Final Programmatic Environmental Assessment
- Abstract -

Wastewater Management Improvements in the Florida Keys, Florida

Prepared For
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In response to Hurricane Georges damages and losses, Congress enacted Public Law 106-31, Emergency Supplemental Appropriations Act for Fiscal Year 1999, to fund long-term disaster recovery projects in Florida counties whose needs were unmet through primary disaster relief funds. Monroe County was included among the counties eligible for "Unmet Needs" funding. The Federal Emergency Management Agency (FEMA), the State of Florida, and the affected counties determined funding priorities.

Monroe County requested that wastewater management improvement projects be considered for this funding since many existing wastewater facilities in the county are not storm-resistant. In addition to achieving the Act's long-term disaster recovery goal, these projects were proposed because of increasing concerns over degraded nearshore water quality partly caused by poor wastewater treatment. Moreover, the State recently mandated more stringent wastewater treatment standards for the county. FEMA has received grant applications from the Village of Islamorada (Islamorada) and the Florida Keys Aqueduct Authority (FKAA), henceforth referred to as "project applicants," requesting Federal assistance to upgrade or replace existing wastewater treatment facilities in their service areas. The National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500 to 1508), and FEMA regulations for NEPA compliance (44 CFR Part 10) direct FEMA to understand and take into consideration during decision making, the environmental consequences of proposed Federal actions (projects). Accordingly, FEMA prepared this Programmatic Environmental Assessment (PEA) on the likely effects of implementing a range of wastewater collection, treatment, and disposal alternatives proposed in the Keys. Because proposed actions and their effects vary based on location, alternatives, and other site-specific criteria, a supplemental environmental review (SER) document (i.e., Supplemental Environmental Assessment or Environmental Impact Statement) would be prepared for each individual project covered by this PEA. The alternatives evaluated in this document and in the SER documents include:

Alternative 1 – No Action Alternative

FEMA would not provide funding assistance to project applicants for the proposed wastewater management improvements. The county (i.e., Monroe County, cities, private wastewater utility operators, business owners, and homeowners) would have to use alternate funding sources to finance the large capital costs of improving their wastewater treatment systems to meet the Florida Statutory Treatment Standards by 2010. Communities that currently use on-site systems, such as cesspools and septic systems, to manage wastes would have to construct either community or regional wastewater treatment plants (WWTPs), install on-site wastewater nutrient reduction systems (OWNRS), and/or upgrade or rebuild existing WWTPs.

Alternative 2 – Centralized Wastewater Treatment Plant Alternative

The project applicants, with FEMA funding, would construct new community or regional WWTPs or upgrade existing facilities at selected locations in the Lower, Middle, and Upper Keys. Wastewater effluent would be collected through either vacuum pumping or a low-pressure grinder pump system. Once treated to Advanced Waste Treatment (AWT) standards, wastewater effluent would be disposed of through shallow injection wells or made available for reuse. The project applicants (or their successor entity) would be responsible for facility construction, operation, and maintenance.

Alternative 3 – On-Site Treatment Upgrades

The project applicants would use FEMA funding to upgrade on-site wastewater treatment systems, such as cesspools and septic tanks with drainfields, to clustered OWNRS. OWNRS are engineered treatment systems that, at a minimum, meet Best Available Technology (BAT) treatment standards, and discharge treated wastewater through either a subsurface drip irrigation systems or shallow injection well. Clustered OWNRS can range in capacity from serving two to more than 50 homes.

Affected Environment and Environmental Consequences

This PEA identifies the affected environment, divided into eleven major resource categories including: Topography, Soils, and Geology; Water Resources and Water Quality; Biological Resources; Air Quality; Cultural Resources; Socioeconomics; Hazardous Materials; Demographics and Environmental Justice; Infrastructure; Land Use and Planning; and Noise and Visual Resources. A summary of the potential effects of the above project alternatives as they relate to these resource areas is described below. Project-specific effects would be discussed in each SER document.

Topography, Soils, and Geology: WWTP and OWNRS projects' effects on topography and soils are expected to be minimal. Soils would be temporarily disturbed; however, implementation of mitigation measures would decrease the adverse effects from temporary construction activities. Regarding geology, the potential effects (sinkholes) from the use of shallow injection wells are expected to be minimal. Project applicants would be required to conduct geotechnical studies and incorporate the findings into the design and construction of any proposed shallow injection wells.

Water Resources and Water Quality: The conversion of cesspits and septic tanks to systems that meet recent State-mandated, more stringent treatment standards are expected to result in the substantial reduction of nutrient loading from Keys wastewater sources; thereby improving inland, nearshore and offshore water quality.

Biological Resources: The proposed projects' overall effects on biological resources are expected to be generally beneficial. Positive effects on nearshore marine habitats, including seagrass meadows and coral reefs, would likely occur due to the reduction of suspended solids, nutrients, and pathogens released to the nearshore waters that would be expected as a result of improved wastewater management. The proposed wastewater project sites may result in some terrestrial habitat losses; however, most activities would be in developed, disturbed areas with low habitat value. Conscientious site selection, implementation of appropriate mitigation measures, and coordination with responsible agencies such as the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) would minimize potential adverse impacts.

Air Quality: Air quality effects from the proposed projects are expected to be negligible.

Cultural Resources: Wastewater project activities may result in ground disturbing activities that could impact historical and archaeological resources, if present. Implementation of mitigation measures, appropriate site selection, and coordination with the Florida State Historic Preservation Officer (FSHPO) would minimize these potential impacts.

Socioeconomics: It is expected that risks to public health, in terms of potential viral and bacterial infections, would be reduced as a result of the proposed wastewater projects, because of better wastewater treatment and resulting improved water quality. This would likely increase the number of visitors to beaches that formerly posted advisories. These water quality improvements would also

benefit commercial fisheries to the extent they are currently being adversely affected by nutrient pollution. Implementation of WWTPs or OWNRS projects would likely result in increased wastewater management costs, particularly to service recipients that currently have cesspits or septic systems. However, grant funding assistance is expected to reduce the capital costs so that the wastewater service would be affordable to service recipients.

Demographics and Environmental Justice: Implementation of the proposed wastewater projects would equally benefit, through improved water quality, the various demographic groups in the Keys. The likely increase in wastewater management costs could cause a highly disproportionate and adverse economic effect to low-income service recipients. The low-income population cannot afford an increase in wastewater management costs above their present wastewater costs. Accordingly, assistance guidelines have been outlined to further reduce the economic impact of wastewater projects to qualified low-income service recipients for FEMA-funded projects. The levels of assistance are based on the U.S. Department of Housing and Urban Development's (HUD) *very-low* and *low* family income levels.

Hazardous Materials: Potential project effects from hazardous materials are expected to be minimal.

Infrastructure: The construction of wastewater system components would temporarily increase the traffic to and from the construction sites. A minor, temporary disruption in wastewater service and other utilities would occur during construction activities. Potential long-term project effects on infrastructure are expected to be minimal.

Land Use and Planning: Installation of new WWTPs, upgrading existing WWTPs, and conversion of OWTS to OWNRS is not expected to change the county's existing land use and growth patterns. Growth projections are based on the present Rate of Growth Ordinance permitting system that limits growth in Monroe County. The effect of the proposed wastewater projects on special status lands such as areas managed under the Coastal Zone Management Act (CZMA), and Conservation and Recreation Lands are expected to be minimal, if any. The natural resource value of special status lands should benefit from these projects to the extent they depend on good water quality.

Noise and Visual Resources: Potential project effects are expected to be minimal. Odor control design features, visual screening, and other measures would mitigate these impacts.

This PEA begins with an introduction in Section 1 that includes the project background, purpose and need, and regulatory framework. Section 2 provides a detailed discussion of the project alternatives. Section 3 describes the range of potential effects on resources associated with the alternatives. Section 4 provides a broad discussion of cumulative impacts, which would also be discussed in the project-specific SERs. Public Involvement activities are outlined in Section 5 and the conclusion is summarized in Section 6. The PEA appendices include a glossary of terms and definitions, list of Monroe County 'hot spots,' a sample water quality improvement analysis, permit information, special status species lists, agency coordination, and funding and financing options.