

Table of Contents

LIST OF TABLES	III
LIST OF FIGURES	III
LIST OF APPENDICES	III
LIST OF ACRONYMS	IV
1.0 INTRODUCTION TO FLORIDA KEYS WATER QUALITY IMPROVEMENTS PROGRAM	1
1.1 PROGRAM DESCRIPTION	1
1.2 PROGRAM AUTHORIZATION	1
1.3 PROGRAM LOCATION	2
1.4 PROGRAM MANAGEMENT PLAN (PMP)	2
1.5 PROGRAM DELIVERY TEAM (PDT)	4
1.6 FUNDING SOURCES FOR THE FKWQIP	4
1.7 REGULATORY REQUIREMENT	4
1.8 AGENCY COORDINATION/COOPERATION	7
1.9 NON-FEDERAL SPONSORSHIP	7
1.10 RELATED PROJECTS	7
2.0 PROGRAM SCOPE	9
2.1 PROBLEMS AND OPPORTUNITIES	9
2.2 FKWQIP GOALS AND OBJECTIVES	10
2.3 PROGRAM ISSUES	10
2.4 ENGINEERING CONSIDERATIONS	13
2.4.1 Wastewater Systems	13
2.4.2 Stormwater Systems	18
2.5 PUBLIC INVOLVEMENT / OUTREACH	20
3.0 PROGRAM COMPONENTS	22
3.1 PLANNING PROCESS SUMMARY	22
3.1.1 Wastewater	22
3.1.2 Stormwater	25
3.1.3 Master Project List	25
3.2 PRIORITIZATION RATIONALE	27
3.2.1 Water Quality “Hot Spots”	27
3.2.2 Wastewater Project Prioritization	28
3.2.3 Stormwater Project Prioritization	29
3.2.4 Intergovernmental Task Force (IGTF)	29
3.2.5 Readiness to Proceed Criteria	29
3.2.6 Revised Readiness to Proceed Criteria	30
3.2.7 Distribution Formula Approved by the IGTF	30
3.3 INITIAL PRIORITY PROJECTS	32
3.3.1 Selection Process	32
3.3.2 Priority Project List	32
3.4 METHOD OF EXECUTION	39
3.4.1 Federal Appropriations	39
3.4.2 Program Implementation Guidance (PIG) Document	39
3.4.3 Program Cooperative Agreement	40

Table of Contents

3.4.4	Independent Technical Review (ITR) Process	40
3.4.5	Contracting and Acquisition Plan	40
3.4.6	Design Process	41
3.4.7	Real Estate Acquisition.....	41
3.4.8	Construction Activities	42
3.4.9	Reimbursement	42
3.4.10	NEPA Requirements.....	43
4.0	PROGRAM SCHEDULE	44
	REFERENCES.....	45
	APPENDICES	47

List of Tables

List of Tables

Table 1-1	Water Quality Standards	5
Table 1-2	Recent Chronology of Regulatory Milestones for Wastewater Management in the Florida Keys.....	6
Table 2-1	Ranking of Stormwater Related Issues by Citizens	18
Table 3-1	Summary of Master Project List	27
Table 3-2	Florida Keys Water Quality Improvement Program Readiness Assessment.....	31
Table 3-3	Florida Keys Water Quality Improvement Program Priority Project List.....	37

List of Figures

Figure 1-1	Location of FKWQIP Study Area.....	3
Figure 2-1	Typical Cesspool or Seepage Pit Wastewater Treatment System	11
Figure 2-2	Typical Septic Tank and Wastewater Infiltration System	12
Figure 2-3	Typical Advanced Treatment Unit.....	17

List of Appendices

Appendix A	Florida Keys Water Quality Improvement Act of 2000.....	A-1
Appendix B	Roster of PDT Members.....	B-1
Appendix C	Plan Formulation Memorandum.....	C-1
Appendix D	Readiness to Proceed Document Prepared by the Intergovernmental Task Force.....	D-1
Appendix E	Revised Readiness to Proceed Document Prepared by the PDT	E-1
Appendix F	Funding Allocation Scheme.....	F-1
Appendix G	Master Project List	G-1

List of Acronyms

List of Acronyms

The following section references acronyms contained in this PMP and acronyms that may be used in future development of this document.

ATU	Advanced Treatment Unit
AWT	Advanced Wastewater Treatment
BAT	Best Available Technology
BCC	Board of County Commissioners
bls	Below Land Surface
BMPs	Best Management Practices
BOD5	Biochemical Oxygen Demand
CCAM	Carrying Capacity Analysis Model
CEQ	Council on Environmental Quality
CERP	Comprehensive Everglades Restoration Plan
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DBOWMS	Design/Build/Operate Wastewater Management System
DCIA	Directly Connected Impervious Area
EA	Environmental Assessment
EDU	Equivalent Dwelling Unit
EIS	Environmental Impact Statement
ENRCCI	Engineering News Record Construction Cost Index
EPA	Environmental Protection Agency
FAS	Floridan Aquifer System
FBFK	Florida Bay and Florida Keys
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FKAA	Florida Keys Aqueduct Authority
FKTR	Florida Keys Tidal Restoration
FKWQIP	Florida Keys Water Quality Improvements Program
F.L.	Florida Law
FONSI	Finding of No Significant Impact
FY	Fiscal Year
gpd	Gallons per Day
gpm	Gallons per Minute
IGTF	Intergovernmental Task Force
ITR	Independent Technical Review
KCA	Kisinger, Campo and Associates Corp
Keys	Florida Keys
KLWTD	Key Largo Wastewater Treatment District
MCSMMP	Monroe County Stormwater Management Master Plan
MCSWMP	Monroe County Sanitary Wastewater Master Plan
Memorandum	Plan Formulation Memorandum
mgd	Million Gallons per Day

List of Acronyms

mg/l	Milligrams Per Liter
MM	Mile Marker
MOU	Memorandum Of Understanding
NEPA	National Environmental Policy Act
NOI	Notice of Intent
O&M	Operation & Maintenance
OMRR&R	Operation, Maintenance, Repair, Rehabilitation and Replacement
OWNRS	On-site Wastewater Nutrient Reduction Systems
PCA	Project Cooperation Agreement
PDT	Program Delivery Team
PEA	Programmatic Environmental Assessment
PEIS	Programmatic Environmental Impact Statement
PIG	Program Implementation Guidance
PMP	Program Management Plan
Program	Florida Keys Water Quality Improvements Program
QC/QA	Quality Control / Quality Assurances
RFP	Request for Proposal
ROD	Record of Decision
Sanctuary	Florida Keys National Marine Sanctuary
SFWMD	South Florida Water Management District
TMDLs	Total Maximum Daily Loads
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
USGS	U.S. Geological Survey
WWTP	Wastewater Treatment Plant

1.0 Introduction

1.0 INTRODUCTION TO FLORIDA KEYS WATER QUALITY IMPROVEMENTS PROGRAM

1.1 Program Description

The Florida Keys (Keys) are a chain of islands extending from the southern tip of the Florida mainland southwest to the Dry Tortugas in portions of both Miami-Dade and Monroe counties. Among the many conservation areas in the Keys are Biscayne National Park, several National Wildlife Refuges, and the Dry Tortugas National Park, all of which are encompassed within the larger Florida Keys National Marine Sanctuary (Sanctuary) (Figure 1-1). The Sanctuary includes 2,800 square nautical miles of nearshore waters that are part of a complex ecosystem that also includes seagrass meadows, mangrove islands, and the only living barrier coral reef in North America. Consequently, water quality is critical to maintaining the marine ecosystem of the Sanctuary.

As population and tourism in the Keys have increased over the years, improvements in wastewater treatment and stormwater management practices have not kept pace with this growth. Ongoing research has suggested that this trend has resulted in a significant degradation of water quality in canals and nearshore waters surrounding the Keys and that nutrients commonly found in wastewater and stormwater are one of the major contributors to the decline of water quality.

For these reasons, the U.S. Congress has directed the U.S. Army Corps of Engineers (Corps) to assist local municipalities in Monroe County, Florida, with the development and implementation of wastewater and stormwater improvements as part of the Florida Keys Water Quality Improvements Program (FKWQIP or Program). The Program is designed to:

- Reduce nutrient loading to nearshore waters of the Sanctuary
- Improve water quality throughout waters of the Sanctuary
- Meet relevant Federal and State regulatory standards.

The FKWQIP is to be accomplished through the implementation of several wastewater and stormwater master plans that have been prepared, or are in the process of being prepared, for Monroe County and other local municipalities in Monroe County. These plans are designed to provide cost-effective, environmentally sound, and feasible programs for managing pollutants that are now, or have the potential to, adversely impact the water quality of the Keys and the Sanctuary. The FKWQIP is intended to provide the technical and financial assistance for planning, engineering, and construction of wastewater and stormwater treatment improvement projects.

1.2 Program Authorization

Under authority of Public Law 106-554 dated December 21, 2000, (Appendix A) the Corps is authorized to provide technical and financial assistance to carry out projects for the planning, design, and construction of treatment works to improve water quality in the Sanctuary. Design and construction assistance may be provided only for projects that are owned by public entities. Typically, large programs of this nature are not in accordance with Administration Program priorities (i.e., navigation, flood control or environmental restoration) of the Corps; however, non-traditional projects are also routinely undertaken by the Corps as “work for others.”

1.3 Program Location

The Sanctuary includes 2,800 square nautical miles of nearshore waters that begin just south of Miami, Florida and extend to the Dry Tortugas (Figure 1-1). The Sanctuary is part of a complex ecosystem that includes the Everglades, Florida Bay, and adjacent areas. The Keys are a chain of more than 800 islands extending approximately 220 miles southwest from the southern tip of the Florida peninsula and through the Sanctuary. The FKWQIP targets the portion of the Keys connected by U.S. Highway 1, a 110-mile stretch of roadway extending from Key Largo to Key West, and the remaining developed portion of the Keys. For clarity, the Keys have been divided into the Upper, Middle, and Lower Keys, as presented in Figure 1-1.

1.4 Program Management Plan (PMP)

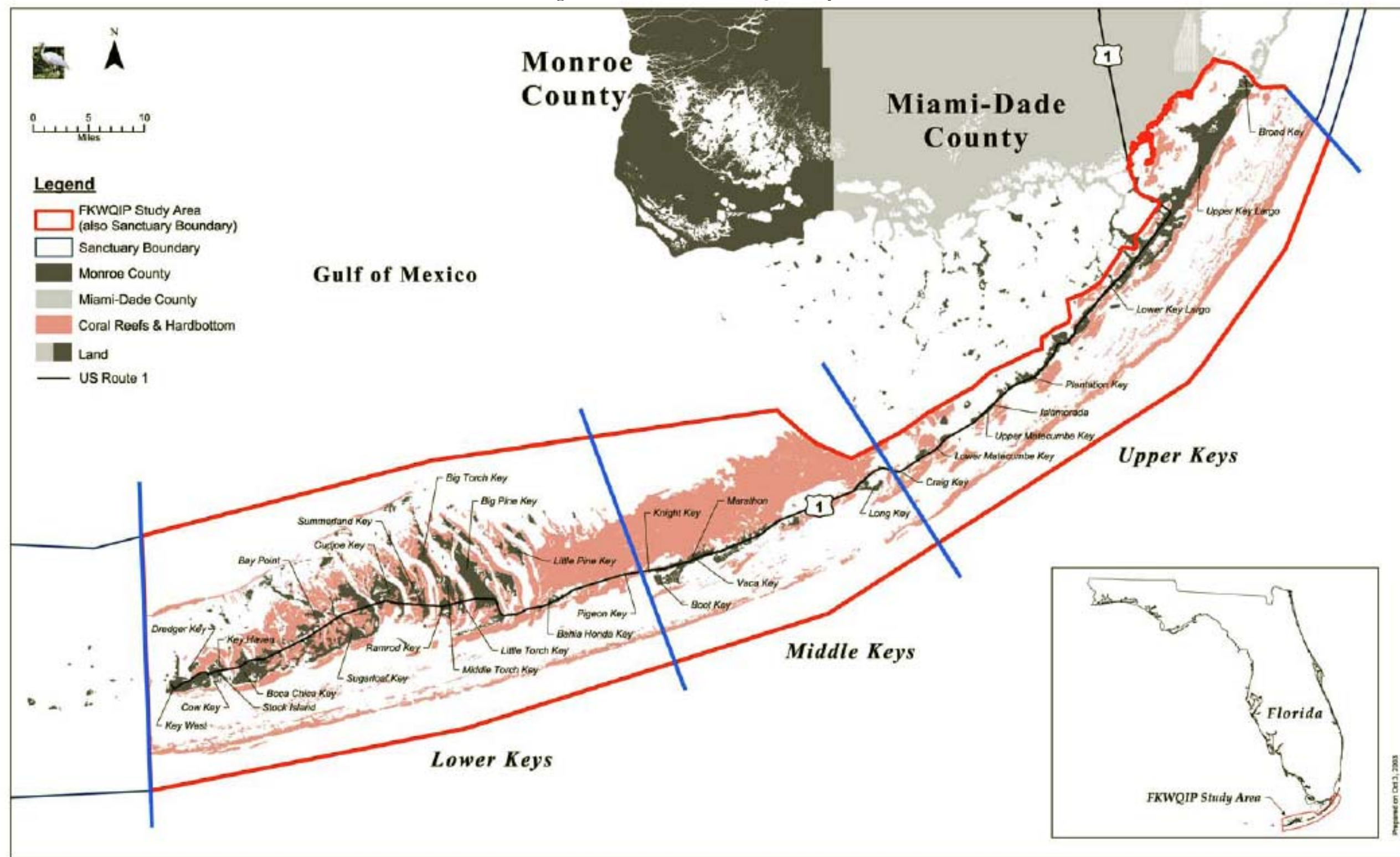
The purpose of this PMP is to establish the framework for development of projects slated for implementation under Federal Authority. The PMP will:

- Outline the specific projects to be initially funded
- Identify required resources
- Establish preliminary budgets and construction schedules

The PMP will describe the rationale used by the FKWQIP Program Delivery Team (PDT) to prioritize specific wastewater treatment and stormwater management projects designated to receive federal funding. These projects were initially identified within various master plans prepared by Monroe County or municipalities within Monroe County.

This PMP is intended to be a dynamic document used to define expected outcomes as well as guide execution and control of the FKWQIP. Primary uses of the PMP are to facilitate communication among participants, assign responsibilities, define assumptions, and document decisions. This PMP establishes baseline plans for scope, cost, schedule and quality objectives against which performance can be measured, and to adjust plans as monies are appropriated by Congress. The FKWQIP PDT is responsible for development of the PMP, which will be updated as required throughout the life of the program. Updates are defined as changes to the PMP that occur on a regular basis and do not substantially modify the schedule, cost, or annual management plan for the program. Scheduled revisions, after the completion of key major project development products, will reflect the changes in the project's development resulting from the completion of a decision document or design/acquisition document. This current version of the PMP represents the third update since the initial publication of the PMP in March 2004. These revisions provide additional levels of detail for upcoming project development and execution of Project Cooperation Agreements (PCAs) with municipalities of Monroe County.

Figure 1-1 Location of FKWQIP Study Area



1.5 Program Delivery Team (PDT)

The PDT is responsible and accountable for ensuring that effective, coordinated actions are combined for successful implementation of the FKWQIP. Membership of the PDT consists of one representative from each municipal governmental agency in Monroe County as well as state and federal agency representatives (Appendix B). A program manager from the Corps (federal sponsor) and municipalities of Monroe County (non-federal sponsor) will be assigned to the PDT to be responsible for the successful implementation of the FKWQIP and to ensure that projects are planned, designed, and constructed consistent with the conditions outlined in the PMP. South Florida Water Management District (SFWMD) Florida Keys Field Office staff will serve as liaison between the Corps and local municipalities. The PDT is also responsible for budgeting, evaluating procurement options during project planning and execution, and identifying potential conflicts and addressing these conflicts in a collaborative manner to reach consensus.

In short, the PDT is an interdisciplinary group formed from the staff of the implementing agencies to develop the products necessary to ensure program success.

1.6 Funding Sources for the FKWQIP

The Florida Keys Water Quality Improvement Act (FKWQIP Act) initially allocated \$420,000 for the Corps to begin coordination activities with the non-federal sponsor and authorized Congress to appropriate up to \$100 million for the FKWQIP (representing 65 percent of program costs). The non-federal sponsor (individual municipalities of Monroe County) will be responsible for 35 percent of the total project cost. The non-federal sponsor will receive credit for the reasonable costs of design work completed for all projects prior to entering into an agreement with the Government, and after passage of the FKWQIP Act.

The enabling legislation states that the Secretary of the Army “may provide technical and financial assistance to carry out projects for the planning, design and construction of treatment works to improve water quality in the Florida National Marine Sanctuary.” While this legislation authorizes federal interest in the program, it does not authorize any construction activity by the Secretary of the Army. The non-federal sponsor is responsible for providing all lands, easements, rights-of-way, and relocations required for the project and for obtaining any necessary permits. The non-federal sponsor is responsible for 100 percent of the operation, maintenance, repair, rehabilitation, and replacement costs associated with a completed construction project; these costs are not part of the cost share.

1.7 Regulatory Requirement

A historical chronology of applicable regulations related to the construction of wastewater treatment improvements and stormwater best management practices (BMPs) in the Keys is discussed below to inform the reader of the more stringent Florida Treatment Standards that will confront residents and commercial entities of Monroe County in the coming years.

As a result of concerns regarding water quality in the Keys, the *Monroe County Year 2010 Comprehensive Plan* (1997) mandated nutrient loading levels be reduced in the Keys marine

ecosystem by the year 2010. In 1998, the Florida Governor issued Executive Order 98-309, which directed local and state agencies to coordinate with Monroe County to implement the *Year 2010 Comprehensive Plan* and eliminate cesspits, failing septic systems, and other substandard on-site sewage systems.

Additionally, in 1998, the Florida Legislature amended the enabling legislation of the Florida Keys Aqueduct Authority (FKAA), the principal potable water supplier for the Keys. Legislation was passed (Florida Law [F.L.] 76-441) to strengthen FKAA involvement in wastewater management for Monroe County. A Memorandum of Understanding (MOU) between Monroe County and the FKAA was signed to “request that the FKAA exercise its authority to purchase, finance, construct, and otherwise acquire and to improve, extend, enlarge, and reconstruct a wastewater collection, transmission, treatment, and disposal system or systems in the Florida Keys.”

In 1999 the Florida Legislature set statutory effluent standards and associated compliance schedules for existing and new wastewater treatment systems in Monroe County. These standards address treatment for several water quality constituents and require best available technology (BAT) standards for flows less than 100,000 gallons per day (gpd) and advanced wastewater treatment (AWT) standards for design flows greater than 100,000 gpd. Table 1-1 includes a list of adopted water quality standards.

Table 1-1 Water Quality Standards

Constituent	BAT milligrams per liter (mg/L)	AWT (mg/L)
Biochemical Oxygen Demand (BOD5)	10	5
Total Suspended Solids (TSS)	10	5
Total Nitrogen (TN)	10	3
Total Phosphorus (TP)	1	1

Statutory compliance schedules for wastewater treatment systems in the county are listed below.

- All unknown or unpermitted on-site systems in non-designated high polluting areas of the Florida Keys, known as “Cold Spots”, and new installations shall be replaced or upgraded with an On-site Wastewater Nutrient Reduction System (OWNRS) by July 12, 2003.
- All existing on-site systems shall cease discharging or shall be upgraded to an OWNRS by July 1, 2010.
- All existing on-site wastewater treatment facilities must be upgraded to either BAT or AWT effluent standards by July 1, 2010.

A chronological summary of these and other events relevant to wastewater management in the Keys is presented in Table 1-2.

Table 1-2 Recent Chronology of Regulatory Milestones for Wastewater Management in the Florida Keys

1993	<ul style="list-style-type: none"> Initial adoption of Monroe County Year 2010 Comprehensive Plan.
1997	<ul style="list-style-type: none"> Monroe County Comprehensive Plan Amended to comply with Florida Statutes. Administration Commission adopts amendments to Monroe County Year 2010 Comprehensive Plan and established Five-year Work Program (Rule 28-20.100). Monroe County established original Identification and Elimination of Cesspools Ordinance, 03-1997; this ordinance was unsuccessful and was later rescinded.
1998	<ul style="list-style-type: none"> Governor’s Executive Order 98-309 (State and Local Agency Participation in Carrying Out Monroe County Year 2010 Plan). Florida Legislature amends the enabling legislation of the FKAA (F.L. 76-441) to reinforce the FKAA’s involvement in wastewater for Monroe County. Monroe County enters into a MOU with the FKAA requesting that the FKAA exercise its authority to finance, construct, and operate wastewater systems in the Keys.
1999	<ul style="list-style-type: none"> Governor Bush and his cabinet amend the 1997 Five-Year Work Program (Rule 28-20.100) to accelerate pace of program, identify “Hot Spots,” and initiate cesspool identification outside of “Hot Spot” areas. Monroe County passes ordinance 031-1999 (Revised Identification and Elimination of Cesspools) to comply with the Governor’s revised Five-Year Work Program. F.L. 99-395 passed (New requirements for all sewage treatment, reuse and disposal facilities, and all on-site systems in Monroe County; prohibits new or expanded discharges into surface waters, and requires existing surface water discharges be eliminated before July 1, 2006).
2001	<ul style="list-style-type: none"> The Florida Keys Water Quality Act approved by the U.S. Congress, authorizing the Corps to provide technical and financial assistance to carry out projects for the planning, design and construction of wastewater treatment and stormwater management to improve water quality of the Florida Keys National Marine Sanctuary.
Source: Modified from Monroe County, 2000	

In addition to local regulations, Section 303(d) of the Clean Water Act (CWA) requires all states to develop a list of priority surface waters that do not meet applicable water quality standards (impaired waters) after implementation of technology-based effluent limitations. States are required to establish Total Maximum Daily Loads (TMDLs), which designate the maximum amount of a pollutant a water body can assimilate without exceeding water quality standards.

Chapter 99-223, Laws of Florida, sets forth the process by which the 303(d) list is refined through more detailed water quality assessments. It also establishes the means for adopting TMDLs, allocating pollutant loadings among contributing sources, and implementing pollution reduction strategies. Implementation of TMDLs can include any combination of regulatory, non-regulatory, or incentive-based actions necessary to reduce pollutant loading. Non-regulatory or incentive-based actions may include development and implementation of BMPs, pollution prevention activities, and habitat preservation or restoration. Regulatory actions may include issuance or revision of wastewater, stormwater, or environmental resource permits necessary for consistency with the TMDL. Permit conditions may be quantitative effluent limitations or, for technology-based programs, a combination of structural and non-structural BMPs necessary for achieving the desired pollutant load reduction.

Florida is comprised of 52 major hydrologic basins, which have been categorized geographically into TMDL groups, and will be assessed for pollutant levels. The five phases of the study for each group are as follows:

- Phase I Preliminary Basin Assessment
- Phase II Strategic Monitoring
- Phase III Data Analysis and TMDL Development
- Phase IV Management Action Plan
- Phase V Implementation

The Keys are in the fifth group of water bodies to undergo TMDL implementation and are scheduled to undergo Phase I from fiscal year (FY) 2005 to FY 2009. The results of the five phases for Group 5 cannot be predicted at this early date and as such, this Program has not given consideration to TMDLs.

1.8 Agency Coordination/Cooperation

The FKWQIP is a cooperative effort between the Corps (lead federal agency) and municipalities of Monroe County located in the Florida Keys (non-federal sponsors). Staff of the SFWMD Florida Keys Field Office will function as a liaison between the Corps and local municipalities to facilitate implementation of the program. During implementation of Section 109, planning activities, the Corps will consult with the Water Quality Steering Committee established under Section 8(d)(2)(A) of the Florida Keys National Marine Sanctuary and Protection Act; the South Florida Ecosystem Restoration Task Force established by Section 528(f) of the Water Resources Development Act of 1996; and the Commission on the Everglades established by Executive Order of the Governor of the state of Florida.

1.9 Non-federal Sponsorship

Municipalities in the Florida Keys will function as the non-federal sponsor for their respective projects funded by the FKWQIP. Staff of the SFWMD Florida Keys Field office will coordinate and facilitate interaction with the Corps for the municipalities of Monroe County.

1.10 Related Projects

Discussed below are ongoing federally sponsored projects in the Keys related to the FKWQIP:

Federal Emergency Management Agency (FEMA) Programmatic Environmental Assessment (PEA) for Wastewater Improvements in the Florida Keys. On December 23, 2002, FEMA finalized a PEA for a project with the Village of Islamorada and three additional projects with the FCAA. Under these four projects, FEMA will issue approximately \$11 million in grants for construction of wastewater systems. Matching funds will be provided through the Florida Division of Emergency Management and local government applicants. This PEA broadly addresses the purpose and need for wastewater improvements in the Keys and presents alternative wastewater management options along with their anticipated environmental consequences. Project and site specific Supplemental Environmental Assessments (EA) currently being prepared were required for the following projects.

Florida Keys Carrying Capacity Study. This study was recently conducted to assess the ability of the Keys ecosystem to support continued growth. The study examined past, present, and future impacts to the ecosystem and developed a database and analysis of consequences that may be used to determine the level of land development activities that could cause further irreversible and/or adverse impacts to the Keys ecosystem. This was accomplished using an interactive, spatially explicit Carrying Capacity Analysis Model (CCAM) that simulates the conditions of land development activities and population growth through time to determine and inventory the impacts on the natural resources and infrastructure in the Keys.

Comprehensive Everglades Restoration Plan (CERP) Related Projects. A number of efforts to restore the south Florida ecosystem are currently underway, including two CERP projects directly related to the FKWQIP. These projects are: (1) the Florida Bay and Florida Keys (FBFK) Feasibility Study and (2) the Florida Keys Tidal Restoration (FKTR) Project. Although the FKWQIP is not a component of CERP, it is extremely important to ecosystem restoration in the Keys.

Project 1. FBFK Feasibility Study will examine the FBFK marine environments, and the actions and land uses upstream, to determine modifications necessary to successfully restore water quality and ecological conditions of the Bay. The study may also include analyses of alternatives for restoration of the marine environment in the Keys if there are positive impacts on Florida Bay. The study goal is to evaluate Florida Bay and its connections to the Everglades, the Gulf of Mexico, and the Florida Keys marine ecosystem in order to determine the modifications needed to successfully restore water quality and ecological conditions, while maintaining or improving these conditions in the Keys' marine ecosystem.

Project 2. FKTR Effort. This project addresses the use of bridges or culverts to restore tidal connections between Florida Bay and the Atlantic Ocean in Monroe County. The four potential sites are located in the Middle Keys near Marathon and include: 1) Tarpon Creek, just south of Mile Marker (MM) 54 on Fat Deer Key (width 150 feet); 2) unnamed creek between Fat Deer Key and Long Point Key, south of MM 56 (width 450 feet); 3) tidal connection adjacent to Little Crawl Key (width 300 feet); and 4) tidal connection between Florida Bay and Atlantic Ocean at MM 57 (width 2,400 feet). Only one of the four sites will be restored as part of this project.

The purpose of this project is to restore tidal connection in a section of the Middle Keys that was eliminated in the early 1900s during the construction of the Flagler railroad. Restoring tidal circulation to areas of surface water that have been impeded and stagnant for decades will significantly improve water quality, benthic floral and faunal communities, and larval distribution of both recreational and commercial species (e.g. spiny lobster) in the nearshore waters in the vicinity of these restoration sites.

2.0 Program Scope

2.0 PROGRAM SCOPE

2.1 Problems and Opportunities

The Keys is home to a complex and dynamic ecosystem and offers a natural beauty that has drawn visitors from around the world. Supporting major fishing and tourist industries, the reef and the entire marine ecosystem are the lifeblood of the Keys, and hence, protecting their existence and vitality is critical to the economic and environmental future of the islands.

As with other Florida ecosystems, human activities over the past 100 years have affected the Sanctuary's water quality. Bacteria and nutrients from human wastes and chemicals such as pesticides and mercury are reaching this delicate ecosystem thereby degrading water quality and posing a public health risk. Currently, the majority of residents and commercial establishments are not connected to AWT systems, but rather septic tanks and outdated on-site package plants. These systems, if not properly operated, allow bacteria and nutrients to leech into nearshore waters. In the areas where testing is performed on nearshore waters, beaches are often posted for health advisories after moderate rainfall because fecal coliform bacteria have leached into surface waters.

Within the Sanctuary are unique and nationally significant marine environments including seagrass meadows, mangrove islands, and the only living coral barrier reef in North America. These marine environments support rich biological communities possessing extensive conservation, recreational, commercial, and aesthetic values, all of which give this area special national significance. The Sanctuary offers many opportunities for recreation, commercial fishing, and tourism-based businesses that comprise a large portion of Florida's economy. For example, the Sanctuary receives over 2.29 million annual visitors to view the Nation's largest living coral reef. Anglers from around the world also visit the Sanctuary for its challenging game fish, especially billfish, found in deeper marine waters, and bonefish, which inhabit shallow waters.

Water quality is critical to maintaining the marine ecosystem of the Sanctuary. The Sanctuary's water quality influences the coral reef and the multitude of living organisms dependent on the reef. Numerous scientific studies have documented the contribution of failing septic tanks and cesspools to the deterioration of canal and nearshore water quality in the Keys. In addition, research has suggested that increased nutrient loadings from wastewater into canals and nearshore waters are one of the major contributors to the decline of water quality within the Sanctuary.

In light of regulatory requirements and in the interest of protecting public health and water quality, the FKWQIP was created. At the federal level, the Florida Keys National Marine Sanctuary and Protection Act of 1990 directed the U.S. Environmental Protection Agency (EPA) and the state of Florida to develop a water quality protection plan for the Sanctuary. Locally, the *Monroe County 2010 Comprehensive Plan* mandates that nutrient loadings to the marine ecosystem be reduced by the year 2010 and that wastewater systems meet more stringent Florida Statutory Treatment Standards. In recognition of the importance of improving water quality in the Sanctuary, the purpose of the FKWQIP is to assist local municipalities in Monroe County in

implementing the priority projects designed to reduce nutrient and bacteria loading, subsequently improve water quality in the Sanctuary, and meet relevant federal and state regulatory standards.

2.2 FKWQIP Goals and Objectives

The primary purpose of the FKWQIP is to improve the water quality within the Sanctuary. During the initial meeting of the PDT (November 22, 2002), a program objective and two goals for the FKWQIP were unanimously adopted. These are cited below:

Program Objective—The FKWQIP will provide an equitable, ecologically sound, and economical implementation strategy for managing wastewater and stormwater to improve water quality in the Sanctuary.

Program Goal—The FKWQIP will provide responsive, flexible, and cost-effective solutions that improve wastewater and stormwater management practices throughout the Keys and satisfy the existing and future needs of the community.

Program Goal—The FKWQIP will address affordability issues, and must satisfy all applicable environmental and regulatory criteria.

Due to the high capital cost of implementing the proposed water quality improvements, municipal governments in the Keys have requested assistance from the federal government to develop and implement wastewater treatment and stormwater management actions that will reduce nutrient loadings and improve water quality in the Sanctuary. Based on the potential beneficial aspects of the FKWQIP and the adverse effects on the natural and manmade environment if water quality improvements are not constructed, the federal government must determine the most favorable action to be implemented for this Congressional Authorization. When completed, Keys residents and visitors can expect improved nearshore water quality and improved water quality within the Sanctuary.

2.3 Program Issues

Significant issues associated with the FKWQIP identified during consultation with regulatory agencies, stakeholders, and residents of the Keys are discussed below. The primary issue is degraded water quality in the Sanctuary resulting from inadequate treatment of wastewater and stormwater in the Keys.

Issue 1: Water Quality. A number of recent scientific studies have documented the contribution of failing septic tanks and cesspools to the deterioration of the canals and nearshore marine water quality of the Keys. The studies attribute increased algal blooms, seagrass die-off, and the loss of coral cover ecosystems to inadequate on-site wastewater treatment. Scientists concur that one of the principal sources of water quality degradation in the Sanctuary is the elevated level of nutrients in the surrounding canals and nearshore waters. The EPA has concluded that the magnitude and extent of estimated nutrient loadings from wastewater sources are regionally substantial (EPA, 1993).

Cesspools. Early on-site wastewater treatment systems used in the Keys consisted of a cesspool or a seepage basin, consisting of a large excavation typically lined with brick or stone allowing raw wastewater to seep into the ground (Figure 2-1). Because the Keys do not have a significant soil layer, little if any treatment of the wastewater occurs through soil filtration. Due to limited nutrient removal, the cesspool and seepage basin discharge is essentially raw wastewater. There are an estimated 2,000 (updated March 2006) of these early cesspools still in operation throughout the Keys and they are a significant contributor to water quality degradation in the nearshore waters of the Keys. Monroe County Ordinance 03-1997 established a program to identify and eliminate cesspools, concentrating on suspected locations in older developed lots. Elimination of cesspools is a significant component of assigning priority to projects in the FKWQIP.

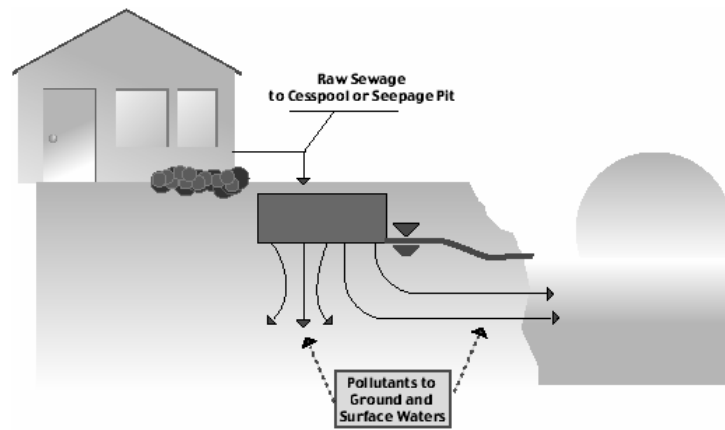


Figure 2-1 Typical Cesspool or Seepage Pit Wastewater Treatment System

Septic Tank Systems. This conventional on-site treatment system consists of a septic tank and a subsurface wastewater infiltration system, or drainfield, which relies on naturally occurring soils to provide wastewater treatment (Figure 2-2). The drainfield and underlying soils are the most critical components of septic tank systems for treatment of wastewater. However, because of the limited soil layer throughout the Keys, soil must actually be imported to construct these systems. The limited soil layer in the Keys reduces the effectiveness of these systems, especially pertaining to nutrient removal. A direct connection between septic tank waste disposal and the nearshore marine water quality was measured during a tracer study in Key Largo. Tracers added to a domestic septic tank appeared in a canal 11 hours later and in nearshore marine waters within 23 hours (Paul *et al.* 1995).

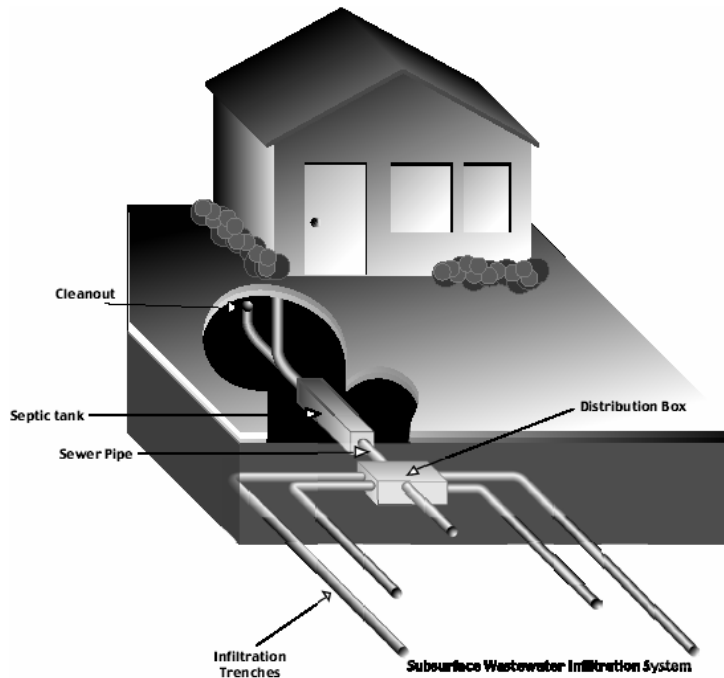


Figure 2-2 Typical Septic Tank and Wastewater Infiltration System

Issue 2: Facility Siting. Construction of wastewater collection and treatment facilities may potentially require tracts of land two to five acres in area. Vacant parcels of land are scarce in the Keys, particularly in urban areas. Potential sites for these treatment facilities may contain sensitive or critical habitat for threatened or endangered species. Additionally, construction of sewer collection systems has the potential to cross naturally or culturally sensitive lands. The farther a treatment facility is located from the area it serves, the greater the conveyance costs to construct and operate it. Increased cost creates additional pressure to locate these facilities in more populated areas of the Keys. Municipalities may invoke eminent domain to obtain needed lands thereby displacing current residences and reducing tax revenue for smaller municipalities.

Issue 3: Protected Species. The Florida Keys are a relatively small landmass in a subtropical island setting and provide habitat for many rare and protected plants and animals. The limited amount of undeveloped natural habitat in the Keys makes these areas and associated species vulnerable to development. Because there are so few remaining developable lands, any FKWQIP actions that results in the loss of natural areas is likely to impact protected species. Protected species that occur or may occur in the study area and their associated habitats, regulatory framework affecting these species, and areas important to maintaining the biodiversity in the Florida Keys must be addressed during project planning and design.

Issue 4: Effluent Disposal. Treated effluent from most wastewater treatment in the Keys is disposed of through the use of shallow injection wells. However, many of the existing injection wells are less than 90 feet deep, and many have shallow casings or are entirely uncased, which increases the probability of effluent leaks to nearshore surface waters. The Florida Department of Environmental Protection (FDEP) rules require wells to be drilled to a depth of 90 feet and cased to 60 feet.

Issue 5: Tourism. Tourism quality of life in the Keys depends upon a healthy marine ecosystem and is negatively impacted by water quality degradation. Over four million individuals per year visit the Keys to enjoy its unique natural features. Water related activities, including snorkeling, diving, fishing, and other beach related activities comprise 70 percent of tourism in the Keys, which generates over \$1.3 billion per year and supports over 21,000 jobs. Poorly treated wastewater presents a public health risk to nearshore waters of the Keys, which in turn can result in beach advisories, decreases in tourism, and fewer individuals participating in recreational activities within waters of the Sanctuary.

Issue 6: Environmental Justice. A low and fixed-income population makes up a large portion of Monroe County and affects the ability of the County and other municipal governments to fund improvements to wastewater treatment and stormwater management facilities. About ten percent of the population was below the poverty level in 1999 and over 15 percent of the population was over the age of 65 in 2000. Many of the standard measures of affordability are based on median family income, which does not adequately reflect the abilities of those least able to afford the capital costs associated with the installation of an advanced on-site wastewater treatment system or connecting to a new public sewer system.

Because of the pending Florida Statutory Treatment Standard mandates, some residents may be required to pay the cost of immediate replacement of on-site wastewater treatment systems as well as future sewer connections. Residents with cesspools or septic tanks may be required to replace their existing systems with a more advanced on-site treatment system before a public sewer system can be made available to their neighborhood. However, once a public sewer system is available, the resident will be required to connect to the public system. Thus a resident may be required to pay for both a new on-site treatment system and ultimately for connection to the sewer system. Differences in the cost of implementing centralized wastewater collection and treatment vary significantly between proposed service areas in the Keys. These differences contribute to potential problems in identifying equitable and affordable means of funding wastewater and stormwater improvements.

2.4 Engineering Considerations

2.4.1 Wastewater Systems

Except for the Cities of Key West and Key Colony Beach, and the Little Venice Service Area and Ocean Reef Club Service Area where regional wastewater systems are in operation, development of wastewater facilities throughout most of Monroe County has occurred with limited forethought of regional wastewater planning. Without access to any regional wastewater utilities, each developer or homeowner has had to construct private on-site or package wastewater treatment facilities to serve their development or individual home. These conditions have resulted in the present mix of approximately 25,000 on-site systems and 260 small wastewater treatment plants (WWTPs) (*updated March 2006*).

Although the existing wastewater collection systems are not adequate for regional wastewater transmission, they could be used to provide source collection and transmission to a regional collection system. The following components of wastewater treatment had to be evaluated in the

process of developing a wastewater master plan for Monroe County and incorporated municipalities.

Collection Systems

The three wastewater collection technologies identified by wastewater master plans prepared for Monroe County and municipalities within Monroe County as best suited for use in the study area were: centrifugal grinder pump systems, progressive cavity grinder pump systems and vacuum sewers. All three technologies are capable of providing reliable wastewater service, if properly installed and maintained. At the time of the initial writing of the PMP, gravity sewers were considered to provide reliable service, but at a significantly higher cost than the alternative collection systems. However, recent and on-going studies prepared by the various entities responsible for providing sewer service in the Keys have noted that depending on area to be sewered, a gravity system may be as or more cost effective than the alternatives discussed above. Additionally, in considering existing conditions, land use and densities, as well as reliability and costs of new collection systems, some entities have deemed hybrid systems the best alternative for sewer collection.

Maintenance costs for the four wastewater collection system options are similar. Owners and operators of existing systems reported similar frequencies of maintenance calls for the two types of grinder pump stations and the vacuum valves. On the average, repairs to vacuum valves were reported to be less costly than repairs to grinder pump stations.

Effluent Disposal Methods

Requirements for effluent disposal in Monroe County were amended by the 1999 Florida Legislature prohibiting new or increased discharges into surface waters and mandating the elimination of existing discharges to surface waters by July 1, 2006. While this legislation allows effluent reuse systems, it otherwise requires the use of underground injection for effluent disposal, under the following conditions:

Shallow Injection Wells-If the design capacity of the facility is less than one million gallons per day (mgd), the injection well must be at least 90 feet deep and cased to a minimum depth of 60 feet.

Deep Injection Wells-If the design capacity of the facility is equal to or greater than one mgd, the injection well must be cased to a minimum depth of 2100 feet.

Water Reuse-The Monroe County Master Plan recommended limited use or reliance on effluent reuse. Among the drawbacks sited for effluent reuse is that land application requires full storage or backup disposal systems whenever treatment requirements are not achieved, or when the land application site cannot accept reclaimed effluent, including during extended periods of wet weather. Additionally, relatively large tracts of land are required to accommodate the effluent being disposed. Such tracts may be distant from the plant site, causing high conveyance costs. Even with these limitations however, recent planning and construction documents prepared by the various entities responsible for providing wastewater service, have been considering potential water reuse in the design of their systems.

Potentially feasible effluent management alternatives were identified and subjected to a preliminary screening. Those alternatives that contained major obstacles to implementation were eliminated from further consideration. The alternatives that passed the preliminary screening were evaluated further. Upon completion of the in-depth evaluation, the remaining effluent management alternatives were either eliminated from further consideration or incorporated into the Facilities Plan. Reuse by land application, underground injection through deep wells, underground injection through shallow wells, and surface water disposal were identified as potentially feasible methods for effluent management in the Marathon area.

Recommendation: A total of four scenarios were considered:

It should be noted that order-of-magnitude costs are reported herein. These are considered planning level costs, and their “accuracy” should be in the range of plus or minus 30 percent. Also costs may not be all inclusive, and are provided as a frame of reference for the various alternatives.

Scenario No. 1–WWTP Capacity of 0.02 mgd. FDEP does not allow reuse for systems this small. A shallow injection well system is the only remaining feasible alternative for effluent management. The order-of-magnitude construction cost estimate for this system is \$33,000 for two wells, wellfield piping, and polishing tank only.

Scenario No. 2–WWTP Capacity of 0.1 mgd. It was recommended that the primary effluent management system be a shallow injection wellfield system. The order-of-magnitude construction cost estimate for the shallow injection wellfield, including four wells, piping effluent, and polishing, is \$100,000.

Reuse should be pursued as the secondary effluent management method. 0.1 mgd is the minimum allowable size for a reuse system. The order-of-magnitude cost estimate for the reuse system is approximately \$1 million for WWTP filters, disinfection, effluent storage tank, continuous on-line turbidity and chlorine residual monitoring equipment, and high service pumping. This cost does not include transmission and distribution piping and connection to the existing irrigation systems. These offsite costs will be determined when site-specific areas for reuse are defined and can be expected to add substantially to the cost of the reuse alternative.

Scenario No. 3–WWTP Capacity of less than 1.0 mgd. As with Scenario No. 2 above, a shallow injection wellfield system is recommended for the primary effluent management system. The order-of-magnitude construction cost for the shallow injection well system, including 14 wells is \$750,000.

Reuse should be pursued as the secondary method of effluent management, depending on economic feasibility. The order-of-magnitude construction cost estimated for the filters, disinfection, effluent storage tank, continuous on-line turbidity and chlorine residual monitoring equipment, and high service pump station is approximately \$2.5 million. Again, offsite facilities, to be evaluated later in a Facilities Plan, will add substantially to the cost of the entire reuse system.

Scenario No. 4—WWTP Capacity of 2.0 mgd. A deep injection well system was recommended as the primary effluent management system. Two injection zones exist and were identified as suitable for wastewater disposal. These constitute the upper part of the Floridan Aquifer System (FAS) and are an intermediate-depth zone, extending from 650 to 1,200 feet below land surface (bls) and the deeper Boulder zone, extending from 2,100 to 2,500 feet bls.

Preliminary design indicates that a 12-inch diameter steel casing set to a depth of approximately 650 feet bls will convey effluent to the injection horizon. The well will be completed with open-hole construction from 650 to 1,200 feet bls.

Typical surface facilities will include a pump station, surge control system, yard piping, and instrumentation. A second, redundant intermediate depth injection well would provide a back-up system for periods in which the primary injection well is off-line for testing. An order-of-magnitude construction cost for two intermediate-depth injection wells and surface facilities is approximately \$1.52 million, with an annual operations and maintenance (O&M) cost of approximately \$90,000.

If the intermediate-depth deep well described above could not be permitted, another potential injection zone exists at 2,100 to 2,500 feet bls, commonly known as the Boulder Zone. This injection horizon is most likely confined by dense limestone from 1,200 to 2,100 feet bls. This option would include a 22-inch casing set to 650 feet bls, and a 12-inch-diameter casing set to 2,100 feet bls, with open-hole construction to 2,500 feet bls. The estimated order-of-magnitude construction costs for two deep wells and surface facilities is \$2.82 million, with an annual O&M cost estimated to be \$90,000.

Reuse should be pursued as the secondary effluent management method, if economically feasible. The estimated order-of-magnitude construction cost for reuse facilities at the WWTP site is approximately \$3.5 million.

Solids Waste Management

Alternatives for processing and disposing of residual wastewater solids (treatment plant sludge) that would be generated in the study area upon implementation of regional or sub regional wastewater collection and treatment systems were evaluated. The alternatives evaluated included various processes for stabilizing, dewatering, transporting, and disposing of solids produced by two WWTPs serving the primary and secondary service areas. Alternative means of handling treatment plant solids from the remaining areas of the planning area were also evaluated.

Proven solids handling processes in general use in the United States today were first screened with respect to their applicability at a new regional WWTP serving the primary service area. For the wastewater collection/treatment option utilizing subregional WWTPs, it was assumed that a single centralized solids handling facility would be constructed at one WWTP site, and solids from the other WWTPs would be transferred to that site for processing. The most feasible processes were then formulated into alternative systems, which were compared on the basis of both capital and O&M costs.

Wastewater Management Alternatives

Wastewater management alternatives were evaluated to identify the most cost-effective and environmentally favorable plan for wastewater management. The alternatives consisted of:

- Upgrade individual on-site systems with BAT and upgrade existing package plants to AWT standards.
- Serve the primary service area with sub regional WWTPs.
- Serve the primary service area with a regional WWTP.

All regional management alternatives were evaluated on the basis of providing AWT where treatment plant flows were greater than 100,000 gpd in accordance with the Monroe County Board of County Commissioners' (BCC) selection of AWT as the most environmentally sound treatment level. Alternatives were evaluated on the basis of cost and environmental and implementation factors.

When the Monroe County Master Plan was published, approximately 23,000 private on-site systems and approximately 246 small WWTPs were operating throughout the Florida Keys. The on-site systems were comprised of approximately 15,200 septic systems, 640 Advanced Treatment Units (ATUs) (Figure 2-3), and 7,200 unknown systems. As previously stated, approximately 2,000 of the unknown systems are currently suspected to be illegal cesspools. The Monroe County Master Plan estimated that the on-site systems contribute 4.88 mgd of wastewater and the WWTPs contribute 2.4 mgd of wastewater. Each of these on-site systems and treatment plants provide minimal nutrient removal with effluent from all facilities containing nutrient levels of about 20 mg/l TN and five mg/l TP. The on-site systems primarily serve single-family residences and small commercial establishments, while the small WWTPs serve condominium and apartment complexes, resorts, motels, restaurants and other larger commercial establishments where higher volumes of wastewater are generated.

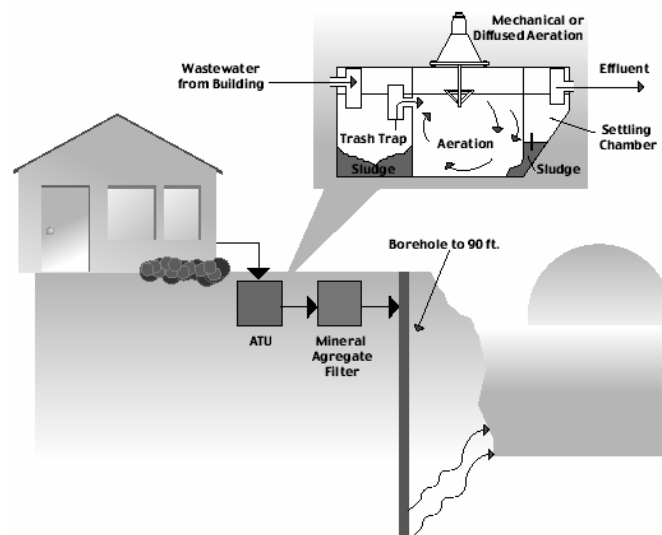


Figure 2-3 Typical Advanced Treatment Unit

Wastewater Reuse

Although there are advantages associated with wastewater reuse, the high cost associated with additional facilities and the limited availability of suitable areas to irrigate make this option more difficult to implement in the Keys than in other areas of Florida. An initial step in determining the practicality and economics of wastewater reuse in the Keys should be to conduct reuse feasibility studies throughout the different service areas. These studies should establish firm amounts of reclaimed water to which reuse customers are willing to commit and pay.

2.4.2 Stormwater Systems

According to the Monroe County Stormwater Management Master Plan (MCSMMP) and information provided by Monroe County Municipalities which have prepared Master Plans, historical reports, staff input, and public comments, there are two types of stormwater concerns in the Keys: water quality and nuisance flooding. Table 2-1 contains the results of a survey completed by citizens present at public meetings on the MCSMMP. They ranked a number of stormwater-related issues from most important to least important:

Table 2-1 Ranking of Stormwater Related Issues by Citizens

Issue	Rank
Water Quality Protection/Improvement	1
Development Controls	2
Enforcement of Existing Regulations	3
Flooding	4
Costs	5
Operation & Maintenance	6
Recreational Opportunities	7

Generally, the plan for addressing these concerns consisted of developing a list of stormwater problem areas ranking them using criteria such as: flood severity, water quality benefits from improving the problem, expected growth of the study area, overall benefit (i.e., how many citizens are affected by the problem area), and assigned historical priority. Many of the problem areas were investigated and found to be on private property.

Following the ranking, the projects were then analyzed versus a list of potential improvement alternatives and the BMP alternative for each problem area was selected. The alternatives generally considered in the Keys included those discussed in the following section.

BMP Alternatives

The MCSMMP listed 19 structural BMPs and 16 nonstructural source controls considered for the Keys.

Structural BMPs

- Shallow grassed swales
- Retention basins
- Buffer strips
- Porous pavement

- Water quality inlets and baffle boxes
- Hydrodynamic separators
- Underdrains and stormwater filter systems
- Infiltration drainfield
- Dry wells
- Modular treatment systems
- Stormwater wetlands
- Alum injection systems
- Aeration
- Level spreaders
- Oil/grease separators
- Recharge wells and bore holes with pretreatment

Based upon the climate of the Keys, the topography and soils of the islands, and stormwater management experience of engineers within the Keys, the following structural BMPs are recommended for application for all types of land development:

- Buffer strips porous pavement
- Water quality inlets
- Baffle boxes hydrodynamic separators
- Dry wells w/pretreatment
- Modular treatment stormwater wetlands
- Alum injection
- Aeration oil and grease separators
- Vegetated swales

Of this list, it was recommended that hydrodynamic separators baffle boxes, modular systems, and alum injection be pilot tested prior to full-scale recommendation since there has been no experience with these BMPs within the Keys.

Nonstructural Stormwater Controls

- Land use planning
- Public information programs
- Stormwater management ordinance requirements
- Fertilizer application controls
- Pesticide use controls
- Control of gray water (cisterns and rain barrels)
- Solid waste management
- Hazardous materials management
- Street sweeping
- Vehicle use reduction
- Directly connected impervious area (DCIA) minimization
- Low impact development
- Illicit connections (non-stormwater discharges) identification and removal
- Erosion and sediment control on construction sites

- Source control on construction sites
- Operation and maintenance

For non-structural or source controls, all of the BMPs on the list are recommended except for street sweeping. While street sweeping can be effective in some urban environments, a curb and gutter road system is generally needed and most of the Keys do not have such roads. Recommended nonstructural stormwater controls include:

- Land use planning
- Public information
- Ordinance requirements
- Cisterns/rain barrels
- Vehicle use reduction
- Impervious reduction
- Low impact development
- Erosion/sediment control
- Operation and maintenance

2.4.2.1 Special Considerations for Bridges

The MCSMMP lists the islands along U.S. Highway 1 within the Monroe County study area with the approximate lengths and bridges connecting them (lengths given to the nearest 0.1 mile). Of the 107 miles indicated, 18.9 miles, about 18 percent, of U.S. Highway 1 are bridges of various lengths.

Related to stormwater runoff, a bridge is 100 percent impervious and rain that falls on the bridge either runs off directly to the nearshore waters under the bridge or flows down the bridge to the entrance or exit. The question of whether or not runoff directly from the bridge can be treated efficiently and at a reasonable cost was studied in the MCSMMP and it was concluded that bridge runoff control is not recommended on a large scale. However, it was suggested that bridge runoff treatment should be tried at one or more sites for a few years, with monitoring to confirm treatment efficiencies. Depending on the outcome, bridge runoff control could be implemented on selective bridges.

2.5 Public Involvement / Outreach

An extensive public involvement program for the Monroe County Sanitary Wastewater Master Plan (MCSWMP) was implemented to provide key stakeholders and interested citizens of Monroe County with the opportunity to participate and influence the outcome of the master plan. Interaction with the public throughout the development process significantly assisted in the development of the contents of the master plan. Numerous public involvement efforts implemented as part of the master plan development process included:

- Public forums and workshops
- Meetings with civic, business, and environmental groups throughout the Keys
- Preparation and distribution of project fact sheets and brochures
- Media coordination

- Production of two videos
- Development of a project web site

Interested citizens and key stakeholders directly influenced the development of the decision models and evaluation processes, identified key issues to be addressed, and defined the elements of what was believed to be an acceptable sanitary wastewater master plan. Throughout the process, citizens clearly stated that cost was the most critical issue to plan implementation. Secondly, there were concerns raised by stakeholders regarding the effectiveness and reliability of the selected wastewater treatment options. Finally, County residents demanded that issues related to potential “double-pay” be addressed.

Under the National Environmental Policy Act (NEPA) of 1969, and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500 to 1508), the Corps must consider the environmental consequences of proposed federal actions (projects). Accordingly, the Corps is preparing a Programmatic Environmental Impact Statement (PEIS) to address the environmental consequences, from a programmatic perspective, of implementing wide-range water quality improvements throughout the Keys to protect water quality in the Sanctuary, including wastewater collection, treatment, and disposal options and stormwater BMPs. Under NEPA, the Corps is required to solicit input from the all interested parties, including stakeholders, residents of the Keys, and appropriate regulatory agencies, regarding proposed federal actions. The process of identifying issues that should be addressed in the PEIS is “scoping.”

Applicable regulatory agencies, affected stakeholders, and interested members of the Florida Keys community were provided opportunities to participate in the decision making process during the development of the PEIS. A public meeting was held in Marathon, Florida, on February 27, 2003 to solicit comments and input on issues to be addressed during the NEPA documentation process. Issues raised at this public meeting included:

- Need for federal funding to support wastewater infrastructure development in the Keys
- Engineering and environmental issues associated with specific projects
- Cost of implementing wastewater improvements to residents of the Keys

In accordance with Corps procedures and NEPA public notification requirements, the draft PEIS was advertised in local newspapers and made available at local repositories for a 45-day comment period (April 30-June 14, 2004). Public comments submitted to the Corps during this time were reviewed and addressed, as appropriate, in the final PEIS. Again, in accordance with the Corps procedures and NEPA public notification requirements, the Final PEIS was advertised in local newspapers and made available for a 30-day comment period (September 10-October 12, 2004).

From September of 2004 until April 2006, stakeholders and the general public had a chance to participate in the scoping process and review of six Draft EAs for wastewater treatment and stormwater management improvements proposed by each municipality in the Florida Keys. A Finding of No Significant Impact (FONSI) has been issued for five of the EAs and one other (Key Largo) is in the final stages of review.

3.0 Program Components

3.0 PROGRAM COMPONENTS

3.1 Planning Process Summary

The enabling legislation for the FKWQIP directs the Corps to coordinate with local and state agencies as part of the planning process to identify and develop water quality improvement projects designed to decrease nutrient loading and improve the water quality of the Sanctuary. Planning at the county level has also addressed water quality improvements in the Keys, primarily in response to the mandated Florida Statutory Treatment Standards of 2010. In addition, local municipalities of Monroe County have prepared wastewater treatment and stormwater management master plans during the past twelve years. Consequently, the water quality improvement projects that make up each master plan have undergone a rigorous analysis of alternatives, including facility siting and treatment technology applications.

As a result of the extensive planning efforts already implemented at the county and municipal levels, including the identification of potential alternatives and plan recommendations, additional plan formulation regarding individual water quality improvement projects for the FKWQIP was deemed unnecessary for the purposes of this PMP. A Plan Formulation Memorandum (Memorandum), which summarizes the decision-making process used and recommendations made in each master plan, has been prepared and included as Appendix C to this PMP. Since 1994, the following plans and documents have been produced and were reviewed for inclusion in this Memorandum:

3.1.1 Wastewater

Monroe County Sanitary Wastewater Master Plan

This document is dated June 2000, and was prepared by CH2MHill, Inc. et al. The stated objective of this Master Plan is to “develop a plan that would provide an equitable, ecologically sound, and economical implementation strategy for managing wastewater and improving the water quality in the Florida Keys.” The stated goal is to “provide responsive, flexible, and cost-effective solutions that improve wastewater management throughout the keys and satisfy existing and future needs of the community.” Additionally, the Master Plan’s goal is to address affordability and equity issues, and to satisfy environmental and regulatory criteria and guidelines. The planning and study area included the entire developed area of the Keys, except for the Cities of Key West and Key Colony Beach (Figure 1-1).

The recommendations presented in this master plan include:

- Replace/upgrade existing on-site systems located in lower density areas of the Keys with an OWNRS
- Installation of 12 community wastewater collection and treatment systems
- Installation of five regional wastewater collection and treatment systems
- 17 existing facilities continue to operate and upgrade their treatment processes to meet BAT or AWT, as required, by July 2010

The master plan further recommends that five of the 12 community wastewater collection and treatment systems feature interim WWTPs that, over time, be phased into the larger regional systems. Details of the recommendation from the Monroe County master plan for each of the three regions of the Keys are presented below:

Lower Keys—In the Lower Keys, four new community wastewater systems and two new regional wastewater systems are recommended for construction. The two proposed regional systems in the Lower Keys are relatively small, in terms of both volume of flow and area and thus the first phase of these WWTPs can be constructed at the actual regional WWTP site. In addition to the new systems or extension of existing systems that are discussed, the master plan recommends that seven existing facilities in the Lower Keys continue to operate and upgrade their treatment processes to meet the BAT/AWT standard by July 1, 2010.

Middle Keys—In the Middle Keys, two new community wastewater systems and one new regional systems are recommended. Other than Duck Key, Conch Key, and Long Key/Layton, all study areas of the Middle Keys will continue to operate and upgrade their treatment process to meet the BAT/AWT standard by July 1, 2010. These systems include:

- Hawk’s Cay (Hawk’s Cay portion of AWT upgrade)
- West End Long key (three facilities)
- East End Long Key (two facilities)

Upper Keys—In the Upper Keys, one new community wastewater system is recommended in Lower Matecumbe, and two new regional systems are recommended: a 1.5 mgd system to serve Islamorada Regional Wastewater Management District; and a 2.25 mgd system to serve the Tavernier/Key Largo Regional Wastewater Management District.

Since publication of the Master Project List, many of the entities or municipalities have modified their plans as noted in Section 3.3.3, Project Descriptions. Additionally, the Key Largo Wastewater Board has been formed to address wastewater projects in the Key Largo area.

Marathon Wastewater Facilities Plan

This document is dated April 1998, and was prepared by CH2MHill, Inc. et al. The purpose of this Plan is “to define the most cost-effective, environmentally sound, and implementable program for the management of existing and future wastewater pollutants that presently act, or will act, to deteriorate the Key’s water quality in the Marathon area.” The planning area encompasses the area from the Seven Mile Bridge through Conch Key (Figure 1). The three steps that comprise the implementation of the wastewater management system are stated to be “planning, design, and construction.” The scope of work for this Facilities Plan is defined in Construction Grants, 1985, a manual published by the U.S. EPA (July 1984).

City of Key West Water Quality Improvement Program

This program, dated June 2001, was developed by the City of Key West in order to facilitate the City's commitment to "divert stormwater runoff away from Outstanding Florida Waters,"

eliminate potential sewer/stormwater conflicts and to reduce infiltration and inflow in their sewer system. This program contains both wastewater and stormwater projects.

City of Key Colony Beach Sewer System Evaluation

This document, dated September 2002, was prepared by URS Corporation. The City has “continuously expended funds” over the last five years in rehabilitating their existing wastewater collection system. The purpose of this report is to assist the City’s wastewater system operation staff in identifying additional sources of Inflow and Infiltration in their wastewater system. Closed circuit TV monitoring of the sewer lines was used to identify lines in need of repair. The report presents recommendations for repair of the various sewer lines. Repair methodology includes slip lining of cracked or broken sewer lines and re-grouting of a number of service connections.

City of Marathon Reuse Component Central Wastewater Request for Proposal (RFP)

This document was prepared in May 2001, and revised in August 2001 and again in October 2001, by Calvin, Giordano & Associates, Inc. The purpose of this study is “to determine water reuse feasibility for the City of Marathon.” The scope of this study is generally based on FDEP’s *Guidelines for Preparation of Reuse Feasibility Studies for Applicants Having Responsibility for Wastewater Management*.

Design/Build/Operate Wastewater Management System (DBOWMS) for the City of Marathon, FL

This document prepared by the FKAA represents a set of specifications that accompanied a RFP for the DBOWMS for the City of Marathon, FL. The specifications establish certain minimum technical requirements and minimum level of quality for the treatment system to be constructed and operated for the City.

FEMA PEA

FEMA has received grant applications to fund the construction of several wastewater treatment systems in Monroe County. Much of the proposed project funding would be provided through FEMA 1249-DR Post Disaster–Unmet Needs funds. Matching funds will be provided through the Florida Division of Emergency Management and local government applications. While the EA finalized on December 23, 2002 was programmatic in nature, it was written to address the environmental consequences of constructing four planned wastewater treatment projects; one with the Village of Islamorada and three more projects with the FKAA. Project specific EAs are currently being prepared to address the environmental consequences of constructing the four projects.

3.1.2 Stormwater

Village of Islamorada Stormwater Management Master Plan

This document was prepared in September 2000 by Law Engineering and Environmental Services, Inc. The purpose of this plan is to “address water quality improvements to stormwater discharges into the Village’s canals and near shore waters of the Atlantic Ocean and Florida Bay.” The planning area is the entire Village, which spans from MM 90.94 on the north to 72.66 on the south and consists of four islands: Plantation Key, Windley Key, Upper Matecumbe Key and Lower Matecumbe Key (Figure 1.1).

Monroe County Stormwater Management Master Plan

This document, dated August 2001, was prepared by Camp, Dresser & McKee, Inc. The stated purposes of the Stormwater Management Master Plan are to “assess the adequacy of existing systems, prioritize stormwater management needs for each island, identify regulations and policy needs, and develop a plan to finance the construction, O&M of required facilities.” The geographic area of this project consists of the islands in the County (the Keys), which are traversed by U.S. Highway 1 (Figure 1-1).

City of Key West Stormwater Runoff Study

This document dated September 1994 was prepared by Kisinger, Campo and Associates Corp (KCA). The stated purpose of the study is to identify and map the existing flooding locations and ultimately develop a Drainage Improvement Development Plan.

City of Key West Long Range Stormwater Utility Plan

This plan, dated June 2001, was prepared by the City’s Engineering Services Division. The purpose of the plan is to document the studies previously prepared by KCA and CH2M Hill as well as information regarding flooding problems after 1994, and make recommendations as to required future projects and funding to alleviate flooding and improve water quality in and around the City of Key West.

3.1.3 Master Project List

As part of this PMP, the plans or studies listed above were reviewed and the recommended list of improvement projects from each was extracted to be incorporated in the FKWQIP master project list. The list has since been updated based on current information available from each municipality or governing entity. Information contained in this master list includes:

- The FKWQIP Project Number (simply a tracking number)
- Whether the project is a wastewater or stormwater project
- The governmental or other entity supporting the project
- The source of the data
- The project’s geographic location (i.e. Upper, Middle or Lower Keys)
- The service or study area name

- Whether or not the project served a “Hot Spot” area
- The project name, and wastewater service area if applicable
- The “Hot Spot” area name it will serve if applicable
- The project rank by region if available
- The overall rank of the project based on each of the various master plans or studies
- The proposed action or project description
- The date the cost estimate for the project was published and the estimated cost
- An updated cost for 2004 and 2006 based on the Engineering News Records Construction Cost Index (ENRCCI) (2004 Update), a cost adjustment of 10.25 percent (2006 Update) and data provided by the municipalities
- Results of project bidding if available
- Tentative start and finish dates for each project
- Current status and projected cost estimate of the project
- Anticipated procurement method (e.g., Design-Bid-Build, Design-Build, Design-Build-Operate)
- Anticipated Corps level of involvement (e.g., Construction Administration, Design, Construction Management)
- Current Funding Available
- Funding Source
- Readiness Score based on the Readiness to Proceed Criteria discussed in section 3.2.5 of this PMP.

The Master Project List, which can be found in Appendix G, contains 260 wastewater and stormwater projects with a total estimated cost¹ of over \$705 million. A Summary of the Master Project List can be found in Table 3-1. Again as noted in Section 2.1, this Master Project List, while based on the original master plans, has been modified based on comments received from municipality staff representatives and individual PDT members.

Table 3-1 Summary of Master Project List

Government Entity	Wastewater Projects		Stormwater Projects		Total	
	Number	Estimated Cost ¹	Number	Estimated Cost ¹	Number	Estimated Cost ¹
Monroe County	36	\$225,416,583	22	\$7,810,469	58	\$233,227,052
Village of Islamorada	7	\$132,645,093	63	\$64,220,504	70	\$196,865,597
City of Key West	8	\$25,494,924	99	\$23,960,263	107	\$49,455,187
City of Key Colony Beach	1	\$551,250	-	0	1	\$551,250
Key Largo Wastewater District	16	\$138,970,000	-	0	16	\$138,970,000
City of Layton	1	\$5,735,155	-	0	1	\$5,735,155
City of Marathon	7	\$80,329,772	-	0	7	\$80,329,772
Totals	76	\$609,142,777	184	\$95,991,236	260	\$705,134,013

¹ These costs are based solely on information provided in each of the respective plans or studies and have been updated based on information provided by the various PDT members or based on the Engineering News Record Construction Cost Index and an increase of 10.25% from 2004 to 2006.

3.2 Prioritization Rationale

In implementing the FKWQIP, authorizing legislation stated, “In selecting projects under subsection (a), the Secretary shall consider whether a project will have substantial water quality benefits relative to other projects under consideration.” This is precisely what was accomplished by the various Wastewater and Stormwater Master Plans prepared for the County and Municipalities in the Keys and amended by the PDT.

3.2.1 Water Quality “Hot Spots”

In July of 1992, the EPA Oceans and Coastal Protection Divisions produced a report entitled “Water Quality Protection Program for the Florida Keys National Marine Sanctuary; Phase 1 Report.” The report provided a list of 84 water quality “Hot Spots.” These are areas, based upon workshops and discussion groups, with known or suspected water quality degradation. The list of 84 was later refined to a list of 88 “Hot Spots” according to a meeting summary dated March 19, 1996. This report list was mainly related to water quality issues associated with wastewater

influences. In July of 1999, Monroe County produced “Water Quality ‘Hot Spots’ in the Florida Keys: Evaluations for Stormwater Contributions.” This report assessed the previously identified concerns, visited the areas in the field, and defined the most probable stormwater-influenced problem areas.

3.2.2 Wastewater Project Prioritization

Monroe County Sanitary Wastewater Master Plan

Given the MCSWMP’s goal of eliminating unknown systems and cesspools other parameters such as “annual cost per pound of nitrogen or phosphorous removed” were deemed to be secondary in importance to the goal of eliminating cesspools. Consequently, the parameter of “annual cost per unknown system eliminated” was the principle criteria used for determining the extent of a community wastewater collection and treatment system, and for establishing and ranking Water Quality “Hot Spot” areas.

The MCSWMP ranks the “Hot Spots” and includes “Hot Spots” for the entire study area. The rankings are shown for the entire Keys, with a ranking of one for the “Hot Spot” areas that the MCSWMP recommended be addressed first for each region (upper, middle, lower) of the Keys, regardless of political boundaries. Generally, “Hot Spot” areas encompass two or more subdivisions and adjacent areas. As indicated above, the Monroe County Ordinance dealing with elimination of cesspools required that each area of the Keys (Upper, Middle, Lower) establish priority “Hot Spots” and initiate planning, design, and construction of these community wastewater systems.

Marathon Wastewater Facilities Plan

The Marathon Wastewater Facilities Plan used a project initial prioritization rational similar to that used in the MCSWMP.

City of Key West Water Quality Improvement Program

Prioritization rational used in developing this program was not available.

City of Key Colony Beach Sewer System Evaluation

This evaluation recommended rehabilitation projects based on the severity of the deterioration of the sewer collection or transmission segment. All repair recommendations were combined into one project in the Sewer System Evaluation. Because of ongoing investment into their sewer collection and treatment system, the City recently (March 2006) indicated that their priority project has been revised to upgrade the existing simplex lift stations to duplex lift stations. This will improve reliability of the collection system.

City of Marathon Reuse Component Central Wastewater RFP

No specific projects were identified as part of this study.

DBOWMS for the City of Marathon, FL

This project is one of those listed in both the MCSWMP and the *Marathon Wastewater Facilities Plan*. The City has recently (May 2003) indicated that they plan to implement this wastewater management system construction in seven phases.

FEMA PEA

The purpose of this document was to provide a programmatic level environmental assessment for three projects previously identified in the MCSWMP, and as such, no project prioritization was considered other than that previously performed in the Master Plan.

3.2.3 Stormwater Project Prioritization

With regard to stormwater, each master plan prioritized project areas based on criteria similar to that indicated in section 2.4.2, which listed the highest priority concern as water quality protection/improvement.

3.2.4 Intergovernmental Task Force (IGTF)

The IGTF in Monroe County is an organization with representatives from each of the Municipal Governments of the Florida Keys. The general purpose of this group is to provide a common voice to ensure that progress is made on water quality issues in the Keys.

3.2.5 Readiness to Proceed Criteria

The Readiness to Proceed Criteria dated June 22, 2001 was prepared by the FCAA, Florida Department of Community Affairs and the FDEP to “define when a recipient is eligible to receive a percentage of their share of any federal/state appropriation for wastewater and stormwater improvements authorized under the Keys Water Quality Improvement Act.

According to the criteria, to be deemed “ready to proceed,” all planning (including the selection of sites, wastewater/stormwater systems to be implemented, reclaimed water evaluation) and financing must be complete; sites must be established as available for the intended purposes, public participation must be documented; and a design-build-operate, design-build or a construction contract would have to be either executed or authorized for execution by the project sponsor’s governing body.

Further definition of these criteria presented in this document include requirements in the areas of: project site identification and availability, engineering, planning documentation, financial planning, connection and pretreatment ordinances, user charge fees, and public participation. Additionally, the document discusses the idea that acceptance of any federal grant funds shall not be contingent upon the receipt of additional federal/state funds in subsequent appropriations. Finally, the document calls for Quarterly Progress Assessment Meetings and deadlines for establishing “Readiness to Proceed.” The document can be found in Appendix D.

3.2.6 Revised Readiness to Proceed Criteria

A Revised Readiness to Proceed Criteria was drafted by a sub-committee of the PDT and distributed for comment on December 6, 2002. The revised document includes the following major changes:

- The requirement for completed “financing” was changed to “financial planning”
- The requirement for a design/build/operate, design/build or a construction contract was changed to reflect that the receipt of a bid would qualify
- A time limit for execution or authorization for execution of a contract was established at within six (6) months of availability of grant funds
- The requirement for EAs to be “completed” was changed to be “underway”
- The requirement for EA, as required, to be completed was stricken
- The requirement that a treatment process be identified was stricken
- The requirement for a “financial plan identifying the rates, fees, and charges associated with providing wastewater/stormwater management services” was changed to a “financial plan identifying the method of collecting rates...”
- The deadline for Readiness to Proceed was stricken

Based on this revised Criteria, the point system presented below was developed in order to assess each project’s readiness. The total potential points for any project would be 20.

3.2.7 Distribution Formula Approved by the IGTF

The IGTF has developed the “Distribution Formula Approved by the Intergovernmental Task Force and Presented for Approval to the Various Municipal Governments of the Florida Keys” (Distribution Formula). This document is included in Appendix F.

The Distribution Formula documents the desired and agreed upon distribution of a \$100 million Federal Appropriation. The agreed upon distribution includes the following points:

- “.... all priority project should participate in any funding that occurs until such time as their promised amounts of funding were reached, as long as all such prioritized project were considered ‘ready to proceed’ within the FY in which the appropriation was made...”
- Readiness to proceed will be based on the “Readiness to Proceed” document developed by the IGTF (Appendix D).

Five different funding scenarios were developed based on different funding levels that could be expected from the federal appropriation and various levels of “readiness to proceed” of different projects.

Table 3-2 Florida Keys Water Quality Improvement Program Readiness Assessment

Assessment Criteria	Score If Satisfied
1 Site	4
A Identification of Site	1
B Environmental and Technical Suitability	1
C Availability of Interest	1
D Legal and Zoning Designations	1
2.1 Engineering for Wastewater Management Projects	3
A Plant Identification	1
B Collection and Transmission System Identification	1
C Overlay of Plant on Survey	1
2.2 Engineering for Stormwater Management Projects	3
A Treatment and Disposal Identification	1.5
B Conveyance and Storage System Identification	1.5
3 Planning Documentation	5
A Completion of Planning	2
B Financial Plan	3
B.1 Financial Breakdown	1
B.2 Estimated Costs for Wastewater/Stormwater Management and Additional Work	1
B.3 Financial Commitments	1
4 Legal	3
A Connection Ordinance for Wastewater	1
B Pretreatment Ordinance for Wastewater	1
C User Charge or Fee Provisions	1
5 Public Participation	5
A Selection of Project Sites	2
B Establishment of Ordinances/Resolutions	1
C Adoption of Recommendations for Wastewater/Stormwater Management Option and Reuse	1
D Financial Planning	1

Once the appropriation is made or scheduled to be made, the IGTF proposes to confer with its “partners” to review the “readiness to proceed” status of each prioritized project. If the amount of funding is deemed too small to be divided according to scenarios stated above such that “substantial progress can be made,” the IGTF will meet to propose a project be funded for which it is presumed “substantial progress” can be made.

The PDT has agreed to utilize the Revised Readiness to Proceed Criteria (Appendix E) to assess a project’s readiness to proceed as part of the FKWQIP.

3.3 Initial Priority Projects

3.3.1 Selection Process

In developing the list of initial FKWQIP projects as a sub-set of the Master Project List, the following were considered:

Distribution Formula-Each local entity, as dictated in the Distribution Formula, is to receive a specified amount of the total funding. While this document does not specify the distribution for any funding greater than \$30 million, the PDT and IGTF has agreed to the following distribution of the \$100 million in funding should it be appropriated:

City of Key West	\$10,320,000
City of Marathon	\$29,560,000
Village of Islamorada	\$29,560,000
Monroe County/Key Largo	\$29,560,000
City of Layton	\$ 800,000
City of Key Colony Beach	\$ 200,000

Congressional Appropriation-As discussed above, should the appropriation from the Congress be less than the authorized \$100 million, the Distribution Formula developed by the IGTF would be used as guidance in selecting which projects would be funded.

Priority Projects-For each of the entities which makeup the IGTF, the highest priority projects from the Master Project List for that entity were selected for inclusion in the Priority Project List up to the amount of the allocated funding.

3.3.2 Priority Project List

As with the PMP, the Priority Project List is a dynamic document, as some projects will become substantially closer to “Ready to Proceed” status as the FKWQIP is implemented. Additionally, other sources of funding may become available such that high priority projects may be completed prior to distribution of funds from the FKWQIP.

The Priority Project List includes the name of the entity responsible for the project, the project name and type of project (wastewater or stormwater), whether or not the project is in a “Hot Spot” area, a readiness assessment, the projected cost of the project as well as what FKWQIP funds would be allocated to the project, the local match funds required, and the need for any additional funds. Detailed descriptions of the work involved in each of the projects can be found

on the Master Project List and the respective planning documents used to compile the Master Project List.

Priority Project Descriptions

Provided below is a brief narrative describing in a conceptual fashion the initial priority projects, updated in March of 2006 as obtained from the PDT members.

City of Key West

Projects included in the Initial Project List for the City of Key West includes 97 Stormwater Projects. Each of these projects generally consists of relatively small improvements such as installing new drainage wells and inlets or treatment structures upstream of outfalls.

City of Layton

This project is a design/build project to include a central wastewater system to serve the City of Layton. The system to serve approximately 295 equivalent dwelling units (EDUs) will include wastewater collection, transmission, treatment and effluent disposal. The collection system will include conventional gravity sewers with conventional sewage pumping stations. Based on the conceptual design provided as part of the design/build RFP, it is anticipated that the collection system will consist of approximately 8,410 linear feet of gravity sewer. The proposed transmission system will consist of 6,600 linear feet of force main and four (4) lift stations ranging in capacities from 20 to 120 gallons per minute (gpm). A 0.049 mgd WWTP will be provided which will meet BAT standards. Effluent disposal will be via shallow injections wells. Residual solids will be digested, thickened and hauled to the Florida mainland for disposal.

City of Key Colony Beach

The City of Key Colony Beach is planning to rehabilitate ten (10) existing simplex lift stations providing added reliability and minimizing potential for sewage spills. The project includes replacement of pumps and piping within the wet wells at each of the ten (10) stations. The project also includes rehabilitation of the wet well structures to include sealing of the interior walls to prevent any exfiltration of sewage.

City of Marathon

The City of Marathon has phased the development of their wastewater collection and treatment systems. The first project implemented by the City of Marathon was the Little Venice System. While the City of Marathon was originally planning to construct one central wastewater treatment facility to meet all remaining wastewater flow, a decision was made to separate the City into seven service areas and implement the type of treatment/collection that is most effective within each area.

In 2006 in a document entitled *City of Marathon Wastewater Treatment Project Implementation Summary*, the 1998 Marathon Facilities Plan collection system alternatives were re-evaluated

3.0 Program Components

using current unit prices. It was determined that vacuum systems are the most cost-effective method of wastewater collection for larger service area, but that a combination of conventional gravity systems and macerator or STEP system was more appropriate for smaller service areas. It was also determined that in areas of low density or remote location, on-site and cluster systems were the correct choice.

Additionally, the construction costs and O&M costs for various combinations of WWTPs were examined. It was found that the capital costs for constructions of WWTPs to serve the City of Marathon could be reduced by using a combination of: 1) pre-engineered systems: 2) upgraded existing WWTPs: 3) use of Relocated BAT WWTPs and 4) on-site and cluster type treatment systems. This allowed the elimination of deep injection wells and long runs of force mains.

Marathon has refined their project, with the considerations discussed above, into a seven service area plan, with priorities placed on Areas 4, 6, 1, 2 and 5. Below are descriptions of the service areas and the planned improvements.

Service Area 4, Vaca Key (central), includes both ocean and bayside from 33rd Street through 60th Street as well as the Sombrero area. The year 2015 estimated wastewater flows are .399 MGD. The density in this area allows a vacuum collection system to be cost effective. A new .400 MGD nutrient removal wastewater treatment plant will be constructed in this area to provide needed treatment. The effluent disposal will be primarily re-use on the Sombrero Country Club, alternate Class V shallow injection wells will also be provided.

Service Area 6, Fat Deer Key (west), includes both ocean and bayside from Vaca Cut to Coco Plum and down Coco Plum Drive to the end. The year 2015 estimated wastewater flows are .155 MGD. This area was re-addressed in December of 2005 once it was determined that some of the flow from these areas would not be pumped to the City of Key Colony Beach WWTP. The original conclusion of grinder pump collection system for this area is still marginally the most economical, however, with the increase in flow and service area size, a vacuum collection System became much more attractive for this area. Value engineering during this review has also reduced the construction cost estimate. The inability to provide back-up power and 24 hour retention volumes for hundreds of pump stations has made the vacuum collection system the recommendation in this area. The treatment will be provided by upgrading an existing package plant both in capacity and in treatment to meet advanced wastewater treatment standards. Effluent disposal will be through Class V shallow injection wells.

Service Area 1, Knight's Key, is currently in process of re-development by a private developer. The year 2015 estimated wastewater flows are .023 MGD. The City of Marathon intends to partner with the developer to provide a new BAT plant to handle the flows from the entire island. The City would then design and construct a collection system to convey the existing property's sewage to the new BAT wastewater treatment plant located in the new development. Effluent disposal will be through Class V shallow injections wells.

Service Area 2, Boot Key, currently has one small facility surrounding the radio tower complex. The year 2015 estimated wastewater flows are .0006 MGD. The remainder of the island is not to be developed. The best way to provide service for Boot Key is a small BAT On-site unit located such

3.0 Program Components

that gravity flow will provide the only needed conveyance. Effluent disposal will be through Class V shallow injections wells, subsurface drip Irrigation, or a conventional drain field.

Service Area 5, Vaca Key (east), includes both ocean side and bayside from 60th Street through Vaca Cut and includes the Little Venice Area. The year 2015 estimated wastewater flows are .490 MGD. The density in this area allows an expansion of the existing vacuum collection system to be cost effective. The existing Little Venice advance WWTP will be expanded to .499 MGD to provide treatment. Effluent disposal will be a combination of re-use on the City of Marathon parks and events fields and through Class V shallow injection wells.

3.0 Program Components

Table 3-3 Florida Keys Water Quality Improvement Program Priority Project List

Entity	Project Priority	Project Name	Project Type SW/WW	Hot Spot Area?	Readiness (Out of 20)	Projected Cost of Top Priority Projects	Potential Allowance from Federal Funding	Local Match to Federal Funds	Total in FKWQIP	Other Local Match Required
Key West	1	97 Stormwater Projects	SW	N/A	20	\$ 20,113,640	\$ 10,320,000	\$ 5,556,923	\$ 15,876,923	\$ 4,236,717
Subtotal Key West						\$ 16,199,007	\$ 10,320,000	\$ 5,556,923	\$ 15,876,923	\$ 322,084
Layton	1	Long Key Estates, City of Layton, area adjacent to US1	WW	Y	11	\$ 5,735,155	\$ 800,000	\$ 430,769	\$ 1,230,769	\$ 3,971,186
Subtotal Layton						\$ 5,735,155	\$ 800,000	\$ 430,769	\$ 1,230,769	\$ 3,971,186
Key Colony Beach	1	City of Key Colony Beach Pump Station Rehabilitation	WW	N/A	20	\$ 551,250	\$ 200,000	\$ 107,692	\$ 307,692	\$ 192,308
Subtotal Key Colony Beach						\$ 551,250	\$ 200,000	\$ 107,692	\$ 307,692	\$ 192,308
Marathon	1	Service Area 4	WW	Y	20	\$ 22,141,063	\$ 14,391,691	\$ 7,749,392	\$ 22,141,063	\$ 0 -
	2	Service Area 6	WW	Y	20	\$ 8,601,165	\$ 5,590,757	\$ 3,010,408	\$ 8,601,165	\$ 0 -
	3	Service Area 1	WW	Y	20	\$ 1,276,302	\$ 829,596	\$ 446,706	\$ 8,601,165	\$ 0
Subtotal Marathon						\$ 59,242,605	\$ 29,560,000	\$ 20,734,912	\$ 50,294,912	\$ 8,947,693
Islamorada	1	Village of Islamorada Master Plan	WW	N/A	N/A	\$ 103,000	\$ 66,950	\$ 36,050	\$ 103,000	\$ -

3.0 Program Components

Entity	Project Priority	Project Name	Project Type SW/WW	Hot Spot Area?	Readiness (Out of 20)	Projected Cost of Top Priority Projects	Potential Allowance from Federal Funding	Local Match to Federal Funds	Total in FKWQIP	Other Local Match Required
	2	Plantation Key Colony Phase II	WW	Y	20	\$ 13,958,997	\$ 9,073,348	\$ 4,885,649	\$ 13,958,997	\$ -
	3	Plantation Key	WW	Y	10	\$ 51,307,497	\$ 20,419,702	\$ 10,995,224	\$ 31,414,926	\$ 19,892,571
Subtotal Islamorada						\$ 65,369,494	\$ 29,560,000	\$ 15,916,923	\$ 45,476,923	\$ 19,892,571
Key Largo	1	Regional Treatment Plant	WW	Y	20	\$ 16,750,000	\$ 10,887,500	\$ 5,862,500	\$ 16,750,000	\$ -
	2	North Transmission Line	WW	Y	20	\$ 5,200,000	\$ 3,380,000	\$ 1,820,000	\$ 5,200,000	\$ -
	3	Sexton Cove / Lake Surprise	WW	Y	20	\$ 9,200,000	\$ 5,980,000	\$ 3,220,000	\$ 9,200,000	\$ -
	4	Largo Gardens	WW	Y	20	\$ 5,500,000	\$ 3,575,000	\$ 1,925,000	\$ 5,500,000	\$ -
	5	Collection Basin A	WW	Y	20	\$ 12,600,000	\$ 5,737,500	\$ 3,089,423	\$ 8,826,923	\$ 3,773,077
Subtotal Key Largo						\$ 49,250,000	\$ 29,560,000	\$ 15,916,923	\$ 45,476,923	\$ 3,773,077
Totals						\$ 199,947,406	\$ 100,000,000	\$ 53,846,154	\$ 153,846,153	\$ 45,516,803

1: Project costs assumed based on the *City of Marathon Wastewater Treatment Project Implementation Summary*

Village of Islamorada

Village of Islamorada Wastewater Master Plan.

The Village has decided to develop their own Master Plan to help them better prioritize and implement their wastewater projects. Previously their plan relied on the MCSWMP as modified by a proposal for a Village-wide wastewater collection and treatment system submitted by Florida Water Services in response to an RFP issued by the Village.

Plantation Key Colony Phase II.

This project generally consists of expansion of the AWT plant built in Phase I to 0.23 mgd, and construction of a vacuum sewer system for the remainder of North Plantation Key Colony from Tavernier to the northeast, High Street to the southeast and Plantation Key Elementary to the southwest, as well as connection of Plantation Key Elementary School and Coral Shores High School.

Remainder of Plantation Key.

This project consists of providing a wastewater collection and treatment system to serve the remainder of Plantation Key. It is anticipated that the required AWT WWTP would have an average daily flow of approximately 0.35 mgd.

Key Largo Wastewater Board

Regional Treatment Plant

This project generally includes replacement of the 0.183 mgd treatment plant with a 2.25 mgd plant to serve the entire island of Key Largo. The system is projected to serve 8,988 EDUs (one unit equals a household of 2.3 persons generating about 145 gallons of effluent per day) by 2015 and will include wastewater collection, transmission, treatment, effluent disposal, and two alternatives for providing reclaimed water service. It is anticipated that the collections system will include conventional gravity sewers with conventional sewage pumping stations, or vacuum sewers with vacuum and pumping stations, or a combination of vacuum and conventional collections systems (hybrid system). The 2.25 mgd AWT plant will be located at MM 100.5 opposite Key Largo Park. The proposed wastewater treatment facility would be constructed on approximately 2.6 acres ocean side of U.S. Highway 1 and adjacent to an existing FKAA facility. The proposed site is part of a larger 23 acre parcel owned by the Key Largo Wastewater Treatment District (KLWTD). Effluent disposal will be via deep injections wells. Residual solids will be digested, thickened and transported to one of three Monroe County Solid Waste Transfer Stations and subsequently transported to the Miami-Dade Water and Sewer Department South District WWTF in Florida City

North Transmission Line

This project generally consists of construction of a transmission line from the plant at MM 100.5 to the northern edge of the service area. This installation will allow for sub-basins or collection areas north of the plant to be connected to the 2.25 mgd AWT plant as they are constructed.

Sexton Cove/ Lake Surprise Collection System

This project consists of providing a wastewater collection system to serve the Sexton Cove and Lake Surprise areas. The collection system will be connected to the North Transmission Line for transport of the wastewater collected to the 2.25 mgd AWT plant located at MM 100.5

Largo Gardens Collection System

This project consists of providing a wastewater collection system to serve the Largo Gardens area. The collection system will be connected to the North Transmission Line for transport of the wastewater collected to the 2.25 mgd AWT plant located at MM 100.5

Collection Basin A

This project consists of providing a wastewater collection system to serve the Stillwright Point, Paradise Point Cove, Riviera Village, Taylor Creek Village, Largo Sound Village, and Anglers Park areas. The collection system will be connected to the North Transmission Line for transport of the wastewater collected to the 2.25 mgd AWT plant located at MM 100.5

3.4 Method of Execution

3.4.1 Federal Appropriations

Public Law 106-554, Departments of Labor, Health, and Human Services and Education, and related Agencies Appropriations Act of 2001, Section 109, allocated \$420,000 for the Corps to begin coordination activities with the non-federal sponsor and to prepare the PMP (subject document) that defines the program scope, guidelines, schedule and resources required for program implementation. Additionally, monies are being used to prepare the appropriate level of NEPA documentation to evaluate program alternatives and address the impacts of program implementation.

Since the funding stream per year is presently an unknown factor, this PMP has assumed Congressional appropriations of various amounts for the next four years to implement the initial projects discussed in Section 3.3. Appropriation assumptions are discussed in Section 4.0.

3.4.2 Program Implementation Guidance (PIG) Document

The Corps Headquarters has prepared a PIG document to assist in the implementation of the FKWQIP that contains the following elements:

- Program Objective
- Authority
- Appropriations and Use of Funds
- Program Management
- Applicable Policy
- Procedures
- Reporting Requirements

3.4.3 Program Cooperative Agreements

The Corps is currently developing a PCA for each municipality in the Florida Keys participating in the FKWQIP. The PCAs will be executed between the federal sponsor (Corps) and the non-federal sponsor (Monroe County municipalities). Subject to the procedures established in the executed PCAs, funds appropriated for the FKWQIP will be used to execute agreements for selected design and construction assistance projects. All work will be performed within available funds.

Before entering into the PCAs, the Corps will ensure each non-federal sponsor has completed adequate planning and design activities, as appropriate. The Corps will ensure the each municipality has completed a financial plan for each project approved by the PDT for federal funding and has identified and secured the financial sources for the non-federal portion of each project. Additionally, the Corps will ensure that each project or project component implemented under the program complies with applicable growth management ordinances of Monroe County, Florida; applicable agreements between Monroe County, Florida, and the State of Florida to manage growth in Monroe County, Florida; and applicable water quality standards. Also, the Corps will ensure all projects selected for federal funding are consistent with the master wastewater and stormwater plans prepared for Monroe County, Florida.

3.4.4 Independent Technical Review (ITR) Process

An ITR is required for Corps planning projects. This is a part of the Corps Headquarters level policy and is further defined by Corps Engineer Regulations. ITR is part of the corporate quality control/quality assurance (QC/QA) process followed by Corps for all engineering projects. QC is comprised of peer reviews, normal technical review and the ITR. In general, QA oversight is for areas of responsibility (and governance) outside the authority assigned to the PDT. All planning, engineering and design products shall have an ITR. The ITR team will be established prior to work starting on individual projects and will conduct reviews as necessary to insure that the product is consistent with established criteria, guidance, regulations, procedures, and policy. The ITR process implemented for the FKWQIP will be a continuous process with reviews coordinated with the appropriate project manager to minimize lost planning and design effort.

3.4.5 Contracting and Acquisition Plan

A general contracting strategy for the FKWQIP will be outlined and included in the PCA that will be utilized for implementing subsequent phases of the FKWQIP. Contracting and acquisition strategies to be utilized during design and construction phases will be developed in subsequent updates of this PMP.

Contract specific acquisition strategies will be developed for each individual project to be advertised and awarded. Procurement statutes, regulations, and procedures applicable to the procuring Agency (i.e., municipalities within Monroe County) will dictate the acquisition process. Factors to be considered in determining the specific acquisition strategies include but are not limited to technical complexity of the work, environmental considerations/constraints, construction schedules, and magnitude of construction. Socioeconomic statutes, regulations and

procedures applicable to the socioeconomic aspects of the respective procuring Agency, will be applied to the procurement process for each individual project.

3.4.6 Design Process

A detailed scope of work will be reviewed during the design phase of each project receiving funding through the FKWQIP. The level of technical design reviews to be conducted will be determined by the Corps in concert with the municipality implementing the project and will include sufficient engineering, economic, and environmental analyses to ensure compliance with applicable federal and state laws.

In selecting projects for funding under criteria contained within Section 109, the Corps will consider whether a project will have substantial water quality benefits relative to other projects under consideration. Sufficient analysis, coordination, and documentation will be prepared to comply with applicable federal environmental laws, statutes, and Executive Orders and to provide a basis for obtaining the necessary permits and licenses for project implementation. Using information provided by each municipality, the Corps will develop and coordinate as required, an EA and Finding of No Significant Impact (FONSI) or a project-specific EIS and Record of Decision (ROD) in accordance with the NEPA of 1969 for each federally funded project or program component. This project specific NEPA documentation will include tiering off the PEIS. The non-federal sponsor is responsible for obtaining all necessary permits and licenses.

Whether the design phase of the project takes the form of a grant, design assistance, or partial cost-reimbursement for design performed by non-federal interests, the end product will be a set of plans and specifications suitable for the advertisement and award of a construction contract for the identified project. The design phase will also produce documentation of the engineering, economic, environmental, institutional analyses, and public involvement activities necessary to implement the project. Requirements include preparation of either an EA and FONSI or a project-specific EIS and ROD that tiers from the PEIS for NEPA compliance and obtaining all the necessary permits required for project implementation.

3.4.7 Real Estate Acquisition

Credit for real estate acquisition associated with the purchase of lands by the non-federal sponsor is not currently reimbursable under terms of the enabling legislation, thus is not subject to review by the Corps. If however, in the future, a determination is made that real estate purchases are reimbursable, the Corps will conduct a real estate evaluation to insure that fair market value was received for purchased property needed to construct the wastewater and stormwater treatment facilities.

If a real estate analysis is needed in the future, an inventory of all lands adjacent to the project improvements followed by a list of lands to be acquired for each specific wastewater or stormwater improvement project, will be developed. An appraisal of the costs of lands and damages, and preparation of a plan for acquisition of these lands will also be reviewed. Other tasks include an analysis of physical takings, attorney's opinion of ability to receive

compensation, and obtaining rights of entry for various field collection activities. This activity includes all written memoranda, opinions, database development reports and other documents provided by real estate personnel as required in support of feasibility phase planning efforts and eventually the purchase of the necessary land and rights-of-way.

3.4.8 Construction Activities

The non-federal sponsor (Monroe County municipalities) is responsible for development and approval of all products pertaining to the performance of work (whether performed under contract or by non-federal sponsor personnel) and will provide the Corps with an opportunity to review such products. The non-federal sponsor will also prepare and furnish to the Corps for review a proposed Operation, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R) Manual. If at any time the Corps is responsible for construction, it will be responsible for development and approval of all contract products and the OMRR&R Manual and will provide the non-federal sponsor an opportunity to review such products.

3.4.9 Reimbursement

The cumulative project financial commitments will be limited to actual appropriations up to the authorized amount of \$100 million federal dollars. Assistance that involves credits or reimbursements to the non-federal sponsor is subject to the requirements established in the implementing legislation (i.e., Public Law 106-554 of 2000) and the executed PCA.

Subject to the availability of federal funding, and execution of the PCA between the non-federal sponsor and the Corps, the non-federal sponsor will be reimbursed for the non-federal share of previous design, future design, or future construction work performed by the non-federal sponsor, to the extent the credited value of the non-federal sponsor's total contributions to the project exceed its required cost share. Creditable prior design is limited to work specifically completed for projects selected by the PDT to be funded by the Corps, or separable components for which assistance is being provided. Credit for design, which occurred before the law was enacted (21 December 2001), is not allowable. Likewise, reimbursement for past construction is not authorized. The amount of the credit to be afforded for non-federal work shall be determined as specified in the executed PCA.

The Corps will process reimbursement payments based on proper invoices submitted by the non-federal sponsor. If there are unforeseen delays in making reimbursement, reasonable interest and financing charges will be credited to the non-federal sponsor by the Government. The amount of the interest and financing charges creditable shall be limited to the amount computed in accordance with the provisions of the Prompt Payment Act.

Federal costs for review of existing design performed by non-federal interests, developing the scope of work, financial analysis, NEPA compliance, and negotiating the construction agreement, will be included in the total project cost that is subject to cost sharing. All federal and non-federal costs incurred subsequent to execution of the agreement will be included in total project costs and subject to cost sharing, crediting, and reimbursement under the terms of the construction agreement.

3.4.10 NEPA Requirements

Under the NEPA of 1969 and the CEQ regulations implementing NEPA (40 CFR Parts 1500 to 1508), the Corps must consider the environmental consequences of proposed federal actions (projects). Accordingly, the Corps prepared a PEIS to evaluate the environmental consequences of implementing a wide range of projects designed to improve water quality in the Sanctuary. The PEIS describes a program to improve the wastewater and stormwater infrastructure in the Florida Keys. Because the affected environment and environmental consequences are addressed in general terms, additional NEPA documentation has been prepared for project-specific actions.

These improvements include wastewater collection, treatment, and disposal options and stormwater BMPs. The PEIS is programmatic, and as such the alternatives and environmental consequences of the overall FKWQIP implementation on the affected environment are described at a general level. Due to the conceptual nature of the FKWQIP, individual project-specific EISs or EAs that build upon the PEIS will be required and have been prepared. This process is called *tiering* and was established by the CEQ to provide “coverage of general matters in broader EIS with subsequent narrower statements or environmental analyses...” Agencies are encouraged to tier EISs to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decisions at each level of environmental review” (40 CFR 1508.02 and 1520.20).

Starting in late FY 2004 project-specific NEPA documentation was prepared for each priority FKWQIP project scheduled to receive federal funding. To date, EAs have been prepared for projects associated with six municipalities and a FONSI issued for five of these projects (i.e., Islamorada, Key West, Key Colony Beach, Layton, and Marathon). The Key Largo EA needs to be revised and will be issued as a revised draft EA in late December 2006.

The current PDT strategy is to use a portion of the initial Congressional appropriation to prepare the required NEPA documentation for each priority project to avoid potential schedule delays.

4.0 Program Schedule

4.0 PROGRAM SCHEDULE

A program schedule has been developed assuming funding of \$100 million appropriations over the next five years to ensure that the priority projects are funded at levels necessary to meet the state mandatory 2010 treatment standards. The funding levels assumed for implementation of the program schedule are as follows:

FY 2007	\$19.7 Million
FY 2008	\$36.4 Million
FY 2009	\$21.1 Million
FY 2010	\$22.8 Million

For the projects contained in the Priority Project List, a program level schedule has been developed which considers work completed to date and includes any required planning, conceptual design, preparation of RFPs, advertisement for bid, bid review and award, and design and construction.

REFERENCES

REFERENCES

Federal Emergency Management Agency (FEMA). September 2002. Federal Emergency Management Agency Draft Programmatic Environmental Assessment. Prepared by URS Corporation.

Islamorada. September 2000. Islamorada, Village of Islands, Stormwater Management Master Plan. Prepared by Law Engineering and Environmental Services, Inc.

Key Colony Beach, City of. September 2002. City of Key Colony Beach Sewer System Evaluation. Prepared by URS Corporation.

Key West, City of. 1999. City of Key West Water Quality Improvement Program.

Key West, City of. June 2001. City of Key West Long Range Stormwater Utility Plan. Prepared by Engineering Services.

Key West, City of. September 1994. Stormwater Runoff Study. Prepared by Kisinger Campo and Associates, Corporation.

Kruczynski, William L. and Fred McManus. 1999. "Water Quality Concerns in the Florida Keys: Sources, Effects, and Solutions", The Everglades, Florida Bay, and Coral Reefs of the Florida Keys: An Ecosystem Sourcebook, 31.

Lapointe, B.E., J.D. O'Connell, and G. Garrett. 1990. Nutrient couplings between on-site sewage disposal systems, groundwaters, and nearshore surface waters of the Florida Keys, Biogeochemistry, 10:2289-307.

Marathon, City of. January 2002. Design/Build/Operate Wastewater Management System (DBOWMS) for the City of Marathon. Prepared by the Florida Keys Aqueduct Authority. Key West, Florida.

Marathon, City of. May 2001. City of Marathon Reuse Component of Central Wastewater RFP. Prepared by Calvin, Giordano & Associates.

Marathon, City of. June 2006. City of Marathon Wastewater Treatment Project Implementation Summary

Monroe County. June 2000. Monroe County Sanitary Wastewater Master Plan. Prepared by CH2Mhill in association with Lindahl, Browning Ferrari & Hellstrom, Inc., Ayers Associates, Hazen and Sawyer, P.C., Katz, Kutter, Haigler, Alderman, Bryant, and Yon, P.A. and Continental Shelf Association, Inc.

Monroe County. April 1998. Draft Wastewater Facilities Plan with Phased Implementation for the Marathon Area of the Florida Keys (Marathon Wastewater Facilities Plan). Prepared by

REFERENCES

- CH2Mhill in association with Lindahl, Browning Ferrari & Hellstrom, Inc. and Continental Shelf Association, Inc.
- Monroe County. August 2001. Monroe County Stormwater Management Master Plan. Prepared by Camp Dresser & McKee, Inc.
- Monroe County. July 1999. "Water Quality 'Hotspots' in the Florida Keys: Evaluations for Stormwater Contributions".
- Paul, J.P., J.B. Rose, J. Brown, E.A. Shinn, S. Miller, S.R. Farrah. 1995. Viral tracer studies indicate contamination of marine waters by sewage disposal practices in Key Largo, Florida. *Appl. Environ. Microbio.* 61:2230-2234
- Paul, J.P., J.B. Rose, S. Jiang, C. Kellog, E.A. Shinn. 1995. Occurrence of fecal indicator bacteria in surface waters and the subsurface aquifer in Key Largo, Florida. *Appl. Environ. Microbio.* 61:2235-2241
- Stoker, Y.E. "Effectiveness of a stormwater collection and detention system for reducing constituent loads from bridge runoff in Pinellas County, Florida". U.S. Geological Survey (USGS) Open File Report 96-484.
- U.S. Environmental Protection Agency (EPA). Oceans and Coastal Protection Divisions. 1993. Water Quality Protection Program for the Florida Keys National Marine Sanctuary; Phase II Report".
- U.S. Environmental Protection Agency (EPA). Oceans and Coastal Protection Divisions. July 1992. Water Quality Protection Program for the Florida Keys National Marine Sanctuary; Phase I Report".

APPENDICES

APPENDICES

Appendix A
Florida Keys Water Quality Improvement Act
Public Law 106-554

Under authority of Public Law 106-554, Department of Labor, Health and Human Services and Education, Related Agencies Appropriations Act of 2000, Section 109 and Conference Report H.R. 4577, the Corps is authorized to provide technical and financial assistance to carry out projects for the planning, design and construction of treatment works to improve the water quality of the Florida Keys National Marine Sanctuary.

Appendix B

Roster of PDT Members

Roster of PDT Members

Appendix B

Name	Title	Entity	Phone	Fax	Email	Address
Tom Willi	County Administrator	Monroe County	305-292-4441	305-292-4544	Willi-Tom@MonroeCounty-FL.gov	1100 Simonton Street Key West, FL 33040
David Fernandez	Utilities Director	Key West	305-293-6414	305-293-6415	dfernand@keywestcity.com	5701 W. College Rd. Key West, FL 33040
Norman Anderson	Mayor	Layton	786-299-2614		rebarman1@aol.com	
John Bartus	Councilman	Marathon	305-743-0033	305-743-3667	jebartus@bellsouth.net	P.O. Box 500938 Marathon, FL 33050
Chris Sante	Mayor	Islamorada	305-664-6400	305-664-12	ChrisSante@islamorada.fl.us	81990 Overseas Hwy., 2 nd Fl. Islamorada, FL 33036
Orlando Hernandez, P.E.	Utilities-Capital Projects Manager	Islamorada	305-852-6933	305-852-9533	Orlando.hernandez@islamorada.fl.us	81990 Overseas Hwy., 2 nd Fl. Islamorada, FL 33036
Clyde Burnett	Mayor	Key Colony Beach	305-743-3571	305-289-1767	mayor@keycolonybeach.net	P.O. Box 510299 KCB, FL 33051
Rebecca Jetton	Planning Manager	FL Dept. of Community Affairs	305-289-2402	305-289-2442	jetton@mail.state.fl.us	2796 Overseas Hwy., Suite 212 Marathon, FL 33050
Jim Reynolds	Executive Director	FL Keys Aqueduct Authority	305-296-2454	305-294-5683	jreynolds@fkaa.com	1100 Kennedy Drive Key West, FL 33040
Claude Bullock	Board Member	Key Largo Wastewater Board	305-453-5804	305-453-5807	Cbullock417@aol.com	110 Point Pleasant Drive Key Largo, FL 33037
Cecelia Weaver	Keys Service Center Manager	SFWMD	305-853-3219	305-853-3221	cweaver@sfwmd.gov	10 High Point Rd., Suite A Plantation Key, FL 33070
Shelly Trulock	Project Manager	US ACOE	904-232-3292	904-899-5001	Shelley.f.trulock@usace.army.mil	701 San Marco Blvd Jacksonville, FL 32207
Bill Kruczynski	Program Scientist	US EPA	305-743-0537	305-743-3304	kruczynski.bill@epa.gov	P.O. Box 500368 Marathon, FL 33050
Gus Rios	Environmental Administrator	FDEP, South District	305-289-2310	305-289-2314	gus.rios@dep.state.fl.us	2796 Overseas Hwy., Suite 221 Marathon, FL 33050

Appendix C

Plan Formulation Memorandum

Appendix D

Readiness to Proceed Document

Prepared by the Intergovernmental Task Force

Readiness to Proceed Criteria
Developed by the Monroe County Intergovernmental Task Force
Draft 6/22/01

To qualify for grant award, the following conditions must be met: All planning (including the selection of sites, wastewater/stormwater systems to be implemented, reclaimed water evaluation, and financing must be complete; sites must be established as available for the intended purposes, public participation must be documented; and a (design/build/operate), (design/build) or a construction contract would have to be either executed or authorized for execution by the project sponsor's governing body.

1. SITES All Project sites shall be:

- a) Identified. Legal descriptions of the properties, including boundary surveys, shall be complete for all required project sites. When all work will be in existing easements or rights of way or on property otherwise owned by the project sponsor, only the identification of the sites (s) will be necessary.
- b) Determined environmentally and technically suitable. Environmental Assessments complete. If determined necessary Environmental Impact Statements completed. Initial geo-technical evaluations of sites, as necessary to assure feasibility of construction shall be completed. When all work will be in existing easements or rights of way or on property otherwise owned by the project sponsor and properly zoned, the foregoing determination will be unnecessary.
- c) Available. Sufficient interest must be held, by the local government, in the sites to enable uninterrupted construction. Sufficient interest means ownership, easement, right-of-way, formal agreement enabling construction, contract for purchase, formal option for purchase/lease with willing seller, or initiation of condemnation process.
- d) Sites shall have the appropriate legal zoning designations(s).

2.1 ENGINEERING FOR WASTEWATER MANAGEMENT PROJECTS.

- a) Identification of treatment plant capacity, treatment level, and treatment processes.
- b) Identification of Collection and transmission system technology and preliminary layout.
- c) Physical overlay of treatment plant process units and disposal facilities on plant site location survey.

2.2 ENGINEERING FOR STORMWATER MANAGEMENT PROJECTS.

- a) Identification of treatment and disposal facilities or methods.
- b) Identification of conveyance and storage capacities.

3. PLANNING DOCUMENTATION.

- a) All wastewater/stormwater planning must be complete and the recommendations, including those for reuse of reclaimed water, contained in the planning documents must be adopted by the local government. The recommendations are to be reflected in the procurement or contract documents.
- b) The financial plan identifying the rates, fees, and charges associated with providing wastewater/stormwater management services. under the different grant funding levels identified by the Intergovernmental Funding Task Force. Information on customer base, location and level of services shall be reflected in the procurement of contract documents for wastewater management services. The plan shall address all capital costs (including financing) operation and maintenance costs.
 - b.1) The financial plan shall identify the amount(s) and source(s) of the non-federal share (State Revolving Loan Program, commercial lending, bonds, dedicated local revenues, etc.) of the project costs. associated with the different grant funding levels identified by the Intergovernmental Funding Task Force.
 - b.2) The financial plan shall identify the nature and amount of all estimated costs, both for the project sponsor's wastewater/stormwater management system and for additional work, if any, associated with the system for which individual property owners will be directly responsible.
 - b.3) A commitment from a financing entity to make available the non-federal share of the project costs must be documented.

4. LEGAL

- a.) Connection ordinance for wastewater management systems. The connection ordinance shall describe all existing wastewater conditions subject to mandatory connection.
- b.) Pretreatment ordinance for wastewater systems. The pre-treatment ordinances shall describe the conditions under which wastes may be discharged to the system.
- c.) User charge or fee provisions for wastewater/stormwater management systems. Draft ordinance/resolution provisions shall describe the structure of rates, fees, and charges. It shall describe the conditions and process under which the schedule of rates, fees, and charges will be changed.

5. PUBLIC PARTICIPATION. Public participation shall be complete for the following activities:

- a) Selection of project sites to be acquired for the project.
- b) Establishment of ordinances/resolutions.
- c) Adoption of recommendations for wastewater/stormwater management options and reuse.
- d) Financial planning.

6. FUNDING LEVEL. The acceptance of any federal grant funds shall not be contingent upon the receipt of additional federal/state funds in subsequent appropriations.

7. DEADLINES FOR READINESS-TO-PROCEED

- a) Quarterly Progress Assessment Meeting shall be held by the intergovernmental Task Force.
- b) The deadline for establishing Readiness-To-Proceed for fiscal year 2002 Grant Funds shall be June 30, 2002.

Appendix E

Revised Readiness to Proceed Document

Prepared by the PDT

Revised Readiness to Proceed Criteria for the Florida Keys Water Quality Improvement Program Wastewater and Stormwater Projects
2/23/03

This document was developed by the Program Delivery Team for the Florida Keys Water Quality Improvement Program.

To qualify for grant award, the following conditions must be met: All planning (including the selection of sites, wastewater/stormwater systems to be implemented, reclaimed water evaluation, and financial planning must be complete; sites must be established as available for the intended purposes, public participation must be documented; and a (design/build/operate), (design/build) or a construction contract bid or proposal would have to be received and either executed or authorized for execution by the project sponsor's governing body within six (6) months of availability of grant funds.

1. SITES All Project sites shall be:

- e) Identified. Legal descriptions of the properties, including boundary surveys, shall be complete for all required project sites. When all work will be in existing easements or rights of way or on property otherwise owned by the project sponsor, only the identification of the sites (s) will be necessary.
- f) Determined environmentally and technically suitable. Environmental Assessments underway. Initial geo-technical evaluations of sites, as necessary to assure feasibility of construction shall be completed. When all work will be in existing easements or rights of way or on property otherwise owned by the project sponsor and properly zoned, the foregoing determination will be unnecessary.
- g) Available. Sufficient interest must be held, by the local government, in the sites to enable uninterrupted construction. Sufficient interest means ownership, easement, right-of-way, formal agreement enabling construction, contract for purchase, formal option for purchase/lease with willing seller, or initiation of condemnation process.
- h) Sites shall have the appropriate legal zoning designations(s).

2.3 ENGINEERING FOR WASTEWATER MANAGEMENT PROJECTS.

- d) Identification of treatment plant capacity, and treatment level.
- e) Identification of Collection and transmission system technology and preliminary layout.
- f) Physical overlay of treatment plant process units and disposal facilities on plant site location survey.

2.4 ENGINEERING FOR STORMWATER MANAGEMENT PROJECTS.

- c) Identification of treatment and disposal facilities or methods.
- d) Identification of conveyance and storage capacities.

8. PLANNING DOCUMENTATION.

- c) All wastewater/stormwater planning must be complete and the recommendations, including those for reuse of reclaimed water, contained in the planning documents must be adopted by the local government. The recommendations are to be reflected in the procurement or contract documents.
- d) The financial plan identifying the method of collecting rates, fees, and charges associated with providing wastewater/stormwater management services. Information on customer base, location and level of services shall be reflected in the procurement of contract documents for wastewater management services. The plan shall address all capital costs (including financing) operation and maintenance costs.
 - b.1) The financial plan shall identify the amount(s) and source(s) of the non-federal share (State Revolving Loan Program, commercial lending, bonds, dedicated local revenues, etc.) of the project costs.
 - b.2) The financial plan shall identify the nature and amount of all estimated costs, both for the project sponsor's wastewater/stormwater management system and for additional work, if any, associated with the system for which individual property owners will be directly responsible.
 - b.3) A commitment from a financing entity to make available the non-federal share of the project costs must be documented.

9. LEGAL

- a.) Connection ordinance for wastewater management systems. The connection ordinance shall describe all existing wastewater conditions subject to mandatory connection.
- b.) Pretreatment ordinance for wastewater systems. The pre-treatment ordinances shall describe the conditions under which wastes may be discharged to the system.
- c.) User charge or fee provisions for wastewater/stormwater management systems. Draft ordinance/resolution provisions shall describe the structure of rates, fees, and charges. It shall describe the conditions and process under which the schedule of rates, fees, and charges will be changed.

10. PUBLIC PARTICIPATION. Public participation shall be complete for the following activities:
 - e) Selection of project sites to be acquired for the project.
 - f) Establishment of ordinances/resolutions.
 - g) Adoption of recommendations for wastewater/stormwater management options and reuse.
 - h) Financial planning.

11. FUNDING LEVEL. The acceptance of any federal grant funds shall not be contingent upon the receipt of additional federal/state funds in subsequent appropriations.

Appendix F

Funding Allocation Scheme

Prepared by the Intergovernmental Task Force

Appendix G

Master Project List