recommendations to funding entities for projects or activities necessary to achieve objectives of the plan.

Status

A team was established at one point. Some annual recommendations for funding modification of the water quality-monitoring program were made and passed through the Miami River Study Commission to obtain State appropriations to support more intensive sampling in Wagner Creek.

Strategy 1.6 Cleansing

Cleanse the Creek of the existing pollutants and maintain.

Task 1.6.A

Remove polluted sediments, debris and solid wastes.

Wagner Creek was loaded with an accumulation of years of sediments and solid wastes. Removing these was expected to improve water quality by eliminating oxygen demanding substances, toxicants and nutrient loads.

Status

This task is complete. A portion of Wagner Creek at and downstream of the upper reach was cleaned of debris and fenced to reduce illegal dumping. Sediment in this area was removed.

Task 1.6.B

Clean out the box culvert and maintain access.

A portion of the upper reach of Wagner Creek was contained by a box culvert. Information available in 1996 indicated that the culvert contained solid wastes and sediments. Removing the debris was hoped to improve water quality and remove impediments for inspection equipment.

Status

Cleaning of the culvert is complete. Sediment and debris was removed from the box culvert. Apparently, remote inspection equipment can now be effectively deployed within the culvert. How access will be maintained is not clear.

Task 1.6.C

Develop and implement a long-term solid waste maintenance program consistent with Strategy No. 2.1.

Wagner Creek was plagued with solid wastes in 1996 that were either dumped in or near the Creek or carried in with stormwater runoff. Keeping wastes out of the water was thought to improve water quality, and increase the aesthetics of the watercourse. Since some methods to control dumping may be contrary to objective no. 2, the plan was to use methods that increased visual beauty and access to the extent possible.

Status

The City of Miami apparently gives priority to cleaning public stormwater systems in the Wagner Creek area. Crews have reported some decrease in the quantity of solid wastes in catch basins, but continue to pick up large amounts. Enforcement and inspection reports indicated large quantities of solid wastes on the ground and in stormwater systems. Improvement of this situation was specifically targeted by most of these activities. The Allapattah NET office was to establish weekly clean up activities. It is not known if the quantity of solid waste in Upper Wagner Creek has decreased.

Task 1.6.D

Complete and maintain a status tracking matrix of Tasks 1.6.A-C. Recommend future projects and funding.

A project team consisting of waste control and land use experts was to create a project plan that included a timeline, milestones, and performance measures. Ideally, this would be maintained in project management software that could be easily managed. The team was to provide annual recommendations to funding entities for projects or activities necessary to achieve objectives of the plan.

Status

No evidence of a team or project plan was found, however the City of Miami maintains an implementation and funding plan for capital stormwater projects.

Objective 2: Implement a community redevelopment plan that, through landscape and water management, makes upper Wagner Creek a sustainable community amenity.

Strategy 2.1 Land Use Planning

Develop a visionary land use plan for the upper Wagner Creek area.

Task 2.1.A

Inventory existing and future land use in the target area. Establish baseline loading and runoff characteristics.

Identifying land use and imperviousness was an initial step for future planning and estimating pollutant loading. The land use plan was to be designed to achieve the water quality objectives of this plan.

Status

A land use inventory was completed in 1997 by the University of Miami's Center for Urban and Community Design. The report concluded that future land uses were planned to be the same as current. The report included maps of land use. No land use category statistics were included.

Theoretical baseline loading and runoff characteristics were described in a 1999 City of Miami report.

Task 2.1.B

Research and evaluate methods for multi-objective solutions.

Many successful examples of land use plans were available in 1996 that incorporated benefits of green space and community pride to maintain good water quality. Good public attitude and use was thought to be much more cost effective than relying on engineered solutions that required continuous maintenance, or compliance monitoring. These practices were to be evaluated for applicability to the upper Wagner Creek basin.

Status

This task was addressed both generally and specifically. A general discussion of regional stormwater treatment systems was included in a 1999 City of Miami stormwater report. It discussed the advantage of multiple uses for regional facilities.

Specific opportunities were developed out of a charrette or workshop conducted in 1997 that identified geographical locations in the Wagner Creek area for strategic multiple use green space.

Task 2.1.C

Create a land use plan incorporating multi-objective solutions.

An actual plan incorporating the results of the analysis in task 2.1.B was to be created for use by City of Miami policy planners.

Status

No future land use plan has been completed. A vacant land analysis was included in a 1999 City of Miami stormwater plan update report, but it is not clear how the information was used.

Task 2.1.D

Obtain funding and track the status of Tasks 2.1.A-C.

A project team consisting of land use planning experts was to create a project plan that included a timeline, milestones, and performance measures. Ideally, this would be maintained in project management software that could be easily managed. The team was to provide annual recommendations to funding entities for projects or activities necessary to achieve objectives of the plan.

Status

A team was established at one point, and some work was completed, but no overall project plan is available.

Strategy 2.2 Partnerships

Establish partnerships with public and private entities to implement community projects.

Task 2.2.A

Investigate potential partnership opportunities locally and nationally.

Many organizations seemed to have potentially compatible goals in 1996 that would benefit Wagner Creek. Strategic partnerships were to be encouraged and established for political and funding needs. Partnerships were to be actively managed with articulated expectations.

Status

No report of a study to locate or evaluate partners can be found specific to this plan.

The City of Miami completed and adopted as policy a plan to benefit low and very low-income persons (Five-year Consolidated Plan). The plan included the Upper Wagner Creek drainage basins. Among the compatible goals of this implementation plan were the following:

- ⌚ To improve the safety and livability of neighborhoods;
- ⌚ To restore and preserve natural and physical features of special value for historic or architectural reasons.

Task 2.2.B

Promote ideas, educate and secure potential partners in opportunities.

In 1996, opportunities existed to create neighborhood organizations, engage corporations and governmental agencies to target information and assistance to those businesses and residents within the basin who wanted to participate in improvements. Ideas generated by those most affected were to be captured. A system to organize and implement these ideas was to be established.

Status

Work completed through the Allapattah NET office and events like a charrette held in 1997, engaged many members of the local community and interested organizations. Some specific and general recommendations have been generated. Some apparent partnerships were established between the City of Miami's Allapattah NET agency and business owners for example. Specific information about these partnerships is not available.

Task 2.2.C

Cooperatively develop specific site designs.

Practices and opportunities that could improve or maintain water quality were to be incorporated into redevelopment plans at specific sites by engaging architects, engineers, property owners and land planners.

Status

Some general design work was completed for the Allapattah market area. Specific site operational plans are to be completed for a few individual properties to prevent stormwater runoff pollution as required by the National Pollutant Discharge Elimination System permits.

Strategy 2.3 Education

Implement a public education program that involves the local community.

Task 2.3.A

Identify potential funding, target groups and issues.

Annual funding proposals were to be developed based on strategies that indicated primary needs and groups such as business owners, residents or students.

Status

A number of independent education projects were implemented. These seem to target groups like business owners in the Upper Wagner Creek basin, area school children and low-income residents. Rationale for specific strategic decisions made to target certain groups cannot be found, but seems to fall out of results of enforcement and planning exercises.

Task 2.3.B

Develop suitable approaches and materials.

Specific strategies were to be developed based on targeted educational requirements of different groups. The strategies were to be tied to actions that resulted in improved water quality, and describe what materials were to be produced.

Status

Educational programs included compliance awareness during site inspections, workshops for residents and business owners, general programs for schools in the area, marking of stormwater drains, and development of reading materials. All of the approaches included objectives to improve water quality.

Task 2.3.C

Distribute information.

A distribution system was to be established for getting the correct information to specific groups.

Status

A distribution system was not established, but each of the activities used various means to distribute information. It cannot be determined how effective the distribution processes were.

Strategy 2.4 Tracking and Reporting System

Develop and maintain comprehensive status tracking reports of the entire project for the public.

Task 2.4.A

Identify an entity to take the responsibility of tracking the status.

A process owner was to be identified that would provide accountability and inform interested parties about progress on actions items.

Status

Although not stated as such, it is apparent that staff of the former Miami River Coordinating Committee took some responsibility for this task.

Task 2.4.B

Formulate an effective format for tracking, and secure commitments from implementation entities to provide status reports.

A system to track milestones and performance measures was to be constructed and maintained. The system would have some feature that was explicit about expectations.

Status

The beginning of a system to track progress was developed. Stormwater subcommittee agendas for a time included specific references to strategies and team reports with expected information. At one point, a suggested format was recommended to help standardize reporting. Generally however, reports were ad hoc, and tended to be random.

Where Can I Find More Information?

The stormwater pages on DEP's Web site contain a variety of compliance assistance information, including the following:

- Explanations of program coverage and requirements
- Applicable regulations
- Generic permits
- Forms (e.g., NOIs, NOT, No Exposure Certification, Discharge Monitoring Reports)
- Guidance (e.g., Phase II Compliance Guide, SWPPP and SWMP guides, fact sheets, FAQs)
- Useful links (e.g., latitude/longitude finder, EPA stormwater Web site, U.S. Bureau of the Census UA mapping Web site).

In addition, the NPDES Stormwater Notices Center provides hardcopies of permits and forms, as well as assistance with NOI submissions.

Contact Information

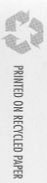
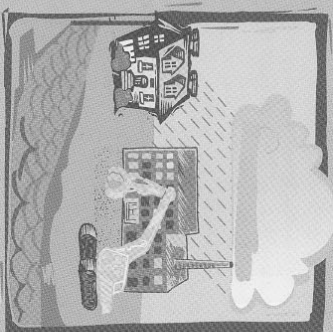
NPDES Stormwater Section
Florida Department of Environmental Protection
2600 Blair Stone Road, MS #2500
Tallahassee, FL 32399-2400
(850) 921-9904
NPDES-stormwater@dep.state.fl.us
www.dep.state.fl.us/water/stormwater/npdes/

NPDES Stormwater Notices Center
Florida Department of Environmental Protection
2600 Blair Stone Road, MS #2510
Tallahassee, FL 32399-2400
(866) 336-6312 (toll-free) or (850) 297-1232

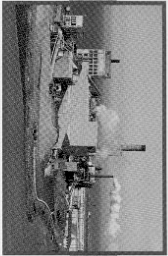
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NPDES Stormwater Section
2600 Blair Stone Road, MS #2500
Tallahassee, FL 32399-2400

The Florida NPDES Stormwater Permitting Program

OVERVIEW



09/01



What is Florida's NPDES Stormwater Permitting Program?

The U.S. Environmental Protection Agency (EPA), as mandated under the Clean Water Act, developed a National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in two phases. Phase I, promulgated in 1990, addressed the most environmentally problematic point source discharges of stormwater runoff. Phase II, promulgated in 1999, dealt with the regulation of additional sources of concern, which need to be addressed by 2003. EPA is responsible for implementing the program. In most cases, EPA has authorized individual States to administer the program in their own jurisdictions.

In October 2000, the Florida Department of Environmental Protection (DEP) was authorized to implement the program in the State of Florida (with the exception of Indian country lands). Previously, EPA Region IV was responsible for Florida's implementation. Although Florida adopted the Phase I Federal regulations, it has yet to adopt Phase II regulations. DEP expects to have full Phase II regulations in place by December 2002 that will closely track the Federal regulations.

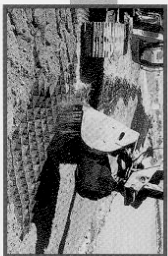
It is important to note that the NPDES stormwater permitting program is separate from the State's stormwater/environmental resource permitting programs and local stormwater/water quality programs, which have their own regulations and permitting requirements.

Which Sources Are Regulated Under the Program?

The sources regulated under both phases of the program fall into three categories:

Industrial Activity

Phase I: Includes 10 categories of industrial activity, such as heavy manufacturing, recycling facilities, and transportation facilities.
Phase II: Provides for a revised "no exposure exclusion" from permitting for any regulated industrial activity that has all of its



industrial materials and activities protected from rainfall or runoff. This is the only component of Phase II that already has been adopted by DEP and is currently in effect.

Construction Activity

Phase I: Includes "large" construction activities that disturb five or more acres of land.
Phase II: Includes "small" construction activities that disturb between one and five acres of land.

Municipal Separate Storm Sewer Systems (MS4s)

Phase I: Includes "medium" and "large" MS4s which are MS4s generally located in areas with populations of 100,000 or more.
Phase II: Includes certain "small" MS4s. Small MS4s are all MS4s not regulated under Phase I and any federally operated MS4s (e.g., military installations). The regulated small MS4s include the following:

- Small MS4s located in U.S. Bureau of the Census-defined urbanized areas (UAs)
- Small MS4s, located outside of UAs, that DEP designates into the program.

What is Required of Regulated Sources?

All regulated sources must obtain an NPDES stormwater permit from DEP. These permits require the development and implementation of a stormwater management plan that includes pollution prevention techniques that will reduce contamination of stormwater runoff. Source-specific details follow:

Industrial Activity

- Industrial facility operators must obtain an individual permit or submit a **Notice of Intent (NOI)** to obtain coverage under the **State of Florida Multi-Sector Generic Permit for Stormwater Discharge Associated with Industrial Activity (MSGP)**. A **Notice of Termination (NOT)** is required to end permit coverage.



- The MSGP requires a **Stormwater Pollution Prevention Plan (SWPPP)**. Necessary components of the SWPPP include a site plan for managing runoff, identification of stormwater controls, and a description of planned inspection, maintenance, and monitoring activities.
- Facility operators with a condition of "no exposure" must submit a **No Exposure Certification for Exclusion from NPDES Stormwater Permitting** instead of a permit application.

Construction Activity

- Operators of large construction site activities must obtain an individual permit or submit an **NOI** to obtain coverage under the **State of Florida Generic Permit for Stormwater Discharge from Construction Activities that Disturb Five or More Acres of Land (GGP)**. An **NOI** is required to end permit coverage.
- Operators of small construction site activities do not need to obtain permit coverage until March 10, 2003, at the earliest.

- The GGP requires a **SWPPP**. Necessary components of the SWPPP include a site plan for managing runoff, identification of erosion and sediment controls and other pollutant controls, descriptions of planned inspection and maintenance activities, and documentation of coverage under the State's stormwater/environmental resource permitting programs, if required.

Municipal Separate Storm Sewer Systems (MS4s)

- Operators of Phase I MS4s are required to seek coverage under individual permits – all currently are permitted.
- Operators of Phase II regulated small MS4s do not need to obtain permit coverage until March 10, 2003, at the earliest.
- All MS4 operators must develop a **Stormwater Management Program (SWMP)** that details their pollution prevention activities, such as educational outreach, the elimination of non-stormwater discharges, controls on construction sites and municipal operations, and cleanup activities.
- All MS4 operators must submit periodic evaluation reports.

Visit DEP's Web site at: www.dep.state.fl.us/water/stormwater/mpdes/

- To obtain a no exposure exclusion, the operator must:
- Meet the criteria for no exposure
 - Complete a **No Exposure Certification for Exclusion from NPDES Stormwater Permitting** (DEP Form 62-620.910(17))
 - Submit the form along with a certification fee of \$100 to the NPDES Stormwater Notices Center
 - Re-certify to a condition of no exposure every five years.

If exposure occurs (or is anticipated to occur) at the facility, the exclusion is no longer valid and permit coverage must be obtained immediately.

Where Can I Find More Information?

DEP's Web site provides more information on program coverage and requirements, useful Web links, and electronic versions of the MSRP, all regulations and forms cited herein, and SWPPP guidance. In addition, the NPDES Stormwater Notices Center provides handcopies of permits and forms.

NPDES Stormwater Section
 Florida Department of Environmental Protection
 2600 Blair Stone Road, MS #2500
 Tallahassee, FL 32399-2400
 (850) 921-9904
 NPDES-stormwater@dep.state.fl.us
 www.dep.state.fl.us/water/stormwater/npdes/

NPDES Stormwater Notices Center
 Florida Department of Environmental Protection
 2600 Blair Stone Road, MS #2510
 Tallahassee, FL 32399-2400
 (866) 336-6312 (toll-free) or (850) 297-1232

Please Note
The certification and application fees are subject to change—always refer to the most current version of Rule 62-4.050(4)(d), F.A.C., to confirm the amount before submitting payment. Make checks payable to the Florida Department of Environmental Protection.

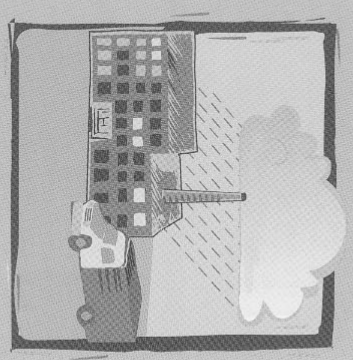


09/01

Florida Department of Environmental Protection
NPDES Stormwater Section
 2600 Blair Stone Road, MS #2500
 Tallahassee, FL 32399-2400

The Florida NPDES
 Stormwater
 Permitting
 Program for

Industrial Activity





What is Florida's NPDES Stormwater Permitting Program for Industrial Activity?

In October 2000, the U.S. Environmental Protection Agency (EPA) authorized the Florida Department of Environmental Protection (DEP) to implement the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in the State of Florida (with the exception of Indian country lands). The program regulates point source discharges of stormwater runoff from certain industrial facilities. The operators of regulated industrial facilities must obtain an NPDES stormwater permit and implement appropriate pollution prevention techniques to reduce contamination of stormwater runoff.

Florida adopted the Federal stormwater general permit for industrial activities (comprising the original September 29, 1995, issuance and subsequent modifications) as specified in Rule 62-621.300(5) (a), F.A.C., and operates the permit as the *State of Florida Multi-Sector Generic Permit for Stormwater Discharge Associated with Industrial Activity (MSGP)*. Most regulated facilities are eligible for coverage under the MSGP; however, some facilities may have to obtain an individual permit as specified in Chapter 62-620, F.A.C. (contact DEP for more information).

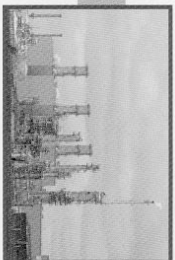
Which Industrial Activities Are Regulated Under the Program?

Florida's permitting program regulates industrial activities that meet both of the following criteria:

- Result in a discharge of stormwater to surface waters of the State or into a municipal separate storm sewer system (MS4) identified in 40 *CFR* 122.26(b) (14).
- Fall under any one of the 11 categories of industrial activities identified in 40 *CFR* 122.26(b) (14).

The 11 categories are defined using both narrative descriptions of the activities and Standard Industrial Classification (SIC) codes. Below are simplified descriptions of each category:

- 1 Facilities subject to Federal effluent limitations or new source performance standards

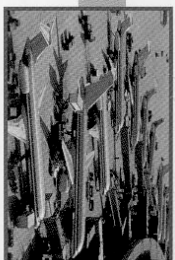


- 2 Heavy manufacturing (e.g., ship building and repair, chemical manufacturing, wood products manufacturing)
- 3 Mining/oil and gas exploration
- 4 Hazardous waste facilities
- 5 Landfills or open dumps
- 6 Recycling facilities (e.g., salvage yards, auto junkyards, battery reclaimers)
- 7 Steam electric power generation facilities
- 8 Transportation facilities (e.g., trucking, airports, marinas)
- 9 Treatment works (e.g., domestic wastewater treatment plants)
- 10 Large construction sites (disturbing five-plus acres). This category is permitted separately; therefore, the permit and fee information presented below does not apply.
- 11 Light industry (e.g., printing, warehousing).

What Does the MSGP Require?

The MSGP divides regulated industrial activities into 30 sectors of related activity and specifies both general and sector-specific requirements for each. In brief, the MSGP requires the following:

- An **MSGP Notice of Intent (NOI)** (DEP Form 62-621.300(5) (b)) must be submitted to DEP.
- A **Stormwater Pollution Prevention Plan (SWPPP)**, which must be kept onsite. In part, the plan must include:
 - A site evaluation of how and where pollutants may be mobilized by stormwater and discharged.
 - A site plan for managing stormwater runoff.
 - Identification of appropriate controls to reduce stormwater pollution (e.g., timely cleanup of spills, covering exposed materials, installing a detention pond).
 - A maintenance, visual monitoring, and inspection schedule.
 - A recordkeeping process.
- Analytical monitoring and reporting (not required of all regulated facilities). Industry-specific **Discharge Monitoring Report (DMR)** forms, to be submitted to DEP are available on the DEP Web site.



How Do I Obtain Copies of the MSGP and NOI?

The MSGP and NOI are available on the DEP Web site or from the **NPDES Stormwater Notices Center**.

- 1 The Web site lists the industrial activities included in each sector and allows downloading of permit language by sector.
- 2 The Notices Center also provides permit language by sector (in hardcopy) and can assist industrial operators with identifying their applicable sectors.

How Do I Obtain Permit Coverage?

To obtain permit coverage, follow these steps:

- Read the permit language applicable to your sector.
- Develop and implement your SWPPP.
- Complete an NOI in its entirety.
- Submit the NOI along with an **application fee of \$500** to the NPDES Stormwater Notices Center.
- Reply for coverage every five years.

The Notices Center will send an acknowledgment letter after receiving and processing your complete NOI and fee. Permit coverage may be terminated by meeting the eligibility requirements for termination specified in the MSGP and by submitting a **Notice of Termination (NOT)** (DEP Form 62-621.300(6)) to the Notices Center.

What Is the Industrial No Exposure Exclusion?

Any regulated industrial activity (except Category 10 activity) may be excluded from the requirement to obtain an NPDES stormwater permit if the facility operator can certify to a condition of "no exposure" at the facility. **No exposure** means that all industrial materials and activities are protected by a storm-resistant shelter that prevents exposure to precipitation and/or runoff (with some exceptions). The detailed criteria for qualifying for the no exposure exclusion are outlined in Rule 62-620.100(2)(c), F.A.C.

Visit DEP's Web site at: www.dep.state.fl.us/water/stormwater/impdes/

Individual permit. This option requires a more comprehensive application process. The operator can be a sole applicant, a co-permittee with a neighboring regulated small MS4, or become a co-permittee with a neighboring Phase I MS4 (which would require a modification of the Phase I MS4's individual permit).

Where Can I Find More Information?

The DEP Web site provides more detailed information on small MS4 program coverage and requirements, including the following EPA guidance:

- Stormwater Phase II Compliance Assistance Guide
- Stormwater Phase II Final Rule Fact Sheet Series
- A Menu of BMPs for Regulated Small MS4s.

The Web site also will provide EPA's measurable goals guidance, Florida's small MS4 regulations, and Florida's generic permit for regulated small MS4s as each item becomes available.

Contact Information

Florida Department of Environmental Protection
NPDES Stormwater Section
2600 Blair Stone Road, MS #2500
Tallahassee, FL 32399-2400
(850) 921-9904
NPDES-stormwater@dep.state.fl.us
www.dep.state.fl.us/water/stormwater/npdes/

U.S. Environmental Protection Agency
Office of Wastewater Management
Storm Water Phase II Hotline: (202) 260-5816
sw2@epa.gov
www.epa.gov/npdes/stormwater

Florida Department of Environmental Protection
NPDES Stormwater Section
2600 Blair Stone Road, MS #2500
Tallahassee, FL 32399-2400

The Florida NPDES
Stormwater
Permitting
Program for

**Small
Municipal
Separate
Storm Sewer
Systems (MS4s)**



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09/01



What is an MS4?

A *municipal separate storm sewer system* (MS4) is a publicly owned conveyance or system of conveyances (i.e., ditches, curbs, catch basins, underground pipes) designed to discharge stormwater to surface waters of the State. An MS4 can drain and be operated by municipalities, counties, drainage districts, colleges, military bases, or large prisons, to name a few examples.

What is Florida's NPDES Stormwater Permitting Program for Small MS4s?

In October 2000, the U.S. Environmental Protection Agency (EPA) authorized the Florida Department of Environmental Protection (DEP) to implement the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in the State of Florida (in all areas except Indian country lands).

EPA developed the Federal NPDES stormwater permitting program regulations in two phases. Under Phase I, the program regulates point source discharges of stormwater runoff from "large" and "medium" MS4s (i.e., those generally located in areas with populations of 100,000 or more). Under Phase II, the program additionally covers discharges from certain "small" MS4s. Small MS4s include all MS4s not regulated under Phase I and any Federally operated MS4s.

Florida adopted the Phase I Federal regulations, but has yet to adopt Phase II regulations. DEP expects to have Phase II regulations in place by December 2002 that will closely track the Federal regulations, which are summarized here as advance notice to potentially regulated small MS4 operators.

Regulated MS4 operators must obtain an NPDES stormwater permit and implement appropriate pollution prevention techniques to reduce the contamination of stormwater runoff and prohibit illicit discharges to the MS4. All large and medium MS4s currently are permitted. Regulated small MS4s will have until **March 10, 2003** (at the earliest), to obtain permit coverage and begin implementation of the permit requirements.



Which Small MS4s Will Be Regulated?

Only a subset of small MS4s will be regulated under the program. This subset includes small MS4s brought into the program in one of three ways:

Automatic Designation

- All small MS4s located in U.S. Bureau of the Census-defined urbanized areas must be regulated automatically. An **urbanized area** (UA) is the combination of a central place (or places) and the adjacent densely surrounding territory that together have a minimum residential population of 50,000 and a minimum average density of 1,000 people per square mile (all UA calculations and mapping are done by the Bureau). To determine if your small MS4 is included within a UA, contact DEP or refer to the DEP Web site.

Designation by DEP

- DEP is required to develop a set of designation criteria to use for the evaluation of all small MS4s, located outside of UAs, serving a jurisdiction with a population of at least 10,000 *and* a population density of at least 1,000 people per square mile. All small MS4s meeting the criteria must be regulated. DEP will include the designation criteria in the Phase II regulations to be developed by December 2002.

Public Petition for Designation by DEP

- DEP will be proposing to allow citizens to petition DEP to designate small MS4s that are believed to be causing significant water quality problems due to stormwater discharges.

What Will Be Required of Regulated Small MS4s?

Regulated small MS4 operators will need to develop and implement a **stormwater management program** that includes measurable goals and best management practices (BMPs) of their choosing for the following six minimum control measures:



- 1 Public Education and Outreach:** Perform educational outreach and distribute materials regarding the harmful impacts of polluted stormwater runoff.

- 2 Public Participation/Involvement:** Comply with State and local public notice requirements and encourage other avenues for citizen involvement in the program.

- 3 Illicit Discharge Detection and Elimination:** Implement a plan to detect and eliminate any non-stormwater discharges to the MS4 and create a system map showing all outfall locations.

- 4 Construction Site Runoff Control:** Implement and enforce an erosion and sediment control program for construction activities.

- 5 Post-construction Runoff Control:** Implement and enforce a program to address discharges of post-construction stormwater runoff from new development and redevelopment activities.

- 6 Pollution Prevention/Good Housekeeping:** Implement a program to prevent/reduce pollutant runoff from municipal operations and property and conduct employee pollution prevention training.

Periodic evaluation reports will be required using the operator's measurable goals as benchmarks for program effectiveness.

What Permit Options Will Be Made Available?

- 1 Generic Permit:** To obtain a generic permit, a **Notice of Intent** must be submitted as the permit application. An operator can be a sole applicant or a co-permittee with a neighboring regulated small MS4. Issuance of the generic permit for regulated small MS4s is expected by December 2002.

- Develop and implement your SWPPP.
- Complete an NOI in its entirety.
- Submit the NOI along with an **application fee of \$150** to the Notices Center. Authorization is granted 48 hours after the date the complete NOI is post-marked to DEP. However, if an ERP or a permit under Chapter 62-25, F.A.C., is not required for the project, authorization is granted 30 days after the complete NOI post-mark date (in such cases, a copy of the SWPPP must be submitted for review along with the NOI, as directed under Section 1.C.2. of the GFR). The Notices Center will send an acknowledgment letter after receiving and processing your complete NOI and fee, and, in certain cases, as indicated above, after receiving and reviewing your SWPPP.
- Re-apply for coverage every five years (if construction activity exceeds five years).

Please Note

The application fee is subject to change—always refer to the most current version of Rule 62-4.050(4)(d), F.A.C., to confirm the amount before submitting payment. Make checks payable to the Florida Department of Environmental Protection.

Where Can I Find More Information?

DEP's Web site provides more information on program coverage and requirements, useful Web links, and electronic versions of the GFR, all regulations and forms cited herein, and SWPPP guidance. In addition, the NPDES Stormwater Notices Center provides hardcopies of permits and forms.

NPDES Stormwater Section

Florida Department of Environmental Protection
 2600 Blair Stone Road, MS #2500
 Tallahassee, FL 32399-2400
 (850) 921-9904
 NPDES-stormwater@dep.state.fl.us
 www.dep.state.fl.us/water/stormwater/npdes/

NPDES Stormwater Notices Center

Florida Department of Environmental Protection
 2600 Blair Stone Road, MS #2510
 Tallahassee, FL 32399-2400
 (866) 336-6312 (toll-free) or (850) 297-1232

Florida Department of Environmental Protection
NPDES Stormwater Section
 2600 Blair Stone Road, MS #2500
 Tallahassee, FL 32399-2400

The Florida NPDES
 Stormwater
 Permitting
 Program for

Construction Activity



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What is Florida's NPDES Stormwater Permitting Program for Construction Activity?

In October 2000, the U.S. Environmental Protection Agency (EPA) authorized the Florida Department of Environmental Protection (DEP) to implement the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in the State of Florida (with the exception of Indian country lands). The program regulates point source discharges of stormwater runoff from certain construction sites and was developed by EPA in two phases: Phase I regulates "large" construction activity and Phase II regulates "small" construction activity. DEP already has adopted the Federal Phase I regulations and currently is in the process of developing its own Phase II regulations.

The "operator" (i.e., the entity with operational control of the site specifications or day-to-day control of the site) of regulated construction sites must obtain an NPDES stormwater permit and implement appropriate pollution prevention techniques to minimize erosion and sedimentation and properly manage stormwater. DEP adopted under Rule 62-621.300(4), F.A.C., the **Generic Permit for Stormwater Discharge from Construction Activities that Disturb Five or More Acres of Land (GCP)** (DEP Document 62-621.300(4)(a)), which is applicable only to Phase I large construction. DEP's permit coverage of Phase II small construction is scheduled to go into effect by March 10, 2003, and is anticipated to be under the GCP rather than a new permit.

It is important to note that the permit required under DEP's NPDES stormwater permitting program is separate from the Environmental Resource Permit (ERP) required under Part IV, Chapter 373, ES., a stormwater discharge permit required under Chapter 62-25, F.A.C., or any local government's stormwater discharge permit for construction activity.

Which Construction Activities Are Regulated Under the Program?

DEP's permitting program currently regulates Phase I large construction activity that meets the following criteria:



- Contributes stormwater discharges to surface waters of the State or into a municipal separate storm sewer system (MS4)
- Disturbs five or more acres of land. Less than five acres also is included if the activity is part of a larger common plan of development or site that will meet or exceed the five-acre threshold. *Disturbance* includes clearing, grading, and excavation.

Under Phase II, small construction activity on sites that disturb an area equal to or greater than one acre and less than five acres will be regulated. Less than one acre also will be included if the activity is part of a larger common plan of development or site that will disturb between one and five acres of land.

What Does the GCP Require?

- A **GCP Notice of Intent (NOI)** (DEP Form 62-621.300(4)(b)) must be submitted to DEP.
- A **Stormwater Pollution Prevention Plan (SWPPP)**. In part, the plan must include the following:
 - A site evaluation of how and where pollutants may be mobilized by stormwater
 - A site plan for managing stormwater runoff
 - Identification of appropriate erosion and sediment controls and stormwater best management practices (BMPs) to reduce erosion, sedimentation, and stormwater pollution
 - A maintenance and inspection schedule
 - A recordkeeping process
 - Identification of stormwater exit areas.
- A **Notice of Termination (NOT)** (DEP Form 62-621.300(6)) must be submitted to DEP to discontinue permit coverage. An NOT may be submitted only when the site meets the eligibility requirements for termination specified in the GCP.

What Are Some Example BMPs?

A comprehensive SWPPP includes both structural and non-structural controls. Some commonly used controls follow:



- **Structural Controls**
- **Retention Ponds.** Permanent structures designed to allow time for sediments to settle and water to infiltrate the ground.
- **Temporary Sediment Basins.** Structures designed to detain sediment-laden runoff from disturbed areas long enough for sediments to settle out and control the release of stormwater.

- **Entrance/Exit Controls.** Temporary controls, such as gravel, used to stabilize the entrances/exits to the site to reduce the amount of soils transported onto paved roads by vehicles (known as "track-out").
- **Site Fencing.** A temporary erosion and sediment control used to prevent dirt from entering waterways before bare soil is stabilized with vegetation.
- **Berms.** A temporary erosion and sediment control that physically prevents polluted runoff from entering nearby storm drain inlets and waters.

Non-structural Controls

- **Stabilization.** Techniques such as sodding, seeding/mulching, and stone cover, which reduce the erosion of exposed soils and steep grades.
- **Phased Construction.** Scheduling construction to occur during the dry season or to minimize the amount of land cleared at any one time.
- **Good Housekeeping.** Techniques such as oil and fuel containment, spill prevention and clean-up, and street sweeping of "tracked-out" soils, which help prevent the contamination of stormwater runoff.

How Do I Obtain Permit Coverage?

To obtain NPDES stormwater permit coverage, complete the following steps in order:

- Obtain permit coverage, as required, under the ERP, Chapter 62-25, F.A.C., or a local government's construction program.
- Obtain copies of the GCP and NOI from the DEP Web site or from the **NPDES Stormwater Notices Center**.
- Carefully read the permit language.

Visit DEP's Web site at: www.dep.state.fl.us/water/stormwater/rules/

Owner	Title
City of Miami	City of Miami Stormwater NPDES Monitoring Scope of Work March 15, 2000
City of Miami	Five Year Consolidated Plan FY99-04
City of Miami	Request for Proposals for Community Development Block Grant and Home Investment Partnership
City of Miami	Rhodamine B Dye Study Wagner Creek Stormwater Basin. Edward E. Clark Engineers-Scientists. July 28, 1997
City of Miami	Scope of Work Dry Weather Screening Attachment A: Scope of Services (undated)
City of Miami	Table 7.2.2 Capital Projects (Stormwater)
Florida Department of Health	Letter dated January 18, 2000 from Walter Livingstone FDOH to Edward Fober FDOT
Florida Department of Health	Memorandum dated December 21, 1999 from Walter Livingstone, FDOH to various
Florida Department of Health	Memorandum dated January 4, 2000 from Walter Livingstone FDOH to various
Miami River Commission	Document describing meeting topics related to issue 1.5 in the Upper Wagner Creek Water Quality Plan on 3/3/97 (anonymous, undated)
Miami River Commission	Document facsimile to David Miller from John Chorlog June 14, 2000 described as Department's work and proposed dye flooding test
Miami River Commission	Draft Stormwater Subcommittee Status Report on the Upper Wagner Creek Water Quality Improvement Plan
Miami River Commission	Grease Discharge Operation- Education Program Plan/Tasks. March 25, 1998. (anonymous)
Miami River Commission	Letter dated April 15, 1998 from Janet Gavarrete MRCC to Funding Panel EPJ 2 Grant Program
Miami River Commission	Memorandum dated August 26, 1997 from Clarence Office, Jr. and Katherine Ornstein to Livia Chamberlain Garcia
Miami River Commission	Miami River Coordinating Committee Stormwater Subcommittee Action Team Strategy 1.1 Report on Status of Grease Trap Facilities in Study Area. May 6, 1998
Miami River Commission	Miami River Coordinating Committee Stormwater Subcommittee Report August 27, 1997. (Status of Strategy 1.2)
Miami River Commission	Miami River Coordinating Committee Stormwater Subcommittee; Upper Wagner Creek Sub basin Preliminary Action Plan, 1995
Miami River Commission	Miami River Coordinating Committee; Comprehensive Action master Planning (CAMP) for Wagner Creek (undated, anonymous)
Miami River Commission	Miami River Stormwater Subcommittee August 6, 1997 (Status Report Strategy 1.1).
Miami River Commission	Miami River Stormwater Subcommittee June 30, 1997 (Status Report Strategy 1.1)
Miami River Commission	MRCC-Stormwater Subcommittee, Upper Wagner Creek Water Quality Plan; Issue 1.5 water quality monitoring to evaluate the success of the plan meeting; 4/3/97 (anonymous)
Miami River Commission	Officer Snook Water Pollution Program Newsletter, Summer 1997 (anonymous)
Miami River Commission	Operating Trends of Sewage Pump Stations in the Miami River Area. (undated, anonymous)
Miami River Commission	Overflows Impacting the Miami River (from DERM's database). (undated, anonymous)
Miami River Commission	Sanitary System Improvements Positive Accomplishments (undated, anonymous)

Owner	Title
Miami River Commission	Table 1: Status Summary of Follow-up Investigations for City of Miami (undated, anonymous)
Miami River Commission	Upper Wagner Creek Water Quality Improvement Plan
Miami River Commission	Upper Wagner Creek Water Quality Improvement Plan Strategy 1.1 Report, March 17, 1998
Miami River Commission	Upper Wagner Creek Water Quality Improvement Plan; Miami River Coordinating Committee; March 17, 1997 (anonymous)
Miami River Commission	Wagner Creek Special Monitoring: Coliform Sampling at Northwestern (WC04) and Central (WC02) Wagner Creek, October 1998 to September 1999; Sample results status and analysis: Submitted to the Miami River Commission Stormwater Subcommittee November 2, 1999 (anonymous)
Miami-Dade DERM	Memorandum (undated, anonymous), subject: Wagner Creek complaints for 1999
Miami-Dade DERM	Memorandum (undated, anonymous), subject: Wagner Creek dye testing for May/June 1999
Miami-Dade DERM	Memorandum (undated, anonymous), subject: Wagner Creek inspection/ dye testing for August/September 1999
Miami-Dade DERM	Memorandum dated February 1, 2000 from Erik Penick DERM to Craig Grossenbacher DERM; subject: Operation market place task force inspections within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated February 11, 2000 from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Operation market place task force inspections within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated February 11, 2000(b) from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Operation market place task force inspections within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated February 14, 2000 from Erik Penick DERM to Jose Diaz DERM; subject: Wagner Creek bacteria sampling areas for 02/14/00 (site sketch).
Miami-Dade DERM	Memorandum dated February 15, 2000 from Erik Penick DERM to Craig Grossenbacher DERM; subject: Operation market place task force inspections within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated February 29, 2000 from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Operation market place task force inspections within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated July 18, 2000 from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Inspections of properties in the upper Wagner Creek area identified as not having water service provided by Miami-Dade Water and Sewer Department.
Miami-Dade DERM	Memorandum dated March 14, 2000 from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Operation market place task force inspections within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated May 8, 2000 from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Sanitary sewer investigation in the upper Wagner Creek area.
Miami-Dade DERM	Memorandum dated April 18, 2000 from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Operation market place task force inspections within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated August 25, 1997 from Miguel Leorza DERM to Jose Lopez DERM
Miami-Dade DERM	Memorandum dated June 2, 1998 from E. Javellana DERM to Jose Lopez DERM

Owner	Title
Miami-Dade DERM	Memorandum dated May 13, 1998 from M. Gambino DERM to Gilberto J. Peralta DERM
Miami-Dade DERM	Memorandum dated May 8, 2000 from Jose C. Diaz DERM to Craig K. Grossenbacher DERM
Miami-Dade DERM	Memorandum dated October 6, 1997 from Miguel Leorza DERM to Jose Lopez DERM and Roy Patrick DERM
Miami-Dade DERM	Memorandum dated September 1, 1999 (anonymous), subject: Sampling for fecal and total coliform bacteria in storm drains around the Wagner Creek culvert area
Miami-Dade DERM	Memorandum dated September 14, 2000 from Jose C. Diaz DERM to Craig Grossenbacher DERM; subject: Inspections of facilities within the Allapattah produce market.
Miami-Dade DERM	Memorandum dated September 9, 1999 (anonymous), subject: Sampling for fecal and total coliform bacteria in storm drains around the Wagner Creek culvert area
Miami-Dade DERM	Stormwater Subcommittee Water Quality Monitoring Status Report Strategies 1.3 and 1.5; August 1999
Miami-Dade DERM	Water Data of Wagner Creek Monitoring Stations; June 1987-March 2000
Miami-Dade WASD	Upper Wagner Creek Study Area MDWASD I/E/I Improvement Program Information Summary of Survey and Repair Status, Hazen and Sawyer. August 4, 2000
South Florida Water Management District	Documents received via electronic mail and facsimile on Oct. 6, 2000 from Wilfredo M. Fernandez, MDWASD
South Florida Water Management District	Wagner Creek Water Quality Basin Planning Inventory Report; June 1997
South Florida Water Management District	Wagner Creek Water Quality Basin Planning Project Final Report
State Attorney	Letter dated November 4, 1997 from Katherine Fernandez Rundle, State Attorney's Office to Raul Martinez COM Police Department
U.S. Environmental Protection Agency	Upper Wagner Creek/Miami River Initiative Inspection Findings Week of April 21, 1997
U.S. Environmental Protection Agency	Allapattah Market Report/Status September 2000. Electronically transmitted document from Jan Rogers, USEPA Oct. 5, 2000
U.S. Environmental Protection Agency	Press release from USEPA Region 4 announcing penalties issued to 18 facilities for violation of CWA