Coral Bay Supplemental Water Quality Sampling

Testing done 10 31 22 by UVI for Coral Bay Community Council

Four Days after a local 2-inch Rainfall

Community Briefing

CORAL BAY
Community Council
www.CoralBayCommunityCouncil.org

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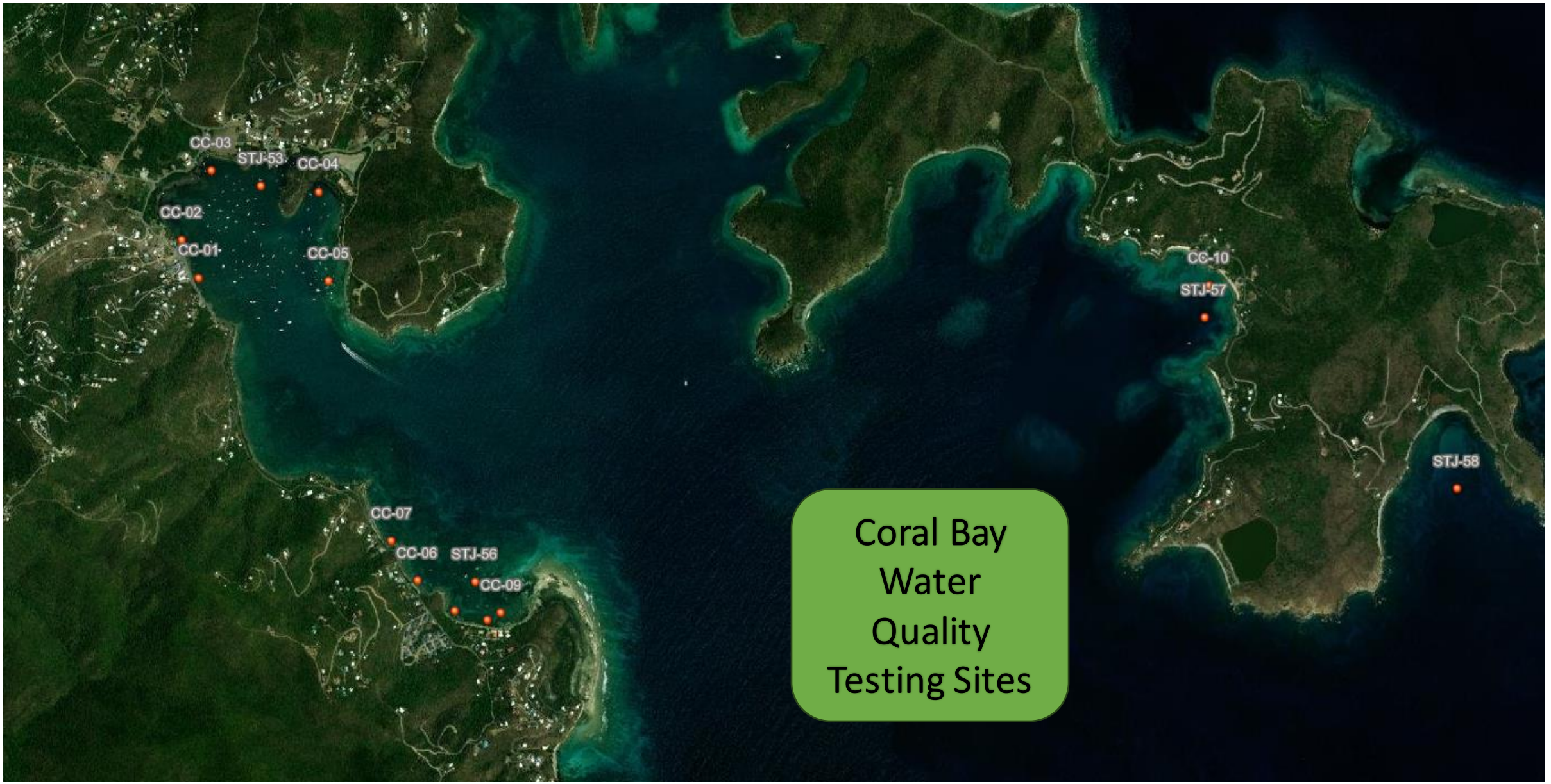

https://sjcf.maps.arcgis.com/apps/instant/basic/index.html?appid=4936bd33e9b042f0bf1a00235e74d38d

Coastal Water Quality Testing in Coral Bay

- Supplemental testing in various coastal locations to seek evidence of groundwater or point-source contamination of coastal waters - 10 extra sampling locations
- Usual quarterly testing at STJ-53, and STJ -56, and 2 other Coral Bay sites by UVI for DPNR
- Johnson Bay area – a good place to study impacts of wastewater systems
- Address local concerns that boats may cause unhealthy water
- CBCC sample points approx. 100 ft from shoreline
- Results being analyzed, future value
- Plan to test again in November 2023.

Close-Up of Johnson Bay Sites

Complete Suite of Water Quality Tests Done

- The next page shows the complete table of water quality results from the University of the Virgin Islands October 31, 2022 sampling, including turbidity, nitrogen, enterococci (a fecal indicator bacteria used as a better measure than direct testing for *E. Coli*) and other parameters. (extra testing paid for by CBCC's grant)
- It also shows the current water quality standards in the VI
- The pages after that detail the significant findings.

Site Description	Sample Station ID	Total Depth (m)	Sample Depth	Sample Depth (m)	Tempertaure (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)	pH (s.u.)	Turbidity (NTU)	Secchi (m)	Enterococci (MPN/100 mL)	Total Suspended Solids (mg/L)	Total Volatile Solids (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)
2019 USVI Water Quality Standards fo Class B Waters					Not exceed 32° Celsius at any time, nor as a result of waste discharge to be greater than 1.0°C above natural conditions. *Areas where coral reef ecosystems are located shall not exceed 25-29°C at any time, nor as a result of waste discharge to be greater than 1.0°C above		No less than 5.5 mg/L (except when due to natural forces).	Not be outside 7.0 to 8.3 standard units. Normal range of pH must not be extended at any location by more than ±0.1 pH unit.	Maximum of 3 NTUs. **For areas where coral reef ecosystems are located, a maximum of 1 NTU	A secchi disc shall be visible at a minimum depth of 1 m. For waters where the depth does not exceed 1 m the bottom must be visible. **In areas where coral reef ecosystems are located, a secchi disc shall be visible at a minimum depth of 15 m. For such waters where the depth does not exceed 15 meters, the bottom must be visible.	* If the sample is found to have more than 70 colonies per 100ml, the beach is considered to be unsafe for swimming. The 30-day geometric mean for enterococcus shall not exceed 30 colony-forming units/100 mL and no more than 10 percent of the samples collected in the same 30 days shall exceed 110 colony-forming units/100 mL.	(Not used in WQS) None from wastewater sources which will cause disposition or be deleterious for the designated uses shall be present in any waters.		Not exceed 207 µg/L (or .207 mg/L) in more than 10 percent of samples over a three-year period in estuarine, marine and coastal waters.	50 µg/L or .05 mg/L
Harolds Way	CC-01	1.9	Surface	0.5	29.17	33.51	7.4	7.91	0.8		<10	2.9	1.6	0.203	0.0035
Harolds Way	CC-01		Bottom	1.4	29.05	33.52	7.22	7.93	0.8	1.9					
Island Blues	CC-02	1.9	Surface	0.5	29.36	33.52	7.02	7.97	0.8		<10	4.3	2.3	0.228	0.0061
Island Blues	CC-02		Bottom	1.4	29.32	33.52	7.4	7.98	0.8	1.9					
Pickles	CC-03	1.9	Surface	0.5	29.78	33.51	7.85	7.91	1.8		<10	6.6	2.4	0.262	0.0021 (J)
Pickles	CC-03		Bottom	1.4	29.7	33.51	7.85	8.03	2.5	1.9					
Coral Harbor Dock	STJ-53	2.1	Surface	0.5	29.14	33.59	6.16	7.95	2.2		<10	3.3 (H;J)		0.296 (J)	0.0031 (J)
Coral Harbor Dock	STJ-53		Bottom	1.6	29.08	33.6	6.02	7.95	2.2	2.1					
Flamingo Pond	CC-04	1.9	Surface	0.5	29.22	33.35	7.12	7.97	1		<10	4.0	2.4	0.252	0.0056
Flamingo Pond	CC-04		Bottom	1.4	29.13	33.35	7.11	7.97	1.5	1.9					
Fortsberg - Johnny Lime	CC-05	1.7	Surface	0.5	29.41	33.72	7.95	8.11	0.6		10	3.7	2.2	0.227	<0.0015 (U)
Fortsberg - Johnny Lime	CC-05		Bottom	1.2	29.35	33.77	8.38	8.13	1	1.7					
Calabash Market	CC-06	2.1	Surface	0.5	28.99	33.57	7.62	8.04	0.5		10	3.2	2.2	0.287	0.007
Calabash Market	CC-06		Bottom	1.6	28.98	33.59	7.91	8.05	0.6	2.1					
Shipwreck	CC-07	1.7	Surface	0.5	29.27	33.58	7.19	8.01	2.1		10	4.3	2.4	0.246	<0.0015 (U)
Shipwreck	CC-07		Bottom	1.2	29.12	33.58	7.39	8.03	1.1	1.7					
Johnson Bay - W - Calabash Boom Housing	CC-08	1.9	Surface	0.5	29.63	33.7	8.25	8.12	0.9		10	4.7	2.6	0.297	0.0032
Johnson Bay - W - Calabash Boom Housing	CC-08		Bottom	1.4	29.55	33.72	8.18	8.1	1.8	1.9					
Johnson Bay - Boats	STJ-56	2.2	Surface	0.5	29.27	33.68	7.75	8.11	0.5		<10	3.9 (H;J)	N/A	0.258 (J)	0.008 (J)
Johnson Bay - Boats	STJ-56		Bottom	1.7	29.19	33.7	7.71	8.1	0.5	2.2					
Johnson Bay - E - Shoreline Homes	CC-09	1.5	Surface	0.5	30	33.84	9.8	8.22	0.4		<10	4.0	2.1	0.235	0.0026 (J)
Johnson Bay - E - Shoreline Homes	CC-09		Bottom	1	29.87	33.83	10.05	8.23	0.6	1.5	<10	4.3	2.2	0.21	0.0075
Johnson Bay - Beach	I-29 / VI823989		Surface	0.3					1.42		<10				
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Hansen Bay Beach - NW - Picnic Table	CC-10	2.6	Surface	0.5	28.78	33.99	6.8	8.09	0.2		<10	3.0	1.7	0.263	0.0058
Hansen Bay Beach - NW - Picnic Table	CC-10		Bottom	2.1	28.73	34.04	6.82	8.09	0.1	2.6					
Round Bay	STJ-57	7.7	Surface	0.5	28.86	33.99	6.63	8.08	0		<10	3 (H;J)		0.299 (J)	0.0106 (J)
Round Bay	STJ-57		Bottom	7.2	28.73	34.14	6.93	8.09	0.2	6					
Privateer Bay	STJ-58		Surface	0.5	28.87	34.08	6.63	8.07	0		<10	3.4 (H;J)		0.284 (J)	0.013 (J)
Privateer Bay	STJ-58	8.4	Bottom	7.9	28.73	34.07	6.6	8.08	0	8.4					

Is the bay water safe for human contact in recreation?

- Many people are fearful that there will be E. Coli or other pathogens (bacteria and viruses) when they know the seawater could be contaminated by waste from large animals, septic systems and boats.
- In saltwater, testing for the Enterococcus bacteria provides the best indicator of whether E. coli and other pathogens are present. Indicators: Enterococci | US EPA
- The good news is that Coral Harbor has routinely for decades tested safe during the quarterly water testing (except for after the 2017 hurricanes.)
- Beach water quality testing is done most weeks by DPNR at Johnson Bay. This area sometimes tests poorly. Reasons are being investigated. The beach testing report always warns: *DPNR … cautions the public that if heavy rainfall were to occur, avoid any areas affected by storm-water runoff until the effects subside. Storm water runoff may also contain contaminants or pollutants harmful to human health and therefore, should avoid areas of storm water runoff (i.e., guts, puddles, and drainage basins) or any area that appears discolored or has foul odors.*
- Everyone should be cautious after heavy rains.

Coral Harbor in 1940s

- In this 1946 photo, you can see areas without seagrass and many fewer mangroves. This is also before road and subdivision building caused serious stormwater runoff and sediment into the bay that changed the water quality to be murkier. This is studied as "turbidity." Much of this is leaf debris and plankton –which are microscopic creatures that other marine creatures feed on. We need more study about what is actually in the coastal seawater and its impact - good and bad - on sea life.
- All of Coral Harbor met Turbidity Water Quality standards. Sea grass does make the water appear darker than the reflection of white sand. There is also land-based sediment on the bottom that gets stirred up by boat anchors and creatures. There is more turbidity here than out in East End waters.

Enterococci (to test for E. coli and other pathogens) -

Density of organisms in 100ml of water: Less than 10 in Coral Harbor, 10 in several other spots
Safe water for recreation and swimming – **less than 70.**

	Enterococci (MPN/100 mL)
Harolds Way	<10
Harolds Way	
Island Blues	<10
Island Blues	
Pickles	<10
Pickles	
Coral Harbor Dock	<10
Coral Harbor Dock	
Flamingo Pond	<10
Flamingo Pond	
Fortsberg - Johnny Lime	10
Fortsberg - Johnny Lime	
Calabash Market	10
Calabash Market	
Shipwreck	10
Shipwreck	
Johnson Bay - W - Calabash Boom Housing	10
Johnson Bay - W - Calabash Boom Housing	
Johnson Bay - Boats	<10
Johnson Bay - Boats	
Johnson Bay - E - Shoreline Homes	<10
Johnson Bay - E - Shoreline Homes	<10
Johnson Bay - Beach	<10
Johnson Bay - Beach	<10

More resources:

- Turbidity and Water | U.S. Geological Survey (usgs.gov)
- Sunlit Zone - Woods Hole Oceanographic Institution (whoi.edu)
- Indicators: Enterococci | US EPA

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