

TAMPA BAY DREDGED HOLE ASSESSMENT: STATUS OF BENTHIC MACROFAUNA AND SEDIMENT CONTAMINANTS

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Environmental Protection Commission
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SAMPLING

- Eleven Dredge Holes Sampled for Benthic Community Analysis and Sediment Quality
 - August 2016 (Fall)
 - March/April 2017 (Spring)
- Three samples inside dredge hole + one reference sample outside
- Parameters
 - Young grab samples
 - Benthic Community Analysis
 - % Silt+Clay Analysis
 - Sediment Contaminants (August 2016 only)
 - Hydrographic profiles

BOTTOM DISSOLVED OXYGEN

Dredge Hole	DO Fall (mg/l)	DO Spring (mg/l)
Georgetown	5.57	6.43
Culbreath Bayou South	5.31	6.81
Culbreath Bayou North	4.81	4.76
Venetian Isles	4.66	6.70
Skyway Causeway North	4.22	5.89
MacDill AFB Docks	4.18	7.08
MacDill AFB Beach	3.92	6.28
Skyway Causeway South	3.72	6.60
McKay Bay	2.86	5.59
Ft. De Soto	2.85	4.96
Bay Point	1.97	4.76

SEDIMENT QUALITY GUIDELINES

- Suite of sediment contaminants: 8 Heavy Metals; 7 Pesticides; Total PCBs; 12 PAHs
- Threshold Effects Level (TEL) = Concentration below which expect minimal toxicity
- Probable Effects Level (PEL) = Concentration above which expect probable toxicity
- PEL Ratio = Measured concentration/PEL
- PEL Quotient (PEL_Q) = Mean of PEL Ratios
- PEL Quotient Targets (MacDonald et al. 2004)
 - <0.05 = Low potential for benthic community impairment
 - $0.05-0.34$ = Moderate potential for benthic community impairment
 - >0.34 = High potential for benthic community impairment

SEDIMENT CONTAMINANTS

Dredge Hole	PEL Quotient	Rank
Skyway Causeway North	0.01	1
Ft. De Soto	0.01	1
Venetian Isles	0.02	2
Skyway Causeway South	0.02	2
Georgetown	0.04	3
MacDill AFB Beach	0.06	4
Culbreath Bayou North	0.06	4
Culbreath Bayou South	0.10	5
Bay Point	0.10	5
McKay Bay	0.16	6
MacDill AFB Docks	0.17	7










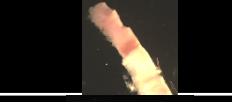

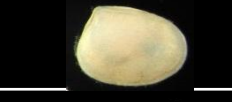





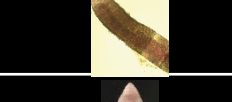
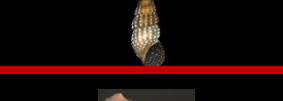

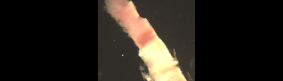
SEDIMENT CONTAMINANTS

Dredge Hole	
Skyway Causeway North	No Exceedances
Ft. De Soto	No Exceedances
Venetian Isles	No Exceedances
Skyway Causeway South	>TEL: PCBs (one sample)
Georgetown	>TEL: Benzo(a) pyrene, Dibenzo(a,h)anthracene
MacDill AFB Beach	>PEL: Lindane; >TEL: DDT, PCBs, Dibenzo(a,h)anthracene
Culbreath Bayou North	>TEL: most PAHs
Culbreath Bayou South	>TEL: Cr, Cu, Ni, most PAHs
Bay Point	>TEL: Cd, Cr, Cu, Pb, Ni, most PAHs
McKay Bay	>PEL: P,p'-DDT; >TEL: Pb, DDD, DDE, Total DDTs, HMW-PAHs
MacDill AFB Docks	>TEL: Cd, Cr, Cu, Pb, HMW-PAHs

FALL BENTHIC COMMUNITY

Dredge Hole	Total S	Mean S	Mean N (#/m ²)	Mean H'
Venetian Isles	161	84.33	51042	2.65
Skyway South	139	82.00	19959	3.24
Skyway North	100	58.33	15067	2.68
Georgetown	82	41.33	8650	2.50
Culbreath Bayou North	65	34.00	5958	2.55
McKay Bay	51	30.33	5275	2.84
MacDill AFB Beach	40	13.67	3217	1.01
Ft. De Soto	37	16.67	1633	1.81
Bay Point	30	10.33	2308	1.31
MacDill AFB Docks	30	12.67	792	2.09
Culbreath Bayou South	9	4	383	0.76










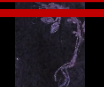











FALL BENTHIC COMMUNITY

Dredge Hole				
Venetian Isles	<i>Mesokalliapseudes macsweenyi</i>		<i>Ampelisca abdita</i>	
Skyway Causeway South	<i>Caecum pulchellum</i>		<i>Caecum cf. bipartitum</i>	
Skyway Causeway North	<i>Ampelisca abdita</i>		<i>Phascolion caupo</i>	
Georgetown	<i>Kirkegaardia sp</i>		<i>Ampelisca holmesi</i>	
Culbreath Bayou North	<i>Kirkegaardia sp</i>		<i>Spiochaetopterus costarum</i>	
McKay Bay	<i>Macoma cf. phenax</i>		<i>Mysella planulata</i>	
MacDill AFB Beach	<i>Prionospio heterobranchia</i>		<i>Laeonereis culveri</i>	
Ft. De Soto	<i>Paraprionospio pinnata</i>		Tubificids	
Bay Point	<i>Kirkegaardia sp</i>		<i>Tubificoides wasselli</i>	
MacDill AFB Docks	<i>Bittium varium</i>		<i>Astyris lunata</i>	
Culbreath Bayou South	<i>Spiochaetopterus costarum</i>			

SPRING BENTHIC COMMUNITY

Dredge Hole	Total S	Mean S	Mean N (#/m ²)	Mean H'
Skyway South	193	108.67	28493	3.66
Culbreath Bayou North	116	60.00	21984	2.84
Venetian Isles	115	67.67	18809	3.09
Skyway North	113	66.67	16967	3.14
Ft. De Soto	96	45.67	4951	3.09
Georgetown	86	45.33	11433	2.93
McKay Bay	71	42.67	82125	1.61
MacDill AFB Docks	58	28.67	5093	2.35
MacDill AFB Beach	46	24.33	5858	1.90
Culbreath Bayou South	27	12	1150	1.70
Bay Point	22	9	917	1.17

SPRING BENTHIC COMMUNITY

Dredge Hole				
Skyway South	<i>Rudilemboides naglei</i>		<i>Clymenella mucosa</i>	
Culbreath Bayou North	Fabriciidae		<i>Kirkegaardia sp.</i>	
Venetian Isles	<i>Rudilemboides naglei</i>		<i>Ampelisca abdita</i>	
Skyway North	<i>Ampelisca holmesi</i>		<i>Ampelisca abdita</i>	
Ft. De Soto	Tellininae		<i>Deutella incerta</i>	
Georgetown	Tubificids		<i>Mysella planulata</i>	
McKay Bay	<i>Ampelisca abdita</i>			
MacDill AFB Docks	<i>Streblospio spp.</i>		<i>Tubificoides brownae</i>	
MacDill AFB Beach	<i>Ampelisca abdita</i>		<i>Mysella planulata</i>	
Culbreath Bayou South	<i>Spiochaetopterosus costarum</i>		<i>Ampelisca abdita</i>	
Bay Point	<i>Ampelisca abdita</i>		<i>Cyclaspis varians</i>	

TAMPA BAY BENTHIC INDEX

Dredge Hole	TBBI Fall	TBBI Spring
Skyway Causeway South	94.76	94.96
Venetian Isles	91.88	89.41
Skyway Causeway North	87.46	89.08
McKay Bay	86.03	89.48
Georgetown	85.79	84.36
Culbreath Bayou North	85.45	85.46
MacDill AFB Docks	80.11	67.38
Bay Point	69.25	52.65
Culbreath Bayou South	58.41	77.98
MacDill AFB Beach	49.12	84.88
Ft. De Soto	47.23	68.31

FINAL RANKINGS

Dredge Hole	Average Rank
Skyway Causeway North	1.0
Venetian Isles	1.2
Skyway Causeway South	1.6
Georgetown	1.8
Culbreath Bayou North	2.0
Culbreath Bayou South	2.6
McKay Bay	2.8
MacDill AFB Beach	2.8
MacDill AFB Docks	3.0
Ft. De Soto	3.2
Bay Point	4.0