

WATER QUALITY MONITORING PROJECT FOR DEMONSTRATION OF CANAL REMEDIATION METHODS, FLORIDA KEYS

Henry O. Briceño, PhD and Alexandra Serna, PhD
Southeast Environmental Research Center,
Florida International University, Miami, FL 33199

PROJECT SUMMARY

Several important results have been realized from Florida International University's regional monitoring project. First is the documentation of elevated nutrient concentrations (nitrogen, phosphorous and silica) in waters close to shore along the Keys, and corresponding responses from the system, such as higher phytoplankton biomass (chlorophyll-a), turbidity and light attenuation, as well as lower oxygenation and lower salinities of the water column. These changes, associated to human impact, have become more obvious in a new series of stations located very close to shore, near canal mouths and sampled since November 2011. These waters are part of the so called Halo Zone, a belt following the shoreline which extends up to 500 meters offshore, and whose water quality characteristics are closely related to those in canals and affected by quick movement of infiltrated runoff and wastewaters (septic tanks), tides and high water tables

Many canals do not meet the State's minimum water quality criteria and are a potential source of nutrients and other contaminants to near shore waters designated as Outstanding Florida Waters. Hence, the Monroe County BOCC has approved moving forward with a series of canal restoration demonstration projects whose results will be used to further define restoration costs and for information in future grant applications to state and federal sources.

The Monroe County, the Florida Keys Water Quality Protection Program Steering Committee and the Canal Subcommittee have selected ten (10) canals for demonstration of restoration technologies. The main objective of this demonstration is to obtain realistic data and costs for future restoration planning and grant application purposes. Those technologies under consideration target two fundamental problems, poor circulation (stagnation) and accumulation of organic matter. Both, poor circulation and accumulation of organic debris, besides run-off and seepage from septic tanks, are major contributors to water quality degradation in the Florida Keys, especially to the degradation of canal waters. Florida International University is monitoring water quality in those selected canals to assess both, conditions pre-remediation and changes occurring after remediation.