WQPP Priorities
Canal Restoration Work Plan
FKNMS WQPP Steering Committee
February 10, 2021

Rhonda Haag
Monroe County

Greg Corning
Wood

Peter Frezza
Islamorada

George Garrett
Marathon

Presentation Topics

What? Canal Restoration Work Plan

Why? Canal Restoration Work Plan

What's Next? Canal Restoration Work Plan

How? Canal Restoration Work Plan

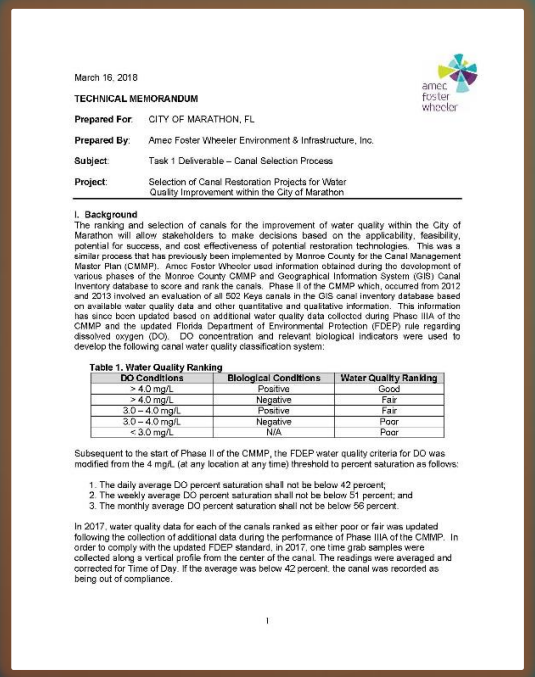
Steering Committee Role

What?
Canal Restoration Work Plan

- 28-20.140 – Monroe County Comprehensive Plan
  - (d) Canal Restoration Implementation
- 28-19.310 – Islamorada, Village of Islands Comprehensive Plan
  - (c) Canal Restoration Implementation
- 28-18.140 – City of Marathon Comprehensive Plan
  - (c) Canal Restoration Implementation

Why?
Canal Restoration Work Plan

- Florida Keys Area of Critical State Concern
- Provides framework and accountability for implementing canal restoration projects
- If lack of progress is determined, ROGOs get reduced by 20%.



March 16, 2018

TECHNICAL MEMORANDUM

Prepared For: CITY OF MARATHON, FL

Prepared By: Amec Foster Wheeler Environment & Infrastructure, Inc.

Subject: Task 1 Deliverable – Canal Selection Process

Project: Selection of Canal Restoration Projects for Water Quality Improvement within the City of Marathon

I. **Background**

The ranking and selection of canals for the improvement of water quality within the City of Marathon will allow stakeholders to make decisions based on the applicability, feasibility, potential for success, and cost effectiveness of potential restoration technologies. This was a similar process that has previously been implemented by Monroe County for the Canal Management Master Plan (CMMP). Amec Foster Wheeler used information obtained during the development of various phases of the Monroe County CMMP and Geographical Information System (GIS) Canal Inventory database to score and rank the canals. Phase II of the CMMP which, occurred from 2012 and 2013 involved an evaluation of all 502 Keys canals in the GIS canal inventory database based on available water quality data and other quantitative and qualitative information. This information has since been updated based on additional water quality data collected during Phase IIIA of the CMMP and the updated Florida Department of Environmental Protection (FDEP) rule regarding dissolved oxygen (DO). DO concentration and relevant biological indicators were used to develop the following canal water quality classification system:

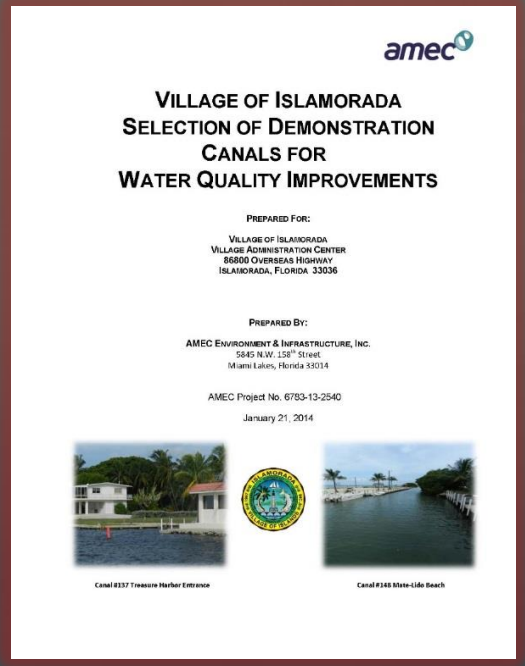
Table 1. Water Quality Ranking

DO Conditions	Biological Conditions	Water Quality Ranking
> 4.0 mg/L	Positive	Good
> 4.0 mg/L	Negative	Fair
3.0 – 4.0 mg/L	Positive	Fair
3.0 – 4.0 mg/L	Negative	Poor
< 3.0 mg/L	N/A	Poor

Subsequent to the start of Phase II of the CMMP, the FDEP water quality criteria for DO was modified from the 4 mg/L (at any location at any time) threshold to percent saturation as follows:

1. The daily average DO percent saturation shall not be below 42 percent;
2. The weekly average DO percent saturation shall not be below 51 percent; and
3. The monthly average DO percent saturation shall not be below 56 percent.

In 2017, water quality data for each of the canals ranked as either poor or fair was updated following the collection of additional data during the performance of Phase IIIA of the CMMP. In order to comply with the updated FDEP standard, in 2017, one time grab samples were collected along a vertical profile from the center of the canal. The readings were averaged and corrected for Time of Day. If the average was below 42 percent, the canal was recorded as being out of compliance.



amec

VILLAGE OF ISLAMORADA
SELECTION OF DEMONSTRATION CANALS FOR WATER QUALITY IMPROVEMENTS

PREPARED FOR:

VILLAGE OF ISLAMORADA
VILLAGE ADMINISTRATION CENTER
86800 OVERSEAS HIGHWAY
ISLAMORADA, FLORIDA 33036

PREPARED BY:

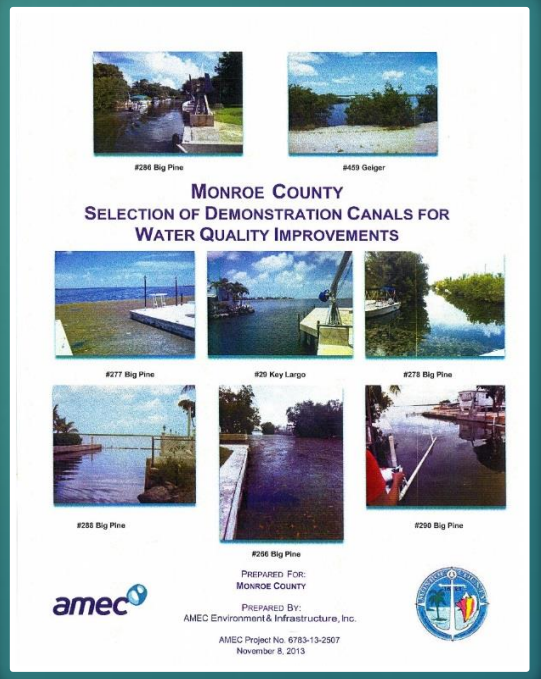
AMEC ENVIRONMENT & INFRASTRUCTURE, INC.
5845 N.W. 158th Street
Miami Lakes, Florida 33014

AMEC Project No. 6783-13-2540

January 21, 2014

Canal #137 Treasure Harbor Entrance

Canal #148 Mate-Lido Beach



#286 Big Pine

#459 Geiger

MONROE COUNTY
SELECTION OF DEMONSTRATION CANALS FOR WATER QUALITY IMPROVEMENTS

#277 Big Pine

#29 Key Largo

#278 Big Pine

#288 Big Pine

#286 Big Pine

#290 Big Pine

amec

PREPARED FOR:
MONROE COUNTY

PREPARED BY:
AMEC Environment & Infrastructure, Inc.

AMEC Project No. 6783-13-2507
November 8, 2013

What's next? Canal Restoration Work Plan

- Develop plans to prioritize water quality improvement in Canals throughout the Florida Keys
- Update Canal Management Master Plan (CCMP) rankings based on demonstration project success and additional water quality data
- Continue to pursue state and federal funding for canal restoration implementation

MONROE COUNTY BOARD OF COUNTY COMMISSIONERS
THE FLORIDA KEYS AREA OF CRITICAL STATE CONCERN

MONROE COUNTY'S CANAL RESTORATION PROGRAM ACCOMPLISHMENTS

OVER A DECADE OF WATER QUALITY PLANNING, DESIGN, PERMITTING AND IMPLEMENTATION FOR THE PROTECTION OF THE NATURAL ENVIRONMENT THROUGH CONSERVATION AND SUSTAINABLE PRACTICES

The *Monroe County Canal Water Quality Restoration Program* was established under the auspice of the National Oceanic Atmospheric Association (NOAA) Florida Keys National Marine Sanctuary (FKNMS) Water Quality Protection Program (WQPP) a set of guiding principles geared toward **improving canal water quality** while ensuring no degradation of the Florida Keys National Marine Sanctuary nearshore waters. The program evaluates, constructs and implements canal restoration technologies to improve canal water quality throughout the Florida Keys in order to **restore and preserve the marine environment** of the Florida Keys that supports unparalleled biodiversity and an annual $1.3 billion tourism industry. Keys' tourism is a strong economic engine for both the local and state economies, and it relies almost entirely on clean waters.

The restoration of water quality in Monroe County's residential canals is a complex and costly venture that requires long-term commitments from participating entities. Through the development of the program, Monroe County and its local partners have documented areas where costs and project schedules can be managed to reduce the expense associated with implementing and operating canal restoration projects.

Our efforts, outlined below, demonstrate the complex and multifaceted approach required for maintaining clean water within the Florida Keys:

2012 FDEP Grant to fund Phase 1 of *Canal Management Master Plan* (CMMP)
2012 EPA Grant to fund Phase 2 of the CMMP
2013 FDEP Grant to fund center line bathymetric surveys for all Canals identified in CMMP
2013 Monroe County funded a *Demonstration Project Selection Report*
2013 Monroe County funded Homeowner Approval Coordination for selected Demonstration canals
2014 EPA Grants funded *CMMP Outreach* & *FL Keys Water Watch*
2014 Monroe County funded *Design, Permit, Construction Engineering* for 6 Demonstration Canals
2014 EPA Grant to FIU for pre and post construction monitoring for the 6 Demonstrations Canals
2015 Monroe County BOCC appropriated $5 Million for Construction of Demonstration Canals
Monroe County and FDEP funded Canal #472 Geiger Key Culvert Installation
Monroe County funded Canal #29 Key Largo Backfilling Construction
Monroe County and FDEP funded Canals #266 and #290 Big Pine Key Organic Removal Restoration
Monroe County and FDEP funded Canals #287, #290 and #266 Big Pine Key Air Curtain Installations
Monroe County and FDEP funded Canal #277 Big Pine Key Culvert Installation

2015 EPA Grant to fund *Alternative Technologies Evaluations*
2016 Monroe BOCC appropriated $2 Million to continue the canal restoration program
Monroe County funded Canal # 83 Key Largo Organic Muck Removal and Backfilling
2017 EPA Grant X7-00D40915 funded CMMP Phase IIIA
Canal Workshop held
2017 Monroe County used FDEP Stewardship Funds to continue the canal restoration program
Canal #75 - Design & Construction using Stewardship Funds
Canal Skimming Demonstration Program using Stewardship Funds
2017 Hurricane Irma made landfall in the Keys
2018 Monroe County receives $49M Grant from USDA NRCS to remove marine debris and sediment from canals impacted by Hurricane Irma. With these grant funds, Monroe restores 247 of canals.

2020 Monroe County uses FDEP Stewardship funds for match funds for NRCS grant and again in 2021 to clear marine debris from 108 additional canals (that did not qualify under NRSC grant)
2020 FDEP funded Canal #475 Geiger Key Culvert *Design*
2021 FDEP funded Canal #84 Key Largo Organic Removal and Backfilling design and #475 Culvert Permitting, and Procurement
2021 U.S. Treasury RESTORE funded Canal #259/#263 - Design, Permitting, Procurement and Construction

Expenditures using Local Funds from Monroe County BOCC	Expenditures Paid for by Grants from EPA, USDA NRCS, RESTORE ACT	Expenditures Paid using FL Keys Stewardship and Other DEP Funds
$6,952,293	$39,398,511	$9,400,000

Contacts: Roman Gastesi, County Administrator 305-292-4444 Rhonda Haag, Chief Resiliency Officer 305-453-8774

Monroe County Board of County Commissioners – January 2021

How?
Canal Restoration Work Plan

Scoring Criteria for Potential Canal Restoration Sites		Canal Name:			
		Score	Weighting Factor	Total Score	Maximum Score
Canal Water Quality Ranking					
1) Water Quality (scored from 0 to + 5) Scoring is based on observed water quality degradation and monitoring conducted by the County.	If no monitoring data is available, or greater than 50 percent of the monitoring data exhibits DO saturation greater than 70 percent; the score is 0. If 1 to 10 monitoring events have been completed, and greater than 50 percent of the monitoring data exhibits a DO saturation between 42 - 70 %; the score is 1. If 1 to 10 monitoring events have been completed, and less than 50 percent of the monitoring data exhibits a DO saturation below 42 percent; the score is 2. If between 1 and 10 monitoring events have been completed, and greater than 50 percent of the monitoring data exhibits a DO saturation below 42 percent; the score is 3. If greater than 10 monitoring events have been completed, and greater than or equal to 3 monitoring events (or the allowable number pursuant to Table 1 of 62-303) exhibit a DO saturation less than 42 percent; the score is 5. If greater than 10 monitoring events have been completed, and less than 3 monitoring events (or the allowable number pursuant to Table 1 of 62-303) exhibit a DO saturation greater than 42 percent; the score is 0.	0	10	0	50
2) Evidence of Nutrient Accumulation (scored from 0 to +5) Scoring is based on the potential discharge of nutrient rich waters from the canals.	For canals that do not receive seaweed loads or do not exhibit elevated nutrient concentrations (evident through slime growth and reduced water clarity); the score is 0. For canals with moderate seaweed loading, moderate slime growth, moderate water clarity, or moderate reduction in fish habitat; the score is 3. For canals with heavy seaweed loading, significant visual degradation, and lack of fish habitat; the score is 5.	0	3	0	15
3) Likelihood of toxicity (scored from 0 to +5) Scoring is based on the likelihood of hydrogen sulfide production based on canal bathymetry.	For canals with an average depth less than 10 feet; the score is 0. For canals with an average depth between 10 feet and 20 feet; the score is 3. For canals with an average depth greater then 20 feet; the score is 5.	0	3	0	15
4) Connectivity to Nearshore Waters (scored from 0 to +5) Scoring is based on the potential of the canal to degrade the water quality in nearshore waters.	For canals that are connected to semi-enclosed waters such as harbors and inlets; the score is 0. For canals that are connected to open water, but are a sufficient distance away from high flow areas such as tidal channels; the score is 3. For canals that are connected to open water, and are close to high flow areas such as tidal channels; the score is 5.	0	2	0	10
5) Potential Nearshore Impact (scored from 0 to +5) The public benefit criterion is related to the number of users affected by the proposed project. A value of 0 means 0-9 users (parcels) would be positively affected by the project, a value of 1 means 10-44 users would be positively affected by the project, a value of 3 means 45-79 users would be positively affected by the project, +5 indicates that 80 or more users would be positively affected.		0	2	0	10
Subtotal				0	100

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Scoring Criteria for Potential Canal Restoration Sites		Canal Name:			
		Score	Weighting Factor	Total Score	Maximum Score
Canal Technology Ranking					
1) Restoration Technology (scored from 0 to +5) Scoring is based on the potential to implement a proven technology that is capable of complete canals restoration. The results are from the FIU evaluation of the demonstration technologies at improving water quality.	For canals that are only amenable to technologies that provide partial restoration (i.e. only air curtain or organic removal); the score is 0. For canals that are only amenable to an alternative technology, such as capping or an injection well, but it is expected that a complete restoration can be achieved; the score is 3. For canals that are amenable to proven technologies, such as backfilling with or without organic sediment removal and culverts, that are expected to provide a complete restoration; the score is 5.	0	3	0	15
2) Implementation Costs (scored from 0 to +5) A scoring value of 0 is associated with restoration projects that exceed $5M, and a scoring value of 5 is associated with restoration projects that can be completed for $1M or less.	For canals that have a restoration cost (including site restoration, mitigation and engineering/design/oversight fees) that exceed $5M, the score is 0 For canals that have a restoration cost (including site restoration, mitigation and engineering/design/oversight fees) that between $4M-$5M, the score is 1 For canals that have a restoration cost (including site restoration, mitigation and engineering/design/oversight fees) that between $3M-$4M, the score is 2 For canals that have a restoration cost(including site restoration, mitigation and engineering/design/oversight fees) that between $2M-$3M, the score is 3 For canals that have a restoration cost(including site restoration, mitigation and engineering/design/oversight fees) that between $1M-$2M, the score is 4 For canals that have a restoration cost(including site restoration, mitigation and engineering/design/oversight fees) less than $1M, the score is 5	0	5	0	25
3) Project "implementability" (scored from -5 to 5) This criterion accounts for factors such as need for O&M, staging areas, complexity of permitting issues, mitigation requirements(mangroves and seagrass impacts), and potential complications with existing utilities or difficulty of access. Scoring ranges from -5 to +5, with -5 indicating very difficult to implement, 0 indicating significant difficulties in implementation, and 5 indicating relative ease of implementation.		0	3	0	-15 TO 15
4) Potential Resource Impacts (scored from -5 to 5) Scoring ranges from -5 to +5, with -5 indicating impacts to resources greater than 7,500 sq ft., with -4 indicating impacts to resources greater than 5,625 sq. ft but less than 7,500 sq. ft., with -3 indicating impacts to resources greater than 3,750 sq. ft but less than 5,625 sq. ft, with -2 indicating impacts to resources greater than 1,875 sq. ft but less than 3,750 sq. ft, with -1 indicating impacts to resources less than 1,875 sq. ft, with 5 indicating no impacts to resources.		0	5	0	-25 TO 25
Subtotal				0	-80 TO 80

How?
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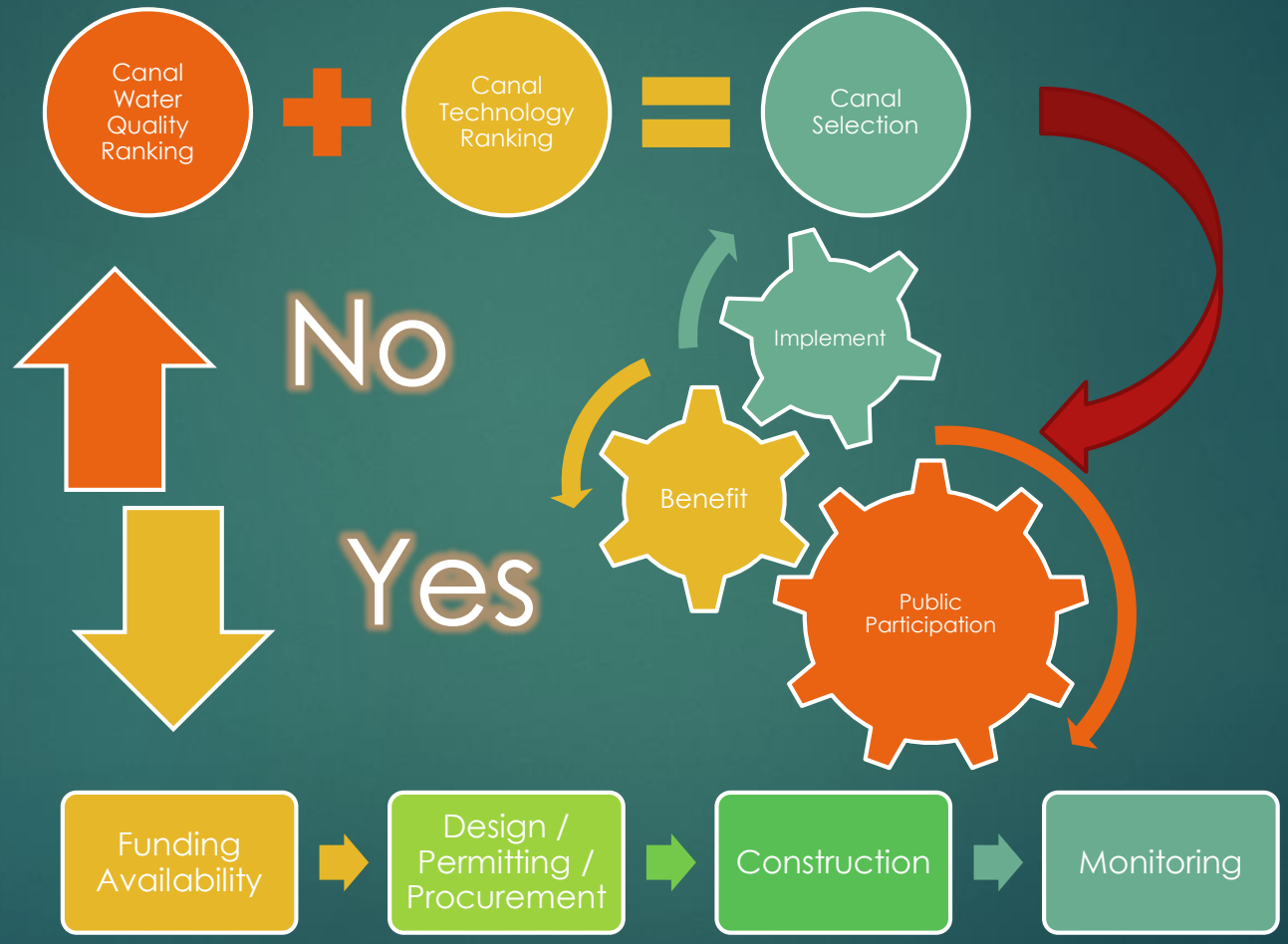

Steering Committee Role

- Incorporate Canal Restoration as a topic for the *2021 EPA South Florida Geographic Initiative* funding
- Provide a forum on a semi-annual basis for the County and municipalities to provide an overview of the results of the canal restoration work plan as may be requested
- Provide technical support for grant deliverables as may be requested

Presentation Summary

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Steering Committee Role

Thank You!

Rhonda Haag