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Great South Bay, Long Island, New York Summer Water Quality Monitoring Program

CERCOM, Molloy University

John Tanacredi Ph.D.

Molloy University, jtanacredi@molloy.edu

Kyle F. Maurelli

Molloy University, kmaurelli@molloy.edu

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Center for Environmental Research and Coastal Oceans Monitoring

(CERCOM)

Molloy College

Great South Bay, Long Island, New York

Summer Water Quality Monitoring Program

2020

FINAL REPORT

Director; **Dr. John T. Tancredi**

Scientific Research Technical Assistant; **Mr. Kyle F. Maurelli**

Administrative Coordinator; **Ms. Regina Gorney**

Address:

132 Clyde Street

West Sayville, NY 11796

2020

Student Intern

Participation:

Emma Hahn	Environmental Law	Binghamton
Bailey Rosen	Earth & Environmental Studies	Molloy College
Richard Kevan	Education	Molloy College
Mason Hermges	Education	Molloy College
Kathleen Doherty	Pre- medicinal	Molloy College
Zuberi Symister	Pre- medicinal	Molloy College
Caroline Kane	Earth & Environmental Studies	Molloy College

The Center for Environmental Research and Coastal Oceans Monitoring (CERCOM) visits 11 locations in the Great South Bay from Memorial Day – Labor Day to monitor for dissolved oxygen (DO), pH, salinity, clarity and temperature. Students are trained and assist in CERCOM's water quality data collection by research assistant Mr. Kyle Maurelli. This monitoring program has been conducted for the past 16 years. These parameters are critical in determining long term water quality conditions in Long Island estuaries.

Water Quality Parameter Methodologies

Salinity, Dissolved Oxygen, Temperature Methodology

YSI Pro 2030 Professional Series; Probe

Clarity Methodology

8 inch Secchi Disk

pH Methodology

Orion Star model A121 pH Meter with low maintenance pH probe

Depth Methodology

Recorded from vessel's navigation GPS automatic system

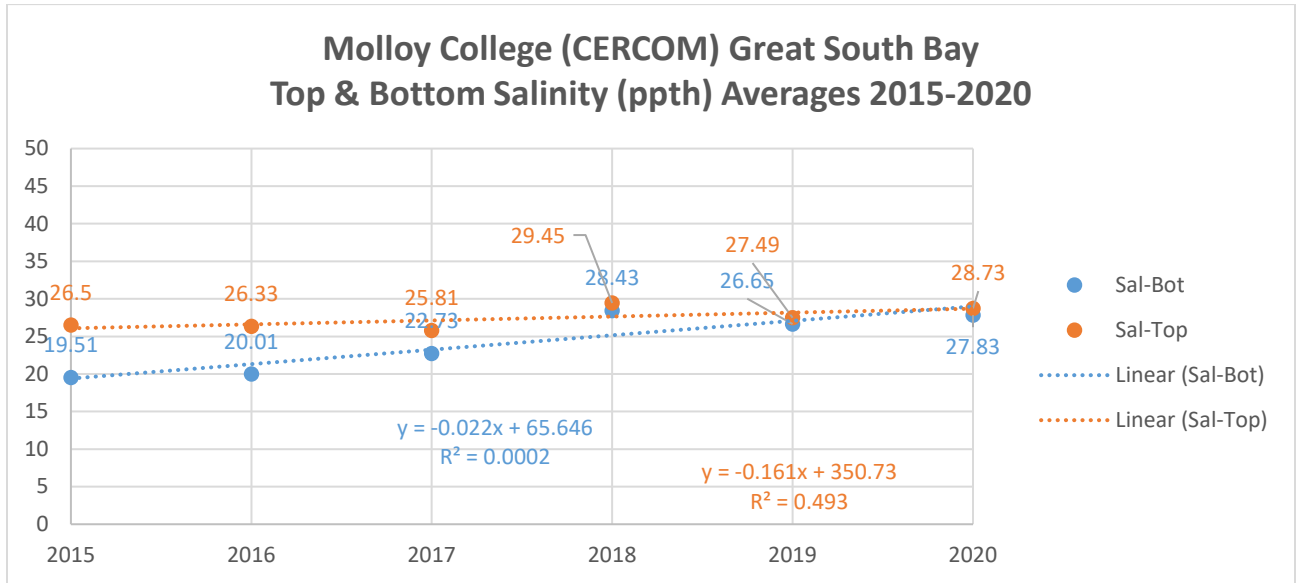
Figure 1.
2020
WQ Averages:

2020

Parameter/Site	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis Park	Watch Hill	Patchogue Bay	Nicoll Bay	Yearly Average
Depth (ft)	19.60	12.46	17.2	5.70	10.5	8.44	7.00	12.13	7.60	8.20	9.26	10.73
Clarity (in)	7.56	6.86	7.13	5.20	6.83	6.20	5.86	6.26	5.23	4.53	5.46	6.10
Sal-Bot (ppth)	26.79	28.98	28.74	28.41	28.29	27.57	27.82	28.69	27.76	25.85	27.31	27.83
Sal-Top (ppth)	29.76	29.23	29.65	29.57	28.90	28.94	28.82	28.39	27.88	27.31	27.67	28.73
Temp-Bot (oC)	75.28	75.59	75.60	76.37	75.92	75.99	75.71	75.78	75.90	76.30	76.34	75.88
Temp-Top (oC)	75.68	75.81	75.86	76.46	76.17	76.27	76.18	76.03	76.07	76.68	77.02	76.20
pH	5.60	5.71	5.37	6.10	5.65	5.35	5.32	5.59	5.79	5.19	5.93	5.60
DO-Bot (mg/L)	5.73	5.90	5.79	6.10	6.01	5.73	5.67	5.95	6.11	6.07	6.60	5.96
DO-Top (mg/L)	8.01	8.00	8.02	8.09	8.09	8.06	8.07	8.11	8.11	8.07	8.16	8.07

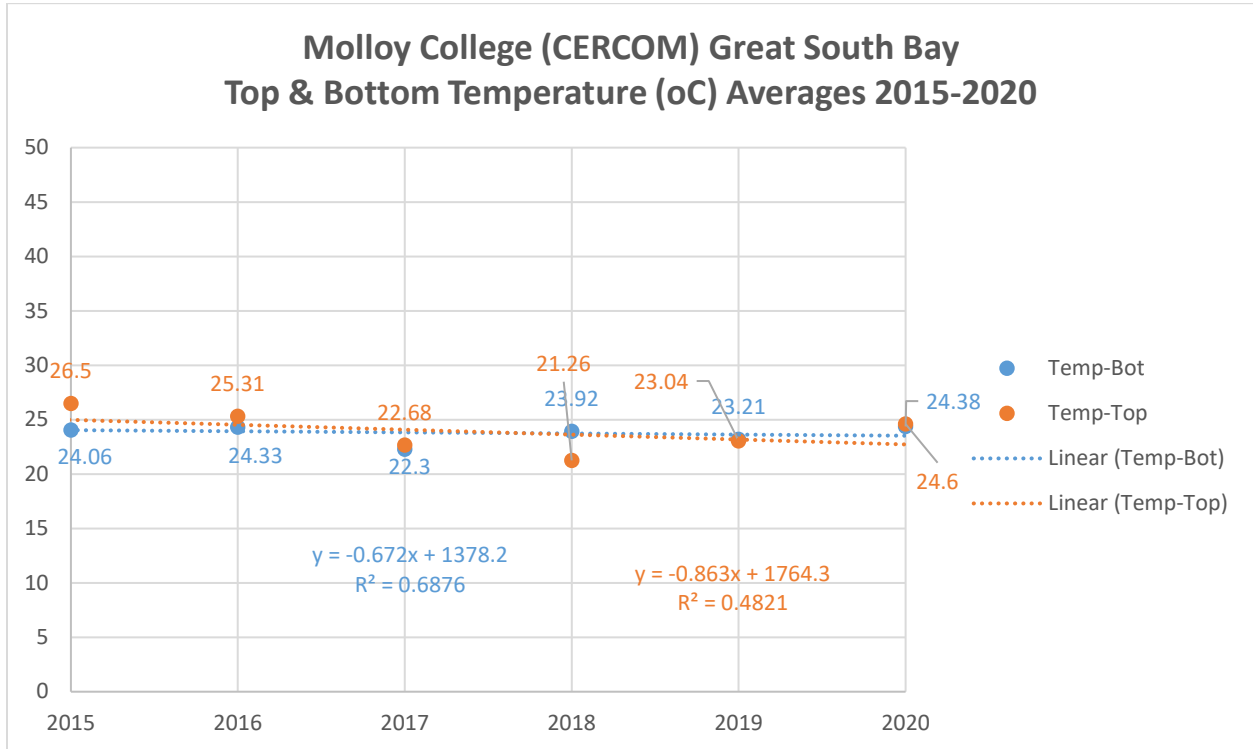
*All raw data is available upon request, held in reserve at CERCOM.

Figure 2. 6 year trend of the Great South Bay top and bottom salinity values:



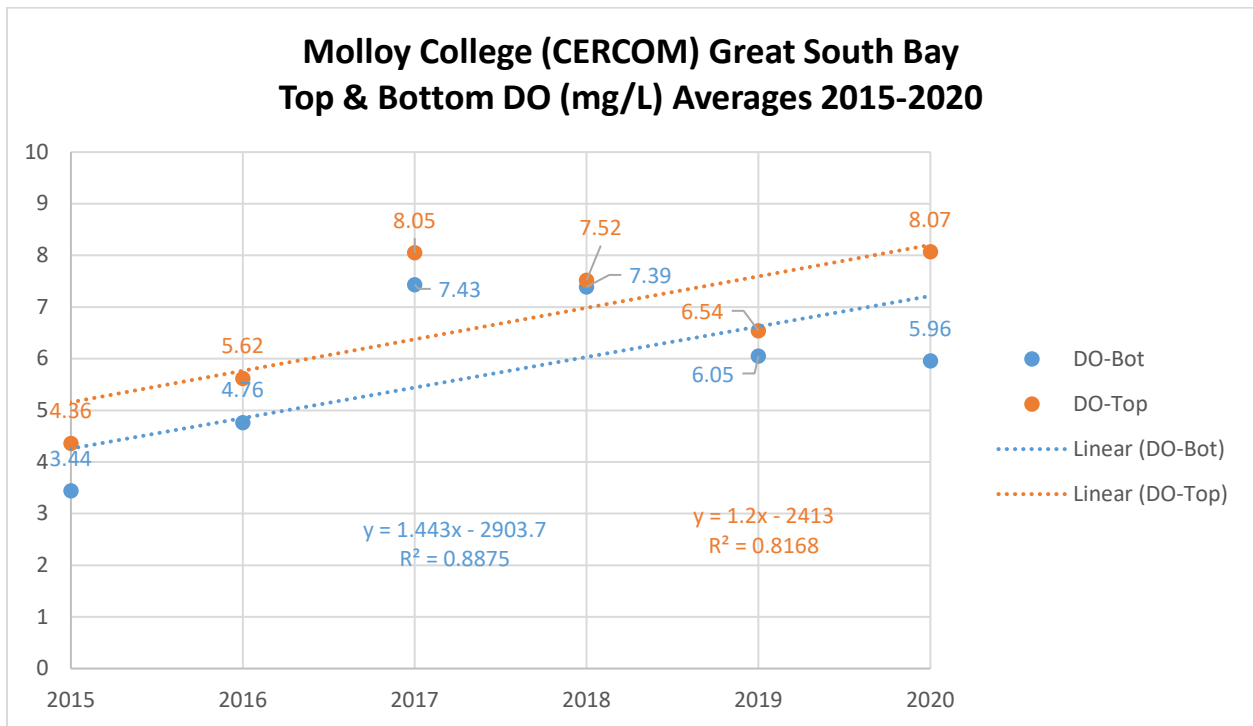
*All raw data is available upon request, held in reserve at CERCOM.

Figure 3. 6 year trend of the Great South Bay top and bottom temperature values:



*All raw data is available upon request, held in reserve at CERCOM.

Figure 4. 6 year trend of the Great South Bay top and bottom Dissolved Oxygen values:

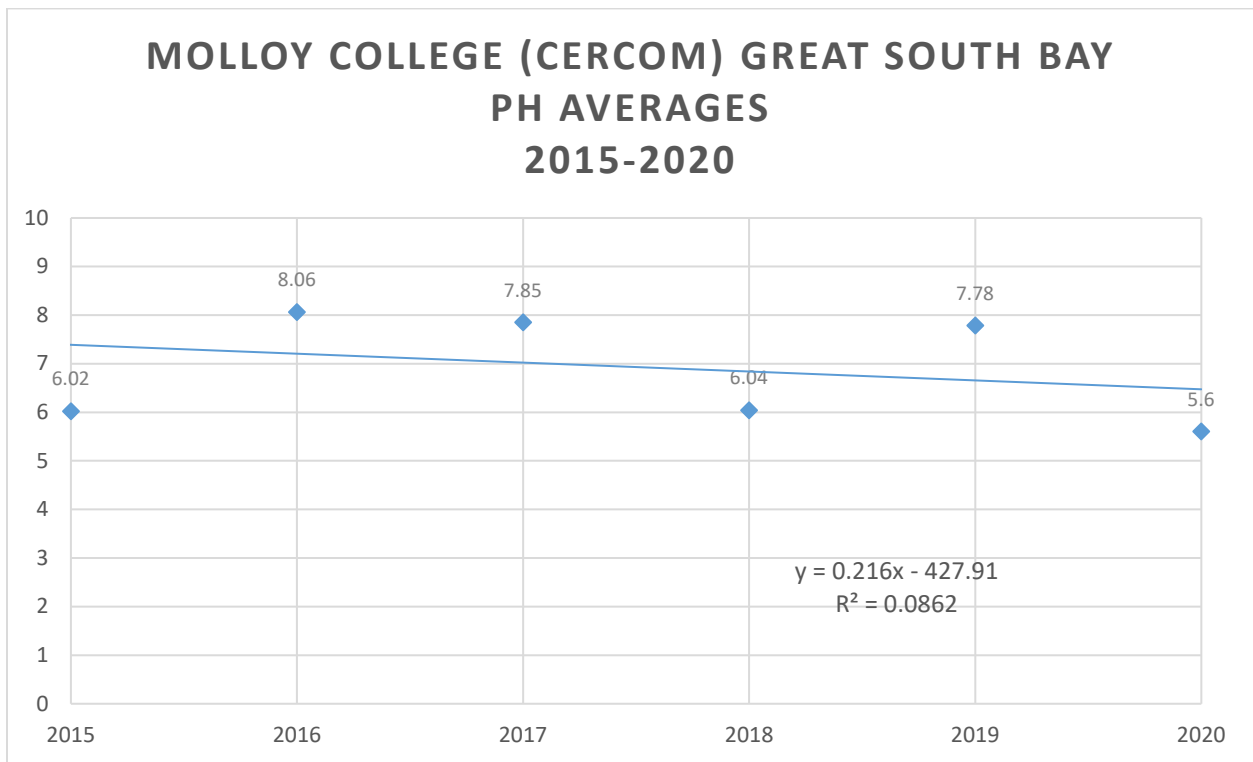


*All raw data is available upon request, held in reserve at CERCOM.

Ocean Acidification monitoring; Great South Bay 2020

pH (Potential Hydrogen)

Figure 5. 6 year trend of the Great South Bay pH values:



*All raw data is available upon request, held in reserve at CERCOM.

2004										
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clarity (in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Top (ppth)	25.9	27.7	25.6	25.9	25.6	24.5	24.7	24.1	24.5	25.4
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temp-Top (oC)	25.3	23.3	23.0	23.7	23.2	23.2	22.8	22.7	22.6	23.3
pH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DO-Bot (mg/L)	10.64	6.42	5.7	7.42	7.22	5.61	7.71	7.08	7.1	7.2
DO-Top (mg/L)	10.64	6.59	6.1	7.1	7.15	5.56	8.03	7.3	7.2	7.3
Total Nitrates mg/L	.05	.15	.25	.25	.15	.25	.75	.25	.14	.25
2005										
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clarity (in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Top (ppth)	28.21	27.80	26.01	26.06	25.81	25.27	25.67	25.31	25.06	26.1
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temp-Top (oC)	24.67	25.07	24.96	25.43	25.24	25.30	24.94	25.34	25.07	25.1
pH	7.42	7.40	7.24	7.48	7.41	7.15	7.34	7.23	7.33	7.33
DO-Bot (mg/L)	7.20	7.02	5.49	6.90	6.95	4.29	6.65	5.54	6.38	6.27
DO-Top (mg/L)	7.30	7.20	5.67	7.08	7.04	4.45	6.63	5.61	6.43	6.38
2006										
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clarity (in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Top (ppth)	27.33	27.09	25.66	24.77	24.87	24.04	24.17	23.67	23.69	25.03
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temp-Top (oC)	25.47	25.49	24.70	25.54	25.59	25.49	25.29	25.36	25.39	25.37
pH	8.16	8.12	8.12	8.22	8.23	7.97	8.17	8.06	8.02	8.12
DO-Bot (mg/L)	7.00	6.96	6.20	7.16	6.88	4.90	6.82	5.38	6.80	6.50

Temp-Top (oC)	24.67	25.07	24.96	25.43	25.24	25.30	24.94	25.34	25.07	25.1		
pH	7.42	7.40	7.24	7.48	7.41	7.15	7.34	7.23	7.33	7.33		
DO-Bot (mg/L)	7.20	7.02	5.49	6.90	6.95	4.29	6.65	5.54	6.38	6.27		
DO-Top (mg/L)	7.30	7.20	5.67	7.08	7.04	4.45	6.63	5.61	6.43	6.38		
2014												
Site/Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average		
Depth (ft)	20.1	8.2	10.4	8	11.7	11.5	8.4	9.2	4.5	X		
Clarity (in)	65.3	45.5	34.3	40.3	41.5	37	48	45.8	43.5	44.58		
Sal-Bot (ppth)	21.2	23.7	26.3	17.3	24.3	25.8	22.3	24.5	21.3	22.97		
Sal-Top (ppth)	26.8	26.5	26.3	26.3	26.4	25.7	26.3	26.1	26.2	26.29		
Temp-Bot (oC)	24	24.5	24.9	24.9	24.3	24.9	24.7	24.2	25.3	24.63		
Temp-Top (oC)	24.2	25.1	25.2	25.3	25.2	25.1	25.7	25.3	25.3	25.16		
pH	8	8.1	8.1	8.3	8.3	8.4	7.3	6.7	7.1	7.81		
DO-Bot (mg/L)	4.6	4.3	2.6	4.8	1.7	0.9	2.9	0.5	5.2	3.06		
DO-Top (mg/L)	4.7	4.8	3.2	5	4.7	3.4	4.8	4.5	5.1	4.47		
2015												
Site/Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average		
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Clarity (in)	55	37.3	40.6	36.75	39.87	55.62	33.71	37.57	32.71	40.01		
Sal-Bot (ppth)	19.6	20	20.1	18.2	18.07	23.21	21.2	16.6	18.63	19.51		
Sal-Top (ppth)	27.7	27.7	26.3	25.48	25	27.48	26.6	26.84	25.57	26.5		
Temp-Bot (oC)	23.8	24.4	24.3	24	24.1	18.87	25.9	26.08	25.1	24.06		
Temp-Top (oC)	23.8	24.6	48.8	24.5	24.74	22.3	26.57	26.57	25.73	27.51		
pH	6.5	6.4	6.3	6.2	5.73	5.6	5.75	5.9	5.77	6.02		
DO-Bot (mg/L)	4.8	4.8	3.41	1.62	2.6	3.35	5	4.33	1.06	3.44		
DO-Top (mg/L)	4.4	4.7	4.3	4	4.3	4.45	4.86	4.47	3.74	4.36		
2016												
Site/Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average		
Depth (ft)	10.7	5.5	11.8	11.4	9.9	6.3	4.5	4.6	11.2	X		
Clarity (in)	68	50	76	56	43	55	50	49	53	55.56		
Sal-Bot (ppth)	19.6	19.5	21.5	19.3	21.6	22.7	19.9	17.8	18.2	20.01		
Sal-Top (ppth)	26.4	27.4	26.5	23.9	26.4	26.4	27.2	27.2	25.6	26.33		
Temp-Bot (oC)	23.7	25.4	25	25.1	24.5	19.8	25.4	25.5	24.6	24.33		
Temp-Top (oC)	24.8	25.7	25.5	25.6	25.6	23.8	25.5	25.8	25.5	25.31		
pH	8.19	8.2	8.05	7.99	7.63	8.04	8.17	8.19	8.07	8.06		
DO-Bot (mg/L)	5.6	5.9	3.3	2.6	2.9	6.7	6.3	6.1	3.4	4.76		
DO-Top (mg/L)	5.7	5.8	4.7	5.4	5.6	5.8	6.00	6.00	5.6	5.62		

2017												
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average		
Depth (ft)	13.1	10.1	15.84	8.06	9.18	5.82	5.68	8.83	7.46	X		
Clarity (in)	29.33	27.2	25.12	35.05	33.86	29.35	34.35	36.06	37.18	31.94		
Sal-Bot (ppth)	23.33	22.33	24.19	21.65	22.04	22.91	23.31	22.86	21.96	22.73		
Sal-Top (ppth)	26.23	25.83	25.78	24.64	25.73	25.91	26.03	26.13	26.05	25.81		
Temp-Bot (oC)	22.26	22.71	22.48	23.66	22.09	20.25	22.15	22.91	22.2	22.3		
Temp-Top (oC)	22.67	24.3	22.75	22.95	22.44	21.81	22.45	22.3	22.49	22.68		
pH	7.75	7.72	7.36	7.67	8.00	8.11	8.05	8.00	7.96	7.85		
DO-Bot (mg/L)	8.79	8.50	6.28	6.37	6.21	8.31	7.34	7.33	7.73	7.43		
DO-Top (mg/L)	8.57	8.27	7.74	8.18	7.63	8.11	7.86	7.96	8.11	8.05		
2018												
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average		
Depth (ft)	14.41	11.99	17.06	4.5	7.1	4.45	5.5	6.81	5.93	X		
Clarity (ft)	4.46	4.05	4.75	4.38	4.5	4.04	4.59	4.34	4.55	4.41		
Sal-Bot (ppth)	28.5	29.15	29.36	28.37	28.22	27.65	28.85	28.14	27.63	28.43		
Sal-Top (ppth)	34.80	29.25	29.31	29.03	28.58	28.29	28.78	28.47	28.57	29.45		
Temp-Bot (oC)	23.67	23.79	23.86	24.13	24.03	24.22	24.16	23.42	24.02	23.92		
Temp-Top (oC)	24.05	24.19	24.09	24.23	24.27	24.42	24.31	23.95	22.27	21.26		
pH	7.78	7.75	7.80	7.79	7.82	7.83	7.81	7.69	7.69	6.04		
DO-Bot (mg/L)	6.97	6.78	6.47	7.67	7.51	9.60	7.37	6.95	7.17	7.39		
DO-Top (mg/L)	7.20	6.90	6.92	7.62	7.60	9.12	7.73	7.35	7.23	7.52		
2019												
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Patchogue Bay	Nicoll Bay	Average
Depth (ft)	16.5	13.8	18.6	8.8	10.8	9.8	7.6	11.4	7.8	8.6	10	11.3
Clarity (ft)	6.5	5	5	4.4	5	5.4	4.4	4	4.1	4	5	4.8
Sal-Bot (ppth)	25.78	27.79	27.33	27.34	27.12	27.08	25.16	26.90	26.46	25.64	26.57	26.65
Sal-Top (ppth)	28.57	28.42	28.15	27.40	26.69	27.07	27.13	27.03	26.69	29.19	26.02	27.49
Temp-Bot (oC)	22.81	22.93	23.10	23.18	23.34	23.08	23.34	22.80	23.40	23.74	23.63	23.21
Temp-Top (oC)	23.16	23.44	23.46	23.74	23.63	23.51	22.25	23.49	20.63	23.88	22.23	23.04
pH	7.93	7.74	7.71	7.91	7.83	7.27	8.11	7.42	7.78	7.84	8.05	7.78
DO-Bot (mg/L)	6.50	6.21	5.91	6.68	6.13	5.66	5.64	5.70	6.16	5.72	6.19	6.05
DO-Top (mg/L)	6.72	6.45	6.48	6.65	6.56	5.41	6.64	6.54	6.70	6.80	6.99	6.54

2020												
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Patchogue Bay	Nicoll Bay	Average
Depth (ft)	19.60	12.46	17.2	5.70	10.5	8.44	7.00	12.13	7.60	8.20	9.26	10.73
Clarity (ft)	7.56	6.86	7.13	5.20	6.83	6.20	5.86	6.26	5.23	4.53	5.46	6.10
Sal-Bot (ppth)	26.79	29.98	28.74	28.41	28.29	27.57	27.82	28.69	27.76	25.85	27.31	27.83
Sal-Top (ppth)	29.76	29.23	29.65	29.57	28.90	28.94	28.82	28.39	27.88	27.31	27.67	28.73
Temp-Bot (oC)	75.28	75.59	75.60	76.37	75.92	75.99	75.71	75.78	75.90	76.30	76.34	75.88
Temp-Top (oC)	75.68	75.81	75.86	76.46	76.17	76.27	76.18	76.03	76.07	76.68	77.02	76.20
pH	5.60	5.71	5.37	6.10	5.65	5.35	5.32	5.59	5.79	5.19	5.93	5.60
DO-Bot (mg/L)	5.73	5.90	5.79	6.10	6.01	5.73	5.67	5.95	6.11	6.07	6.60	5.96
DO-Top (mg/L)	8.01	8.00	8.02	8.09	8.09	8.06	8.07	8.11	8.11	8.07	8.16	8.07