

August 2022

WQAUG22 Hypoxia Summary

6 Stations below 3.0 mg/L

CT DEEP sampled 42 stations during the WQAUG22 survey that was conducted 1-3 August 2022. The lowest dissolved oxygen (DO) concentration recorded during this survey was 1.43 mg/L at Station A4. Five additional stations were below 3.0 mg/L and 22 additional stations were below 4.8 mg/L. Data are available in an Excel spreadsheet format or from the [UCONN ERDDAP site](#).

Station A4 consistently has the lowest DO concentrations throughout WQAUG surveys. The following statistics summarize the bottom DO levels during all WQAUG surveys conducted by CT DEEP between 1998 and 2022 (n=25). For Station A4: the median is 1.69 mg/L, the mean is 1.98 mg/L (+/- 1.14 mg/L), and the values range from a minimum of 0.32 mg/L (1998) to a maximum of 4.62 mg/L (2016).

During WQAUG22, 224.4 km² of bottom water had concentrations of dissolved oxygen below 3.0 mg/L (Table 1). Of those 224.4 km², 137 km² were below 2 mg/L and 0 km² were below 1.0 mg/L. An additional 874 km² were below 4.8 mg/L.

In 2021, there were 206.1 km² of bottom water with DO concentrations less than 3.0 mg/L, of which 53.1 km² were below 2.0 mg/L and 21.8 km² were less than 1 mg/L. There were 164.2 km² of bottom water that had DO concentrations less than 3.0 mg/L during the WQAUG20 survey.

The areal estimates of bottom waters with DO concentrations less than 3.0 mg/L range from 0 km² (2017, 2016, and 2000) to 515.4 km² (2006).

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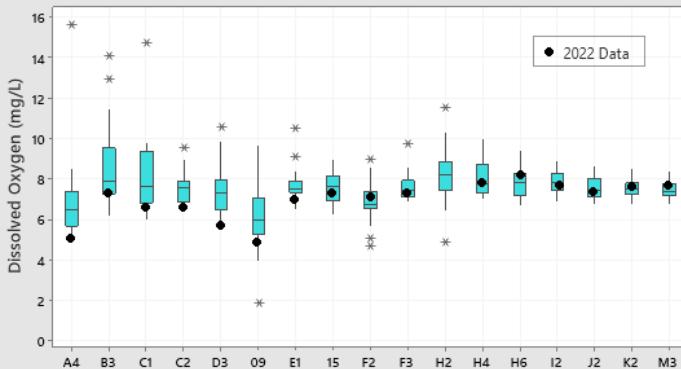


Long Island Sound Water Quality Monitoring Program

<https://portal.ct.gov/DEEP-LIS>

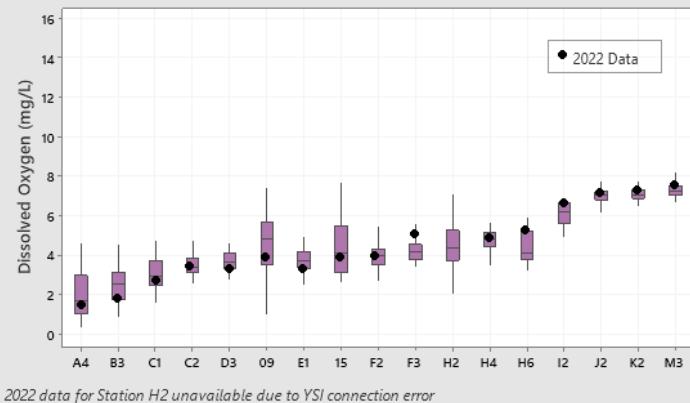
79 Elm Street
Hartford, CT 06106
(860) 424-3176
Katie.obrien-clayton@ct.gov

Surface Dissolved Oxygen Concentrations Across Long Island Sound
WQAUG Cruises
1998-2022



2022 data for Station H2 unavailable due to YSI connection error

Bottom Dissolved Oxygen Concentrations Across Long Island Sound
WQAUG Cruises
1998-2022



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Dissolved Oxygen

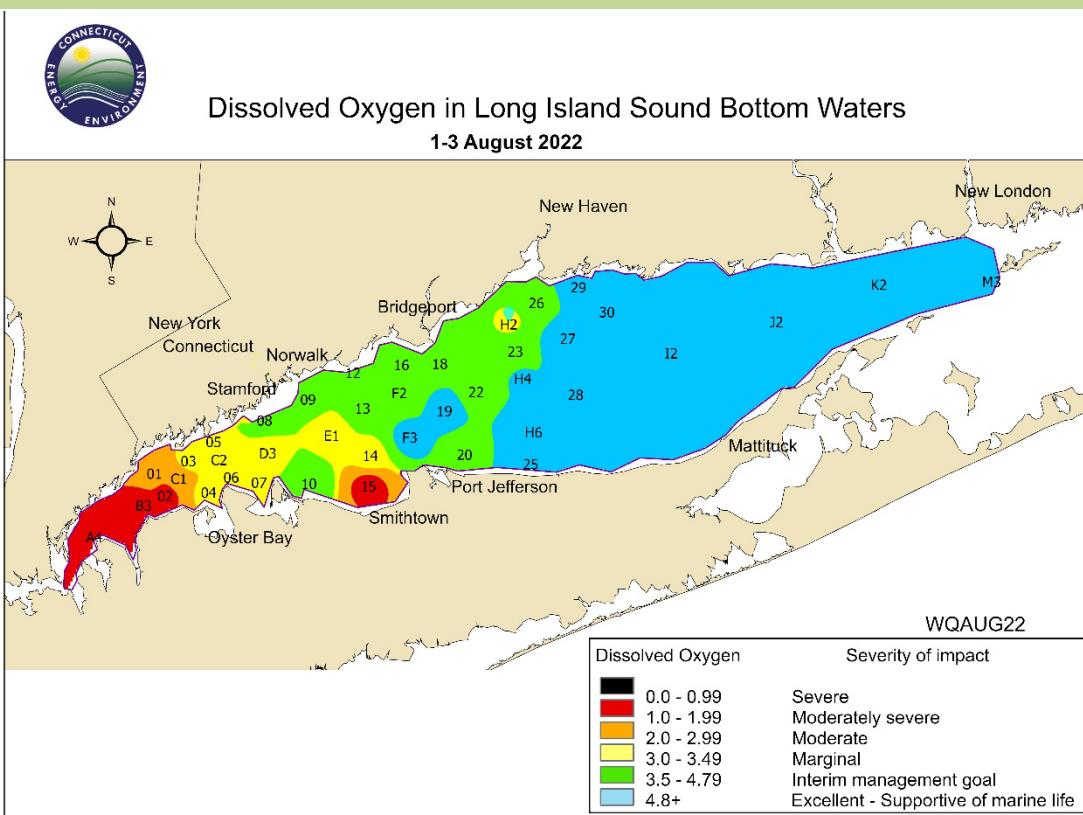


Table 1. Minimum Dissolved Oxygen Concentrations and Areal Estimates for WQAUG Cruises Conducted from 1998-2022 by CT DEEP.

Cruise	Minimum DO Observed (mg/L)	Station with Minimum DO	Area under 4.8 mg/L (km ²)	Area under 3 mg/L (km ²)
WQAUG98	0.33	A4	1188.6	312.5
WQAUG99	0.8	A4	1458.6	311.5
WQAUG00	3.13	06	1183.2	0
WQAUG01	2.23	A4	1532.3	165.8
WQAUG02	0.56	02	1303.5	324.7
WQAUG03	1.91	B3	1733	275.1
WQAUG04	2.67	A4	1213.3	53.1
WQAUG05	0.6	A4	1338.7	459.5
WQAUG06	0.63	A4	1597.7	515.4
WQAUG07	1.59	A4	1480.4	418.9
WQAUG08	0.61	A4	1530.5	235.9
WQAUG09	1.49	A4	1177.1	113.2
WQAUG10	1.17	02	1210.5	261.8
WQAUG11	1.65	A4	1049.7	165.5
WQAUG12	2.35	02	1615	121.1
WQAUG13	2.28	A4	1066.7	41.3
WQAUG14	1.67	B3	980.5	225.6
WQAUG15	2.77	A4	552.4	90.1
WQAUG16	3.37	F3	890.2	0
WQAUG17	3.37	F3	1232	0
WQAUG18	2.58	A4	1080.3	53.5
WQAUG19	1.29	A4	1218.8	231.6
WQAUG20	1.77	A4	1470.3	164.2
WQAUG21	0.99	A4	1389.1	206.1
WQAUG22	1.43	A4	1098.4	224.4

Weather

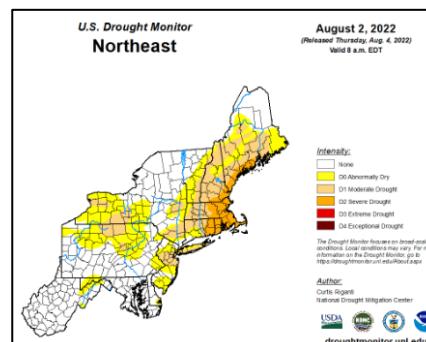
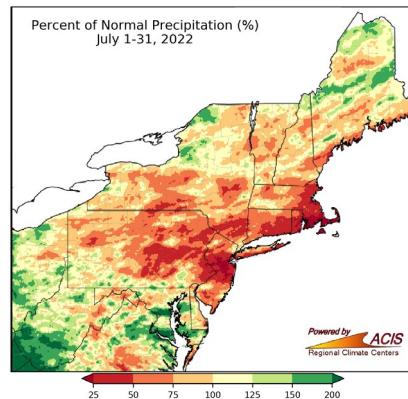
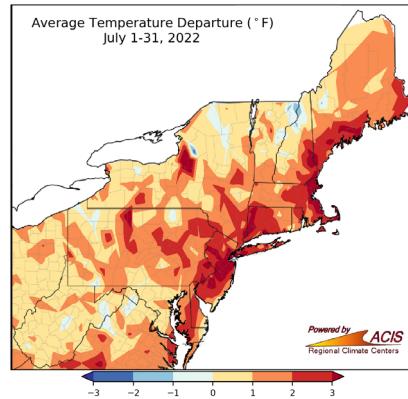
From July 1-31, average temperatures around Long Island Sound ranged from 77.1°F in Bridgeport, Islip, and JFK Airport to 81.1°F at La Guardia Airport. All sites recorded temperatures warmer than normal, with the highest deviations occurring at JFK Airport (3.2 °F warmer). This July period was ranked as the 4th, 7th, and 10th all-time hottest month at JFK Airport, La Guardia Airport, and Islip respectively.

Over the survey 0.36 inches of rain fell at Bridgeport due to thunderstorm activity on 8/1. In fact, we deviated from our usual course to avoid being caught in a strong storm. Islip saw 0.29 inches of rain fall on 8/1 and LaGuardia recorded 0.41 inches, while Hartford saw 0.72 inches.

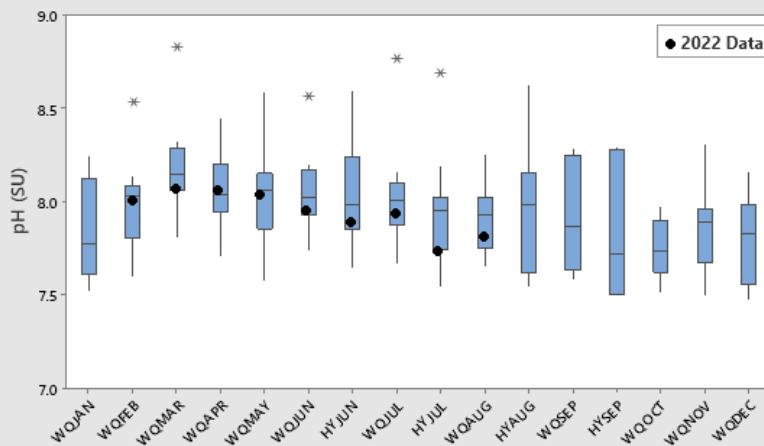
July 1-31, 2022, saw 93% of normal precipitation amounts for Bridgeport with only 3.05 inches recorded. JFK Airport and Islip were much drier, receiving only 1.10 inches and 1.27 inches of precipitation respectively. This July ranked as the 7th driest at JFK Airport and the 11th driest in Islip.

CT and NY continued to be under drought conditions with eastern CT facing a severe drought. The Northeast Climate Center has an informative [blog](#) dated 4 August 2022 on the Northeast Drought that utilizes available data from USGS streamflow and ground water gages, as well as their regional climate data.

More detailed weather information can be viewed on the [Northeast Regional Climate Center's website](#).



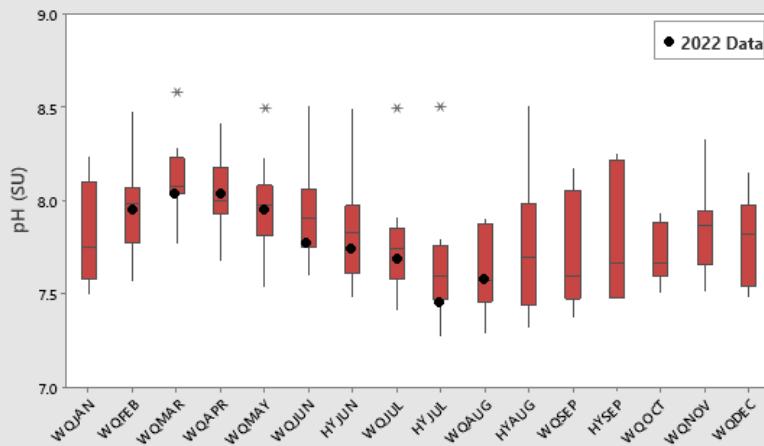
Average Surface pH of Long Island Sound
December 2010- August 2022



During the WQAUG22 survey, the surface pH averaged 7.80 SU, and the bottom pH averaged 7.58 SU. Median values for WQAUG surveys (data from 2011 to 2021) are: 7.92 SU and 7.57 SU for surface and bottom, respectively.

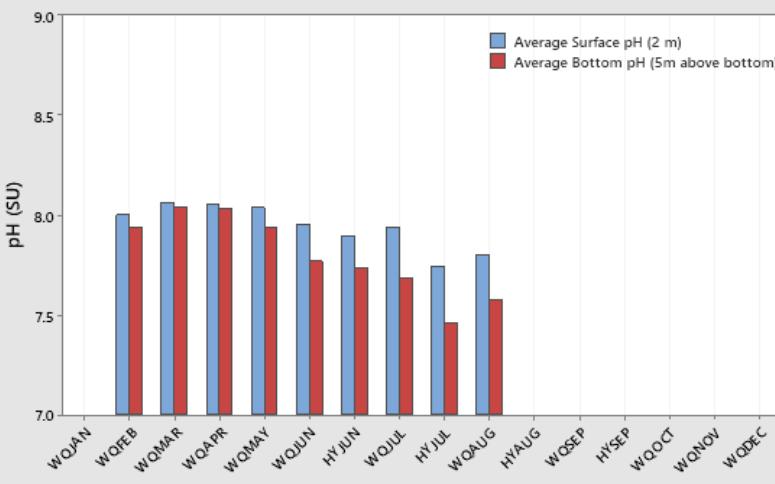
For WQAUG22, surface pH ranged from 7.51 SU (Station A4) to 7.96 SU (Station I2 and H6). Bottom pH ranged from 7.26 (Station B3) to 7.90 SU (Station J2).

Average Bottom pH of Long Island Sound
December 2010- July 2022

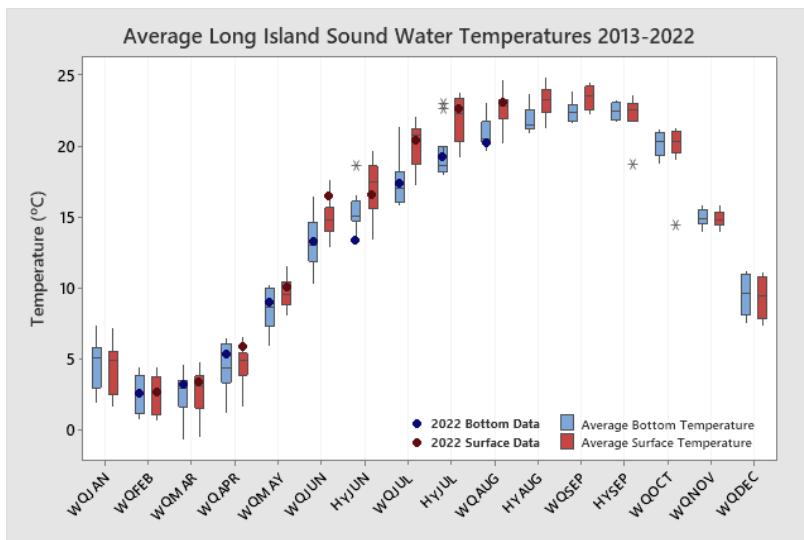
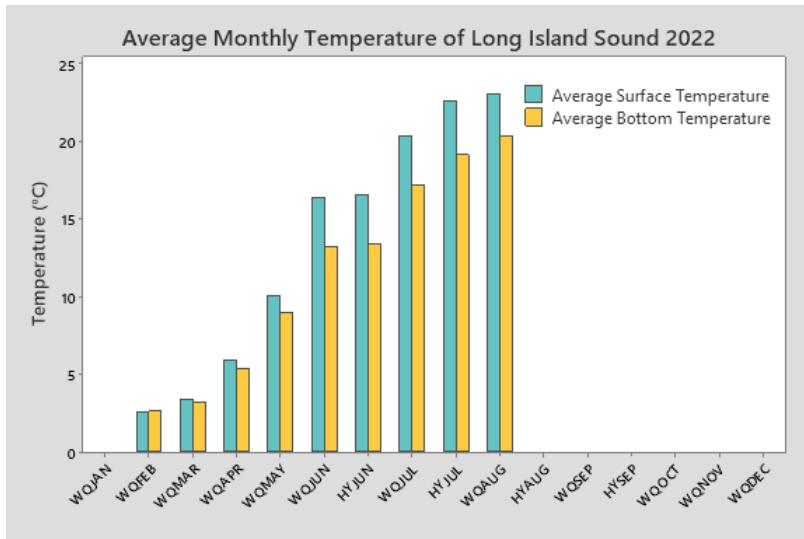
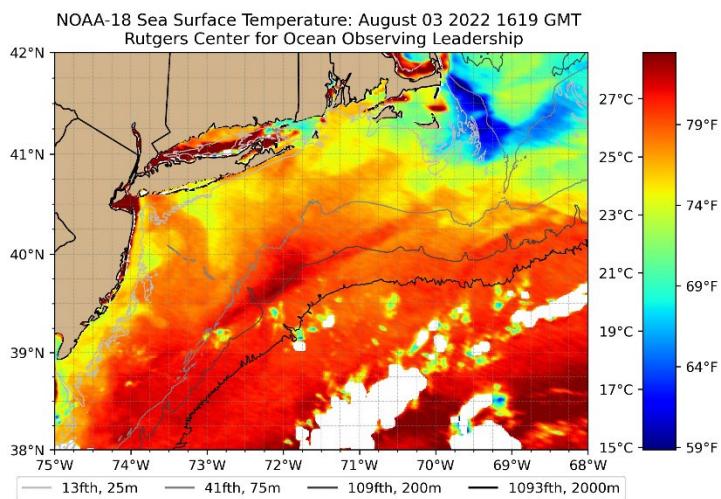


The average surface and bottom pH boxplots and bar charts only include the 17 year-round water quality stations.

Average Monthly pH of Long Island Sound 2022



Temperature



During the WQAUG22 survey the average surface water temperature (all stations sampled) was 23.07°C and bottom waters averaged 20.34°C.

The warmest surface temperature recorded during the WQAUG22 survey was 25.96°C at Station 25 and the warmest bottom temperature recorded was 21.71°C at Station I2.

Station 20 had the greatest temperature difference between the surface and near bottom water (ΔT), which was 4.71°C.

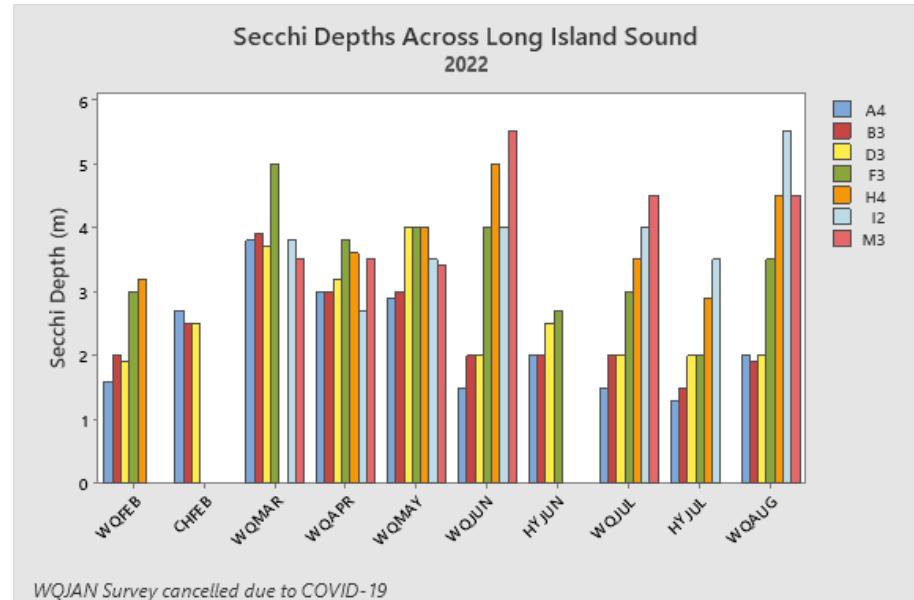
Comparatively, average surface water temperatures were slightly lower in 2021, while bottom temperatures were slightly higher; the surface waters averaged 22.32°C and bottom waters averaged 20.40°C (all stations sampled).

The 2013-2022 average surface and bottom temperature graphs reflect only data from the 17 year-round water quality stations for bottom temperatures.

Utilizing the most recent ten years of data (2013-2022) collected during the WQAUG surveys, the mean bottom temperature (of the 17-year-round stations) is 20.34°C, while the mean surface temperature is 23.07°C. The maximum surface temperature recorded was 26.18°C (Station H4, 2018), and the minimum was 19.21°C (Station M3, 2014). The maximum bottom water temperature recorded was 23.62°C (Station H2, 2016), and the minimum was 16.57°C (Station M3, 2019).

Secchi Disk Depths

In order to assess the water clarity across Long Island Sound, Secchi disks are used at each station. The black and white disk is lowered into the water column until such a depth is reached that the black and the white quarters can no longer be differentiated. This is called the Secchi depth.

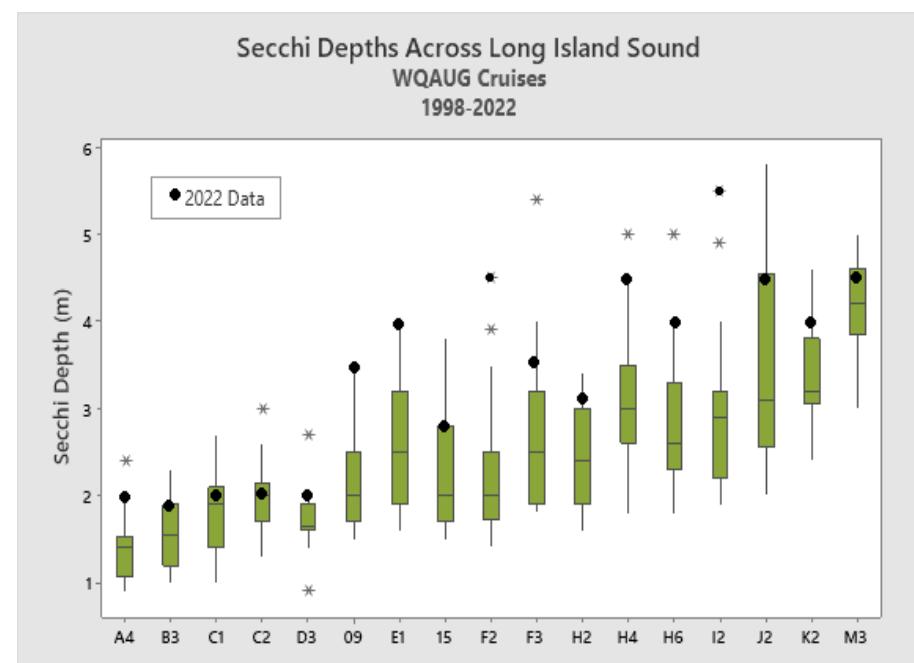


The [Long Island Sound Report Card](#) developed by Save the Sound utilizes the following water clarity depth thresholds:

1. >2.28 m (A- to A+; 90-100)
2. 2.12 to <2.28 (B- to B+; 80-89)
3. 1.95 to <2.12 (C- to C+; 70-79)
4. 1.8 to <1.95 (D- to D+; 60-69)
5. 0 to <1.8 (F; <60)

Secchi depths were taken at 42 stations during the WQAUG22 survey; these depths ranged from 1.7 meters (Station 01) to 6.0 meters (Station 23).

In Report Card terms, 28 stations were in the A-range (>2.28m), no stations were in the B-range (2.12-2.28m), 9 stations were in the C-range (1.95 to <2.12m), 4 stations were in the D-range (1.8 to <1.95m), and 1 station failed (<1.8m).



Next Survey

The next survey is scheduled for 16 - 18 August (HYAUG22) aboard the R/V John Dempsey. The schedule for the remainder of 2022 is available on our website.



Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION