

# Monroe County and Village of Islamorada Canal Restoration Project Updates FKNMS WQPP Steering Committee Meeting – April 26, 2017



Rhonda Haag  
Monroe County



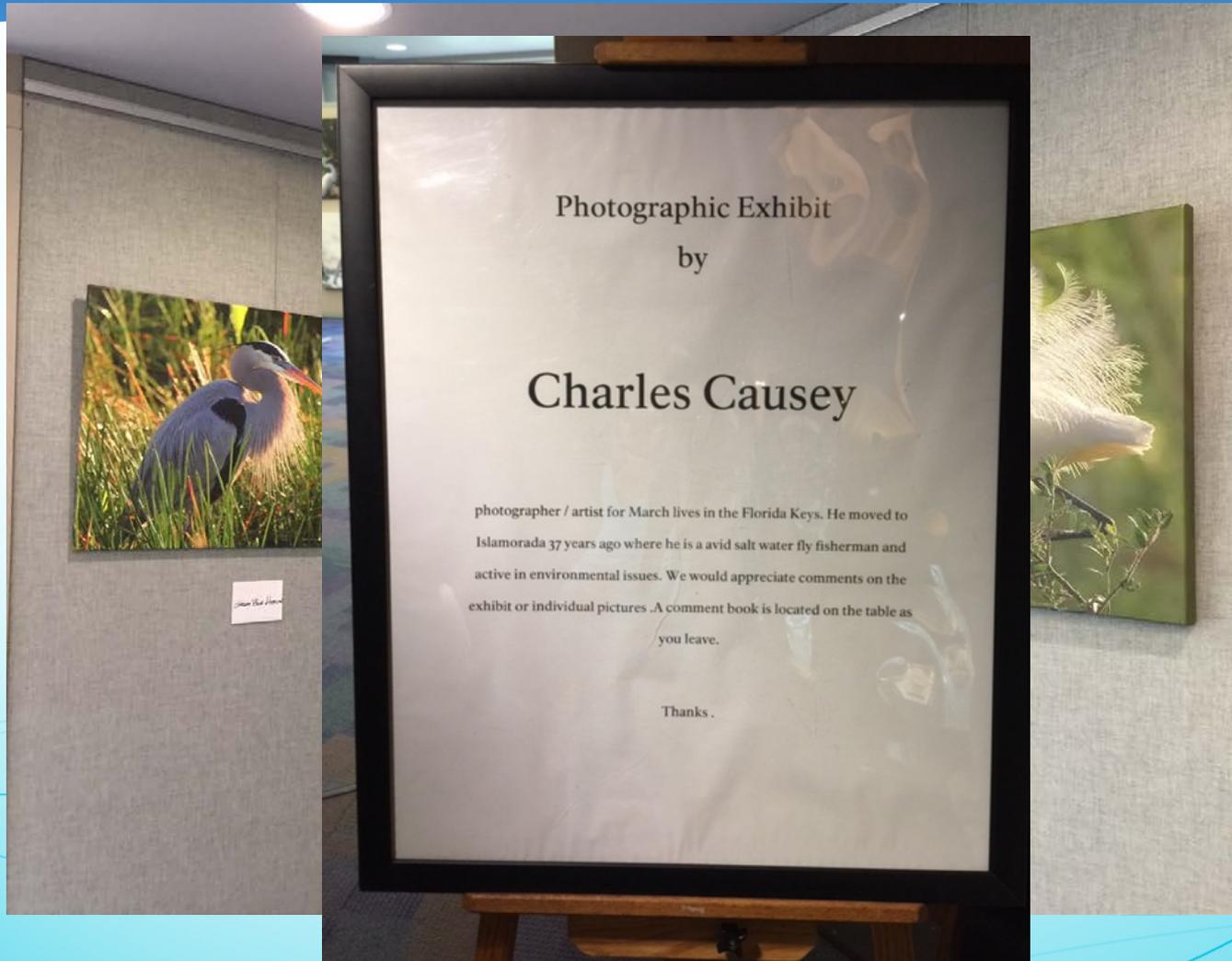
Greg Corning  
AMEC Foster  
Wheeler



Susan Sprunt  
Village of  
Islamorada



# Everglades National Park – Charles Causey Photographic Exhibit



Photographic Exhibit  
by

Charles Causey

photographer / artist for March lives in the Florida Keys. He moved to Islamorada 37 years ago where he is a avid salt water fly fisherman and active in environmental issues. We would appreciate comments on the exhibit or individual pictures. A comment book is located on the table as you leave.

Thanks .

# Presentation Goals

1. **Progress** of demonstration projects
2. **Role of canals** in the upcoming RAD update
3. Project **selection criteria**
4. **Monitoring program specifics** for future canal projects and to determine role for Monroe County, municipalities, and FDEP

# Air Curtain Installation – Islamorada Canal #145 Lower Matecumbe Key

- A. Public – Private partnership
- Local property owner - \$58K
  - Village of Islamorada - \$60K for design, permitting, and 2 year O&M
- B. Vertex Water Features awarded \$66,697.90 on March 9, 2017 for installation and 2 years O&M.
- C. Activities to date:
- Permit Notifications
  - Equipment being manufactured
  - Electrical configurations being finalized



# Air Curtain Installation – Islamorada Canal #148 Lower Matecumbe Key

- A. Vertex Water Features awarded \$32,333.90 on March 9, 2017 for installation and 2 years O&M.
- B. Activities to date:
- Air Curtain Installed on April 20, 2017
  - Working on final close out documents
- C. **DEP provided \$50,000 for design and construction costs approved 2016**



# Village of Islamorada Canal Funding Sources to date

- 1. Village of Islamorada - \$425K**
- 2. FDEP - \$50K**
- 3. RESTORE Local Pot 1 - \$128K**
- 4. Homeowners - \$75K**

# Islamorada Village of Islands Top 10 Canals and Approved Canals for Demonstration Funding

Air Curtain	Organic Removal	Culvert Installation	Pumping	Backfilling
#137 Plantation Key Treasure Harbor - Completed	#148 Lower Matecumbe Key Mate - Lido Beach	#157 Lower Matecumbe Beach	#120 Plantation Key Indian Key Waterways	#116 Plantation Key Tropical Atlantic Shores
#148 Lower Matecumbe Key – Under Construction	#147 Lower Matecumbe Key – Mar Celeste Am.	#120 Plantation Key Indian Waterways		#137 Plantation Key Treasure Harbor
#116 Plantation Key Tropical Atlantic Shores	#145 Lower Matecumbe Matecumbe Ocean View			#143 Upper Matecumbe Key Palm Harbor
#132 Plantation Key Plantation Lake Estates – Next Selected Project	#157 Lower Matecumbe Beach			#145 Lower Mat Matecumbe Ocean View
#145 Lower Matecumbe Key– Under Construction				#120 Plantation Key Indian Waterways
#147 Lower Matecumbe Key Mar Celeste				#110 Plantation Key Plantation Tropical Key

# Canal #132 Plantation Key – Air Curtain





**Are you paying  
attention?**

nti.com

# Monroe County Canal Funding Sources to date

- 1. Monroe County - \$7 Million**
- 2. Homeowners - \$0**
- 3. FDEP - \$50k-\$100k/year**
- 4. EPA - \$170,000 FY16**
- 5. RESTORE Local Pot 1 - \$478K**

# DEP FUNDING

- Installation of an air curtain on Canal #290 on Big Pine Key **\$50K** (FY17)
- Installation of a culvert on Canal #277 on Big Pine Key **\$50K** (FY16)
- Construction support services and the installation of a culvert on Canal #472 Geiger Key **\$100K** (FY14)
- Culvert design and permitting and sediment characterization testing for organic removal demonstration projects **\$100K** (FY13)
- Perform bathymetric surveys and collection and analysis of soil samples **\$100K** (FY13)
- Phase 1 of a County-wide canal improvements masterplan **\$100K** (FY12)

# EPA FUNDING

- Phase IIIA of the Canal Management Master Plan **\$110,582.00** (FY16)
- Florida Keys Water Watch, **\$13,645** (FY15)
- Monroe County Canal Improvement - Alternative technologies, Business plan development **\$73,909** (FY15)
- Florida Keys Watch and Canal Master Plan Education - Monroe County, **\$75,000** (FY14)
- Canal Demonstration Projects Water Quality Monitoring FIU - **\$300,000**
- Canal Management Master Plan Database, Phase II – Monroe County, **\$110,000** (FY12)

# Completed Monroe County Canal Demonstration Projects

- 1. Canal 266 – Organic Removal and Air Curtain – Dr's Arm Subdivision, Big Pine Key**
  - Construction Cost – \$1,303,355.00
  - Completion Date – May 2016
- 2. Canal 287 – Air Curtain – Atlantic Estates, Big Pine Key**
  - Construction Cost – \$101,192.00
  - Completion Date – June 2016
- 3. Canal 290 – Organic Removal and Air Curtain – Between Avenues I & J, Big Pine Key**
  - Construction Cost – \$788,421.00
  - Completion Date – Organic Removal – March 2016; Air Curtain – Estimated June 2017
- 4. Canal 470/472 – Culvert – No formal Subdivision, Between Mars and Venus Lanes, Geiger Key**
  - Construction Cost – \$199,291.00
  - Completion Date – April 2015
- 5. Canal 277 – Culvert - Tropical Bay Estates Subdivision, Big Pine Key**
  - Construction Cost – \$423,957.00
  - Completion Date – May 2016
- 6. Canal 83 – Organic Removal, Backfilling, and Air Curtain - Rock Harbor, Key Largo**
  - Construction Cost – \$1,524,040.00
  - Completion Date – Estimated July 2017
- 7. Canal 29 – Backfill, Sexton Cove, Key Largo**
  - Construction Cost – \$1,360,000.00
  - Completion Date – June 2015

# Under Construction!

## Air Curtain Installation Project - Canal #290

### The Avenues, Big Pine Key

- A.** Canal previously restored in 2016 for \$800K- funded by Monroe County
- B.** *Earth Tech Enterprises* awarded \$88,780 contract on February 15, 2017
- C.** NTP issued on April 4, 2017
- D.** Final completion anticipated June 3, 2017
- E.** Activities to date:
  - Equipment being manufactured
  - Monroe County permit being finalized
  - Electrical configuration being finalized
- F.** DEP provided \$50K and County contributed \$38K construction cost



# Under Construction!

## Organic Removal, Backfilling, and Air Curtain Project Canal #83 Rock Harbor, Key Largo

1. *Adventure Environmental, Inc.* was selected by committee based on the criteria in the RFP.
2. \$1,524,040 Construction Contract funded by Monroe County with conditions on the temporary staging area.
3. NTP issued on March 6, 2017
4. Final completion anticipated August 3, 2017
5. Activities to date:
  - Permit agencies notified of commencement
  - All boats removed from canal
  - Staging area set for dewatering and backfill operations
  - Turbidity curtains deployed at mouth of canal
  - Sediment removal operations to ongoing

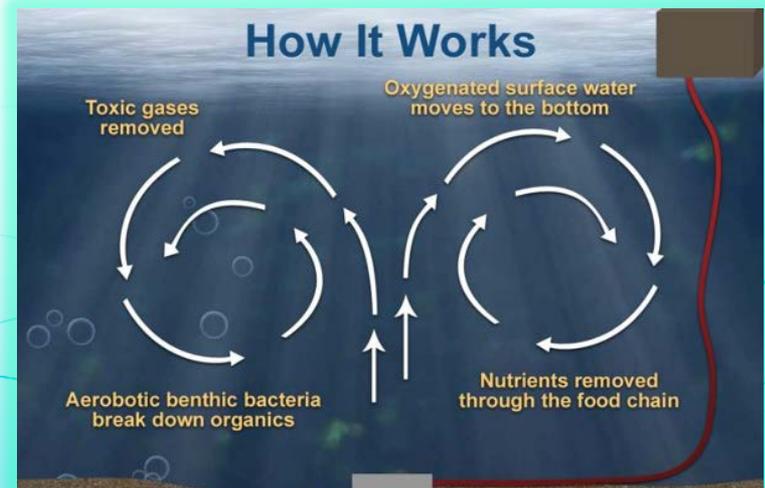
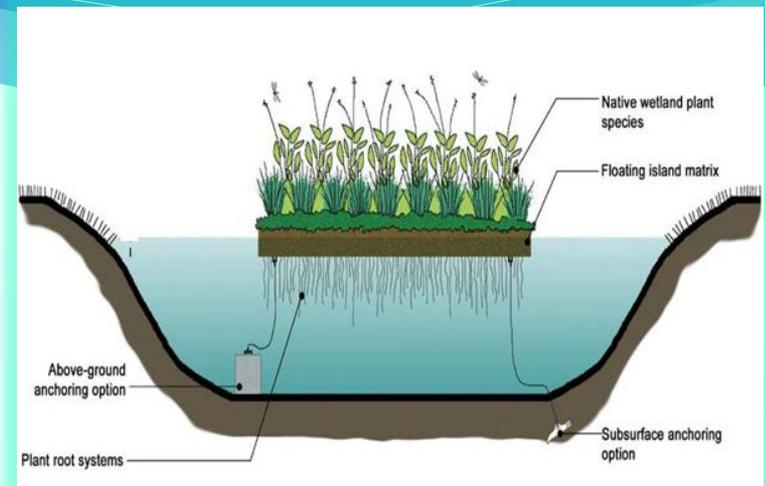


# Near Construction!

## Augmented Aeration Projects

### Canals #48, #59, #79, #80, Key Largo

- A. Previous muck technologies expensive looking at more cost effective alternatives that are also effective at removing organic muck
- B. Project may include augmented aeration such as bio bugs, macro algae, or applicable means of improving water quality
- C. RFP released on March 2, 2017
- D. Proposals received on April 25, 2017
- E. A selection committee will evaluate the proposals based on criteria in the RFP.
- F. Pre applications meeting may be held upon selection of technology



# New! Backfilling Project

## Canal #75 Rock Harbor, Key Largo

- A. Selected Canal #75 based on POOR water quality and selected backfill technology
- B. Obtained site access agreement for temporary staging of material and equipment.
- C. Working on final design, permitting, and contractor procurement
- D. Approval to advertise the RFP approved at April BOCC
- E. Funds to be provided by **FDEP FY17 \$1.5 Million State Stewardship Grant Allocation**
- F. Upon completion no O&M required

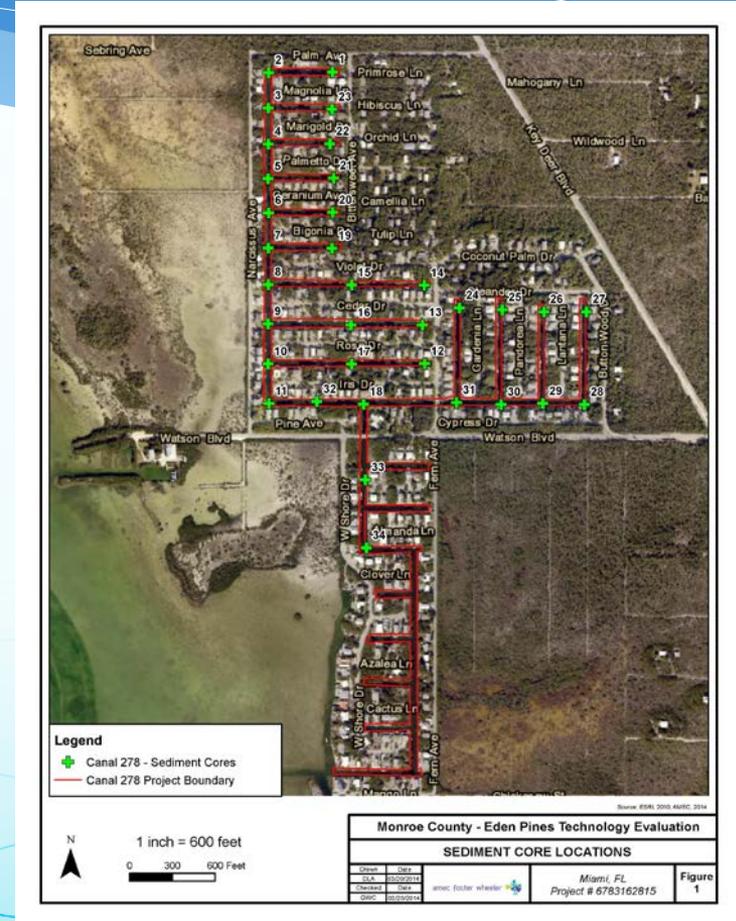


Hydrogen sulfide  
bottom of canal

# Technology Evaluation Canal #278

## Eden Pines, Big Pine Key

- A. Selected as one of the original Monroe County Canal demonstration projects to evaluate the effectiveness of using a circulation pump to improve water quality.
- B. Due to homeowners concerns with operation and maintenance cost and site access issues, the project was placed on hold so that other technologies could be evaluated.
- C. AMEC evaluated 5 alternatives
- D. Final report recommended alternative technology – injection well
- E. The report will be placed on the Monroe County Canal Restoration website.



# Technology Evaluation – Canal #278

## Eden Pines, Big Pine Key Con't

Technology	Effective- ness (0-5)	Ease to Implement (0 to 5)	Permitting (0-5)	Homeowner Disruption (0 to 5)	Time (0-5)	Cost (0 to 5)	Cost	Total	Rank
<b>Injection Wells</b>	4	4	3	4	3	5	\$292K	23	1
<b>Pump-in Recirculation System</b>	3	1	2	4	3	5	\$304K	18	2
<b>Culvert</b>	1	3	5	3	3	2	\$634K	17	3
<b>Bio-augmented Aeration</b>	2	2	4	2	2	4	\$415K	14	4
<b>Organic Muck Removal</b>	2	1	3	1	1	0	\$804K	7	5

# Technology Evaluation – Canal #278 Eden Pines, Big Pine Key Con't

## Location of Injection Wells



# EPA 2016 South Florida Initiative Grant

- A. EPA provided \$110,582.30 to the County to fund CMMP Part III A to address data gaps**
  - Grant approved at December BOCC 2016
  - Monroe County provided \$17,029.75 in match funding
  - \$28,188 in work remains unfunded for conceptual designs.
- B. Grant Activities completed to date:**
  - AMEC Visited 180 Fair and 131 Poor ranked canals – February and March 2017
  - Collection of expanded Dissolved Oxygen (DO) data for 180 Fair and 131 Poor ranked canals
  - 8 canals were not tested based on no access.
  - Quality Assurance Project Plan has been submitted to the EPA for review
- C. 10 Canals proposed for continuous water quality measurements using current FDEP standards**
- D. 15 canals proposed for collection of sediment cores**
  - A. Have documented organic detritus bottom sediment loading greater than 0.75 feet in thickness**
  - B. To evaluate the potential for reusing canal sediments in their planning and cost evaluation of organic removal and backfilling**
  - C. Selection to be considered based upon future restoration funding**

# EPA 2016 South Florida Initiative Grant

## Con't

- A. In 2017 the *Dissolved Oxygen* criteria and *monitoring locations* were revised from the 2013 CMMP assessment
- B. Preliminary review indicates that of the 303 Poor and Fair canals resampled in 2017, the following are potential revisions of the canal ranking process :
  - **56 More Canals** are now ranked as potentially having **GOOD** water quality, total now 248 ranked as GOOD canals
  - **163 Canals** are now ranked as potentially having **FAIR** water quality (originally 180 Canals from CMMP)
  - **91 Canals** are now ranked as potentially having **POOR** water quality (originally 131 Canals from CMMP)
  - Total **254 Poor and Fair** + 248 Good = 502 canals

# Canal Water Quality Monitoring

- A. 2 year demonstration canal monitoring program funded through a \$300,000 EPA Grant to FIU. FIU final report for demonstration projects due in September 2017.**
- B. Initial trends showing positive results for projects, especially the culverts and backfilling projects. The organic removal and air curtain projects may require additional restoration technologies to provide 100% restoration.**
- C. FDEP coordinating with Monroe County on implementing a water quality monitoring program for future canal projects, after EPA funds expire in September 2017.**



Say Sammy,  
I think you took  
a wrong turn...

CRANE ST



# Operation & Maintenance Municipal Service Benefit Unit (MSBU) Program

A. Resident meetings held in Big Pine Key, April 10 and Key Largo, April 11 to discuss the proposed canal assessments with the homeowners who live on lots adjacent to the restored canals

B. Proposed BOCC, subject to approval by the Board of Supervisors

Resto

Air Cu

Culve

C. BOCC's effectiveness

- FIU is e
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# Canal Funding Sources Moving Forward

- A. DEP Annual funding - \$100,000**
- B. EPA funding – amount to be determined**
- C. Municipalities funding – amount to be determined**
- D. Homeowners funding – to fund 100% of the O&M costs, amount TBD**
- E. Monroe County funding – \$ Some amount to be proposed annually for grants match, master planning, etc.**
- F. RESTORE Gulf Consortium Pot 3 - \$19 Million**
  - Application for the selected projects to be completed by August 2017
  - Allocated annually over 15 years – about \$1 Million/year
  - Must follow federal grant guidelines, rules and restrictions
  - Funds available Fall 2018
  - Monroe County and Municipalities proportions to be determined
- G. State Stewardship Act**
  - Estimated \$0-6 Million to County
  - Municipalities receive separate funding
  - No guaranteed allocation per year

# Restore Pot 1 Funding (\$478k) Ranking Methodology

## **A. Monroe \$478,000 Pot 1 Potential Projects:**

- 1) Augmented Aeration Projects**
- 2) Canal 459 Geiger Key – Culvert**
- 3) Canal 278 Eden Pines - Injection Well(s)**

## **B. Islamorada - \$100,000 received from Monroe County share of Pot 1**

- 1) Canal 132 Plantation Key – Air Curtain**

# Potential New Canal Projects

## Selection Methodology Discussion

### A. Initial Criteria:

- Select by Water Quality Ranking
- Select by Water Quality Summary
- Ease of Implementation
- Ease of Permitting

### B. Modified Additional Criteria:

- Select by technology effectiveness?
- Selected by geographical area?
- Selected by technology cost?
- Selected by Operation & Maintenance Costs?

### C. Other Considerations

- How would each affect the WBID areas?
- What method provides the biggest environmental gain?
- Other selection methods or factors for consideration?
- Municipalities selection process to be the same?

Dear God, when will  
this presentation end?



# Presentation Summary

- A. Progress of demonstration projects**
- B. Role of canals in the upcoming RAD update**
- C. Project selection criteria**
- D. Monitoring program specifics for future canal projects and role for Monroe County, FDEP and municipalities**



**The End**