



WATER QUALITY MONITORING PROJECT FOR THE FLORIDA KEYS NATIONAL MARINE SANCTUARY.

Key Colony Beach, FL. Sept 29th, 2015

Team

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<http://casgroup.fiu.edu/serc>

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Photography: James Duquesnel



YEAR 2014

EPA WQPP Water Quality Targets

Year	REEF Stations		All Stations (excluding SHORE sites)	
	CHLA $\leq 0.35 \mu\text{g l}^{-1}$	$K_d \leq 0.20 \text{ m}^{-1}$	DIN $\leq 0.75 \mu\text{M}$ (0.010 ppm)	TP $\leq 0.25 \mu\text{M}$ (0.0077 ppm)
1995-05	1778 of 2367 (75.1%)	1042 of 1597 (65.2%)	7826 of 10254 (76.3%)	7810 of 10267 (76.1%)
2006	196 of 225 (87.1%)	199 of 225 (88.4%)	432 of 990 (43.6%)	316 of 995 (31.8%)
2007	198 of 226 (87.6%)	202 of 222 (91.0%)	549 of 993 (55.3%)	635 of 972 (65.3%)
2008	177 of 228 (77.6%)	181 of 218 (83.0%)	836 of 1,000 (83.6%)	697 of 1,004 (69.4%)
2009	208 of 228 (91.2%)	189 of 219 (86.3%)	858 of 1,003 (85.5%)	869 of 1,004 (86.6%)
2010	170 of 227 (74.9%)	176 of 206 (85.4%)	843 of 1000 (84.3%)	738 of 1,003 (73.6%)
2011	146 of 215 (67.9%)	156 of 213 (73.2%)	813 of 1012 (80.3 %)	911 of 1013 (89.9 %)
2012	142 of 168 (84.5%)	135 of 168 (80.4%)	489 of 683 (71.6 %)	634 of 684 (92.7 %)
2013	148 of 172 (86.0%)	150 of 172 (87.2%)	496 of 688 (72.1 %)	603 of 688 (87.6 %)
2014	141 of 172 (82.0%)	133 of 172 (77.3%)	426 of 690 (61.7%)	540 of 690 (78.3%)

Update of Canal Monitoring Project

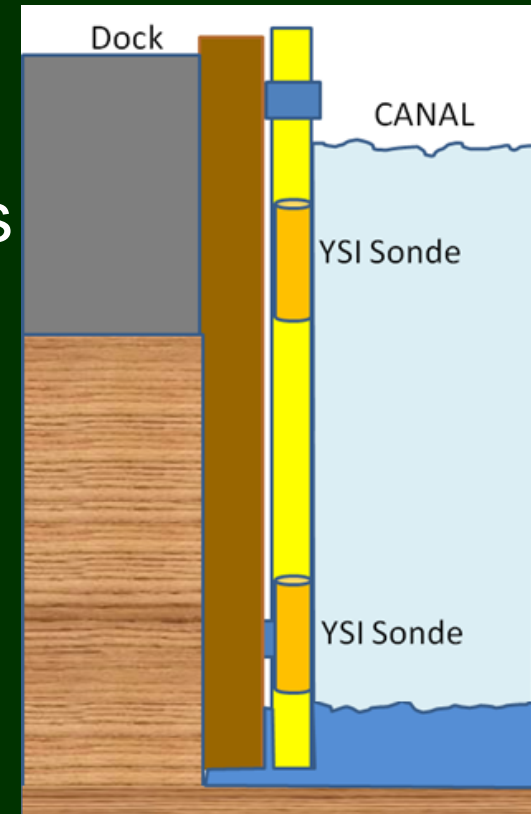
- FIU has performed FKC03 in May 2015 in all sites except Canal 28 and Canal 29
- ... and FKC04 in Aug 2015 to evaluate remediation (culvert installation) between Canal 472 and Canal 470
- Two additional canals have been included in the monitoring

WATER QUALITY ASSESSMENT TOOLS



CTD & YSI
casts

Diel (24 hour)
measurements



Water Chemistry



Canal\Survey		FKC01		FKC02		Culvert opened 04/22/2015	FKC03A		FKC03B		FKC04A		Culvert closed 07/02/2015	FKC04B	
		CTD Profile	Diel	CTD Profile	Diel		CTD Profile	Diel	CTD Profile	Diel	CTD Profile	Diel		CTD Profile	Diel
458	A		ND		9/26/2014		5/5/2015		ND					8/5/2015	
	B		ND		ND		ND		ND					ND	
472	A	5/9/2014	5/22/2014	10/15/2014	9/25/2014	4/29/2015	5/4/2015	ND	5/7/2015	ND	ND	7/21/2015	8/1/2015		
	B		ND		ND									ND	
470	A	ND	ND		ND		ND		ND				8/3/2015		
	B				ND				ND				ND		
459	A				9/26/2014				ND				8/6/2015		
	B	5/9/2014	ND		ND	4/29/2015			ND				ND		
460	A	ND	ND	ND	ND	ND			ND				8/6/2015		

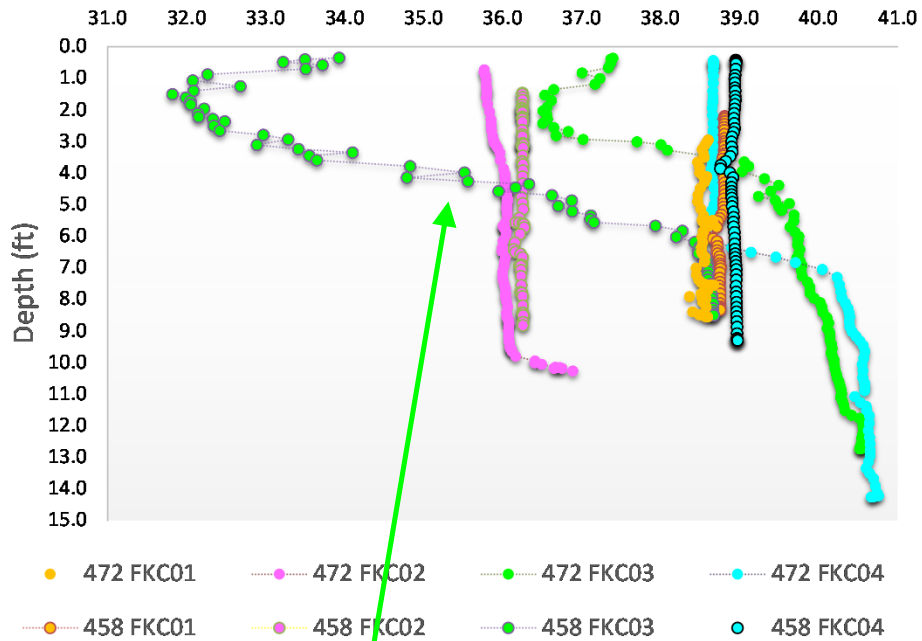




Profiles of physical-chemical properties

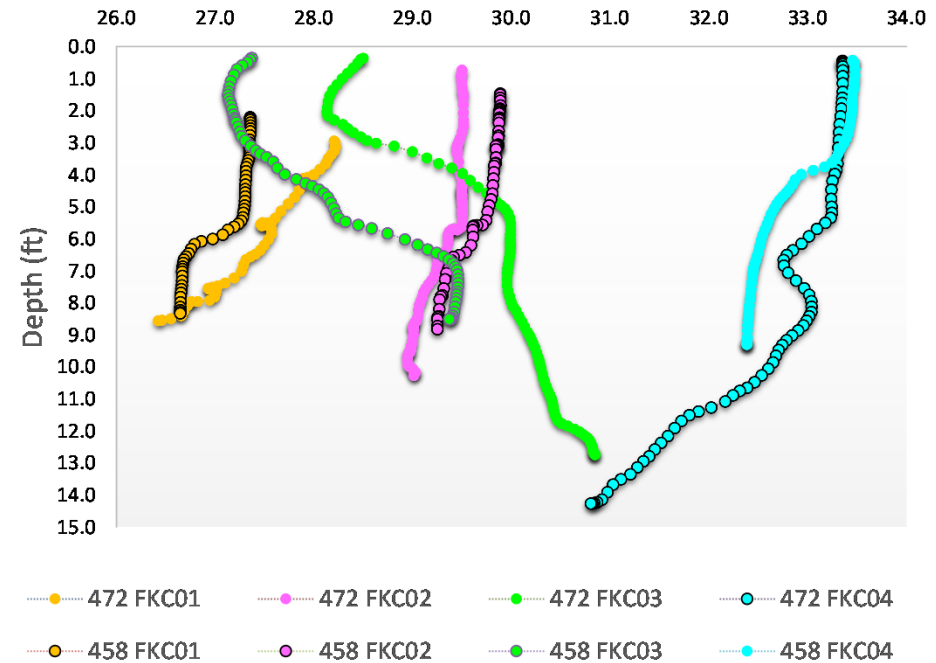
Comparing remediated canal (#472) with its control canal (#458)

Salinity (PSU)



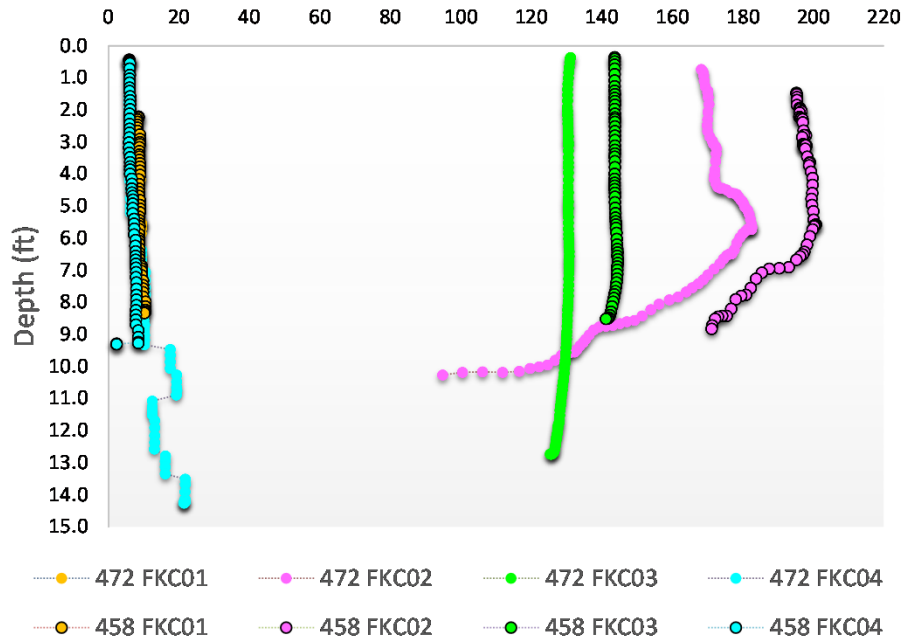
Green series during rainy day

Temperature °C

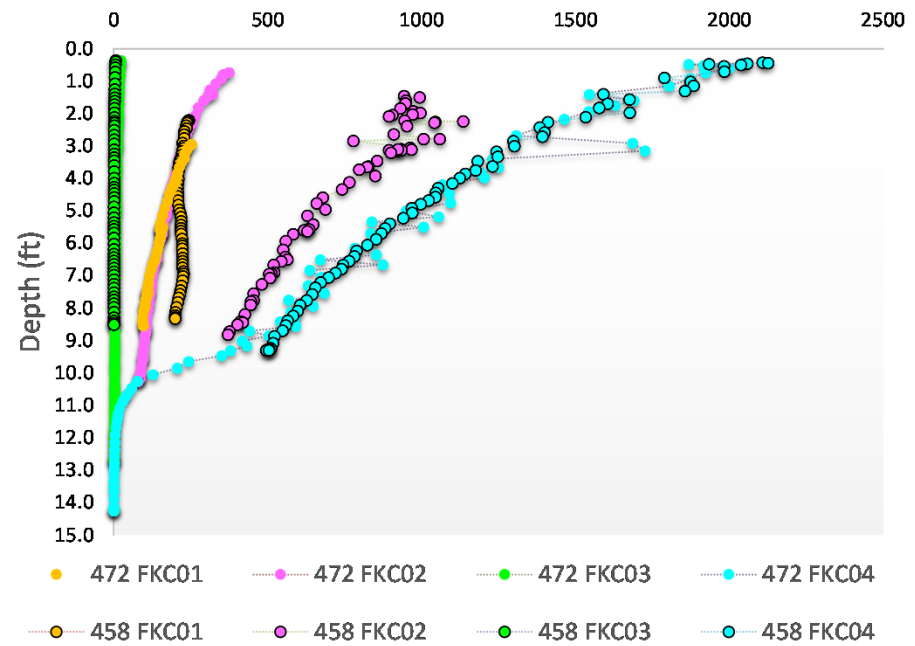


Comparing remediated canal (#472) with its control canal (#458)

CDOM (mg/m³)

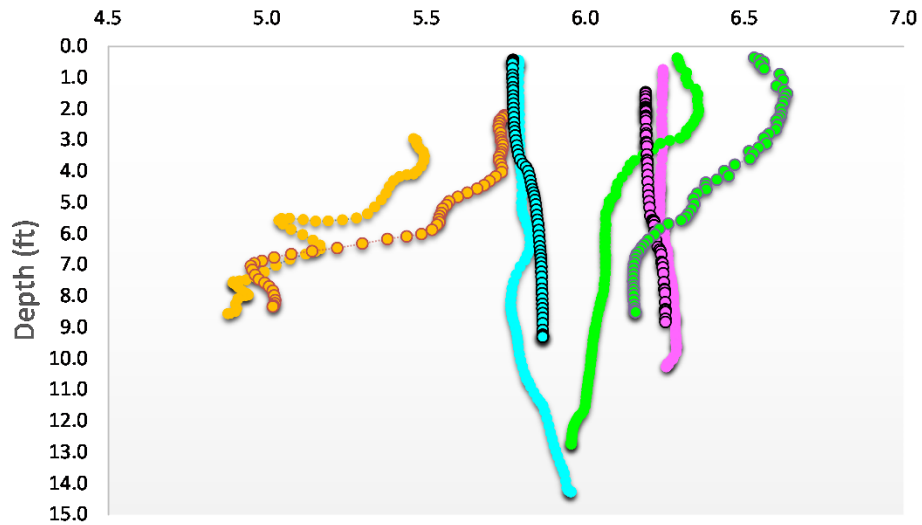


PAR/ Irradiance



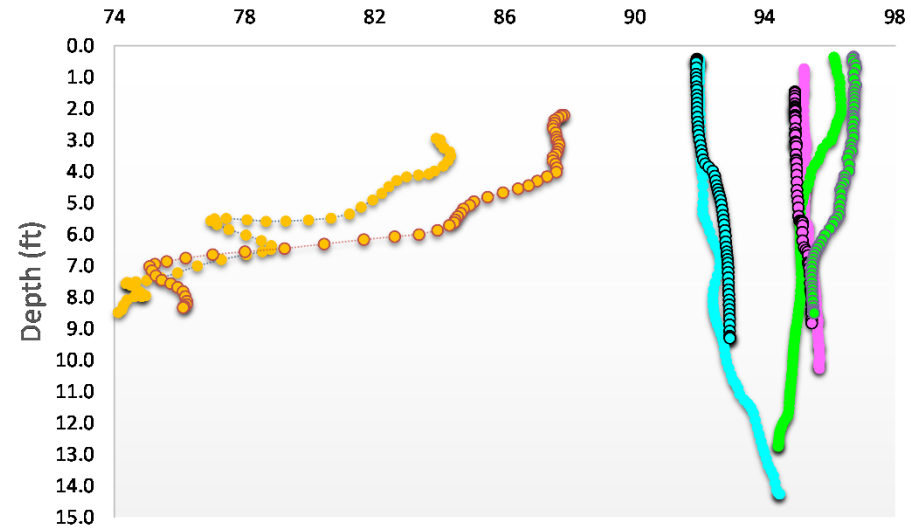
Comparing remediated canal (#472) with its control canal (#458)

Oxygen (mg/L)



- 472 FKC01
- 472 FKC02
- 472 FKC03
- 472 FKC04
- 458 FKC01
- 458 FKC02
- 458 FKC03
- 458 FKC04

%DO Saturation



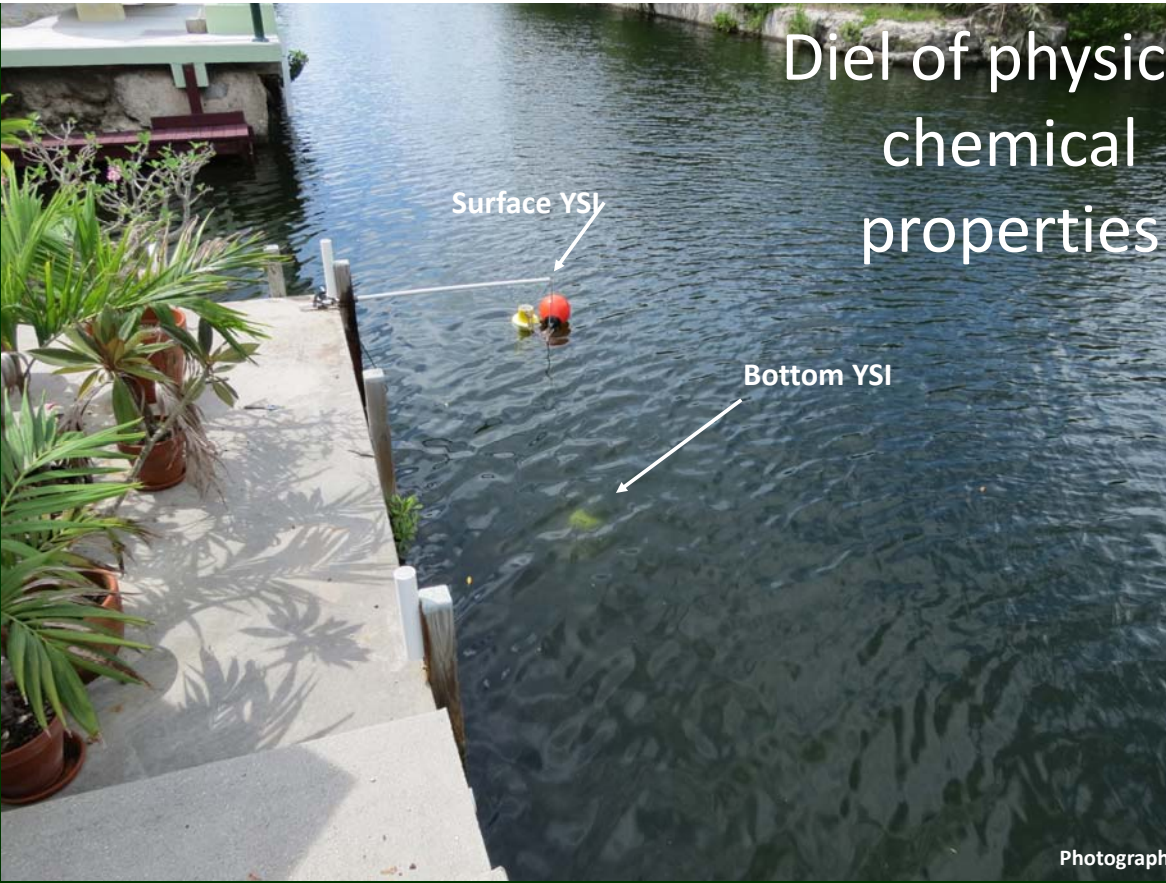
- 472 FKC01
- 472 FKC02
- 472 FKC03
- 472 FKC04
- 458 FKC01
- 458 FKC02
- 458 FKC03
- 458 FKC04

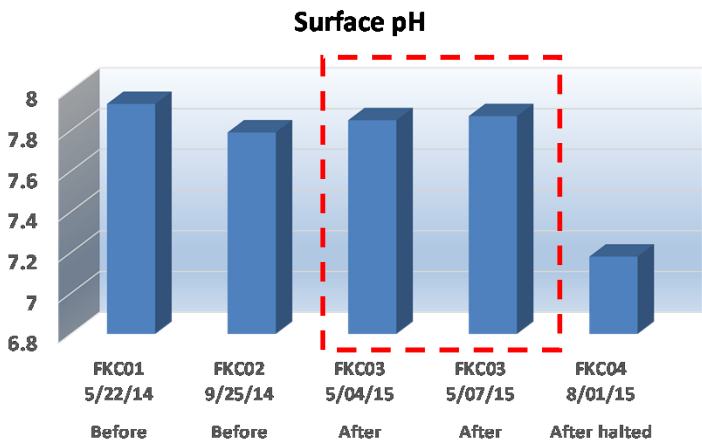
Diel of physical- chemical properties

Surface YSI

Bottom YSI

Photography: James Duquesnel

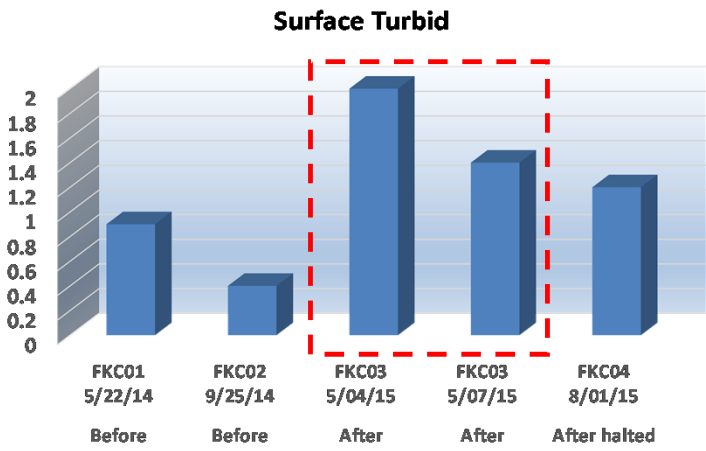




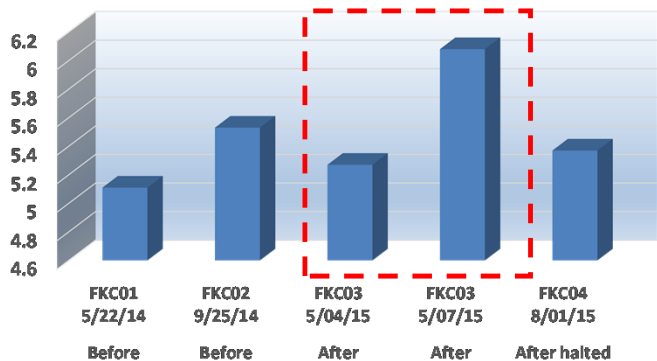
Culvert Installed

Culvert Closed

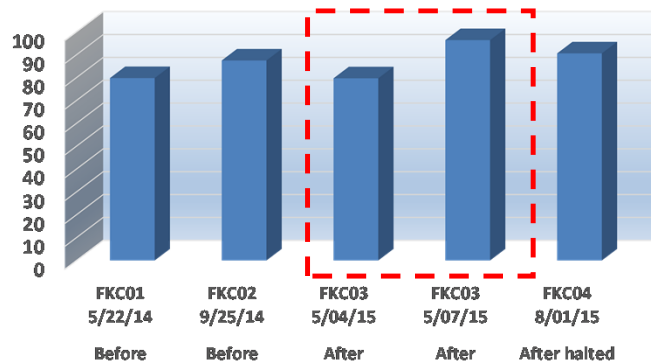
Canal #472 Diel Results Surface



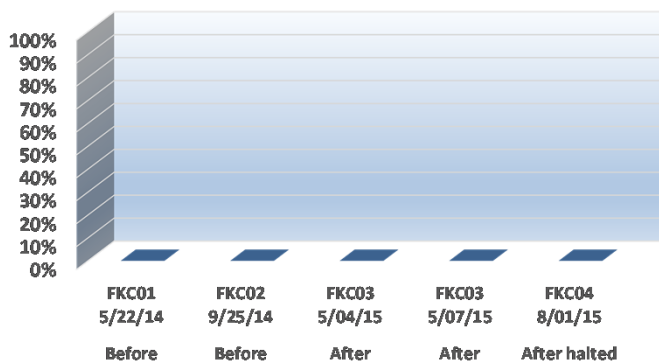
Surface DO (mg/l)



Surface %DO Saturation

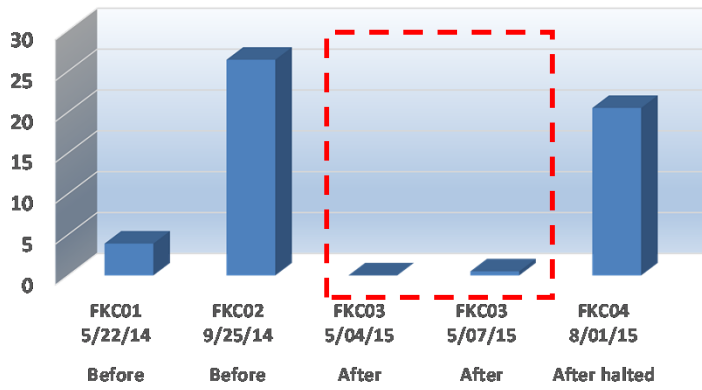


%DO Sat Exceedances



Canal #472
Diel Results

Bottom Turbidity (NTU)

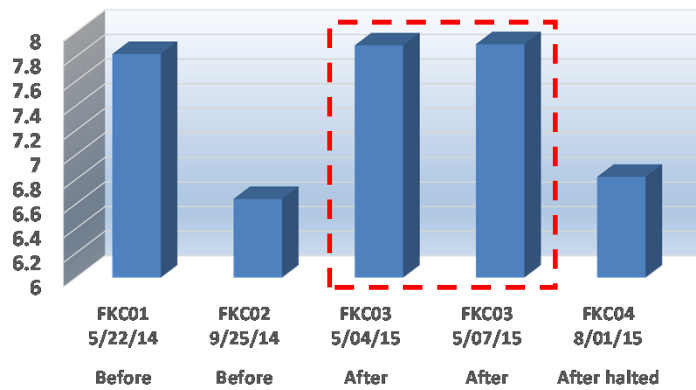


Culvert Installed

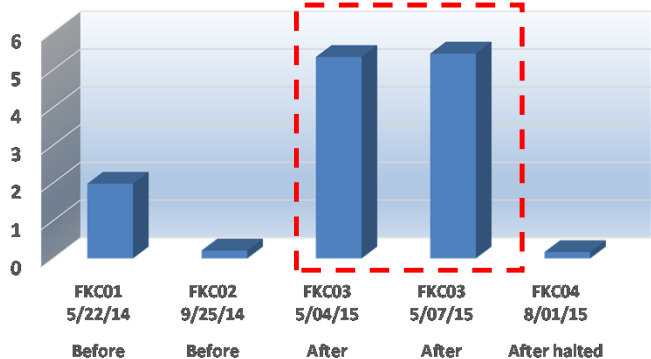
Culvert Closed

Canal #472 Diel Results Bottom

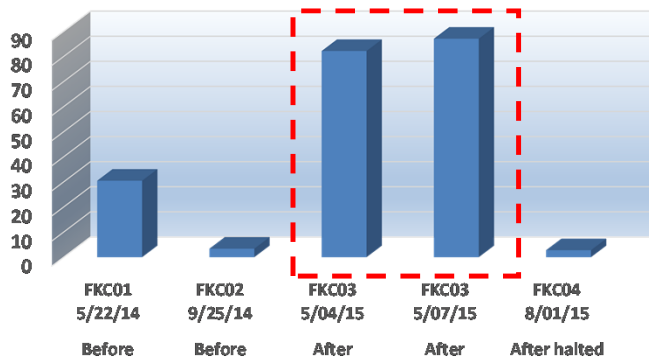
Bottom pH



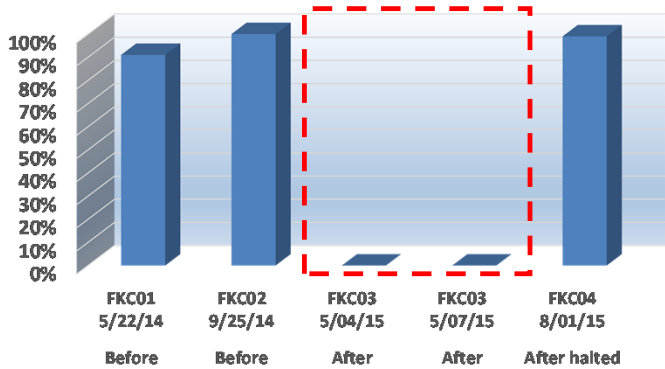
Bottom DO (mg/l)



Bottom DO% Sat

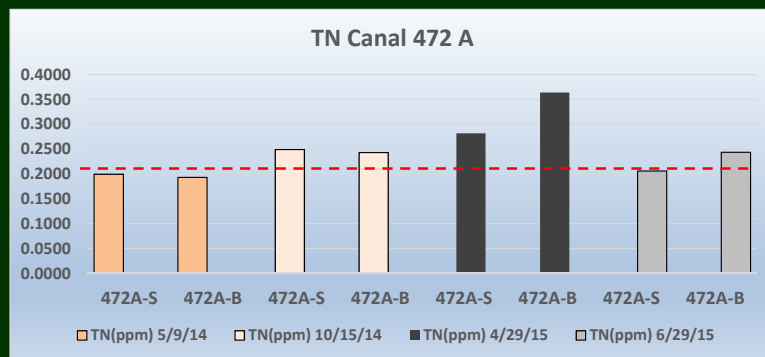
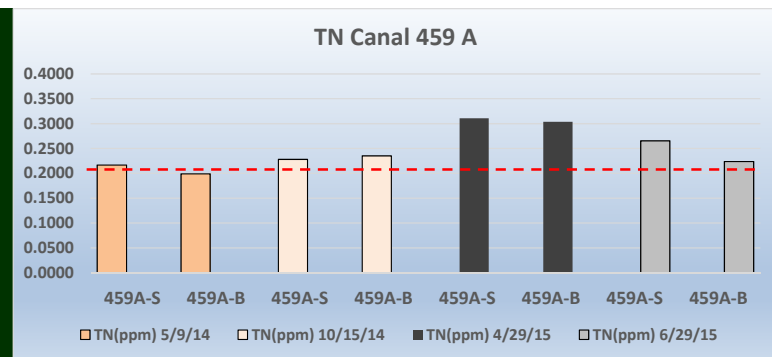
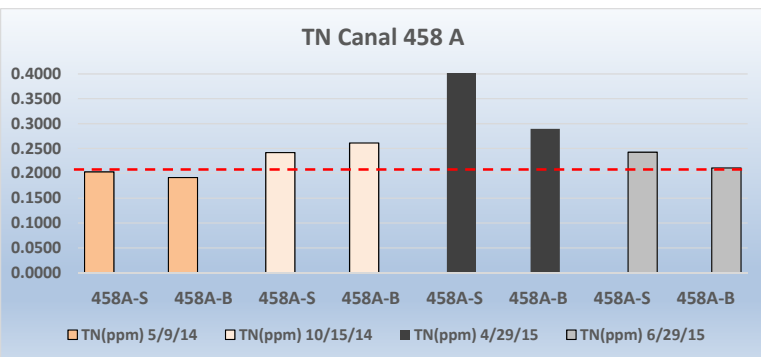


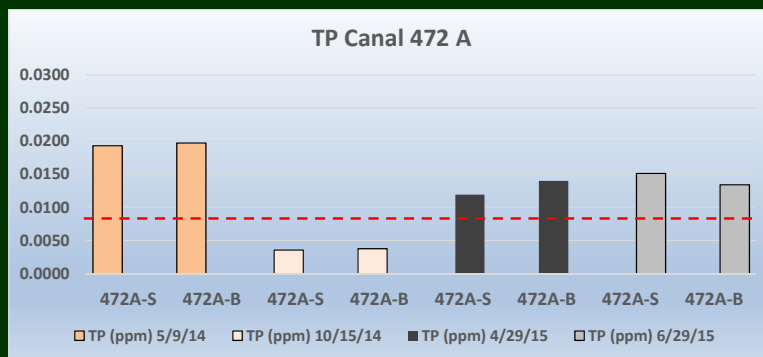
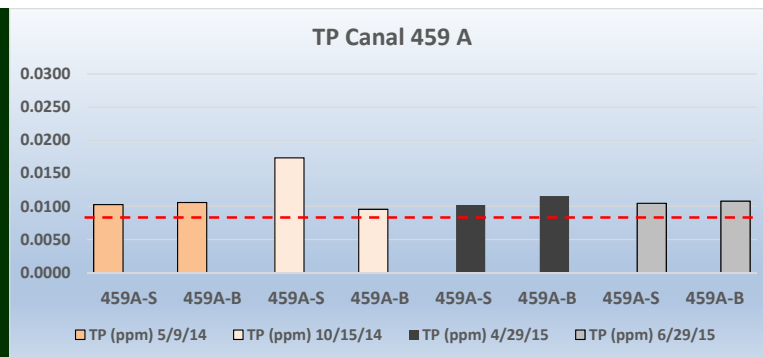
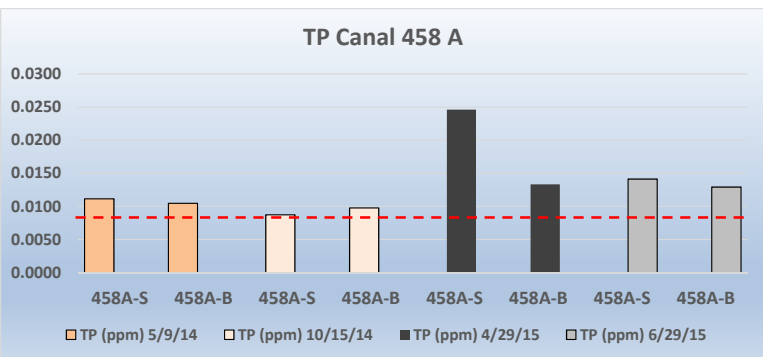
Bottom %DO Sat Exceedances



**Canal #472
Diel Results**







**WATER QUALITY
MONITORING
PROJECT FOR
DEMONSTRATION
OF CANAL
REMEDiation
METHODS
FLORIDA KEYS**

Team

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