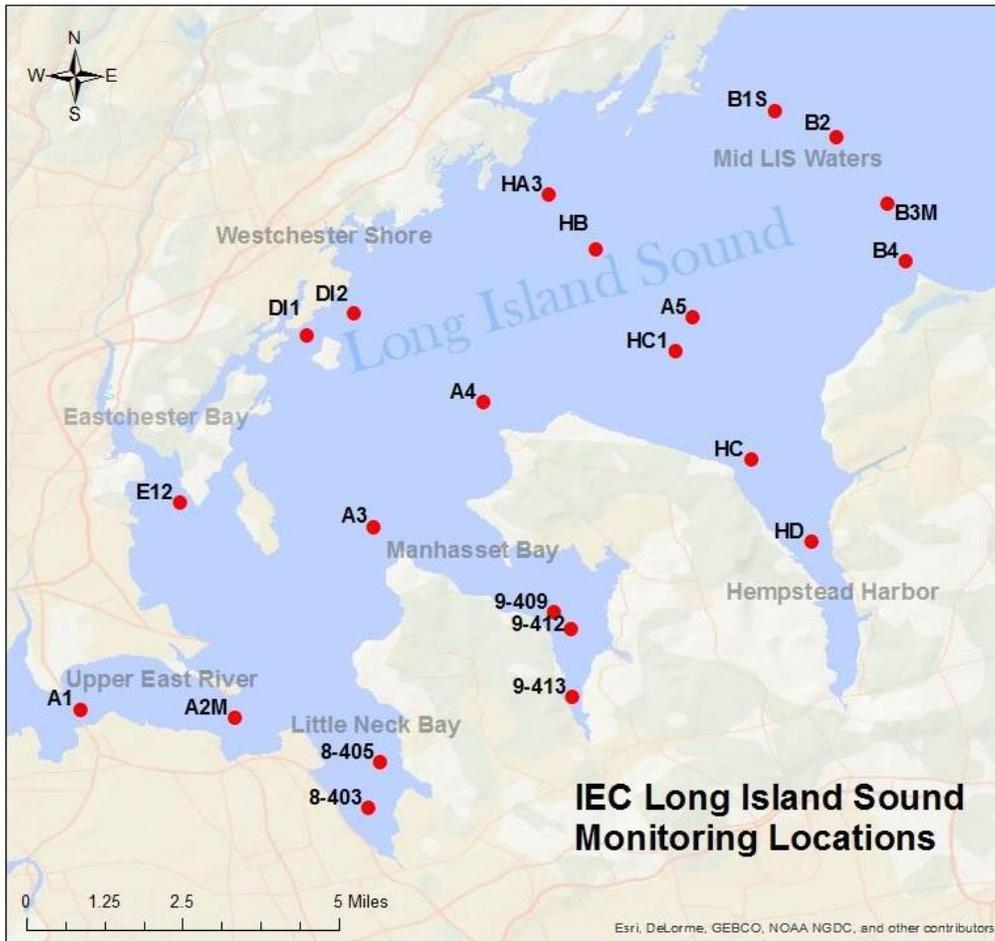




Western Long Island Sound Monitoring 2021 Summer Survey Bi-Weekly Summary Surveys #9 & #10 Survey Dates: August 25, 2021 & August 31, 2021



STATION	LATITUDE DD	LONGITUDE DD
E-12	40.8487	-73.8045
A1	40.8013	-73.8268
A2M	40.7992	-73.7913
8-403	40.7778	-73.7608
8-405	40.7888	-73.7582
A3	40.8433	-73.7590
9-409	40.8240	-73.7175
9-412	40.8200	-73.7135
9-413	40.8041	-73.7133
A4	40.8725	-73.7343
A5	40.8923	-73.6853
B1S	40.9403	-73.6667
B2	40.9343	-73.6520
B3M	40.9187	-73.6403
B4	40.9054	-73.6360
DI1	40.8883	-73.7748
DI2	40.8930	-73.7642
H-A3	40.9207	-73.7187
H-B	40.9080	-73.7090
H-C	40.8590	-73.6717
H-C1	40.8853	-73.6903
H-D	40.8402	-73.6572

As part of the Long Island Sound Study’s ongoing water quality monitoring program, IEC started its 31st consecutive summer of weekly ambient monitoring surveys in western Long Island Sound and the upper East River on Thursday, July 1, 2021

Throughout summer 2021, IEC staff will perform 12 weekly surveys to each of 22 stations in the far western Long Island Sound to assess seasonal hypoxic conditions. Hypoxia occurs when dissolved oxygen (“DO”) concentrations become low. Marine organisms need oxygen to live and low oxygen concentrations can have serious consequences for a marine ecosystem. The 12 surveys include weekly *in situ* measurements of water temperature, salinity, dissolved oxygen, pH, and Secchi disk depth. Measurements at each station are taken half a meter below the surface, at mid-depth, and half a meter above the bottom. Biweekly surveys will include collection of additional samples for parameters relevant to hypoxia at 11 of the 22 stations (stations listed in **bold** on table, upper right). These samples will be analyzed for nutrients, Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), and chlorophyll *a*, in addition to the suite of *in situ* parameters listed above.

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Nutrient parameters that will be analyzed include Ammonia, Nitrate+Nitrite, Particulate Nitrogen, Orthophosphate/DIP, Total Dissolved Phosphorus, Particulate Phosphorus, Dissolved Organic Carbon, Particulate Carbon, Dissolved Silica, and Biogenic Silica.

Proposed 2021 Summer Schedule		
Date	Survey Number	Parameters
7/1/2021	1	<i>In situ</i> parameters only
7/7/2021	2	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
7/13/2021	3	<i>In situ</i> parameters only
7/22/2021	4	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
7/27/2021	5	<i>In situ</i> parameters only
8/3/2021	6	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
8/10/2021	7	<i>In situ</i> parameters only
8/17/2021	8	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
8/25/2021	9	<i>In situ</i> parameters only
8/31/2021	10	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
9/10/2021	11	<i>In situ</i> parameters only
9/14/2021	12	<i>In situ</i>, nutrients, chlorophyll a, BOD, TSS



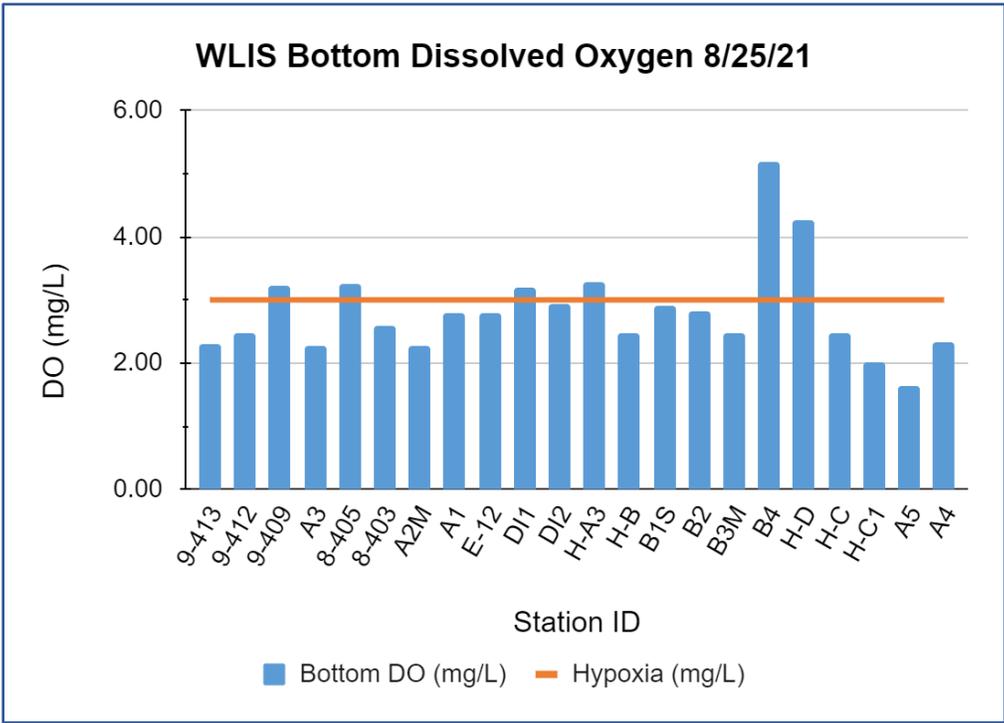
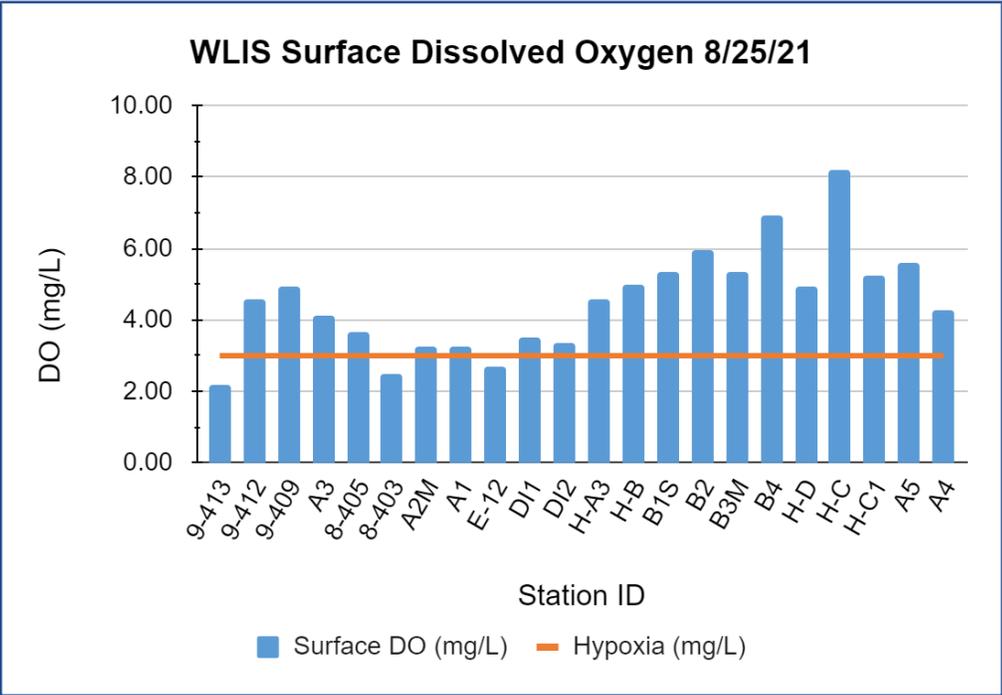
Evelyn Powers, IEC Executive Director

SURVEY #9 AT A GLANCE 08/25/2021

Hypoxia (DO <3.00 mg/L)	16 stations exhibited hypoxia at bottom depths: Manhasset Bay – 9-413, 9-412 Little Neck Bay – 8-403 Upper East River – A2M, A1 Eastchester Bay – E-12 Westchester Shoreline – DI2, H-B Mid-LIS waters – A3, B1S, B2, B3M, H-C1, A5, A4 Hempstead Harbor – H-C 3 stations also exhibited hypoxia at surface depths: 9-412, 8-403, E-12
Lowest surface DO concentration	2.17 mg/L (Station 9-413 in Manhasset Bay)
Lowest bottom DO concentration	1.65 mg/L (Station A5 in the Mid LIS waters)
Average surface DO concentration	4.52 mg/L
Average bottom DO concentration	2.81 mg/L
Average surface water temperature	24.21 °C
Average bottom water temperature	23.19 °C
Average water column ΔT	1.02 °C
Average surface salinity	25.32 ppt
Average bottom salinity	26.49 ppt

Survey #9 Narrative Summary

The 9th weekly summer survey took place on Wednesday, August 25th, 2021, which was a few days after Hurricane Henri hit the Northeastern US and New England ([Source: NOAA National Hurricane Center](#)). The survey began at 05:49 and ended at 08:51, with low tide at 08:34 and 08:15 at Kings Point, NY and New Rochelle, NY, respectively. The weather conditions were sunny with calm waters, and cloud cover was estimated to be 0 to 15% across all stations. The weather station at LaGuardia Airport reported 0.00 and 0.80 inches of precipitation for the 24 and 48-hour period prior to the start of the survey, respectively, and no precipitation occurred during the survey. Secchi disk measurements ranged from 2.5 ft in Manhasset Bay and Hempstead Harbor to 7.5 ft in the Mid-LIS waters, Upper East River, and the Westchester shoreline. *This survey had the greatest extent of hypoxia of the summer 2021 weekly surveys to date – 16 stations exhibited hypoxia at bottom depths. The only stations that did not exhibit hypoxia at bottom depths were 9-409, 8-405, DI1, H-A3, B4, and H-D. Of those stations that were hypoxic at bottom depths, 3 stations also exhibited hypoxia at the surface: 9-413, 8-403, and E-12.*



The Long Island Sound Study defines hypoxia as DO values which are below a concentration of 3.00 mg/L.

Interstate Environmental Commission Western Long Island Sound Sampling August 25, 2021



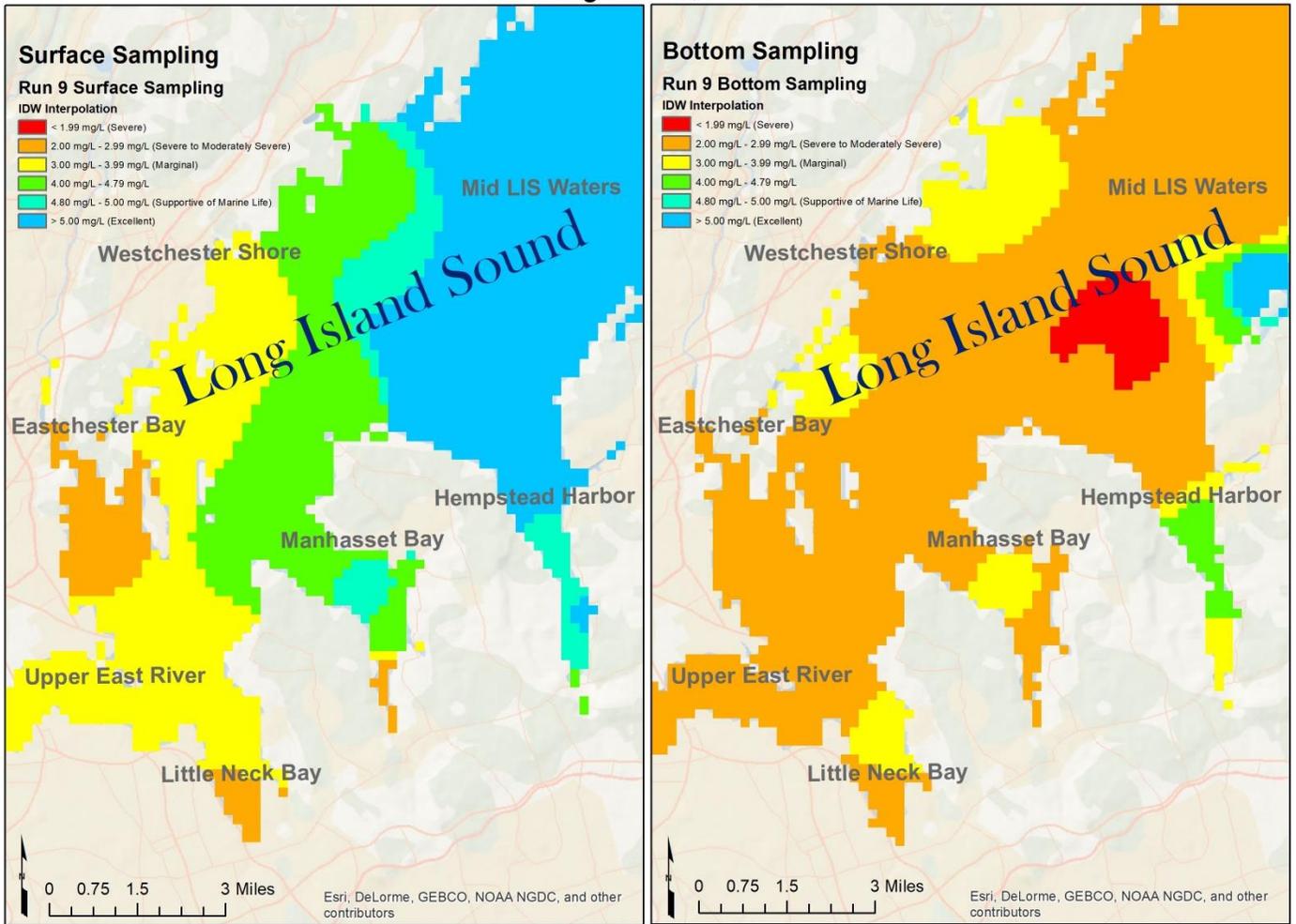
Map by: Jessica Bonamusa



Interstate Environmental Commission

Map Made: 9/15/21

Interstate Environmental Commission Western Long Island Sound Sampling
August 25, 2021



Map by: Jessica Bonamusa

Interstate Environmental Commission

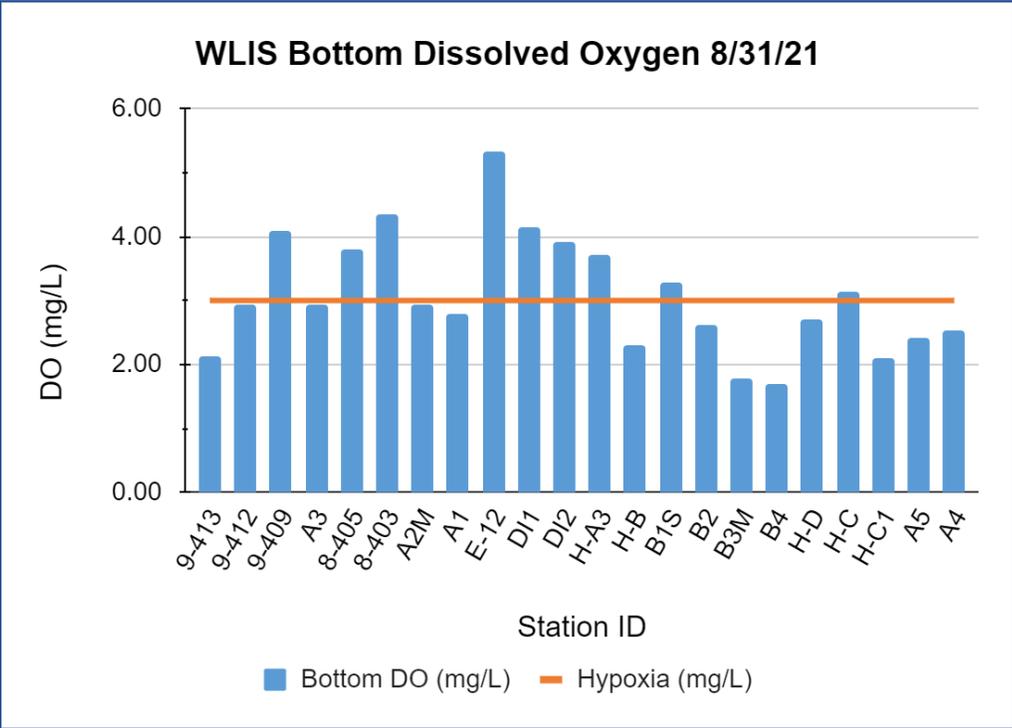
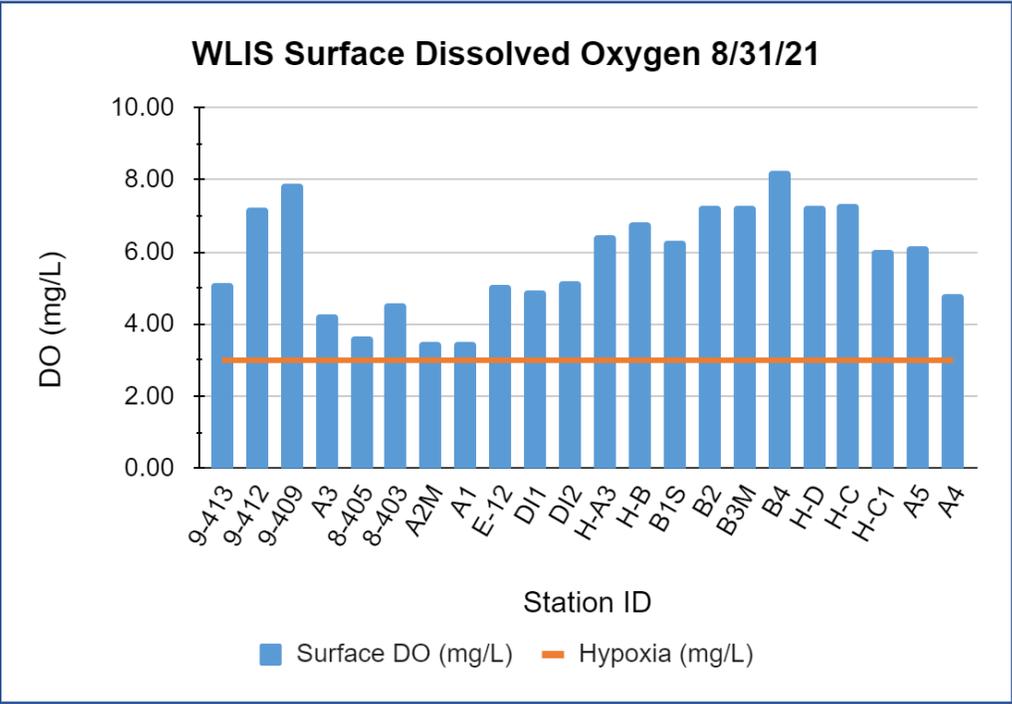
Map Made: 9/08/21

SURVEY #10 AT A GLANCE 08/31/2021

Hypoxia (DO <3.00 mg/L)	13 stations exhibited hypoxia at bottom depths: Manhasset Bay – 9-413, 9-412 Upper East River – A2M, A1 Mid-LIS waters – A3, B2, B3M, B4, H-C1, A5, A4 Westchester Shoreline – H-B Hempstead Harbor – H-D No stations exhibited hypoxia at surface depth.
Lowest surface DO concentration	3.50 mg/L (Station A1 in the Upper East River)
Lowest bottom DO concentration	1.68 mg/L (Station B4 in the Mid-LIS waters)
Average surface DO concentration	5.86 mg/L
Average bottom DO concentration	3.08 mg/L
Average surface water temperature	24.27 °C
Average bottom water temperature	23.47 °C
Average water column ΔT	0.81 °C
Average surface salinity	25.71 ppt
Average bottom salinity	26.51 ppt

Survey #10 Narrative Summary

Weekly summer survey #10 took place on Tuesday, August 31st, 2021. Due to the unforeseen unavailability of our boat captain, the survey began slightly later, starting at 06:33 and ending at 09:58. High tide occurred at 07:15 and 06:58 at Kings Point, NY and New Rochelle, NY, respectively. The weather was mostly cloudy with calm waters throughout the survey, and percent cloud cover was estimated to be 40 to 100% across all stations. The weather station at LaGuardia Airport reported 0.00 inches of precipitation for the 48-hour period prior to the start of the survey, and no precipitation occurred during the survey. Secchi disk measurements were relatively high and ranged from 3.0 ft in the Mid-LIS waters and Hempstead Harbor to 8.0 ft in the Mid-LIS waters and the Upper East River. Average temperatures measured throughout this survey were relatively higher than in previous weekly surveys. Hypoxic conditions improved slightly by this weekly survey, but this may be due to the later sampling period. **13 stations exhibited hypoxia at bottom depths: 9-413, 9-412, A3, A2M, A1, H-B, B2, B3M, B4, H-D, H-C1, A5, and A4. No stations exhibited hypoxia at surface depth.**



The Long Island Sound Study defines hypoxia as DO values which are below a concentration of 3.00 mg/L.

Interstate Environmental Commission Western Long Island Sound Sampling
August 31, 2021



Map by: Jessica Bonamusa



Interstate Environmental Commission

Map Made: 9/15/21

Interstate Environmental Commission Western Long Island Sound Sampling
August 31, 2021

