

August 2018

Ambient Water Quality Monitoring in the Western Long Island Sound

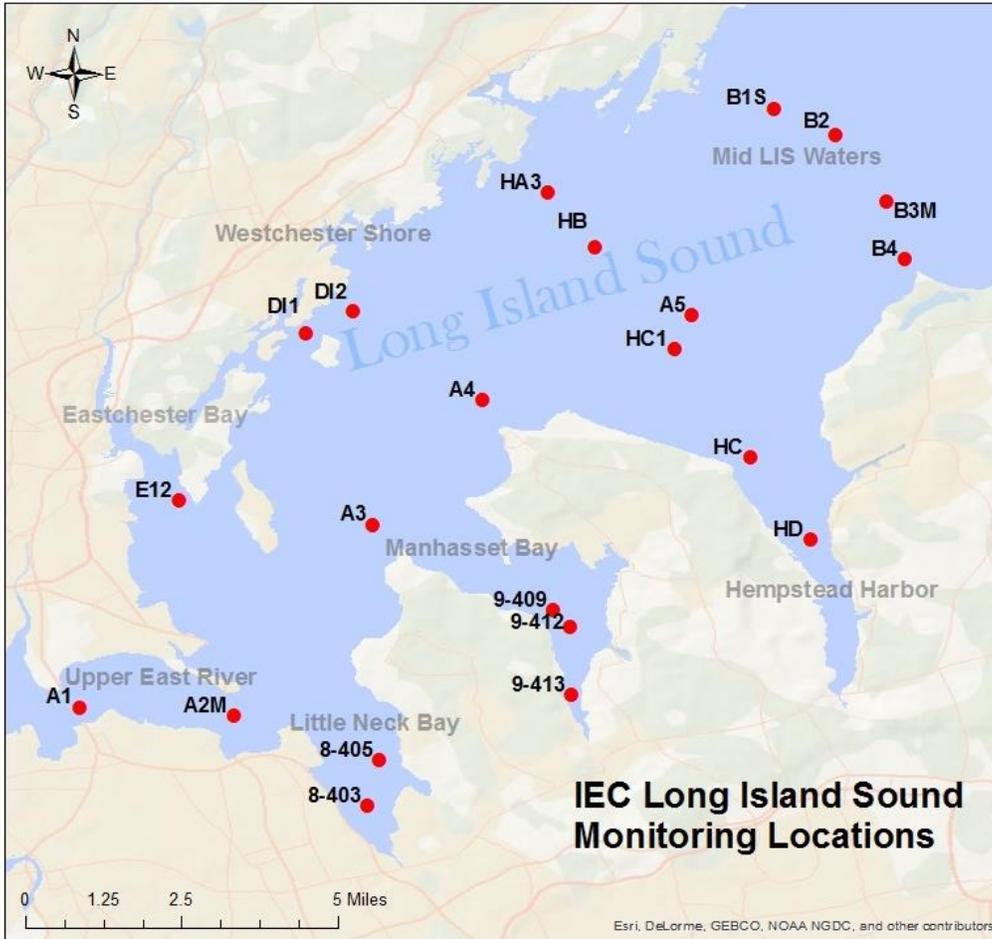
SURVEY 10: 8/28/2018

INVESTIGATION NUMBER: 17831

Steven Weber



**Interstate
Environmental
Commission**
NY · NJ · CT



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 its ongoing water pollution abatement program, NEIWPCC (IEC District) has started its 28th consecutive summer ambient monitoring survey in western Long Island Sound and the upper East River on Tuesday, June 26th.

During the summer 2018, IEC staff will perform 12 weekly surveys each summer of 22 stations in the far western Long Island Sound. The 12 surveys will include weekly *in situ* measurements of water temperature, salinity, dissolved oxygen, pH, and Secchi disk depth. Measurements at each station will be taken one meter below the surface, at mid-depth, and one meter above the bottom. 6 of the 12 surveys will include collection of additional samples for parameters relevant to hypoxia at 11 of the 22 stations (station in **bold**). 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.

The specific 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.

NEIWPCC -IEC District

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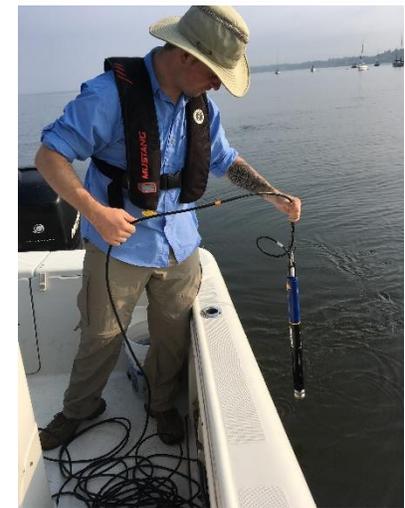
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Date	Survey Number	Parameters
6/26/18	Long Island Sound 1	<i>In situ</i>
7/3/18	Long Island Sound 2 and Nutrients	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
7/10/18	Long Island Sound 3	<i>In situ</i>
7/17/18	Long Island Sound 4 and Nutrients	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
7/24/18	Long Island Sound 5	<i>In situ</i>
7/31/18	Long Island Sound 6 and Nutrients	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
8/7/18	Long Island Sound 7	<i>In situ</i>
8/14/18	Long Island Sound 8 and Nutrients	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
8/21/18	Long Island Sound 9	<i>In situ</i>
8/28/18	Long Island Sound 10 and Nutrients	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS
9/4/18	Long Island Sound 11	<i>In situ</i>
9/11/18	Long Island Sound 12 and Nutrients	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS



This summer, 12 surveys are scheduled between late June and mid-September and include sample collection for nutrients, chlorophyll *a*, biochemical oxygen demand (BOD), and total suspended solids (TSS) analysis.

Samples for chlorophyll *a* and TSS will be collected at each station during 6 of the 12 surveys (every other week starting 7/3/2018). Samples for nutrient and BOD analysis will be collected at 11 of the 22 stations during 6 of the 12 surveys (every other week starting 7/3/2018), which includes both embayment and open water locations.

SURVEY # 10 AT A GLANCE

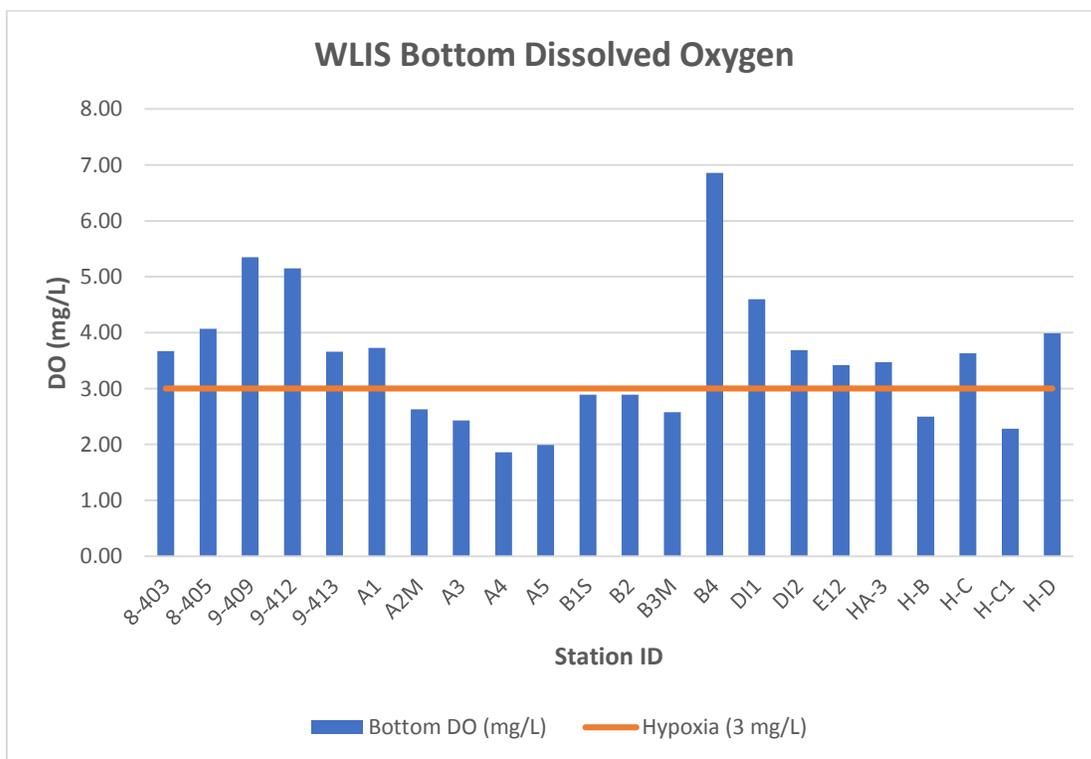
Hypoxia (DO <3.00 mg/L)	Ten sites exhibited hypoxic conditions. (See Note A)
Lowest Surface DO concentration	2.19 mg/L (Station 9-413)
Lowest bottom DO concentration	1.86 mg/L (Station A4)
Average surface DO concentration	6.17 mg/L
Average bottom DO concentration	3.52 mg/L

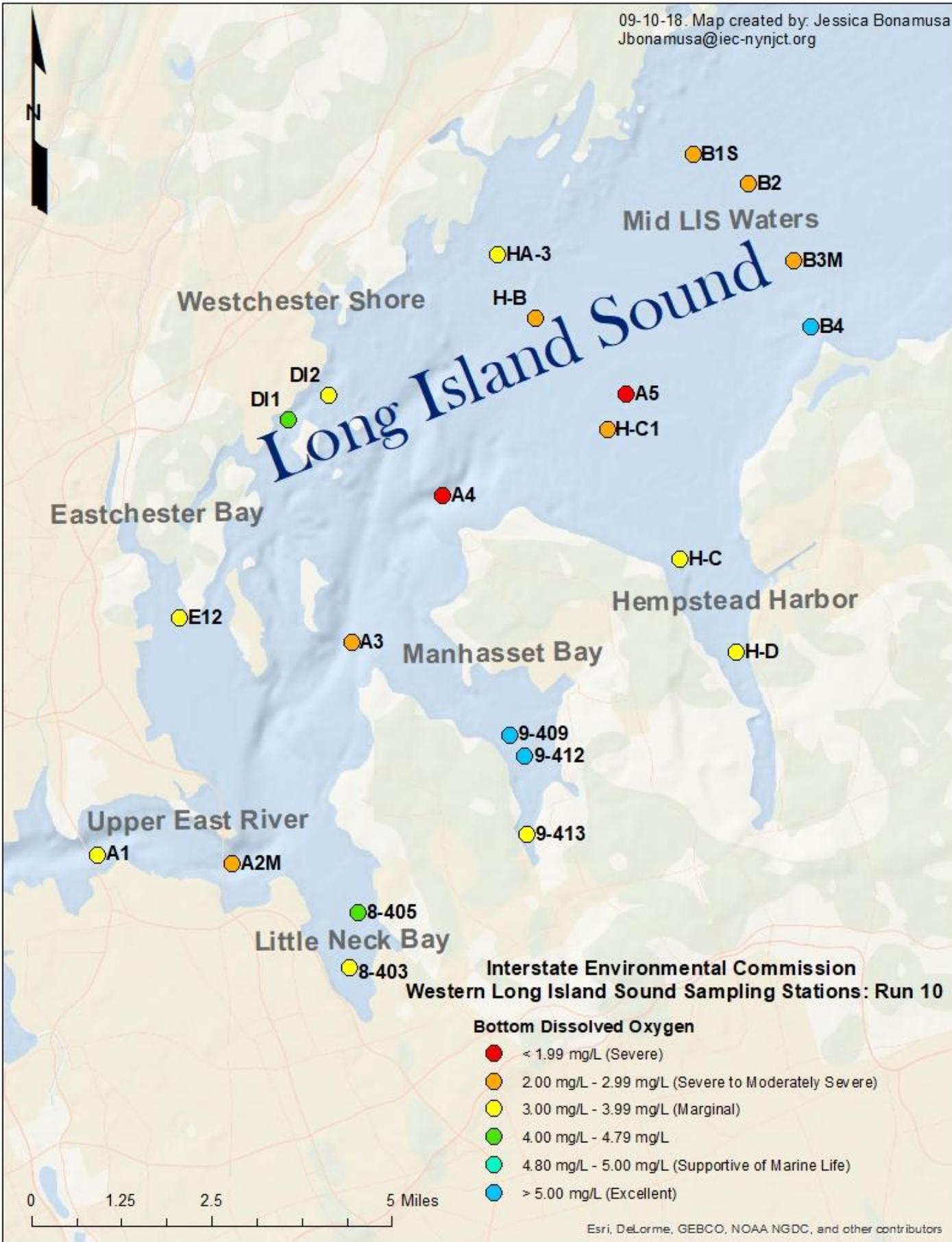
Average surface water temperature	24.56 °C
Average bottom water temperature	23.93 °C
Average water column ΔT	0.57 °C
Average surface salinity	26.38 ppt
Average bottom salinity	27.14 ppt

****NOTE A**** Nine sites (A2M, A3, A4, A5, B1S, B2, B3M, H-B, H-C1) exhibited hypoxia at bottom depth. One site (9-413) exhibited hypoxia at the surface only.

Atmospheric temperatures during the time of the survey ranged between 23.89°C and 35°C. The weather conditions were sunny. The survey started at 06:05 and ended at 09:32, with low tide at 06:47 and high tide at 00:30 as per the NOAA tide table at New Rochelle.

Marine organisms need oxygen to live, and low concentrations can have serious consequences for a marine ecosystem. Hypoxia occurs when dissolved oxygen (“DO”) concentrations become low. The Long Island Sound Study defines hypoxia as DO values which are below a concentration of 3.00 mg/L (EPA, 2000).



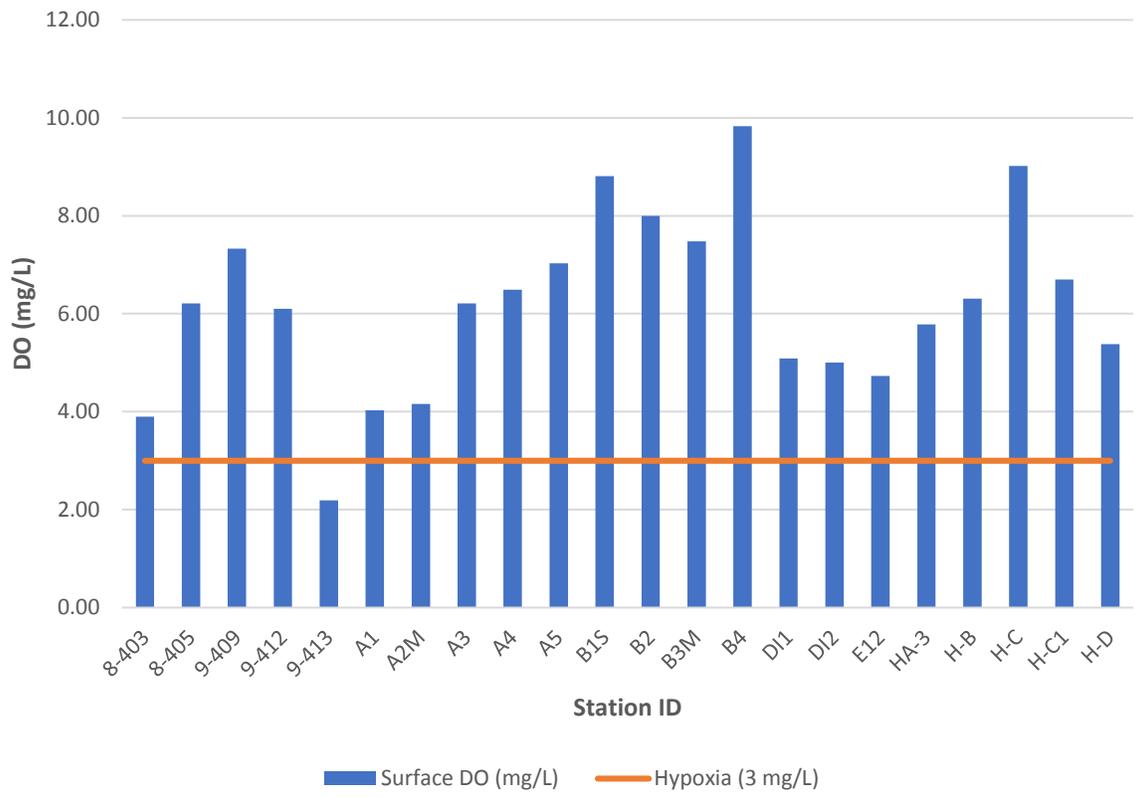


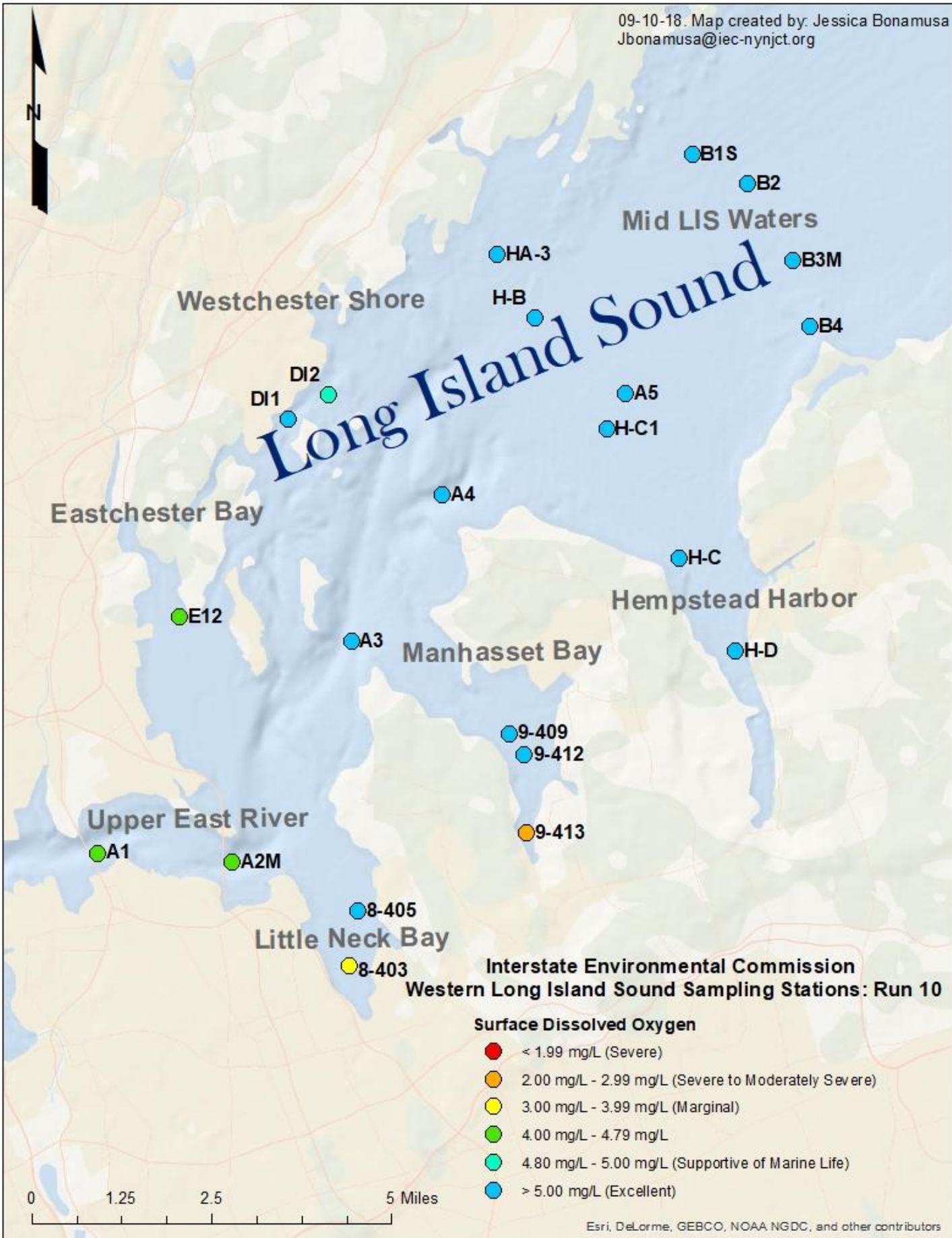
**Interstate Environmental Commission
Western Long Island Sound Sampling Stations: Run 10**

Bottom Dissolved Oxygen

- Red dot: < 1.99 mg/L (Severe)
- Orange dot: 2.00 mg/L - 2.99 mg/L (Severe to Moderately Severe)
- Yellow dot: 3.00 mg/L - 3.99 mg/L (Marginal)
- Green dot: 4.00 mg/L - 4.79 mg/L
- Cyan dot: 4.80 mg/L - 5.00 mg/L (Supportive of Marine Life)
- Blue dot: > 5.00 mg/L (Excellent)

WLIS Surface Dissolved Oxygen





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Western Long Island Sound Sampling Stations: Run 10**

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TSS AND BOD RESULTS FOR
SURFACE SAMPLES
COLLECTED 08/28/2018

Station ID	TSS (mg/L)
9-413	9.32
9-412	13.4
9-409	8.96
A3	5.52
8-405	5.60
8-403	6.96
A2M	7.68
A1	6.80
E-12	6.06
DI-1	5.38
DI-2	9.06
H-A3	7.32
H-B	6.52
B1S	5.80
B2	12.6
B3M	10.3
B4	11.2
H-D	7.48
H-C	12.5
H-C1	5.96
A5	7.98
A4	11.9
H-C1 dup	6.52

Station ID	BOD (mg/L)
9-412	<3.0
8-403	3.63
A2M	<3.0
E-12	<3.0
DI-2	<3.0
H-A3	<3.0
B1S	<3.0
B3M	<3.0
H-D	<3.0
A5	<3.0
A4	<3.0
DI-2 dup	<3.0

SECCHI DISK DEPTH

Secchi disk measurements ranged from 2.0 feet to 6.5 feet. The deepest reading was taken at station A1. The shallowest reading was taken at station 9-413.

CITATIONS

US EPA. 2000. Ambient aquatic life water quality criteria for dissolved oxygen (saltwater): Cape Cod to Cape Hatteras. EPA-822-R-00-012. Office of Water, Washington, DC. p. 49.