

# **Draft Environmental Assessment**

## **Florida Keys Water Quality Improvements Program (FKWQIP)**

### **Key Largo Wastewater Treatment Facility Monroe County, Florida**

**U.S. Army Corps of Engineers  
Jacksonville District**

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**July 2005**

### 2.2.2 Alternative 2 (*Proposed Action*): Provide Federal Financial and Technical Assistance to Develop and Implement a Wastewater Improvement Project for Key Largo

The *Proposed Action* includes financial and technical assistance for the KLWTD to construct a regional WWTF and associated infrastructure to serve the Key Largo service area. Alternative 2 would accomplish the goals listed below.

- Meet objectives of the Act
- Address local and regional water quality issues
- Achieve nutrient loading reductions and commensurate improvements in water quality in nearshore waters of the service area and subsequently, the Sanctuary
- Comply with federal and state mandated regulatory water quality treatment standards in a timely manner



*Under Alternative 2, the Proposed Action, federal funds would be used to assist in the construction of a regional WWTF to service the Key Largo service area.*

The *Proposed Action* would include new service to residents with on-site systems in the service area. All single-family residences and almost all small commercial entities currently use some type of on-site system, either permitted/unpermitted septic tank systems, or illegal cesspools. As of 1998, there were 42 FDEP-permitted small WWTFs in the Key Largo service area, treating approximately 0.24 mgd (MCSWMP 2000), or ten percent of the total estimated wastewater flows in the Keys. A total of 4,919 onsite systems in the service area account for 1.06 mgd of wastewater flows. Onsite treatment systems include 46 ATUs, 3,942 septic systems, an identified 372 substandard septic systems, and 558 cesspools.

The equivalent dwelling unit (EDU) system has been adopted by the KLWTD for calculating wastewater flows and contributions and is based on wastewater flows (gpd) generated by individual households, or "single dwelling units". The EDU provides a means of quantifying the number of users in a service area and the estimating the cost of treatment per household. Projected flows and EDUs in the service area are listed in Table 2-1.

**Table 2-1**  
**Projected Flows and EDUs in the Service Area for 2008 and 2015**

| Source          | 2008        |       | 2015        |       |
|-----------------|-------------|-------|-------------|-------|
|                 | Flows (mgd) | EDUs  | Flows (mgd) | EDUs  |
| Residential     | 0.8787      | 6,079 | 0.8374      | 5,833 |
| Non-residential | 0.4742      | 3,246 | 0.4605      | 3,155 |
| Total           | 1.3529      | 9,325 | 1.2979      | 8,988 |

At the owner's expense, existing residential septic systems and cesspools would be removed from residences and businesses in the service area. Similarly, service recipients would be responsible for the installation of conveyance pipes from their residence or business to the

## **2.0 Description of Alternatives**

wastewater collection system service lateral to the street. Removal of existing systems would be phased in accordance with construction of the collection system, and pursuant to Florida Department of Health (FDOH) requirements.

### **2.2.2.1 Alternative Site Selection**

In 2000, a total of 15 sites on Key Largo were identified as potential locations for the WWTF and VPS in the MCSWMP (2000). All but two sites were subsequently eliminated from consideration due to market availability issues. The proposed location at MM 100.5 was chosen and the location at MM 98 was designated an alternate. Both sites were evaluated as part of the documentation required for allocating FEMA funds to counties impacted by Hurricane Georges in 1998 (URS 2004). Potential sites were evaluated with respect to location, existing and future land use, adjacent land uses, general environmental and habitat considerations, present ownership, development constraints, and cost. Consequently, additional plan formulation was not undertaken for this project-specific activity for this draft EA.

### **2.2.2.2 Wastewater Collection and Transmission System**

Several wastewater collection options are available throughout the Keys, as described in the PEIS (Section 2.2.2.1). For the Key Largo service area, a vacuum collection system was chosen due to system reliability, ability to function on auxiliary power, and low operation and maintenance (O&M) costs. Maintenance costs were similar among the three collection alternatives (vacuum sewers, gravity sewers, and centrifugal grinder pump systems).

#### **Collection System**

The proposed collection system includes a vacuum sewer system with gravity collection mains and/or service laterals, wastewater holding sumps and vacuum valve pits, vacuum collection mains, and a VPS building. Residential wastewater would be collected via gravity into a vacuum valve pit composed of a lower fiberglass holding sump and an upper vacuum valve. Each valve pit would serve two or more residences. Increased wastewater levels in the holding sump activate the VPSs and pump wastewater into three inch or larger polyvinyl chloride (PVC) vacuum wastewater collection mains. The wastewater then flows through vacuum mains into the collection tank at the VPS and is pumped through the collection mains and into the treatment facility. The VPS would be constructed as a slab-on-grade building, between 1,000 and 3,000 square feet in area, and would have two 430-cubic feet per minute (cfm) vacuum pumps, two 320 gallons per minute (gpm) discharge pumps, a 6,300-gallon collection tank, and an emergency generator. The vacuum pumps would generally operate at about 15 horsepower, and could be increased to 75 horsepower for future wastewater treatment projects in the Key Largo service area. A separate concrete pad external to the station would accommodate odor control equipment (either a vapor phase activated carbon filter or a biological filter) to treat air discharged from the collection tank by the VPS blowers.

Wastewater would be conveyed from houses and businesses via transmission lines to lift stations located in or near the ROWs in the service area. Service laterals necessary for residential connections to the collection system would be provided up to the ROW. Connections to the

collection system would be the responsibility of the property owners. Soil would be excavated for the installation of gravity sewer mains, lift stations, and gravity service laterals, which would be constructed about three feet below land surface (bls).

**Transmission System Components.** Ten- to 16-inch force mains and six- to ten-inch vacuum mains would be installed in existing portions of ROWs or easements along the service area roads in front of the residences and businesses to be served, and along portions of U.S. 1 where residential and non-residential development cannot be accessed from side streets. Wastewater would be conveyed from the lift stations to the wastewater collection tank at the WWTF through ten- to 16-inch force mains. There would be two transmission mains constructed in the ROW of U.S. 1, one from the Lake Surprise and Sexton Cove communities, and one from the KLTV and KLP area. Local streets will be served by four-inch vacuum mains. Service entrances (manholes) will be installed along the transmission lines at a maximum of 400-foot intervals.

### 2.2.2.3 Wastewater Treatment Facilities

**Site Description.** The proposed WWTF would be constructed on approximately 2.6 acres at MM 100.5, ocean side of U.S. 1 and adjacent to an existing FKAA facility (Figure 2-1). The proposed site is located in sections 27 and 28 of township 61 south, range 39 east, and is part of a larger 23 acre parcel owned by the KLWTD. An existing FKAA facility borders the southern portion of the parcel and U.S. 1 borders the northwest portion of the parcel. Undeveloped lands directly adjacent to the parcel along the eastern and southern boundaries are owned by FDEP. The Florida Straits are approximately 1,500 feet east of the site and Florida Bay is about 2,500 feet west (FKAA, 2002).

Undisturbed hardwood hammock characterizes the site and much of the surrounding land is undeveloped and in public ownership (Figures 2-2 and 2-3). The WWTF would be constructed in the most disturbed portion of the parcel, which has signs of previous clearing, debris dumping, and invasion by non-native plant species. Hardwood hammocks are protected under the Monroe County Land Development Regulation Section 9.5-345 and proposed mitigation for impacts to hammock includes restoration of 2.6 acres of hardwood hammock, and conservation of the remaining 20.4 acres of the parcel as undeveloped land in perpetuity. The site has no wetlands.

### 2.2.2.4 Construction Activities

Proposed construction includes building the WWTF and associated infrastructure, installing treatment tanks, underground and aboveground transmission lines, pumping stations, and sand or fabric filtration facilities. Removal of septic systems and pipeline trenching activities would occur throughout the service area at the residents' expense.

Excavation activities for the collection system and WWTF site development, transmission lines, and septic tank and cesspool removals would require heavy construction equipment, such as trenching equipment, excavators, bulldozers, front-end loaders, and dump trucks to transport material, equipment, and construction debris. Existing utilities within the ROWs on either side



# KEY LARGO WWTF

SITE  
LOCATION

NORTH  
SCALE: 1"=50'

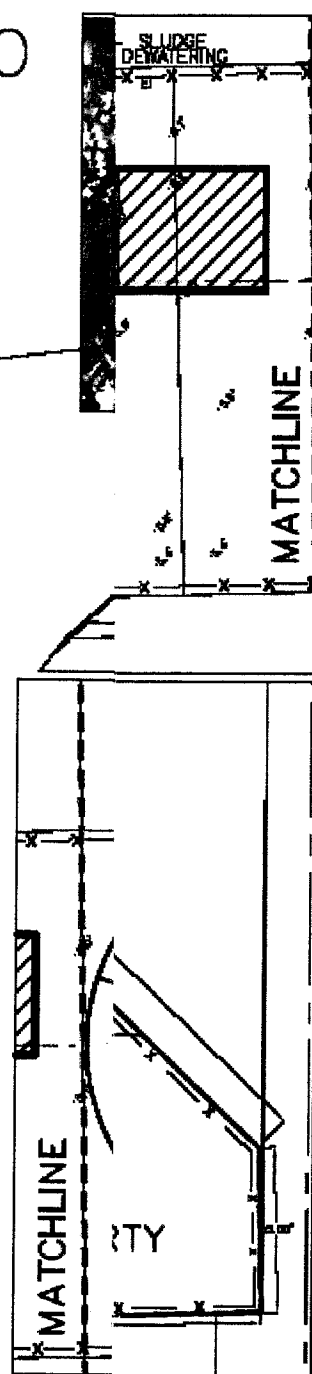




**Figure 2-2**  
**Entrance to Proposed WWTF Location and Adjacent Hammock**

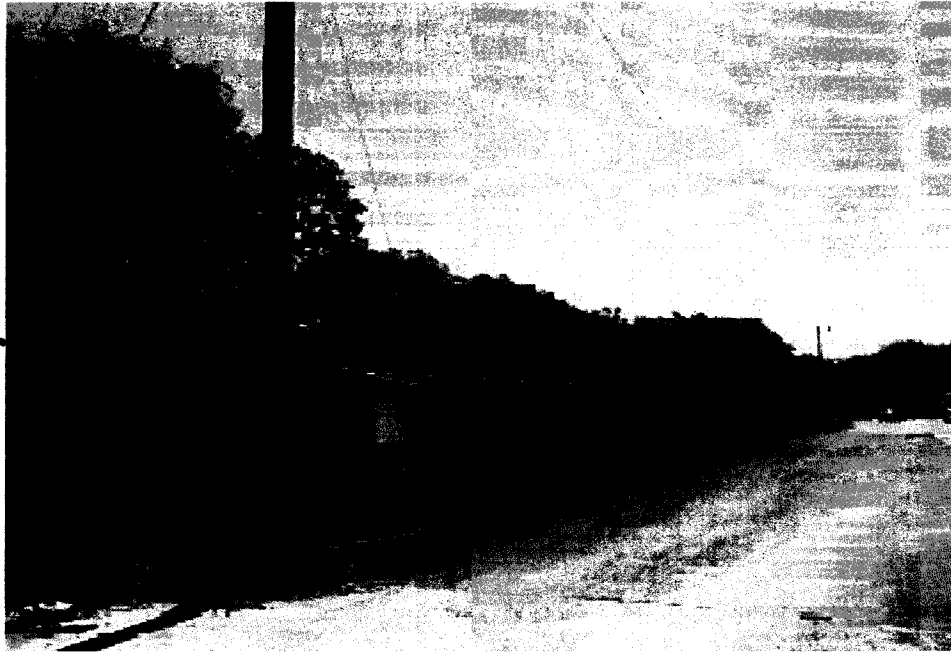
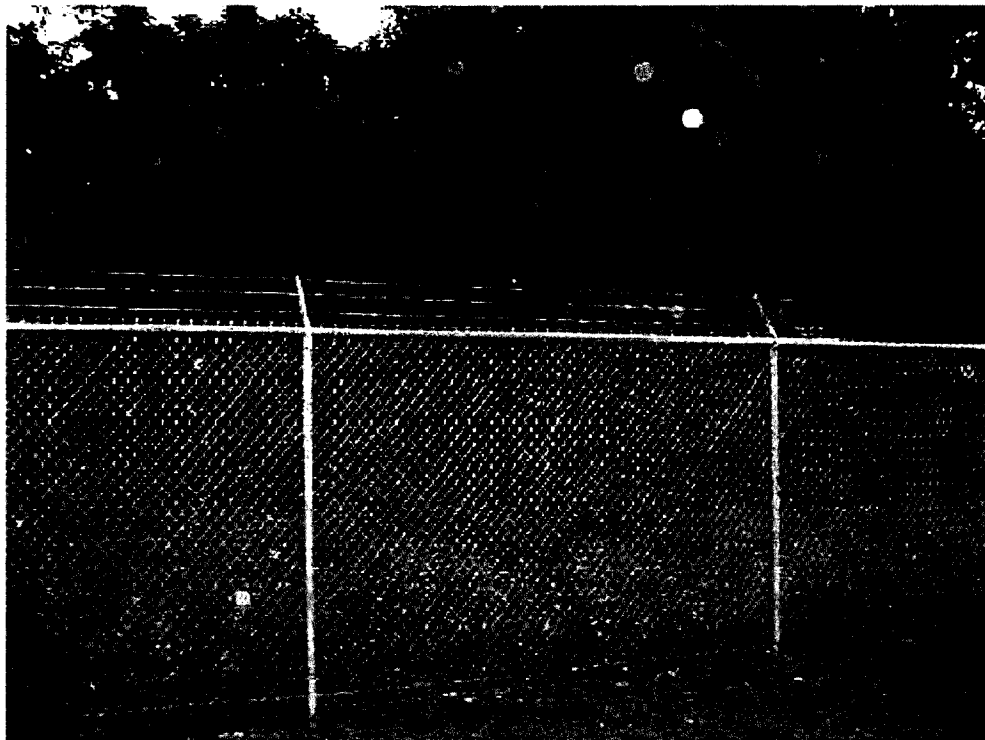


**Figure 2-3**  
**View North Into Property From South Boundary and Fence Line**





of U.S. 1 may require the construction of portions of the wastewater collection mains, force mains, and transmission mains under one or more paved lanes of U.S. 1, resulting in temporary traffic delays in proximity to the construction. All construction will meet Florida Department of Transportation (FDOT) requirements to minimize traffic impacts, and conform to FDOT standards for restoration of roadways. Depending on the time required for construction on U.S. 1, construction may take place during evening hours.

All construction activities would be conducted pursuant to applicable facility planning regulations at the state and county level. Coordination between and among Key Largo local governments, including the Building Department, Public Works, and city engineers, would be required to ensure that facility structural and mechanical integrity comply with current codes, and to ensure that required permits for siting, planning, design, and operation are obtained.

### 2.2.2.5 Operation and Maintenance

The new WWTF would be operated and maintained by the KLWTD for Key Largo.

**Wastewater Treatment Components.** Design of the new WWTF includes the facility, storage for maintenance, treatment, and operations materials, parking, paved access roads, and landscaping. The KLWTD is considering four options for the required effluent treatment levels in a Design/Build Request for Proposal. Depending on the chosen option, WWTF process components may vary, although the overall design includes influent flow measurement and pretreatment screening, an equalization (EQ) tank, biological nutrient removal (BNR) reactors, clarifiers as required by the selected treatment process, chlorine contact basins, an aerobic digester, odor control equipment, Class I injection wells, and ancillary equipment such as pumps and blowers to support each unit process. Design wastewater influent and effluent characteristics are listed in Table 2-2.

**Wastewater Treatment System Operation.** The WWTF includes two field-erected treatment facilities, an emergency power generator, two deep injection wells, headworks, odor treatment, an operations building, facility pump station, blower/electrical building, a deep well pump station with surge system, a sludge processing building, and a sludge storage area. Roads, landscaping, and stormwater retention will also be included. Facilities for a customized cast-in-place treatment system, future disinfection, storage, and pumping facilities in the event that reuse is implemented will also be constructed. Reuse of treated wastewater is addressed in Section 2.2.2.1 (Wastewater Effluent Disposal Methods) of the PEIS. The MCSWMP recommends limited use or reliance on effluent reuse.

**Table 2-2**  
**Design Wastewater Influent and Effluent Characteristics**

| Parameter                     | Influent Concentration      | Effluent Concentration |
|-------------------------------|-----------------------------|------------------------|
| BOD <sub>5</sub>              | 225 parts per million (ppm) | 10 ppm                 |
| TSS                           | 225 ppm                     | 10 ppm                 |
| Total Kjeldahl Nitrogen (TKN) | 45 ppm                      | 10 ppm                 |
| TP                            | 10 ppm                      | 1 ppm                  |

## 2.0 Description of Alternatives

Wastewater would be conveyed from the transmission mains and lift stations to an EQ tank. The WWTF would provide primary treatment, biological treatment, solids removal, nitrogen and phosphorus removal, filtration, effluent disinfection and disposal to deep injection wells. Effluent discharged would meet the 2010 Florida Statutory Treatment Standards for AWT of five milligrams per liter (mg/L) biochemical oxygen demand (BOD), five mg/L TSS, three mg/L TN, and one mg/L TP. An in-line magnetic flow meter would measure and record the wastewater flow from the pump station into the WWTF. If necessary, alkalinity of the influent wastewater would be buffered using sodium hydroxide and excess sodium hydroxide would be dissolved and would not be discharged (URS 2004).

Wastewater would be treated using sequencing batch reactor (SBR) process with aluminum sulfate (alum) additions and conventional filters or the upflow sludge blanket filter process with alum addition and conventional filters. Other possible methods of treatment include the modified Ludzak-Ettinger process, the Bardenpho process, and the immersed membrane bioreactor. The WWTF would use two or three parallel process trains, each with equal-sized biological reactor systems, so that if one system were out of service, the remaining train(s) would be capable of treating the system design flow (FKAA 2002). Bio-solids and sludge would be 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 (FKAA 2002).

The proposed WWTF and service area is in the 100-year floodplain and design provisions of the Monroe County Floodplain Ordinance would apply. Because of Federal funding, per EO 11988 (Floodplain Management), as implemented in FEMA regulations at 44 CFR Part 9, WWTFs are considered critical and therefore subject to more stringent flood protection requirements. Specifically, KLWTD would floodproof the WWTF and its critical operating components to the 500-year flood, as outlined at 44 CFR Part 9.11.

Completion of the facilities, including sewer line placement, is anticipated in about 12 months, with an anticipated additional 12 months to complete connections and testing. Typical construction equipment would include a backhoe, trenching machine, bulldozer, crane, pile driver, drilling rig, front-end loader, street sweeper, boring machine, and paving machine. Vehicles would also be required for the transport of equipment and materials to and from the project sites. The proposed site would also have a temporary staging area for construction equipment and building materials. The lifespan of the treatment plant would be between 30 and 50 years (FKAA 2002).

**Effluent Disposal.** The proposed WWTF would treat influent wastewater to a level compatible with groundwater disposal. Disposal into deep injection wells was described in the PEIS (Section 2.2.2.1) and would be the primary disposal method for the Key Largo WWTF. The well design would meet both FDEP Class I reliability standards and FDEP UIC well construction and monitoring requirements. Class I injection wells are defined as wells that inject fluids beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water (USDW).

Under F.A.C. 62-528, applicants for Class I injection wells must demonstrate that the hydrogeologic environment is suitable for waste injection without modifying the ambient water quality of other aquifers overlying the injection zone. Deep injection wells will be designed and constructed to meet both FDEP Class I reliability standards and FDEP UIC Class I well construction and monitoring requirements. Monroe County falls within the jurisdiction of the FDEP Fort Myers office UIC program.

Additional requirements of Class I injection wells include casing and cementing to prevent the movement of fluids to maintain the ground water quality in aquifers above the injection zone, exploratory pilot holes, monitoring well, and an alternate disposal method for emergency events. Additional information related to the permitting requirements of Class I injection wells for domestic wastewater is in FDEP regulations for domestic wastewater facilities (F.A.C. 62-600) and UIC (F.A.C. 62-528).

The deep well injection system will include pumps and pumping surge control system, two deep injection wells, and monitoring wells (one dual zone monitor well and surficial wells). The monitoring well is designed as a three-inch groundwater monitoring well with a ten-foot bls cased depth. A 30-foot bls total depth would be constructed adjacent to the WWTF. The system would direct recycle flows, including filter backwash and digester decant, back to the head of the treatment plant for processing (FKAA, 2002).

### **2.2.3 Alternative 3 (*Alternative Funding Sources*): Pursue Other Sources of Funding for the Key Largo Wastewater Improvement Project**

Under Alternative 3, *Alternative Funding Sources*, including state and federal funding alternatives (other than Corps funds), would be pursued to implement the Key Largo wastewater improvement project. This alternative is not within the jurisdiction of the federal government and no monies would be obtained from federal sources. Consequently, the project would be implemented as funding became available, potentially delaying full implementation. The overall potential impacts of implementing *Alternative Funding Sources* are briefly summarized below.

- Fail to meet objectives of the Act until alternate funding is identified and obtained
- Delay addressing local and regional water quality issues
- Delay nutrient loading reductions and commensurate improvements in water quality in nearshore waters of the service area and subsequently, the Sanctuary
- Delay compliance with federal and state regulatory water quality standards until all funding is made available

### 2.3 Comparison of Alternatives

The alternatives examined as part of this Draft EA were premised on the need to implement water quality improvement projects that will reduce nutrient loading and result in commensurate water quality improvements in the Sanctuary. The environmental consequences are summarized in Table 2-3 and a more detailed analysis is presented in *Chapter 4.0 Environmental Consequences*.

### 2.4 Preferred Alternative

The preferred alternative is Alternative 2, the *Proposed Action*. Under the *Proposed Action*, the Corps would provide financial and technical assistance to the KLWTD for implementation of a wastewater improvement project that would reduce nutrient loads and pollutants to nearshore waters in the Sanctuary.



*Under the Proposed Action, the Corps would provide financial and technical assistance to the KLWTD for the construction of a WWTF and associated infrastructure that would reduce nutrient and pollutant loads to nearshore waters in the Sanctuary.*

### 2.5 Summary of Mitigation Requirements for Key Largo WWTF

Some unavoidable impacts may occur as a result of the *Proposed Action* and would require mitigation. Proposed mitigation measures are described below.

**Biological Resources.** Adverse impacts to existing hardwood hammock habitat are anticipated as a result of the proposed project. Because remaining natural areas are scarce, any action by the KLWTD that results in the loss of natural areas is likely to impact protected species. There are no wetlands on the proposed WWTF location.

The hardwood hammock on the proposed WWTF site provides a suitable habitat for federally protected Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) and Stock Island tree snail (*Orthalicus reses*). Although formal consultation regarding the proposed project has not occurred, the proposed project is an expansion of an existing wastewater improvement project for which formal consultation with the USFWS was previously initiated due to FEMA funding. As part of the BO, the USFWS outlined reasonable and prudent measures necessary to minimize "incidental take" of Schaus swallowtail butterflies and Stock Island tree snails. These measures are listed below.

- Restore an area of hardwood hammock habitat equal to the area lost (2.6 acres) as a result of the *Proposed Action* in order to replace the habitat functions essential to the long-term conservation of the species in the action area
- Preserve the 23 acres of action area not required for construction of the *Proposed Action* to prevent any further adverse impacts and to ensure proper long-term management of the habitat

The proposed WWTF would be constructed in the lowest quality portion of 23 acre parcel. The remaining undeveloped portion of the parcel would provide a mitigation area for transplanting protected species, planting hardwood hammock species, and removing exotic and nuisance vegetation. The KLWTD would restore 2.6 acres of hardwood hammock and conserve the remaining 20.4 acres as undeveloped land in perpetuity. The 2.6 acre restoration site (once identified), restoration plan, and 20.4 acre conservation provisions are subject to Corps and USFWS approval and would occur prior to construction activities. Native hardwood hammock trees greater than 3.5 inches in diameter would be transplanted or replaced in the conserved 20.4 acres or in onsite landscaped areas. Locating the proposed WWTF adjacent to an existing FKAA facility would preserve existing hardwood hammock and would avoid fragmentation of other hardwood hammocks.

County regulations do not require traditional habitat mitigation for the uplands, but do require replacement of large native trees and all listed plants. The anticipated number of trees for mitigation is low due to the disturbed nature of the site and the presence of Brazilian pepper. Removal of the Brazilian pepper is required and a native hardwood revegetation plan would be implemented pursuant to Monroe County requirements.



*The proposed WWTF will be built on approximately 2.6 acres of a 23 acre parcel. The site is characterized by hardwood hammock and includes no wetlands.*

The Florida Natural Areas Inventory (FNAI) database records for the service area include 55 rare and protected species, six natural communities, and bird rookeries within the service area. Of the 55 species, 39 are protected by the state and/or federal government. A total of 13 state protected plant species have been observed on the proposed WWTF site.

**Cultural Resources.** The results of a review of the Florida Master Site files and a subsequent archaeological survey of the proposed Key Largo regional WWTF location in January 2001, indicated no known archaeological or historic sites on, or in direct proximity to, the proposed project location. Consequently, no effect on historic, archaeological, or cultural resources is anticipated as a result of the proposed project. Conclusions from previous consultation with the State Historic Preservation Office (SHPO) regarding the site concluded that the occurrence of historic properties on the site is unlikely. However, the proposed 2.6 acre site proposed for mitigation (but not yet identified), may have historic resources that would be adversely impacted by restoration activities. Accordingly, further cultural resources evaluation will be required, including SHPO consultation. Should any historic or archeological items be discovered during project work, all activities would be terminated and the KLWTD would consult with the Corps, SHPO, and other appropriate agencies for further guidance.



*The results of a review of the Florida Master Site files and a subsequent archaeological survey of the proposed Key Largo regional WWTF location in January 2001 indicated no known archaeological or historic sites on, or in direct proximity to, the proposed project location.*

## 2.0 Description of Alternatives

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**Environmental Justice.** EO 12898 directs federal agencies to solicit participation by minorities and low-income populations in the federal decision-making process, and further directs agencies to fully disclose any adverse effects of plans and proposals on minority and low-income populations. Potential impacts to low-income residents are a concern from the perspective of environmental justice in the Key Largo. While the median household income (MHI) in Key Largo is well above that of the county and state, ten percent of the residents live below poverty level in Monroe County. This percentage may actually be larger given that the cost of living in Monroe County is about ten percent higher than that of the state, as described in the PEIS (Section 3.13) and in this document (Section 3.13).

In addition, the proportion of residents over the age of 65 in Key Largo is greater when compared with the rest of the state. This segment of the population often lives on fixed incomes and while their income may not be below the poverty level, they are affected by cost of living changes. These factors suggest that while the majority of the Key Largo residents are financially secure, there is considerable disparity in wealth and income among residents, raising potential environmental justice concerns. Three potential approaches Key Largo may elect to address for this issue are presented below, as previously outlined in the PEIS.

- ***Subsidize Connection Fees.*** Subsidize the cost of connection for low-income or fixed-income residents. The principal issue associated with providing subsidies for this group of residents is the source of funding, which could be provided by the water treatment utility or local government property tax revenues. In each case, the potential for funding would have to be evaluated.
- ***Subsidize the Recurring Cost of Sewer Service.*** Again, the principal issue would be the source of funding. A major difference between funding requirements for subsidizing connection charges and recurring charges is the continuing nature of the recurring charges.
- ***Implement a Rate Structure Based on Water Volume Use.*** Apply service fees based on the volume of water actually used. Such a rate structure would include a very low base charge for the first 3,000 gallons of water use per month, with a sharply increasing charge for greater volumes of water use.

**Table 2-3**  
**Comparison of Environmental Consequences for the Key Largo Regional WWTF Alternatives**

| Scoping Issue                                                                                                      | Alternative 1<br><i>No Action</i>                                                                                                                                                                                                                                                             | Alternative 2<br><i>Proposed Action</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Alternative 3<br><i>Alternative Funding Sources</i>                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>1. Water Quality</b>       | Adverse impacts due to continued untreated wastewater runoff and associated nutrients, toxins, bacteria, and viruses to canals and nearshore waters in the Sanctuary. State and federal mandates to improve water quality in the Sanctuary may not be addressed.                              | Benefits of centralized wastewater treatment include water quality improvements due to decreased nutrients and other contaminants into canals and nearshore waters of the Sanctuary. Reductions in TN, TP, and TSS loadings of 88, 80, and 77 percent, respectively, are anticipated. These improvements will address state and federal legislation.                                                                                                                                                                                                                                                                                                                                                                                                   | Continued degradation of water quality is anticipated until funding is obtained to construct all of the regional WWTF. Piece-meal construction may delay full achievement of project and program objectives.        |
| <br><b>2. Facility Siting</b>     | No impacts are anticipated. No lands will be required for the location and construction of wastewater facilities. Therefore, existing residences, fish and wildlife habitats, and land uses will not be disrupted.                                                                            | Net environmental benefits due to improved water quality. Potential adverse impacts to approximately 2.6 acres of hammock. Mitigation proposed for hammock and disturbed wetlands loss, per Monroe County regulations. Impacts to cultural or historic resources are not anticipated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Impacts similar to those described under the <i>Proposed Action</i> are expected.                                                                                                                                   |
| <br><b>3. Protected Species</b> | Adverse impacts to protected species anticipated as a result of continued runoff of untreated wastewater into canals and nearshore waters and subsequent water quality degradation. Because no new facilities would be required, no impacts to habitat for protected species are anticipated. | Minimal adverse impacts due to facilities siting. Regulatory agencies support project. Section 7 USFWS/ National Marine Fisheries Service (NMFS) consultation and Florida Fish and Wildlife Conservation Commission (FFWCC) for protected species will occur as needed. A BO (June 2001) previously issued relevant to FEMA funding for WWTF indicated that the proposed WWTF is not likely to jeopardize the continued existence of the federally protected Schaus swallowtail butterfly or Stock Island tree snail, or affect the eastern indigo snake. No critical habitat will be impacted. Measures recommended by the USFWS include the restoration of 2.6 acres of hardwood hammock and preservation of the remaining 20.4 acres of the parcel. | Impacts similar to those described under the <i>Proposed Action</i> are expected, with delays in benefits, in addition to potentially greater impacts due to larger number of smaller facilities being constructed. |
| <br><b>4. Effluent Disposal</b> | Adverse impacts anticipated as a result of unchanged effluent disposal practices. Runoff from cesspools and septic tanks will continue to enter canals and nearshore waters in the Sanctuary.                                                                                                 | Construction of centralized sewers will expedite the removal of cesspools and associated pollutants in the Key Largo <i>hot spots</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Construction of sewers will be less effective due to fragmented approach. Delays in construction also anticipated.                                                                                                  |

## 2.0 Description of Alternatives

**Table 2-3**

**Comparison of Environmental Consequences for the Key Largo Regional WWTF Alternatives**

| Scoping Issue                                                                                                       | Alternative 1<br><i>No Action</i>                                                                                                                                                                                                                            | Alternative 2<br><i>Proposed Action</i>                                                                                                                                                                                                                | Alternative 3<br><i>Alternative Funding Sources</i>                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>5. Tourism</b>              | Increasing impacts anticipated related to water quality degradation. Continued beach health advisories would adversely affect immediate recreational and tourist opportunities, and long-term impacts could be detrimental to tourism and the local economy. | Improved water quality would decrease the incidence of beach advisories and closings, thereby increasing the opportunity for saltwater-based recreation. Temporary adverse impacts would include transportation delays due to construction activities. | Improved water quality would decrease the incidence of beach advisories and closings, thereby increasing the opportunity for saltwater-based recreation albeit at a slower pace than the <i>Proposed Action</i> . |
| <br><b>6.Environmental Justice</b> | Adverse impacts to low-income households who will have difficulties affording the cost of meeting 2010 mandates for wastewater treatment are expected.                                                                                                       | Without special consideration and financial assistance, low-income and fixed-income households may have difficulty paying for wastewater hook-up and service fees.                                                                                     | Without special consideration and financial assistance, low-income and fixed-income households may have difficulty paying for wastewater hook-up and service fees.                                                |

### 3.0 Affected Environment

A PEIS was previously prepared by the Corps for the proposed FKWQIP. The PEIS was prepared in accordance with the NEPA, the CEQ regulations implementing NEPA (40 CFR 1500-1508), and FEMA regulations (44 CFR Part 10, Environmental Considerations). These laws and regulations require the Corps to consider and address issues when funding any Federal action.

The PEIS was prepared by the Corps and published in the Federal Register in September 2004 and provides a framework to address potential environmental impacts associated with design and implementation of the FKWQIP. This Draft EA tiers from the PEIS for the FKWQIP and thereby incorporates the PEIS by reference, in accordance with 40 CFR Part 1508.28. The *Proposed Action* addressed by this Draft EA is the construction of a new regional wastewater collection, treatment, and disposal system by the KLWTD and consists of the components listed below.

- A regional advanced WWTF with approximately 2.25 mgd capacity that would serve an existing 13,602 residential units
- System of combined vacuum and gravity sewer force mains and collection lines along approximately eight miles of U.S. 1
- Approximately 15 VPSs in existing road ROWs, lift stations, and a vacuum main to transport wastewater to the WWTF
- Two deep injections wells for disposal of wastewater that has undergone AWT and a single monitoring well

The affected environment addressed by this Draft EA includes the Key Largo service area which extends from Lake Surprise to Harbor Shores. The environmental components addressed in the Draft EA are summarized in Table 3-1. The proposed WWTF is located on the south side of U.S. 1 in the southern portion of the service area. While global or regional conditions such as climate will not be affected by the alternatives under consideration, habitat, protected species, environmental justice, and water quality are issues of concern and are therefore evaluated in appropriate detail. This chapter provides a current baseline against which comparisons of alternatives discussed in Chapter 4, *Environmental Consequences*, can be made.



*In this chapter, the environmental resources of the service area are described and provide a current baseline against which comparisons of alternatives can be made.*

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   |   |   |   |   |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

### 3.0 Affected Environment

**Table 3-1**  
**Relationship Between Scoping Issues and Environmental Resources**

| Section | Affected Environment               | Scoping Issues                                                                                        |                                                                                                         |                                                                                                           |                                                                                                             |                                                                                                   |                                                                                                                 |
|---------|------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
|         |                                    | 1. Water Quality<br> | 2. Facility Siting<br> | 3. Protected Species<br> | 4. Effluent Disposal<br> | 5. Tourism<br> | 6. Environmental Justice<br> |
| 3.1     | Climate                            |                                                                                                       |                                                                                                         |                                                                                                           |                                                                                                             |                                                                                                   |                                                                                                                 |
| 3.2     | Topography, Geology and Soils      | ✓                                                                                                     | ✓                                                                                                       |                                                                                                           | ✓                                                                                                           | ✓                                                                                                 |                                                                                                                 |
| 3.3     | Water Resources                    | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         | ✓                                                                                                           | ✓                                                                                                 |                                                                                                                 |
| 3.4     | Water Quality                      | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         | ✓                                                                                                           | ✓                                                                                                 |                                                                                                                 |
| 3.5     | Ecological Habitats                | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         |                                                                                                             | ✓                                                                                                 |                                                                                                                 |
| 3.6     | Protected Species                  | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         |                                                                                                             | ✓                                                                                                 |                                                                                                                 |
| 3.7     | Essential Fish Habitat             | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         |                                                                                                             | ✓                                                                                                 |                                                                                                                 |
| 3.8     | Air Quality and Noise              |                                                                                                       | ✓                                                                                                       |                                                                                                           |                                                                                                             |                                                                                                   |                                                                                                                 |
| 3.9     | Cultural Resources                 |                                                                                                       | ✓                                                                                                       |                                                                                                           |                                                                                                             |                                                                                                   |                                                                                                                 |
| 3.10    | Demographics and Socioeconomics    | ✓                                                                                                     | ✓                                                                                                       |                                                                                                           |                                                                                                             | ✓                                                                                                 | ✓                                                                                                               |
| 3.11    | Recreation                         | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         |                                                                                                             | ✓                                                                                                 |                                                                                                                 |
| 3.12    | Open Space and Aesthetic Resources | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         |                                                                                                             | ✓                                                                                                 |                                                                                                                 |
| 3.13    | Environmental Justice              |                                                                                                       | ✓                                                                                                       |                                                                                                           |                                                                                                             | ✓                                                                                                 | ✓                                                                                                               |
| 3.14    | Land Use and Planning              | ✓                                                                                                     | ✓                                                                                                       | ✓                                                                                                         | ✓                                                                                                           | ✓                                                                                                 | ✓                                                                                                               |
| 3.15    | Infrastructure                     |                                                                                                       | ✓                                                                                                       |                                                                                                           |                                                                                                             |                                                                                                   |                                                                                                                 |
| 3.16    | Hazardous Materials and Waste      |                                                                                                       | ✓                                                                                                       |                                                                                                           |                                                                                                             |                                                                                                   |                                                                                                                 |

#### 3.1 Climate

The climate in the Key Largo service area is the same as that described for the Keys in the PEIS (Section 3.1). While global and regional climate conditions strongly influence the physical environment that supports biological and human activities, climate conditions will not be influenced by any of the project alternatives.

The Keys are marked by a wet summer season (June to October) characterized by numerous thunderstorms, while winters (November to May) are dry with infrequent, fast-moving cold fronts (30-40 each year). Precipitation in the Keys is low compared with other portions of Florida. Rainfall averages 40 inches per year and peaks in June and late September and accounts for most of the precipitation in the Keys.

### 3.2 Geology, Topography, and Soils

The topography, geology, and soils in the Keys are described in the PEIS (Section 3.2). These elements make up the substrate over and through which water flows in these islands. Geologically, the Key Largo service area is a fossilized coral reef formation referred to as Key Largo Limestone (Randazzo and Halley 1997) that characterizes the upper Keys. The archipelago that forms the Keys extends from Key Largo to Key West for approximately 110 miles and includes 66,000 acres. Ninety-six percent of the land mass in the Keys is no more than 6.7 feet above mean sea level and elevations in the Key Largo service area range from sea level to approximately 10 feet (U.S. Geological Survey [USGS] Digital Elevation Model) and elevations in the Key Largo service area range from approximately 3 to 4 feet above mean sea level (FKAA 2002). U.S. 1 is the topographic divide along the Keys, and elevations decrease with increasing distance from U.S. 1, to Florida Bay on the bayside and to the Florida Straits on the ocean side (Monroe County 2000).



*The topography, geology, and soils in the Keys provide the substrate over and through which water flows to nearshore waters and are therefore important to understanding impacts that may result from the Proposed Action.*

|   |   |  |   |   |  |
|---|---|--|---|---|--|
|   |   |  |   |   |  |
| ✓ | ✓ |  | ✓ | ✓ |  |

**Service Area.** Small areas of soils in the service area are generally confined to hammocks (at higher elevations) and mangroves (lower elevations). A soil map of the Key Largo service area (U.S. Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS]) indicates seven soil map units in the Key Largo service area. Pennekamp gravelly muck (25 percent), Islamorada muck (22 percent), Key Largo muck (15 percent), and Udorthents (14 percent) make up 76 percent of the service area. Key Largo and Islamorada mucks are tidal soils characteristic of mangrove swamps that occur at elevations at or below sea level. Islamorada mucks soils have bedrock within a depth of 20 inches.

Pennekamp gravelly muck is a well-drained soil typical of tropical hammocks in the Upper Keys. These soils have a surface that is approximately ten percent large stones, 10 to 20 inches in diameter and are moderately well drained. Seasonal high water table in these soils is about 3.5 to 5.0 feet bls and the soils have a moderately rapid permeability (USDA, 1995).

The Udorthents-Urban Land soils complex is composed of crushed oolitic limestone or coral bedrock spread over original soil material and consequently, do not support vegetation growth. These soils are moderately well drained and have a water table at two to four feet bls during the wet season. Houses and other urban structures occur on approximately 40 percent of the Udorthents in the Keys.

Tavenier rock outcrops less than two feet above mean sea level (3.9 percent), Matecumbe soils typical of tropical hammocks in uplands throughout the Keys (2.7 percent), and Keyvaca gravel and stone (less than one percent) make up approximately five percent of the remaining area. No

### 3.0 Affected Environment

soil classification data are available for 18.6 percent of the service area due to grid discrepancies, flooding, or inadequate data.

Nearly 70 percent (853 acres) of the soils in the Key Largo service area are poorly drained soils with a high runoff potential, while the remaining soils have more moderate infiltration and runoff characters (USDA/NRCS). There are no prime farmlands in Monroe County that fall under the Farmland Protection Policy Act.



*Pennekamp soils, which are often characterized by upland hardwood hammocks, comprise 100 percent of the proposed WWTF location.*

**WWTF Location.** Soil borings performed as part of a geotechnical survey of the proposed WWTF indicated a surface layer of fine sand with limestone fragments in the upper one to five feet bls, and light tan medium- to well-cemented limestone to a depth of 25 feet bls (Nutting Engineers 2002). A layer of peat occurred at two feet bls in one sample and a one foot thick layer of red silty clay occurred at two feet bls in another sample. A layer of asphalt occurred at the surface in another sample.

### 3.3 Water Resources

Ground water, surface waters, and nearshore and marine waters in the Keys are the environmental resources targeted by the FKWQIP and Key Largo for the proposed wastewater improvement project, as described in the PEIS (Section 3.3).

The Key Largo regional WWTF will address several of the 45 water quality hot spots in the Keys, including two of the four most critical hot spots identified in the MCSWMP (Monroe County 2000).



*The Key Largo regional WWTF will address several of the 45 water quality hot spots in the Keys, including two of the four most critical, previously identified in the MCSWMP.*

|   |   |   |   |   |  |
|---|---|---|---|---|--|
|   |   |   |   |   |  |
| ✓ | ✓ | ✓ | ✓ | ✓ |  |

#### 3.3.1 Ground Water

**Service Area.** Water in the Biscayne Aquifer ranges from brackish to saline throughout the Keys and is not used as a potable water source except as input for desalination systems. The FKAA is the sole provider of potable water for all residents of the Keys and no new domestic water supply wells have been permitted in the Keys since 1986 (FEMA 2002).

The presence of freshwater lenses has not been documented for the Key Largo area. Key Largo has 111 active shallow Class V injection wells throughout the island (FDCA 2003). The existing shallow injection wells are for onsite wastewater nutrient reduction systems (OWNRS).

**WWTF Location.** Groundwater levels at the treatment plant site are usually about five feet below the existing ground surface (Nutting Engineers 2002), based on the results of a geotechnical survey. The groundwater fluctuates due to tidal influence, seasonal precipitation, construction activities, and other site-specific impacts.

### 3.3.2 Surface Waters and Stormwater Runoff

**Service Area.** Inland waters in the Key Largo service area include artificial ponds, canals, and boat basins and little to no freshwater systems. Freshwater wetlands and ponds in the Keys are generally limited to relatively thin freshwater lenses on the larger islands of the lower Keys and less than one acre of these surface waters are mapped in the Key Largo service area.

Surface waters include 177 acres of canals that provide boat access to marinas and residential developments and a drainage system for stormwater runoff. Inland canals and access channels in the Keys are often 10 to 20 feet in depth and discharge directly into the ocean, as described in the PEIS (Section 3.3). In addition, stormwater ponds, retention ponds, and wet extended detention ponds in the service area may be permanent or seasonal. Stormwater swales collect and divert stormwater from roads and highways into canals and nearshore waters. Although a few small inland ponds occur on the bay side of U.S. 1, most of the 107 acres of inland waters are lagoons that gradually merge with over 2,732 acres of mangroves (Table 3-2) (USGS 2002).



*Inland surface waters in the service area include 177 acres of canals and ponds that receive stormwater runoff, ground water, and direct rainfall.*

**WWTF Location.** There are no surface waters in the proposed WWTF location. Stormwater runoff flows to the bay or into stormwater culverts along U.S. 1.

**Table 3-2**  
**Acres and Percent Cover of Water and Land in the Service Area**

| Water Body or Land Cover             | Acres        | Percent    |
|--------------------------------------|--------------|------------|
| Bays, estuaries, gulfs, oceans, seas | 1,257        | 16         |
| Ditch or canal                       | 177          | 2          |
| Lake/ pond/ lagoon                   | 107          | 1          |
| Mangrove area                        | 2,732        | 35         |
| Land                                 | 3,530        | 45         |
| Stream                               | 98           | 1          |
| <b>Total</b>                         | <b>7,901</b> | <b>100</b> |

### 3.3.3 Nearshore and Offshore Waters

**Service Area.** The service area includes nearshore waters of the Gulf of Mexico and Atlantic Ocean, which are home to the largest living coral reef system in the U.S. The reef system provides habitat for 80 percent of fish species in the U.S., and most commercially valuable fish

### 3.0 Affected Environment

species depend on nearshore waters at some point during their development, as described in the PEIS (Section 3.3.3). In addition to valuable fish and wildlife habitat, nearshore and marine waters provide numerous recreational opportunities, such as boating, diving, swimming, surfing, snorkeling, and fishing. In general, nutrient pollutants from the Keys have greater nearshore effects than offshore effects due to dilution by tides and currents (Kruczynski 1999, Szmant and Forrester 1996).

**WWTF Location.** There are no surface waters or wetlands in the proposed WWTF location. Stormwater runoff flows to the bay or into stormwater culverts along U.S. 1.

#### 3.4 Water Quality

The purpose of the proposed WWTF for the Key Largo service area is to decrease the discharge of nutrients and other pollutants to the Sanctuary and consequently improve water quality in the Sanctuary, consistent with the mission of state and federal entities. The proposed project is designed to protect the biodiversity, natural beauty, and recreational opportunities of the Keys that are important to Florida's tourism industry and make up a significant part of the nation's collective natural resources.

The water quality of the nearshore environment of the Keys is affected by nutrient loading from an estimated 200 WWTFs, 22,000 septic tanks, 5,000 cesspools and 139 marinas harboring over 15,000 boats via canals and channels. Average estimated reductions in wastewater loading to nearshore waters in the Keys due to implementation of FKWQIP are on the order of 69 and 73 percent in TN and TP loadings, respectively, using AWT standards. Reductions in TN, TP, and TSS loadings of 88, 80, and 77 percent, respectively, are anticipated for the Key Largo service area as a result of implementing the proposed wastewater improvements. The proposed WWTF would meet AWT standards and includes disinfection.



*AWT effluent standards at the proposed WWTF would represent a major improvement in groundwater quality compared with existing reliance on cesspools and septic tanks.*

|   |   |   |   |   |  |
|---|---|---|---|---|--|
|   |   |   |   |   |  |
| ✓ | ✓ | ✓ | ✓ | ✓ |  |

##### 3.4.1 Ground Water

The Key Largo service area is considered a pollutant source to nearshore coastal waters. Numerous cesspools and septic systems which provide little to no treatment due to high groundwater levels and small residential lot sizes release effluent into canals and the nearshore environment. Approximately 732 current cesspools and septic systems are utilized by residential and commercial property owners in the KLTV and KLP (FKAA, 2002). A total of 4,919 onsite systems in the service area account for 1.06 mgd of wastewater flows. Onsite treatment systems include 46 ATUs, 3,942 septic systems, an identified 372 substandard septic systems, and 558 cesspools. The build-out flow estimates for the entire KLWTD include 2,430 EDUs, with an average annual daily flow of 377,000 gpd and a mean monthly average daily flow of 565,000

gpd. As of 1998, there were 42 FDEP-permitted WWTFs in the Key Largo service area, treating approximately 0.24 mgd (MCSWMP 2000).

WWTFs are required to treat effluent to AWT or best available technology (BAT) standards. For facilities that treat over 100,000 gpd, the AWT standards are five mg/L BOD, five mg/L TSS, three mg/L TN, one mg/L TP (5:5:3:1); and for facilities treating less than 100,000 gpd the BAT standards are ten mg/L, ten mg/L, ten mg/L, and one mg/L, (10:10:10:1) respectively. Generally, WWTFs in the Keys dispose of their treated effluent into shallow injection wells (cased zero to 60 feet with open holes from 60-90 feet) and into the highly permeable Upper Water-Bearing Zone limestone of the Biscayne Aquifer. This disposal system is categorized as a Class I well by the state of Florida and is designated for treatment facilities with capacities greater than 100,000 gpd.

Because of the density differences, shallow, relatively freshwater lenses overlay saline ground waters in the Keys and injected wastewater seeps to the ocean on both the bay and ocean sides (Kump 1998). In two studies, one in Long Key and one in Key Largo, wastewater migrated toward the ground surface and phosphate, nitrate, and ammonia concentrations were highest nearest the injection well at a depth of five meters, although in different directions from the point of injection. In another injection study on Long Key, a viral tracer injected into ground waters was found in a canal located across U.S. 1 from the injection site (Paul *et al.* 1997).

Wastewater effluent disposal from package treatment plants or onsite disposal systems into (shallow) Class V injection wells results in nutrient enrichment of the groundwater (Kruczynski 1999). Injected wastewater is buoyant relative to saline groundwater and, based on results of tracer studies, can rise to the surface in hours to days. These studies demonstrated that tracers were greatly diluted before reaching surface waters and that some phosphorus was stripped from groundwater by the substrate. Patterns of (shallow) groundwater input into Florida Bay have also been established using natural tracers of submarine groundwater discharge (SGD) (Burnett and Chanton 2000). A groundwater velocity of approximately 1.9 centimeter (cm) day<sup>-1</sup> was estimated for three sites in the Keys and results suggest that the interactions between groundwater and surface water are greatest nearshore along the Florida Bay side of the Keys.

#### 3.4.2 Surface Waters and Stormwater Runoff

The pollutant loads in stormwater runoff, and subsequently surface and nearshore waters, are largely a function of rainfall quantity, pervious nature of soils, and land use. As described previously in this Draft EA (Section 3.2), the amount of soil in the Keys and the service area is minimal, moderately impervious, and has a high runoff potential.

Swales along U.S. 1 are the primary drainage system in the Keys and convey stormwater along the highway into the ocean, although much of U.S. 1 has no drainage system (Monroe County 1997b). Stormwater discharge is regulated at the federal level through the Clean Water Act (CWA) and the National Pollution Discharge Elimination System (NPDES) permit programs.

### 3.4.3 Nearshore and Offshore Waters

The relationship between fecal contamination and nutrient enrichment of nearshore waters and septic tanks has been reviewed in many studies, including Lapointe and Clark (1992) and Paul *et al.* (1995 and 1997). These studies generally concluded that septic tank use increases the nutrient contamination of ground water and consequently, shallow nearshore waters, and that transport of contaminants from septic tanks can occur in hours or days (ten hours for Key Largo and 53 hours for the middle Keys). Several authors (Lapointe and Clark 1992, Lapointe and Matzie 1996, and Lapointe and Matzie 1997) have concluded that nutrient enrichment at offshore reefs is possible following heavy rains and/or high wind events, but have also noted that nutrient concentrations in sediments decreased rapidly from the shore.

The Southeast Environmental Research Center (SERC) at Florida International University (FIU) has collected water quality data for the National Marine Sanctuary Water Quality Protection Program (WQPP) since 1995. Nearshore water quality stations revealed elevated levels of dissolved inorganic nitrogen (DIN), which was not found in the nearshore environment of the Dry Tortugas, pointing to a land use source of elevated DIN. Eleven monitoring stations along Key Largo off the ocean side of U.S. 1 (SERC 2003) characterize the status and trends in water quality. Inshore water quality stations along Key Largo showed similar water quality conditions, including a gradient of elevated DIN, TP, total organic carbon (TOC) and turbidity from inshore to offshore (Boyer and Jones 2003). The Key Largo stations averaged 10  $\mu\text{M}$  total organic nitrogen (TON), 0.1  $\mu\text{M}$  nitrates ( $\text{NO}_3^-$ ), 0.2  $\mu\text{M}$  ammonium ( $\text{NH}_4^+$ ) and 0.2  $\mu\text{M}$  TP for the eight year sampling period (Boyer and Jones 2003). It is difficult to correlate these trends with a specific nutrient loadings source in the Key Largo service area due to the distance to the stations.

Fecal contamination of nearshore waters due to untreated or poorly treated wastewater has also been examined in the service area. Key Largo nearshore water was sampled in a study of viral pathogen and microbial indicators at five different sites. Six indicators of fecal pollution were assessed in canals at the sites (Griffin *et al.* 1999). Key Largo sites had variable rankings based on site sampled. Ocean Reef Lodge ranked first (lowest levels of bacteria), while a bayside site ranked 17<sup>th</sup> out of 19 sites for presence of these indicators. Enterococcus virus was found at all Key Largo sampling sites, while Norwalk virus and Hepatitis A virus were only detected at one and three of the sites respectively. This study did not address seasonal variability. Data from the Florida Keys Watch (FKW), a partnership between the USEPA, University of South Florida (USF), and The Nature Conservancy (TNC) indicated similar results.

**Water Quality Hot Spots.** Key Largo locations were included as water quality *hot spots* in the USEPA report (1996) that lists 88 *hot spots* based on water quality issues and wastewater influences. The Key Largo regional WWTF will address several of the 45 water quality hot spots in the Keys, including two of the four most critical hot spots identified in the MCSWMP (Monroe County 2000). *Hot spot* locations correspond with higher-density urban areas and higher ranks represent neighborhoods and subdivisions with the poorest sewage treatment and strongest need for central sewage facilities.

**Health Advisories.** Clean public beaches and nearshore water quality are leading health concerns in Monroe County. Of the 17 Monroe County beaches monitored in 2004, three were

found to have elevated bacterial levels and received water quality advisories. None of these were located within the Key Largo service area (FDOH 2004).

#### 3.5 Ecological Habitats

Unique and nationally significant resources, most notably the only living coral reef in North America, emphasize the importance of the Keys and Sanctuary as part of a complex ecosystem that includes numerous public conservation areas and habitat for protected species. The Key Largo service area and associated nearshore waters are a component of this complex ecosystem, which supports over 6,000 species of plants, fishes and invertebrates and is dominated by the third largest coral reef system in the world. These habitats can be altered by anthropogenic influences, including increased urban development, water quality degradation, altered groundwater flows, and expansion of non-native and invasive species.

**Service Area.** Mangroves comprise 35 percent of the habitat in the service area, while uplands make up approximately 36 percent of the service area (Table 3-3). Uplands include developed lands, which comprise approximately 26 percent of the 7,901-acre service area. Since developed land does not provide significant or essential ecological habitat for wildlife or native plants, it is not discussed in this section.

The Advanced Identification of Wetlands (ADID) data, produced by the FFWCC, indicate ten habitat types in the 7,901-acre service area (Table 3-4) (FFWCC 1991). Marine habitats such as seagrass beds cover an additional 5,263 acres in the nearshore waters of the service area.

The eleven habitat types identified in the service area, listed according to frequency of occurrence, are mangroves (35 percent), developed land (26 percent), hammocks (ten percent), scrub mangrove (three percent), buttonwoods (two percent), water (one percent), salt marsh (one percent), non-native (less than one percent), freshwater marsh (less than one percent), freshwater hardwoods (less than one percent), and ridge/hammock (less than one percent). In addition to specific terrestrial and marine habitat types, floodplains are addressed in this section.

It should be noted that a separate category (land boundary difference) was created to account for differences in the amount of land covered between databases from different sources. This category allows for the acreage of the service area to stay constant at 7,901 acres.

**WWTF Location.** The proposed WWTF location is mapped as 100 percent uplands, all of which is tropical hardwood hammock.

## 3.5.1 Upland Habitats

**Service Area.** Hammock and ridge/hammock habitat types comprise approximately ten percent of the service area (Table 3-3). The PEIS (Section 3.5.1) describes the general characteristics of the tropical hardwood hammocks of the Keys, along with the typical vegetation and wildlife occurring in such a community.

**Table 3-3**  
**Habitat Types in the Service Area**

| <b>Class</b>                         | <b>Total Acres<br/>(approximate)</b> | <b>Upland/Wetland<br/>Habitats (percent)</b> |
|--------------------------------------|--------------------------------------|----------------------------------------------|
| Hammocks                             | 809                                  | 10                                           |
| Ridge/Hammock                        | 5                                    | <1                                           |
| Developed                            | 2,081                                | 26                                           |
| Total Uplands                        | 2,895                                | 36                                           |
| Mangrove                             | 2,783                                | 35                                           |
| Scrub Mangrove                       | 242                                  | 3                                            |
| Buttonwood                           | 151                                  | 2                                            |
| Salt Marsh                           | 91                                   | 1                                            |
| Water                                | 102                                  | 1                                            |
| Freshwater Marsh                     | 9                                    | <1                                           |
| Freshwater Hardwoods                 | 9                                    | <1                                           |
| Total Wetlands/Water/Coastal Dune    | 3,387                                | 42                                           |
| Non-Native                           | 22                                   | <1                                           |
| <b>Total Non-Native and Invasive</b> | <b>22</b>                            | <b>&lt;1</b>                                 |
| <b>Land Boundary Difference</b>      | <b>1,597</b>                         | <b>20</b>                                    |
| <b>Totals</b>                        | <b>7,879</b>                         | <b>100</b>                                   |

**WWTF Location.** The 2.6 acre WWTF site is characterized by high quality tropical hardwood hammock and is part of a larger 23 acres of hammock. An existing FKAA maintenance facility abuts the south boundary of the proposed site. Several parcels surrounding the site are in state or county ownership and the state owned lands are part of the 191 acre Newport Hammocks Conservation and Recreation Lands (CARL) acquisition project. Prior to purchase by Monroe County, the parcel had been surveyed for purchase through CARL.

The 23 acre parcel is fragmented from adjacent habitat by roads and existing development, although the parcel itself has no development. Disturbance due to invasive and non-native plants, fire ants, and solid waste dumping has occurred on the parcel. The combined effect of the surrounding development and local disturbances are increased light penetration and reduced moisture in the forest interior when compared with less disturbed hammocks. Consequently, the 23 acre parcel is not optimal habitat for either the Schaus swallowtail butterfly (*Heraclides*

*aristodemus ponceanus*) or Stock Island tree snail (*Orthalicus reses*), but provides important habitat for these species considering the limited distribution of available habitat on Key Largo.



*The proposed WWTF site is characterized by high quality tropical hardwood hammock that provides suitable habitat for the Shaus swallowtail butterfly and Stock Island tree snail.*

#### 3.5.2 Non-Native and Invasive Species

**Service Area.** Non-native species make up less than one percent of the Key Largo service area. These habitats are scattered through the service area, usually in close proximity to developed areas.

**WWTF Location.** Canopy vegetation on the proposed WWTF site is dominated by gumbo limbo (*Bursera simaruba*), poisonwood (*Metopium toxiferum*), pigeon plum (*Coccoloba diversifolia*) and willow busic (*Bumelia salicifolia*). Non-native tree species include white leadtree (*Leucaena leucocephala*), Brazilian pepper (*Schinus terebinthifolius*), and sapodilla (*Manilkara zapota*) on approximately 0.41 acre along the disturbed boundary of the 2.6 acre site. The edge is about 500-feet along the common property line with the FKAA maintenance facility, which was previously cleared for a road and fence easement. The remaining 2.2 acres are higher quality hardwood hammock habitat with fewer non-native plant species.

#### 3.5.3 Estuarine and Freshwater Wetland Habitats

**Service Area.** Wetlands include areas where water is present either at or near the surface of the soil for all or part of the year, resulting in characteristic soils, water regimes and plant species. ADID data for the Key Largo service area indicate both estuarine and freshwater wetlands in the service area. However, freshwater wetlands comprise less than one percent of the service area.

Inland and coastal wetlands make up approximately 61 percent of the service area. The USFWS National Wetlands Inventory (NWI) maps identify all of wetlands in the service area estuarine (Table 3-3).

**Mangrove and Scrub Mangrove.** Mangrove and scrub mangrove habitat types comprise approximately 35 percent and three percent of the service area, respectively (Table 3-3). The three species of mangrove found in the Keys are the red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), and white mangrove (*Laguncularia racemosa*) (Tomlinson 1986). Based on ADID data, mangrove habitats are distributed along most of the coastline of the service area.

**Salt Marsh and Buttonwood.** Based on the ADID data, the salt marsh and buttonwood habitat types comprise approximately one and two percent of the service area, respectively (Table 3-3). Salt marshes usually occur adjacent to buttonwood and/or mangrove habitat, but do not occur on the proposed WWTF site. Buttonwood habitat is frequently adjacent to hammocks.

### 3.0 Affected Environment

*Water.* Within the service area, the water habitat type comprises approximately one percent of the service area (Table 3-3) and is scattered throughout the service area. This habitat type represents areas of water that are enclosed within other habitat types and are not connected to large waterbodies (i.e. the Atlantic Ocean or Gulf of Mexico).

*Floodplains.* EO 11988 (Floodplain Management) requires federal agencies to minimize floodplain occupancy and alteration, 44 CFR Part 9. The Key Largo service area occurs within Zones AE, VE, X, and X500 (Figure 3-1) while the parcel that the proposed WWTF is located within occurs in the AE, X, and X500 zones. Consequently, provisions of the Monroe County Floodplain Ordinance would apply. In addition, federal funding, per EO 11988 requires that WWTFs, because they are designated critical facilities, are subject to more stringent construction requirements. Specifically, FKAA would flood-proof the WWTF and its critical operating components to the 500-year floodplain standards per CFR Part 9.11.

**WWTF Location.** No estuarine or freshwater wetland habitats occur on the proposed WWTF location.

#### 3.5.4 Marine and Benthic Habitats

Marine habitats are characterized by high productivity and biodiversity and are essential to many commercially and recreationally important fisheries (Livingston 1990), as well as recreational activities such as self contained underwater breathing apparatus (SCUBA) diving, snorkeling, and boating, all of which are in turn important to the local and regional economy. Marine habitats, particularly seagrasses and coral reefs, are susceptible to water quality degradation. The effects of water quality degradation in these habitats are described in the PEIS (Section 3.4).

**Service Area.** Acreages and percentages of each marine habitat type were calculated based on the FFWCC Benthic Habitats of the Keys data (FMRI 1995). This 1,500-foot buffer zone was used to calculate the nearshore benthic habitats surrounding the service area (Table 3-4 and Figure 3-2). FMRI data indicate the presence of seagrass beds; hard-bottom communities with seagrass; and bare substrate in the buffer zone. The general ecology and characteristics of these communities of the Keys, such as typical vegetation and wildlife occurring within the communities, were described in greater detail in the PEIS (Section 3.5.4).

Patchy and continuous seagrasses together comprise approximately 72 percent of the benthic habitat in the service area (Figure 3-2) and occur within the tidally-influenced areas in the service area. Hardbottom habitat with seagrass comprises approximately 27 percent of the benthic habitat and is mapped in Figure 3-2.

**WWTF Location.** Neither of these habitats occurs on the proposed WWTF location.

**Figure 3-1**  
**Flood Zones in the Key Largo Service Area**

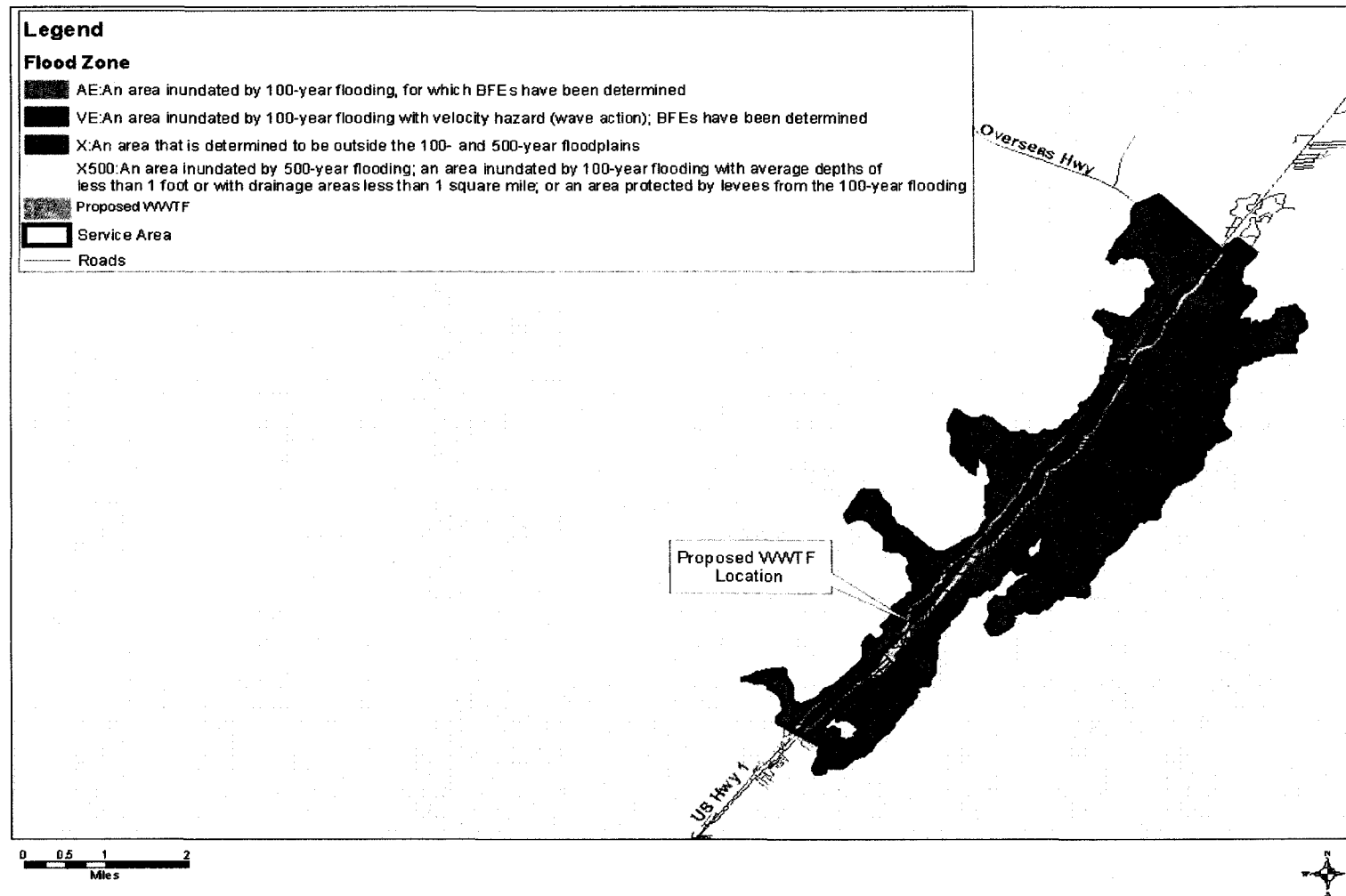


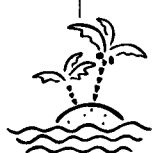
**Table 3-4**  
**Marine Benthic Habitats in the 1,500 Foot Buffer Zone**

| Habitat Group             | Area (acres) | Percent    |
|---------------------------|--------------|------------|
| Continuous Seagrass       | 3,159        | 59         |
| Patchy Seagrass           | 665          | 13         |
| Hard-bottom with Seagrass | 1439         | 27         |
| Bare Substrate            | 51           | 1          |
| <b>Total</b>              | <b>5314</b>  | <b>100</b> |

Data from FMRI (1995).

### 3.6 Protected Species

The Keys provide habitat for many rare, threatened, and endangered plants and animals. In addition, the limited remaining undeveloped natural habitat in the Keys makes these areas and associated species vulnerable to development and any project that results in the loss of natural areas is likely to impact protected species. Protected species refers to both federally and state listed species considered endangered, candidate, proposed, threatened, and species of special concern.



*Although no federally protected species have been observed on the proposed WWTF, the hardwood hammock on the site and adjacent areas provides suitable habitat for the federally protected Shaus swallowtail butterfly and Stock Island tree snail.*

|   |   |  |   |   |  |
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|   |   |  |   |   |  |
| ✓ | ✓ |  | ✓ | ✓ |  |

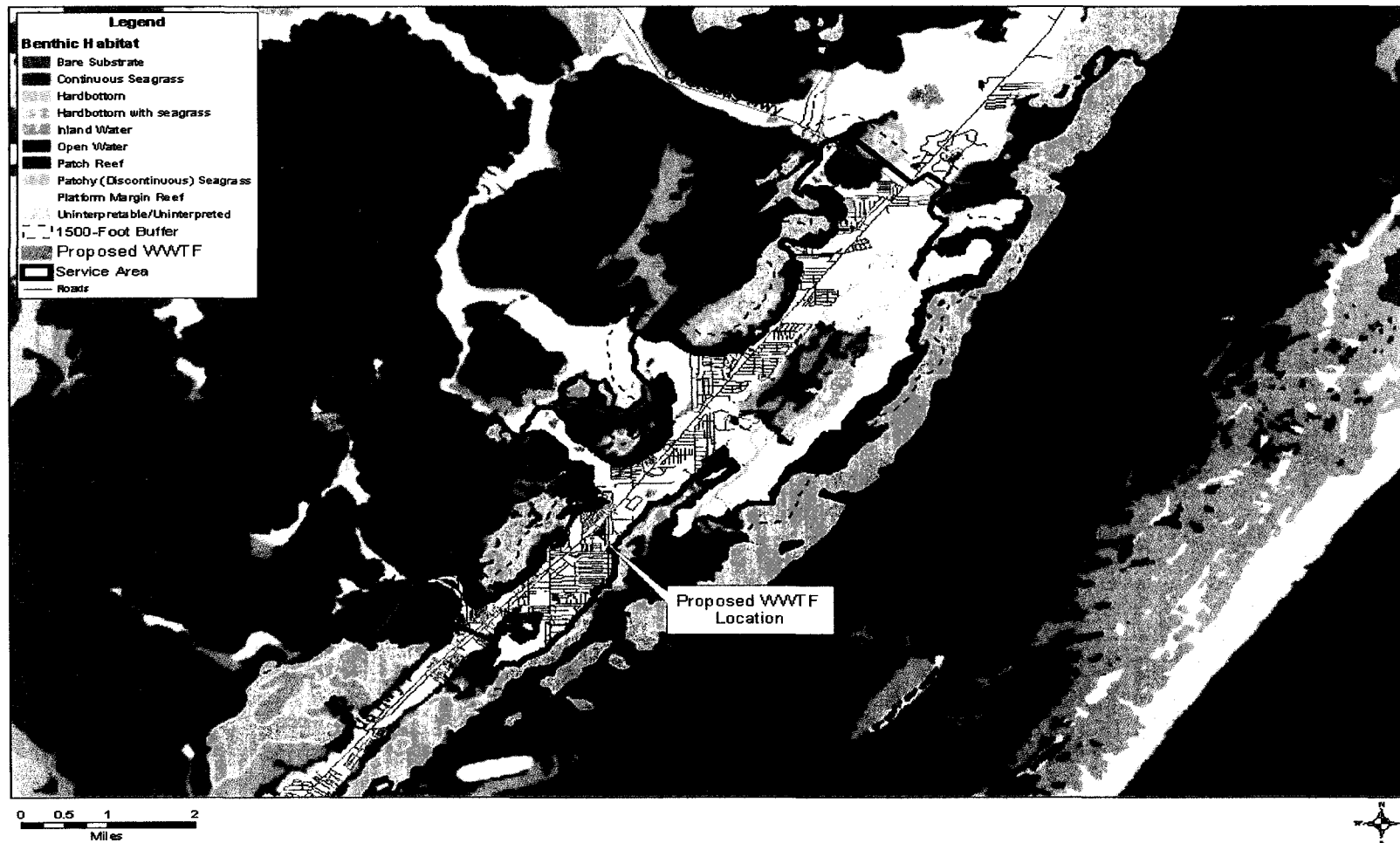
#### 3.6.1 Regulatory Framework

The Endangered Species Act (ESA) of 1973 was created to protect those species at risk of extinction throughout all or a significant portion of their range and to conserve the ecosystems on which those species depend. Section 7 of the ESA prohibits activities that would jeopardize a protected species or destroy or modify its critical habitat.

The USFWS is responsible for listing and conserving federally protected terrestrial and freshwater animals and plants, while the NMFS is responsible for most marine and anadromous species. If the proposed wastewater project has the potential to adversely affect or lead to incidental taking of a federally protected species, a formal Section 7 Consultation with the USFWS, and/or NMFS would be required.

Similarly, state lists of animals are maintained by the FFWCC and designated as endangered, threatened, and of special concern, per Rules 39-27.003, 39-27.004 and 39-27.005, respectively, F.A.C. Any actions that may adversely impact a state listed animal require individual consultation with the FFWCC. Plants also may be designated endangered, threatened, or

**Figure 3-2**  
**Benthic Habitat in a 1,500 foot Buffer Area Around the Key Largo Service Area**



## 3.0 Affected Environment

commercially exploited, and are listed by the Florida Department of Agriculture and Consumer Services (Chapter 5B-40, F.A.C.).

### 3.6.2 Federally and State Protected Species in the Service Area

Protected species data for Monroe County were obtained from the FNAI database, Florida Division of Agriculture and Consumer Services (FDAC), and Atlas of Florida Vascular Plants (AFVP). Protected species potentially occurring in Monroe County include 82 animal and 91 plant species, although fewer have a documented presence (FFWCC and FNAI). Several state protected species, such as the roseate spoonbill and the red rat snake, are not federally protected and consultation is limited to the state level if adverse impacts to these species are anticipated as a result of the proposed project. Documented occurrences of protected species in the Key Largo service area are summarized in Table 3-5.

**Table 3-5**  
**Summary of Protected Species Occurrences in the Key Largo Service Area**

| <b>Taxonomic Group</b> | <b>Federally and State Protected*</b> | <b>State Protected Only</b> | <b>Total</b> |
|------------------------|---------------------------------------|-----------------------------|--------------|
| Mammals                | 2                                     | 0                           | 2            |
| Birds                  | 1                                     | 10                          | 11           |
| Reptiles               | 1                                     | 2                           | 3            |
| Amphibians             | 0                                     | 0                           | 0            |
| Fish                   | 0                                     | 0                           | 0            |
| Invertebrates          | 1                                     | 0                           | 1            |
| Plants                 | 1                                     | 21                          | 22           |
| <b>Total</b>           | <b>6</b>                              | <b>33</b>                   | <b>39</b>    |

\*All federally protected species are also state protected.

### 3.6.3 Protected Species Occurrences

The FNAI database was reviewed to identify species occurrences in the service area recorded since 1985. This database provides listings within USGS map quadrangles. For this project, the Blackwater Sound, Garden Cove, and Rock Harbor quadrangles were reviewed.

**Service Area.** The FNAI database records for the service area include 55 rare and protected species, six natural communities, and bird rookeries within the service area. Of the 55 species, 39 are protected by the state and/or federal government (Table 3-6).



*The white-crowned pigeon, bald eagle, and least tern are the only protected (state threatened) bird species documented to occur in the Key Largo service area. No reported rookeries occur in the service area.*

Breeding nests and eggs in the service area have been recorded in the FFWCC Breeding Bird Atlas (BBA) survey data for 1986–1991 (Endries *et al.* 2001). The BBA states that 43 species were recorded in the Blackwater Sound Quad, 29 species in the Garden Cove Quad, and 35

species in the Rock Harbor Quad (exact location unavailable). Of these, one is federally protected (bald eagle) and eight are state protected species. Wading bird rookeries data (FFWCC 2002c) indicated no wading bird rookeries in the service area and the closest rookery is approximately 0.3 miles west of the service area in Tarpon Basin.

**Table 3-6**  
**Protected Species Occurrence Records**

| Common Name/Scientific Name                                           | Status | Habitat                                                                                                                                                                                            |
|-----------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MAMMALS</b>                                                        |        |                                                                                                                                                                                                    |
| Key Largo woodrat<br><i>Neotoma floridana smalli</i>                  | FE, SE | Terrestrial: deciduous forest, dry tropical forest                                                                                                                                                 |
| Key largo cotton mouse<br><i>Peromyscus gossypinus</i>                | FE, SE | Terrestrial: deciduous forest                                                                                                                                                                      |
| <b>BIRDS</b>                                                          |        |                                                                                                                                                                                                    |
| Roseate spoonbill<br><i>Ajaia ajaja</i>                               | SSC    | Estuarine: mangrove-dominated pools. Palustrine: various freshwater areas                                                                                                                          |
| White-crowned pigeon<br><i>Columba leucocephala</i>                   | ST     | Terrestrial: mangrove covered islands (nesting), tropical hardwood forest (feeding)                                                                                                                |
| Little blue heron<br><i>Egretta caerulea</i>                          | SSC    | Estuarine: marshes, shoreline. Palustrine: floodplain, swamp. Riverine: shoreline                                                                                                                  |
| Reddish egret<br><i>Egretta rufescens</i>                             | SSC    | Terrestrial: coastal islands (nesting), sand and mud flats (feeding)                                                                                                                               |
| Snowy egret<br><i>Egretta thula</i>                                   | SSC    | Estuarine: marshes, shoreline, tidal swamp. Lacustrine: lake edges. Palustrine: swamp, floodplain, ruderal. Riverine: shoreline                                                                    |
| Tricolored heron<br><i>Egretta tricolor</i>                           | SSC    | Estuarine: marshes, tidal swamps, shoreline. Lacustrine: lake edges. Palustrine: swamp, floodplain, ruderal. Riverine: shoreline                                                                   |
| White ibis<br><i>Eudocimus albus</i>                                  | SSC    | Estuarine and Terrestrial: various freshwater, brackish and saline environments.                                                                                                                   |
| Bald eagle<br><i>Haliaeetus leucocephalus</i>                         | FT, ST | Estuarine: marsh edges, tidal swamp, open water. Lacustrine: swamp lakes, edges. Palustrine: swamp, floodplain. Riverine: shoreline, open water. Terrestrial: pine and hardwood forests, clearings |
| Osprey<br><i>Pandion haliaetus</i>                                    | SSC**  | Riverine and Palustrine: swamp forest, riparian woodlands, belts of cypress trees                                                                                                                  |
| Brown pelican<br><i>Pelecanus occidentalis</i>                        | SSC    | Estuarine: islands for nesting, open water. Marine: open water                                                                                                                                     |
| Least tern<br><i>Sterna antillarum</i>                                | ST     | Estuarine: various. Lacustrine: various. Riverine: various. Terrestrial: beach dune, ruderal.                                                                                                      |
| <b>REPTILES</b>                                                       |        |                                                                                                                                                                                                    |
| Eastern indigo snake<br><i>Drymarchon corais couperi</i>              | FT, ST | Terrestrial: mangrove swamps, wet prairies, xeric pineland and scrub                                                                                                                               |
| Florida Keys mole skink<br><i>Eumeces egregius egregius</i>           | SSC    | Terrestrial: sandy shorelines                                                                                                                                                                      |
| Rim rock crowned snake<br><i>Tantilla oolitica</i>                    | ST     | Terrestrial: pine flatwoods, tropical hammocks, vacant lots and pastures                                                                                                                           |
| <b>INVERTEBRATES</b>                                                  |        |                                                                                                                                                                                                    |
| Schaus swallowtail butterfly<br><i>Heracles aristodemus ponceanus</i> | FE, SE | Terrestrial: hardwood hammocks                                                                                                                                                                     |
| <b>PLANTS</b>                                                         |        |                                                                                                                                                                                                    |
| Golden leather fern<br><i>Acrostichum aureum</i>                      | SE     | Terrestrial: mangrove swamp, saltmarsh hydric hammock                                                                                                                                              |
| Sea lavender<br><i>Argusia gnaphalodes</i>                            | SE     | Terrestrial: beach dune, coastal strand                                                                                                                                                            |

### 3.0 Affected Environment

**Table 3-6**  
**Protected Species Occurrence Records**

| Common Name/Scientific Name                                             | Status  | Habitat                                                                        |
|-------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------|
| Little strongbark<br><i>Bourreria cassinifolia</i>                      | SE      | Terrestrial: pine rocklands                                                    |
| Myrtle-of-the-river<br><i>Calyptranthes zuzygium</i>                    | SE      | Terrestrial: rockland hammocks, coastal berm                                   |
| Wild cinnamon<br><i>Canella winteriana</i>                              | SE      | Terrestrial: rockland hammock, maritime hammock                                |
| Rhacoma<br><i>Crossopetalum rhacoma</i>                                 | ST      | Terrestrial: rockland hammock, pine rockland, coastal scrub                    |
| Milkbark<br><i>Drypetes diversifolia</i>                                | SE      | Terrestrial: tropical hammock                                                  |
| Red stopper<br><i>Eugenia rhombea</i>                                   | SE      | Terrestrial : rockland hammock                                                 |
| Wild cotton<br><i>Gossypium hirsutum</i>                                | SE      | Terrestrial: coastal berm, shell mounds, maritime hammock                      |
| Lignum-vitae<br><i>Guaiacum sanctum</i>                                 | SE      | Terrestrial: rockland hammock                                                  |
| Simpson's prickly apple<br><i>Harrisia simpsonii</i>                    | SE      | Terrestrial: coastal hammocks and thickets                                     |
| White ironwood<br><i>Hypelate trifoliata</i>                            | SE      | Terrestrial: rockland hammocks                                                 |
| Florida Keys indigo<br><i>Indigofera mucronata</i> var. <i>keyensis</i> | FC, SE  | Terrestrial: rockland hammock, coastal berm, rock barren                       |
| Joewood<br><i>Jacquinia keyensis</i>                                    | ST      | Terrestrial: coastal salt flat, coastal scrub, maritime hammock, pine rockland |
| Wild dilly<br><i>Manilkara bohamensis</i>                               | ST      | Terrestrial: upland hammock                                                    |
| Whitish passionflower<br><i>Passiflora multiflora</i>                   | SE      | Terrestrial: hammocks, scrublands                                              |
| Tree cactus<br><i>Pilosocereus robinii</i>                              | FE, SE* | Terrestrial: tropical hardwood hammock, cactus hammock, thorn scrub            |
| Florida boxwood<br><i>Schaefferia frutescens</i>                        | SE      | Terrestrial: hammocks                                                          |
| West Indies mahogany<br><i>Swietenia mahagoni</i>                       | ST      | Terrestrial: rockland hammock, maritime hammock                                |
| Florida thatch palm<br><i>Thrinax radiata</i>                           | SE      | Terrestrial: maritime hammock, upland hammock, coastal scrub                   |
| Banded wild pine<br><i>Tillandsia flexuosa</i>                          | SE      | Terrestrial: pine rockland                                                     |
| Pearl berry<br><i>Vallesia antillana</i>                                | SE      | Terrestrial: rockland hammock                                                  |

Source: FNAI (date unavailable). FE—Federally Endangered/SE—State Endangered/FT—Federally Threatened/ST—State Threatened/FC—Federal Candidate Species/FT (S/A)—Federally Threatened due to Similarity of Appearance/SSC—State Species of Special Concern/\*a recovery plan is available for this species/\*\*only listed for Monroe County.

**WWTF Location.** No federally protected plant or animal species were observed during a survey of the proposed WWTF in March 2004 (URS 2004), although the hardwood hammock is suitable for federally protected Schaus swallowtail butterfly (*Heracles aristodemus ponceanus*) and Stock Island tree snail (*Orthalicus reses*). Several state protected plant species observed on the site and are listed in Table 3-7.

**Table 3-7**  
**State Protected Plant Species in the Proposed Key Largo**  
**Regional WWTF Site**

| Common Name                 | Scientific Name                 |
|-----------------------------|---------------------------------|
| Spicewood                   | <i>Calyptanthes pallens</i>     |
| Prickly Pear                | <i>Opuntia stricta</i>          |
| Blackbead                   | <i>Pithecellobium keyensis</i>  |
| Red Ironwood                | <i>Reynosia septentrionalis</i> |
| Spiny Greenbrier            | <i>Smilax havanensis</i>        |
| Cinnamon Bark               | <i>Canella winterana</i>        |
| Milkbark                    | <i>Drypetes diversifolia</i>    |
| Princewood                  | <i>Exostema caribaeum</i>       |
| White Ironwood              | <i>Hypelate trifoliata</i>      |
| White Flower Passion flower | <i>Passiflora multiflora</i>    |
| Hammock Snout Pea           | <i>Rhynchosia swartzii</i>      |
| Mahogany                    | <i>Swietenia mahogani</i>       |
| Thatch Palm                 | <i>Thrinax radiata</i>          |

State-protected plant species in the nearby Newport Hammock CARL site that may also occur at the proposed WWTF, per the FFWCC include yellowwood (*Schaefferia frutescens*, endangered), Simpson's prickly apple (*Harrisia simpsonii*, endangered), banded wild pine (*Tillandsia flexuosa*, endangered), wild cotton (*Gossypium hirsutum*, endangered), joewood (*Jacquinia keyensis*, threatened), wild dilly (*Manilkara bahamensis*, threatened), and golden leather fern (*Acrostichum aureum*, threatened).

#### 3.6.4 Existing and Potential Habitat Areas for Protected Species

Identification of habitats of particular interest or importance allows these habitats to be avoided during implementation of this and other FKWQIP projects. Existing and potential wildlife habitats in the Keys have been identified by the FMRI, based on habitat and numbers of key species, many of which are protected. Importantly, biodiversity *hot spots* and Strategic Habitat Conservation Areas (SHCAs) have been developed by Cox *et al.* (1994) to identify conservation targets considered necessary to meet conservation goals in Florida.

**Service Area.** The FFWCC biodiversity *hot spots* data (FFWCC 2002b), reviewed for the service area, represent areas of overlap among potential habitats of 44 rare or focal species of wildlife and four important natural communities. Overlap among greater numbers of species indicates higher biodiversity.

SHCAs for three bird species (white-crowned pigeon, black-whiskered vireo, mangrove cuckoo), one reptile (American crocodile), and two additional elements of biodiversity (tropical hardwood hammock and wetlands important to wading birds) were identified in the service area (Table 3-8 and Figure 3-3). The white-crowned pigeon is a state protected threatened species, while the black-whiskered vireo and mangrove cuckoo are not protected at the state or federal level. The SHCAs for the white-crowned pigeon and black-whiskered vireo are scattered throughout the

### 3.0 Affected Environment

Key Largo service area. The parcel that the proposed WWTF site is located within occurs in a white-crowned pigeon SHCA as well as the black-whiskered vireo SHCA.



*The Key Largo service area includes a SHCA for the state protected white-crowned pigeon. The species has also been observed on the proposed WWTF site.*

**Table 3-8**

**Habitat and SHCA Conservation Targets and Presence in Key Largo Service Area**

| SHCA Conservation Target                                                                    | Presence of Area or Species in Service Area                           |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 30 species of wildlife inadequately protected by the current system of conservation lands   | White-crowned pigeon, black-whiskered vireo, and mangrove cuckoo      |
| High quality sandhill, scrub and pine rockland sites                                        | None identified in service area                                       |
| High quality examples of tropical hardwood hammocks                                         | Tropical hardwood hammocks identified within the service area         |
| Bat maternity caves and winter roost caves                                                  | None identified in service area                                       |
| Wetlands critically important to breeding success of eight species of wading birds          | Wetlands important to wading birds identified within the service area |
| Lands critically important to the long-term survival of 105 globally rare species of plants | None identified in service area                                       |

**WWTF Location.** The hardwood hammock on the proposed WWTF site provides a suitable habitat for the federally protected Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) and the Stock Island tree snail (*Orthalicus reses*). Formal consultation with the USFWS regarding FEMA funding for the proposed project was concluded in June 2001 and the USFWS issued a BO. As part of the BO, the USFWS outlined reasonable and prudent measures necessary to minimize "incidental take" of Schaus swallowtail butterflies and Stock Island tree snails (listed below).

- Restore an area of hardwood hammock habitat equal to the 2.6 acres of the proposed construction to replace the habitat functions essential to the long-term conservation of the Schaus swallowtail butterfly and Stock Island tree snail
- Preserve that part of the 23 acre parcel not required for the proposed WWTF to prevent any further adverse impacts and to ensure proper long-term management of the habitat

The proposed WWTF would be constructed in the lowest quality portion of the 23 acre parcel and the remaining undeveloped portion of the parcel would provide a mitigation area for transplanting protected species, planting hardwood hammock species, and removing exotic and nuisance vegetation. The KLWTD would conserve the remaining 19.4 acres as undeveloped land in perpetuity and restore and additional 2.6 acres off site. The 2.6 acre restoration site (once identified), restoration plan, and 20.4 acre conservation provisions are subject to Corps and USFWS approval and would occur prior to construction activities. Native hardwood hammock trees greater than four inches in diameter would be transplanted or replaced in the conserved 20.4 acres or in onsite landscaped areas. Locating the proposed WWTF adjacent to an existing FCAA facility would avoid fragmentation of other hardwood hammocks.

The hardwood hammock on the proposed WWTF site also provides suitable habitat for the white-crowned pigeon (*Columba leucocephala*), Florida tree snail (*Liguus fasciatus*), and Miami black-headed snake (*Tantilla oolitica*). Several plant species identified by Monroe County as regionally important species also occur on the proposed WWTF site, including inkwood (*Exothea paniculata*), black ironwood (*Kruigiodendron ferreum*), lancewood (*Nectandra coriacea*), capeweed (*Phyla nodiflora*), paradise tree (*Simarouba glauca*) and hog plum (*Ximenia americana*).

County regulations do not require traditional habitat mitigation for the uplands, but do require replacement of large native trees and all listed plants. The anticipated number of trees for mitigation is low due to the disturbed nature of the site and the presence of Brazilian pepper. Removal of the Brazilian pepper is required and a native hardwood revegetation plan would be implemented pursuant to Monroe County requirements.

The parcel that the proposed WWTF site is located within occurs in a white-crowned pigeon SHCA as well as the black-whispered vireo SHCA. Biodiversity *hot spots* include three to four focal species and seven or more focal species are scattered throughout the Key Largo service area. A small portion (0.23 acres) of the parcel that the proposed WWTF site is located in occurs in a biodiversity hot spot (Figure 3-3).

#### 3.7 Essential Fish Habitat (EFH)

Coral reefs and other benthic habitats identified as EFH must be considered as part of any federal action. Federal agencies must also comply with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 *et seq.*) that requires implementation of measures to conserve and enhance this habitat per the Sustainable Fisheries Act (SFA) Public Law 104-297. EFH in the service areas and the Keys is described in the PEIS (Section 3.7).

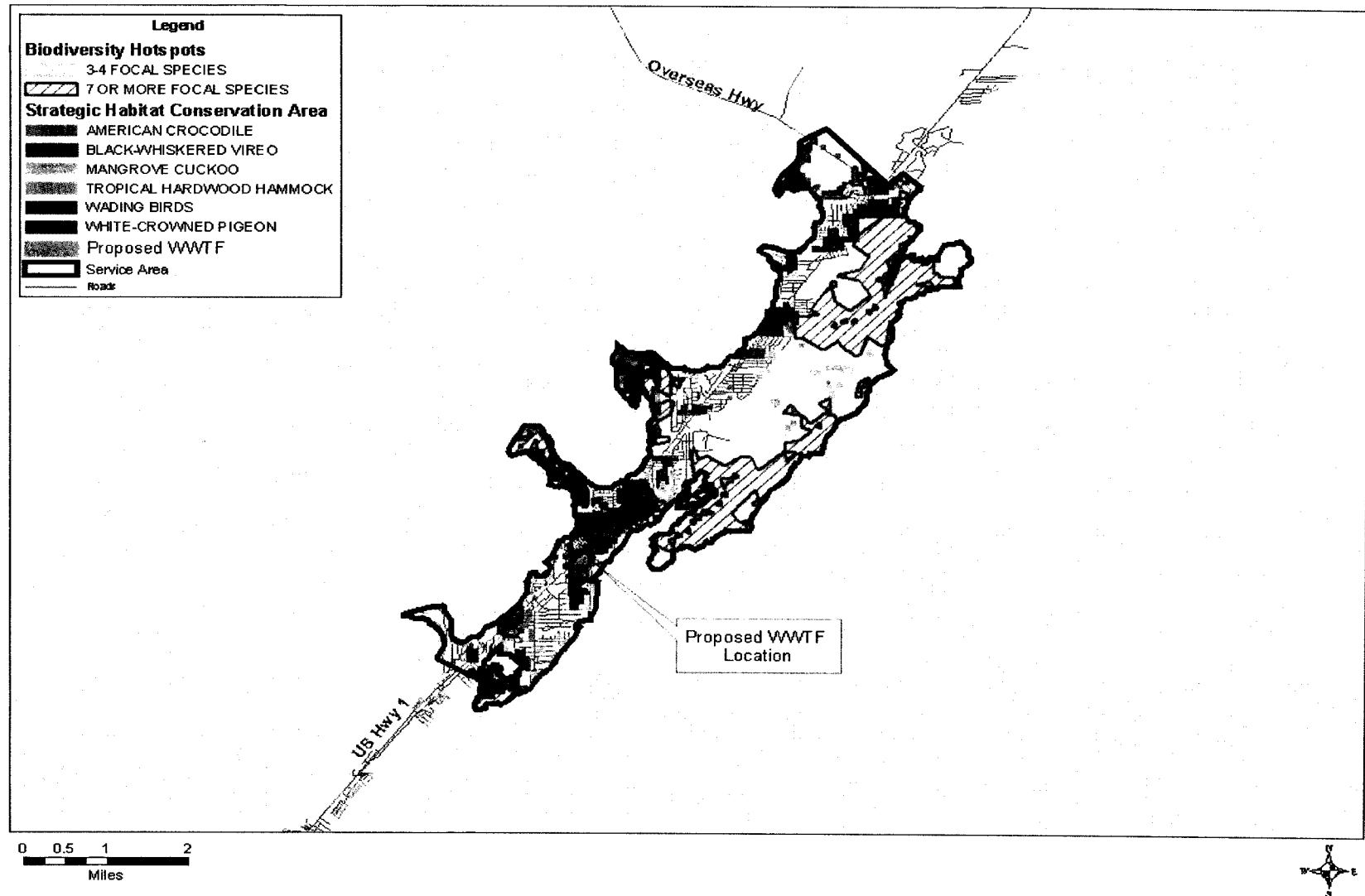


*Coral reefs and other benthic habitats are identified as EFH and must be considered as part of any federal action.*

|                                                                                     |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| ✓                                                                                   | ✓                                                                                   | ✓                                                                                     |                                                                                       | ✓                                                                                     |                                                                                       |

The MSA requires federal agency consultation on activities that may adversely affect EFH. NMFS, a service of the U.S. Department of Commerce-NOAA, is responsible for implementing this mandate. Informal consultation with NMFS was initiated as part of the preparation for the PEIS. Species and associated habitats identified as relevant to the proposed project include panaeid shrimp (e.g. pink and brown shrimp) and rock shrimp, red drum, snapper, the grouper unit, golden crab, and spiny lobster.

Figure 3-3  
SHCAs and Biodiversity Hot Spots in the Key Largo Service Area



### 3.8 Air Quality and Noise

The Key Largo service area currently meets or exceeds all federal air quality standards. Noise levels are typical of urban areas dominated by commercial and recreational activities.



*Air quality in the Keys presently meets or exceeds federal air quality standards, and noise levels are typical of areas dominated by recreational and commercial activities.*

|  |   |  |  |  |  |
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#### 3.8.1 Air Quality

The affected environment for air quality is similar to that described in the PEIS (Section 3.8.1). Air pollution within the service area has not been extensively documented, however the FDEP has designated Monroe County as an air quality attainment area, which means that air quality standards set by both FDEP and the USEPA are maintained countywide (Monroe County 1995). F.A.C. 62-604.400 and 62-296.320 require reasonable assurance from the applicant that the facility will not cause objectionable odors, such as those resulting from WWTF hydrogen sulfide discharges, at levels that would adversely affect neighboring residents or commercial uses.

Air quality in the Keys is generally excellent, and data from two FDEP ambient air monitoring stations in Key West and Marathon indicate that particulate matter concentrations remain well below Florida standards. Motor vehicles are generally the main source of emissions.

#### 3.8.2 Noise

Noise in the Keys is typical of areas with urban activities such as traffic, construction, aircraft (near airports), and boats, as described in the PEIS (Section 3.8.2). Since 1982, responsibility for noise abatement and control has been delegated to state and local governments, but noise levels and exposure recommendations developed by the USEPA under the Noise Control Act are still relevant (FEMA 2002). The State of Florida addresses noise control in Title XXIX, Chapter 403 (Public Health, Environmental Control) of the Florida Statutes (F.S.). Chapter 62-600 of the F.A.C. addresses rules for siting and operation of WWTFs and requires that new facilities are located to minimize noise from the facility that may impact sensitive noise receptors such as residences, schools, hospitals, churches, and parks.

Noise levels over a 24-hour period should be less than 70 decibel (dB) to prevent any measurable hearing loss over a lifetime. Likewise, maximum levels of 55 dB outdoors and 45 dB indoors are identified as preventing activity interference and annoyance. Monroe County has adopted an ordinance that prohibits noise equal to or exceeding 60 dB (typical of a residential area) beyond the property line of the sound source and may collect fines up to \$500 per day from violators.

## 3.9 Cultural Resources

The protection of cultural, archaeological, and historical resources in the Keys is described in the PEIS (Section 3.9). Major federal laws protecting cultural resources include the National Historic Preservation Act (NHPA), Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and American Indian Religious Freedom Act (AIRFA) of 1978. Section 106 of the NHPA requires federal agencies to consider the effects of the *Proposed Action* on identified and potentially present cultural resources. In addition, the State Historic Preservation Office (SHPO), Tribal Historic Preservation Officers, and the Advisory Council on Historic Preservation, could review and comment on a *Proposed Action*.



*The presence of historic properties on the proposed WWTF, KLTV, or KLP is unlikely. However, the Calusa Campground may have historic properties that would be adversely affected during connection to the WWTF and would require further coordination with SHPO regarding possible mitigation with concerned parties.*

|  |   |  |  |   |  |
|--|---|--|--|---|--|
|  |   |  |  |   |  |
|  | ✓ |  |  | ✓ |  |

A review of the Florida master site files indicates the presence of nine historic properties in the vicinity of the proposed WWTF (See Pertinent Correspondence, Appendix B).

- Sites 8MO26, 8MO27, and 8MO1258 are located north of the proposed WWTF site, on the west side of U.S. 1, in the Calusa Campground and between KLP and KLTV. Site 8MO1258 (rock mound and midden) is a National Register-listed archaeological site. Sites 8MO26 and 8MO27 were nominated to the National Register (Rock Mound National Register Nomination 1974), but not listed. Both sites are rock mounds with associated middens dating from the Glades period.
- Sites 8MO2057 and 8MO2058 (historic cisterns), 8MO2060 (a historic pioneer domestic site), and 8MO2067 (historic cistern and home site) are located northeast of the proposed WWTF. These sites are most likely associated with the settlement of Newport Village.
- Prehistoric sites 8MO2061 and 8MO2066 are shell middens.

A survey was conducted on January 10, 2001 (URS 2004) to examine the site for visible cultural resources and to assess the necessity for a more detailed archaeological survey. The results of this survey were submitted to SHPO.

The proposed WWTF location has indications of modern disturbances and no previously recorded or visible signs of cultural resources, little or no soils, and no potable water. Site conditions indicate little probability of significant cultural resources occurring within the WWTF sites. No impacts to historic, archaeological, or cultural resources are anticipated as a result of constructing the proposed WWTF.

In letters dated May 16, 2001, and August 18, 2003, respectively, the SHPO concurred with the findings that no historic properties were likely to be located on the proposed WWTF, the KLTV, or the KLP. However, the Calusa Campground may have historic properties that would be adversely affected during connection of the WWTF. The KLWTD would be advised to avoid sensitive archaeological features, have professional onsite archaeological monitoring during collection system work, and further coordinate activities with the SHPO.

Furthermore, although the 2.6 acre rehabilitation site is likely to have been previously disturbed, site work and planting activities have the potential to affect historic properties. Accordingly, should the *Proposed Action* be selected, further cultural resources evaluation will be required, including SHPO consultation. Should any unanticipated historic or archeological materials be discovered during project work, all activities on the site shall be halted immediately and the KLWTD shall consult with the Corps and other concerned parties, SHPO, and other appropriate agencies for further guidance.

#### 3.10 Demographics and Socioeconomics

Like most of the Keys, the economy of Key Largo is largely dependent on the continued health of the coral reefs in the Sanctuary. The coral reefs support a major recreational industry that attracted more than two million tourists to the Keys and South Florida by the early 1990s who spent an estimated \$1.3 billion (Crosby 1997), figures that are no doubt substantially greater today. Scuba and free diving are the principal recreational activities revolving around the coral reef, attracting over 1.2 million divers annually to the Keys and generating more than \$220 million in economic benefit. Commercial fishing contributes about one-half the economic benefit as diving, and constitutes the second largest of the water-based economic contributors. While these figures are for the entire Keys, they indicate the importance of the health of the coral reef to the Keys, including the residents and businesses of Key Largo.



*Tourism is the principal economic force in Key Largo and Monroe County and is largely dependent on the continued health of the coral reefs in the Sanctuary.*

|   |   |  |  |   |   |
|---|---|--|--|---|---|
|   |   |  |  |   |   |
| ✓ | ✓ |  |  | ✓ | ✓ |

##### 3.10.1 Demographics

Key Largo is an unincorporated area in northeast Monroe County. Designated by the U.S. Census Bureau as a Census Designated Place (CDP), it encompasses the area south of the intersection of U.S. 1 and Card Sound Road (approximately MM 106.5), and north of approximately MM 97.

The permanent population of Key Largo in 2000 was 11,886 (Table 3-9). Population estimates for Key Largo for more recent years are not available; however, general demographic characteristics of the Key Largo CDP are summarized below.

### 3.0 Affected Environment

- By age group, the population of Key Largo is similar to the county and state populations, although the median age in Key Largo and Monroe County is 43, about four years greater than for Florida as a whole.
- In 2000, 94 percent of the residents of Key Largo were white, compared to 91 percent in the county, and 78 percent for the state.
- Housing units in Key Largo were 65 percent occupied, compared to 68 percent in the county, and 87 percent statewide, reflecting the seasonal nature of the service area.
- Seasonal, for recreation, or occasional housing use was 27 percent in Key Largo, 24 percent in Monroe County, and seven percent statewide.
- The vacancy rate in 2000 was seven percent, compared to 12 percent in the county and nine percent statewide.
- The average household size in Key Largo and Monroe County are similar, but considerably lower than the average for the State of Florida.



*The Key Largo CDP had a population in 2000 of about 11,886, most of whom were white, with a median age of 43 years.*

**Social Characteristics.** Social characteristics for the Key Largo CDP are also similar to those of Monroe County and the State of Florida (Table 3-9). Key Largo has a slightly higher number of elementary school students when compared with the county and state, although the level of education attainment is similar for Key Largo, the county, and the state (Table 3-10). Compared with other places in Florida, a relatively large number of the residents have moved to Key Largo and Monroe County since 1995.

**Housing Characteristics.** Housing characteristics of Key Largo differ from those of Monroe County and the State of Florida. About 33 percent of the housing units in Key Largo are mobile homes, compared to only about 19 percent for Monroe County and 12 percent statewide, many of which have been in place for many years. In addition, ninety-four percent of Key Largo households have a vehicle, compared to 91 percent in Monroe County and 92 percent statewide.

The estimated value of housing units in Key Largo is reasonably similar to that of Monroe County, but differs greatly from the State of Florida. In 2000, Key Largo had virtually no owner-occupied housing units valued at less than \$50,000 (Table 3-11), and only about seven percent of the housing units were valued at between \$50,000 and \$100,000. While these figures were close to those of Monroe County, they were much lower than those for the State of Florida. While Key Largo had a lower percentage of housing units in higher value brackets than Monroe County, the housing value in Key Largo was consistently greater than that of the State of Florida.

As would be expected, the cost of home ownership is generally higher in Key Largo than the State of Florida as a whole. For example, the percentage of owner-occupied households with a mortgage of more than \$2000 per month was seven percentage points greater in Key Largo than the State of Florida (Table 3-9). Correspondingly, the table also indicates that Key Largo had a large percentage of households where the percentage of household income needed for housing

exceeded 35 percent. Interestingly, the data in Table 3-9 indicate that the cost for renter-occupied housing units was generally comparable to that of the State of Florida as a whole.

**Tourism.** Tourism is the principal economic force in Key Largo and Monroe County (Corps 2004). A reported 2.29 million visitors spent an estimated 14.3 million days in the Keys between June 1997 through May 1998. Visitors spent an estimated \$1.38 billion in the county during this period and generated an estimated \$1.55 billion in total output and sales. In turn, this provided approximately \$565,000,000 in income, and supported nearly 19,000 jobs (Leeworthy and Vanesse 1999). The income generated by tourism amounted to an estimated 47 percent of the county total, while the employment supported by tourism was estimated to be nearly 37 percent of the county total.

#### 3.10.2 Socioeconomics

Selected economic characteristics for the Key Largo, Monroe County, and the state of Florida are listed in Table 3-12. These data indicate that employment characteristics of Key Largo residents are similar to those of Monroe County and the State of Florida. However, Key Largo has a higher proportion of residents in the arts, entertainment, recreation, accommodation and food services sector management than the State of Florida, as well as in construction.

In the year 2000, the unemployment figure for the Key Largo CDP and Monroe County was two percent, compared with three percent statewide. Historically, Key Largo and Monroe County have lower unemployment rates than the state of Florida in spite of the higher proportion of residents in the working age groups (between the ages of 18 and 65).

**Cost of Living.** One of the principal factors affecting the cost of living in the Keys and a factor that would be impacted by the proposed project is the cost of utility services. Rates for utility services are elevated for residents in the Keys due to the distance of utility lines required to provide service to residents. In addition, the cost of sewer service is relatively high in the Keys due to infrastructure requirements for collecting wastewater, treatment, and disposal of treated effluent.



*The principal contributing factors in the county, including the Key Largo CDP, are elevated costs of real estate, insurance, transporting goods and services, sales tax, and utilities.*

Cost of living data are available only at the county level, and it is reasonable to assume that the cost of living in Key Largo varies little from Monroe County. The 2003 Florida Price Level Index identified Monroe County as having the highest cost of living in Florida, with an index value of 109.63 (Bureau of Economic and Business Research 2003). This index indicates that the cost of living is almost ten percent higher than the state average. It is worth noting that only five other counties had an index greater than 100, so the cost of living in Monroe County is significantly higher than most parts of Florida. The principal factors that contribute to the high cost of living in Monroe County, including Key Largo, are elevated costs of real estate, insurance, transporting goods and services, sales tax, and utilities. Goods and services are

### 3.0 Affected Environment

generally more costly in the Keys than elsewhere in Florida, mainly due to the high cost of transportation to and from the area. With no rail transportation or commercial seaport, virtually all goods are shipped by truck from the mainland.

**Table 3-9**

**Profile of General Demographic Characteristics for Key Largo, Monroe County, and State of Florida (2000)**

| Subject                                | Key Largo |         | Monroe County |         | State of Florida |         |
|----------------------------------------|-----------|---------|---------------|---------|------------------|---------|
|                                        | Value     | Percent | Value         | Percent | Value            | Percent |
| <b>Population</b>                      |           |         |               |         |                  |         |
| Total                                  | 11,886    | 100     | 79,589        | 100     | 15,982,378       | 100     |
| Male                                   | 6,165     | 52      | 42,379        | 53      | 7,797,715        | 49      |
| Female                                 | 5,721     | 48      | 37,210        | 47      | 8,184,663        | 51      |
| Under 5 years                          | 554       | 5       | 3,462         | 4       | 945,823          | 6       |
| 5 to 19 years                          | 1,999     | 17      | 11,503        | 14      | 3,102,809        | 19      |
| 20 to 44 years                         | 3,859     | 32      | 28,392        | 36      | 5,497,657        | 34      |
| 45 to 64                               | 3,599     | 30      | 24,584        | 31      | 3,628,492        | 23      |
| 65 to 74 years                         | 1,071     | 9       | 6,779         | 9       | 1,452,176        | 9       |
| 75 years and over                      | 804       | 7       | 4,869         | 6       | 1,355,421        | 9       |
| Median age (years)                     | 43        | -       | 43            | -       | 39               | -       |
| White                                  | 11,218    | 94      | 72,151        | 91      | 12,465,029       | 78      |
| Black/African American                 | 243       | 2       | 3,795         | 5       | 2,335,505        | 15      |
| American Indian/Alaska Native          | 35        | 0       | 301           | 0       | 53,541           | 0       |
| Asian                                  | 56        | 1       | 657           | 1       | 266,256          | 2       |
| Two or more races                      | 221       | 2       | 1,418         | 2       | 376,315          | 2       |
| <b>Households</b>                      |           |         |               |         |                  |         |
| Total                                  | 5,245     | 100     | 35,086        | 100     | 6,337,929        | 100     |
| Householder 65 years and over          | 463       | 9       | 2,884         | 8       | 710,025          | 11      |
| Households with individuals <18 years  | 1,356     | 26      | 8,069         | 23      | 1,986,554        | 31      |
| Households with individuals ≥ 65       | 1,358     | 26      | 8,354         | 24      | 1,943,478        | 31      |
| Average household size                 | 2.26      | -       | 2.23          | -       | 2.46             | -       |
| Average family size                    | 2.75      | -       | 2.73          | -       | 2.98             | -       |
| <b>Housing</b>                         |           |         |               |         |                  |         |
| Total housing units                    | 8,043     | 100     | 51,617        | 100     | 7,302,947        | 100     |
| Occupied housing units                 | 5,245     | 65      | 35,086        | 68      | 6,337,929        | 87      |
| Vacant housing units                   | 2,798     | 35      | 16,531        | 32      | 965,018          | 13      |
| Seasonal, recreational, occasional use | 2,152     | 27      | 12,332        | 24      | 482,944          | 7       |

**Table 3-10**  
**Selected Education Characteristics 2000**

| Subject                         | Layton |         | Monroe County |         | State of Florida |         |
|---------------------------------|--------|---------|---------------|---------|------------------|---------|
|                                 | Number | Percent | Number        | Percent | Number           | Percent |
| Population 25 years and over    | 8,955  | 100     | 61,161        | 100     | 11,024,645       | 100     |
| Less than 9th grade             | 334    | 3.7     | 2,827         | 4.6     | 739,222          | 6.7     |
| 9th to 12th grade, no diploma   | 1,084  | 12.1    | 6,405         | 10.5    | 1,480,726        | 13.4    |
| High school graduate            | 2,813  | 31.4    | 17,664        | 28.9    | 3,165,748        | 28.7    |
| Some college, no degree         | 1,813  | 20.2    | 13,738        | 22.5    | 2,403,135        | 21.8    |
| Associate degree                | 755    | 8.4     | 4,944         | 8.1     | 773,486          | 7       |
| Bachelor's degree               | 1,427  | 15.9    | 10,256        | 16.8    | 1,573,121        | 14.3    |
| Graduate or professional degree | 729    | 8.1     | 5,327         | 8.7     | 889,207          | 8.1     |
| Percent H.S. or higher          | 84.2   | (X)     | 84.9          | (X)     | 79.9             | (X)     |
| Percent BS/BA or higher         | 24.1   | (X)     | 25.5          | (X)     | 22.3             | (X)     |

**Table 3-11**  
**Selected Housing Characteristics**

| Subject                   | Layton  |         | Monroe County |         | State of Florida |         |
|---------------------------|---------|---------|---------------|---------|------------------|---------|
|                           | Number  | Percent | Number        | Percent | Number           | Percent |
| Total housing units       | 8,117   | 100     | 51,617        | 100     | 7,302,947        | 100     |
| <b>Units In Structure</b> |         |         |               |         |                  |         |
| 1-unit, detached          | 3,785   | 46.6    | 24,212        | 46.9    | 3,816,527        | 52.3    |
| 1-unit, attached          | 264     | 3.3     | 4,203         | 8.1     | 429,457          | 5.9     |
| 2 units                   | 324     | 4       | 2,531         | 4.9     | 196,327          | 2.7     |
| 3 or 4 units              | 120     | 1.5     | 2,770         | 5.4     | 313,631          | 4.3     |
| 5 or more units           | 851     | 10.5    | 7308          | 14.1    | 1670190          | 22.9    |
| Mobile home               | 2,718   | 33.5    | 9,814         | 19      | 849,304          | 11.6    |
| Boat, RV, van, etc.       | 55      | 0.7     | 779           | 1.5     | 27,511           | 0.4     |
| Occupied Housing Units    | 5,304   | 100     | 35,086        | 100     | 6,337,929        | 100     |
| <b>Value</b>              |         |         |               |         |                  |         |
| Less than \$50,000        | 16      | 0.7     | 89            | 0.6     | 232,080          | 7.2     |
| \$50,000 to \$149,999     | 795     | 36.9    | 2562          | 18.1    | 2126944          | 65.6    |
| \$150,000 to \$299,999    | 864     | 40.1    | 6695          | 47.5    | 677955           | 20.9    |
| \$300,000 to \$999,999    | 905     | 42      | 8303          | 58.9    | 457788           | 14.1    |
| \$1,000,000 or more       | 12      | 0.6     | 462           | 3.3     | 18,094           | 0.6     |
| Median (dollars)          | 174,200 | (X)     | 241,200       | -       | 105,500          | -       |
| <b>Gross Rent</b>         |         |         |               |         |                  |         |
| Less than \$200           | 4       | 0.3     | 243           | 1.8     | 71,963           | 3.8     |
| \$200 to \$299            | 29      | 1.9     | 389           | 3       | 64,650           | 3.4     |
| \$300 to \$499            | 194     | 12.7    | 1,266         | 9.6     | 347,435          | 18.4    |
| \$500 to \$749            | 466     | 30.5    | 2,952         | 22.5    | 722,946          | 38.3    |
| \$750 to \$999            | 455     | 29.8    | 3,250         | 24.7    | 392,136          | 20.8    |
| \$1,000 to \$1,499        | 251     | 16.4    | 2,846         | 21.7    | 155,594          | 8.2     |
| \$1,500 or more           | 46      | 3       | 887           | 6.8     | 46,265           | 2.4     |
| Median (dollars)          | 763     | (X)     | 820           | -       | 641              | -       |

**Table 3-12**  
**Selected Economic Characteristics 2000**

| Subject                                                     | Layton       |            | Monroe County |            | State of Florida |            |
|-------------------------------------------------------------|--------------|------------|---------------|------------|------------------|------------|
|                                                             | Number       | Percent    | Number        | Percent    | Number           | Percent    |
| <b>Employment Status</b>                                    |              |            |               |            |                  |            |
| Population 16 years & over                                  | 9,893        | 100        | 67,582        | 100        | 12,744,825       | 100        |
| In labor force                                              | 6,245        | 63.1       | 43,838        | 64.9       | 7,471,977        | 58.6       |
| Employed                                                    | 6,018        | 60.8       | 41,181        | 60.9       | 6,995,047        | 54.9       |
| Unemployed                                                  | 219          | 2.2        | 1,364         | 2          | 412,411          | 3.2        |
| <b>Occupation</b>                                           |              |            |               |            |                  |            |
| Management, professional, etc.                              | 1,637        | 27.2       | 11,232        | 27.3       | 2,206,193        | 31.5       |
| Service occupations                                         | 1,240        | 20.6       | 9,635         | 23.4       | 1,183,660        | 16.9       |
| Sales and office occupations                                | 1,523        | 25.3       | 10,422        | 25.3       | 2,066,191        | 29.5       |
| Farming, fishing, and forestry                              | 129          | 2.1        | 1,332         | 3.2        | 63,572           | 0.9        |
| Construction, extraction, maintenance                       | 905          | 15         | 5,006         | 12.2       | 717,333          | 10.3       |
| Production, transportation, and material moving occupations | 584          | 9.7        | 3,554         | 8.6        | 758,098          | 10.8       |
| <b>Households Income</b>                                    | <b>5,229</b> | <b>100</b> | <b>35,106</b> | <b>100</b> | <b>6,341,121</b> | <b>100</b> |
| Less than \$10,000                                          | 365          | 7          | 3,093         | 8.8        | 606,995          | 9.6        |
| \$10,000 to \$34,999                                        | 1763         | 33.7       | 11044         | 31.4       | 2246959          | 35.4       |
| \$35,000 to \$74,999                                        | 1926         | 36.9       | 13018         | 37.1       | 2274123          | 35.9       |
| \$75,000 to \$199,999                                       | 1031         | 19.8       | 6809          | 19.4       | 1065671          | 16.8       |
| \$200,000 or more                                           | 144          | 2.8        | 1,142         | 3.3        | 147,373          | 2.3        |
| MHI                                                         | 42,577       | -          | 42,283        | -          | 38,819           | -          |
| With Social Security income                                 | 1,307        | 25         | 8,765         | 25         | 2,072,258        | 32.7       |
| With public assistance income                               | 137          | 2.6        | 1,008         | 2.9        | 265,883          | 4.2        |
| With retirement income                                      | 896          | 17.1       | 5,674         | 16.2       | 1,262,325        | 19.9       |
| <b>Families</b>                                             | <b>3,348</b> | <b>100</b> | <b>20,661</b> | <b>100</b> | <b>4,238,409</b> | <b>100</b> |
| MFI (dollars)                                               | 50,755       | -          | 50,734        | -          | 45,625           | -          |
| Per capita income (dollars)                                 | 25,441       | -          | 26,102        | -          | 21,557           | -          |
| Percent below poverty level                                 | 197          | 5.9        | 1,403         | 6.8        | 383,131          | 9          |
| <b>Individuals</b>                                          |              |            |               |            |                  |            |
|                                                             |              |            |               |            |                  | -          |
| Individuals below poverty level                             | 996-         | 8.3        | 7,977-        | 10.2       | 1,952,629        | 12.5       |
| ≥65 years below poverty level                               | 138          | 7.8-       | 1,138         | -8.8-      | 434,180          | -9.1-      |

**Employment and Income.** Selected economic characteristics for the Key Largo CDP, Monroe County, and the State of Florida are provided in Table 3-12 and indicate that employment characteristics of Key Largo residents are similar to those of Monroe County. Key Largo and Monroe County have approximately 63 percent of their residents in the labor force, compared to about 58 percent statewide. Unemployment in Key Largo and Monroe County is only two percent and has remained relatively unchanged, compared to the state average of three percent, which has risen since 2000.

Employment by industry sector is similar among Key Largo, Monroe County, and the state, with a notable exception. The arts, entertainment, recreation, accommodation and food services sector in Key Largo and Monroe County make up 22 percent of the labor force, compared with 12 percent statewide. In addition, 15 percent of the Key Largo labor force works in construction, compared to ten percent statewide.

While the cost of living in Key Largo when compared with the State of Florida is higher, household income is also generally higher in Key Largo. In 2000, the family income in Key Largo was almost \$51,000 per year, virtually the same as the county, but more than \$5000 greater than for the state.

**Home Ownership.** The home ownership rates in Key Largo as well as Monroe County are lower than for the State of Florida. In Key Largo, about 65 percent of the residents owned their own homes, compared to 62 percent for Monroe County and 70 percent for the State of Florida (U. S. Census Bureau 2002). The lower home ownership rate in Key Largo and Monroe County is attributable to the much higher cost of housing units in Monroe County. Another factor is the transient nature of the population. A high proportion of the population of Key Largo, like Monroe County, is temporary.

**Poverty Level.** Largely because of higher incomes, the proportion of individuals and families living below the poverty level in Key Largo was reportedly only eight to six percent, respectively, compared to nine percent for the State of Florida (U.S. Census Bureau 2002). For individuals, the corresponding figures were eight percent for Key Largo, ten percent for Monroe County, and 12 percent for the State of Florida (Table 3-12).

However, because the cost of living in Monroe County is about ten percent higher than the Florida average, the actual proportion of residents in the city and the county living below the poverty level is much greater than the figures indicate. The definition of poverty applied by the Census Bureau does not provide a meaningful indication of the proportion or number of city or county residents with little or no discretionary income.



*Because of the high cost of living in Monroe County, the number of actual residents below the poverty line in the Key Largo CDP is actually greater than the estimated eight percent (U.S. Census 2000).*

As part of the implementation of the wastewater improvements funded by FEMA (2002), a Housing and Urban Development income level system for identifying residents eligible for financial assistance was developed. The system defines low-income residents as those with 80 percent of the median family income, and very low-income residents as those with household income of 50 percent of the median. Based on these definitions, very low income residents have no discretionary income. Those designated as low-income households have discretionary income levels of about \$750 per month.

**Utility Costs.** Residents of the Key Largo CDP rely primarily on low cost septic systems for wastewater treatment. In contrast, where central WWTFs have been installed, the costs

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associated with developing wastewater transmission and treatment facilities, connecting residences and businesses, and maintaining the facilities is often very high.

There are currently five central WWTFs operating in Monroe County (Corps 2004), although only Key West and Key Colony Beach comply with Florida 2010 treatment standards (FEMA 2002). In the three non-compliant service areas (Key Haven Utilities, Ocean Reef Club, and KW Resort Utilities), residents pay \$1,215 to \$2,700 toward the cost of wastewater treatment. These costs include the system development charge, additional connection costs, and \$55 to \$64 for monthly service.

A resident can afford an estimated two percent of their income for sewer service (FEMA 2002), which amounts to \$85 per month, based on the median annual household income of \$50,755 in Key Largo. Excluding connection costs, residential monthly sewer bills for centralized wastewater treatment would be within the target range for sewer bills for those with incomes equal to or greater than the Key Largo MHI. However, monthly sewer costs for residents with household incomes substantially below the median income could greatly exceed the generally accepted affordability level.

Affordability indices focus on the ability to pay for continuing service and do not address system development or connection charges that are of equal or greater significance to customers. Although the FKAA allows payment of the system development charge over time, the addition of this cost to monthly charges described earlier could raise the monthly charge above the affordability index, even for a family with the median income.

#### 3.11 Recreation

While local geology limits the formation of sandy beaches in the Keys, the primary natural attraction in the Keys is the coral reef, as described in the PEIS (Section 3.11). The 2.29 million visitors to the Keys rely on clean water and beaches as well as the abundant fish and wildlife that characterize this popular vacation spot. These visitors provide the basis of the tourism industry on which the economy of the Keys relies. Consequently, potential impacts to recreational amenities and tourism that may result from the implementation of FKWQIP must be examined.



*90 percent of all visitors responded that recreation or vacation was their primary purpose for visiting the Keys.*

|   |   |   |  |   |  |
|---|---|---|--|---|--|
|   |   |   |  |   |  |
| ✓ | ✓ | ✓ |  | ✓ |  |

Ninety percent of visitors to the Keys visit for recreation or vacation. In addition to water sports, historical and cultural resources associated with the Keys support tourism. Historical attractions include the remnants of the Overseas Railroad constructed in the early 1900s, Fort Zachary Taylor in Key West, and Fort Jefferson in the Dry Tortugas. Recreation days in Monroe County (Table 3-13) indicate that most activities are related to saltwater.



*Forty-three percent of the Key Largo service area is designated as conservation lands, and four percent are proposed for future conservation.*

Forty-three percent of the Key Largo service area is designated as conservation lands, and four percent are proposed for future conservation. Recreation areas provide active and passive recreation opportunities, rather than focusing on conservation and are usually smaller and more densely developed (Monroe County 1997a). Key Largo is home to the largest artificial reefs in the world, the 510-foot USS Spiegel Grove, and the first undersea park in the U.S., John Pennekamp Coral Reef State Park. The state park is located at MM 102.5 and is managed under the Florida Park Service (under the FDEP). The park comprises nearly 63,000 acres, of which approximately 54,000 acres are submerged. Recreation activities at the park include camping, fishing, picnicking, hiking, sailing, snorkeling, and scuba diving.

**Table 3-13**  
**Recreation Days in Monroe County: 12-Month Period 1995-1996**

| Activity                      | Recreation Days Reported | Percent of Total Days Reported |
|-------------------------------|--------------------------|--------------------------------|
| <b>Boating Activities</b>     |                          |                                |
| Snorkeling                    | 1,010.8                  | 7.9                            |
| SCUBA diving                  | 190.0                    | 1.5                            |
| Offshore fishing              | 859.2                    | 6.7                            |
| Personal watercraft           | 239.8                    | 1.9                            |
| Viewing nature & wildlife     | 796.0                    | 6.2                            |
| <b>Non-Boating Activities</b> |                          |                                |
| Snorkeling from shore         | 548.1                    | 4.3                            |
| Fishing from shore            | 359.9                    | 2.8                            |
| All beach activities          | 2,867.6                  | 22.4                           |
| Swimming in outdoor pools     | 2,489.2                  | 19.4                           |
| Wildlife & nature studies     | 1,789.8                  | 14.0                           |
| Museums & historic sites      | 1,665.9                  | 13.0                           |

Leeworthy and Wiley 1996.



*Two popular recreation sites attract visitors to Key Largo are the 510-foot USS Spiegel Grove artificial reef and the John Pennekamp Coral Reef State Park.*

### 3.12 Open Space and Aesthetic Resources

Visual resources are an aesthetic quality of a community. Physical features that make up the landscape include land, water, and vegetation, and other features such as buildings. The significance of open space and aesthetic resources in the Keys was presented in the PEIS (Section 3.12).

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*The Key Largo service area includes bridge crossings and the John Pennekamp Coral Reef State Park, both of which provide unique site seeing opportunities for visitors.*

|   |   |   |  |   |  |
|---|---|---|--|---|--|
|   |   |   |  |   |  |
| ✓ | ✓ | ✓ |  | ✓ |  |

The Key Largo service area includes bridge crossings and the John Pennekamp Coral Reef State Park, both of which provide unique site seeing opportunities for visitors to the Keys. The service area also includes numerous natural areas with mangrove forests, salt marshes, and upland areas containing hardwood hammocks and pine communities. From the bridges, a view of open water, beaches, and nearshore waters, attracts visitors year round.

Wastewater nutrient loading into the Sanctuary can lead to increased algal blooms and fish kills. These occurrences result in nuisance odors and views, which detract from the otherwise pleasant visual resources of the area.

### 3.13 Environmental Justice

The issue of environmental justice is one of fairness in locating facilities and the regulation of environmentally hazardous activities, as describe in the PEIS (Section 3.13). Federal EO 12898 (1994) requires a federal agency to include environmental justice in the planning process, ensuring greater public participation, and identifying differences in resource consumption patterns of minority and low-income portions of the population. The USEPA Office of Environmental Justice has defined environmental justice as:

*The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, policies.*

There are no effective barriers to resource use in Key Largo and the Keys. Most of the population of the Key Largo CDP is white (U.S. Census Bureau 2002) and consequently, race is not an environmental justice issue. In addition, the policy of the FKAA, the implementing entity, is to acquire property for these facilities from willing sellers. Therefore, the property acquisition, construction, and operation of these facilities would have a negligible effect on nearby residents. Finally, the proposed WWTF site is adjacent to an existing FKAA facility and some distance from any residential area.



*There are no effective barriers to resource use in the Key Largo service area: most of the population is white and race is not issue. However, while most residents are financially well-off, there is disparity in wealth and income among residents, raising potential environmental justice concerns.*

|  |   |  |  |   |   |
|--|---|--|--|---|---|
|  |   |  |  |   |   |
|  | ✓ |  |  | ✓ | ✓ |

Impact on low income residents remains a potential source of concern from the perspective of environmental justice. While the MHI in the Key Largo service area is greater than that of Monroe County and well above that of the state, eight percent of the residents live below the poverty level. This percentage may actually be larger given that the cost of living in Monroe County is about ten percent higher than that of the state, as described in the PEIS (section 3.13).

The proportion of residents over the age of 65 in the Key Largo CDP is approximately the same as that of the county and the state. This segment of the population often lives on fixed income and, while their income may not be below the poverty level, they are affected by cost of living changes. These factors suggest that while the majority of the Key Largo residents are financially comfortable, there is considerable disparity in wealth and income among residents, raising potential environmental justice concerns.

### 3.14 Land Use and Planning

This section addresses the land use patterns and regulations in the Key Largo service area. Many of the water quality issues in the Keys are closely associated with land uses implemented prior to and since existing environmental regulations. Consequently, untreated stormwater runoff and improper wastewater disposal practices continue to adversely affect wetlands and nearshore waters. Greater detail regarding land use regulations and controls in the state of Florida and Monroe County is provided in the PEIS (Section 3.14).

To ensure the sustainability of resources unique to the Keys, Monroe County comprehensive land use planning provisions have been developed and include a Permit Allocation System and the Rate of Growth Ordinance (ROGO) to control future growth (explained in further detail in Section 3.14.3). In addition, the FKCCS, sponsored jointly by the FDCA and the Corps, developed a planning tool to assist in determining the level of development activities that will provide a means to avoid further irreversible and/or adverse impacts to the Keys (Florida Administrative Weekly 1996).

#### 3.14.1 Land Use

Land use classes in the Key Largo service area are listed in Table 3-14 and mapped in Figure 3-4 (based on Florida Land Use Cover and Forms Classification System [FLUCFCS] (South Florida Water Management District [SFWMD] 1995). Residential land uses account for 19 percent of

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the land area in the service area and accommodate permanent residents as well as seasonal and recreational residents. Residential land uses along the shoreline of Florida Bay or the Florida Straits make the most of the scenic resources and recreational access afforded by these waterfront locations. The service area is comprised primarily of mangrove swamps (39 percent). Commercial land uses include general commercial, commercial and recreational boating and fishing, as well as tourist-based land uses.



*Mangroves, saltwater marshes, and water embayments make up 57 percent of the service area. The proposed WWTF location is part of a larger 23 acre parcel originally targeted for CARL acquisition.*

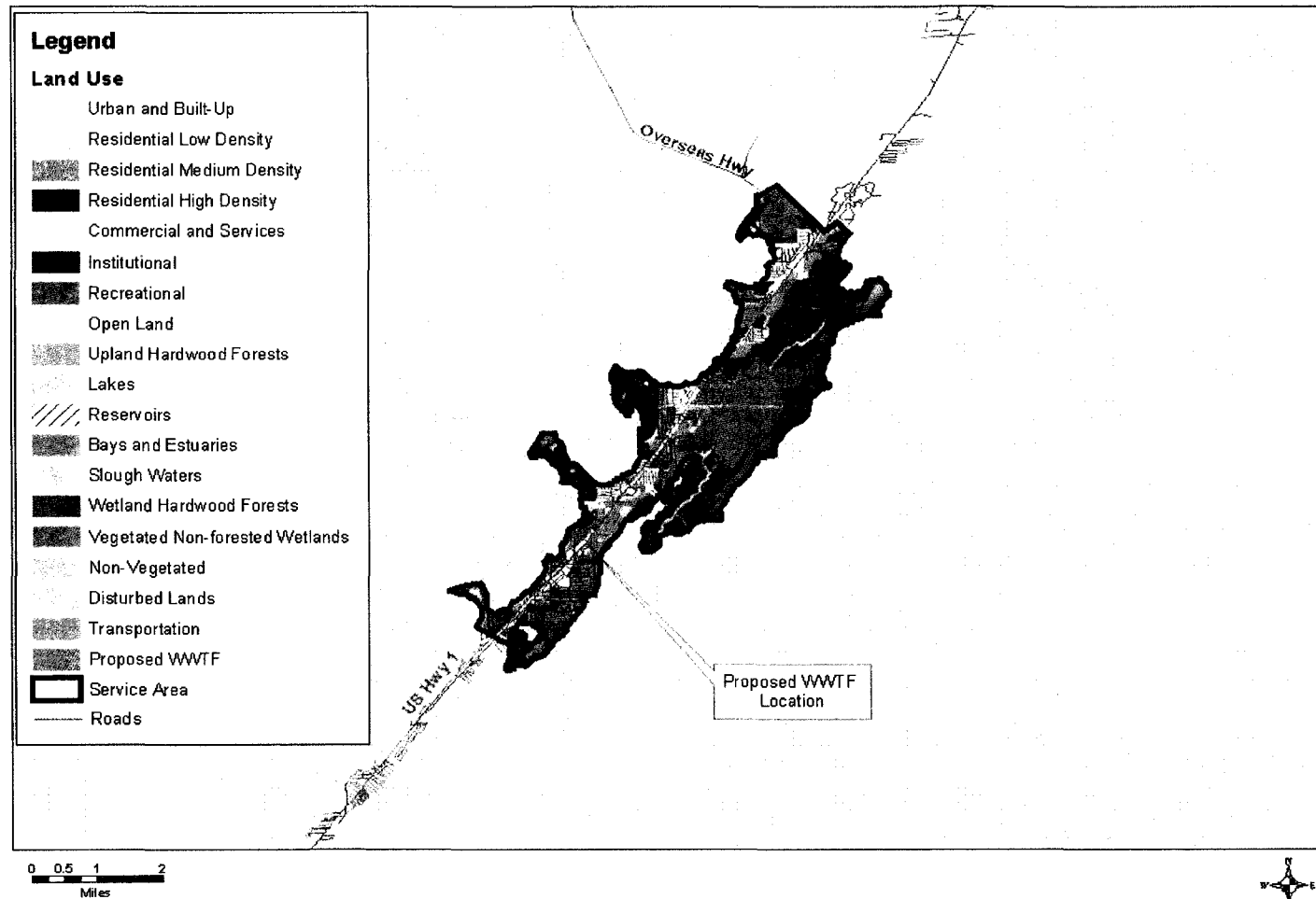
The proposed WWTF will be constructed on approximate 2.6 acres of a larger 23 acre parcel and is located on the Atlantic side of U.S. 1 at approximately MM 100.5. The proposed WWTF is located in land uses designated as Upland Hardwood Forests and Commercial and Services.

**Table 3-14**  
**Key Largo Service Area Land Use**

| Land Use                 | Acres       | Percent of Total |
|--------------------------|-------------|------------------|
| Urban and Built-Up       | 477         | 3.0%             |
| Residential              | 1475        | 9.3%             |
| Difference in boundaries | 25          | 0.2%             |
| Commercial and Services  | 277         | 1.8%             |
| Institutional            | 19          | 0.1%             |
| Recreational             | 63          | 0.4%             |
| Open Land                | 27          | 0.2%             |
| Tropical Hardwoods       | 694         | 4.4%             |
| Water                    | 1440        | 9.1%             |
| Mangrove Swamps          | 3044        | 19.3%            |
| Saltwater Marshes        | 193         | 1.2%             |
| Tidal Flats              | 4           | 0.0%             |
| Disturbed Lands          | 30          | 0.2%             |
| Transportation           | 39          | 0.2%             |
| Canals and Locks         | 94          | 0.6%             |
| <b>Total</b>             | <b>7901</b> | <b>100%</b>      |

Source: SFWMD 1995

**Figure 3-4**  
**Existing Land Use in the Key Largo Service Area**



### 3.14.2 Conservation Areas

Nearly half of the Key Largo service area is designated as conservation land, either existing or proposed (Table 3-15 and Figure 3-5). Of the total 7,901 acres of land in the service area, there are a total of 3,433 acres (43 percent) of existing conservation lands and an additional 304 acres (four percent) proposed for future conservation (Source: FNAI and Geoplan Center 1999). John Pennekamp Coral Reef State Park is one of nine state parks in the Sanctuary.



*Of the total 7,901 acres of land in the service area, 43 percent is existing conservation lands and an additional four percent is proposed for future conservation.*

The Sanctuary surrounds the Keys and the service area and includes the most extensive coral reef in North America and the third largest reef system in the world. Under Public Law 101-605, 2,600 square nautical miles of coastal waters are designated under the Sanctuary.

There are numerous National Wildlife Refuges, Ecological Reserves, Sanctuary Preservation Areas, and Wildlife Management Areas within the Sanctuary primarily located in the upper and lower Keys, one of which is adjacent to the John Pennekamp Coral Reef State Park.

There are also management areas within the Sanctuary, some of which are designated as research-only areas (ROAs) for which a permit is required for entry. The ROAs in the Sanctuary are the Looe Key, Tennessee Reef and Conch Reef ROAs; the Conch Reef ROA is located due south of Key Largo.

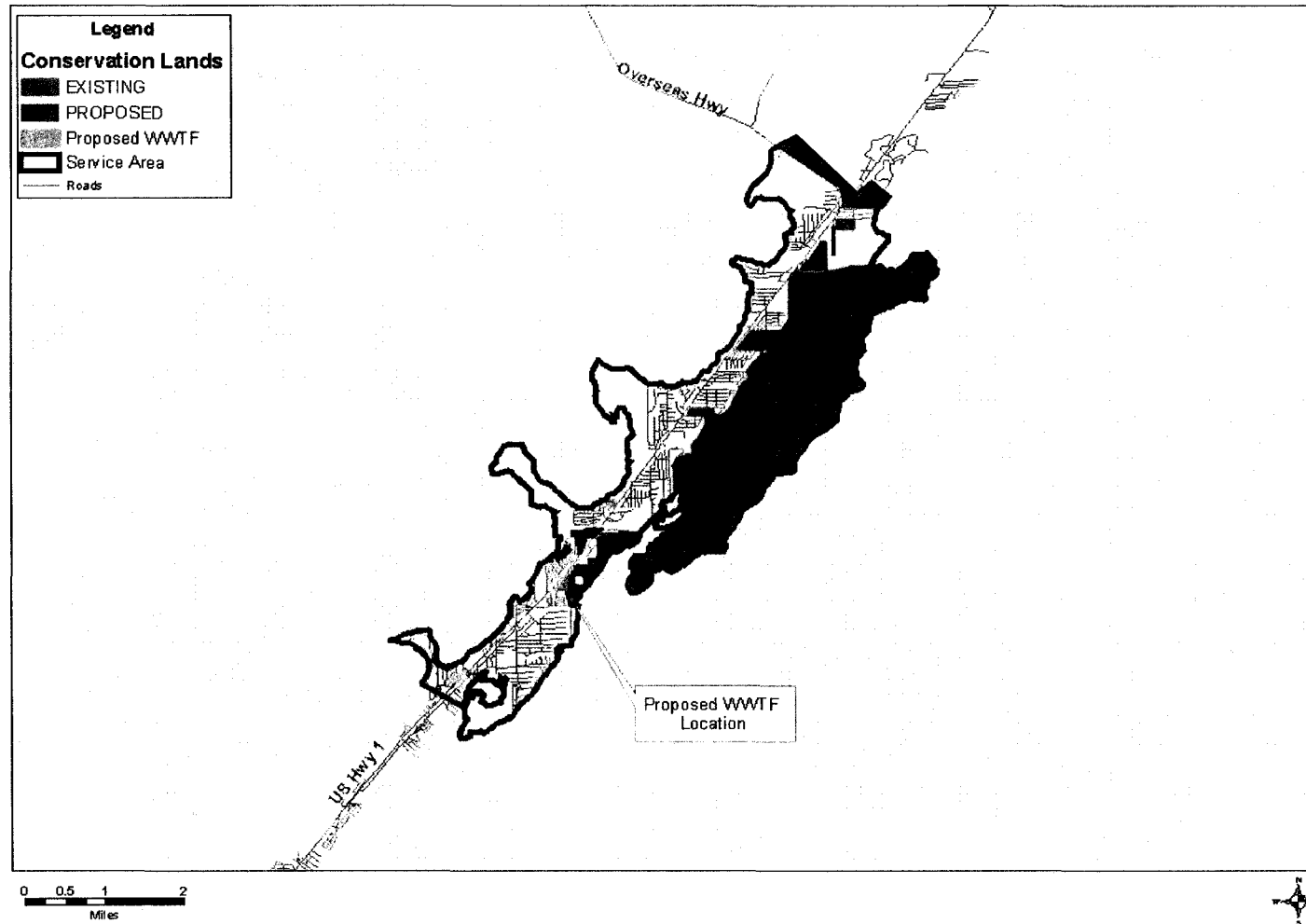
**Table 3-15**  
**Acres of Conservation Lands in Service Area**

| Conservation Lands | Acres        | Percent of Total |
|--------------------|--------------|------------------|
| Existing           | 3,433        | 92               |
| Proposed           | 304          | 8                |
| <b>Total</b>       | <b>3,737</b> | <b>100%</b>      |

### 3.14.3 Future Land Use

The comprehensive plans of Monroe County and the incorporated cities of Islamorada, Marathon, Layton, Key Colony Beach, and Key West are specifically structured to control and direct future land use development to areas with sufficient services to accommodate the growth (Chapter 163 F.S. Public facilities must serve the development at the adopted LOS standards (concurrent with the impacts of the development). LOS standards are established for traffic and circulation, potable water, solid waste, sanitary sewer, drainage, and recreation and open space (Monroe County 2000).

**Figure 3-5**  
**Conservation Lands in the Key Largo Service Area**



### 3.0 Affected Environment

Under the Monroe County Comprehensive Plan, the total number of building permits issued per year is limited by Monroe County's ROGO permit allocation system, not the presence of specific infrastructure. Policy 101.2.13 of the Monroe County Comprehensive Plan established an interim permit allocation system to control growth based on hurricane evacuation, public safety and environmental needs including water quality and habitat protection. To implement this policy, Monroe County has adopted a ROGO that specifically allocates credits towards obtaining building permits. Nutrient reduction credits are necessary to qualify for a building permit. Each year this interim permit allocation system limits the number of building permits issued for new residential development to the number of nutrient reduction credits earned within the same ROGO area.

Future land uses in the Key Largo service area are primarily conservation (32 percent) and residential (36 percent), which together make up 68 percent of the future land use mapped for the service area (Table 3-16, Figure 3-6). Four land uses (commercial, institutional, water bodies, and multi-family residential) make up the remaining future land use categories (SFWMD 2003). The proposed WWTF would be located on a parcel identified as Mixed Use/Commercial and Low Density Residential on the Future Land Use Map.

**Table 3-16**  
**Future Land Use in the Key Largo Service Area**

| <b>Future Land Use</b>                                               | <b>Acres</b> | <b>Percent</b> |
|----------------------------------------------------------------------|--------------|----------------|
| General Commercial                                                   | 551          | 7              |
| General Institutional                                                | 160          | 2              |
| General Recreation                                                   | 174          | 2              |
| Water Bodies                                                         | 146          | 2              |
| Multi-Family Density Range of 8.1 to 20 dwelling unit per acre Du/Ac | 4            | <1             |
| Single Family Density Range of .2 to 10.0 Du/Ac                      | 1,809        | 23             |
| Conservation                                                         | 2,488        | 31             |
| Difference in land boundary                                          | 1,545        | 20             |
| <b>Total</b>                                                         | <b>7,901</b> | <b>100</b>     |

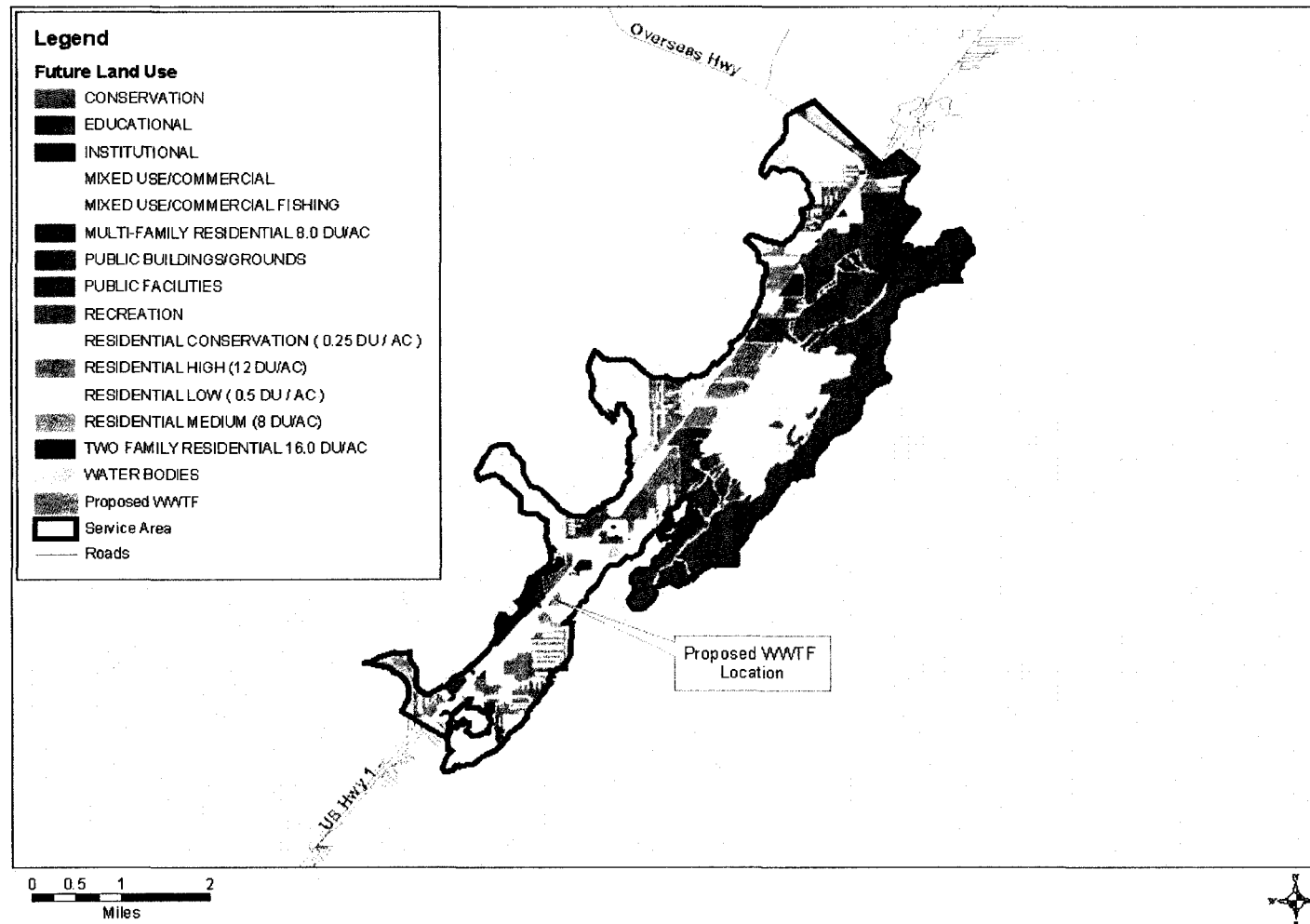
Source: SFWMD 2003

#### 3.14.4 Coastal Zone Management Act (CZMA)

The Key Largo service area is located in the State of Florida's designated coastal zone. The Florida Coastal Management Program (FCMP), the state of Florida's federally approved management program, was approved by the NOAA in 1981.

The Coastal Barrier Improvement Act of 1990 (CBIA) reauthorizes and amends the Coastal Barrier Resources Act (CBRA) of 1982 (16 U.S.C 3501-3510) and is described in the PEIS (Chapter 3.0). Although the CBIA restricts federal expenditures for coastal barrier development,

**Figure 3-6**  
**Future Land Use in the Key Largo Service Area**



## 3.0 Affected Environment

Section 6(a)(6)(A) contains a broad exemption for projects relating to the study, management, protection, or enhancement of fish and wildlife resources and habitats, including recreational projects. Under the 1990 amendments, the Secretary of the Interior has consultation responsibilities for additional exemptions from funding prohibitions under CBRA, including water resource development projects.

A review of the Coastal Barrier Resource System (CBRS) maps show that a small part of two designated CBRS units (FL-35 and FL-37) lie within the Key Largo service area. The Federal CBRS designation has been incorporated into the Monroe County Year 2010 Comprehensive Plan. Monroe County discourages the extension of facilities and services, such as telephone or electricity, to designated coastal barrier areas. Construction of the proposed WWTF and all of the infrastructure and transmission lines needed to convey wastewater to the facility will occur outside the boundaries of these CBRS units.

Consultation with the FDEP and U.S. Department of Interior (DOI) has been initiated to fulfill requirements of the FCMP and CBIA and would be completed prior to implementation of the *Proposed Action*.

### 3.15 Infrastructure

Transportation service and corridor access for conveyance of potable water and electrical service from the mainland are provided to the Keys via U.S. 1. There is no centralized WWTF currently serving the Key Largo service area. Consequently, nutrient and other pollutant loadings are discharged into nearshore waters and contribute to the degradation of these waters.



*There is no centralized WWTF currently serving the Key Largo service area. Consequently, nutrient and other pollutant loadings are discharged into nearshore waters and contribute to their degradation.*

|  |   |  |  |  |  |
|--|---|--|--|--|--|
|  |   |  |  |  |  |
|  | ✓ |  |  |  |  |

#### 3.15.1 Transportation

Transportation infrastructure in the service area includes roadways that link the mainland with Key Largo via the Overseas Highway/ U.S. 1. This route allows vehicle traffic, as well as air and boat transportation through the numerous waterways. However, the primary transportation objective of Monroe County is to reduce the time required for hurricane evacuation to 24 hours by the year 2010 (Monroe County 1997b).

**Roadways.** U.S. 1 is the major roadway connection for Key Largo. Within Monroe County, the highway stretches 112 miles from Key West to the Miami-Dade County line and provides a means of transporting food, supplies, and tourists between the mainland and the Keys. Approximately 80 percent of U.S. 1 is a two-lane roadway. However, the portion of the highway in the Key Largo service area is a four-lane roadway.

The Monroe County Comprehensive Plan mandates that U.S. 1 be maintained to provide LOS C travel conditions (Monroe County 1997b). The U.S. 1 LOS Task Force, with members from Monroe County, FDOT, and FDCA, monitors service levels along U.S. 1. Traffic counts are collected during peak tourist season (February–March) and then adjusted to reflect average daily traffic (ADT) conditions. Most of the segments along U.S. 1, including the majority of the segments in the service area, are operated at LOS C or better for 2003 ADT conditions (Monroe County data unavailable). Monroe County has no roadway improvements planned in the Key Largo service area that will increase the capacity of the existing network.

**Public Transportation.** The City Key Largo service area has no formal public transportation.

**Air Transportation.** There are no airports in the Key Largo service area. The two airports in Monroe County, Key West International Airport and Keys Marathon Airport, have regularly scheduled commercial passenger service and provide services for private aircraft at the general aviation fixed base operations. Major air carriers include U.S. Airways, Delta, and American Eagle Airlines.

**Waterways.** There are no deep-water ports in the Key Largo service area. The Coast Guard station at Key West maintains navigational aids, provides emergency search and rescue services, and patrols coastal waters to promote boating safety. The U.S. Coast Guard group in Key West includes the Cutter Nantucket and nine 110-foot island/class patrol boats based at boat stations in Key West, Marathon, and Islamorada.

The network of waterways, proximity to deep waters, and the numerous marinas and boating facilities makes water transportation an important function in the Keys. Most residents in the service area have easy boating access to open water via a network of canals. Monroe County has 25,862 registered commercial and pleasure boats, or one boat for every three residents.

#### 3.15.2 Utilities and Services

**Electrical Power.** Two electrical service providers serve the Keys. To the north and east of the Seven Mile Bridge, which includes the Key Largo service area, service is provided by the Florida Keys Electric Cooperative (FKEC). In 2001, FKEC had over 30,000 customers in Monroe County and supplied 639,000,000 kilowatt hours of electricity to those customers (FKEC 2002). FKEC purchased power generated on the mainland by Florida Power and Light. This power is distributed to the Keys by two 138,000-volt transmission lines. A small power plant in Marathon supplies approximately two percent of the FKEC power requirements.

The second electrical service provider is Keys Energy Services (KEYS), which provides electrical power to the southern portion of the Keys. KEYS is a municipal utility operated by a state authorized utility board and imports most of its power from the mainland, but has an on-island emergency generator that can provide 60 percent of its power in case of power interruption (KEYS 2003). KEYS power is distributed along a transmission line paralleling U.S. 1, jointly owned with FKEC to the north of the Seven Mile Bridge.

### 3.0 Affected Environment

**Potable Water.** The FKAA is the sole provider of potable water for the Keys (FKAA 2002). Potable water is transported through a 130-mile transmission pipeline (24 to 36 inches in diameter) and an additional 649 miles of distribution pipeline to over 42,000 customers. The water supply for FKAA is the Biscayne aquifer from a well field west of Florida City in Miami-Dade County. The well field contains some of the highest quality ground water in the state of Florida (FKAA 2002). The water is pumped to the Keys, with diesel pumps as backup. Water storage facilities are located at various locations throughout the Keys in case of a pipeline rupture. Desalination facilities are being constructed in Marathon and on Stock Island. There is an existing 12-inch water main in the east ROW of U.S. 1 situated immediately adjacent to the *Proposed Action* WWTF site at MM 100.5.



*No centralized wastewater treatment system or facility currently provides uniform service to the Key Largo service area.*

**Wastewater Treatment.** No centralized wastewater treatment system or facility currently provides uniform service to the service area. Systems currently operating in the Keys are administered by municipal governments or private developments. All development in the Key Largo service area is served by private systems.

The four basic methods for wastewater management and treatment presently used in the Keys include cesspools, septic tanks, ATUs, and OWNRS. These methods were described in detail in the PEIS (Section 3.15).

At the time a development permit is issued, adequate sanitary wastewater treatment and disposal facilities, including WWTFs and on-site sewage treatment and disposal systems (OSTDS), must be available to support the development at the adopted LOS, concurrent with the impacts of the development (Monroe County 1997b). The Monroe County Comprehensive Plan includes provisions for eliminating cesspools and improving failing septic systems and package treatment facilities (Monroe County 1997b).

#### 3.16 Hazardous Materials and Domestic Waste

A Phase I Environmental Site Assessment (Assessment) was conducted for the proposed WWTF site on Key Largo, owned by the KLWTD, to evaluate potential risks due to hazardous materials on the site, in accordance with American Society of Testing and Materials (ASTM) Standard E 1527-97. The purpose of a Phase I site assessment is to identify and record any obvious existing and potential suspect conditions resulting from the use, handling, and disposal of hazardous substances within the project boundaries which may pose an environmental liability.

An earlier Phase I Assessment (ECT 2000) of the same site concluded that the potential for site chemical contamination from onsite sources, offsite contamination from onsite sources, and offsite contaminant migration in surface and/or groundwater from adjacent sites within a 0.25-mile radius of the property, was low. However, petroleum odor and a groundwater sheen were observed during a subsequent excavation, along with several groundwater monitoring wells. The proposed site has contamination due to petroleum seepage originating on the FKAA parcel to the

south. The contamination is not considered significant, and FDEP has permitted excavation and dewatering based on low contaminant levels. A remediation and monitoring plan are being developed for the adjacent FKAA site.



*The proposed site has contamination due to petroleum seepage originating on the FKAA parcel to the south. The contamination is not considered significant, and FDEP has permitted excavation and dewatering based on low contaminant levels. A remediation and monitoring plan are being developed for the adjacent FKAA site.*

Contamination originating on the adjacent FKAA property had previously been reported to FDEP. The FKAA has contracted with CH2M Hill to develop a remediation and monitoring plan for the site. FDEP requested that the KLWTD submit a Discharge Report Form so a Facility ID Number could be issued for the additional property.

FDEP later allowed removal of cut coral slabs for use as structural sheathing and restricted all soil to the site. Dewatering of the excavation was also acceptable, based on low contaminant levels in discharged water. Data obtained by CH2M Hill indicated that the contamination encroaches to some extent onto the KWLTD property, but occurs mainly along the southwest fence line of the property.

The final EA will address and resolve issues of concern to the agencies and the public. However, the site is considered contaminated, i.e. "...the presence of any regulated material/chemical contained within the soil, surface water or ground water on or adjacent to ...the property, or proposed property, that may require assessment, remediation, or special handling, or that has a potential for liability." These materials would include, but not be limited to, those substances normally referred to as petroleum or petroleum products. The proposed site does not contain significant contamination, i.e. there is no presence of any contamination that would meet the definition of "hazardous materials" or "hazardous waste" and be regulated under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Resource Conservation and Recovery Act (RCRA). Petroleum contamination from underground storage tanks is not regulated by CERCLA or RCRA.

The RCRA of 1974, Subtitle C, established a federal program for the handling of hazardous wastes in a manner that will prevent impacts to human health and the environment. In Florida, the FDEP Division of Waste Management, Bureau of Solid and Hazardous Wastes regulates handling of solid wastes. Florida Statutes, Chapter 403, Florida Public Health Section, Resource Recovery and Management, and F.A.C., Rule 62-730 provide the regulations for the handling of hazardous materials and waste.

Monroe County collects solid wastes at three locations: Key Largo, Cudjoe Key and Long Key. Waste material is collected at these locations by four private contractors and then separated and either shipped to a landfill in Broward County, or recycled. Household hazardous wastes are collected at these three locations and handled separately. Hazardous wastes from commercial, institutional, and industrial facilities in the Keys are collected at the generation site and disposed of according to stringent regulations regarding the specific material. Treated wastewater sludge

### **3.0 Affected Environment**

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materials are not considered hazardous wastes. Adequate collection, disposal, and resource recovery for solid waste is essential for future developments. No building permits will be issued unless adequate solid waste collection and disposal facilities needed to support the development are available concurrent with the impacts of the development.

## 4.0 Environmental Consequences

This portion of the Draft EA presents an analysis of the environmental consequences anticipated as a result of implementing the alternatives described in *Chapter 2, Description of Alternatives*. The comparative analysis focuses on issues identified as concerns during initial scoping meetings and communications with regulatory agencies and stakeholders. A summary matrix of the alternatives analysis is presented in Table 4-1. The three project alternatives under consideration are briefly outlined below.

- *No Action* alternative (Alternative 1), under which federal funding via the Corps would not be allocated for construction of the Key Largo regional WWTF and city residents and businesses would be responsible for addressing state water quality mandates.
- *Proposed Action* (Alternative 2), under which federal funding via the Corps would be allocated for construction of the Key Largo regional WWTF.
- *Alternative Funding Sources* (Alternative 3), under which alternative funding sources would be pursued to implement projects for the Key Largo that would address state water quality mandates.



*The vast majority of potential environmental impacts associated with the FKWQIP are beneficial and consistent with the intent of the program.*

Like most of the Keys, residents in Key Largo and associated service area rely primarily on septic tanks and cesspools, resulting in little or no treatment of wastewater that ultimately flows to adjacent nearshore waters. A total of 4,919 onsite systems in the service area account for 1.06 mgd of wastewater flows. Onsite treatment systems include 46 ATUs, 3,942 septic systems, an identified 372 substandard septic systems, and 558 cesspools. As of 1998, there were 42 FDEP-permitted WWTFs in the Key Largo service area, treating approximately 0.24 mgd (MCSWMP 2000). Continuing research has identified these discharges as major contributors to declining water quality in the canals and nearshore waters in the Keys and Sanctuary.

**Application of the Florida Keys Carrying Capacity Study (Corps 2002).** Importantly, the Corps' model provided a means of quantifying the effects of wastewater improvement projects, specifically the reductions in nutrient loads, in the Key Largo service area. To apply the KFCCS specifically for FKWQIP projects, an independent contractor from the team who originally developed the FKCCS model coordinated with and assisted the South Florida Regional Planning Council in running the model specifically for this project.

The goal of the FKCCS is to "determine the ability of the Keys ecosystem, and the various segments thereof, to withstand all impacts of additional land development activities." The study focused on establishing relationships between land development activities and carrying capacity indicators and used these relationships to model impacts to terrestrial and marine ecosystems and species, human infrastructure, socioeconomics, fiscal conditions, and water resources. Results were integrated into a spatially explicit automated computer model that then characterized current conditions as a baseline scenario as well as six additional scenarios with varying levels of development and a scenario with the wastewater master plan implemented.

## 4.0 Environmental Consequences

**The Alternatives.** Implementation of the *No Action* alternative is expected to result in continued adverse impacts to, and the persistence of, existing conditions described in *Chapter 3, Affected Environment*, due to discharges from an estimated 3,942 septic systems, 372 identified substandard septic systems, and 558 cesspools in the service area. The *Proposed Action* and *Alternative Funding Sources* alternatives, call for a new WWTF and associated infrastructure for the Key Largo service area, but vary due to availability of funding and entities that would implement projects. The vast majority of benefits under both alternatives are positive, consistent with the intent of the FKWQIP and other federal, state, and local initiatives to improve water quality in the nearshore waters of the Keys and the Sanctuary.



*The Corps' FKCCS provided a means of quantifying the effects of wastewater improvement projects, specifically the reductions in nutrient loads, in the Key Largo service area.*

Under the *Proposed Action*, federal financial and technical assistance would be provided to construct a regional WWTF that would improve wastewater treatment in the Key Largo service area and address state mandates to improve water quality in the Sanctuary. Under the *Proposed Action*, discharges to soils and nearshore waters from an estimated 3,942 septic systems, 372 identified substandard septic systems, and 558 cesspools in the service area would be eliminated and TN, TP, and TSS loads would be subsequently reduced by 88, 80, and 77 percent, respectively.

In contrast, under *Alternative Funding Sources*, Key Largo residents and businesses would pursue alternate funding options for wastewater treatment improvements and implement projects as funding becomes available. Although long-term benefits under *Alternative Funding Sources* are the same as those described for the *Proposed Action*, the absence of Corps funding may delay the implementation of projects, impede the integration of individual wastewater components, and decrease cost effectiveness. Potential adverse impacts due to implementation of the *Proposed Action* are relatively minor and are related to environmental justice and protected species and associated habitat.

**Potential Issues of Concern.** Potential issues addressed in this Draft EA include environmental justice, protected species and associated habitat, and effluent disposal via deep well injection. Approximately 8.3 percent of the residents and approximately 7.8 percent of individuals 65 years of age and older live below the poverty level in Key Largo. In addition, approximately 16.3 percent of families have annual incomes below the median income of \$50,755. Consequently, the capital costs and monthly service fees for wastewater treatment improvements may be disproportionately large for this group and may require mitigation.

Any action by the KLWTD that results in the loss of natural areas is likely to impact protected species due to the few remaining natural areas in the Keys. Protected species that occur or may occur in the service area, associated habitats, and regulatory framework affecting these species, are addressed in this Draft EA. Although formal consultation regarding the proposed project has not occurred, the proposed project is an expansion of an existing wastewater improvement project for which formal consultation with the USFWS was previously initiated due to FEMA funding. Formal consultation with the USFWS regarding FEMA funding for the proposed

project was concluded in June 2001 with the issue of a BO. Conclusions in the BO regarding the proposed WWTF are outlined below.

- The proposed project is not likely to jeopardize the continued existence of the federally protected Schaus swallowtail butterfly (*Heracles aristodemus ponceanus*) or Stock Island tree snail (*Orthalicus reses*)
- The proposed project is not likely to affect the eastern indigo snake (*Drymarchon corais couperi*)
- No critical habitat has been designated for these species, and therefore none will be impacted by the proposed project
- Reasonable and prudent measures identified by the USFWS include the restoration of 2.6 acres of hardwood hammock and preservation of the remaining 20.4 acres following construction of the proposed project

Potential impacts of deep well injection of highly treated effluent on groundwater resources are of concern to federal, state, and local agencies and deep injection wells constructed as part of the proposed project would comply with all applicable and relevant standards for disposal. Because deep well injection is required for all WWTFs with capacities greater than one mgd, two deep injection wells will be constructed for disposal of AWT effluent. Deep injection wells are governed by Chapter 62-528 F.A.C. Deep injection wells would be designed and constructed to meet both FDEP Class I reliability standards and UIC Class I well construction and monitoring requirements. Approximately 100 deep injection wells are currently permitted and operating in Florida. Public comments regarding deep well injection of AWT facility effluent were addressed in the PEIS.

**Table 4-1**  
**Comparison of Environmental Consequences for Key Largo**  
**Wastewater Improvement Alternatives**

| <b>Alternative</b>          | <b>Alternative 1<br/>No Action</b>                                                                          | <b>Alternative 2<br/>Proposed Action</b>                                                                                                                                                                        | <b>Alternative 3<br/>Alternative Funding<br/>Sources</b>                                                                                                                          |
|-----------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Issue</b>                | No implementation of wastewater improvements in the Keys. Pollutant inputs to the Sanctuary would continue. | Integrated, centrally managed, cost effective implementation of area-wide storm and wastewater improvement projects in the Keys. Pollutant inputs to the Sanctuary would be reduced and water quality improved. | Pursue other funding to implement water quality improvements. Projects would be smaller and fragmented in terms of time (2-3 years) and area. Improvements may occur more slowly. |
| <b>Physical Environment</b> |                                                                                                             |                                                                                                                                                                                                                 |                                                                                                                                                                                   |
| <b>Soils</b>                | Continued adverse impacts of contamination of soils due to inputs from untreated wastewater.                | Reduced wastewater surface discharges and commensurate reduction in pollutants entering soils. Small increase in impervious surfaces.                                                                           | Delayed and smaller reductions in pollutant inputs into soils may be anticipated.                                                                                                 |

## 4.0 Environmental Consequences

**Table 4-1**  
**Comparison of Environmental Consequences for Key Largo**  
**Wastewater Improvement Alternatives**

| <b>Alternative</b>                    |                          | <b>Alternative 1<br/>No Action</b>                                                                                                                                                                          | <b>Alternative 2<br/>Proposed Action</b>                                                                                                                                                                                                                                                                                                                                    | <b>Alternative 3<br/>Alternative Funding<br/>Sources</b>                                                                                                                                                                                                       |
|---------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aquifers                              | Biscayne                 | Continued contamination due to disposal and seepage of untreated wastewater.                                                                                                                                | Benefits include reduced surface water and shallow aquifer effluent discharges into Sanctuary due to deep well injection of AWT/disinfected water. Potential impacts due to SGD of nutrients or other contaminants such as arsenic, are unknown. Centralized WWTF will expedite the removal of cesspools and associated pollutants in up to 13 of 45 hot spots in the Keys. | Similar to the <i>Proposed Action</i> except benefits could be delayed and/or reduced due to fragmented implementation process.                                                                                                                                |
|                                       | Floridan                 | No adverse impacts due to confined nature of this aquifer.                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                |
| Water Resources                       |                          | Continued alterations to flow regimes due to wastewater discharges into surface waters.                                                                                                                     | Improved flow regimes due to decrease in runoff and discharge volumes entering nearshore waters and canals.                                                                                                                                                                                                                                                                 | Similar to the <i>Proposed Action</i> except that altered flows may continue until implementation is complete.                                                                                                                                                 |
| Water Quality                         | Nearshore Waters, Canals | Continued water quality degradation due to nutrient inputs from untreated wastewater.                                                                                                                       | No adverse impacts anticipated. Benefits include decreased waste and discharges and improved AWT would reduce nutrient discharges.                                                                                                                                                                                                                                          | Continued degradation of water quality until funding is obtained to implement priority projects.                                                                                                                                                               |
|                                       | Centralized Sewer        | Elimination of cesspools and associated nutrient and contaminants. Cesspool elimination will progress slowly.                                                                                               | Expedited removal of cesspools and associated pollutants in pollutant hot spots throughout the Keys.                                                                                                                                                                                                                                                                        | Treatment will be less effective due to fragmented approach to implementation and delayed construction.                                                                                                                                                        |
|                                       | Effluent Disposal        | Effluent disposal practices will essentially remain the same.                                                                                                                                               | Larger WWTF would have more deep well injection of treated water, reducing effluent discharged to the Sanctuary. Disinfection would reduce bacteria concerns.                                                                                                                                                                                                               | Fewer and smaller WWTFs without central management, potentially greater reliance on injection wells.                                                                                                                                                           |
| Air Quality                           |                          | Continued odors associated with existing or new treatment facilities, cesspools and septic tanks.                                                                                                           | Temporary, minor adverse impacts due to construction, primarily industrial areas. Air permit required for sludge incinerator or auxiliary generator operating > 25% of time.                                                                                                                                                                                                | Reduced impacts due to fewer WWTFs. Remaining cesspools, septic tanks, and odors would be less when compared with the <i>Proposed Action</i> .                                                                                                                 |
| <b>Biological Environment</b>         |                          |                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                |
| Habitats, Fish and Wildlife Resources |                          | Continued pollutant inputs may alter soils and habitat and adversely impact vegetation and wildlife, through toxins and bioaccumulation and food chain transfer. Phosphorus additions may benefit mangrove. | Potential adverse impacts to 2.6 acres of hammock. Avoidance, minimization, and mitigation will result in no significant impacts to protected species' habitat. Net environmental benefits to seagrasses and corals due to fewer algal blooms, improved water clarity and light penetration.                                                                                | Conditions for Alternative 1 would continue until projects are implemented. Delays and smaller scale projects anticipated under this alternative may result in similar, but less expansive benefits, when compared with those for the <i>Proposed Action</i> . |

**Table 4-1**  
**Comparison of Environmental Consequences for Key Largo**  
**Wastewater Improvement Alternatives**

| <b>Alternative</b>          | <b>Alternative 1<br/><i>No Action</i></b>                                                                                                                                               | <b>Alternative 2<br/><i>Proposed Action</i></b>                                                                                                                                                                                                                                         | <b>Alternative 3<br/><i>Alternative Funding Sources</i></b>                                                                                                                                                 |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protected Species           | Potential adverse impacts due to continued habitat degradation related to cesspools and septic tanks, and subsequent nutrient and other pollutant inputs into nearshore coastal waters. | Minimal adverse impacts due to facilities siting. Conservation of 20.4 acres of contiguous hammock and off-site mitigation for 2.6 acres of hammock. Section 7 USFWS/NMFS consultation and FFWCC for state protected species will occur as needed. Regulatory agencies support project. | Potential adverse affects as described under <i>No Action</i> would continue until water quality improvement projects are implemented.                                                                      |
| Essential Fish Habitat      | Adverse impacts due to continued pollutant discharges into canals and nearshore waters.                                                                                                 | Anticipated reductions in nutrient loadings and discharge volumes and improved nearshore habitats, directly benefiting EFH. NMFS supports development of AWT. Impacts due to SGD unknown.                                                                                               | Potential adverse impacts as described under <i>No Action</i> , until projects are implemented.                                                                                                             |
| Coastal Barrier Resources   | Continued pollutant inputs and water quality degradation would adversely impact benthics, corals, and seagrasses.                                                                       | No adverse impacts anticipated. Benefits include improved water quality and improvements in associated benthic, coral, and seagrass habitats.                                                                                                                                           | Continued nearshore water quality degradation as described under <i>No Action</i> until project implementation.                                                                                             |
| <b>Human Environment</b>    |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                             |
| Cultural Resources          | No impacts to unidentified cultural resources are anticipated.                                                                                                                          | No documented occurrences of archaeological or historic sites on the proposed WWTF site. Potential impacts to buried, undocumented resources. SHPO coordination and compliance with NHPA Section 106 required.                                                                          | Potential impacts to buried, undocumented, archaeological and historical resources. SHPO coordination and compliance with NHPA Section 106 required.                                                        |
| Demographics                | Constrained growth in land development and population.                                                                                                                                  | Modest growth in development and population anticipated. Moderate growth expected for wastewater improvements for current residents as well.                                                                                                                                            | Constrained growth in land development and population.                                                                                                                                                      |
| Environmental Justice       | Residents may be responsible for WWTF project costs. Potential impacts to the number of residents > 65 on a fixed income.                                                               | Corps funding would alleviate some costs for implementing WWTF projects, although additional costs of infrastructure would be greater for residents >65 on a fixed income.                                                                                                              | Similar to the <i>No Action</i> alternative if alternative funding sources not obtained. Once alternate funding sources are available, impacts would be similar to those under the <i>Proposed Action</i> . |
| Tourism                     | Beach health advisories due to poor water quality would continue, adversely affecting immediate recreational and tourist opportunities.                                                 | Improved water quality, fewer beach advisories and closings, and increased opportunities for saltwater-based recreation. Temporary transportation delays due to construction activities.                                                                                                | Some growth in tourism due to improved nearshore water quality could be expected, however, at a slower rate as compared with the <i>Proposed Action</i> .                                                   |
| Wastewater Management Costs | Existing wastewater management costs will remain the same.                                                                                                                              | Increased utility service costs due to connection charges and monthly fees, particularly for low-income households. Potential mitigation would include low-cost financing and subsidies.                                                                                                | Cost of wastewater management would increase at a slower pace as compared with the <i>Proposed Action</i> .                                                                                                 |

**Table 4-1**  
**Comparison of Environmental Consequences for Key Largo**  
**Wastewater Improvement Alternatives**

| <b>Alternative</b>    | <b>Alternative 1<br/><i>No Action</i></b>                                                                                        | <b>Alternative 2<br/><i>Proposed Action</i></b>                                                                                       | <b>Alternative 3<br/><i>Alternative Funding Sources</i></b>                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Public Health         | Potential decrease in public health due to higher levels of bacteria.                                                            | Reduced incidences of water borne disease, health advisories, and beach closings related to wastewater discharges.                    | Similar to the <i>Proposed Action</i> , except beach health advisories and closings would continue until project implementation.                                 |
| Infra-structure       | No impacts to transportation or utilities and services would occur.                                                              | Minor, temporary impacts to traffic and utilities and services could occur during construction of WWTF and associated infrastructure. | Impacts would be similar to those under the Proposed Action, but impacts would be staggered (construction activities would occur at a slower pace).              |
| Land Use and Planning | No impacts anticipated. Future land use would be delayed or limited to developments with approved on-site wastewater facilities. | No adverse impacts due to compatibility with land use designations. Future development would proceed per ROGO and Comprehensive Plan. | Impacts of <i>Alternative Funding Sources</i> on land use would be similar to those of the Proposed Action, occurring more slowly and possibly at a lower level. |
| Regulatory            | Florida Statutory Treatment Standards of 2010 would not be met.                                                                  | Florida Statutory Treatment Standards mandated for 2010 compliance would likely be met.                                               | Difficult for County to meet the treatment standards mandated by Florida Statute.                                                                                |

### 4.1 Climate

Climate is a regional environmental characteristic and would not be affected by the proposed Key Largo WWTF and associated infrastructure. Climate was discussed in *Chapter 3, Affected Environment* to describe the environmental setting for the service area and seasonal rainfall patterns.

### 4.2 Topography, Geology, and Soils

Topography and geology would not be affected by the project alternatives. Potential impacts to soils are important in the Keys due to the relative absence of topsoil and seepage of untreated wastewater into the limited amount of topsoils in the Keys and the Key Largo service area would be minor.

#### 4.2.1 Alternative 1 (*No Action*)

Impacts to geology and soils under the *No Action* alternative would continue as described under *Chapter 3, Affected Environment*. Existing wastewater and associated seepage from cesspools and septic tanks in the Key Largo service area would continue to elevate soil nutrient levels. Under the *No Action* alternative, the transport of accumulated soil contaminants such as heavy metals, polychlorinated biphenyls (PCBs), pesticides, and herbicides in surface water runoff to marine, estuarine, and freshwater environments would continue and may be long-term.

Sinkhole formation is infrequent in south Florida as a result of the relative absence of soil and overlying sediments, compared with mainland areas with 50 to 100 feet of overlying soils, in addition to declining water tables. Sinkholes occur when underlying limestone is dissolved by acidic rainfall moving through soil, especially along the fractures and weak layers. A cavity forms and subsequently collapses under the weight of the overlying soils. Water also exerts hydrostatic pressure on the clay layers that separate the shallow surficial aquifer from the deeper Floridan aquifer and supports the limestone matrix. The direct connection of the aquifer to, and interaction with, the marine environment via the porous limestone in the Keys makes the water source non-potable and maintains the hydrostatic pressure.

### 4.2.2 Alternative 2 (*Proposed Action*)

Under this alternative, the proposed WWTF and associated collection, treatment, and disposal facilities would be constructed and discharges from cesspools and septic systems into soils, and subsequently into wetlands and nearshore waters, would decrease or be eliminated. Consequently, water quality in the service area and in the Sanctuary would be improved.

Under the *Proposed Action*, soils would be disturbed during construction and other activities associated with the proposed WWTF. The Udorthents-Urban Land soils complex that dominates the proposed WWTF site is gravelly sand and limestone typically used as fill on constructed lands and does not generally support vegetation. Clean, suitable fill would be applied to the WWTF site and excavation of soils in ROWs would be required to install sewer mains, vacuum pits, buffer tanks, gravity service laterals, and lift stations. Excavated material would be used for backfill and remaining material would be transported to an appropriate offsite disposal facility.

Increases in impervious surface would occur commensurate with the construction of WWTFs. Soil disturbance would be temporary and standard construction BMPs for erosion and sedimentation control would decrease the potential for long-term surface soil erosion. Cumulative increases in impervious surface would be regulated by growth ordinances and comprehensive plans. Effluent injected into the porous limestone substrate becomes part of the fluid component of the aquifer and, in south Florida, is hydraulically connected to the marine environment. However unlikely, frequent fluxes in effluent discharges to shallow wells where fractures are present and wells are poorly constructed could result in sinkhole collapse.

Adverse impacts to groundwater from nutrients and/or pathogens are not anticipated. There are currently approximately 100 deep injection wells permitted and operating in Florida. BOD and TSS standards for effluent disposal to deep wells are <20 mg/L. Disinfection is not required for deep well injection, but is part of the proposed WWTF and would protect groundwater resources.

Adverse impacts to geology in the Key Largo service area as a result of the *Proposed Action* are not anticipated. Deep well injection effluent becomes part of the fluid component of the aquifer matrix and, in south Florida, is hydraulically connected to the marine environment. Consequently, the formation of a sinkhole as a result of deep well injection is highly unlikely. In addition, new construction would introduce even greater safeguards against this unlikely event.

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The proposed regional WWTF design currently includes one groundwater monitoring well and two deep injection disposal wells. The applicant is responsible for obtaining all applicable FDEP permits for injection wells (Table 4-2). Deep injection wells are governed by Chapter 62-528 F.A.C. and would meet Class I construction standards.

**Table 4-2**  
**Applicable FDEP Permits for Disposal Well Construction**

| Form Title                                                                         | Form Number    |
|------------------------------------------------------------------------------------|----------------|
| Application to Construct/Operate/Abandon Class I, III, or V Injection Well Systems | 62-528.900(1)  |
| Certification of Class V Well Construction Completion                              | 62-528.900(4)  |
| Certification of Monitor Well Completion                                           | 62-528.900(10) |

### 4.2.3 Alternative 3 (*Alternative Funding Sources*)

Effects on the soils under this alternative would be similar to those described under the *No Action* alternative until the KLWTD acquires sufficient alternative funding sources to implement the regional WWTF system. The delay would result in continued water quality impacts, as described under the *No Action* alternative. Once the proposed wastewater project is implemented, the effects would be similar to those described under the *Proposed Action*.

### 4.3 Water Resources

The proposed WWTF project for Key Largo would improve water quality in wetlands, groundwater, and nearshore waters of the service area and the Sanctuary by reducing or eliminating nutrient inputs and bacteria from inadequately and untreated wastewater. No adverse impacts to potable water supplies are anticipated with respect to the proposed project due to AWT for nutrient reduction and additional disinfection of effluent. Potential impacts to water resources under the *No Action* alternative are the same as those described in detail in *Chapter 3, Affected Environment* and the PEIS (Section 4.3).

### 4.4 Water Quality

Water quality improvements in the Sanctuary are the primary objective of the Key Largo wastewater improvement project specifically and the FKWQIP in general. Importantly, any of the proposed projects, whether shallow well or deep well injection disposal is applied, will decrease the nutrients discharged into the environment once implemented. This section makes a clear distinction between the environmental consequences of the *No Action* alternative (continued reliance on septic tanks and cesspools and inadequate wastewater treatment) and the benefits of implementing the proposed regional WWTF system in the Key Largo service area. The *Proposed Action* would eliminate the most significant sources of nearshore contamination.

### 4.4.1 Alternative 1 (No Action)

Under the *No Action* alternative, the residents of the Key Largo service area would continue to rely on individual treatment systems (septic tanks and cesspools) and privately owned cluster or package treatment facilities, as described under *Chapter 3, Affected Environment*. Individual property owners and businesses would be responsible for meeting the water treatment standards prescribed by county ordinance or state regulation.

**Ground Water Quality.** Under the *No Action* alternative, continued adverse impacts to the shallow waters of the Biscayne Aquifer due to existing wastewater practices are anticipated. Seepage from cesspools and septic tanks would continue to elevate nutrient levels and negatively impact the water quality of the canals and nearshore waters of the service area and surrounding Sanctuary. Effluent disposal through shallow well injection into the underlying aquifers would continue. As a result, compliance with 2010 water quality mandates would be unlikely.

**Inland Waters, Nearshore, and Offshore Water Quality.** Under the *No Action* alternative, continued adverse impacts to nearshore water quality are anticipated as a result of existing inadequate wastewater practices and subsequent SGD into canals and nearshore waters. The effects of continued nutrient inputs to the nearshore system may extend to offshore areas (Kruczynski and McManus 2002) and can only exacerbate historic problems related to coral reef health in the Sanctuary.



*Under the No Action alternative, the effects of continued nutrient inputs to the nearshore system may extend to offshore areas (Kruczynski and McManus 2002) and can only exacerbate historic problems related to coral reef health in the Sanctuary.*

### 4.4.2 Alternative 2 (Proposed Action)

Under the *Proposed Action*, the proposed WWTF and associated infrastructure would be constructed and discharges from cesspools and septic systems would be reduced or eliminated, resulting in improvements in water quality in the Sanctuary. Impacts to offshore water quality as a result of deep well or shallow well injection and the subsequent potential discharge of nutrients via SGD are possible. Importantly, any of the proposed projects, whether shallow well or deep well injection disposal is applied, will cumulatively decrease the nutrients discharged into the environment.

**Ground Water Quality.** Replacing existing cesspools and septic systems with a centralized WWTF in the Key Largo service area would allow residents and business to comply with Florida Statutory Treatment Standards and reduce the nutrient and contaminant loads seeping or discharged into the aquifer. Subsequent benefits would include improved water quality in canals and nearshore waters and a reduced potential for human health concerns. Improvements in water quality would be on the order of 88, 80, and 77 percent reductions in TN, TP, and TSS loadings, respectively (FKCCS 2004, Table 4-3) following implementation of the proposed WWTF.

## 4.0 Environmental Consequences

Construction of the transmission system for the WWTF would minimally and temporarily impact groundwater resources due to construction disturbances.



*Improvements in water quality would be on the order of 88, 80, and 77 percent reductions in TN, TP, and TSS loadings, respectively, following implementation of the proposed WWTF*

**Table 4-3**

**Reductions in Wastewater Load (pounds/day) Under Existing and Proposed WWTF Conditions for the Key Largo Service Area**

| Parameter  | Current Conditions | Proposed Conditions | Percent Change |
|------------|--------------------|---------------------|----------------|
| TN         | 75.11              | 9.34                | 88%            |
| TP         | 7.42               | 1.49                | 80%            |
| TSS        | 66.36              | 14.95               | 77%            |
| Flow (gpd) | 407,063.80         | 407,063.80          | No change      |

Since completion of the scoping process and issue of the final PEIS, concerns have been expressed regarding the disposal of treated wastewater effluent via deep well injection. Importantly, three options exist for disposal of treated effluent in the Keys:

- Surface discharge
- Underground injection
- Water reuse

As described in the PEIS (Section 2.2.2.1), legislation mandating the elimination of new and existing effluent discharges to surface waters in the Keys was passed in 1999. Based on sound scientific evidence, Florida regulatory agencies have prohibited surface water discharge of treated effluent to reduce nutrient loading in nearshore waters and protect the Sanctuary and offshore coral reefs. This State mandate leaves underground injection and water reuse as the only remaining disposal options. There are few opportunities for water reuse exist in the Keys because of the unavailability of large tracts of land for disposal and high transmission conveyance costs. In addition, nutrients, which are one of the primary pollutants, are not removed from reuse effluent prior to land applications.

Consequently, the only viable effluent disposal option available to municipalities in the Keys is underground injection. Regulatory agencies require injection well construction depths of at least 2,100 feet if the design capacity of a facility is greater than or equal to one mgd.

Based on an USEPA study in south Florida that evaluated the relative risks of deep-well injection to human health; the risk is low with proper siting, construction and operation of the disposal well (USEPA 2003). This is particularly true in the Keys where there are no underground sources of drinking water (USDW). One potential concern is the survival and

transport of pathogenic organisms in the deep subsurface; however, their byproducts would rarely exceed existing health standards. Where disinfection is part of the treatment process this is not a concern. The transport of pathogens to surface water bodies is possible via vertical migration, but would occur over long time frames and would be diluted with saline groundwater. Risks to ecological receptors from chemical constituents released through the aquifer matrix are also possible due to the hydrological connection between the aquifer and the ocean. However, no tracer studies are available to assess this risk. If the treated effluent reaches surface waters, the nitrate level may exceed recommended surface water levels in the absence of denitrification during treatment or transport through the aquifer matrix.

Based on these and other studies, and in the context of federal and state water quality regulations, injection of highly treated and disinfected effluent into a non-USDW aquifer of the Keys poses little risk to human and ecological health.

Permitting and construction of deep injection wells are governed by Chapter 62-528, F.A.C. Wells will be designed and constructed to meet both FDEP Class I reliability standards and FDEP UIC Class I well construction and monitoring requirements and permits are required for each deep injection well. Monroe County falls within the jurisdiction of the FDEP Fort Myers office UIC program. Relevant issues for human and ecological health and associated with deep well injection were reviewed by USEPA (2002) and are summarized in Table 4-4.

**Table 4-4**  
**Relevant Issues for Human and Ecological Health and Deep-Well Injection**

| Human Health                                                                                                                                                                                                                               | Ecological Health                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stressors Remaining After Treatment                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                           |
| Infective bacteria or viruses and pathogenic protozoans.                                                                                                                                                                                   | Nitrogen.                                                                                                                                                                                                                                                                 |
| Nitrates and ammonia.                                                                                                                                                                                                                      | Metals, organic compounds, phosphorus, pathogenic microorganisms.                                                                                                                                                                                                         |
| Treatment Adequacy                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                           |
| Disinfection not required and pathogenic bacteria and viruses may be active; byproducts rarely exceed health standards.                                                                                                                    | Post-treatment nutrient levels are high enough to pose potential ecological risks for surface waterbodies. However, no off-site ground water monitoring is conducted and so actual subsurface levels are not known. The presence of subsurface receptors is also unknown. |
| <i>Cryptosporidium</i> and <i>Giardia</i> are uncertain. Wastewater usually not filtered and likely exceeds state health-based limits (reuse limits) for pathogenic protozoans.                                                            |                                                                                                                                                                                                                                                                           |
| Nitrate occasionally exceeds drinking water standard (MCL). Ammonia meets USEPA lifetime health-advisory limit; exceeds stringent risk-based criteria for indoor air exposure. Regulated metals and organic compounds typically meet MCLs. |                                                                                                                                                                                                                                                                           |
| Known and Potential Significant Exposure Pathways                                                                                                                                                                                          |                                                                                                                                                                                                                                                                           |
| Transport of stressors to deep USDWs.                                                                                                                                                                                                      | Transport of stressors to surface waterbodies is feasible, but would occur over long time frames.                                                                                                                                                                         |
| Transport of stressors to shallow USDWs and to public or private water-supply wells.                                                                                                                                                       |                                                                                                                                                                                                                                                                           |
| Exposure to significant stressor concentrations is unlikely, but depends upon proximity and site-specific vertical times of travel.                                                                                                        | Pinellas County has shorter times of travel but a higher level of treatment is used and so risk is reduced.                                                                                                                                                               |
| Data and Knowledge Gaps                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                           |

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**Table 4-4**  
**Relevant Issues for Human and Ecological Health and Deep-Well Injection**

| Human Health                                                                                                                                                     | Ecological Health                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Survival and transport of pathogenic microorganisms in the deep subsurface.                                                                                      | Survival and transport of microorganisms in the deep subsurface; microbial transformation processes in deep subsurface; cumulative impacts of long-term disposal                                                                                                                                                                                   |
| Exact means of transport at specific locations (for example, porous media flow versus bulk flow through conduits).                                               |                                                                                                                                                                                                                                                                                                                                                    |
| Rates of biogeochemical transformation for conservative compounds (such as nitrate and ammonia). This is of particular relevance in relatively shallow aquifers. |                                                                                                                                                                                                                                                                                                                                                    |
| Overall Estimate of Health Risk                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                    |
| Low where proper siting, construction, and operation result in physical isolation of stressors, with no fluid movement.                                          | The risks from chemical constituents are low, but not zero, because of possible hydrologic connectivity. Risks related to pathogenic microorganisms are low to moderate for Dade and Brevard counties because of lack of disinfection and filtration. Microbial risk is very low in Pinellas County because of use of disinfection and filtration. |
| Low where there have been impacts to deep USDWs; however, exposure of current water supplies is unlikely.                                                        |                                                                                                                                                                                                                                                                                                                                                    |
| Increased risk where short times of travel prevail and where exposure of current water supplies is more likely.                                                  | If injectate reaches surface waters, the nitrate level may exceed recommended surface water levels in the absence of denitrification in the subsurface.                                                                                                                                                                                            |
| In all cases, the risk would be further reduced when injected wastewater is treated to reclaimed water standards.                                                |                                                                                                                                                                                                                                                                                                                                                    |

**Inland, Nearshore, and Offshore Water Quality.** Improved water quality in the service area, particularly canals, would be expected under the *Proposed Action*. The environmental consequences to inland, nearshore, and offshore waters are closely related to those described above for groundwater because of the direct link between groundwater, canal, and nearshore waters. As described for groundwater, 88, 80, and 77 percent reductions in loadings of TN, TP, and TSS, respectively (FKCCS 2004), are anticipated. Effects of the WWTF also include 100 percent reductions in TN, TP, and TSS to canals (FKCCS 2004). Parameters including length of flush time, localized hydrogeological characteristics, and effectiveness of limestone in removing phosphorus from injected effluent would affect the exact extent of anticipated improvements.

The proposed WWTF would reduce nutrient loading, improve human health and welfare concerns in canals, meet federal and state regulatory water quality standards, and ultimately assist in protecting water quality in the Sanctuary. Nutrient and TSS reductions would reduce the potential for algal blooms, and water clarity and dissolved oxygen concentrations would improve, possibly improving the overall health of seagrass habitats of nearshore and offshore communities. Although implementation of the *Proposed Action* would not provide quantifiable improvements to the quality of offshore waters, the benefits would contribute to a healthier coral reef system due to improved water clarity and increased oligotrophic (nutrient poor) conditions necessary for a healthy coral reef system.

No wetlands would be disturbed for the construction of the proposed WWTF. Undisturbed salt marsh and mangroves would remain intact and undisturbed. Erosion control BMPs would be employed during construction to reduce soil erosion and prevent discharge of sediments to nearshore waters. NPDES permits would be required from the FDEP to control treated effluent during operations.

Potential impacts to offshore water quality as a result of deep well or shallow well injection and the subsequent potential discharge of nutrients via SGD are possible. Patterns of potential groundwater input into Florida Bay from shallow wells have been established using natural tracers of SGD (Burnett and Chanton 2000). A groundwater velocity estimate of approximately 1.9 cm day<sup>-1</sup> was estimated for three sites and results suggest that the interactions between groundwater and surface water are greatest nearshore along the Florida Bay side of the Keys. Other studies of discharges from shallow injection wells indicate that the nutrients are taken up by seagrasses and phytoplankton before reaching the coral reefs.

Ocean discharge is the only effluent disposal option for which there is a known tracer study proving the source of "stressors" (USEPA 2002). In the study reviewed by the USEPA, a stable isotope tracer indicated an insignificant amount of nitrogen was taken up by phytoplankton in the vicinity of the south Florida ocean outfalls examined. One could reasonably conclude the same fate of nitrogen that may eventually be discharged to the marine environment as a result of deep well injection. Given the absence of studies on this subject in south Florida (USEPA 2002), it is impossible to adequately address the fate of effluent discharged via deep well injections.

Deep well injection of freshwater effluent into the aquifer can also result in the mobilization and release of arsenic from the aquifer matrix (Arthur *et al.* 2002), although the fate of the arsenic is also unknown. The Floridan aquifer system matrix is chemically heterogeneous and mobilization of arsenic, iron, manganese, and uranium and other metals has been documented during aquifer storage and recovery activities. Variables affecting this mobility include native and input water chemistry, aquifer matrix chemistry/mineralogy, contact time, and site-specific hydrogeology/geochemistry.

### 4.4.3 Alternative 3 (*Alternative Funding Sources*)

Benefits under *Alternative Funding Sources* would be similar to those described under the *Proposed Action*, albeit with possible delays while the KLWTD secures other funding sources. This time delay would effectively allow further water quality degradation, particularly of nearshore waters, increasing the cost and time to implement recovery. The delay in implementing water quality improvements may also reduce the likelihood of meeting 2010 treatment standards.

## 4.5 Ecological Habitats

Implementation of the *Proposed Action* (Alternative 2) and subsequent water quality improvements will reduce nutrient loadings and improve water quality in terrestrial and nearshore environments in the Keys. Although 2.6 acres will be impacted for the proposed WWTF construction, most impacts will be temporary and short-term. In addition, the long-term benefits of this program would substantially offset the unavoidable impacts to habitat. Importantly, the *No Action* alternative will continue to adversely impact ecological habitats. Under *Alternative Funding Sources* (Alternative 3), water quality degradation will continue until alternate funding is available to implement the proposed wastewater treatment improvements.

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*Implementation of the Proposed Action (Alternative 2) and subsequent water quality improvements will reduce nutrient loadings and improve terrestrial and nearshore environments in the Keys.*

|   |   |   |  |   |  |
|---|---|---|--|---|--|
|   |   |   |  |   |  |
| ✓ | ✓ | ✓ |  | ✓ |  |

The habitat categories addressed here include upland, freshwater and estuarine wetlands, marine and benthic habitats, coral reefs, and floodplains. The importance of each of these habitats was discussed in detail in *Chapter 3, Affected Environment*. Potential environmental consequences of implementing the alternatives presented in this document are described in detail in this chapter.

There are no wetlands on the proposed regional WWTF site, and no Corps 404 Permit or state Environmental Resource Permit (ERP) will be required. Relevant county regulations are addressed in this section.

### 4.5.1 Alternative 1 (No Action)

**Upland Habitats.** Under the *No Action* alternative, adverse impacts to upland habitats described in *Chapter 3, Affected Environment* would continue. Adverse impacts to hammock communities would be limited to locations with direct upland discharges and seepage and increased nutrient levels would stimulate plant growth and lead to changes in plant species composition over time.

**Estuarine and Freshwater Wetlands.** Untreated wastewater from adjacent uplands would continue to flow or seep into mangroves, buttonwoods, salt marshes, and canals in the service area under this alternative. Elevated nutrient inputs from terrestrial runoff would initially enhance the growth (height and biomass) of mangroves (Lugo and Snedaker 1974), as discussed in Section 3.5.3 of the PEIS. However, nutrient rich conditions can also inhibit growth and resistance to infection in plants. Sediment from terrestrial runoff could lead to changes in estuarine wetlands elevations and subsequent shifts in species composition, including replacement of salt marsh by upland invasive native and non-native plants. Changes in vegetation composition would directly affect wildlife habitat and use. For example, increased nutrient loading from groundwater and commensurate increases in macroalgal growth have been shown to decrease eelgrass cover and impact benthic fauna composition in Waquoit Bay, Massachusetts (Valiela *et al.* 1992).

Freshwater hardwoods would continue to experience indirect impacts such as altered hydrology, increased pollutant loading, and/or altered natural vegetation, resulting from continued wastewater discharges in the service area. As described in Section 3.5.3 of the PEIS, increased nutrients and toxins would likely adversely affect freshwater wetland vegetation and could lead to bioaccumulation and biomagnification of toxins in aquatic and marine organisms. Elevated nutrient levels could be exploited by opportunistic species and species composition may shift. Sedimentation from terrestrial runoff could potentially change the elevation of freshwater wetlands and possibly displace or shift the species composition.

**Marine and Benthic Habitats.** Marine and benthic habitats in the service area include seagrass beds, hardbottom communities, and bare substrate. These communities are sensitive, complex ecosystems influenced by many different sources. Under the *No Action* alternative, continued adverse impacts to marine habitats, including seagrasses, are anticipated as a result of continued wastewater practices in the service area. Nutrients that are transported from cesspools and septic tanks to nearshore waters in the service area would increase existing nutrient levels and subsequently adversely affect water quality in the nearshore waters of the Sanctuary.

Changes in water temperature, pH, and clarity affect the health and survival of marine and benthic communities. With respect to the proposed wastewater improvements, adverse impacts to benthic and marine habitats would occur as a result of land-based activities and changes in water quality through discharges to inland and nearshore waters. While direct impacts of diver contact, overfishing, or boating contribute to the decline of seagrasses, indirect impacts, such as eutrophication of local waters, result in the increased growth of algae and subsequent shading and gradual decline of seagrass beds.

As described in Section 4.5.1 of the PEIS, elevated nutrient levels can lead to algal blooms which in turn reduce water clarity, decrease light penetration, and potentially result in hypoxic (low oxygen) or anoxic (oxygen depleted) conditions in shallow, poorly flushed locations. These conditions would adversely affect light-dependent organisms such as seagrasses, and can result in adverse impacts such as fish kills and species shifts. In addition, the release of contaminants and pathogens from wastewater can result in pollutant bioaccumulation and biomagnification in the food chain, affecting human health and safety concerns.

The impact to marine habitats as a result of the lack of adequate wastewater treatment in the Keys has not been and may never be quantified. However, water quality degradation in the nearshore waters and the substantial decline of these habitats are well documented. For the most part, impacts to the marine habitats as a result of the implementation of the proposed project would be highly beneficial, indirect, and long-term.

**Coral Reefs.** As discussed in Section 3.5.5, no coral reefs were identified within the 1,500-foot buffer zone surrounding the service area. However, coral reefs are located within the Sanctuary and will be affected by this FKWQIP project. Under the *No Action* alternative, continued adverse impacts to nearshore waters in which coral reefs occur are anticipated as a result of nearshore water quality degradation associated with nutrients from untreated wastewater. Corals typically thrive in marine environments where oligotrophic (nutrient poor) conditions include clear waters and low turbidity. Excess nutrients, whether from natural or anthropogenic sources, may negatively impact marine and coral reef ecosystems in several ways. Consequently, coral reefs would be adversely affected by continued nutrient loading to nearshore waters of the Sanctuary caused by continued use of septic tanks and cesspools for wastewater treatment in the service area.

Excess nutrients in the water column can increase the growth of phytoplankton and result in algal blooms that reduce water clarity, decrease light penetration, and decrease seagrass and coral growth. Additionally, high nutrient concentrations tend to favor the growth of non-symbiotic mat-forming macroalgae that are not symbionts with the coral and will shade the coral,

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eliminating the ability of the zooanthellae to photosynthesize, causing bleaching and eventual death of corals.

**Floodplains.** Continued adverse impacts to habitats in floodplains (as described above) as a result of inadequately treated wastewater are anticipated under the *No Action* alternative. Without the implementation of the Key Largo regional WWTF and associated infrastructure, water quality degradation in the habitats described above would continue. In addition, EO 11988 and 11990 would not apply under this alternative and compliance with wastewater system designs with Monroe County Floodplain Ordinance would be required to protect the 100-year flood plain.

### 4.5.2 Alternative 2 (*Proposed Action*)

**Upland Habitats.** Vacant lands are scarce in the Keys and potential sites for WWTFs may include sensitive or critical habitat for protected species (see issue 3, below). In addition, sewer collection systems may cross sensitive natural lands. The proposed WWTF would be built on 2.6 acres of a larger 23 acre parcel located ocean side of U.S. 1 at MM 100.5, adjacent to an existing FKAA maintenance facility (Figure ES-1). The parcel is characterized by undisturbed hardwood hammock and the proposed WWTF would be constructed on a portion of the larger 23 acre parcel previously disturbed due to clearing, debris dumping, and non-native plant species invasion. Because hardwood hammocks are protected under Monroe County's Land Development Regulation Section 9.5-345, restoration of 2.6 acres of off-site hardwood hammock and conservation in perpetuity of the remaining 20.4 acres of the parcel are proposed.

Implementation of the proposed regional WWTF and associated infrastructure would decrease or eliminate the seepage of nutrients and contaminants from cesspools and septic systems. In addition, a reduction in the seepage of nutrients and contaminants to the Sanctuary would improve water quality.

Under this alternative, minimal adverse impacts to upland communities are anticipated due to construction activities associated with the new regional WWTF and associated infrastructure. The proposed regional WWTF will impact the developed and hammock habitat types. The proposed regional WWTF site includes approximately 2.6 acres of hammock habitat and 0.98 acre of developed land.

As described in the PEIS (Section 4.2.1.2), the USFWS recommended that project applicants avoid certain habitat types during the siting of wastewater improvements. These habitat types include tropical hardwood hammock, pine rocklands, buttonwood grasslands, and freshwater marshes. Of the upland habitat types in this list, only hammocks occur in the service area. As mentioned above, the proposed regional WWTF would impact approximately 2.6 acres of hammock habitat. Based on this acreage, the proposed impact to hammocks from construction of the regional WWTF should not be considered a "significant area of tropical hardwood hammock." Thus, this project abides by the USFWS recommendation for wastewater improvement sitings, and impacts to important vegetation habitats have been minimized.

The FFWCC Integrated Wildlife Habitat Ranking System (System) was developed by the FFWCC Office of Environmental Services (FFWCC 2002a) and the analysis was applied as part of the PEIS. The System ranks habitat areas important to a broad array of wildlife species, including many protected and/or rare mammals, birds, amphibians and reptiles. Corresponding habitat values are based on a composite score of several variables, including, but not limited to, land cover, protected species occurrences/habitat, (SHCAs and species richness (Endries *et al.* 2001). The System is intended to assist in long-range planning efforts by targeting sensitive or rare habitats. Ranks of one (lower value) to ten (higher value) would be assigned to each land cover class represented in the service area.

Approximately 50 percent of the service area has a low habitat value (value of four or lower based on the System). The majority of the remaining service area was assigned a value of five, six, or seven. The proposed WWTF site is located in an area of low habitat value (a value of two). Thus, the proposed project should not adversely impact high quality habitat in the service area. Adverse impacts from the associated wastewater infrastructure will be avoided and/or minimized as the improvements will be located within existing ROW corridors. In addition to mapping data, model output from the FKCCS (2004) indicates no direct impacts to habitat, i.e. habitat loss, in the upper Keys (Key Largo) as a result of implementing wastewater improvements.

**Estuarine and Freshwater Wetland Habitats.** Implementation of the proposed WWTF and associated infrastructure would decrease or eliminate nutrient and contaminant seepage from cesspools and septic systems into wetlands in the service area and consequently decrease pollutant loadings into adjacent nearshore waters. Commensurate decreases in pollutant loadings into the aquifer, both directly and indirectly, would also improve water quality and habitat in general in the service area, as discussed in the PEIS (Section 3.5.3).

Field visits and ADID data indicated no wetlands in the proposed regional WWTF site. Therefore, impacts to wetlands as a result of the construction and implementation of the proposed regional WWTF are not anticipated. However, wetlands such as mangroves, buttonwoods, salt marsh, and freshwater hardwoods cover approximately 41 percent of the Key Largo service area and are located predominantly in the undeveloped areas. Impacts to wetlands from the proposed wastewater infrastructure will be avoided and/or minimized as the improvements will generally occur within existing ROW corridors.

Mangroves comprise approximately 63 percent of the wetlands identified within the service area. Although mangrove productivity and growth may benefit from increased nutrient levels, there is no evidence to support that mangrove communities are nutrient limited (Odum and McIvor 1990). Thus, mangroves should not be adversely affected by the reduction in nutrient levels that is expected to occur as a result of the implementation of the *Proposed Action*.

As described in the PEIS (Section 4.2.1.2), the USFWS recommended that project applicants avoid certain habitat types during the siting of wastewater improvements. These habitat types include tropical hardwood hammock, pine rocklands, buttonwood grasslands, and freshwater marshes. Of the wetland habitat types in this list, buttonwoods and freshwater marshes would occur in the service area. However, the proposed regional WWTF site does not include any

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buttonwood or freshwater marsh habitat. Thus, this project abides by the USFWS recommendation for wastewater improvement sitings, and impacts to important vegetation habitats have been minimized.

**Marine and Benthic Habitats.** No adverse impacts to marine and benthic habitats are anticipated as a result of the *Proposed Action*. Under the *Proposed Action*, construction of the regional WWTF and associated infrastructure to service the Key Largo service area would decrease or eliminate existing inputs of contaminants, nutrients, and other pollutant inputs from cesspools and septic systems into nearshore waters surrounding the service area. Consequently, water quality in nearshore waters of the Sanctuary would be improved.

Substantial benefits to the marine habitats in the service area would be anticipated under this alternative. Reductions in nutrients would reduce the potential for algal blooms. Likewise, water clarity and dissolved oxygen concentrations would improve, and commensurate improvements in the overall health of benthic marine communities would be expected. No mitigation would be required due to the positive effects of this program.

**Coral Reefs.** As discussed in Section 3.5.5, no coral reefs were identified within the 1,500-foot buffer zone surrounding the service area. However, coral reefs are located within the Sanctuary and will be affected by this FKWQIP project. No adverse impacts to corals reefs in the Sanctuary are anticipated as a result of the proposed project. Benefits of the *Proposed Action* include improved water quality of nearshore waters in the service area and commensurate improvements in ecosystem health in the Sanctuary.

As described in Section 4.5.2 of the PEIS, marine flora and water quality dependent marine organisms, including corals, in nearshore waters of the Sanctuary will benefit from reduced nutrient levels. Implementation of the proposed project would potentially contribute to the recovery of the only living coral barrier reef system in North America. Consequently, implementation of this alternative would benefit the coral reef tract of the Keys and contribute to recovery of this important national treasure.

**Floodplains.** Under the *Proposed Action*, potential temporary adverse impacts to floodplains in the service may occur as a result of temporary construction activities. Habitat loss in the floodplain is addressed above for each habitat.

Construction and implementation of the proposed regional WWTF and associated water treatment improvements are anticipated to benefit the habitats associated with these floodplains (as described above). However, there is public concern that the proposed regional WWTF and associated improvements under the *Proposed Action* would lead to further floodplain development. However, the Monroe County ROGOs are based on hurricane evacuation times, public safety, and environmental needs (including water quality and habitat protection) (see Section 4.14 in this document). Since the primary limiting factor in the ROGO is hurricane evacuation time, the permit allocation should not change as a direct result of construction of a new WWTF.

The proposed WWTF will provide a means to effectively treat existing wastewater flows, not a means to introduce or support floodplain development. Therefore, if growth and development in the floodplain occur after implementation of either alternative, they are the result of established county planning and are not directly related to this proposed wastewater project. Because much of the Keys is in the 100-year floodplain, there are no other practical alternatives for these facilities.

### 4.5.3 Alternative 3 (*Alternative Funding Sources*)

**Upland Habitats.** Effects on upland habitats under this alternative would be similar to those described under the *No Action* alternative until alternative funding is acquired for the proposed regional WWTF and associated infrastructure. Once alternative funding sources are available and the proposed wastewater improvement project is implemented, the benefits would be similar to those described under the *Proposed Action*.

**Estuarine and Freshwater Wetland Habitats.** Adverse impacts to wetland habitats under this alternative would be the same as those described under the *No Action* alternative until alternative funding is acquired and the wastewater improvement project is implemented. The delay in implementation would allow continued wetland habitat degradation with potential adverse effects as described under the *No Action* alternative. Once the proposed wastewater improvement project is implemented, the benefits would be similar to those described under the *Proposed Action*.

**Marine and Benthic Habitats.** Adverse impacts to marine habitats under this alternative would be the same as those described under the *No Action* alternative until the proposed wastewater improvement project is implemented with alternative funding sources. The time delay would allow continued marine habitat degradation with potential adverse effects as described under the *No Action* alternative. Once alternative funding sources are available and the proposed wastewater improvement project is implemented, the benefits would be similar to those described under the *Proposed Action Permitting and mitigation* under this alternative would be similar to that described under the *Proposed Action*.

**Coral Reefs.** Delayed implementation of the FKWQIP under this alternative would result in continued adverse impacts to water quality in nearshore environments and associated coral reefs. Once alternative funding sources are available and the proposed wastewater improvement project is implemented, the benefits would be similar to those described under the *Proposed Action*.

**Floodplains.** Under *Alternative Funding Sources*, implementation of the proposed regional WWTF associated infrastructure would not occur until alternative funding is acquired. Consequently, water quality degradation in the habitats described above would continue until proposed wastewater treatment improvements are made and floodplains would be protected under the Monroe County Floodplain Ordinance.

As for the *Proposed Action*, there is public concern that the proposed regional WWTF and associated improvements would lead to further floodplain development. However, as described above, the Monroe County and Key Largo ROGOs are based on hurricane evacuation times,

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public safety, and environmental needs and the permit allocation should not change as a direct result of construction of a new regional WWTF. If growth and development in the floodplain occur after implementation of either alternative, they are the result of established county planning and are not directly related to this proposed wastewater project.

### 4.6 Protected Species

Existing adverse impacts to protected species and their habitat that have occurred due to nutrient and other pollutant inputs into nearshore waters in the Sanctuary are anticipated to continue under the *No Action* alternative. Minimal adverse impacts to protected species or their habitat may occur under the *Proposed Action* as a result of proposed regional WWTF and associated infrastructure that would serve the Key Largo service area. However, the long-term benefits of this program would substantially offset the unavoidable impacts to habitat. Consultation with federal, state, and local agencies is an integral part of the planning process for this project.

There are 3,433 acres (43 percent) of existing conservation lands in the Key Largo service area and an additional 304 acres (four percent) proposed for conservation (see Section 3.14.2). Consequently, any construction on natural lands is likely to impact a protected species or associated habitat. Protected species in the service area include a minimum of 39 federally or state protected plants and animals, as described in Section 3.6.2. Protected species can be impacted directly through a "take" or actual loss of an organism or loss of federally designated critical habitat. Indirect impacts would include the loss or degradation of the habitat that the organism requires to sustain its population.

#### 4.6.1 Alternative 1 (*No Action*)

Adverse impacts to protected species are not expected to occur within the service area under the *No Action* alternative. However, protected species that rely on or live in nearshore waters of the Sanctuary adjacent to the service area may be adversely affected as a result of continued discharges of untreated wastewater into nearshore habitats. As described previously, continued nutrient and other pollutant discharges into local canals and nearshore waters would likely increase the potential for algal blooms, impair water clarity and light penetration, decrease dissolved oxygen, increase the likelihood of fish kills, and encourage macroalgal growth. This would in turn decrease light penetration and adversely affect benthic habitats and those protected species using them.

#### 4.6.2 Alternative 2 (*Proposed Action*)

Under the *Proposed Action*, beneficial and minimal adverse impacts to protected species are anticipated due to the construction and implementation of the proposed wastewater improvement project. Reductions in nutrients, contaminants, and other pollutants would improve water quality and result in commensurate improvements in habitat in the nearshore waters surrounding the service area. These improvements would directly benefit the health and status of protected species in these nearshore habitats.

Among the species of wildlife that would benefit under the *Proposed Action* are numerous state listed piscivorous birds and the Florida manatee. The long-term benefits of the proposed water quality improvements would substantially offset the unavoidable impacts to habitat.

Unavoidable adverse impacts may occur as a result of construction of the proposed regional WWTF and associated infrastructure. Based on FNAI database records, 39 protected species may occur within the Key Largo service area. Based on FFWCC BBA survey data, 43 species were recorded in the Blackwater Sound Quad, 29 species in the Garden Cove Quad, and 35 species in the Rock Harbor Quad (exact location unavailable). Of these, the bald eagle is federally protected and eight species are state protected. Adverse impacts to these species may occur as a result of the *Proposed Action*. However, construction for the regional WWTF and associated infrastructure will be aligned within existing ROW corridors and, consequently, impacts to protected species from the proposed wastewater infrastructure will be avoided and/or minimized.

Coordination with the appropriate local, state, and federal agencies will occur for this project. Compliance with USFWS recommendations for avoiding areas of tropical hardwood hammock, pine rocklands, buttonwood grasslands, or freshwater marshes would occur. As discussed in Section 3.5.1 of this document, the proposed WWTF site is dominated by hardwood hammock.

Any action by the KLWTD that results in the loss of natural areas is likely to impact protected species due to the few remaining natural areas in the Keys. Previous formal consultation with the USFWS relevant to FEMA funding for project was concluded in June 2001 with the issue of a BO, as described earlier. The BO indicated that the construction of the proposed WWTF is: 1) not likely to jeopardize the continued existence of the federally protected Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) or Stock Island tree snail (*Orthalicus reses*); 2) not likely to affect the eastern indigo snake (*Drymarchon corais couperi*); and 3) no critical habitat has been designated for these species, and therefore none will be impacted. Reasonable and prudent measures identified by the USFWS include the restoration of 2.6 acres of hardwood hammock and preservation of the habitat remaining following construction of the proposed project.

Approximately 50 percent of the service area was assigned a low habitat value (value of four or lower). The majority of the remaining service area was assigned a value of five, six, or seven. The proposed WWTF site is located in an area of low habitat value (a value of two). Thus, the proposed project should not adversely impact high quality habitat in the service area.

### 4.6.3 Alternative 3 (*Alternative Funding Sources*)

Under *Alternative Funding Sources*, nutrient and other pollutant discharges into local canals and nearshore waters, as described under the *No Action* alternative, would continue until alternative funding sources are available and water quality improvements are implemented. With the delay in implementation, the discharge of untreated wastewater and associated water quality degradation in nearshore waters of the Key Largo service area and the Sanctuary would continue. The effects on protected species would be similar to those described in the *No Action* alternative. However, once the proposed wastewater project is implemented with funds from alternative

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sources, the benefits to protected species would be similar to those described under the *Proposed Action*. Mitigation, if necessary, would also be similar to that recommended with the *Proposed Action*.

### 4.7 Essential Fish Habitat

The MSA requires federal agency consultation with the NMFS on activities that may adversely affect EFH. Informal consultation was initiated as part of the preparation effort of the PEIS (Section 3.7) and several relevant species and associated habitats were identified. Until the wastewater improvement projects are implemented, adverse impacts to nearshore waters and dependent fisheries would continue as described under the *No Action* alternative. Benefits to EFH are anticipated under *Alternative Funding Sources* once the WWTF and associated infrastructure are constructed similar to that described under the *Proposed Action*.

### 4.8 Air Quality and Noise

Noise and air quality impacts resulting from the construction and operation of the facilities proposed for the FKWQIP would not differ from any other typical WWTF and associated infrastructure. The operation and maintenance of these facilities would have less impact than the construction.

#### 4.8.1 Alternative 1 (*No Action*)

No additional impacts to air quality or noise levels would occur as a result of implementing the *No Action* alternative. Under this alternative, conditions would continue as described for the affected environment.

#### 4.8.2 Alternative 2 (*Proposed Action*)

**Air Quality.** The construction of the new WWTF would result in minor, temporary impacts to the air quality in the vicinity of construction sites. The operation of heavy equipment during construction may result in minor, temporary adverse impacts to local air quality from heavy equipment engine exhaust. In addition, heavy equipment operation during construction can also result in windblown dust and particles. Dust can be minimized by adding moisture to the soil, mulching, and landscaping soon after construction completion. The duration of construction activities would be approximately one year. Operation of the facilities would also produce minor, long-term impacts and mitigation would consist of odor abatement measures integrated into the design of each facility. Monroe County is an air quality attainment area. Consequently, anticipated air emissions from construction activities are minimal.

**Noise.** The construction of the new WWTF would result in temporary noise impacts to land uses in the vicinity of the construction site. Heavy equipment operation and heavy trucks accessing construction sites would add additional noise to the ambient noise levels described in Section 3.8 of this Draft EA. Construction would only occur during daylight hours, and the WWTF is located in an industrial area where disturbances due to noise would be minimal. Operation of the

facilities would also produce minor, long-term impacts and mitigation would consist of the noise abatement measures appropriate for each specific treatment facility or pump station.

### 4.8.3 Alternative 3 (*Alternative Funding Sources*)

**Air Quality.** Under the *Alternative Funding Sources*, impacts would be similar to the *Proposed Action*. However, impacts would be staggered (construction activities would occur at a slower pace, and may be drawn out for an extended period of time).

**Noise.** Under *Alternative Funding Sources*, impacts would be similar to the *Proposed Action*. However, potential impacts would be staggered (construction activities would occur at a slower pace, and may be drawn out for an extended period of time).

### 4.9 Cultural Resources

The protection of cultural, archaeological, and historical resources in the Keys is described in the PEIS (Section 3.9). Major federal laws protecting cultural resources include the NHPA, ARPA, NAGPRA, and the AIRFA of 1978. Section 106 of the NHPA requires federal agencies to consider the effects of the *Proposed Action* on identified and potentially present cultural resources. In addition, the State Historic Preservation Office (SHPO), Tribal Historic Preservation Officers, and the Advisory Council on Historic Preservation, would review and comment on a *Proposed Action*.



*The presence of historic properties on the proposed WWTF, KLTV, or KLP is unlikely. However, the Calusa Campground may have historic properties that would be adversely affected during connection to the WWTF and would require further coordination with SHPO regarding possible mitigation with concerned parties.*

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|  |   |  |  |   |  |
|  | ✓ |  |  | ✓ |  |

#### 4.9.1 Alternative 1 (*No Action*)

Under this alternative, impacts to historic, archaeological, and cultural resources would only occur as described for the existing environment in *Chapter 3, Affected Environment*. Implementation of projects by individual residents or businesses may disturb buried and undocumented historical resources. Those individuals or business owners would be responsible for compliance with relevant federal, state, and local regulations.

#### 4.9.2 Alternative 2 (*Proposed Action*)

To ensure the protection of archaeological or historical resources, construction activities in the vicinity of documented occurrences of cultural and historical resources would be supervised at all times by a qualified archaeologist who meets criteria set forth in the Secretary of the Interior's

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Standards and Guidelines for Archaeology and Historic Preservation and 36 CFR. Appropriate steps would be taken in accordance with applicable federal and state laws and the procedures recommended by the SHPO during construction in potentially sensitive areas.

A review of the Florida Master Site Files indicates the presence of nine historic properties in the vicinity of the proposed Key Largo WWTF (Section 3.9). A survey was conducted on January 10, 2001 (URS 2004) to examine the site for visible cultural resources and to assess the necessity for a more detailed archaeological survey. The results of this survey were submitted to SHPO.

The proposed WWTF location has indications of modern disturbances and no previously recorded or visible signs of cultural resources, little or no soils, and no potable water. Site conditions indicate little probability of significant cultural resources occurring within the WWTF sites. No impacts to historic, archaeological, or cultural resources are anticipated as a result of constructing the proposed WWTF.

In letters dated May 16, 2001, and August 18, 2003, respectively, the SHPO concurred that no historic properties were likely to be located on the proposed WWTF, the KLTV, or the KLP. However, the Calusa Campground may have historic properties that would be adversely affected during connection to the WWTF. The KLWTD should avoid sensitive archaeological features, have professional on-site archaeological monitoring during collection system work, and further coordinate activities with the SHPO. Should any unanticipated historic or archeological materials be discovered during project work, all activities on the site shall be halted immediately and the KLWTD shall consult with Corps and other concerned parties, SHPO, and other appropriate agencies for further guidance.

The proposed 2.6 acre restoration/mitigation site would require evaluation regarding potential impacts to historic properties. The restoration site would be identified for mitigation based on previous disturbance and need for restoration; therefore.

### 4.9.3 Alternative 3 (*Alternative Funding Sources*)

Under this alternative, the proposed WWTF and associated infrastructure would not be constructed and implemented until alternative funding is acquired. If funding is obtained through non-federal entities to comply with Florida Statutory Treatment Standards, compliance with Section 106 of the NHPA would not be required. Once FKAA secures funding and the project proceeds, effects on cultural resources would be similar to those described under the *Proposed Action*.

### 4.10 Demographics and Socioeconomics

The economy of the Keys is based on a tourist industry that attracts 2.2 million visitors per year and depends on water related recreation. Implementation of the Key Largo WWTF and associated infrastructure is one of the many FKWQIP projects that will improve nearshore water quality and reduce public health concerns. This section describes potential demographic and socioeconomic impacts of implementing project alternatives.

### 4.10.1 Alternative 1 (No Action)

Under the *No Action* alternative, the Key Largo WWTF and associated transmission facilities would not be implemented and declines in the economy and population may occur. Development would rely on on-site treatment facilities, many of which would be adequate only through the year 2010. Consequently, growth in land development and permanent population could be constrained beyond that which is planned.

**Employment and Income.** Decreased employment and wages in the Key Largo CDP are anticipated as a result of the *No Action* alternative and the subsequent slow development and increases in population. While the economy of the Key Largo area and the Keys is largely driven by tourism, the demand for goods and services by the permanent population is also an important economic force. The sector of the county economy that supports permanent residents would slow, and the overall economy would rely more heavily on the tourism industry.

**Home Ownership.** Reduced home ownership may occur due to inadequate wastewater infrastructure and limited growth in the housing market. The high price of real estate may have already contributed to a lower incidence of home ownership in Key Largo, further reducing home ownership, and could increase the average number of persons per household in the Key Largo DCP.

**Tourism.** Tourism in Key Largo and throughout the Keys centers around local marine resources, which are dependent on water quality. Under the *No Action* alternative, continued declines in nearshore water quality would continue to adversely impact recreation and tourism. However, a significant decline in visitation to the Keys in general is unlikely under this alternative and the subsequent demand for tourist activities is expected to grow, regardless of water quality or infrastructure constraints.

**Wastewater Management Costs in Key Largo.** Under the *No Action* alternative, wastewater improvement projects would not be implemented. Therefore, wastewater management costs would not be affected.

**Cost of Living.** An increased cost of living in Key Largo would be anticipated as a result of the *No Action* alternative. The absence of adequate wastewater infrastructure could constrain the limited allowable development. Continued slow development and the continued demand for housing and commercial services would increase the cost of real estate. Housing cost is a principal component of the cost of living in Monroe County and the difference between the supply and demand for housing could impact the local cost of living. The effects of a growing difference are apparent in the rapidly escalating price of real estate in Key Largo and throughout Monroe County in the last few years. The *No Action* alternative would exacerbate these effects.

**Public Health Conditions.** Under the *No Action* alternative, the FKWQIP would not be implemented and public health could be adversely impacted due to the continued discharge of inadequately treated wastewater into canals and nearshore waters. Public health indicators suggest that the connection between water quality and public health is high in the Keys when compared with the state of Florida as a whole. Higher levels of fecal coliform bacteria and

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commensurate health impacts would be expected to be minor due to existing provisions that protect the public from contaminated waters.

### 4.10.2 Alternative 2 (*Proposed Action*)

The *Proposed Action* would result in the implementation of a regionally integrated and managed wastewater treatment system in Key Largo. The *Proposed Action* is necessary for planned land development at a modest rate in accordance with Monroe County ordinances.

**Employment and Income.** Implementation of the proposed wastewater improvement projects may result in increased employment and income in Key Largo as a result of project construction and a potential increase in the rate of planned development. Consequently, the local economy would continue to grow modestly, maintain a stronger demand for employment, and increase wages and salaries. These conditions in turn would increase tourism, economic growth, employment, and income.

**Home Ownership.** The *Proposed Action* may result in reduced home ownership due to the increased utility services costs for implementing the wastewater treatment projects, subsequently increasing the cost of living for many residents and businesses. Although the cost of implementation to residents would be equal, the increased cost of wastewater management would have a greater (disproportionate) impact on lower income residents.

**Tourism.** An improved tourism industry is anticipated as a result of the *Proposed Action* due to continued development in visitor related economic sectors and improved nearshore water quality that supports recreation opportunities. Adverse impacts to tourism from the *Proposed Action* include temporary and short term road closings and detours for construction of sewer lines.

**Wastewater Management Costs.** Under the *Proposed Action*, an increase in the cost of utility services to the residents of Key Largo is anticipated. Although federal funding would provide a portion of the total wastewater infrastructure cost, the local utility would be required to fund, and recover, costs for some development, including land acquisition and all associated O&M expenses. These costs would be substantial and would be passed on to residents and businesses as connection and recurring service charges.

In the Keys, the costs of system development and O&M are recovered from the customers in the service area, except where subsidies are available. Therefore, the charge to a new customer depends on the cost of developing the system, the extent to which the costs are subsidized, and whether a customer is eligible for individual assistance.

The cost of constructing the proposed wastewater treatment and transmission facilities for Key Largo is estimated to be \$140 million. The Corps funding would provide 29,560,000 in additional funding, potentially reducing the total cost to \$110,440,000. The projected total number of EDUs for Key Largo is 2,430, which amounts to approximately \$45,449 per EDU. Estimates per EDU are actually much lower, ranging from \$20,000 to \$25,000 per EDU with no additional funding. Charges for residential and business connections to the transmission system

can range from \$2,500 to \$5,000 per residence. Finally, estimated monthly water management services are \$70 per residence.



*The cost of the proposed WWTF, associated infrastructure, and deep well disposal system for Key Largo is an estimated \$140 million.*

**Cost of Living.** An increase in the cost of utility services to most residents in the Key Largo service area is anticipated under the *Proposed Action* due to implementation of the wastewater management improvements. Although federal funding would provide a significant portion of the total cost of developing wastewater infrastructure, the local utility would be required to pass along the remaining costs to residents and businesses in the form of utility service charges. The increased charges would substantially raise the cost of living Key Largo residents.

**Public Health Conditions.** Because of the water quality improvements in canals and nearshore waters under the *Proposed Action*, the incidence of water borne disease would be reduced and a modest improvement in public health would be anticipated. Improvement would be small, however, because public health indicators in Monroe County suggest that the overall level of public health is currently very good.

### 4.10.3 Alternative 3 (*Alternative Funding Sources*)

Under *Alternative Funding Sources*, the anticipated delay in the installation of wastewater treatment infrastructure would slow land development and population growth in the service area. Depending largely on local funding, the residents and business operators in Key Largo would be poorly prepared to fund all or portions of the facilities required for any significant additional development. Similarly, increases in visitor populations would be smaller with the delayed implementation of wastewater treatment improvements.

**Employment and Income.** Under *Alternative Funding Sources*, implementation of wastewater improvements would be delayed until adequate funding was acquired. The installation of infrastructure improvements needed to support continued residential and commercial growth would be delayed. This alternative would, in turn, slow the rate of residential and commercial growth and result in modest growth in employment and income.

**Home Ownership.** Under this alternative, the delay in implementing wastewater infrastructure may result in reduced home ownership. Slower economic growth would result from delayed project implementation and slower increases in utility services costs. Combined with the existing demand for housing and business locations in the Keys, this would increase the cost of real estate, further increasing the cost of living in Key Largo, and subsequently decrease home ownership.

**Tourism.** Under *Alternative Funding Sources*, slower growth in tourism in the Key Largo service area is anticipated in comparison with the *Proposed Action*. By funding wastewater treatment projects to improve nearshore water quality, additional permanent residents and visitors would be accommodated, providing a boost to recreation and tourism. Some minor

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adverse impacts may occur to temporary road closings during construction and installation of wastewater transmission systems.

**Wastewater Management Costs in Key Largo.** Under *Alternative Funding Sources*, the cost of wastewater utility services would increase as necessary improvements are implemented to comply with 2010 treatment standards. Utility cost increases would be incrementally passed along to residents and businesses.

**Cost of Living.** Under *Alternative Funding Sources*, the cost of wastewater management utility services would increase as the necessary improvements were implemented. Cost increases would be passed along to residents and businesses, thereby increasing the cost of living.

**Public Health Conditions.** *Alternative Funding Sources* would result in delayed improvements in water quality, in turn delaying potential improvements in public health conditions. However, any improvement would be minor, as overall public health relating to water quality is currently good.

### 4.11 Recreation

The 2.2 million annual visitors to the Keys provide the basis of the tourism industry on which the economy relies. Tourism is based on clean water and beaches as well as the abundant fish and wildlife that characterize this popular vacation destination. Consequently, potential impacts of the proposed project on recreation amenities are examined below.

#### 4.11.1 Alternative 1 (*No Action*)

Under the *No Action* alternative, a decline in recreation opportunities would be expected as inadequately treated wastewater discharges to nearshore waters of the Sanctuary and subsequent water quality impacts continue, as described in *Chapter 3, Affected Environment*. Anticipated adverse impacts include additional beach advisories and closings and, potentially, further damage to coral reefs.

#### 4.11.2 Alternative 2 (*Proposed Action*)

Most of the outdoor recreation in Monroe County (and the Key Largo service area) relates directly to marine resources. Implementation of the *Proposed Action* would decrease loadings of nutrients and other pollutants into nearshore waters, improve water quality, and subsequently, benefit recreation resources. Improvements in nearshore water quality, combined with fewer incidences of beach advisories and closings, would increase recreation opportunities as well as the perception of these opportunities, thereby improving the local economy in the Key Largo service area.



*Improvements in nearshore water quality, combined with fewer incidences of beach advisories and closings, would increase recreation opportunities as well as the perception of these opportunities, thereby improving the local economy in the Key Largo service area.*

Construction activities associated with completing the proposed project would result in minor, temporary impacts to recreation activities. Discontinuing use of septic tanks and cesspools and construction of the WWTF and infrastructure would result in temporary traffic delays and construction disturbances (e.g. staging sites, equipment). All of these construction related impacts would be temporary and minor, and state parks and other recreation areas would remain open during these activities. Reducing nuisance odors (by discontinuing use of septic tanks and cesspools) in Key Largo would enhance the recreation opportunities as well.

### 4.11.3 Alternative 3 (*Alternative Funding Sources*)

Under Alternative *Funding Sources*, delayed implementation of the proposed project would delay improvements in nearshore water quality, beach health and recreational opportunities in the service area described under the *Proposed Action*. The eventual benefits would be significant because of the importance of the marine environment to recreation in the Keys. Construction related impacts would also occur over an extended period of time under this alternative.

### 4.12 Open Space and Aesthetic Resources

Visitors to the Keys enjoy a unique sight seeing experience over the miles of U.S. 1 that link the numerous islands across open water. Water quality is important to the maintenance of healthy ecosystems and the open spaces of the Keys and the Key Largo service area.

#### 4.12.1 Alternative 1 (*No Action*)

Under the *No Action* alternative, wastewater treatment management would continue to rely primarily on individual treatment systems and no impacts to aesthetic resources beyond those described in *Chapter 3, Affected Environment* are anticipated. Nuisance odors and views associated with increased algal blooms and fish kills caused by continued nutrient loading from wastewater discharges would continue.

#### 4.12.2 Alternative 2 (*Proposed Action*)

The proposed WWTF location at MM 100.5 is characterized by undisturbed hardwood hammock and much of the surrounding land is undeveloped and in public ownership. The WWTF would be constructed in the most disturbed portion of the parcel, which has signs of previous clearing, debris dumping, and invasion by non-native plant species. The site has no wetlands. Pumping facilities would be housed in buildings resembling residential homes and would have little if any noise, odor, or other effect on nearby residents.

#### 4.12.3 Alternative 3 (*Alternative Funding Sources*)

Under *Alternative Funding Sources*, benefits to open space and aesthetic resources would be delayed until alternative funding is acquired and wastewater improvement projects could be implemented. However, once projects are implemented, benefits would be similar to those under

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the *Proposed Action*, albeit at a slower pace. Nuisance odors and sights due to algal blooms and fish kills would be reduced over time.

### 4.13 Environmental Justice

As required by EO 12898, this section focuses on potential impacts to minority and low income residents as they relate to environmental justice (see *Section 3.13* for a description of federal requirements). Impacts to minority and low income populations that may occur as a result of the proposed alternatives include:

- Siting of wastewater and stormwater improvements, especially treatment facilities, in minority or low income neighborhoods
- Increased costs for wastewater management services in the form of sewer charges and property taxes that disproportionately impact low income residents

Under both state of Florida and Monroe County ordinances, residents of the Keys are required to replace existing cesspools and failing septic tanks with adequate WWTFs. The financial impact to residents for these improvements would be uniformly applied in accordance with Monroe county codes and tax structure.

#### 4.13.1 Alternative 1 (*No Action*)

Under the *No Action* alternative, residents would be responsible for complying with 2010 wastewater treatment standards. Estimated costs for these on-site treatment systems would range from \$11,392 to \$14,912 per household (Monroe County 2000), and monthly costs range from \$63 to \$118 (FEMA 2002). Low income and fixed income residents would be adversely impacted by these costs in the absence of discretionary income. Residents who comply with the 2010 requirements by meeting interim requirements would partially offset the costs of implementing the *Proposed Action*.



*Under the No Action alternative, estimated costs for on-site treatment systems would range from \$11,392 to \$14,912 per household. Monthly costs would range from \$63 to \$118. Low income and fixed income residents would be adversely impacted by these costs in the absence of discretionary income.*

#### 4.13.2 Alternative 2 (*Proposed Action*)

The *Proposed Action* would impose an adverse economic impact on residents of the Key Largo service area, particularly lower income residents. While facility location is not considered an environmental justice issue under the *Proposed Action*, the increased costs to lower income residents are.

Under the *Proposed Action*, the implementation schedule for the proposed wastewater improvement project is accelerated in comparison with the *Alternative Funding Sources* (below) and would therefore allow residents to connect directly to a central sewer system and eliminate

the need to install costly interim treatment facilities. Reducing the financial impact of replacing cesspools and other substandard wastewater treatment system would benefit all residents, regardless of income.

Costs to residents under the *Proposed Action* could be substantially greater than costs associated with the *No Action* alternative because of the low number of EDUs in the Key Largo service area. The total cost of the proposed project is an estimated \$140 million and estimated cost per EDU may range as high as \$20,000 to \$25,000.

Utility costs in Key Largo would be higher under the *Proposed Action* in comparison with the *No Action* alternative. Residents and businesses connecting to the central wastewater treatment system would incur a system development charge in addition to a potential connection cost of \$5,000 per residence and a monthly service charge of \$70 per residence. These costs would be a financial burden for lower income residents, regardless of whether the cost is evaluated alone or compared with OWTS costs.

While the MHI in Key Largo is relatively high, at least eight percent of the residents live below the poverty level, and possibly more given that the cost of living in Monroe County is about ten percent higher than that of the state, as described in the PEIS (*Section 3.13*) and in this document (*Section 3.13*).

The proportion of residents in Key Largo over the age of 65 is comparable to county and state figures. This segment of the population often lives on fixed income and, while their income may not be below the poverty level, they are affected by cost of living changes. These factors suggest that while the majority of the Key Largo residents are financially secure, there is considerable disparity in wealth and income among residents, raising potential environmental justice concerns. Three potential approaches available to the Key Largo are detailed in the PEIS and briefly summarized here.

**Subsidize Initial Connection Costs.** Lower income residents may receive subsidies, mainly from Community Development Block Grants (CDBGs) and the FEMA. Presently, the only known funding source is the federal government through the Corps. No CDBG funding is currently available.

**Subsidize Cost of Sewer Service.** Lower income residents would be financially burdened regardless of whether they are charged for on-site treatment facilities or the central facilities. The only available subsidy for these costs is the Key Largo general fund revenues. Such funding would probably not be practical over an extended period of time.

**Implement a Rate Structure Based on Water Volume Use.** Residents are charged a lower base charge and volume charge for the first designated volume, with an increasing charge for more water use. Such a rate structure links sewer charges to metered water use. This rate structure is: 1) inconsistent with the practice of charging per EDU; 2) places the sewer utility at financial risk because revenue is linked to water use by larger customers and the very factors that lead to a decline in water use often cause increased wastewater management expenses; 3) higher

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rates for larger water users are arbitrary, discriminatory, and subsidize only low volume customers, regardless of ability to pay.

### 4.13.3 Alternative 3 (*Alternative Funding Sources*)

With delayed implementation of central wastewater systems, *Alternative Funding Sources* would result in many of the same impacts described for the *Proposed Action*, albeit more slowly. However, similar to effects described for the *No Action alternative*, any such impacts would not be related to the proposed federal action.

### 4.14 Land Use and Planning

The *Proposed Action* directly addresses the Monroe County Year 2010 Comprehensive Plan (1997) mandated reductions in nutrient loadings to the marine ecosystem by the year 2010, and EO 98-309, which directed local and state agencies to coordinate with Monroe County in the implementation of the Year 2010 Comprehensive Plan to eliminate cesspools, failing septic systems, and other substandard on-site sewage systems.

#### 4.14.1 Alternative 1 (*No Action*)

Land use and planning in the service area would continue as described in *Chapter 3, Affected Environment*. The absence of federal funding for implementation of improved wastewater treatment infrastructure under the *No Action* alternative is not anticipated to impact existing land uses. However, planned future land use development would be limited under the *No Action* alternative. Without wastewater treatment improvement projects, Key Largo risks non-compliance with EO 98-309 and the Year 2010 Comprehensive Plan. In turn, noncompliance with the 2010 Plan could jeopardize the allocation of credits for new development.

#### 4.14.2 Alternative 2 (*Proposed Action*)

No adverse impacts to land use are anticipated under the *Proposed Action*. The proposed WWTF parcel and potential VPS sites are designated on the Future Land Use Map as mixed use/commercial and residential future land use categories (Figure 3-17). The proposed WWTF is located adjacent to existing FKAA facilities.

The proposed project is consistent with Monroe County ROGOs developed to control growth and maintain a high standard of living while protecting remaining natural resources. Although the proposed WWTF would support and facilitate planned growth, it would not induce growth, increase permit allocations, or facilitate floodplain development beyond that which is already planned. While county and city ROGO considerations include public safety and environmental needs (including water quality and habitat protection), the primary limiting factor in the ROGO is hurricane evacuation time. Consequently, the proposed project would not affect permit allocation and associated development in the service area.



*While ROGO considerations include public safety and environmental needs, the primary limiting factor in the ROGO is hurricane evacuation time. Consequently, the proposed project would not affect permit allocations and associated development in the service area.*

In accordance with the Monroe County Comprehensive Plan (Sections 9.5-257.4 and 9.5-257.5), construction of a new WWTF or VPS is consistent with permitted land uses in either suburban commercial or suburban residential land planning zones. Construction and operation of the WWTF would be consistent with the current land use at the adjacent FKAA maintenance facility. The 2.6 acre restoration/mitigation site is anticipated to be consistent with a conservation land use as well as surround land uses.

Construction activities would be limited to the project sites and would not directly impact CARL lands. However, under the *Proposed Action*, about 20.4 acres of the 23-acre parcel for the WWTF would be preserved in perpetuity under a conservation easement. CBRS units in the Key Largo service area would not be affected by the *Proposed Action* or served by the proposed WWTF. The proposed project has been reviewed by the state of Florida and is considered consistent with the FCMP (Letter dated 3 June 2004).

Construction activities would result in minor, temporary impacts to land use (anticipated to last 12 months). Short-term traffic delays as well as general construction disturbances would occur during construction.

### 4.14.3 Alternative 3 (*Alternative Funding Sources*)

Under *Alternative Funding Sources*, impacts on land use would be similar to those described for the *Proposed Action* once alternative funding is acquired and wastewater improvement projects are implemented. However, potential impacts would occur at a slower pace. Prior to implementation, residents and businesses in the Key Largo service area remain at risk of non-compliance with the 2010 treatment standards.

## 4.15 Infrastructure

The effects of the *Proposed Action* and other alternatives on transportation and utilities and services in the Key Largo are discussed in this section.

### 4.15.1 Alternative 1 (*No Action*)

Under the *No Action* alternative, the residents of Key Largo would continue to rely on individual treatment systems (septic tanks and cesspools) and privately owned cluster or package treatment facilities, as describe under *Chapter 3, Affected Environment*. Individual property owners and businesses would be responsible for meeting the state or county defined LOS standards. Residents and businesses would risk non-compliance and have no impacts to transportation or infrastructure, or implement many smaller projects, which would in turn result in larger numbers of small traffic and infrastructure disruptions.

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### 4.15.2 Alternative 2 (*Proposed Action*)

**Transportation.** The construction of a new WWTF would result in minor, temporary impacts to traffic in the vicinity of the proposed project due to heavy equipment and trucks accessing the construction site. In addition, the construction of the wastewater collection system could affect traffic patterns. Depending on available ROWs, transmission lines are generally constructed under roadways, and segments of U.S. 1 would be closed during construction. A traffic maintenance plan would be prepared to accommodate residential and business traffic during construction of the WWTF, pump stations, and associated sewer lines for approximately one year.

The operation of the WWTF would result in additional traffic due to workers traveling to the facility site. It is estimated that four to seven workers would be employed at the WWTF (Furland 2003), resulting in less than 30 trips per day. The impact on the area roadway system of the trips produced by the WWTF would be insignificant.

**Utilities and Services.** The construction of a centralized WWTF and collection system would result in minor, temporary impacts to utilities at various locations and times throughout the service area. Utility transmission lines are often constructed under roadways or in roadway ROWs. Consequently, it may be necessary to relocate buried transmission lines during construction thus impacts would be localized and short in duration.

### 4.15.3 Alternative 3 (*Alternative Funding Sources*)

**Transportation.** Under *Alternative Funding Sources*, impacts would be similar to those described for the *Proposed Action*. Although potential impacts would be delayed while alternative funding is acquired to implement the proposed project, delayed funding could result in a larger number of smaller projects and therefore greater traffic disruptions.

**Utilities and Services.** Under *Alternative Funding Sources*, wastewater treatment improvement projects would not be constructed until alternative funding is acquired. Consequently, impacts would be similar to those described for the *Proposed Action* but would be delayed (construction activities would occur at a slower pace, and may be drawn out for an extended period of time).

## 4.16 Hazardous and Toxic Materials

This section addresses the potential impacts of hazardous and toxic materials relevant to the proposed project. Specifically, known areas of hazardous contamination would be avoided and mitigation necessary should hazardous contamination be encountered and identified. A petroleum leak on the adjacent FKAA property is presently being addressed and potential contamination to the proposed WWTF site has been evaluated and deemed insignificant.

### 4.16.1 Alternative 1 (*No Action*)

Without federal funding for the *Proposed Action*, responsibility for implementing wastewater treatment improvement projects would remain with individual property owners and businesses. Disturbance of lands would be limited to individual actions and conditions would continue as described in *Chapter 3, Affected Environment*.

### 4.16.2 Alternative 2 (*Proposed Action*)

Under the *Proposed Action*, construction and implementation of the Key Largo WWTF and associate transmission lines and pump stations would include soil disturbance, grading, and moving, and may, as a result, uncover or expose a hazardous material. For individual infrastructure improvement projects, the non-federal sponsor would be responsible for investigating the potential presence or extent of a hazardous substances regulated under the CERCLA.

No signs of improper storage or handling of hazardous materials were observed on the proposed WWTF site during a Phase I assessment. The construction of the proposed treatment facilities and the infrastructure and normal O&M of the treatment facilities would not generate hazardous wastes under normal circumstances. Contractors would be required to provide pollution prevention plans and contain any petroleum spills that may occur during construction. If hazardous wastes should enter the system, a monitoring system typically identifies the malfunction and corrective actions are taken to prevent the discharge.

Effluent disposal via deep well injection would not generate hazardous wastes during the operation of the WWTF, nor would it result in the discharge of hazardous wastes into the ground water. Treated effluent would be monitored for hazardous material contamination.

### 4.16.3 Alternative 3 (*Alternative Funding Sources*)

Under *Alternative Funding Sources*, residents and businesses would be individually responsible for implementation of wastewater improvement projects. Construction delays and reliance upon smaller projects would also result. The smaller projects would have impacts on the environment with respect to potential hazardous contamination similar to those described for larger projects. Many small systems would be constructed on private property and compliance with state and federal regulations regarding the handling and disposal of hazardous materials would be the responsibility of the individual.

## 4.17 Predicted Attainment of the Program Objectives

The primary goal of the FKWQIP is to provide federal funding for local municipalities to implement wastewater treatment projects that would result in commensurate water quality improvements in the Sanctuary. The proposed Key Largo WWTF and associated infrastructure would provide improved wastewater treatment for Key Largo and associated service area and decrease pollutant loads to local canals and nearshore waters. As a result, water quality

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improvements in the nearshore waters of the Sanctuary would be anticipated, thereby meeting federal, state, and local goals and objectives.

### 4.18 Predicted Cumulative Impacts

Cumulative impacts are those that “result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions.” The cumulative impacts of an action may be undetectable, but can add to other disturbances and eventually lead to a measurable environmental change.

Potential cumulative impacts of the proposed project are primarily beneficial and should be considered in the spatial and temporal context of the wastewater and stormwater improvement projects funded by federal, state, and local sources. Multiple wastewater projects in the Keys would be located closely both spatially and temporally and the cumulative impacts of these facilities would be beneficial in terms of improved water quality in the Sanctuary. Improved water quality would in turn enhance marine habitats, and would increase recreation and tourism opportunities.



*Multiple wastewater projects in the Keys would be located closely both spatially and temporally and the cumulative impacts of these facilities would be beneficial in terms of improved water quality in the Sanctuary.*

Due to construction activities, minor cumulative adverse impacts to protected species or protected habitat, terrestrial habitat loss, or both, may occur, depending on the locations of the individual projects. Appropriate measures would be taken to minimize or mitigate for these impacts at the individual project level. Implementation of multiple FKWQIP projects would not have a cumulative environmental justice impact, since each community's financial impact would be limited to its individual project.

While there is an overall trend to balance development and resource protection, development trends continue to pressure south Florida. These trends include increased development within the constraints of ROGOs, transportation corridor widening, and changes in land uses from trailer parks to single family homes and multi-family units. Consequently, this cumulative impacts analysis addresses the effects of the proposed FKWQIP projects in the context of larger trends in south Florida, including the Comprehensive Everglades Restoration Plan (CERP), anticipated development, such as the KLTV stormwater project, as well as other wastewater improvement projects. Issues and potential impacts are outlined in Table 4-2 and described below.

**CERP.** Importantly, the Key Largo WWTF and other proposed FKWQIP projects are consistent with the efforts of the CERP, and in combination with the CERP, would cumulatively benefit the restoration, protection, and preservation of water resources in south Florida. The CERP covers 16 counties in central and south Florida, including the Everglades and the Keys, addresses water quality through the multi-step Everglades Construction Project, and also focuses on species diversity and habitat protection.

Cumulative adverse impacts to water quality and habitat would be greatest under the *No Action* alternative due to the continued discharge of inadequately and untreated wastewater into the shallow aquifer, canals, and nearshore waters in the service area and in the Keys in general. Under the *No Action* and *Alternative Funding Sources alternatives*, the conservation of relatively larger, contiguous habitats would be unlikely in the absence of regional planning and facilities. In contrast, conservation of sensitive lands would be more likely as part of a regional plan under the *Proposed Action*. Cumulative adverse impacts to water quality would be reduced under the *Proposed Action* as a result of reduced discharges of nutrients, suspended solids, and pathogenic organisms into the aquifer, canals, and nearshore waters of the Keys.

**Urban Growth and Development.** Cumulative adverse impacts of urban development include increased impervious surface and stormwater runoff and fragmented habitat. Adverse cumulative impacts of wastewater loads, although stormwater runoff and habitat fragmentation are not expected to change as a direct result of the proposed project, would be reduced under the *Proposed Action* and *Alternative Funding Sources* due to improved wastewater treatment.

Although the proposed Key Largo WWTF, as well as other FKWQIP projects, would support and facilitate planned growth, they would not induce growth and no specific future development activities are currently identified that would not proceed without the proposed project. The FKWQIP is consistent with Monroe County ROGOs developed to control growth and maintain a high standard of living while protecting remaining natural resources. ROGOs are based on several conditions, including hurricane evacuation times, public safety, and environmental needs (including water quality and habitat protection). FKWQIP implementation would not increase permit allocations and would not contribute to or support floodplain development beyond that which is already planned. Cumulative adverse impacts to land use and planning in the Keys are not anticipated under any of the alternatives.

**Ecological Habitats and Protected Species.** Beneficial cumulative effects of the proposed wastewater improvement projects on marine biological resources are anticipated due to reduced nutrient and pathogen inputs and subsequent improvement in quality of groundwater, surface water, and nearshore waters, as discussed in Sections 3.3 and 3.4 of this Draft EA.

Under the *Proposed Action*, approximately 2.6 acres of hardwood hammock habitat would be eliminated. In combination with other development in the Key Largo service area, this would result in negative cumulative impacts to terrestrial biological resources. However, avoidance, minimization, and mitigation measures would not result in a net loss of hammock. Other habitat and special status species cumulative impacts mitigation measures include: USFWS review of Monroe County Building Permits would occur through a formal consultation for ESA compliance; avoidance of development in Tier I (Conservation, Restoration, Protection) and Tier II Transition; Reduce Sprawl) lands; and target Tier III lands (Redevelopment, Infill Development) for development.

**Cultural Resources.** Cumulative impacts to cultural resources are not anticipated as a result of the *Proposed Action* because federally funded actions would include coordination and review of projects at the state (SHPO) and local (Monroe County Historic Preservation Society) levels. Under the *No Action* alternative, projects would not be reviewed for potential impacts to cultural

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resources and cumulative impacts to these resources would be anticipated. Potential effects on cultural resources and potential cumulative effects on historic and cultural resources may occur.

**Table 4-5**  
**Potential Cumulative Impacts as a Result of the Proposed Wastewater Improvement Projects**

| Issue                               | No Action: No Federal Funding for FKWQIP                                                                                                                                                                      | Proposed Action/ Alternative 2: Implementation of FKWQIP                                                                                                                                                                                                                                                                    | Alternative 3: Alternative Funding Sources                                                                                                                                                                                    |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Quality                       |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                               |
| Nutrients                           | Cumulative increases in nutrient loads to soils, aquifer, canals, and nearshore waters that reduce water clarity and may adversely impact offshore coral reefs.                                               | Anticipated nutrient reductions are 69 and 73 percent in TN and TP loadings, respectively, using AWT. Post-treatment nutrient levels may pose ecological risks for surface water, but cumulative reductions in nutrients are anticipated. Deep well injections are not expected to migrate quickly to the nearshore waters. | Cumulative water quality (WQ) benefits, similar to Alternative 2, except that there may be delays in improvements until alternative funding is required, as well as less effective implementation due to fragmented approach. |
| Bacteria, viruses, pathogens        | Potential long term and cumulative adverse impacts to human and ecological health in absence of wastewater disinfection and treatment and continued discharges of untreated or inadequately treated effluent. | Cumulative improvements in WQ in soils, canals, and nearshore waters, and possibly offshore marine waters anticipated due to combined wastewater and stormwater improvements throughout the Keys as well as the CERP.                                                                                                       |                                                                                                                                                                                                                               |
| Metals, organics                    | Potential release from aquifer matrix and discharge into nearshore environment via SGD due to injected freshwater effluent. However, no tracer studies available for evaluation..                             | Unknown, but potential release from aquifer matrix due to interaction of injected freshwater effluent with saline aquifer and subsequent discharge into nearshore environment is possible.                                                                                                                                  |                                                                                                                                                                                                                               |
| Overall risk to human health        | No USDWs, therefore no risk to potable water supplies. However, cumulative adverse impacts to soils, canals, and nearshore waters. Potential non-compliance with 2010 treatment standards.                    | No USDWs present. Also, proper siting, construction, and operation restrict fluid movement and physically isolate potential stressors, In all cases, the risk would be further reduced with disinfection and treatment to AWT standards.                                                                                    |                                                                                                                                                                                                                               |
| Habitat and Protected Species       |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                               |
| Protected species                   | Continued cumulative decrease in habitat for protected species anticipated due to habitat loss and fragmentation, within constraints of county regulations.                                                   | Cumulative loss of habitat associated with construction of projects, although minor. Coordination with federal, state, and local agencies will ensure avoidance, minimization, and mitigation.                                                                                                                              | Cumulative habitat loss, as in Alternative 2, but impacts greater when compared with other alternatives due to less centralization, greater habitat fragmentation.                                                            |
| Hardwood Hammock                    | Continued cumulative loss and fragmentation of hammock under existing county regulation (20 percent clearing of properties permitted with replacement of trees and removal of non-native species).            | Short term cumulative reduction in amount of hardwood hammock, however, conservation areas will decrease fragmentation and guard against future losses that may occur, consistent with county regulations.                                                                                                                  |                                                                                                                                                                                                                               |
| Growth and Development Requirements |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                               |
| Land Use                            | Existing land uses may be inconsistent with future conservation areas and may be incompatible with adjacent resource protection efforts.                                                                      | Cumulative increase in conservation lands, consistent with future land uses. Proposed projects are outside existing conservation areas, e.g. CARL and CBRS units, therefore adverse impacts to these lands are not anticipated. No cumulative impacts in combination with CERP, Comprehensive Plans.                        | Cumulative increases in development and impervious surfaces, similar to other alternatives, consistent with ROGO. Multiple projects could result in                                                                           |

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| Issue                   | No Action: No Federal Funding for FKWQIP                                                                                                                                                                          | Proposed Action/ Alternative 2: Implementation of FKWQIP                                                                                                                                                                                                                                                                                                                      | Alternative 3: Alternative Funding Sources                                                                                                                                         |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Future Development      | New development would remain limited by existing ROGOs. Existing residences and businesses would continue to operate without centralized WWTFs. Would not comply with 2010 Treatment Standards.                   | Consistent with Monroe County ROGO and Floodplain Ordinance. Would facilitate planned growth, but would not induce growth and no specific future development activities are currently identified that would not proceed without the proposed project.                                                                                                                         |                                                                                                                                                                                    |
| Water Use               | No impacts to potable water supplies. Little change in number of EDUs to be treated anticipated.                                                                                                                  | No impacts to potable water supplies. Changes in land use, e.g. from trailer park to multi-family residential, may change EDU volumes and improve connection/treatment efficiency.                                                                                                                                                                                            |                                                                                                                                                                                    |
| Impervious surfaces     | Continued cumulative increase in impervious surfaces, as permitted under County regulations, and commensurate nutrient and pathogen loadings to canals, surface waters, and shallow aquifer.                      | Cumulative increases in impervious surfaces, as permitted under County regulations. However, cumulative improvements in treatment of associated stormwater runoff anticipated.                                                                                                                                                                                                |                                                                                                                                                                                    |
| Cultural Resources      | No state and federal coordination required and disturbance and/or removal of cultural resources during construction and development activities could occur.                                                       | Increased protection due to compliance with state and federal agencies during construction and development activities.                                                                                                                                                                                                                                                        |                                                                                                                                                                                    |
| Tourism Economy         |                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                    |
| Recreation              | Continued health advisories and beach closings, and subsequent decreases in beach visitors, potential for adverse cumulative impacts to related economy. Loss of recreational opportunities under some scenarios. | Cumulative improvements to tourism and related economy due to reduced numbers of health advisories and beach closings. Improved fisheries. Cumulative effects of strong tourism on the Keys economy would be positive, with a commensurate increase in demand for goods and services.                                                                                         | Similar to Alternative 2, with potential delays until funding is acquired.                                                                                                         |
| Environmental Justice   |                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                    |
| Minority and Low Income | No impacts beyond those presently occurring.                                                                                                                                                                      | Cumulative WQ improvements would benefit all demographics. Cost may pose economic hardships in some municipalities and, to help local municipalities address low income and fixed income issues, approaches have been proposed to assist with the capital costs associated with 2010 treatment standards compliance. Cost may pose economic hardships in some municipalities. | Overall impacts to employment, income, population and housing would be minor. Short-term construction gains would be greater due to larger number of facilities being constructed. |
| Economy                 | Short-term economic gains from construction activities. Long-term gains dependant on intensity of development.                                                                                                    | Both short-term and long-term beneficial economic effects would be expected from project construction, although minor.                                                                                                                                                                                                                                                        |                                                                                                                                                                                    |

### 4.19 Irreversible and Irretrievable Commitment of Natural and Depletable Resources

Construction of the Key Largo project may irreversibly impact 2.6 acres of hardwood hammock that would, however, be mitigated through restoration actions described previously. The proposed facility is necessary to address nutrient and other pollutant loading to the nearshore waters of the Keys and improve water quality in the Sanctuary.

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Resources committed as a result of the proposed projects would include local, state, and federal funding to purchase lands and labor as well as energy and project materials to build, operate, and maintain each individual wastewater or stormwater improvement project.

### 4.20 Unavoidable Adverse Environmental Impacts

The Key Largo WWTF would be constructed on approximately 2.6 acres of a 23 acre parcel owned by the KLWTD. Temporary increases in turbidity of local waters are expected due to construction of wastewater treatment improvement projects. Fugitive dust from vehicle traffic and earth moving would be unavoidable but temporary and short-term in nature. Temporary disruption of soils is expected from the construction of sewer systems and clearing and grubbing of new WWTF and VPS sites. Unavoidable adverse environmental impacts would also include the loss of the existing habitat in the footprint of the WWTF. Mitigation for these impacts is addressed in Section 4.5.

No historic or archeological sites are documented to occur on the proposed WWTF site. The protection of potentially occurring cultural, archaeological, and historical resources is ensured via major federal laws including the NHPA, ARPA, NAGPRA, and AIRFA of 1978. In addition, the SHPO, relevant tribal historic preservation officers, and if necessary, the Advisory Council on Historic Preservation, would review and comment on a *Proposed Action*.

### 4.21 Indirect Effects

Substantial environmental benefits are anticipated due to indirect effects of the proposed project on physical, human, and biological environments, primarily due to improved water quality in nearshore waters of the Sanctuary. The only identified negative indirect consequence of program implementation is increased potential growth as a result of constructing centralized sewer and wastewater treatment systems. However, a number of local ordinances regulate growth, both for private residences and new businesses. Advocates for property rights are very active in the Keys and support continued growth and development of private property. Changes to the rate of growth and building permit allocation system are at the discretion of the Monroe County Board of County Commissioners (BOCC) and the FDCA.

### 4.22 Compatibility with Federal, State and Local Objectives

As a result of declining nearshore water quality in the Keys, a number of federal, state, and local laws and regulations have been implemented to improve wastewater management, monitor water quality, assist in financing water quality improvements, and establish new water quality monitoring standards. In particular, the Monroe County 2010 Comprehensive Plan, as well as Florida EO 98-309 and F.A.C. 99-395, mandate that nutrient loading levels be reduced in the marine ecosystem of the Keys by the year 2010. Specific actions include eliminating cesspools, failing septic systems, and other substandard on-site sewage systems as well as requiring all wastewater discharge be treated to Florida Statutory Treatment Standards. In response to the mandated water quality improvements, a number of master plans have been prepared by Monroe County and municipalities within Monroe County and these have been compiled into the Master List of Projects provided in Appendix C of the PEIS.

The proposed project is part of the FKWQIP and therefore directly supports federal, state, and local objectives for improvement of water quality in the Keys. The program is a direct result of the Act of 2001 that directed the USEPA and the state of Florida to develop a water quality protection plan for the Sanctuary.

### 4.23 Conflicts and Controversy

Controversial issues associated with FKWQIP are the cost of program implementation, the means of recovering initial capital investment, and the means of generating revenues to support maintenance and operational activities. New urban development in the Keys is limited by the ROGO, consequently the number of new users would increase too slowly to share the cost of new and improved wastewater infrastructure. A significant portion of the population in the Keys is classified as low-income and/or fixed income. Many of the typical 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 new treatment systems or connecting to a new public sewer system.

Some users may be subject to the cost of immediate replacement of individual systems as well as future sewer connections. Users with cesspools or septic tanks may be required to replace existing systems with an OWNRS before a public sewer system can be made available to their neighborhood. However, once a public sewer system is available, the user would be required to connect to the public system, adding additional costs to the user. Under this scenario, the user would be required to pay for both an OWNRS and for connection to the sewer system.

The disposal of wastewater effluent into the groundwater through deep well injection and the potential for groundwater contamination is of concern to the public. Most wastewater in the service area remains untreated or inadequately treated. Disinfecting and treating the effluent to AWT standards and disposing of it via deep injection wells is an acceptable alternative.



*The potential for groundwater contamination through deep well injection is of concern to the public. Disinfecting and treating the effluent to AWT standards and disposing of it via deep injection wells is an acceptable alternative.*

FDOH records indicate 1,081 permitted septic tanks in the service area. Wastewater from single-family residences not treated by these FDEP or FDOH permitted systems is discharged to unpermitted septic systems or cesspools (CH<sub>2</sub>MHill 1998). A review of aerial photography indicates approximately 4,500 developed lots with on site systems disposal (OSDS), and the Water Quality Protection Program Phase II Report for the Sanctuary estimates as many as 3,400 unpermitted OSDS in the service area (CH<sub>2</sub>MHill 1998). Implementation of the improved wastewater treatment technologies would reduce the TN, TP, and TSS loads by 88, 80, and 77 percent, respectively (FKCCS 2004), substantially decreasing loads into the groundwater.

Another prevailing issue, primarily within the scientific community, is whether the improvement of wastewater treatment and the installation of centralized sewers would improve the health of the coral reef within the Sanctuary. Conflicting scientific evidence would seem to indicate that

## 4.0 Environmental Consequences

improving nearshore water quality would, at a minimum, have a positive, albeit indirect, impact on the coral reef. Excessive nutrient loading in nearshore waters of the Sanctuary can only exacerbate historic problems related to coral reef health. Implementing wastewater treatment projects would alleviate the excessive nutrient loading to estuarine and marine habitats in the Sanctuary to the greatest extent feasible.

### 4.24 Uncertain, Unique, or Unknown Risks

The Act (2001) was passed with an authorization of up to \$100 million to implement the program. To date, however, limited funding has been appropriated for program implementation. Without Congressional appropriation or identification of other funding sources, water quality degradation would continue within the Sanctuary and the Keys would not meet state mandated statutory effluent standards for wastewater treatment systems. Without program implementation, the number of health advisories in beaches and canals in the Keys can be expected to increase. Local municipalities must also identify how they plan to raise the necessary funding to meet the cost requirements (i.e. the 35 percent match required for the non-federal sponsor).

### 4.25 Energy Commitments and Conservation Potential

Implementation of the *Proposed Action* would result in the expenditure of energy resources to construct treatment facilities, pump stations, and central sewers. These energy resources would include fuel for construction vehicles and equipment. Once the facilities are built and placed into operation, there would be an increase in energy demands to operate the treatment and pump stations. Energy available within the service area is adequate to accommodate the minimal increase in energy demand required for the *Proposed Action*. Conservation potential for any of the alternatives would be minimal.

### 4.26 Relationship between Short-Term Uses and Long-Term Productivity

While water quality improvements in the Sanctuary are anticipated as a result of the proposed project, short-term, or localized, adverse impacts would undoubtedly occur. For example, the construction of centralized sewer systems throughout the Keys would disrupt local traffic conditions. These construction activities would be sequenced to minimize traffic congestion.

### 4.27 Environmental Commitments

Habitat and protected species surveys have been conducted on the proposed WWTF site and are addressed under Sections 4.6 and 4.7 in this document. Appropriate mitigation measures would be implemented to minimize adverse effects.

### 4.28 Compliance with Environmental Requirements

This section of the Draft EA addresses compliance with applicable laws and regulations under the *Proposed Action*. All environmental regulatory requirements are being addressed as part of

this NEPA documentation, as described in individual sections pertaining to protected species, habitats, wastewater treatment, and other relevant issues.

**National Environmental Policy Act of 1969.** A scoping letter for the Key Largo WWTF was mailed to federal, state, and local agencies; Native American Tribes; private organizations and interested parties to solicit their views, comments, and information about resources, study objectives, alternatives, and important features within the study area by letter dated December 14, 2004. Comments received were reviewed and incorporated in project planning. Early identification of issues was conducted as part of the FKWQIP, of which the Key Largo WWTF was a component. Scoping, a Notice of Intent to prepare a draft Programmatic EIS, and a draft and final PEIS were all released for the FKWQIP between September 2002 and September 2004.

Environmental information on the Key Largo WWTF project has been compiled and an Environmental Assessment has been prepared and released for public and agency review. The project is in compliance with the National Environmental Policy Act.

**Endangered Species Act of 1973.** Coordination under Section 7 of the ESA will occur during the NEPA review of the draft EA. The draft EA will constitute the Corps Biological Assessment and Section 4.6 addresses the effects to threatened and endangered species. Section 7 coordination will be concluded prior to construction. The project will be in compliance with the Act.

**Fish and Wildlife Coordination Act (FWCA) of 1958.** The FKWQIP PEIS has been coordinated with the USFWS and the protection of sensitive ecological resources, federal land resources, protected species and critical habitat have been addressed in Sections 3.5, 3.6, 4.5, and 4.6 of this Draft EA. Coordination under the FWCA will be conducted during the NEPA review of the draft EA and will be concluded prior to construction. This project is in full compliance with the Act.

**National Historic Preservation Act of 1966 (Inter Alia) (PL 89-665, the Archeology and Historic Preservation Act [PL 93-291] and Executive Order 11593).** A Phase I Cultural Resources survey was completed for the proposed WWTF site and is addressed in Sections 3.9 and 4.9 of this Draft EA. Consultation with the SHPO is ongoing and will be completed prior to construction.

**Clean Water Act of 1972.** As required, the non-federal sponsor would apply for a 404 permit with the Corps work occurring in wetlands. All state water quality standards will be met. The project is in compliance with this Act. However, there are no wetlands on the proposed facility site.

**Clean Air Act of 1972.** The service area is in a Clean Air Act compliance area. No air quality permits would be required for this project. To comply with Section 309 of the Act, this Draft EA will be reviewed by concerned agencies including the USEPA, other stakeholder agencies, and the public.

## **4.0 Environmental Consequences**

**Coastal Zone Management Act of 1972.** A federal consistency determination in accordance with 15 CFR 930 Subpart C has been included in this Draft EA as Appendix A. The consistency review, delegated to the state of Florida, will be performed during the coordination of this Draft EA.

**Farmland Protection Policy Act of 1981.** Implementation of the proposed project would not impact any prime or unique farmland. The proposed project is in compliance with the Act.

**Wild and Scenic River Act of 1968.** No designated wild and scenic river reaches would be affected by project related activities.

**Marine Mammal Protection Act of 1972.** The West Indian manatee and other marine mammals do occur in the nearshore waters near the proposed WWTF site. No construction work would be conducted in the water. Therefore, project related activities would not result in take as defined by Marine Mammal Protection Act.

**Estuary Protection Act of 1968.** Implementation of the proposed WWTF and associated infrastructure would decrease or eliminate nutrient and contaminant seepage from cesspools and septic systems within the service area and consequently decrease pollutant loadings into adjacent estuarine habitats. This project is in full compliance with the Act.

**Fishery Conservation and Management Act of 1976.** The proposed project has been coordinated with the National Marine Fisheries Service and is in compliance with the Act.

**Submerged Lands Act of 1953.** The proposed project would not occur on submerged lands of the state of Florida. This Act is not applicable.

**Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990.** A review of the Coastal Barrier Resource System maps show that a small part of two designated CBRS units (FL-35 and FL-37) lie within the Key Largo service area. Construction of the proposed WWTF and all of the infrastructure and transmission lines needed to convey wastewater to the facility will occur outside the boundaries of these CBRS units. The project will be in compliance with these Acts.

**Rivers and Harbors Act of 1899.** The proposed work would not obstruct navigable waters of the United States. The proposed project is in full compliance.

**Anadromous Fish Conservation Act.** Anadromous fish species would not be affected. The project has been coordinated with the National Marine Fisheries Service and is in compliance with the Act.

**Migratory Bird Treaty Act and Migratory Bird Conservation Act.** Migratory birds do not currently use the proposed WWTF site and therefore would not be affected by proposed activities. The project is in compliance with these Acts.

**Marine Protection, Research and Sanctuaries Act.** The term "dumping" as defined in the Act (33 U.S.C. 1402[f]) does not apply to this project. Therefore, the Marine Protection, Research and Sanctuaries Act does not apply to this project.

**Resource Conservation and Recovery Act of 1976.** A preliminary records search completed for the service area during the preparation of this Draft EA found limited potential for hazardous, toxic or radioactive waste substances to be encountered during implementation of the proposed project. Hazardous waste for this project is addressed under Sections 3.16 and 4.16 of this Draft EA. The project is in compliance.

**Toxic Substances Control Act of 1976.** No substances regulated under this Act and related laws have been identified in project lands. The project is in compliance.

**Magnuson-Stevens Fishery Conservation and Management Act.** No adverse effects to Essential Fish Habitat (EFH) are anticipated by implementing the proposed project. Implementation of the proposed WWTF and associated infrastructure would decrease or eliminate nutrient and contaminant seepage from cesspools and septic systems within the service area and consequently decrease pollutant loadings into adjacent marine and estuarine habitats, therefore benefiting EFH. This Draft EA will be coordinated with the NMFS for concurrence. The project is in full coordination of the Act.

**E.O. 11990, Protection of Wetlands.** There are no wetlands on the proposed WWTF site. Overall, implementation of the proposed WWTF and associated infrastructure is anticipated to benefit wetland habitat throughout the service area by decreasing or eliminating nutrient and contaminant seepage from cesspools and septic systems. This project is in compliance with the goals of this Executive Order.

**E.O. 11988, Flood Plain Management.** The project has been evaluated in accordance with this Executive Order. This project is in compliance.

**E.O. 12898, Environmental Justice.** Executive Order 12898 requires the Federal Government to achieve environmental justice by identifying and addressing disproportionately high adverse effects of its activities on minority or low-income populations, and by involving potentially affected minorities in the public coordination process. Environmental justice is specifically addressed in Sections 3.13 and 4.13 of this Draft EA. The project is in compliance with the Executive Order.

**E.O. 13089, Coral Reef Protection.** This Executive Order applies to coastal projects that might directly or indirectly impact coral reefs. The Executive Order refers to "those species, habitats, and other natural resources associated with coral reefs." This project will not adversely impact coral reefs or coral reef resources and may, in fact, benefit these resources by improved water quality of the nearshore waters adjacent to the service area. The project complies with this Executive Order.

**E.O. 13112, Invasive Species.** Much of the vegetation within the WWTF footprint consists of non-native invasive species, which will be removed within the immediate footprint as a

## **4.0 Environmental Consequences**

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consequence of construction of the impoundment. Construction equipment will use standard measures to avoid the spread of invasive species. This project will not authorize, fund, or carry out any action that might spread or introduce invasive species. Therefore, this project complies with the goals of this Executive Order.

## 5.0 Public Involvement

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The topics of wastewater degradation in the Sanctuary and the need to reduce nutrient loading in the nearshore waters of the Keys are of particular interest to regulatory agencies and citizens alike. For this reason, public participation throughout the previously prepared PEIS included actions by the Corps to accomplish the goals listed below.

- Comply with the intent of NEPA and other applicable statutes
- Solicit and address public and agency opinions during this process
- Document the process and characterize the project accurately

### 5.1 Public Involvement for Master Plans

As described in Chapter 1, the Corps did not undertake planning activities to delineate alternatives in this Draft EA, but rather relied upon results of planning initiatives of Monroe County municipalities. Thus, it is important to recognize the extensive public outreach and involvement associated with these efforts.

Public involvement was an integral component of the Monroe County wastewater planning process and the development of the MCSWMP. Public involvement activities conducted as part of this master plan included over 30 meetings with key stakeholders and the public, hosted by the FKAA and the County between 1998 and 2000. Public forums in the Upper, Middle, and Lower Keys were held to allow key stakeholders and interested citizens of Monroe County the opportunity to participate in, 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 were implemented as part of the Master Plan development process and are outlined below.

- 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 and evaluation processes, identified key issues to be addressed, and defined the elements of the wastewater master plan guiding Monroe County to achieve compliance with the Florida Statutory Treatment Standards of 2010. Comments provided by participants generally expressed concerns regarding:

- Implementation costs
- Extent of improved water quality
- Implementation approaches
- Alternative wastewater conveyance/treatment technologies

- Measure of project performance
- County responsiveness to public input

### 5.2 Public Involvement for PEIS

Applicable regulatory agencies, affected stakeholders, and interested members of the Keys community have been provided opportunities to participate in the decision-making process during the development of this Draft EA. The Notice of Intent (NOI), scoping letter, and the responses to the scoping process can be found in Appendix G 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 are listed below.

- 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

### 5.3 Scoping and Public Involvement for Key Largo EA

A scoping letter was issued to various stakeholders and interested parties on December 14 2004, and comments were received through January 14, 2005. The scoping letter and pertinent correspondence are included in Appendix B of this Draft EA.

Additional means of public outreach are planned following issuance of the Draft EA. In accordance with Corps procedures and NEPA public notification requirements and made available at local libraries for a 45-day comment period. Public comments submitted to the Corps during this time will be reviewed and addressed, as appropriate.

## 6.0 Conclusion

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This Draft EA provides the basis for examining and evaluating potential environmental impacts of the proposed Key Largo regional WWTF on the physical, biological, and human environment in the Sanctuary. Three project alternatives were evaluated as part of this Draft EA, premised on the need to implement water quality improvement projects that would reduce nutrient loadings to nearshore waters and result in commensurate improvements in water quality of the Sanctuary. The three alternatives are briefly summarized below.

- **Alternative 1: No Action.** No state or federal agency would provide funding to the KLWTD for implementation of wastewater treatment improvement projects to address state mandates to meet wastewater treatment standards. Public entities would not construct or operate the WWTF. Key Largo residents, communities, and businesses would be responsible for addressing state mandates aimed at improving water quality in the Sanctuary.
- **Alternative 2: Proposed Action.** Provide federal financial and technical assistance from the Corps, as part of the FKWQIP to develop and implement a regional wastewater collection and treatment system for Key Largo that would address mandatory state wastewater treatment standards.
- **Alternative 3: Pursue other Sources of Funding for Project Implementation.** In the absence of federal funding from the FKWQIP through the Corps, alternative funding sources would be pursued to implement projects for Key Largo that would address state mandates and improve water quality in the Sanctuary. Sources of monies may include other federal and state funding mechanisms.

The preferred alternative, based on an analysis of potential environmental impacts associated with each alternative discussed in detail in Chapter 4, is the *Proposed Action* (Alternative 2), under which a regional WWTF would be constructed to serve the Key Largo service area. The WWTF is designed to reduce nutrient loading to nearshore waters and subsequently improve water quality in the Sanctuary.

Importantly, the Corps' previously developed FKCCS model provided a means of quantifying the effects of wastewater improvement projects, specifically the reductions in nutrient loads, in the Key Largo service area. To apply the FKCCS model specifically for FKWQIP projects, an independent contractor from the team who originally developed the FKCCS model coordinated with and assisted the South Florida Regional Planning Council in running the model specifically for this project. Improved treatment technology is anticipated to reduce TN, TP, and TSS loads by an estimated 88, 80, and 77 percent, respectively. The use of federal funds to assist in the construction of the WWTF is the best means to reduce this nutrient source and protect the Sanctuary.

Most of the residents and businesses in Key Largo are connected to septic tanks and outdated on-site package plants that, if not properly operated, can result in harmful bacteria and nutrient inputs to nearshore waters. Under the *No Action* alternative, wastewater inputs and commensurate water quality degradation of the Sanctuary would continue. As a result,

## 6.0 Conclusion

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businesses, property owners, and residents of Key Largo may risk non-compliance with federal and state regulatory treatment standards for wastewater. Under *Alternative Funding Sources*, federal funding would be unavailable and the KLWTD would pursue alternate funding for water quality improvement projects. Consequently, project implementation, management, and expenditures would be less effective.

The *Proposed Action* addressed by this Draft EA is construction of a new regional WWTF that includes approximately 2.25 mgd capacity and would serve an existing 13,602 residential units. The system would include sewer force mains and collection lines along eight miles of U.S. 1, approximately 15 VPSs or conventional pump stations in existing road ROWs or purchased parcels, and a vacuum main to transport wastewater to the WWTF. Effluent would be disinfected and treated to AWT standards prior to injection via two deep injections wells. The proposed facility is anticipated to accomplish the following goals and objectives.

- Meet objectives of the Act
- Address regional water quality issues
- Achieve reductions in nutrient loadings and commensurate improvement in water quality in the nearshore waters of the Sanctuary associated with the Key Largo service area
- Comply with federal and state regulatory water quality treatment standards in a timely manner

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## 8.0 List of Preparers

The people primarily responsible for the preparation of this PEIS are listed below:

| <b>U.S. Army Corps of Engineers</b>              |                                       |                                                  |                                                    |
|--------------------------------------------------|---------------------------------------|--------------------------------------------------|----------------------------------------------------|
| Shelley Trulock,<br>Project Manager              | 10 years<br>Water Resources           | B.S. Architectural<br>Design and<br>Construction | Project Manager<br>Jacksonville District,<br>USACE |
| Michael Dupes                                    | 30 years<br>Environmental<br>Planning | B.S. Biology                                     | Senior Biologist                                   |
| <b>South Florida Water Management District</b>   |                                       |                                                  |                                                    |
| Cecelia Weaver,<br>Environmental Scientist       | 12 years<br>Ecology                   | B.S. Biology                                     | Project Manager,<br>SFWMD                          |
| <b>Everglades Partners Joint Venture (EPJV)</b>  |                                       |                                                  |                                                    |
| Katherine Anamisis,<br>Environmental Planner     | 8 years<br>Environmental<br>Planning  | M.S. Environmental<br>Planning                   | GIS and<br>Environmental<br>Planning               |
| Kim Fitzgibbons,<br>Senior Scientist             | 8 years<br>Environmental<br>Planning  | M.S. Environmental<br>Planning                   | Land Use and Planning                              |
| Bill Hutchinson,<br>Senior Environmental Planner | 30 years<br>Environmental<br>Planning | M.A. Economics                                   | Environmental<br>Planning, Economic<br>Analysis    |
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| Debra Childs Woithe,<br>Environmental Scientist  | 10 years<br>Ecology                   | M.S. Biology                                     | FKCCS Model                                        |
| Beth Zimmer,<br>Environmental Scientist          | 4 years<br>Ecology                    | B.S. Biology                                     | Environmental<br>Sciences                          |



## 9.0 Glossary of Terms

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**Adsorption.** Adhesion of molecules of gases or of ions or molecules to the surfaces of solid bodies with which they are in contact.

**Advanced Wastewater Treatment (AWT).** Also known as **tertiary treatment**, AWT follows Secondary Treatment. Removal of soluble nitrogen and phosphorus compounds is a common application of AWT. AWT may involve chemical addition, filtration, or activated carbon processes. As referred to in the MCSWMP, effluent treated to AWT standards meets 5 mg/L BOD, 5 mg/L TSS, 3 mg/L TN, and 1 mg/L TP.

**Anthropogenic.** Relating to humans and their impact on the natural environment.

**Benthic Algae.** Algae relating to the bottom of a water body.

**Best Available Technology (BAT).** The level to which wastewater treatment systems are designed. As referred to in the MCSWMP effluent treated to BAT standards that 10 mg/L BOD, 10 mg/L TSS, 10 mg/L TN, and 1 mg/L TP.

**Best Management Practices (BMP).** A set of minimum practices developed and implemented to improve the physical, chemical, and biological integrity of the nation's waters. Examples include installation of silt fencing at a construction site to prevent eroded soils from entering a nearby waterway.

**Biochemical Oxygen Demand/Biological Oxygen Demand (BOD).** The oxygen that is needed and used by aerobic organisms living in water that is rich in organic material (such as waters polluted by sewage).

**Boulder Zone.** A very permeable, cavernous zone in the lower Floridian Aquifer System that is about 2800 to 3300 feet below ground surface.

**Calcareous.** Containing calcium carbonate. As applied to rock, the predominant percentage of the rock is calcium carbonate.

**Cesspool/Cesspit.** An unregulated and unpermitted effluent disposal method that consists of an excavated area (100 to 1000 cubic feet, to eight feet deep) into the ground surface. The area is covered with a slab of concrete, and untreated sewage is then deposited into the pit. Liquid wastes are discharged through the porous limestone formations and ultimately to the nearshore areas. Solid wastes are retained in the pit, which is often abandoned after it becomes full.

**Class B Lime Stabilization.** The process used to reduce harmful bacteria and odors in sludge or biosolids. Lime is added to untreated sludge in sufficient quantity to raise the pH to 12 or higher. The high pH creates an environment that is not conducive to the survival of microorganisms. Class B Lime Stabilization refers to the USEPA classification for the safe treatment, beneficial use, and disposal of biosolids that contain pathogen concentrations levels low enough for some beneficial uses, such as land application with restrictions.

## 9.0 Glossary of Terms

**Class I Injection Well.** The first of five well classifications developed by the U.S. Environmental Protection Agency under their underground disposal control program to categorize the injection of various types of liquid wastes. Class I wells are typically used by hazardous waste generators and operators, as well as industrial and municipal disposal systems, to inject fluids into a geologic formation that is beneath the lower-most formation containing an underground source of drinking water within one quarter mile of the well bore. A Class I Well must meet siting, construction, operation, and maintenance criteria specific to this well class, as established by the U.S. Environmental Protection Agency and the Florida State regulating agency.

**Class V Injection Well.** Similar to a Class I Injection Well, the U.S. Environmental Protection Agency established this well category for a broad range of specialty applications to dispose liquid wastes, which are not categorized under the other four injection well classes. For example, a Class V well could be used to drain stormwater runoff into an aquifer.

**Cluster System (of OWNRS).** An OWNRS that serves multiple homes. Clusters can be composed of small groups (such as two homes), which share one treatment system, or of large groups (50 homes), which use low-pressure sewers to connect the cluster to a centralized OWNRS.

**Effluent.** The waste stream from a wastewater treatment system collection unit.

**Enteric.** Relating to the intestines. Over 100 different human enteric pathogens, including viruses, parasites, and bacteria may be found in municipal wastewater and surface runoff.

**Enterococci.** A bacterium whose presence indicates Fecal Coliform.

**Environmental Impact Statement (EIS).** A public document prepared pursuant to NEPA containing a detailed analysis and evaluation of all the impacts of a proposed major federal action and all its reasonable alternatives that has the potential to significantly affect the quality of the human environment. This is a more rigorous analysis than an Environmental Assessment and provides for formal public involvement.

**Epiphyte.** A plant growing on another plant but getting little nutrition from its host.

**Equivalent Dwelling Unit (EDU).** A household of 2.3 persons generating about 168 gallons of effluent per day.

**Eutrophication.** The process by which a body of water becomes nutrient -rich and oxygen-deficient.

**Executive Order (EO).** A Presidential mandate that directs a federal agency to consider certain issues as an agency plans their actions. For example, former President Jimmy Carter directed all agencies to "minimize the destruction and loss or degradation of wetlands" under EO 11990, "Protection of Wetlands."

**Facility Siting.** The process of determining the best location for a treatment facility. The siting decision model resembles an organization chart, and is broken into three levels. At the top level is the principal project objective of maximizing facility siting benefits. The second level lists a series of key issues that were identified by the stakeholder groups and the third level presents a series of performance criteria that measure how well a specific alternative will accomplish program objectives.

**Fecal Coliform.** A bacterium used as an indicator of total sewage biological contamination.

**Florida Statutory Treatment Standards.** Quality standards for discharged wastewater effluent as promulgated in F.A.C. 99-395. Treated effluent generated by sewage facilities with design capacities greater than 100,000 gpd must meet 5 mg/L TP. Sewage facilities with design capacities less than 100,000 gpd must meet 10 mg/L BOD, 10 mg/L TSS, 10 mg/L TN, and 1 mg/L TP. On-site sewage treatment and disposal systems must meet 10 mg/L BOD, 10 mg/L TSS, 10 mg/L TN, and 1 mg/L TP.

**Gravity Sewers.** Gravity sewers are sewer lines that "run with the lay of the land" and may be variable-grade effluent sewers (VGES), minimum grade effluent sewers (MGES), or septic tank effluent pump (STEP) sewers. The pipe system works like a sink trap through the low sections. VGES is designed to assure that the hydraulic grade line is below all septic tank outlets by increasing pipe sizes as required to lower the hydraulic grade line. MGES sewer lines generally run constantly downhill, but with no solids to transport, no set minimum velocity must be maintained and the line is much easier to lay than conventional gravity sewers. Septic tank outlets must be above the hydraulic grade line for both VGES and MGES. STEP sewers have septic tank outlets below the hydraulic grade line, so a pump is required to move effluent through the sewers. Since wastewater is pumped, line grade is irrelevant, making STEP sewers very easy to lay. The system may be designed with a pump tank at the outlet of each septic tank, or flow from several septic tanks may be routed through effluent gravity sewers to a collective pump tank.

**Hydraulic Communication.** Water movement from one area to another (such as from the Boulder Zone to the ocean).

**Hydraulic Conductivity.** An aquifer's water transmission rate; similar to transmissivity.

**Hydraulic Head.** The driving force influencing groundwater movement, water's total energy at a given location.

**Injection Well (shallow and deep).** An underground well designed to pump treated effluent (or other materials) into shallow (e.g., 90 feet) or deep (e.g., 2,100 feet) geologic locations. Injection wells are designed to account for physical and chemical characteristics of the injection matrix, and require monitoring to ensure mechanical integrity of the well.

**Lithologic.** A rock's descriptive characteristics, including color, structure, mineral composition, and grain size.

## 9.0 Glossary of Terms

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**Median Family Income (MFI).** As defined by the U.S. Census Bureau, refers to the income of a family where a family is defined as two or more people (one of whom is the householder) related by birth, marriage, or adoption residing in the same housing unit.

**Median Household Income (MHI).** As defined by the U.S. Census Bureau, refers to the income of a household where a household is defined as all people who occupy a housing unit regardless of relationship. A household may consist of a person living alone or multiple unrelated individuals or families living together.

**Microkarst.** Karst features on the scale of millimeters. Karst is a type of landform developed over limestone, dolomite, or gypsum through solution of the rock, typified by closed depressions, caves, and underground drainages.

**National Environmental Policy Act (NEPA).** A Congressional act established in 1969 that directs all federal agencies to consider the environmental effects of their programs, projects, and funding decisions. NEPA considers the effects on all resources of natural and built environments and includes compliance requirements with all other applicable federal laws, such as the Endangered Species Act and the Environmental Justice Executive Order.

**Nearshore Waters.** Technically, nearshore waters include the area between mean low tide and the seaward extent of the longshore bar and trough topography; it is approximately equal to the maximum width of the breaker zone. However, in the Keys and most of Florida, nearshore waters are the narrow band of waters that form the mixing zone of freshwater terrestrial runoff and saline ocean waters. The Carrying Capacity Model uses a width of 500 meters, others have defined nearshore as < 1 km from shore.

**Norwalk Virus.** Norwalk viruses (and related caliciviruses) are important causes of sporadic and epidemic gastrointestinal disease in the United States, and have typically been associated with eating contaminated shellfish. Water and ice are other sources of infection. Symptoms of Norwalk virus infection include nausea, vomiting, diarrhea, headache, low-grade fever, and abdominal cramps. Persons with this infection usually recover within 2-3 days without serious or long-term health effects.

**Offshore Waters.** Offshore waters include the generally flat area extending from the seaward edge of the breaker zone to the edge of the continental shelf (Davis 1972). However, in the Keys, offshore waters extend beyond the nearshore waters where mixing of freshwater and saline waters is not significant.

**Oligotrophic.** A body of water that is nutrient -poor.

**On-Site Wastewater Nutrient Reduction System (OWNRS).** An on-site wastewater treatment system that meets a minimum level of BAT treatment, or 10 mg/L BOD, 10 mg/L TSS, 10 mg/L TN, and 1 mg/L TP.

**On-Site Wastewater Treatment System (OWTS).** Any of several wastewater treatment types that are located on the property they serve. Examples include septic systems, cesspools, aerobic treatment units (ATU), and On-Site Wastewater Nutrient Reduction Systems (OWNRS).

**Oolites.** Rocks consisting mostly of small, spherical calcium carbonate grains.

**Operation and Maintenance (O&M) Costs.** These include the monthly or annual costs incurred by service recipients for long-term operation and maintenance of the wastewater management system.

**Permeability.** The capacity of porous material to transmit water or other fluid. In bedded sediments, horizontal permeability is measured parallel to the bedding direction, and vertical permeability is measured transverse to the bedding.

**Phytoplankton.** Plant plankton, which float or weakly swim, are often microscopic (e.g., many algae species), and are the primary food source in most aquatic and marine ecosystems.

**Primary Treatment.** The first level of wastewater treatment that removes solids, greases, oils and other floatable solids from the waste stream, partially clarifying the effluent. Suspended solids, dissolved organic materials, and other pollutants are not removed from the effluent.

**Programmatic Environmental Impact Statement (PEIS).** A concise public document prepared pursuant to NEPA. It contains sufficient analysis to determine the likely significance of a group of similar *Proposed Actions* (projects) and alternatives' impacts, to aid decision making. A project- and site-specific effects evaluation document supplements the PEIS, generically called a Supplemental NEPA documentation.

**Protected Species.** In this document, protected species refers to any plant or animal that has been designated as threatened or endangered, species of special concern, or who's designation as threatened or endangered is encouraged, by the federal government (under the Endangered Species Act ) or the state of Florida. The purposes of the Endangered Species Act is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve (these purposes).

**Readiness to Proceed Criteria.** These criteria were prepared to "define when a recipient is eligible to receive a percentage of their share of any federal or state appropriation for wastewater and stormwater improvements authorized under the Act of 2001." Readiness to proceed occurs when all planning (including the selection of sites and wastewater/stormwater systems to be implemented, reclaimed water evaluation, and financing) are complete. This means that sites are established as available for the intended purposes, public participation is documented, and construction (design/build/operate or design/build) or a construction contract is either executed or authorized for execution by the project sponsor's governing body.

**Scoping Issues.** "Scope" consists of the range of actions, alternatives, and impacts to be considered in an EIS. To determine the scope of an EIS, agencies shall consider 3 types of actions (connected, cumulative, and similar), three types of alternatives (*No Action*, other reasonable courses of action, and mitigation measures), and three types of impacts (direct, indirect, and cumulative).

**Secondary Treatment.** Used in concert with Primary Treatment. This second level of treatment removes dissolved organic materials and more suspended solids, however nutrients such as nitrogen and phosphorus remain in the effluent.

**Septic Tank.** An OWTS using a tank and drainfield to capture waste, separate solids from liquids, and drain liquid to adjacent soils.

**Significantly.** In the NEPA context, this term is used to describe both the context and intensity (severity) of impacts. For a detailed description of this term, see Section 1508.27 of the President's Council on Environmental Quality's regulations implementing NEPA.

**Slurry.** Mixture of coarsely ground solids and liquid.

**Specific Gravity.** Ratio of a given mass to the mass of an equal volume of water at a specified temperature.

**Stakeholder.** The stakeholder on any issue represents the parties or individuals that the expert source or sources believe are trying to shape the resolution of the issue(s) in question.

**Submarine Groundwater Discharge.** The discharge of groundwater directly into marine waters is called submarine groundwater discharge (SGD).

**Supplemental NEPA Documentation.** A generic phrase used herein for referencing the site- and project-specific NEPA document that would be prepared following issuance of a final PEIS. This document would be either an environmental assessment or environmental impact statement depending on the significance of the specific project impacts.

**System Capital Costs.** These include expenses associated with planning, designing, engineering, purchasing, building, and installing a wastewater treatment system, and its wastewater conveyance piping in public rights-of-way and selected effluent disposal method (e.g., injection wells, subsurface drip irrigation system [SDI], reuse).

**Tiering.** "Tiering" refers to the coverage of general matters in broader EISs with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared. Tiering is appropriate when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe.

**Total Nitrogen/Nitrogen (TN/N).** Nitrogen is a common element found in nature and in wastewater. Nitrogen is an essential nutrient for plants, but contributes to water body eutrophication when more abundant. "Total nitrogen" describes nitrogen in four oxidation states: organic nitrogen, ammonia nitrogen, nitrite nitrogen, and nitrate nitrogen. Removal or reduction of TN from wastewater effluent involves nitrification (where organic N and ammonia N are converted to nitrite N, which easily converts to nitrate N) and denitrification (where nitrate N is converted to nitrogen gas).

**Total Phosphorus/Phosphorus (TP/P).** Phosphorus is a natural element, however most phosphorus enters waterways via human activities (i.e., untreated wastewater or fertilizer runoff). Similar to nitrogen, phosphorus is an essential nutrient for plants, but eutrophication occurs when phosphorus is more abundant. "Total phosphorus" is in organic and inorganic forms and can occur in solution, particles, or micro-organisms (such as polyphosphates, which account for 70% of wastewater phosphorus). TP removal or reduction from wastewater effluent typically involves biological treatment (to convert P to the orthophosphate forms), which are then removed via chemical processes.

**Total Suspended Solids (TSS).** TSS are solids in water, such as silt, decaying plant and animal matter, and sewage that can be trapped by a filter. High concentrations of suspended solids can cause many problems for water body health and aquatic life. For example, high TSS can block light from reaching submerged vegetation.

**Turbidity.** A measure of the water clearness as a function of suspended sediment.

**Vacuum Sewer.** Sewage flows by gravity from homes into a collection sump. When 10 gallons (40 liters) accumulates in the sump, the vacuum interface valve located above the sump automatically opens and differential air pressure propels the sewage through the valve and into the vacuum main. - Sewage flows through the vacuum lines and into the collection tank at the vacuum station. Sewage pumps transfer the sewage from the collection tank to the WWTF or nearby gravity manhole. There are no electrical connections required at the home. Power is necessary only at the vacuum station.

**Wastewater Treatment Facility (WWTF).** An effluent collection, treatment, and disposal system that collects waste from homes and businesses, and transports collected waste through a series of sewers to a centralized treatment plant. Physical, chemical, and biological processes clarify the effluent at the WWTF so that the treated water can be safely released into the environment via water reuse, deep or shallow well injection, or other permitted methods.

**Water Quality Cold Spots.** Defined as areas where on-site systems will continue to operate. Cold Spots fall into two categories: 1) properties with unknown systems that must replace or upgrade their systems immediately with an on-site wastewater nutrient reducing system (OWNRS) by July 12, 2003 and 2) properties that currently have permits for their on-site systems and will not be required to upgrade or replace them until 2010, when all on-site systems must be upgraded or replaced with nutrient reduction OWNRS to meet the regulatory effluent limits.

**Water Quality Hot Spots.** These areas have been identified as sites of known or suspected water quality degradation, based upon workshops and discussion groups. The list was increased to 88 *hot spots* in 1996, primarily as a result of water quality issues and wastewater influences. *Hot spot* locations correspond with higher-density urban areas, representing neighborhoods and subdivisions with the poorest sewage treatment and strongest need for central sewage facilities.

**Water Reuse (or reclamation).** Treatment and management of municipal, industrial or agricultural wastewater to produce water of suitable quality for additional beneficial uses.



## **Appendix A:**

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### **Coastal Zone Management Consistency Evaluation**



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## FLORIDA COASTAL ZONE MANAGEMENT PROGRAM FEDERAL CONSISTENCY EVALUATION PROCEDURES

### Key Largo Wastewater Improvement Project

#### 1 Chapter 161, Beach and Shore Preservation.

The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Response: The proposed plans and information will be submitted to the state in compliance with this chapter. No work is proposed seaward of the mean high water line in beach areas.

#### 2 Chapters 186 and 187, State and Regional Planning.

These chapters establish the State Comprehensive Plan that sets goals that articulate a strategic vision of the State's future. Its purpose is to define in a broad sense, goals and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

Response: The proposed project has been coordinated with various Federal, State, and local agencies during the planning process. The proposed project would achieve the goals of this chapter by contributing to a long-range master plan for South Florida's water resources and supporting the continued orderly social, economic and physical growth of the region.

#### 3 Chapter 252, Disaster Preparation, Response and Mitigation.

This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: The proposed project would not jeopardize the public health, safety, or welfare in the project area. The proposed project would enhance the chapter's goals and would be consistent with the intent of this chapter.

#### 4 Chapter 253, State Lands.

This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources; near shore reefs; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

Response: The proposed project would make a positive contribution to preserving cultural, water, fish and wildlife, wetland and estuarine resources, including the Florida Keys National Marine Sanctuary, which is a unique natural resource. The proposed project would comply with the intent of this chapter.

5 Chapters 253, 259, 260, and 375, Land Acquisition.

This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Response: These chapters are not applicable to the proposed project. The property for the proposed project is designated for public utilities.

6 Chapter 258, State Parks and Aquatic Preserves.

This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Response: The *Proposed Action* does not include any activity within a state park or aquatic preserve, but would enhance environmental conditions at state parks or aquatic preserves in the region. The project is consistent with this chapter.

7 Chapter 267, Historic Preservation

This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Response: This project has been coordinated with the State Historic Preservation Officer (SHPO). An investigation of historic properties of the proposed WWTF site included an archival and literature review of the Florida Master Site File records and a Phase I site survey. No archaeological artifacts, features, or sites were discovered and no adverse impacts to resources are anticipated. If historic or archeological items are found during project work, all activities on the site would be terminated and consultation with the Corps, SHPO, and other appropriate agencies would occur to identify actions necessary to comply with NHPA Section 106 and other applicable requirements. If human remains are discovered, the Florida unmarked human burial law (F.S. Title XLVI 872.05 Unmarked Human Burials) would be implemented.

8 Chapter 288, Economic Development and Tourism

This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Response: The proposed project would achieve the goals of this chapter by contributing to a long-range master plan for South Florida's water resources, which would support economic diversification and tourism.

9 Chapters 334 and 339, Public Transportation.

This chapter authorizes the planning and development of a safe balanced and efficient transportation system.

Response: No public transportation systems would be impacted by this project.

10 Chapter 370, Saltwater Living Resources.

This chapter directs the state to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and to conduct scientific, economic, and other studies and research.

Response: This project would help improve ecological conditions in the Florida Keys National Marine Sanctuary. Based on the overall impacts of the project, the project is consistent with the goals of this chapter.

11 Chapter 372, Living Land and Freshwater Resources.

This chapter establishes the Game and Freshwater Fish Commission (now called the Florida Fish and Wildlife Conservation Commission) and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of species with densities and distributions that provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: The project will have a long-term positive effect on freshwater aquatic life or wild animal life.

12 Chapter 373, Water Resources.

This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Response: The non-federal sponsor for this project is the Key Largo Wastewater Treatment District (KLWTD). The KLWTD has coordinated with the South Florida Water Management District, which is the state agency responsible for implementing this statute, to ensure compatibility with established policies. The project is consistent with the goals of this chapter.

13 Chapter 376, Pollutant Spill Prevention and Control.

This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Response: The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be required.

14 Chapter 377, Oil and Gas Exploration and Production.

This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Response: This project does not involve exploration, drilling, or production of gas, oil or petroleum product and therefore, this chapter does not apply.

15 Chapter 380, Environmental Land and Water Management.

This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development.

Response: The proposed project would achieve the goals of this chapter by contributing to a long-range master plan for South Florida's water resources, which would support the continued orderly social, economic and physical growth of the region.

16 Chapter 388, Arthropod Control.

This chapter provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

Response: The project would not further the propagation of mosquitoes or other pest arthropods.

17 Chapter 403, Environmental Control.

This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation (now a part of the Florida Department of Environmental Protection).

Response: An Environmental Assessment addressing project impacts has been prepared and will be reviewed by the appropriate resource agencies including the Florida Department of Environmental Protection. Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. Water Quality Certification will be sought from the State prior to construction. The project complies with the intent of this chapter.

18 Chapter 582, Soil and Water Conservation.

This chapter establishes policy for the conservation of state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to

cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

Response: Project construction and implementation will include appropriate erosion control plans and measures to ensure compliance with the intent of the chapter. There are no prime farmlands in the project area.



## **Appendix B:**

### **Pertinent Correspondence**

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DEPARTMENT OF THE ARMY  
JACKSONVILLE DISTRICT CORPS OF ENGINEERS  
P.O. BOX 4970  
JACKSONVILLE, FLORIDA 32232-0019

14 DEC 2004

REPLY TO  
ATTENTION OF

Planning Division  
Environmental Branch

Mike Dupes  
State Clearinghouse  
letter attached.  
Jaunen M.

TO WHOM IT MAY CONCERN

The U.S. Army Corps of Engineers, Jacksonville District (Corps), is requesting your assistance in gathering information that will help define the issues and concerns to be addressed in a National Environmental Policy Act document. The document, a draft Environmental Assessment (EA), is being prepared for the City of Key Largo, Florida to address the construction of a regional wastewater treatment facility (WWTF) and collection system. This project is a component of the Florida Keys Water Quality Improvements Program (FKWQIP) enacted to improve the water quality within the Florida Keys National Marine Sanctuary (Sanctuary). This program is a cooperative effort between the Corps and the South Florida Water Management District (non-federal sponsor).

Under authority of Public Law 106-554, Department of Labor, Health and Human Services and Education, and Related Agencies Appropriation Act of 2001, Section 109 and Conference Report H.R. 4577, the Corps is authorized to provide technical and financial assistance to implement planning, design and construction of treatment projects designed to improve water quality in the nearshore waters of the Sanctuary. The maintenance of the fragile aquatic ecosystem of the Sanctuary is dependent on acceptable water quality. However, improvements in wastewater treatment and management practices have not kept pace with the growth of population and tourism in the Keys over the years. Research suggests that nutrients from wastewater are one of the major contributors to water quality degradation in canals and nearshore waters surrounding the Florida Keys. The primary objective of the FKWQIP is to improve wastewater treatment and associated water quality throughout the Florida Keys and meet the existing and future needs of local municipalities.

Based on readiness-to-proceed criteria established by the FKWQIP Program Development Team (PDT), a number of priority projects have qualified for federal funds to implement wastewater treatment projects. The Key Largo Wastewater Treatment District regional advanced wastewater treatment facility (AWTF) is one of the priority projects designated by the PDT and includes 13 of 45 top ranking water quality hot spots in the Keys.

Alternatives to be considered include, 1) no action, or continued reliance on inadequate wastewater treatment using septic tanks and cesspits; 2) the proposed action, which is to provide federal financial and technical assistance to develop and construct a new regional AWTF and associated vacuum pumps, injections and monitoring wells, and

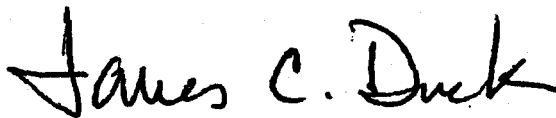
collection system to serve nearly 4,500 residences and businesses; or 3) secure alternate funding for the construction of the regional WWTF and associated infrastructure.

The new regional AWTF system will serve residents and commercial businesses located within the Key Largo Wastewater Treatment District in the Upper Keys. The site for the proposed AWTF is on a 4.2 acre parcel located ocean side of U.S. Hwy 1 at Mile Marker 100.5 and is owned by the Key Largo Wastewater Treatment District. In addition to the AWTF, the system will include two deep injection wells, a monitoring well, a force main system, and a vacuum collection system designed to serve nearly 4,500 equivalent dwelling units (EDUs). The collection system will include approximately 15 vacuum and/or gravity sewer lines and force mains installed throughout the service area within existing road rights-of-way. Specific pump station sites have not yet been selected and will be part of the environmental documentation effort.

The draft EA will address the following issues: water quality impacts to nearshore waters of the Sanctuary, preservation of coral reefs, impacts to protected species, health and safety, aesthetics and recreation, fish and wildlife resources, cultural resources, socio-economic resources, and other impacts identified through scoping, public involvement, and interagency consultation.

We welcome your views, comments, and information about the above project. If you know of others who may wish to comment on this activity, please advise them of this request for public comment. Letters should be addressed to the letterhead address to the attention of the Planning Division, South Florida Section, within 30 days from the date of this letter. If you have question, please contact Mike Dupes, at 904-232-1689 or by e-mail at [Michael.Dupes@saj02.usace.army.mil](mailto:Michael.Dupes@saj02.usace.army.mil).

Sincerely,

A handwritten signature in black ink that reads "James C. Duck". The signature is written in a cursive, flowing style.

James C. Duck  
Chief, Planning Division

August 5, 2003

Mr. Ramon Mendieta  
Environmental Scientist  
URS Corporation  
Eastern Financial Building, Suite 1000  
700 South Royal Poinciana Boulevard  
Miami Springs, Florida 33166

RE: Federal Emergency Management Agency – Hazard Mitigation Assistance – Draft  
Supplemental Environmental Assessment (DSEA) for the Little Lagoon Wastewater System  
– Monroe County, Florida.  
SAI # FL200306112523C

Dear Mr. Mendieta:

The Florida State Clearinghouse, pursuant to Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated the review of the above-referenced Draft Supplemental Environmental Assessment (DSEA) for the proposed project.

The Department of Environmental Protection (DEP) outlines several concerns related to the proposed locations of the wastewater treatment systems, and enumerates the requirements for Advanced Waste Treatment, cross connection control and Environmental Resource Permitting. Please see the attached DEP memo for additional comments, concerns and details.

The Florida Fish and Wildlife Conservation Commission (FFWCC) indicates that the information provided is not sufficient for State review of the potential impacts to ecological resources at the candidate sites. Information on fish, wildlife and other environmental resources is missing from evaluation of the alternative project sites. The FFWCC has previously submitted its written opposition to the 22-acre site at Mile Marker 100.5 (Alternative 2) as well as its opposition to construction of the proposed wastewater treatment facility at this site. The Commission recommends that the proposed sewage treatment facility be constructed on the disturbed site at MM 98, Alternative 3. Please see the enclosed letter from the FFWCC for additional details.

The South Florida Water Management District (SFWMD) states that inadequate information has been provided from which to determine the environmental impacts of the project, and its consistency with the Florida Coastal Management Program. The District indicates that Alternative 1 has no details that can be assessed, and the fact that FEMA will not provide funding does not adequately explain this alternative. The SFWMD recommends that the DSEA describe the current system for wastewater removal and treatment, and outline the requirements of the Florida Statutory Treatment Standard of 2010,

Mr. Ramon Mendieta  
August 5, 2003  
Page 2

and how it applies to this project. The District indicates that alternative 2 is confusing with respect to which numbers apply to Phase I and which numbers apply to phase II. Please see the enclosed letter from the SFWMD for additional issues and concerns.

The South Florida Regional Planning Council (SFRPC) believes that the project will further its goals for a more livable, sustainable and competitive region and has summarized the relevant goals and policies that apply to this project. Please see the attached comments from the SFRPC and specific recommendations for complying with permitting requirements.

The Florida Department of Transportation (FDOT) states that the project may impact its road rights-of-way and may require permits. Lane closures or traffic channelization on the state roadway system may require permits from the FDOT permit Office. Please see the enclosed FDOT comments on the Clearinghouse printout for additional information.

Based on the information contained in the DSEA, and the comments provided by our reviewing agencies, as summarized above and enclosed, the state has determined that at this stage, the above-referenced project is consistent with the Florida Coastal Management Program (FCMP). All subsequent environmental documents prepared for this project must be reviewed to determine the project's continued consistency with the FCMP. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence on the project's consistency with the FCMP will be determined during the environmental permitting stage.

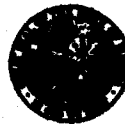
Thank you for the opportunity to review this project. If you have any questions regarding this letter, please contact Mr. Bob Hall at 850/245-3333.

Sincerely,

Sally B. Mann, Director  
Office of Intergovernmental Programs

SBM/rwh  
Enclosures

cc: Jim Gole, SFWMD  
Gus P. P. P. Marathon  
Robert R. Schneider, SFRPC  
Brian Barnett, FFWCC  
Andrea Whitmire, FDOT



STATE OF FLORIDA  
**DEPARTMENT OF COMMUNITY AFFAIRS**

*"Dedicated to making Florida a better place to call home"*

**JES BUSH**  
Governor

**THADDEUS L. COHEN, AIA**  
Secretary

January 03, 2005

James C. Duck, Chief  
Planning Division  
Environmental Branch  
Department of the Army  
Jacksonville District Corps of Engineers  
P.O. Box 4970  
Jacksonville, FL 32232-0019

Dear Mr. Duck:

The Department of Community Affairs is in receipt of your letter requesting comments and information regarding the draft Environmental Assessment you are preparing for the Key Largo Waste Water Treatment Facility. The Department supports the proposed action to construct the waste water treatment project.

Thank you for the opportunity to comment on this project. For additional information or assistance, please contact Dr. Clarence Feagin, AICP, at the Keys Field Office in Marathon, FL (305.289.2402).

Sincerely,

Rebecca Jetton, Administrator  
Area of Critical State Concern

2656 SHUMARD OAK BOULEVARD \* TALLAHASSEE, FLORIDA 32399-2100  
Phone: 850.488.8466/Suncom 278.8466 FAX: 850.921.0781/Suncom 291.0781  
Internet address: <http://www.dca.state.fl.us>

CRITICAL STATE CONCERN FIELD OFFICE

COMMUNITY PLANNING

EMERGENCY MANAGEMENT

HOUSING & COMMUNITY DEVELOPMENT





JAN 17 2005

January 12, 2005

Mr. James C. Duck  
Chief, Planning Division  
Department of the Army  
Jacksonville District Corps of Engineers  
P.O. Box 4970  
Jacksonville, Florida 32232-0019

RE: SFRPC #04-1233, SAI #FL200409029681C - Request for comments on the Key Largo Wastewater Treatment District component for the Florida Keys Water Quality Improvements Program, U.S. Army Corps of Engineers, Monroe County.

Dear Mr. Duck:

We have reviewed the Request for Comments for the Florida Keys Water Quality Improvements Program and have the following comments:

- Staff recognizes that this process is intended to identify the benefits of providing financial resources to fund wastewater treatment within Monroe County and various municipalities in regards to water quality within the Florida Keys National Marine Sanctuary.
- The project should be consistent with the goals and policies of the Monroe County comprehensive plan and corresponding land development regulations. It is important for the applicant to coordinate permits with all governments of jurisdiction.
- Staff recognizes the location of the project as being within an Area of Critical State Concern and the Florida Keys National Marine Sanctuary, proximate to the four National Wildlife Refuges within Monroe County, and potentially impacting Coral Reef Habitats, Class II Waters, Florida Bay, and Biscayne Bay, all of which are Natural Resources of Regional Significance designated in the *Strategic Regional Policy Plan for South Florida (SRPP)*.
- The goals and policies of the SRPP for South Florida, in particular those indicated below, should be considered when making decisions regarding this pilot project.

**GOAL 4** Enhance the economic and environmental sustainability of the Region by ensuring the adequacy of its public facilities and services.

**Policy 4.1** Public facility and service providers should give priority to the construction, maintenance, or reconstruction of public facilities needed to serve existing development most effectively and, to the elimination of any infrastructure deficiencies which would impede redevelopment.

**Policy 4.2** Optimize the service area and facility size of public facilities in the Region and direct future development and redevelopment first to areas served by existing infrastructure.

- Policy 4.3 Utilize the existing infrastructure capacity of regional facilities to the maximum extent consistent with applicable level of service (LOS) standards before encouraging the expansion of facilities or the development of new capacity.
- Policy 4.4 Whenever feasible, larger-than-local facilities or services should replace inefficient local facilities and services.
- Policy 4.5 Develop a regional forum and legislative initiatives to address service provision and facility development needs and strategies, as well as to enable the inter-governmental review of regionally significant public facilities.
- Policy 4.8 Utilize financing mechanisms for the provision of new public facilities and ensure that costs are distributed equitably within the Region.
- Policy 4.9 Ensure that local governments establish as wide a range of financing methods for the provision of public facilities as possible. Where impact fees are assessed, procedures, schedules, and programs for the expenditure of these fees in a timely and equitable manner shall be developed.
- Policy 4.10 Encourage the application of resource recovery, recycling, cogeneration, district cooling, water re-use systems, and other appropriate mechanisms where they are cost-effective and environmentally sound as a means of reducing the impacts of new development on existing public facilities and services and decreasing the costs of providing new public facilities and services.
- Policy 4.11 Ensure that the public sector gives priority to the funding of those improvements which support the general welfare of its citizenry and promote public goals, objectives and plans.
- GOAL 7 Protect, conserve, and enhance the Region's water resources.**
- Policy 7.4 Local governments should provide centralized sewer service in areas where existing septic tanks are an environmental or human health problem, particularly within densely populated urban services areas and sites where septic tanks and private water wells are jointly utilized.
- Policy 7.5 Implement stormwater quantity and quality level of service standards consistent with those recommended by the South Florida Water Management District.
- Policy 7.6 Ensure that the recharge potential of the property is not reduced as a result of a proposed modification in the existing uses by incorporation of open space, pervious areas, and impervious areas in ratios which are based upon analysis of on-site recharge needs.
- Policy 7.7 Require all inappropriate inputs into Natural Resources of Regional Significance to be eliminated through such means as redirection of offending outfalls, treatment improvements, or retrofitting options.
- Policy 7.8 Existing stormwater outfalls that do not meet or improve upon existing water quality or quantity criteria or standards, or cause negative impacts to Natural Resources of Regional Significance, shall be modified to meet or exceed the existing water quality or quantity criteria or standard.
- Policy 7.9 Restore and improve water quality throughout the system by:
- a. requiring stormwater treatment and management;
  - b. protecting wetlands, native uplands, and identified aquifer recharge areas; and
  - c. implementing best management practices, such as utilization of low phosphorus fertilizers.

Policy 7.10 Protect the habitat and water quality of the Region's Outstanding Florida Water bodies by requiring stormwater discharges to meet applicable non-degradation water quality standards.

**GOAL 14 Preserve, protect, and restore Natural Resources of Regional Significance.**

Policy 14.1 Address environmental issues, including the health of our air, water, habitats, and other natural resources, that affect quality of life and sustainability of our Region.

Policy 14.4 Direct land uses that are not consistent with the protection and maintenance of natural resource values away from Natural Resources of Regional Significance, adjacent buffer areas, and other natural resource areas.

Policy 14.7 Restore, preserve, and protect the habitats of rare and state and federally listed species. For those rare and threatened species that have been scientifically demonstrated by past or site specific studies to be relocated successfully, without resulting in harm to the relocated or receiving populations, and where *in-situ* preservation is neither possible nor desirable from an ecological perspective, identify suitable receptor sites, guaranteed to be preserved and managed in perpetuity for the protection of the relocated species that will be utilized for the relocation of such rare or listed plants and animals made necessary by unavoidable project impacts. Consistent use of the site by endangered species, or documented endangered species habitat on-site shall be preserved on-site.

**GOAL 16 Enhance and preserve natural system values of South Florida's shorelines, estuaries, benthic communities, fisheries, and associated habitats, including but not limited to, Florida Bay, Biscayne Bay, tropical hardwood hammocks, and the coral reef tract.**

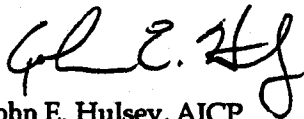
Policy 16.1 Restore and improve marine and estuarine water quality by:  
a. improving the timing and quality of freshwater inflows;  
b. reducing turbidity, nutrient loading, and bacterial loading from wastewater facilities, septic systems, and vessels;  
c. reducing the number of improperly maintained stormwater systems; and  
d. requiring port facilities and marinas to implement hazardous materials spill plans.

Policy 16.3 Enhance and preserve coastal, estuarine, and marine resources, including but not limited to tropical hardwood hammocks, mangroves, seagrass and shellfish beds, and coral habitats.

Policy 16.4 Enhance and preserve commercial and sports fisheries through monitoring, research, best management practices for fish harvesting, education, and protection of nursery habitat

Thank you for the opportunity to comment. We would appreciate being kept informed on the progress of this project. Please do not hesitate to call if you have any questions or comments.

Sincerely,



John E. Hulsey, AICP  
Senior Planner

JEH/kal

cc: Timothy J. McGarry, AICP, Director, Monroe County Growth Management



From

Clifford and Barbara Hill  
416 Bowie Ln.  
Key Largo, FL 33037

to PLANNING DIVISION  
Environmental Branch  
Army Corps of Engineers

RE: Key Largo Wastewater Treatment

Questions:

1. TWO Deep Injection Wells:  
How possible with Keys salt  
water table?

How close to our water  
supply?

2. How are you  
cooperating with FL  
Keys (FKNMS) (revised)  
Management Plan?

Mrs. B. Hill

Jan 11 1985

61019

S

RECEIVED

4 Jan 85







Jeb Bush  
Governor

# Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

August 5, 2003

Mr. Ramon Mendieta  
Environmental Scientist  
URS Corporation  
Eastern Financial Building  
Suite 1000  
700 South Royal Poinciana Boulevard  
Miami Springs, Florida 33166

Re: Federal Emergency Management Agency, Hazard Mitigation Assistance, Draft Supplemental Environmental Assessment (DSEA) for the Key Largo Wastewater System, Monroe County, Florida

SAI: FL200306112523C

Dear Mr. Mendieta:

The Florida State Clearinghouse, pursuant to Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated the review of the above-referenced Draft Supplemental Environmental Assessment (DSEA) for the proposed project.

The Department of Environmental Protection (DEP) outlines several concerns related to the proposed locations of the wastewater treatment systems, and enumerates the requirements for Advanced Waste Treatment, cross connection control and Environmental Resource Permitting. Please see the attached DEP memo for additional comments, concerns and details.

The Florida Fish and Wildlife Conservation Commission (FFWCC) indicates that the information provided is not sufficient for State review of the potential impacts to ecological resources at the candidate sites. Information on fish, wildlife and other environmental resources is missing from evaluation of the alternative project sites. The FFWCC has previously submitted its written opposition to the 22-acre site at Mile Marker 100.5 (Alternative 2) as well as its opposition to construction of the proposed wastewater treatment facility at this site. The Commission recommends that the proposed sewage treatment facility be constructed on the disturbed site at MM 98, Alternative 3. Please see the enclosed letter from the FFWCC for additional details.

The South Florida Water Management District (SFWMD) states that inadequate information has been provided from which to determine the environmental impacts of the project, and its consistency with the Florida Coastal Management Program. The District indicates that Alternative 1 has no details that can be assessed, and the fact that FEMA will not provide funding does not adequately explain this alternative. The SFWMD recommends that the DSEA describe the current system for wastewater

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*Printed on recycled paper.*

Mr. Ramon Mendieta  
August 5, 2003  
Page 2

removal and treatment, and outline the requirements of the Florida Statutory Treatment Standard of 2010, and how it applies to this project. The District indicates that alternative 2 is confusing with respect to which numbers apply to Phase I and which numbers apply to phase II. Please see the enclosed letter from the SFWMD for additional issues and concerns.

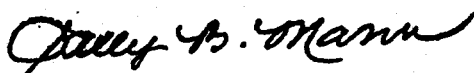
The South Florida Regional Planning Council (SFRPC) believes that the project will further its goals for a more livable, sustainable and competitive region and has summarized the relevant goals and policies that apply to this project. Please see the attached comments from the SFRPC and specific recommendations for complying with permitting requirements.

The Florida Department of Transportation (FDOT) states that the project may impact its road rights-of-way and may require permits. Lane closures or traffic channelization on the state roadway system may require permits from the FDOT permit Office. Please see the FDOT comments on the Clearinghouse printout for additional information.

Based on the information contained in the DSEA, and the comments provided by our reviewing agencies, as summarized above and enclosed, the state has determined that, at this stage, the above-referenced project is consistent with the Florida Coastal Management Program (FCMP). All subsequent environmental documents prepared for this project must be reviewed to determine the project's continued consistency with the FCMP. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence on the project's consistency with the FCMP will be determined during the environmental permitting stage.

Thank you for the opportunity to review this project. If you have any questions regarding this letter, please contact Mr. Bob Hall at 850/245-2163.

Sincerely,



Sally B. Mann, Director  
Office of Intergovernmental Programs

SBM/rwh  
Enclosures

cc: Jim Golden, SFWMD  
Gus Rios, DEP Marathon  
Natalie R. Schneider, SFRPC  
Brian Barnett, FFWCC  
Sandra Whitmire, DOT



# Florida

Department of Environmental Protection

"More Protection, Less Process"



Site Map

| Project Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FL200306112523C                                                                                                                                                                      |
| Comments Due:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | July 09, 2003                                                                                                                                                                        |
| Letter Due:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | August 08, 2003                                                                                                                                                                      |
| Description:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | FEDERAL EMERGENCY MANAGEMENT AGENCY - HAZARD MITIGATION ASSISTANCE - DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT (SEA) FOR THE KEY LARGO WASTEWATER SYSTEM - MONROE COUNTY, FLORIDA. |
| Keywords:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | FEMA - HAZARD MITIGATION - KEY LARGO WASTEWATER SYSTEM - MONROE COUNTY                                                                                                               |
| CFDA #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 97.039                                                                                                                                                                               |
| Agency Comments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                      |
| COMMUNITY AFFAIRS - FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                      |
| Released Without Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                      |
| ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                      |
| Please see the Department's memo outlining DEP concerns and requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                      |
| FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                      |
| 3-PAGE LETTER BY BRIAN BARNETT DATED JUNE 19, 2003 (PLUS ENCLOSURE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                      |
| STATE - FLORIDA DEPARTMENT OF STATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                      |
| No Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                      |
| SOUTH FLORIDA WMD - SOUTH FLORIDA WATER MANAGEMENT DISTRICT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                      |
| Letter faxed/mailed on 7/2/03.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                      |
| ENVIRONMENTAL POLICY UNIT - OFFICE OF POLICY AND BUDGET, ENVIRONMENTAL POLICY UNIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                      |
| No Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                      |
| SOUTH FL RPC - SOUTH FLORIDA REGIONAL PLANNING COUNCIL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                      |
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| MONROE -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                      |
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| HEALTH - FLORIDA DEPARTMENT OF HEALTH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                      |
| NC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                      |
| TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                      |
| <p>The purpose of this assessment is to evaluate several wastewater alternatives proposed for Key Largo, and the potential environmental consequences associated with those alternatives. A Programmatic Environmental Assessment (PEA) for Wastewater Management Improvements in the Florida Keys was prepared in accordance with NEPA providing a framework to address impacts of a range of wastewater treatment projects in the Florida Keys. Alternatives identified in the Monroe County Sanitary Wastewater Master Plan (2000) and in the PEA are evaluated for the proposed Key Largo Wastewater Management System. 1. FDOT permits may be required for project-related activities, which occur within FDOT right-of-way. Therefore, it may be necessary to coordinate with the FDOT's Permit Office. 2. Should the need for lane closures or traffic channelization on the state roadway system arise, Maintenance-of-Traffic Plans may be necessary. Coordination with the FDOT Traffic Operations Office will be required. 3. Field assessment may be required to determine the presence of wetlands adjacent to the project corridor. Thank you for providing DEMO with the opportunity to comment. Should you have any questions please contact Xavier Pagan or Marjorie Bixby at (305) 470-5220.</p> |                                                                                                                                                                                      |



**Memorandum**

**Florida Department of  
Environmental Protection**

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**TO:** Florida State Clearinghouse

**FROM:** Robert W. Hall, Environmental Specialist  
Office of Intergovernmental Programs 

**DATE:** August 5, 2003

**PROJECT:** Federal Emergency Management Agency, Hazard Mitigation Assistance,  
Draft Supplemental Environmental Assessment (SEA) for the Key Largo  
Wastewater System, Monroe County, Florida

**SAI:** FL200306112523C

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The Department has reviewed the above-referenced project and offers the following comments.

Several major concerns have been expressed by the DEP Marathon office, and include the location of the vacuum station and wastewater treatment plant on the northern site, or the location of the vacuum station on the northern site with the treatment plant on the southern site. This location will disturb a high quality hardwood hammock, which may not be in compliance with the Monroe County Comprehensive Plan.

If there is to be dredging and filling of surface waters or impacts to wetlands, an Environmental Resource Permit will be required from the department's Marathon office. The NPDES office in Tallahassee will also be contacted to determine if the proposed projects will require NPDES permits for stormwater management.

The proposed treatment plants will be required to meet Advanced Waste Treatment (AWT) standards, and the wastewater collection system must meet the separation standards of Chapter 62-604, F.A.C., with prevention of cross connections between potable water mains and wastewater collection systems.

Please see the attached summary report for further details on the Florida Keys requirements for wastewater treatment, to include permitting requirements. For technical assistance with DEP's requirements please contact Mr. Gus Rios at 305/289-2310.



Key Largo Wastewater System SEA Comments  
SAI #: FL03-2523C

**General:**

- ❖ The construction of the wastewater collection, treatment and disposal systems will require wastewater permits from the DEP's South District Office in Ft. Myers.
- ❖ On February 26, 2003, an application (application number: 211402-001) to construct a collection/transmission system was received in the Department's South District Office/Ft. Myers. Russell Eastenes is the Department engineer assigned to process the application. He will be responsible for reviewing the documents for compliance with all applicable Department regulations prior to issuing any permits. Since the application was received, the following activities have occurred:
  - On March 26, 2003, a Request for Additional Information (RAI) was sent by Russell Eastenes to the permittee.
  - On April 25, 2003, a response was sent to the Ft. Myers District office in response to the Department's 3/25/03 RAI.
  - On May 23, 2003, a second RAI was sent from Ft. Myers.
- ❖ Any dredging or filling in wetlands or surface waters will require Environmental Resource Permits (ERP) from the DEP's Marathon office.
- ❖ The location of the vacuum station and wastewater treatment plant on the Northern site or the vacuum station in this location (with the treatment plant on the Southern site) will disturb a high quality hardwood hammock. Please be advised that the Department of Community Affairs and Monroe County should be contacted to ensure compliance with the Monroe County Comprehensive Plan.
- ❖ The Department's NPDES Section in Tallahassee shall be contacted to determine if the construction projects will require NPDES permits for stormwater.

**Alternative 2-new treatment plant and collection system**

- ❖ Section 1.2 New wastewater treatment plant on Northern site
  - It is stated that Phase I will provide new service to residents and business owners in Key Largo Trailer Village and Key Largo Park, a flow of approximately 0.122 MGD. This size treatment plant will need to meet Advanced Waste Treatment (AWT) standards of 5 mg/L for Carbonaceous Biochemical Oxygen Demand (CBOD<sub>5</sub>) and Total Suspended Solids (TSS), 3 mg/L Total Nitrogen, and 1 mg/L Total Phosphorus.
  - The Phase II wastewater treatment facility, capable of serving the entire Key Largo Wastewater Service District from the 91 Mile Marker to the 106.5 Mile Marker, with a capacity of 2.25 MGD will also be required to meet effluent AWT standards.
- ❖ Section 1.2.1 Wastewater collection system
  - The Department will require reasonable assurance that, pursuant to Chapter 62-604, FAC:
    1. separation distances between potable water mains and wastewater collection systems are maintained
    2. cross connections between potable water mains and wastewater collection systems shall be prevented
  - Regarding plumbing connections at individual homes, FAC Rule 62-604.100(1) states that any single, individual gravity service connection to a collection system sized and intended to serve a single building is exempted from the requirements of this rule. The Department of Health (DOH) is responsible for ensuring the homeowners' on site systems are properly abandoned in accordance with the requirements of FAC Rule 64E-6.011.
  - On page 5 it is stated that "vacuum collection stub-outs would be provided to the existing residential side streets on the bayside of US1 in order to facilitate the future extension of wastewater collection and transmission services to the Key Largo Park and Sunset Waterways subdivisions." Please be advised that any additional collection systems or modifications to existing systems will require Department permits.

Key Largo Wastewater System SEA Comments  
SAI #: FL03-2523C

❖ **Section 1.2.2 Wastewater Treatment Plant**

- The location of the treatment plant on a lot that is comprised of high quality hardwood hammock will need to be coordinated with Monroe County and the Department of Community Affairs for compliance with the Monroe County Comp Plan.
- On Page 9, it is stated that "filtration may also be needed to produce effluent with TSS of not more than 10 mg/L." The facility, a 0.150 MGD facility, will need to meet AWT effluent standards of 5 mg/L TSS.
- Also on page 9 it is stated that "The effluent disinfection process would consume all calcium hypochlorite or sodium hypochlorite prior to effluent discharge." In accordance with F.A.C. Rule 62-600.440(4)(b), the effluent must maintain a total residual chlorine (TRC) of no less than 0.5 mg/L after 15 minutes of contact at peak hourly flow.

**Alternative 3-New Wastewater treatment plant on Southern Site**

❖ **Section 1.3.2 Vacuum Pump Station**

- the location of the vacuum pump station on a high quality hardwood hammock lot will need to be coordinated with Monroe County and the Department of Community Affairs for compliance with the Monroe County Comp Plan.

❖ **Section 1.3.3 Wastewater Transmission System**

- The Department will require reasonable assurance that, pursuant to Chapter 62-604, FAC:
  1. separation distances between potable water mains and wastewater collection systems are maintained
  2. cross connections between potable water mains and wastewater collection systems shall be prevented

❖ **Section 1.3.4 Wastewater Treatment Plant**

- The location results in the closest private residence being a distance of 100' away. This may provide a very good possibility for noise, lighting, odor complaints. F.A.C. Rule 62-600.400(2)(a) requires the facility shall be designed and located on the site so as to minimize adverse effects from odors, noise, aerosol drift and lighting.
- The basis of design comments for this facility are the same as those for the construction of the alternate location, and are:
  1. On Page 9, it is stated that "filtration may also be needed to produce effluent with TSS of not more than 10 mg/L." The facility, a 0.150 MGD facility, will need to meet AWT effluent standards of 5 mg/L TSS.
  2. On page 9 it is stated that "The effluent disinfection process would consume all calcium hypochlorite or sodium hypochlorite prior to effluent discharge." In accordance with F.A.C. Rule 62-600.440(4)(b), the effluent must maintain a total residual chlorine (TRC) of no less than 0.5 mg/L after 15 minutes of contact at peak hourly flow.



## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574  
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

GOV 04-14

July 2, 2003

Ms. Lauren Milligan  
Florida State Clearinghouse  
Florida Dept. of Environmental Protection  
3900 Commonwealth Blvd., MS 47  
Tallahassee, FL 32399-3000

Dear Ms. Milligan:

**Subject: Key Largo Wastewater System, Monroe County  
Supplemental Environmental Assessment [SAI#: FL200306112523C]**

In response to your request, South Florida Water Management District (SFWMD) staff has reviewed the Draft Supplemental Environmental Assessment (DSEA) for the above subject project for consistency with the Florida Coastal Zone Management Program (FCMP). The purpose of the DSEA is to evaluate several wastewater management alternatives proposed for Key Largo and the potential environmental consequences associated with the alternatives evaluated.

Projects reviewed by the SFWMD, pursuant to the FCMP, are reviewed for consistency with the provisions of Chapter 373, F.S. (Florida Water Resources Act of 1972, as amended), as well as the programs and regulations developed thereunder. Chapter 373, F.S. authorizes the SFWMD to regulate the withdrawal, diversion, storage, and consumptive uses of water, the construction and operation of stormwater management systems, and work in, on, or over surface waters or wetlands. Chapter 373, F.S. also authorizes the SFWMD to acquire and manage land, to conduct research and investigations into all aspects of water resource management, and to disseminate information relating to the water resources of the state to public and private users.

Based on an analysis of the mandatory enforceable provisions and recommended policies of the core FCMP statutes and implementing rules administered by the SFWMD, staff has determined that inadequate information has been provided to determine the consistency of this project with the FCMP. Although fairly detailed design information has been provided for the proposed wastewater treatment facilities, insufficient information has been provided regarding the potential environmental impacts associated with the construction of the proposed wastewater treatment facilities on the northern and southern sites. While the DSEA contains a number of references to the Programmatic Environmental Assessment (PEA) and the PEA may very well contain a more detailed evaluation of the potential environmental impacts associated with the construction of the proposed wastewater

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James Dean, Executive Director

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treatment facilities on the northern and southern sites, SFWMD staff reviewing the DSEA is not familiar with the PEA nor the information contained therein. Consequently, the SFWMD's review of the proposed project (see below) is based solely on the information contained in the DSEA.

#### General Comments

- (1) The DSEA does not include a detailed environmental assessment of any of the three alternatives. Current environmental conditions, the impacts and/or benefits of each alternative on the environment, and an environmental comparison of one alternative to another are not provided. In particular, there is no mention of groundwater and/or surface water impacts and/or benefits.
- (2) Alternatives 2 and 3 are essentially the same project located on different sites. The DSEA should evaluate alternatives using disposal methods other than shallow injection wells (e.g., reclaimed water). Please note that reclaimed water may be a more cost-effective alternative to shallow injection wells.

#### Alternative 1 – No Action Alternative

- (3) No details are provided for this alternative. Stating that FEMA will not provide funding is not an alternative. The DSEA should describe the current system for wastewater removal and treatment, outline the requirements of the Florida Statutory Treatment Standard of 2010, indicate how it applies to this project, and discuss the current and future environmental conditions and issues if no action is taken.

#### Alternative 2 – New Wastewater Treatment Plant on Northern Site

- (4) The entire description for Alternative 2 is very confusing with respect to which numbers apply to Phase I and which apply to Phase II. The DSEA does not specify whether the 2.6 acres required for the site is only for Phase I or for Phases I and II combined. No details are provided on the treatment equipment associated with Phase II or the actual Phase II construction except for "expansion of modular increments". The DSEA should either state that it only covers Phase I for Alternatives 2 and 3 and a supplemental EA will be performed for Phase II or it should address both Phases I and II in their entirety.
- (5) The success of this alternative (as well as Alternative 3) is dependent on the economic ability of the homeowners to decommission and properly abandon their existing on-site waste disposal systems and to connect to the service laterals. An economic analysis should be performed to verify that the residents will be

able to pay for the proposed wastewater improvements. Otherwise, a significant number of existing on-site waste disposal systems may not be properly decommissioned/abandoned. This could pose a continuing environmental risk to ground and surface water quality.

- (6) There is no mention of groundwater-related issues in the DSEA. The DSEA should include a discussion of groundwater levels on and in the vicinity of the proposed site and should address the potential impacts to ground water levels/quality during construction and operation of the proposed facilities.
- (7) The potential site for the pump station and treatment plant is described as a high quality hardwood hammock habitat. There is no mention of existing wildlife. There is no mention of the site's hydrology, existing surface water features, surface water conveyances, and drainage conditions. All of the potential impacts associated with the proposed pump station and treatment plant that will affect any of these environmental characteristics need to be identified. The DSEA should clearly state if any direct conveyances to the Straits of Florida (1,500 feet away) or to Florida Bay (2,500 feet away) are proposed. A plan for collecting and treating stormwater runoff should be included.
- (8) The potential impacts associated with injecting 400 gallon per minute (gpm) per well of effluent into the ground needs to be addressed as well as the quality of the water being injected compared to the current groundwater quality. The DSEA should address whether the site's geology supports shallow well injection.
- (9) The DSEA should include additional information to substantiate that one groundwater monitoring well be sufficient to monitor the effects of the shallow well injection and the operation of the wastewater treatment plant. Detailed design information should be included indicating that a monitoring well depth of 30 feet is sufficient for a 60 foot deep injection well with a 60 to 90 foot deep gravel-packed open hole section.
- (10) Peak hourly flows are reported in gallons per day (gpd). Peak flows are usually calculated on a daily basis, during morning hours, at noon, and in the afternoon, not for 24 hours.
- (11) The DSEA indicates that vacuum pumps will be used instead of submersible pumps. Consequently, the DSEA should confirm that the grade elevation for the proposed vacuum pumps is above maximum flood levels.

- (12) The DSEA should address whether the pretreatment screenings can be disposed of from the collection hopper or trash receptacle directly into a sanitary landfill without any treatment such as chlorination.
- (13) The SBR, USBF, Bardenpho, and Ludzak-Ettinger processes are not recommended for these applications. Conventional activated sludge or an immerse membrane bioreactor with nitrification and chemical addition for phosphorus removal offer more flexibility and ease of operation than the above-mentioned processes.
- (14) Disinfection with calcium hypochlorite tablets or briquettes is not cost-effective for plants larger than 100,000 gpd. Chlorine in liquid or gas form is acceptable; however, it is highly toxic and requires handling and storage facilities. Ultraviolet (UV) disinfection is the preferred method of disinfection in an environmentally sensitive area such as the Florida Keys.
- (15) On-site dewatering of the digested bio-solids (e.g., filterpress) may be more cost-effective than hauling 5,000-gallon/month of bio-solids to a municipality. This option should be considered.

#### Alternative 3 – New Wastewater Treatment Plant on Southern Site

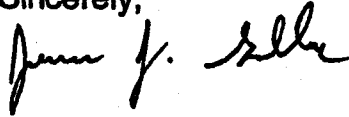
- (16) For Alternative 2 (northern site), the DSEA indicates that the finished floor elevations for the pump station and treatment plant will be built "above the base flood elevation of 8 feet National Geodetic Vertical Datum." However, for Alternative 3, which utilizes the same location for the pump station, the DSEA indicates that the pump station will be constructed "above the 100-year floodplain level." This discrepancy should be clarified.
- (17) Similar to Alternative 2, the DSEA does not include any information on the site's hydrology, existing surface water features, surface water conveyances, and drainage conditions.
- (18) The DSEA indicates that Alternative 2 requires 2.6 acres for both the Phase I pump station and the treatment plant. Alternative 3 requires 3.8 acres for the treatment plant only. The DSEA should specify if all of the southern site will be utilized for Alternative 3 and indicate if it is large enough for the Phase II expansion.
- (19) For Alternative 3, there is no mention of the injection wells, the number of wells, and where they will be located. In addition, there is no mention of the geology of

Ms. Lauren Milligan  
July 2, 2003  
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this site or an evaluation of the appropriateness of this site for shallow well injection.

If you have any questions concerning the above or if I can be of further assistance, please do not hesitate to contact me at (561) 682-6862.

Sincerely,



James J. Golden, AICP  
Senior Planner  
Environmental Resource Regulation

/jig

c: Ramon Mendiata, URS Corporation



# FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



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June 19, 2003

Ms. Lauren Milligan  
Environmental Consultant  
Florida State Clearinghouse  
Department of Environmental Protection  
3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, FL 32399-3000

Re: SAI# FL200306112523C  
Draft Supplemental Environmental Assessment (SEA)  
Key Largo Wastewater System, Monroe County, Florida

Dear Ms. Milligan:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed the referenced document, and submits the following comments.

As indicated in the cover letter to the Clearinghouse, URS Group, Inc., is preparing the Draft SEA on behalf of the Federal Emergency Management Agency (FEMA). URS indicates that the "Draft SEA evaluates several wastewater management alternatives proposed for Key Largo, and the potential environmental consequences associated with those alternatives." URS further states that the information that has been submitted for review represents "only a portion of the Draft SEA."

The information submitted to the Clearinghouse is not sufficient for State review of the potential impacts of the proposed alternatives on the ecological resources of the candidate sites. The information that was submitted is limited to a set of engineering specifications for the proposed wastewater treatment facility. The portion of the Draft SEA submitted to the Clearinghouse contains almost no information concerning the fish, wildlife, or other ecological resources on the alternative project sites.

Nevertheless, we have been involved with the planning for this project since early in 2000, and we are very familiar with the alternative sites. Members of our staff have participated

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Ms. Lauren Milligan

June 19, 2003

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in numerous meetings pertaining to this project, we were present at a conference call sponsored by the Governor's Office, and we have conducted several field inspections of the proposed sites. On July 14, 2000, we sent a letter (attached) to Mr. John Copenhagen, Regional Director of FEMA, providing ecological resource information concerning the 22-acre site at Mile Marker (MM) 100.5 (Alternative 2 in the Draft SEA). We also registered our opposition to construction of the proposed wastewater treatment facility at this site.

A summary of our reasons for opposing construction of a sewage treatment facility at MM 100.5 is as follows. The 22-acre site is completely covered by mature tropical hardwood hammock, a very rare natural community type found almost exclusively in the Florida Keys. Fewer than 15,000 acres of tropical hardwood hammocks remain in the United States, and only 8,000 acres are currently in public ownership. This site is included within parcels targeted for acquisition by the State of Florida under the State's Florida Forever land acquisition program. This parcel is part of the Florida Keys Ecosystem project, which is on the A list, and its high ranking is due largely to its recognized ecological values. The site is adjacent to and contiguous with lands owned by the State of Florida and managed by John Pennekamp Coral Reef State Park. The site is occupied by, or provides potential habitat for, numerous animals and plants listed by State or federal agencies as endangered, threatened, or species of special concern. Our own work has identified this site as a strategic habitat conservation area for three indicators of biodiversity, the white-crowned pigeon, black-whiskered vireo, and the tropical hardwood hammock natural community. Earlier drafts of the environmental assessment for this project suggested that the best way to save the ecological resources of this site from the adverse impacts of potential residential development was to construct a sewage treatment plant on the site. However, we concluded that this assertion was unfounded. More detail concerning the ecological resource values of the MM 100.5 site are contained in the attached letter.

In contrast, the proposed site at MM 98 (Alternative 3 in the Draft SEA) includes 3.8 acres that have already been cleared, grubbed, and developed. The site is presently used for boat and vehicle storage and other uses. There would be virtually no impact to rare and imperiled species of fish and wildlife or natural plant communities associated with construction of a sewage treatment facility at the MM 98 site.

In summary, the submitted information contains no characterization of the ecological resources at the two sites proposed for construction of a sewage treatment facility on Key Largo. However, we are familiar with these sites and this project. We recommend that the proposed sewage treatment facility be constructed on the disturbed site at MM 98 (Alternative 3). We recommend against location of the facility in the 22-acre site at MM 100.5 (Alternative 2). The tropical hardwood hammock at MM 100.5 is a rare natural community type found only in extreme south Florida; it hosts several species of plants and animals listed as rare and endangered; it is contiguous with other hammock parcels that are contiguous with John Pennekamp Coral Reef State Park; and it is proposed for acquisition under the Florida Forever program.

Ms. Lauren Milligan  
June 19, 2003  
Page 3

Thank you for the opportunity to comment on this project. If you need additional information concerning this matter, please contact me or Mr. Randy Kautz at (850) 488-6661.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Barnett". The signature is fluid and cursive, with a large, stylized initial "B".

Brian S. Barnett, Interim Director  
Office of Environmental Services

ENV 8-4/10  
Attachment



# FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



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July 14, 2000

Mr. John B. Copenhagen, Regional Director  
Federal Emergency Management Agency  
3003 Chamblee Tucker Road  
Atlanta, GA 30341-4130

Re: Preliminary Environmental Assessment  
Proposed Wastewater Treatment Plant Site  
Key Largo, Florida

Dear Mr. Copenhagen:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission would like to submit to you our comments concerning the referenced document. Our office has participated in several previous meetings pertaining to the siting of a sewage treatment plant, to be partially funded by FEMA, on Key Largo. Our staff was present at a recent interagency conference call hosted by the Florida Governor's office, and we participated in the interagency field inspection of the proposed site on July 10, 2000. We have also been following correspondence between your agency and the U. S. Fish and Wildlife Service (USFWS) pertaining to the potential need to prepare an Environmental Assessment for this project pursuant to the National Environmental Policy Act (NEPA) and to consult with USFWS under Section 7 of the U. S. Endangered Species Act. It appears that the referenced document may factor into FEMA's efforts to prepare an Environmental Assessment of the proposed site, and it also appears that present circumstances are compelling FEMA to expedite the process. Given these circumstances, we are providing you the following comments concerning the Preliminary Environmental Assessment prepared by Monroe County staff.

## Listed Species

The Preliminary Environmental Assessment identifies a set of species listed by either State or federal agencies as endangered, threatened, or species of special concern as occurring, or potentially occurring, on the site. The list is not complete. First, the site contains potential habitat for the rim rock crowned snake (*Tantilla oolitica*), a species listed as threatened by the State of Florida due to the rapid rate of loss of its habitat. The rim rock crowned snake is endemic to a small area of southeast Florida, including the upper Keys. It is a secretive burrower

that occupies a variety of habitats including tropical hardwood hammocks. Second, the environmental assessment did not include a number of State-listed plants likely to occur on site. The proposed site for the Key Largo sewage treatment plant is a 22-acre parcel of land that has been targeted for acquisition by the State of Florida under the Conservation and Recreation Lands (CARL) program. The parcel is included within the larger 191-acre Newport Hammocks tract, a part of the Florida Keys Ecosystem CARL project. The Florida Keys Ecosystem CARL project ranks number two out of 32 priority projects identified for acquisition under the CARL program. The Newport Hammocks tract has been surveyed for the presence or rare and imperiled species by various biologists. The Florida Natural Areas Inventory element occurrence database indicates that the following listed plants occur on the Newport Hammocks tract: wild cinnamon (*Canella winteriana*, endangered), yellowwood (*Schaefferia frutescens*, endangered), Simpson's prickly apple (*Harrisia simpsonii*, endangered), whitish passionflower (*Passiflora multiflora*, endangered), milkbark (*Drypetes diversifolia*, endangered), banded wild-pine (*Tillandsia flexuosa*, endangered), wild cotton (*Gossypium hirsutum*, endangered), Florida thatch palm (*Thrinax radiata*, endangered), joewood (*Jacquinia keyensis*, threatened), wild dilly (*Manilkara bahamensis*, threatened), and golden leather fern (*Acrostichum aureum*, threatened). While these plants are known from the Newport Hammocks CARL site, they are not necessarily present on the proposed wastewater treatment plant site. Nevertheless, their potential presence should be discussed in the environmental assessment, and any surveys planned for the site should include these species as potential candidates.

The Preliminary Environmental Assessment provides a brief discussion of the potential presence of Schaus' swallowtail butterfly (*Heraclides aristodemus ponceanus*) on the site. This butterfly is listed by State and federal agencies as an endangered species. This endangered species has been reintroduced to John Pennecamp Coral Reef State Park within two miles of the proposed site. This reintroduction effort has been successful thus far. While Schaus' swallowtail butterfly may or may not be present on the site at the present time, the potential exists for it to colonize this part of its historic range some time in the relatively near future. Similarly, the assessment contains a brief discussion of the potential presence of Stock Island tree snail (*Orthalicus reses reses*), a species listed as endangered by both State and federal agencies. While not known with certainty to be present at this site, the Stock Island tree snail is known to be present within one mile of the proposed sewage treatment site. If not present, the potential also exists for this species to colonize this site at some future date.

The Preliminary Environmental Assessment included a number of species of animals as potentially occurring on site that are very unlikely to be present. The following species probably do not occur on the site and should be withdrawn from further consideration: American alligator (*Alligator mississippiensis*), American crocodile (*Crocodylus acutus*), Florida brown snake (*Storeria dekayi viciata*), southeastern kestrel (*Falco sparverius paulus*), Arctic peregrine falcon (*Falco peregrinus tundrius*), southern bald eagle (*Haliaeetus leucocephalus*), least tern (*Sterna antillarum*), and roseate tern (*Sterna dougalli*). The Key Largo woodrat (*Neotoma floridana smalli*) and Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*) are both listed as endangered by State and federal agencies, and the project site is within the historic range of these small mammals. However, at this point in time, these species are known to occur only in North

**Key Largo.** While this site probably should be surveyed for these endangered mammals, it is unlikely that they will be found.

### Strategic Habitat Conservation Area

The Preliminary Environmental Assessment did not include a discussion of the ecological importance of this site as identified in our 1994 report entitled, "Closing the Gaps in Florida's Wildlife Habitat Conservation System." The purpose of this report was to assess the habitat conservation needs of rare and imperiled animals, plants, and natural communities in Florida. The report used a set of indicator species and communities to assess current levels of biodiversity protection and to identify lands in need of protection. Lands identified for protection were referred to as strategic habitat conservation areas, which were defined as privately owned lands that, taken in conjunction with existing publicly owned lands, have the best chances of meeting the long-term habitat needs of most components of Florida's biological diversity. The intent was that, if strategic habitats could be protected, future extinctions of plant and animal species in Florida could be averted.

The Closing the Gaps report identified the proposed sewage treatment plant site as a strategic habitat conservation area for white-crowned pigeon (*Columba leucocephala*, threatened), black-whiskered vireo (*Vireo altiloquus*, unlisted), and tropical hardwood hammock natural community. In our opinion, the importance of this site to the long-term conservation needs of biodiversity in Florida is clearly indicated by the presence of three of our indicator species and communities.

### Current Status of the Tropical Hardwood Hammock Community

In our opinion, the Preliminary Environmental Assessment overlooks the significance of the proposed site within the context of the bigger picture of conservation of tropical hardwood hammocks as a rare natural community type. Tropical hardwood hammocks are the successional climax community of the rockland habitats of extreme south Florida. This community type supports a high diversity of plants and animals found nowhere else in the United States. A minimum of 30-40 years are needed for a hammock community to begin to mature following disturbance. Thus, the presence of a high quality tropical hardwood hammock on the proposed site attests to the time since last disturbance as well as the time frame over which the ecological conditions necessary to support associated rare and imperiled plants and animals have been developing.

The best remaining examples of tropical hardwood hammocks in the United States are found in the Florida Keys, and most of these are on Key Largo. While we have never seen an estimate of the original area of Florida covered by tropical hardwood hammocks, our inventories of vegetation types statewide indicated that there were no more than 15,345 acres remaining in Florida in the late 1980s, and almost all of it was found in the Keys. As of December 1999, only 8,137 acres of tropical hardwood hammock were protected by public ownership despite much of the remainder having been targeted for public acquisition for over 10 years. When compared with the status of other natural communities in Florida, these are alarmingly small numbers. The

only secure future for the rare tropical hammock community type hinges on land management practices on existing public lands and on land use decisions made for the development of private lands. The variety of rare and imperiled plants and animals found in tropical hardwood hammocks and the very limited amount of land available to support these species dramatically increases the ecological significance of remaining tracts such as the one on the proposed site.

Over years of human development, the tropical hardwood hammock community has become highly fragmented. That is, due to habitat loss, remaining patches have become smaller in size and isolated from one another. A consequence of converting large contiguous patches of habitat into small isolated fragments is that wide-ranging species with large area requirements (e.g., eastern indigo snake) are eliminated from smaller patches. As an example, the white-crowned pigeon typically does not forage in forest patches smaller than 12 acres. Past developments that have resulted in fragmentation effects at the project site include US 1 along the west boundary, the Florida Keys Aqueduct Authority facility to the southwest of the site, the road along the east boundary, and a small private development to the southeast of the site. Nevertheless, the tropical hardwood hammock on site is contiguous with a much larger patch of tropical hardwood hammock that extends to the northeast. A portion of the adjacent hammock is already in State ownership and is managed as part of John Pennekamp Coral Reef State Park. Thus, despite past disturbances surrounding the site, the proposed site is part of a much larger patch of tropical hardwood hammock, portions of which are in public ownership. This contiguity increases the likelihood that this site is used by species such as the indigo snake, and it enhances the overall ecological importance of the site for a variety of rare and imperiled species.

#### Potential for Residential Development

The Preliminary Environmental Assessment asserts that a minimum of eleven single-family homes could be permitted on the proposed site, and that the number could increase to as many as 22 single-family homes through the use of Transferable Development Rights (TDR). The assessment further states that, despite habitat constraints contained within the Monroe County Land Development Regulations (LDR), it is not practical to assume that the County could constrain the ultimate configuration of residential lots. The purpose for this statement is to suggest that the impacts to ecological resources associated with clearing 3.6 acres of tropical hardwood hammock in a rectangular patch would be less than those associated with conversion of the site to evenly distributed residential use. While these points are technically accurate, such a development scenario is highly unlikely to occur under the current regulatory environment existing in Monroe County.

Until such time as concerns over hurricane evacuation times are resolved, the Monroe County Rate of Growth Ordinance (ROGO) limits the number of building permits than can be issued throughout the Keys to 225 per year. The number that can be issued in the Upper Keys (excluding Islamorada) is 52 per year, and these are further limited to no more than 13 per quarter. Because the demand for building permits is greater than the supply, the ROGO provides for a point system to score individual permit applications based on site-specific conditions. Proposed developments having higher scores are more likely to receive one of the 13 building permits available quarterly. In general, positive points are assigned to projects that are in a

platted subdivision, have infrastructure available, that aggregate vacant lots, that employ TDRs, that incorporate water and energy conservation features, and have high integrity of construction. On the other hand, negative points are assigned to sites with high quality habitats (high quality hammock such as that on the proposed site has the highest rank), with threatened or endangered species or their habitats, that are on the State's CARL list, and that are in coastal high hazard areas.

A recent phone call to Monroe County staff verified that, during the last quarter, applicants allocated building permits in the Upper Keys had projects scoring a minimum of 18 ROGO points. Our staff applied the ROGO scoring system to a hypothetical building permit application for a single-family dwelling on the proposed site, and concluded that such an application would probably have a score of around -14 ROGO points. A few points could be added through density reduction, land dedication, TDRs, and perseverance, but these additional points probably would not even get the project into the plus column for ROGO points. In other words, the most well-designed single-family residence proposed for this site would likely fall far short of the number of ROGO points needed to obtain a building permit in today's competitive market. In fact, for the amount of money one would have to spend to obtain the maximum number of ROGO points at this site, a person could more than likely purchase an existing developable canal-front lot, and maybe even an ocean-front lot. Moreover, upon designing a project with the maximum possible ROGO points, the project would still likely fall short of the 18 points needed to obtain a building permit allocation for the last quarter.

For these reasons, we conclude that it is highly unlikely that the site proposed for the sewage treatment plant could actually accommodate the suggested 22 single-family dwelling units in today's regulatory environment. In fact, it is more likely that no one would even seek a building permit at this location because of the disincentives built into the system. However, even if we assume building permits could be obtained for at least a few single-family dwelling units, the amount of clearing on the site would still be limited to 4.4 acres by the 80% open space requirement in the Monroe County LDR. Section 9.5-345(a)(3) of the Monroe County LDR requires that developments on a site containing one ecologically sensitive habitat type shall be clustered in the least ecologically valuable area of habitat on the site. This means that single-family residences probably would have to be clustered in the southwest corner of the site near the Florida Keys Aqueduct Authority facilities, the portion of the site adjacent to the greatest amount of disturbance. We conclude from this language that, in the highly unlikely event that building permits could be obtained, the County has the regulatory authority to limit the footprint of the development to one similar to that of the proposed sewage treatment plant. Therefore, impacts from residential versus sewage treatment plant development may not be dissimilar.

### Conclusion

The Preliminary Environmental Assessment prepared by Monroe County staff underrates the ecological importance of the 22-acre site proposed for a sewage treatment plant. The site is completely covered by mature tropical hardwood hammock, a very rare natural community type found almost exclusively in the Florida Keys. Fewer than 15,000 acres of tropical hardwood hammocks remain in the United States, and only 8,000 acres are currently in public ownership.

Mr. John B. Copenhagen

July 14, 2000

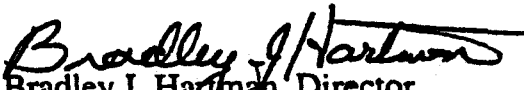
Page 6

This site is included within parcels targeted for acquisition as part of the CARL program's Florida Keys Ecosystem project, the number two ranked priority project for public land acquisition in Florida. The high ranking of this CARL project site is due largely to its recognized ecological values. The site is adjacent to and contiguous with lands owned by the State of Florida and managed by John Pennekamp Coral Reef State Park. The site is occupied by, or provides potential habitat for, numerous animals and plants listed by State or federal agencies as endangered, threatened, or species of special concern. Our own work has identified this site as a strategic habitat conservation area for three indicators of biodiversity, the white-crowned pigeon, black-whiskered vireo, and tropical hardwood hammock natural community. The suggestion that siting a sewage treatment plant on this site will save the ecological resources from the impacts of dispersed residential development appears to be unfounded.

We urge you to consider these factors as you prepare your Environmental Assessment for the NEPA process. Moreover, we recommend against FEMA funding for land acquisition and construction of a sewage treatment plant at this site because of its high ecological values. Monroe County staff recommended two other candidate sites for this use, neither of which has the significant ecological values found on the 22-acre site.

If you need additional information or would like to discuss our concerns further, you may contact me at 850-488-6661.

Sincerely,

  
Bradley J. Hartman, Director  
Office of Environmental Services

BJH/RK

cc: William Straw, FEMA  
Science Kilner, FEMA  
James Slack, FWS  
Tom Grahl, FWS  
Jeanette Gallihugh, FWS  
Tom Beck, DCA  
Eva Armstrong, DEP  
Fran Mainella, DEP  
Mimi Drew, DEP  
Teresa Tinker, Governor's Office  
Ralph Gouldy, Monroe County

South  
Florida  
Regional  
Planning  
Council



June 30, 2003

Ms. Lauren Milligan  
Florida State Clearinghouse  
Florida Department of Environmental Protection  
3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, FL 32399-3000

RE: SFRPC #03-0633, SAI #FL200306112523C, Request for comments on a Notice of Draft Environmental Assessment for the Key Largo Wastewater System, URS Group, Inc. on behalf of U.S. Department of Commerce - Federal Emergency Management Agency, Monroe County.

Dear Ms. Milligan:

We have reviewed the above-referenced program and have the following comments:

- Council staff believes the project will further our goals for a more livable, sustainable, and competitive region. The project is generally consistent with the goals and policies of the *Strategic Regional Policy Plan for South Florida*, particularly the following:

**Strategic Regional Goal**

2.2 Revitalize deteriorating urban areas.

**Regional Policies**

- 2.2.1 Give priority to development in areas that are blighted, characterized by underdevelopment or underemployment and are in need of redevelopment; among these, secondary priority should be given to areas within which adequate infrastructure and support services are either programmed or available.
- 2.2.2 Public facility and service providers should give priority to eliminating any infrastructure deficiencies which would impede rehabilitation or redevelopment of blighted areas.

**Strategic Regional Goal**

- 2.3 Enhance the economic competitiveness of the region and ensure the adequacy of its public facilities and services by eliminating the existing backlog, meeting the need for growth in a timely manner, improving the quality of services provided and pursuing cost-effectiveness and equitability in their production, delivery and financing.

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JUL 02 2003

OIP/OLGA

3440 Hollywood Boulevard, Suite 140, Hollywood, Florida 33021  
Broward (954) 985-4416, State (800) 985-4416  
SunCom 473-4416, FAX (954) 985-4417, Sun Com FAX 473-4417  
email: sfadmin@sfrpc.com, website: www.sfrpc.com

Ms. Lauren Milligan  
June 30, 2003  
Page 2

### **Regional Policies**

- 2.3.3 The public sector should give priority to the funding of those improvements which support the general welfare of its citizenry and promote public goals, objectives and plans.
- 2.3.11 Give priority to the construction, maintenance or reconstruction of public facilities needed to serve existing development most effectively.
- 2.3.12 Provide incentives for development and redevelopment to use existing public facilities and services.
- 2.3.13 Local governments should provide centralized sewer service in areas where existing septic tanks are a problem and adopt and implement stormwater level of service standards consistent with those recommended by the South Florida Water Management District.
- 2.3.15 Impact review procedures shall consider the impacts of development on state, regional and local public facilities and services.
- 2.3.30 Local governments should establish as wide a range of financing methods for the provision of public facilities as possible. Where impact fees are assessed, procedures, schedules, and programs for the expenditure of these fees in a timely and equitable manner shall be developed.

Thank you for the opportunity to comment. If you require further information, please contact me.

Sincerely,



Natalie R. Schneider  
Senior Planner

NRS/

cc: Timothy McGarry, Monroe County Growth Management

COUNTY: MONROE - 2003-5190  
SAI-FEMA

DATE: 6/9/2003  
COMMENTS DUE DATE: 7/9/2003  
CLEARANCE DUE DATE: 8/8/2003  
SAI#: FL200306112523C

MESSAGE:

| STATE AGENCIES               | WATER MNGMNT. DISTRICTS | OPB POLICY UNIT           | RPCS & LOC GOVS |
|------------------------------|-------------------------|---------------------------|-----------------|
| COMMUNITY AFFAIRS            | SOUTH FLORIDA WMD       | ENVIRONMENTAL POLICY UNIT |                 |
| ENVIRONMENTAL PROTECTION     |                         |                           |                 |
| FISH and WILDLIFE COMMISSION |                         |                           |                 |
| HEALTH                       |                         |                           |                 |
| X STATE                      |                         |                           |                 |
| TRANSPORTATION               |                         |                           |                 |

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- ☒ Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- ☐ Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- ☐ Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- ☐ Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

FEDERAL EMERGENCY MANAGEMENT AGENCY  
- HAZARD MITIGATION ASSISTANCE - DRAFT  
SUPPLEMENTAL ENVIRONMENTAL  
ASSESSMENT (SEA) FOR THE KEY LARGO  
WASTEWATER SYSTEM - MONROE COUNTY,  
FLORIDA.

To: Florida State Clearinghouse

EO. 12372/NEPA Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)  
3900 COMMONWEALTH BOULEVARD MS-47  
TALLAHASSEE, FLORIDA 32399-3000  
TELEPHONE: (850) 245-2161  
FAX: (850) 245-2190

☒ No Comment

☐ Comment Attached

☐ Not Applicable

☒ No Comment/Consistent

☐ Consistent/Comments Attached

☐ Inconsistent/Comments Attached

☐ Not Applicable

From:

Division of Historical Resources

Division/Bureau:

Bureau of Historic Preservation

Reviewer:

SARAH JALVINS JUL 7/13/03

Date:

7/11/03

02/39/5

ROHA: 48MM

NIHPA

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JUL 22 2003

03 JUN 13 PM 3:32

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BUREAU OF  
HISTORIC PRESERVATION

COUNTY: MONROE

B8

6/9/2003  
7/9/2003  
8/8/2003  
FL200306112523C

COMMENTS DUE D  
CLEARANCE DUE D.

MESSAGE:

|                              |                                |                           |                            |
|------------------------------|--------------------------------|---------------------------|----------------------------|
| <b>STATE AGENCIES</b>        | <b>WATER MNGMNT. DISTRICTS</b> | <b>OPB POLICY UNIT</b>    | <b>RPCS &amp; LOC GOVS</b> |
| COMMUNITY AFFAIRS            | SOUTH FLORIDA WMD              | ENVIRONMENTAL POLICY UNIT |                            |
| ENVIRONMENTAL PROTECTION     |                                |                           |                            |
| FISH and WILDLIFE COMMISSION |                                |                           |                            |
| X HEALTH                     |                                |                           |                            |
| STATE                        |                                |                           |                            |
| TRANSPORTATION               |                                |                           |                            |

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

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- Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
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- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

**Project Description:**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
- HAZARD MITIGATION ASSISTANCE - DRAFT  
SUPPLEMENTAL ENVIRONMENTAL  
ASSESSMENT (SEA) FOR THE KARGO  
WASTEWATER SYSTEM - MONROE COUNTY,  
FLORIDA.

WTP EXPANSION

**To: Florida State Clearinghouse**

AGENCY CONTACT AND COORDINATOR (SCH)  
3900 COMMONWEALTH BOULEVARD MS-47  
TALLAHASSEE, FLORIDA 32399-3000  
TELEPHONE: (850) 245-2161  
FAX: (850) 245-2190

**EO. 12372/NEPA Federal Consency**

- |                                           |                                                           |
|-------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> No Comment       | <input checked="" type="checkbox"/> No Comment/Consistent |
| <input type="checkbox"/> Comment Attached | <input type="checkbox"/> Consistent/Cmts Attached         |
| <input type="checkbox"/> Not Applicable   | <input type="checkbox"/> Inconsistent/Cmts Attached       |
|                                           | <input type="checkbox"/> Not Applicable                   |

HSES Onsite Sewage Programs

**From:**

Dale Holcomb

Division/Bureau: 6-23-2003

Reviewer:

Date:

REIVED

J 9 2003

COLGA

COUNTY: MONROE

DATE: 6/9/2003

COMMENTS DUE DATE: 7/9/2003

CLEARANCE DUE DATE: 8/8/2003

SAI#: FL200306112523C

MESSAGE:

|                              |                                |                             |                            |
|------------------------------|--------------------------------|-----------------------------|----------------------------|
| <b>STATE AGENCIES</b>        | <b>WATER MNGMNT. DISTRICTS</b> | <b>OPB POLICY UNIT</b>      | <b>RPCS &amp; LOC GOVS</b> |
| COMMUNITY AFFAIRS            | SOUTH FLORIDA WMD              | X ENVIRONMENTAL POLICY UNIT |                            |
| ENVIRONMENTAL PROTECTION     |                                |                             |                            |
| FISH and WILDLIFE COMMISSION |                                |                             |                            |
| HEALTH                       |                                |                             |                            |
| STATE                        |                                |                             |                            |
| TRANSPORTATION               |                                |                             |                            |

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

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Project Description:

FEDERAL EMERGENCY MANAGEMENT AGENCY  
- HAZARD MITIGATION ASSISTANCE - DRAFT  
SUPPLEMENTAL ENVIRONMENTAL  
ASSESSMENT (SEA) FOR THE KEY LARGO  
WASTEWATER SYSTEM - MONROE COUNTY,  
FLORIDA.

To: Florida State Clearinghouse

EO. 12372/NEPA Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)  
3900 COMMONWEALTH BOULEVARD MS-47  
TALLAHASSEE, FLORIDA 32399-3000  
TELEPHONE: (850) 245-2161  
FAX: (850) 245-2190

☒ No Comment

☐ Comment Attached

☐ Not Applicable

☐ No Comment/Consistent

☐ Consistent/Comments Attached

☐ Inconsistent/Comments Attached

☐ Not Applicable

From:

Division/Bureau: OPB. Env.

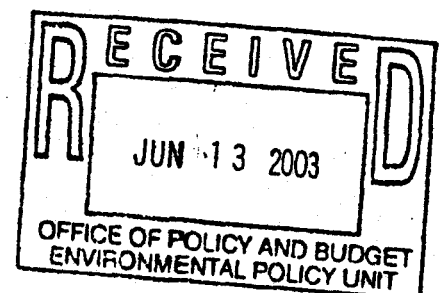
Reviewer: M. J. Amner

Date: 7/8/03

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JUL 14 2003

OIP/OLGA





June 5, 2003

Florida State Clearinghouse  
Department of Environmental Protection  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

**Subject: Notice of Draft Supplemental Environmental Assessment (SEA) for  
the Key Largo Wastewater System, Monroe County, Florida.**

Dear Sir or Madam:

This purpose of this letter is to provide your agency with notice that URS Group, Inc., on behalf of the Federal Emergency Management Agency (FEMA), is preparing a Draft Supplemental Environmental Assessment (SEA) for the Key Largo Wastewater System, Monroe County, Florida. The Draft SEA evaluates several wastewater management alternatives proposed for Key Largo, and the potential environmental consequences associated with those alternatives. At this time, FEMA requests your comments regarding the range of alternatives (attached). Please note that this attachment represents only a portion of the draft SEA. Additionally, a street map of the project vicinity has also been attached.

In 1998, during the aftermath of Hurricane Georges, Congress allocated additional monies for long-term disaster recovery projects in the State of Florida to assist counties whose needs were yet unmet through allocation of primary disaster relief funds. This Unmet Needs money was earmarked for the counties most impacted by Hurricane Georges, including Monroe County. Monroe County requested that wastewater management improvement projects be considered for disaster funding since many existing wastewater facilities do not provide adequate collection, treatment, or disposal, and thus contribute to degrading water quality in the Florida Keys. Since then, FEMA has received a grant application from the Florida Keys Aqueduct Authority requesting Federal assistance to upgrade the current wastewater treatment facilities on Key Largo.

The National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500 through 1508), and FEMA regulations for NEPA compliance (44 CFR Part 10) direct FEMA and other Federal agencies to fully understand and take into consideration during decision making, the environmental consequences of proposed Federal actions (projects). Therefore, FEMA must comply with NEPA, and other applicable Federal laws and regulations, before making Federal funds available for any disaster recovery and mitigation actions.

URS Corporation  
Eastern Financial Building, Suite 1000  
700 South Royal Poinciana Boulevard  
Miami Springs, FL 33166  
Tel: 305.884.8900  
Fax: 305.884.2665

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JUN 09 2003

OIP/OLGA

Mr. Mike Dupes  
Jacksonville District Corps of Engineers  
Jacksonville, Florida 32232-0019  
FAX: 1-904-899-5095

Dec. 26, 2004

Dear Mr. Dupes,

The Corps' attempt to extend its jurisdiction over International Waters was spelled out in their To Whom It May Concern documents of April 20, 2004 and September 1, 2004. I voiced my objections then regarding some issues to the Corps. Now, I have received two more letters To Whom It May Concern directives, both dated 12/14/04, wherein the Corps once again attempts to extend its jurisdiction.

In letter # 1 which I will call, 'The Bait, the Corps' project addresses is a regional Waste Water Treatment Facility (WWTF) for the City of Key Largo. The program is a co-operative effort between the Corps and South Florida Water Management District with financial assistance which have qualified for federal funds. The end results will discharge treated water into State Waters of the Florida Keys National Marine Sanctuary (FKNMS) for 1 of 13 of the 45 top ranking water quality hot spots in the Keys.

The location of the 13 and 45 hot spots should be identified with state waters, the time frame for upgrading them and the method for financing the project outlined so that Floridians will have a more complete picture of the Corps, and their associates full intentions. The alternatives presented for consideration are outlined totally devoid of any concrete facts on which to make an intelligent decision. Government spin is put on number 2 of the Alternatives to make it appear as the only intelligent choice.

Letter # 2, which I will call, 'The Switch, proposed a facility for the City of Key West which will discharge treated water into International Waters of the FKNMS where the South Florida Water Management District is not involved. All prior comments referencing City of Key Largo also apply to the proposal for the City of Key West. The notable difference is that Key Largo treated water will be discharged into state waters but treated waters in Key West will be discharged into International Waters. It appears intentional that nothing addresses what waters the Treated Waters from the other 32 hot spots are discharged into. Particularly the 12 of the 13 mentioned. Please Correct.

cc: Media

Your truly,

*H. T. Pontin*

H. T. Pontin  
Master Mariner  
951 W. Indies Dr.  
Ramrod Key, Fl. 33042



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southeast Regional Office  
9721 Executive Center Drive North  
St. Petersburg, Florida 33702

January 10, 2005

Mr. Michael Dupes  
Planning Division, South Florida Section  
Department of the Army  
Jacksonville District Corps of Engineers  
P.O. Box 4970  
Jacksonville, Florida 32232

Dear Mr. Dupes:

The National Marine Fisheries Service (NOAA Fisheries) has reviewed the December 14, 2004, letters requesting assistance in gathering information for a draft Environmental Assessment (EA) for the City of Key Largo and City of Key West projects in Monroe County, Florida. These projects are a component of the Florida Keys Water Quality Improvements Program (FKWQIP) enacted to improve the water quality within the Florida Keys National Marine Sanctuary (FKNMS). For brevity, our response to your request addresses both the City of Key Largo and City of Key West projects even though each is distinct in many ways. By letter dated June 3, 2004, NOAA Fisheries provided comments on the Draft Programmatic Environmental Impact Statement (DPEIS) for the FKWQIP. According to the information provided in your December 14<sup>th</sup> letters, the City of Key Largo and City of Key West projects have been designated by the Program Development Team as priority projects.

The draft EA for the City of Key Largo will address construction of a regional wastewater treatment facility and collection system. The new regional advanced wastewater treatment facility (AWTF) will be located on a 4.2-acre parcel on the Atlantic Ocean side of U.S. Highway 1 at Mile Marker 100.5 in Key Largo. This system will include two deep injection wells, a monitoring well, a force main system, and a vacuum collection system designed to serve nearly 4,500 equivalent dwelling units. The collection system will include approximately 15 vacuum and/or gravity sewer lines and force mains installed throughout the service area within existing road rights-of-way. Specific pump station sites have not yet been selected and will be part of the environmental documentation effort. We note that the scoping letter does not contain site-specific information on current land uses or habitat types at the proposed AWTF site. The proposed action would provide federal financial and technical assistance to develop and construct a new regional AWTF and associated vacuum pumps, injection and monitoring wells, and collection system to serve nearly 4,500 residences and businesses in Key Largo.



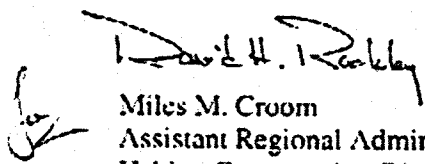
The draft EA for the City of Key West project will address construction of 68 gravity wells and two pump-assist wells for stormwater improvement. These wells will be installed in the existing rights-of-way at street intersections in the city. The well itself consists of a drilled open shaft that is partially lined. The casing extends downward past a confining (hard) soil layer located 35-40 feet below the ground surface. This confining soil layer acts as a barrier that separates the aquifer from the stormwater disposal area. As required by the Florida Department of Environmental Protection, the gravity wells will be a minimum of 100 feet in depth, with the upper 60 feet encased. Pump-assisted injection wells will be used where gravity injection will not work. The pump-assisted wells will be constructed to the same specifications as the gravity wells, with the addition of two 60-horsepower, 8350 gallon per minute pumps to assist in moving the stormwater. The proposed action would provide federal financial and technical assistance to construct 68 gravity wells and two pump-assist wells at 70 intersections in the City of Key West.

As previously stated in our June 3, 2004 letter, NOAA Fisheries generally supports implementation of the FKWQIP. We believe the FKWQIP would have a beneficial effect with regard to essential fish habitat (EFH) and other federally managed fishery resources. Nearshore marine habitats including seagrass communities and coral reefs are likely to benefit as a result of reductions in total suspended solids, nutrients, and pathogens that are expected in connection with wastewater and stormwater improvement activities. However, we recommend that the siting of wastewater and stormwater treatment facilities should avoid or minimize adverse impacts to wetland communities. Compensatory mitigation will be required for unavoidable impacts to these communities.

In conclusion, NOAA Fisheries supports the proposed action. Reducing nutrient loading and contaminated runoff into nearshore waters from outdated septic systems, cesspits, and other sources should result in improved water quality and positive effects on EFH and other NOAA Fisheries' trust resources in the Florida Keys.

We look forward to reviewing the draft EA's and working with the COE, SFWMD, and others during individual project development and implementation. If we can be of further assistance, please advise. Related correspondence should be addressed to the attention of Ms. Audra Lavergood. She may be reached at 11420 North Kendall Drive, Suite 103, Miami, Florida 33176 or by phone at (305) 595-8352.

Sincerely,

  
Miles M. Croom  
Assistant Regional Administrator  
Habitat Conservation Division

cc:

FKNMS, Key Largo (Attn. Lauri MacLaughlin)

EPA, Marathon (Attn. Bill Kruczynski)

DEP, Marathon

FFWCC, Marathon

FWS, Vero Beach

F/SER45-Livergood



*by Largo*



FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists eighteen previously recorded archaeological sites and no historical standing structures in the following parcel:

T60S R40E, Section 19, 29, 30, 31 and 32.

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites or historical structures.
- While many of our records relate to historically significant properties, the entry of an archaeological site or an historical structure on the Florida Master Site File does not necessarily mean that the structure is significant.
- Since vandalism is common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.
- As you may know, federal and state laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

If you have any further questions concerning the Florida Master Site File, please contact us as below.

Sincerely,

*Gerald L. Brinkley*

Wm. Gerald L. Brinkley  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
R. A. Gray Building  
500 South Bronough Street  
Tallahassee, Florida 32399-0250

Phone 850-245-6440, Fax: 850-245-6439  
State SunCom: 205-6440  
Email: [fmsfile@dos.state.fl.us](mailto:fmsfile@dos.state.fl.us)  
Web: <http://www.dos.state.fl.us/dhr/msf/>

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

☐ Director's Office  
(850) 245-6300 • FAX: 245-6435

☐ Archaeological Research  
(850) 245-6444 • FAX: 245-6436

☐ Historic Preservation  
(850) 245-6333 • FAX: 245-6437

☐ Historical Museums  
(850) 245-6400 • FAX: 245-6433

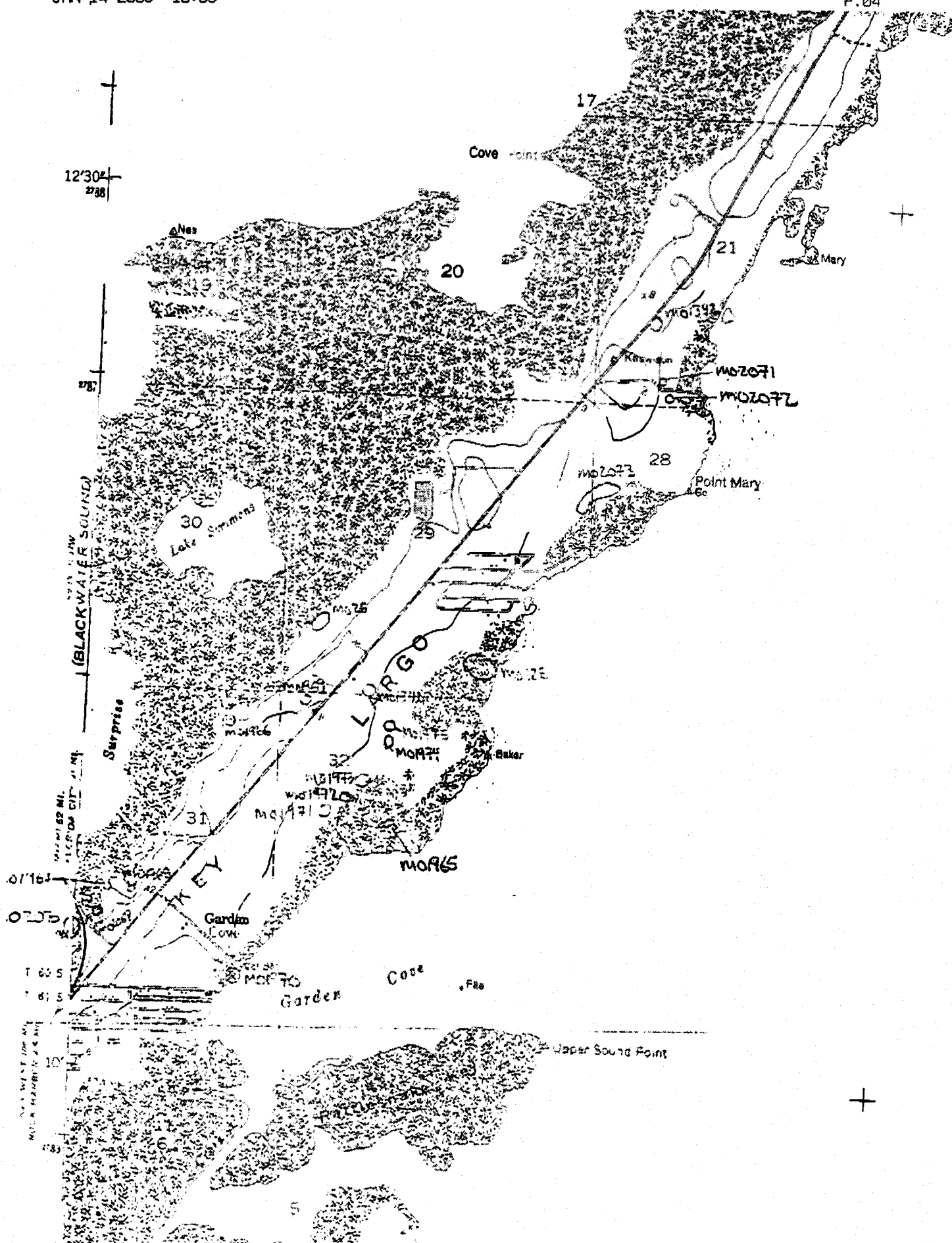
☐ Palm Beach Regional Office  
(561) 279-1475 • FAX: 279-1476

☐ St. Augustine Regional Office  
(904) 825-5045 • FAX: 825-5044

☐ Tampa Regional Office  
(813) 272-3843 • FAX: 272-2340

| SITEID  | FORMNO | T-R-S      | CR | SITENAME                             | NRLIST SURVEY | LOCATION  | OTHER                                                 |
|---------|--------|------------|----|--------------------------------------|---------------|-----------|-------------------------------------------------------|
| 4000025 | MELD   | 60S/40E/29 | AR | KEY LARGO 1                          |               | Map: GARC | Culture: ARCL, GL2, GL3<br>Sitetype: MDSH             |
| 4000128 | 197504 | 60S/40E/29 | AR | ATLANTIC                             |               | Map: GARC | Culture: GL3<br>Sitetype: MIDD                        |
| 4000208 | 196805 | 59S/40E/12 | AR | JOHN PENNEKAMP CORAL REEF STATE PARK | Listed        | Map: BLKW | Culture: 19TH, SP17<br>Sitetype: WRZC                 |
| 4001341 | 199206 | 60S/40E/29 | AR | ROUND CONTAINER                      |               | Map: GARC | Culture: 19TH, 20TH<br>Sitetype: BLDG, HOME, VADE     |
| 4001965 | 198212 | 60S/40E/32 | AR | PORT BOUGAINVILLE 1                  | 814           | Map: GARC | Culture: GL1, GL2<br>Sitetype: MDSH, MIDD, SCAR       |
| 4001966 | 198212 | 60S/40E/31 | AR | PORT BOUGAINVILLE 2                  | 814           | Map: GARC | Culture: GL1, GL2<br>Sitetype: MDSH, MIDD, MOUN, SCAR |
| 4001967 | 198212 | 60S/40E/31 | AR | HEART HAMMOCK                        | 814           | Map: GARC | Culture: INDE<br>Sitetype: SCAR, SING                 |
| 4001968 | 198212 | 60S/40E/31 | AR | SHERR                                | 814           | Map: GARC | Culture: INDE<br>Sitetype: SCAR, SING                 |
| 4001969 | 198212 | 60S/40E/32 | AR | ADZE                                 | 814           | Map: GARC | Culture: PREA, PREH<br>Sitetype: SING                 |
| 4001970 | 198212 | 60S/40E/31 | AR | GARDEN COVE                          | 602           | Map: GARC | Culture: 20TH, AMER<br>Sitetype: HOUS, MDSH, WELL     |
| 4001971 | 198212 | 60S/40E/32 | AR | CELT                                 | 814           | Map: GARC | Culture: PREA, PREH<br>Sitetype: SCAR, SING           |
| 4001972 | 198212 | 60S/40E/32 | AR | LAURA                                | 814           | Map: GARC | Culture: AMER, POSR, SPAN<br>Sitetype: SCAR, SING     |
| 4001973 | 198212 | 60S/40E/32 | AR | FRAG                                 | 814           | Map: GARC | Culture: PREA, PREH<br>Sitetype: SCAR, SING           |
| 4001974 | 198212 | 60S/40E/32 | AR | BUSYCON ADZE                         | 814           | Map: GARC | Culture: PREA, PREH<br>Sitetype: SCAR, SING           |
| 4001975 | 198212 | 60S/40E/32 | AR | COLUMELLA                            | 814           | Map: GARC | Culture: PREH<br>Sitetype: SCAR, SING                 |
| 4002069 | MELD   | 60S/40E/31 | AR | CAMP KEY LARGO                       |               | Map: GARC | Culture: AMER, SPAN<br>Sitetype: RAIL                 |
| 4002073 | MELD   | 60S/40E/28 | AR | GULFSTREAM                           |               | Map: GARC | Culture: INDE<br>Sitetype: MDSH, SCAR                 |
| 4002075 | MELD   | 60S/40E/31 | AR | LAKE SURPRISE                        |               | Map: BLKW | Culture: INDE<br>Sitetype: MDSH                       |

8 site(s) evaluated; 18 form(s) evaluated.  
Print date: 1/14/2005 3:22:47 PM







FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists ten previously recorded archaeological sites and one historical standing structure in the following parcels:

T61S R39E, Sections 1, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32 and 33.

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites or historical structures.
- While many of our records relate to historically significant properties, the entry of an archaeological site or an historical structure on the Florida Master Site File does not necessarily mean that the structure is significant.
- Since vandalism is common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.
- As you may know, federal and state laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

If you have any further questions concerning the Florida Master Site File, please contact us as below.

Sincerely,

Wm. Gerald L. Brinkley  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
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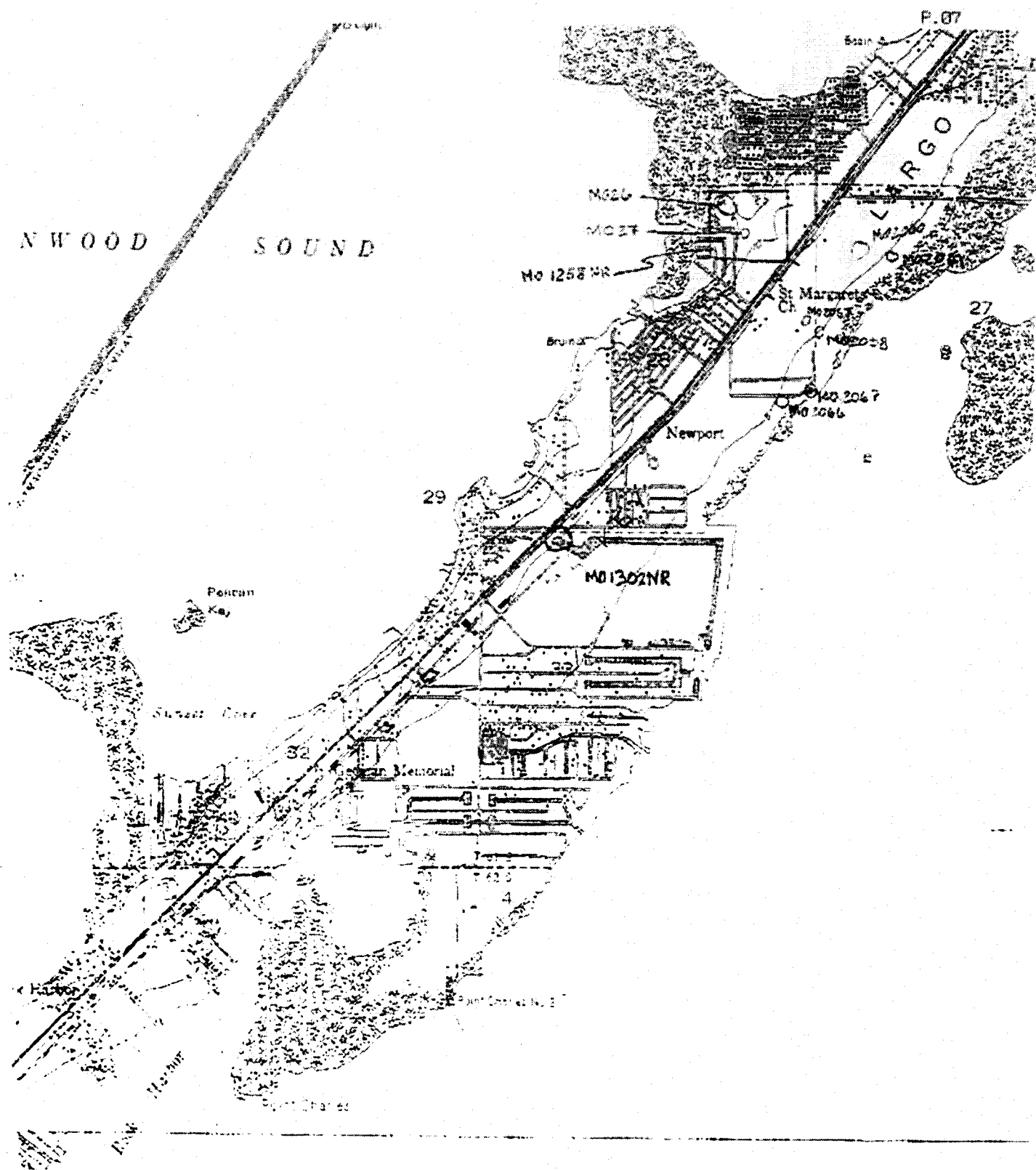
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☐ Tampa Regional Office  
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| GENERAL INFORMATION |        |            |                                            | STATUS | SURVEY | LOCATION           | OTHER                                                                                          |
|---------------------|--------|------------|--------------------------------------------|--------|--------|--------------------|------------------------------------------------------------------------------------------------|
| 0000026             | 197408 | 61S/39E/28 | AR ROCK MOUND 1 (MIDDEN) KEY LARGO         |        |        | Map: ROHA          | Culture: GL2A, GL2B, GL3, GL3B<br>Sitetype: MIDD, MOON                                         |
| 0000027             | MELD   | 61S/39E/28 | AR ROCK MOUND 2 (ROCK MOUND) (KEY LARGO 3) |        |        | Map: ROHA          | Culture: GL, GL3<br>Sitetype: MIDD, MOON                                                       |
| 0000208             | 196805 | 59S/40E/12 | AR JOHN PENNEKAMP CORAL REEF STATE PARK    | Listed |        | Map: BLKW          | Culture: 19TH, SP17<br>Sitetype: WRSC                                                          |
| 0001258             | 199509 | 61S/39E/28 | AR ROCK MOUND ARCHAEOLOGICAL SITE          | Listed | 4848   | Map: ROHA          | Culture: 20TH, GL1B, GL2A, GL2B, GL2C, G<br>Sitetype: FEAT, HARI, LAND, MDSR, MOON, Uscs: VESS |
| 0001302             | 200304 | 62S/38E/   | SS AFRICAN QUEEN                           | Listed | 9277   | 99701 OVERSEAS HWY | Built: 1912<br>Culture: AMER, BOON, DEPR, SPAW, WW1A<br>Sitetype: CIST, WALL                   |
| 0002057             | MELD   | 61S/39E/28 | AR ROSE MARIE                              |        |        | Map: ROHA          | Culture: AMER, POSR, SPAW, WW1A<br>Sitetype: CIST, HONS, REFU                                  |
| 0002058             | MELD   | 61S/39E/27 | AR GUN RANGE CISTERN                       |        |        | Map: ROHA          | Culture: AMER, POSR, SPAW, WW1A<br>Sitetype: CIST, HONS, REFU                                  |
| 0002060             | MELD   | 61S/39E/27 | AR NEWPORT PLANTATION                      |        |        | Map: ROHA          | Culture: GL2, GL3<br>Sitetype: MDSR, MIDD, SCAR, SCLY                                          |
| 0002061             | MELD   | 61S/39E/27 | AR THORN                                   |        |        | Map: ROHA          | Culture: HIST, POSR, PRER, SPAW, WW1A<br>Sitetype: MUSH, REFU, SCAR                            |
| 0002066             | MELD   | 61S/39E/28 | AR NEWPORT                                 |        |        | Map: ROHA          | Culture: AMER, POSR, SPAW, WW1A<br>Sitetype: CIST, HONS, REFU                                  |
| 0002067             | MELD   | 61S/39E/28 | AR SWINE                                   |        |        | Map: ROHA          |                                                                                                |

1 site(s) evaluated; 11 form(s) evaluated.  
Print date: 1/14/2005 3:27:12 PM







FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists one previously recorded archaeological site and no historical standing structures in the following parcels:

T61S R40E, Sections 6, 7, 8 and 18.

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites or historical structures.
- While many of our records relate to historically significant properties, the entry of an archaeological site or an historical structure on the Florida Master Site File does not necessarily mean that the structure is significant.
- Since vandalism is common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.
- As you may know, federal and state laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

If you have any further questions concerning the Florida Master Site File, please contact us as below.

Sincerely,

Wm. Gerald L. Brinkley  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
R. A. Gray Building  
500 South Bronough Street  
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| MOON    | DATE              | SITENAME                                | NRLIST SURVEY | LOCATION  | OTHER                                 |
|---------|-------------------|-----------------------------------------|---------------|-----------|---------------------------------------|
| MO00208 | 196805 59S/408/12 | AR JOHN PENNEKAMP CORAL REEF STATE PARK | Listed        | Map: BLKW | Culture: 19TH, SP17<br>Sitetype: WREC |

1 site(s) evaluated; 1 form(s) evaluated.  
 Print date: 1/14/2005 4:37:00 PM



FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists two previously recorded archaeological sites and no historical standing structures in the following parcels:

T62S R39E, Sections 4, 5, 6 and 7.

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites or historical structures.
- While many of our records relate to historically significant properties, the entry of an archaeological site or an historical structure on the Florida Master Site File does not necessarily mean that the structure is significant.
- Since vandalism is common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.
- As you may know, federal and state laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

If you have any further questions concerning the Florida Master Site File, please contact us as below.

Sincerely,

*Wm. Gerald L. Brinkley*  
Wm. Gerald L. Brinkley  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
R. A. Gray Building  
500 South Bronough Street  
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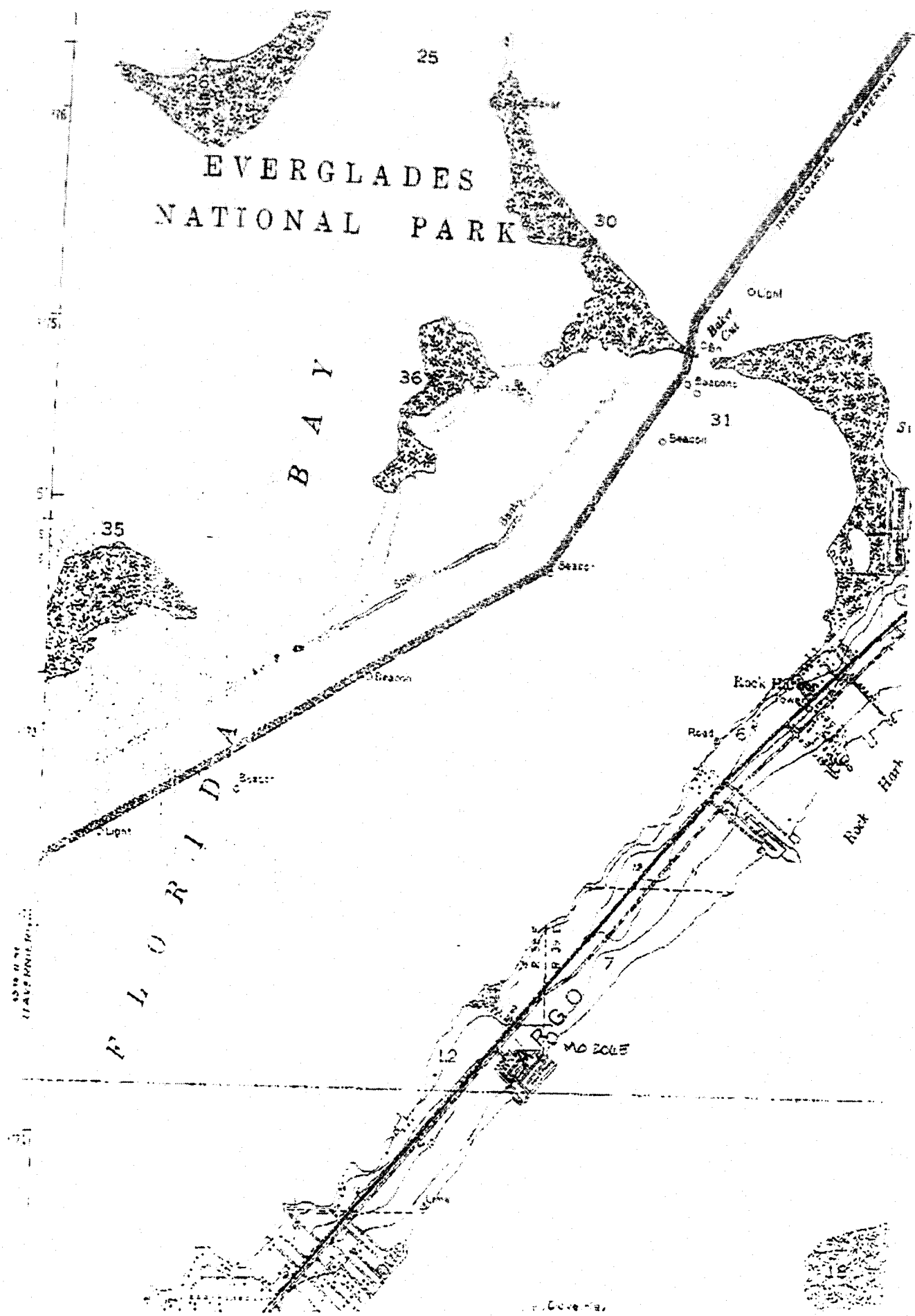
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|                           | UTM                                     | NRLIST SURVEY | LOCATION  | OTHER                                                                 |
|---------------------------|-----------------------------------------|---------------|-----------|-----------------------------------------------------------------------|
| M000208 196805 59S/40E/12 | AR JOHN PENNEKAMP CORAL REEF STATE PARK | Listed        | Map: BLKW | Culture: 19TH, SP17<br>Sitetype: WRRC                                 |
| M002065 MELD 62S/39E/7    | AR OCEAN SIDE                           |               | Map: ROHA | Culture: CIVL, GL, GL2, GL3, POSR, RECI<br>Sitetype: MDSH, MIDD, REFU |

2 site(s) evaluated; 2 form(s) evaluated.  
Print date: 1/14/2005 3:29:05 PM







FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists no previously recorded cultural resources within the following parcels:

T60S R38E Sections 13 and 14.

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites, unrecorded historically important structures, or both.
- As you may know, state and federal laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review of cultural resources. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

Sincerely,

Wm. Gerald L. Brinkley, 850-245-6440  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
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500 South Bronough Street  
Tallahassee, Florida 32399-0250

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FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists no previously recorded cultural resources within the following parcels:

T60S R39E Sections 25, 26 and 36.

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites, unrecorded historically important structures, or both.
- As you may know, state and federal laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review of cultural resources. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

Sincerely,

A handwritten signature in cursive script, reading "Gerald Brinkley", is written over a horizontal line.

Wm. Gerald L. Brinkley, 850-245-6440  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
R. A. Gray Building  
500 South Bronough Street  
Tallahassee, Florida 32399-0250

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FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists no previously recorded cultural resources within the following parcels:

T61S R38E Sections 24, 25, 26 and 36.

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites, unrecorded historically important structures, or both.
- As you may know, state and federal laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review of cultural resources. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

Sincerely,

Wm. Gerald L. Brinkley, 850-245-6440  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
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FLORIDA DEPARTMENT OF STATE  
Glenda E. Hood  
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DIVISION OF HISTORICAL RESOURCES

January 14, 2005

Pam Latham  
PBSJ  
5300 West Cypress Street, Suite 300  
Tampa, FL 33607  
FAX#: 813-287-1745

Dear Ms. Latham:

In response to your inquiry of January 13, 2005, the Florida Master Site File lists no previously recorded cultural resources within the following parcel:

T62S R38E Section

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites, unrecorded historically important structures, or both.
- As you may know, state and federal laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review of cultural resources. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

Sincerely,

Wm. Gerald L. Brinkley, 850-245-6440  
Archaeological Data Analyst, Florida Master Site File  
Division of Historical Resources  
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TOTAL P.16







**FINDING OF NO SIGNIFICANT IMPACT (DRAFT)**

**PROPOSED CONSTRUCTION OF REGIONAL ADVANCED WASTEWATER  
TREATMENT FACILITY IN KEY LARGO**

**FLORIDA KEYS WATER QUALITY IMPROVEMENT PROJECT  
MONROE COUNTY, FLORIDA**

I have reviewed the Environmental Assessment (EA) for the *Proposed Action*. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed hereto. Based on information analyzed in the EA, reflecting pertinent information obtained from agencies having jurisdiction by law and/or special expertise, I conclude that the *Proposed Action* will not significantly impact the quality of the human environment and does not require an Environmental Impact Statement. Reasons for this conclusion are in summary:

a. The *Proposed Action*: Provide federal financial and technical assistance from the Corps, as part of the Florida Keys Water Quality Improvements Program (FKWQIP), to develop and implement a regional wastewater collection and treatment system for the Key Largo service area that would address mandatory state wastewater treatment standards. This project is being implemented under the FKWQIP, which is intended to alleviate water quality degradation resulting from the discharge of inadequately treated and untreated wastewater into nearshore waters of the Florida Keys National Marine Sanctuary (Sanctuary), and includes the second highest ranking hotspot in the Keys.

b. Measures to prevent or minimize impacts to the Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) or Stock Island tree snail (*Orthalicus reses*), and in accordance with Biological Opinions from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service will be implemented during and after project construction. There would be no adverse impacts to other Federally listed endangered or threatened species.

c. Upon reviewing the draft EA, the state has determined that, at this stage, the action is consistent with the Florida Coastal Zone Management Program. Refer to letter dated August 2, 2002 from the Florida State Clearinghouse in Appendix D of the Programmatic Environmental Impact Statement (PEIS). Final consistency will come with the issuance of the state Water Quality Certification.

d. Based on consultation with the State Historic Preservation Officer, no significant historical properties have been identified on the proposed site.

e. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources include the following: (1) construction limited to 2.6 acres identified for the project, (2) restoration of 2.6 acres of off-site hardwood hammock and preservation of the habitat remaining on the 23 acre parcel following construction of the proposed project, (3) removal of Brazilian pepper throughout the site, (4) any unavoidable impacts to protected species or resources would be appropriately mitigated as described in the EA.

## Executive Summary

---

The United States (U.S.) Congress has directed the U.S. Army Corps of Engineers (Corps) to assist local municipalities in Monroe County, Florida, in the planning and construction of wastewater and stormwater improvements designed to accomplish the goals listed below.

- Reduce nutrient loading to the nearshore waters of the Florida Keys National Marine Sanctuary (Sanctuary)
- Improve water quality throughout the waters of the Sanctuary
- Meet relevant federal and state regulatory standards

A Programmatic Environmental Impact Statement (PEIS) was previously prepared by the Corps for the proposed Florida Keys Water Quality Improvements Program (FKWQIP) in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508). These laws and regulations require the Corps to consider and address environmental issues when funding a major federal action.

This Draft Environmental Assessment (EA) tiers from the PEIS for the FKWQIP and hereby incorporates the PEIS by reference, in accordance with 40 CFR Part 1508.28. The Key Largo regional wastewater improvement system will address several of the 45 water quality hot spots in the Keys, including two of the four most critical, previously identified in the Monroe County Sanitary Wastewater Master Plan (MCSWMP).



*The Key Largo regional WWTF will address several of the 45 water quality hot spots in the Keys, including two of the four most critical, previously identified in the MCSWMP.*

The *Proposed Action* addressed by this Draft EA is the construction of a new regional wastewater collection, treatment, and disposal system by the Key Largo Wastewater Treatment District (KLWTD) and consists of the components listed below.

- A regional advanced wastewater treatment facility (WWTF) with approximately 2.25 million gallons per day (mgd) capacity that would serve an existing 13,602 residential units
- System of combined vacuum and gravity sewer force mains and collection lines along approximately eight miles of U.S. Highway 1 (U.S. 1)
- Approximately 15 vacuum pump stations (VPSs) or conventional pump stations in existing road rights-of-way (ROWs) or purchased parcels, and a vacuum main to transport wastewater to the WWTF
- Two deep injections wells for disposal of wastewater that has undergone advanced wastewater treatment (AWT) and a single monitoring well

The Key Largo service area addressed by this draft EA extends from approximately mile marker (MM) 106.5 (Lake Surprise and Sexton Cove) to MM 98.5 (Harbor Shores) in the upper Keys.

The proposed WWTF would be located at approximately MM 100.5, opposite Key Largo Park (KLP) and Key Largo Trailer Village (KLTV). The design capacity of the proposed facility is 2.25 mgd and would be large enough to serve the entire Key Largo Wastewater Treatment District (MM 91 to MM 106.5) once funds are available to expand the collection capacity.

### Purpose and Need

In recognition of the importance of improving water quality in the Sanctuary, the purpose of the *Proposed Action* is to implement the goals and objectives of the Florida Keys Water Quality Improvements Act (Act) and FKWQIP in the Key Largo service area. The *Proposed Action* is needed to reduce nutrient and bacteria loading, improve water quality in the Sanctuary, and expedite compliance with relevant federal, state, and local regulatory standards.

Water quality is critical to maintaining the marine ecosystem of the Sanctuary and influences the coral reef and the organisms dependent on the reef. At the federal level, the Sanctuary and Protection Act of 1990 directed the U.S. Environmental Protection Agency (USEPA) and the state of Florida to develop a water quality protection plan for the Sanctuary. Locally, the *Monroe County 2010 Comprehensive Plan* mandates reduced nutrient loadings to the Sanctuary by the year 2010 and the application of more stringent Florida Statutory Treatment Standards to wastewater treatment.

Unique and nationally recognized marine habitats in the Sanctuary include seagrass meadows, mangrove islands, and the only living coral barrier reef in North America. Numerous scientific studies have documented the contribution of failing septic tanks and cesspools to the deterioration of canal and nearshore water quality that can adversely impact these habitats. However, water users in the service area continue to rely on septic tanks and outdated on-site package facilities rather than central wastewater treatment systems.

Importantly, the Corps' Florida Keys Carrying Capacity Study (FKCCS) model provided a means of quantifying the effects of wastewater improvement projects, specifically reductions in nutrient loads, in the Key Largo service area. The model was run specifically for the FKWQIP and the associated individual projects such as the proposed Key Largo WWTF, and the model results were used to evaluate impacts of the wastewater improvement projects.



*The purpose of the Proposed Action is to reduce nutrient and bacteria loading, improve water quality in the Sanctuary, and expedite compliance with relevant federal and state regulatory standards in the Key Largo service area.*

### Decision to be Made

Based on the potential benefits of the Key Largo regional wastewater treatment project and the adverse environmental impacts if water quality improvements are not made, the federal government must determine whether to provide financial and technical assistance to implement wastewater treatment improvements for the service area under provisions of the FKWQIP. The estimated cost of the proposed project is \$140 million and would be funded by the KLWTD,

grant funding obtained by the KLWTD, and the Corps (approximately \$30 million). The location of the WWTF is mapped in Figure ES-1.

### Description of Alternatives

Wastewater project alternatives for the Key Largo service area provide the basis for decision-making, thereby making up the core of this Draft EA. The three alternatives evaluated as part of this Draft EA are described briefly below.

**Alternative 1: No Action.** No state or federal funding would be provided to the KLWTD for implementation of wastewater treatment improvement projects to address state mandates to meet wastewater treatment standards and public entities would not construct or operate WWTFs. Key Largo residents, communities, and businesses would be responsible for addressing state mandates aimed at improving water quality in the Sanctuary.

**Alternative 2: Proposed Action.** Federal financial and technical assistance would be provided by the Corps, as part of the FKWQIP, to develop and implement a regional wastewater collection and treatment system for the Key Largo service area that would address mandatory state wastewater treatment standards.

**Alternative 3: Pursue other Sources of Funding for Project Implementation.** In the absence of federal funding from the FKWQIP, alternative funding sources would be pursued to implement projects for the Key Largo service area that would address state mandates and improve water quality in the Sanctuary. Sources of monies may include other federal and state funding mechanisms.

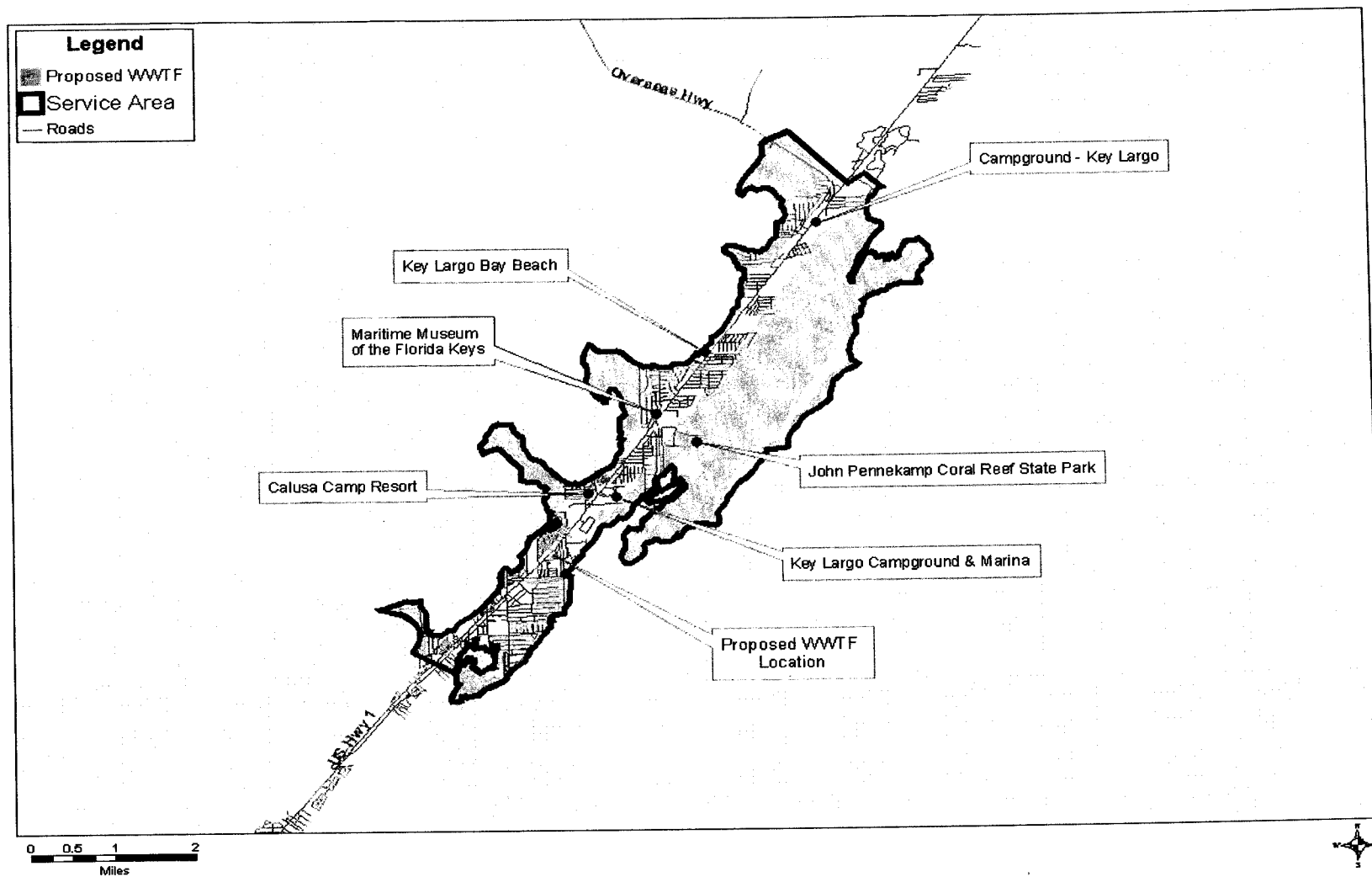
While other funding sources are currently being evaluated to assist in implementing wastewater improvement projects in the Key Largo service area, the proposed federal funding would expedite construction of the regional WWTF and associated infrastructure.

### Scoping Issues

A scoping letter was issued to various stakeholders and interested parties on December 14, 2004 and comments were received through January 14, 2005. Significant issues identified during the scoping process and discussions with regulatory agencies, stakeholders, and residents of the Key Largo service area are listed below and have guided the preparation of this document.

** Issue 1: Water Quality.** A number of recent scientific studies have documented the contribution of failing septic tanks and cesspools to the deterioration of canal and nearshore marine water quality in the Keys. The studies attribute increased algal blooms, seagrass die-off, and the decline in coral reef ecosystems health to inadequate wastewater treatment. Scientists concur that one of the principal sources of water quality degradation in the Sanctuary is the elevated level of nutrients in surrounding canals and nearshore waters. The USEPA has concluded that the magnitude and extent of estimated nutrient loadings from wastewater sources

**Figure ES-1**  
**Proposed WWTF Location on Key Largo, in Monroe County, Florida**



are regionally substantial (USEPA 1993), and fecal indicators have been found in onshore and nearshore monitoring wells in Key Largo canals (Paul *et al.* 1995). Reductions in total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) loadings of 88, 80, and 77 percent, respectively are anticipated in the Key Largo service area as a result of implementing proposed wastewater improvements.



**Issue 2: Facility Site.** Vacant lands are scarce in the Keys and potential sites for WWTFs may include sensitive or critical habitat for protected species (see issue 3, below). In addition, sewer collection systems may cross naturally or culturally sensitive lands. The proposed WWTF would be built on 2.6 acres of a larger 23 acre parcel located ocean side of U.S. 1 at MM 100.5, adjacent to an existing Florida Keys Aqueduct Authority (FKAA) maintenance facility (Figure ES-1). The parcel is characterized by an undisturbed hardwood hammock and the proposed WWTF would be constructed on a portion of the larger 23 acre parcel previously disturbed due to clearing, debris dumping, and non-native plant species invasion. Because hardwood hammocks are protected under Monroe County's Land Development Regulation Section 9.5-345, restoration of 2.6 acres of off-site hardwood hammock and conservation in perpetuity of the remaining 20.4 acres of the parcel are proposed. Impacts to cultural and historic resources are not anticipated.



**Issue 3: Protected Species.** Any action by the KLWTD that results in the loss of natural areas is likely to impact protected species due to the few remaining natural areas in the Keys. Protected species that occur or may occur in the service area, associated habitats, and regulatory framework affecting these species, are addressed in this Draft EA. Although formal consultation regarding the proposed project has not occurred, the proposed project is an expansion of an existing wastewater improvement project for which formal consultation with the U.S. Fish and Wildlife Service (USFWS) was previously initiated due to FEMA funding. The subsequent Biological Opinion (BO) concluded that the construction of the proposed WWTF is: 1) not likely to jeopardize the continued existence of the federally protected Schaus swallowtail butterfly (*Heracleides aristodemus ponceanus*) or Stock Island tree snail (*Orthalicus reses*), 2) not likely to affect the eastern indigo snake (*Drymarchon corais couperi*), and 3) no critical habitat has been designated for these species, and therefore none will be impacted. Reasonable and prudent measures identified by the USFWS include the restoration of 2.6 acres of hardwood hammock and preservation of the habitat remaining following construction of the proposed project.



**Issue 4: Effluent Disposal.** Residents in the Key Largo service area currently rely on septic tanks, cesspools, and package treatment facilities. Because deep well injection is required for all WWTFs with capacities great than one mgd, two deep injection wells will be construction for disposal of AWT effluent. Deep injection wells are governed by Chapter 62-528 Florida Administrative Code (F.A.C.). The deep well injection system would include pumps and pumping surge control system, two deep injection wells, and a monitoring well. Deep injection wells would be designed and constructed to meet both Florida Department of Environmental Protection (FDEP) Class I reliability standards and Underground Injection Control (UIC) Class I well construction and monitoring requirements. Approximately 100 deep injection wells are currently permitted and

operating in Florida. Formal consultation for the FEMA funded project was concluded in June 2001. Activities under the *Proposed Action* would be consistent with these measures.



**Issue 5: Tourism.** The quality of life for tourists in the Keys relies on a healthy marine ecosystem and can be negatively impacted by water quality degradation. Over two million individuals per year visit the Keys to enjoy its unique natural features and Key Largo has been referred to as the “diving capital of the world.” Water related activities, including snorkeling, diving, fishing, and other activities support 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 economic losses.



**Issue 6: Environmental Justice.** Approximately eight percent of the population of Key Largo was living below the poverty level in 2000 and a relatively high proportion (17 percent) of the population was over the age of 65 in 2000 (in comparison with 14.7 percent of the county and 17.6 percent of the state). This segment of the population often lives on fixed incomes and, while their income may not be below the poverty level, they are affected by cost of living changes. These factors suggest that while the majority of the Key Largo residents are financially secure, there is considerable disparity in wealth and income among residents, raising potential environmental justice concerns.

### Comparison of Alternatives

The alternatives examined as part of this Draft EA were premised on the need to implement water quality improvement projects in the Key Largo service area that will reduce nutrient loading and result in commensurate improvements in water quality to the Sanctuary. Environmental consequences of physical, biological, and human issues are presented in comparative form in Table ES-2.

Proposed Actions under Alternative 2 would: 1) address regional water quality issues, 2) reduce nutrient loadings and improve water quality throughout the Sanctuary, and 3) expedite compliance with federal and state regulatory water quality treatment standards. Alternative 2 or *Proposed Action* provides for implementation of central community wastewater collection and treatment system service areas in the service area. Under the *Proposed Action*, construction of projects would be expedited and project management and expenditures would be more effective when compared with the *No Action* Alternative or Alternative 3, *Alternative Funding Sources*.

Potential adverse impacts due to implementation of the *Proposed Action* include those related to environmental justice and biological resources. Seventeen percent of the population in the Key Largo service area is classified as over 65 and more than eight percent of the Key Largo population lives below the poverty level it would be difficult for these residents to afford the capital costs and monthly service fees associated with wastewater treatment improvements. As for biological resources, as much as 2.6 acres of tropical hardwood hammock would be eliminated or disturbed as a result of the construction of the WWTF.

### Preferred Alternative

The preferred alternative, or *Proposed Action*, includes financial and technical assistance for the KLWTD to construct a regional WWTF, VPSs, and sewer force mains necessary to serve the Key Largo service area. The *Proposed Action* would accomplish the goals outlined below.

- Meet objectives of the Act
- Address local and regional water quality issues
- Achieve nutrient loadings reductions and commensurate improvement in water quality in nearshore waters of the service area and subsequently, the Sanctuary
- Expedite compliance with federal and state mandated regulatory water quality treatment standards

### Areas of Controversy

Controversial issues associated with FKWQIP include the cost of program implementation, the means of recovering initial capital investment, and the means of generating revenues to support maintenance and operational activities.

An issue primarily within the scientific community is whether the improvement of wastewater treatment and the installation of centralized sewers would improve the health of the coral reef in the Sanctuary. Conflicting scientific evidence would seem to indicate that improving nearshore water quality would, at a minimum, have a positive, albeit indirect, impact on the coral reef. Loss of upland hardwood hammocks that provide habitat for protected species is also an issue addressed in this Draft EA.

The disposal of wastewater effluent into the ground water through deep well injection and the potential for groundwater contamination is of concern to the public. Residents and businesses in the service area currently rely on residential septic tanks, cesspools, and packaged treatment plants, which provide little to no treatment, to treat more than 2.25 mgd of wastewater. Implementation of the improved wastewater treatment technologies will reduce the TN and TP loads by 88 and 80 percent, respectively, for the Key Largo service area.

These issues, as well as comments received as part of the PEIS process, are addressed in this EA as appropriate, and more specifically in *Chapter 5.0 Public Participation*.

**Table ES-1**  
**Comparison of Key Issues Among Alternatives For The FKWQIP**

| Scoping Issue                                                                                                      | Alternative 1<br><i>No Action</i>                                                                                                                                                                                                                                                             | Alternative 2<br><i>Proposed Action</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Alternative 3<br><i>Alternative Funding Sources</i>                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>1. Water Quality</b>       | Adverse impacts due to continued untreated waste- and stormwater runoff and associated nutrients, toxins, bacteria, and viruses to canals and nearshore waters in the Sanctuary. State and federal mandates to improve water quality in the Sanctuary may not be addressed.                   | Benefits of centralized wastewater treatment include water quality improvements due to decreased nutrients and other contaminants into canals and nearshore waters of the Sanctuary. Reductions in TN, TP, and TSS loadings of 88, 80, and 77 percent, respectively, are anticipated. These improvements will address state and federal legislation.                                                                                                                                                                                                                                                                                                                            | Continued degradation of water quality is anticipated until funding is obtained to implement wastewater improvement projects. Piece-meal implementation of projects may not address priority water quality areas, e.g. pollutant <i>hot spots</i> .                            |
| <br><b>2. Facility Siting</b>     | No impacts anticipated. No lands will be required for the location and construction of wastewater facilities. Therefore, existing residences, fish and wildlife habitats, and land uses will not be disrupted or displaced.                                                                   | Net environmental benefits due to improved water quality. Potential adverse impacts to approximately 2.6 acres of hammock. Mitigation proposed for hammock and disturbed wetlands loss, per Monroe County regulations. Impacts to cultural or historic resources are not anticipated.                                                                                                                                                                                                                                                                                                                                                                                           | Similar to the <i>Proposed Action</i> except that implementation will occur over time and additional impacts due to several smaller facilities are anticipated.                                                                                                                |
| <br><b>3. Protected Species</b> | Adverse impacts to protected species anticipated as a result of continued runoff of untreated wastewater into canals and nearshore waters and subsequent water quality degradation. Because no new facilities would be required, no impacts to habitat for protected species are anticipated. | Minimal adverse impacts due to facilities siting. Regulatory agencies support project. Section 7 USFWS/NMFS consultation and Florida Fish and Wildlife Conservation Commission (FFWCC) for protected species will occur as needed. A previously issued BO (June 2001) indicated that the proposed WWTF is not likely to jeopardize the continued existence of the federally protected Schaus swallowtail butterfly or Stock Island tree snail, or affect the eastern indigo snake. No critical habitat will be impacted. Measures recommended by the USFWS include the restoration of 2.6 acres of hardwood hammock and preservation of the remaining 20.4 acres of the parcel. | Impacts similar to those described under the <i>Proposed Action</i> are expected, with delays in benefits, in addition to potentially greater impacts due to larger number of smaller facilities being constructed.                                                            |
| <br><b>4. Effluent Disposal</b> | Adverse impacts anticipated as a result of unchanged effluent disposal practices. Runoff from cesspools and septic tanks will continue to enter canals and nearshore waters in the Sanctuary. Elimination of cesspools will progress at a slow pace.                                          | Benefits include reduced effluent discharges into Sanctuary as a result of deep well injection of AWT water from larger, centralized WWTF. Construction of centralized sewers will expedite the removal of cesspools and associated pollutants in pollutant <i>hot spots</i> throughout the Keys.                                                                                                                                                                                                                                                                                                                                                                               | Adverse impacts anticipated due to the absence of a centrally-managed WWT system. Fewer and smaller WWTFs may rely more heavily on shallow injection wells. Construction of sewers will be less effective due to fragmented approach. Delays in construction also anticipated. |

## Executive Summary

| Scoping Issue                                                                                                        | Alternative 1<br><i>No Action</i>                                                                                                                                                                                                                          | Alternative 2<br><i>Proposed Action</i>                                                                                                                                                                                                                                                                                                                       | Alternative 3<br><i>Alternative Funding Sources</i>                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>5. Tourism</b>               | Increasing impacts anticipated related to water quality degradation. Continued beach health advisories would adversely affect immediate recreation and tourist opportunities, and long-term impacts could be detrimental to tourism and the local economy. | Improved water quality would decrease the incidence of beach advisories and closings, thereby increasing the opportunity for saltwater-based recreation. Temporary adverse impacts would include transportation delays due to construction activities                                                                                                         | Improved water quality would decrease the incidence of beach advisories and closings, thereby increasing the opportunity for saltwater-based recreation however, at a slower pace as compared with the <i>Proposed Action</i> .                                           |
| <br><b>6. Environmental Justice</b> | Adverse impacts to low-income households who will have difficulties affording the cost of meeting 2010 mandates for wastewater treatment are expected.                                                                                                     | Approximately eight percent of the population of Key Largo was living below the poverty level in 2000 and 17 percent of the population was over the age of 65 in 2000. Compared with the county and state, these factors suggest that there is considerable disparity in wealth and income among residents, raising potential environmental justice concerns. | Over 14 percent of the population within the Key Largo service area is classified as low income and 16 percent are over 65 living on a fixed income. Without financial assistance, low-income and fixed income households may have difficulty paying for wastewater fees. |

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## List of Acronyms

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|            |                                                                       |
|------------|-----------------------------------------------------------------------|
| ACT        | Florida Keys Water Quality Improvement Act                            |
| ADID       | Advanced Identification of Wetlands                                   |
| ADT        | Average Daily Traffic                                                 |
| AFVP       | Atlas of Florida Vascular Plants                                      |
| AIRFA      | American Indian Religious Freedom Act                                 |
| Alum       | Aluminum Sulfate                                                      |
| ARPA       | Archaeological Resources Protection Act                               |
| AMSL       | Above Mean Sea Level                                                  |
| Assessment | Environmental Site Assessment                                         |
| ASTM       | American Society of Testing and Materials                             |
| ATUs       | Aerobic Treatment Units                                               |
| AWT        | Advanced Wastewater Treatment                                         |
|            |                                                                       |
| BAT        | Best Available Technology                                             |
| BBA        | Breeding Bird Atlas                                                   |
|            |                                                                       |
| BLS        | Below Land Surface                                                    |
| BMPs       | Best Management Practices                                             |
| BNR        | Biological Nutrient Removal                                           |
| BO         | Biological Opinion                                                    |
| BOCC       | Board of County Commissioners                                         |
| BOD        | Biochemical Oxygen Demand                                             |
|            |                                                                       |
| CARL       | Conservation and Recreation Lands                                     |
| CBIA       | Coastal Barrier Improvement Act                                       |
| CBRA       | Coastal Barrier Resources Act                                         |
| CBRS       | Coastal Barrier Resource System                                       |
| CDBG       | Community Development Block Grants                                    |
| CDP        | Census Designated Place                                               |
| CEQ        | Council on Environmental Quality                                      |
| CERCLA     | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFM        | Cubic Feet per Minute                                                 |
| CFR        | Code of Federal Regulations                                           |
| cm         | centimeter                                                            |
| Corps      | U.S. Army Corps of Engineers                                          |
| CWA        | Clean Water Act                                                       |
| CZMA       | Coastal Zone Management Act                                           |
|            |                                                                       |
| dB         | Decibel                                                               |
| DIN        | Dissolved Inorganic Nitrogen                                          |
| DOI        | Department of Interior                                                |
| Du/Ac      | Dwelling Unit per Acre                                                |

## List of Acronyms

|         |                                                        |
|---------|--------------------------------------------------------|
| EA      | Environmental Assessment                               |
| EDU     | Equivalent Dwelling Unit                               |
| EFH     | Essential Fish Habitat                                 |
| EIS     | Environmental Impact Statement                         |
| EO      | Executive Order                                        |
| EPJV    | Everglades Partners Joint Venture                      |
| ERP     | Environmental Resource Permit                          |
| ESA     | Endangered Species Act                                 |
| EQ      | Equalization                                           |
|         |                                                        |
| F.A.C.  | Florida Administrative Code                            |
| FCMP    | Florida Coastal Management Program                     |
| FDCA    | Florida Department of Community Affairs                |
| FDEP    | Florida Department of Environmental Protection         |
| FDOH    | Florida Department of Health                           |
| FDOT    | Florida Department of Transportation                   |
| FEMA    | Federal Emergency Management Agency                    |
| FFWCC   | Florida Fish and Wildlife Conservation Commission      |
| FIU     | Florida International University                       |
| FKAA    | Florida Keys Aqueduct Authority                        |
| FKCCS   | Florida Keys Carrying Capacity Study                   |
| FKEC    | Florida Keys Electric Cooperative                      |
| FKNMS   | Florida Keys National Marine Sanctuary                 |
| FKW     | Florida Keys Watch                                     |
| FKWQIP  | Florida Keys Water Quality Improvements Program        |
| FLUCFCS | Florida Land Use Cover and Forms Classification System |
| FMP     | Final Management Plan                                  |
| FMRI    | Florida Marine Research Institute                      |
| FNAI    | Florida Natural Areas Inventory                        |
| F.S.    | Florida Statute                                        |
| FWCA    | Fish and Wildlife Coordination Act                     |
|         |                                                        |
| GIS     | Geographical Information System                        |
| gpd     | Gallons per Day                                        |
| gpm     | Gallons per Minute                                     |
|         |                                                        |
| KEYS    | Florida Energy Services                                |
| KLP     | Key Largo Park                                         |
| KLTV    | Key Largo Trailer Village                              |
| KLWTD   | Key Largo Wastewater Treatment District                |
| km      | kilometer                                              |
|         |                                                        |
| LOS     | Level of Service                                       |
|         |                                                        |
| MCSWMP  | Monroe County Sanitary Wastewater Master Plan          |
| mgd     | Million Gallons per Day                                |

|           |                                                          |
|-----------|----------------------------------------------------------|
| MGES      | Minimum Grade Effluent Sewers                            |
| mg/L      | Milligrams per Liter                                     |
| MHI       | Median Household Income                                  |
| MM        | Mile Marker                                              |
| MSA       | Magnuson-Stevens Fishery Conservation and Management Act |
| NAGPRA    | Native American Graves Protection and Repatriation Act   |
| NEPA      | National Environmental Policy Act of 1969                |
| NHPA      | National Historic Preservation Act                       |
| NMFS      | National Marine Fisheries Service                        |
| NOAA      | National Oceanic and Atmospheric Administration          |
| NOI       | Notice of Intent                                         |
| NRCS      | Natural Resources Conservation Service                   |
| NPDES     | National Pollution Discharge Elimination System          |
| NWI       | National Wetlands Inventory                              |
| O&M       | Operations and Maintenance                               |
| OFW       | Outstanding Florida Waters                               |
| OSDS      | On site Disposal System                                  |
| OSTDS     | On-site Sewage Treatment and Disposal System             |
| OWNRS     | On-site Wastewater Nutrient Reduction Systems            |
| OWTS      | On-site Wastewater Treatment Systems                     |
| PCBs      | Polychlorinated Biphenyls                                |
| PEA       | Programmatic Environmental Assessment                    |
| PEIS      | Programmatic Environmental Impact Statement              |
| ppm       | Parts per Million                                        |
| PVC       | Polyvinyl Chloride                                       |
| RCRA      | Resource Conservation and Recovery Act                   |
| ROAs      | Research-only Areas                                      |
| ROGO      | Rate of Growth Ordinance                                 |
| ROWs      | Rights-of-way                                            |
| Sanctuary | Florida Keys National Marine Sanctuary                   |
| SBR       | Sequencing Batch Reactor                                 |
| SCUBA     | Self Contained Underwater Breathing Apparatus            |
| SDI       | Subsurface Drip Irrigation system                        |
| SERC      | Southeast Environmental Research Center                  |
| SFA       | Sustainable Fisheries Act                                |
| SFWMD     | South Florida Water Management District                  |
| SGD       | Submarine Groundwater Discharge                          |
| SHCA      | Strategic Habitat Conservation Areas                     |
| SHPO      | State Historic Preservation Office                       |
| STEP      | Septic Tank Effluent Pump                                |
| System    | Integrated Wildlife Habitat Ranking System               |

## List of Acronyms

|        |                                      |
|--------|--------------------------------------|
| TKN    | Total Kjeldahi Nitrogen              |
| TN     | Total Nitrogen                       |
| TNC    | The Nature Conservancy               |
| TON    | Total Organic Nitrogen               |
| TP     | Total Phosphorus                     |
| TSS    | Total Suspended Solids               |
| UIC    | Underground Injection Control        |
| US     | United States                        |
| U.S. 1 | U.S. Highway 1                       |
| USDA   | U.S. Department of Agriculture       |
| USDW   | Underground Source of Drinking Water |
| USEPA  | U.S. Environmental Protection Agency |
| USF    | University of South Florida          |
| USFWS  | U.S. Fish and Wildlife Service       |
| USGS   | U.S. Geological Survey               |
| VGES   | Variable-grade Effluent Sewers       |
| VPSs   | Vacuum Pump Stations                 |
| WQPP   | Water Quality Protection Program     |
| WWTF   | Wastewater Treatment Facility(s)     |

## 1.0 Purpose of and Need for Action

The United States (U.S.) Congress has directed the U.S. Army Corps of Engineers (Corps) to assist local municipalities in Monroe County, Florida, in the planning and construction of wastewater and stormwater improvements designed to accomplish the goals listed below.

- Reduce nutrient loading to the nearshore waters of the Florida Keys National Marine Sanctuary (Sanctuary)
- Improve water quality throughout the waters of the Sanctuary
- Comply with relevant federal and state regulatory standards

A Programmatic Environmental Impact Statement (PEIS) was previously prepared by the Corps for the proposed Florida Keys Water Quality Improvements Program (FKWQIP) in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508). These laws and regulations require the Corps to consider and address environmental issues when funding a major federal action.

The PEIS prepared by the Corps provides a framework to address potential environmental impacts associated with design and implementation of eligible wastewater treatment projects for the FKWQIP. This Draft Environmental Assessment (EA) tiers from the PEIS for the FKWQIP and hereby incorporates the PEIS by reference, in accordance with 40 CFR Part 1508.28. The Key Largo regional wastewater treatment facility (WWTF) will address up to 13 of the 45 water quality *hot spots* in the Keys, including two of the four most critical *hot spots* identified in the Monroe County Sanitary Wastewater Master (MCSWMP, Monroe County 2000).



*The Key Largo regional WWTF will address several of the 45 water quality hot spots in the Keys, including two of the four most critical, previously identified in the MCSWMP.*

The proposed project area is Key Largo in the Upper Keys, from approximately mile marker (MM) 106.5 (Lake Surprise and Sexton Cove) to MM 98.5 (Harbor Shores). The proposed WWTF would be located at approximately MM 100.5, opposite Key Largo Park (KLP) and Key Largo Trailer Village (KLTV). The proposed WWTF has a design capacity of 2.25 million gallons per day (mgd), which would be large enough to serve the entire Key Largo Wastewater Treatment District once additional funds are available to expand the collection capacity. Project components are listed below.

- A regional advanced WWTF with approximately 2.25 mgd capacity that would serve an existing 13,602 residential units
- System of combined vacuum and gravity sewer force mains and collection lines along approximately eight miles of U.S. Highway 1 (U.S. 1), from Sexton Cove to Harbor Shores
- Approximately 15 vacuum pump stations (VPSs) in existing road rights-of-way (ROWs), lift stations, and a vacuum main to transport wastewater to the WWTF

## **1.0 Purpose and Need for Action**

- Two deep injections wells for disposal of wastewater that has undergone advanced wastewater treatment (AWT) and a single monitoring well

This section of the Draft EA explains the purpose and need for the federal action and the decision to be made by the federal government. Authorizing legislation for the FKWQIP is described and the project service area delineated. Relevant issues and related environmental documentation addressed during the scoping process are discussed. Finally, the organization of the Draft EA is outlined.

### **1.1 Authorization**

Under authority of Public Law 106-554 dated December 21, 2001 (Appendix A of the PEIS), 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 owned by public entities. Typically, large programs of this nature are not in accordance with Administration Program priorities of the Corps (i.e. navigation, flood control, or environmental restoration). However, non-traditional projects are routinely undertaken by the Corps as "work for others."

The Florida Keys Water Quality Improvement Act (Act) authorized Congress to appropriate up to \$100 million for FKWQIP projects (representing 65 percent of program costs) for the planning and construction of wastewater and stormwater improvements. The Key Largo Wastewater Treatment District (KLWTD) would be responsible for 35 percent of the regional WWTF costs (or match) and would receive credit for the reasonable costs of design work completed prior to entering into an agreement with the federal government (passed on the same date as the Act). The total cost of the proposed project is an estimated \$140 million.

### **1.2 Key Largo Service Area**

The Key Largo service area extends from approximately MM 106.5 (Lake Surprise and Sexton Cove) to MM 98.5 (Harbor Shores), along U.S. 1, the main highway through the Keys (Figure 1-1). The WWTF has a design capacity of 2.25 mgd and would be large enough to serve the entire KLWTD (MM 91 to MM 106.5) once additional funds are available to expand the collection capacity.

The proposed WWTF would be constructed on approximately 2.6 acres at MM 100.5, ocean side of U.S. 1 and adjacent to an existing Florida Keys Aqueduct Authority (FKAA) facility. The proposed site is located in sections 27 and 28 of township 61 south, range 39 east, and is part of a larger 23 acre parcel owned by the KLWTD. An existing FKAA maintenance facility borders the southern portion of the 23 acre parcel and U.S. 1 borders the northwest portion of the parcel. Undeveloped lands directly adjacent to the parcel along the eastern and southern boundaries are owned by Florida Department of Environmental Protection (FDEP). The Florida Straits are approximately 1,500 feet east of the site and Florida Bay is about 2,500 feet west (FKAA 2002).

An undisturbed hardwood hammock characterizes the site and much of the surrounding land is undeveloped and in public ownership. However, the WWTF would be constructed adjacent to an existing FKAA maintenance facility, in the most disturbed portion of the parcel, which has

signs of previous clearing, debris dumping, and invasion of non-native plant species. Hardwood hammocks are protected under Monroe County's Land Development Regulation Section 9.5-345 and mitigation for impacts to these hammocks is addressed in this Draft EA.

### 1.3 Purpose and Need

In recognition of the importance of improving water quality in the Sanctuary, the purpose of the *Proposed Action* is to assist the KLWTD and other municipalities with the planning and implementation of projects that will support the goals and objectives of the Act and FKWQIP. The Proposed Action is needed to reduce nutrient and bacteria loading to the Sanctuary, improve water quality in the Sanctuary, and comply with relevant federal and state regulatory standards.

The Sanctuary includes unique and nationally significant marine environments such as seagrass meadows, mangrove islands, and the only living coral barrier reef in North America. Similar to other Florida ecosystems, human activities during the past 100 years have affected water quality in the Sanctuary. Bacteria and nutrients from human wastes, and chemicals such as pesticides and mercury, that may reach this delicate ecosystem as a result of little or no treatment, can adversely impact water quality and pose a public health risk.



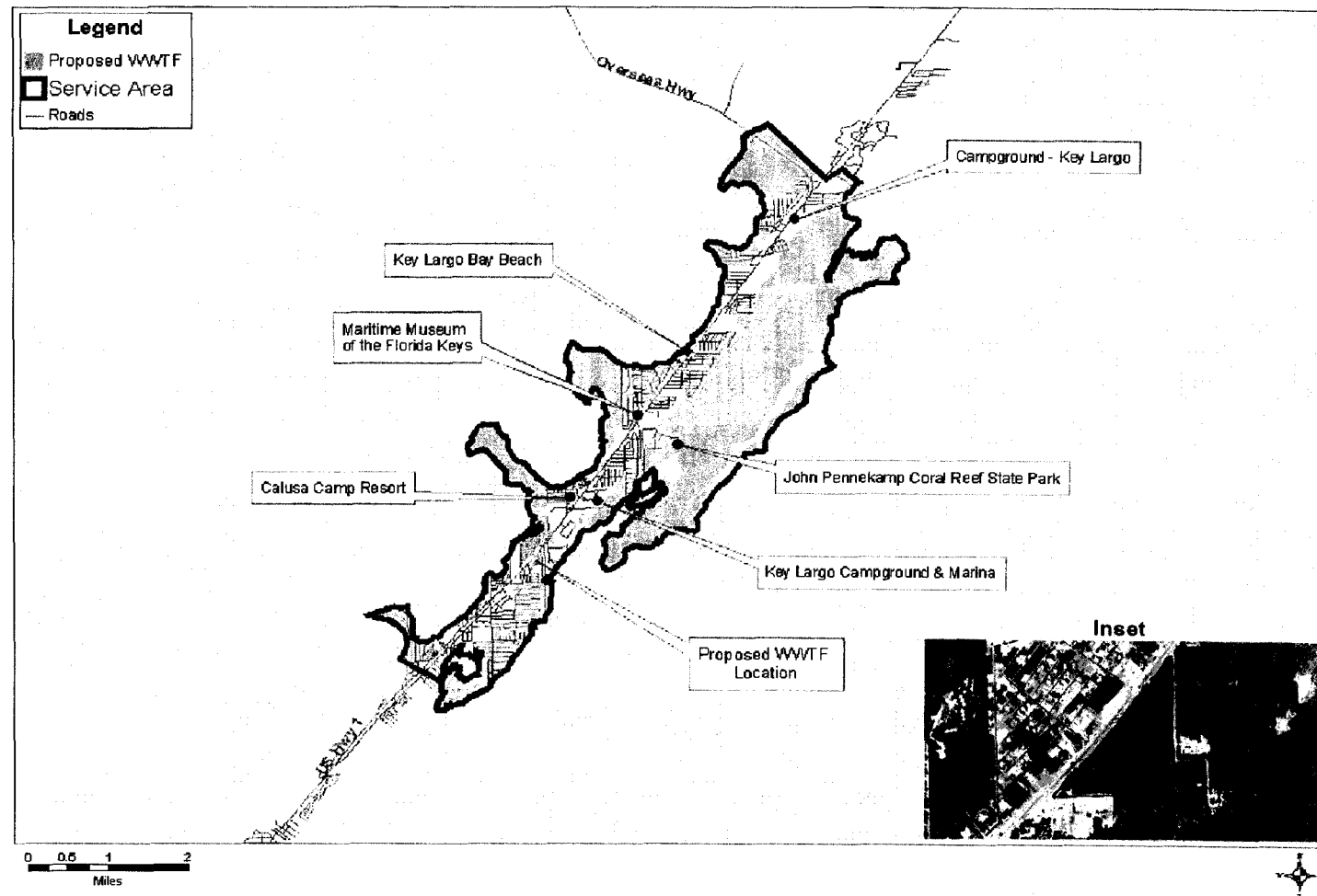
*The purpose of the Proposed Action is to assist Key Largo with the planning and implementation of projects that will reduce nutrient and bacteria loading, improve water quality in the Sanctuary, and expedite compliance with relevant federal and state regulatory standards.*

With the exception of Key West, Key Colony Beach, and Ocean Reef Resort on Key Largo, communities in the Keys rely on septic tanks, cesspools, and package treatment facilities and shallow injection wells for sewage disposal (Griffin *et al.* 1999). There are currently about 30,000 septic tanks and 600 injection shallow injection wells in the Keys. These systems, if not properly operated, allow bacteria and nutrients to leach into nearshore waters. In some nearshore areas where water quality is monitored, beaches have been posted for health advisories due to fecal coliform bacteria contamination of surface waters after moderate rainfall events.

There were 42 FDEP-permitted WWTFs in the Key Largo service area in 1998, treating approximately 0.24 (mgd) (MCSWMP 2000). A total of 4,919 onsite systems in the service area account for 1.06 mgd of wastewater flows. Onsite treatment systems include 46 aerobic treatment units (ATUs), 3,942 septic systems, an identified 372 substandard septic systems, and 558 cesspools.

Average estimated reductions in wastewater loading to nearshore waters in the Keys due to implementation of FKWQIP are on the order of 69 and 73 percent in total nitrogen (TN) and total phosphorus (TP) loadings, respectively, using AWT standards. Reductions in TN, TP, and total suspended solids (TSS) loadings of 88, 80, and 77 percent, respectively, are anticipated for the Key Largo service area as a result of implementing the proposed wastewater improvements.

**Figure 1-1**  
**Proposed WWTF Location on Key Largo, in Monroe County, Florida**



## 1.0 Purpose and Need for Action

Water quality is critical to maintaining the marine ecosystem of the Sanctuary and influences the coral reef and the 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.

Importantly, the Corps' Florida Keys Carrying Capacity Study (FKCCS) model provided a means of quantifying the effects of wastewater improvement projects, specifically reductions in nutrient loads, within the Key Largo service area. The model was run specifically for the FKWQIP and the associated individual projects and the model results were used to evaluate impacts of the wastewater improvement projects.



*The Corps' FKCCS model provided a means of quantifying the effects of wastewater improvement projects, specifically the reductions in nutrient loads, in the Key Largo service area.*

FKWQIP was created in response to regulatory requirements and in the interest of protecting public health and water quality. At the federal level, the Sanctuary and Protection Act of 1990 directed the U.S. Environmental Protection Agency (USEPA) and the state of Florida to develop a water quality protection plan for the Sanctuary. Locally, the *Monroe County 2010 Comprehensive Plan* mandates nutrient loading reductions in the marine ecosystem by the year 2010 and that wastewater systems meet more stringent Florida Statutory Treatment Standards.

### 1.4 Decision to be Made

Due to the high capital costs of implementing the proposed water quality improvement facilities, 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 benefits of the Key Largo regional WWTF and the adverse effects on the natural and manmade environment if water quality improvements are not made, the Corps must decide whether to provide financial and technical assistance to the KLWTD in developing and implementing wastewater improvements for the Key Largo service area. Once the proposed WWTF is completed, Key Largo residents and visitors can expect improved water quality in the surrounding Sanctuary and nearshore waters.



*Once the proposed WWTF is completed, Key Largo residents and visitors can expect reduced nutrient and other pollutant loadings to the Sanctuary and local nearshore waters.*

### 1.5 Scoping Issues

Under NEPA 1969, federal agencies are required to determine the scope of issues to be addressed for a project and identify the significant issues related to the *Proposed Action*. This process is called "scoping."

## 1.0 Purpose and Need for Action

A Scoping Letter was issued to various stakeholders and interested parties on December 14, 2004 and comments were received through January 14, 2005. Significant issues identified during the scoping process and discussions with regulatory agencies, stakeholders, and residents of Key Largo are listed below and have guided the preparation of this document.

 **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 canal and nearshore marine water quality in the Keys. The studies attribute increased algal blooms, seagrass die-off, and the decline in coral reef ecosystems health to inadequate wastewater treatment. Scientists concur that one of the principal sources of water quality degradation in the Sanctuary is the elevated level of nutrients in surrounding canals and nearshore waters. The USEPA has concluded that the magnitude and extent of estimated nutrient loadings from wastewater sources are regionally substantial (USEPA 1993), and fecal indicators have been found in onshore and nearshore monitoring wells in Key Largo canals (Paul *et al.* 1995). Reductions in TN, TP, and TSS loadings of 88, 80, and 77 percent, respectively, are anticipated in the Key Largo service area as a result of implementing the proposed wastewater improvements.

 **Issue 2: Facility Site.** Vacant lands are scarce in the Keys and potential sites for WWTFs may include sensitive or critical habitat for protected species (see issue 3, below). In addition, sewer collection systems may cross naturally or culturally sensitive lands. The proposed WWTF would be built on 2.6 acres of a larger 23 acre parcel owned by the KLWTD. The site is located ocean side of U.S. 1 at MM 100.5, in sections 27 and 28 of township 61, range 39 (Figure ES-1). The parcel is characterized by undisturbed hardwood hammock and much of the surrounding land is undeveloped and in public ownership. The proposed site is adjacent to an existing FKAA maintenance facility and is the most disturbed portion of the 23 acre parcel due to clearing, debris dumping, and non-native plant species invasions. Hardwood hammocks are protected under Monroe County's Land Development Regulation Section 9.5-345. Consequently, proposed mitigation includes restoration of 2.6 acres of hardwood hammock and conservation in perpetuity of the remaining 20.4 acres as undeveloped parcel.

 **Issue 3: Protected Species.** The Keys are a relatively small landmass in a subtropical to tropical island setting and provide habitat for many rare and protected plants and animals. Because remaining natural areas are scarce, any action by the KLWTD that results in the loss of natural areas is likely to impact protected species. Protected species that occur or may occur in the service area, associated habitats, and regulatory framework affecting these species, are addressed in this Draft EA. Although formal consultation has not occurred, the project is an expansion of an existing wastewater improvement project for which formal consultation with the U.S. Fish and Wildlife Service (USFWS) was previously initiated due to FEMA funding. The subsequent Biological Opinion (BO) concluded that the construction of the proposed WWTF is: 1) not likely to jeopardize the continued existence of the federally protected Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) or Stock Island tree snail (*Orthalicus reses*), 2) not likely to affect the eastern indigo snake (*Drymarchon corais couperi*), and 3) no critical habitat has been

designated for these species, and therefore none will be impacted. Reasonable and prudent measures identified by the USFWS include the restoration of 2.6 acres of hardwood hammock and preservation of the habitat remaining following construction of the proposed project.



**Issue 4: Effluent Disposal.** Residents in the Key Largo service area currently rely on septic tanks, cesspools, and package treatment facilities. Because deep well injection is required for all WWTFs with capacities great than 1.0 mgd, two deep injection wells will be constructed for disposal of AWT effluent. Deep injection wells are governed by Chapter 62-528 Florida Administrative Code (F.A.C.). The deep well injection system would include pumps and pumping surge control system, two deep injection wells, and a monitoring well. Deep injection wells would be designed and constructed to meet both FDEP Class I reliability standards and Underground Injection Control (UIC) Class I well construction and monitoring requirements. Approximately 100 deep injection wells are currently permitted and operating in Florida.



**Issue 5: Tourism.** The quality of life for tourists in the Keys is dependent on a healthy marine ecosystem and can be negatively impacted by water quality degradation. Over two million individuals per year visit the Keys to enjoy its unique natural features and Key Largo has been referred to as the “diving capital of the world.” Water related activities, including snorkeling, diving, and fishing support 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 economic losses.



**Issue 6: Environmental Justice.** Approximately eight percent of the population of Key Largo was living below the poverty level in 2000 and a relatively high proportion (17 percent) of the population was over the age of 65 (in comparison with 14.7 percent in the county and 17.6 percent statewide). This segment of the population often lives on fixed incomes and, while their income may not be below the poverty level, they are affected by cost of living changes. These factors suggest that while the majority of the Key Largo residents are financially secure, there is considerable disparity in wealth and income among residents, raising potential environmental justice concerns.

### 1.6 Related Environmental Documents

Documents related to the Key Largo regional WWTF and water quality improvements in the service area that may influence the scope of this Draft EA include the *Federal Emergency Management Agency (FEMA) Programmatic Environmental Assessment for Wastewater Improvements in the Florida Keys* (2002), the *FEMA Final Supplemental Environmental Assessment for KLTV and KLP* and associated BO (2004), and the FKCCS (Corps 2002). These and other relevant documents are discussed in the PEIS.

## 1.0 Purpose and Need for Action

### 1.7 National Environmental Policy Act 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 has prepared this document to evaluate the environmental consequences of constructing the Key Largo regional WWTF. These project-specific improvements include wastewater collection, treatment, and disposal options. This Draft EA tiers from the PEIS for the FKWQIP as described previously.

### 1.8 Summary of Prior Regulatory Action

A historical chronology of regulations applicable to the construction of wastewater treatment improvements and stormwater best management practices (BMPs) in the Keys was provided in the previously prepared PEIS to inform the reader of the more stringent Florida Statutory Treatment Standards that will confront residents and commercial entities of Monroe County in the coming years. The *Monroe County Year 2010 Comprehensive Plan* (1997) mandated reductions in nutrient loadings to the marine ecosystem by the year 2010. In 1998, the Florida Governor issued Executive Order (EO) 98-309, directing local and state agencies to coordinate with Monroe County in the implementation of their Year 2010 Comprehensive Plan to eliminate cesspools, failing septic systems, and other substandard on-site wastewater treatment systems (OWTS).

### 1.9 Document Organization

The basic elements of a Draft EA, as well as all applicable sub-elements, are presented in this document. Subsequent individual sections of the Draft EA are listed and briefly described below.

- **Chapter 2. Description of Alternatives** including the *Proposed Action*. Presents a description of alternatives considered in the planning of the Key Largo regional WWTF, thereby providing the basis for decision-making.
- **Chapter 3. Affected Environment**. A description of existing conditions in the service area provides a context in which to evaluate the alternatives.
- **Chapter 4. Environmental Consequences**. This chapter provides an analysis of the potential environmental consequences anticipated as a result of the proposed alternatives considered as part of this Draft EA.
- **Chapter 5. Public Involvement**. Water quality and the need to reduce nutrient loading in the nearshore waters of the Keys, including the Key Largo service area, are of interest to regulatory agencies and citizens alike. Consequently, public participation has been an important component throughout the preparation of this Draft EA to ensure compliance with the intent of NEPA and other applicable statutes.
- **Chapter 6. Conclusion**. In this chapter, conclusions regarding potential environmental impacts of the three alternative actions proposed for the Key Largo regional WWTF and associated infrastructure to the physical, biological, and human environment within the service area are presented.

- **Chapter 7. Bibliography.** The bibliography documents the literature cited throughout the Draft EA as well as documents used during the preparation of the Draft EA that were not specifically cited.
- **Chapter 8. List of Preparers.** The authors primarily responsible for the preparation of this Draft EA are listed in this chapter.
- **Chapter 9. Glossary of Terms.**

