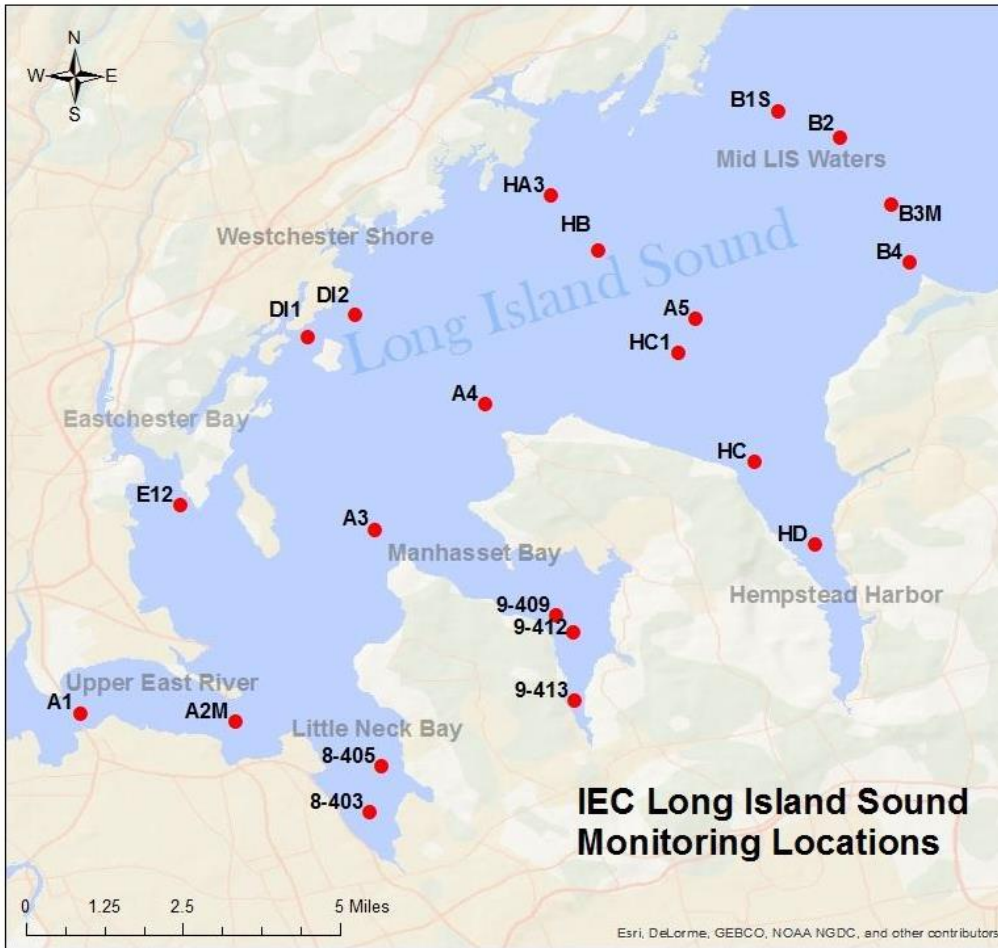




**Western Long Island Sound Monitoring
2021 Summer Survey Bi-Weekly Summary
Surveys #3 & #4
Survey Dates: July 13, 2021 & July 22, 2021**



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
9/7/2021	11	<i>In situ</i> parameters only
9/14/2021	12	<i>In situ</i> , nutrients, chlorophyll a, BOD, TSS



Samantha Wilder, IEC Intern



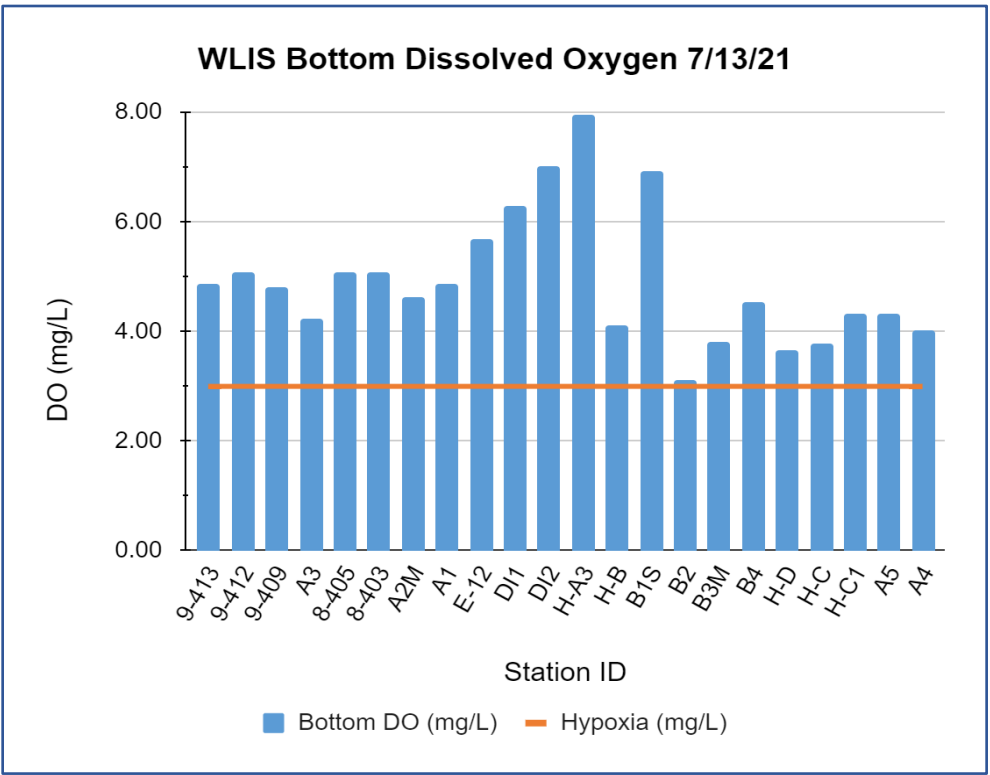
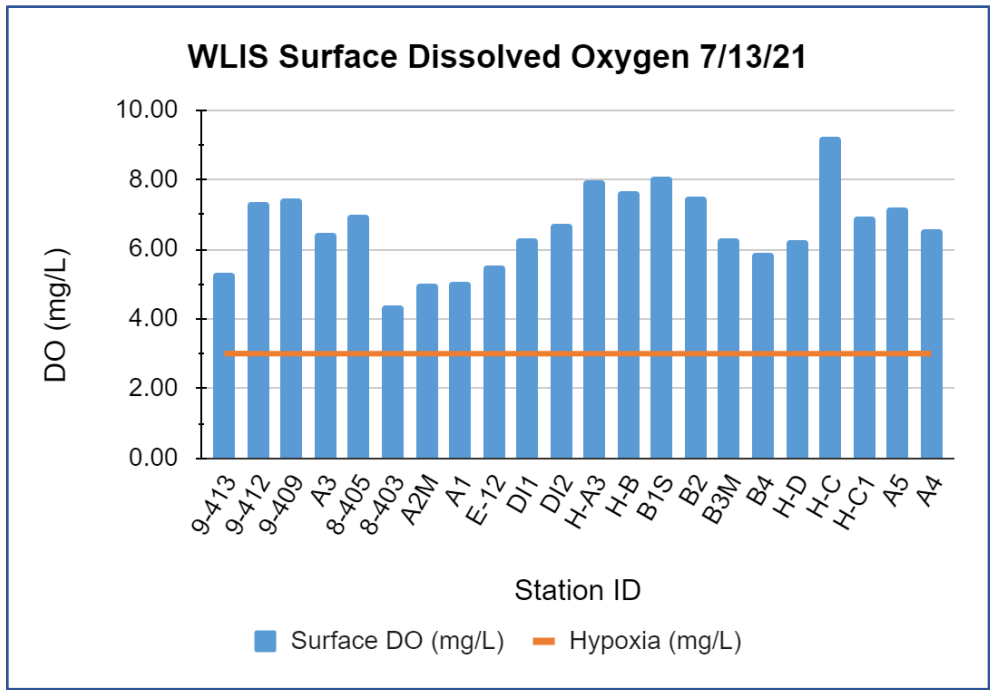
SURVEY # 3 AT A GLANCE 07/13/2021

Hypoxia (DO <3.00 mg/L)	No stations exhibited hypoxia! ☺
Lowest surface DO concentration	4.40 mg/L (Station 8-403 in Little Neck Bay)
Lowest bottom DO concentration	3.12 mg/L (Station B2 in the Mid LIS waters)
Average surface DO concentration	6.65 mg/L
Average bottom DO concentration	4.92 mg/L
Average surface water temperature	22.50 °C
Average bottom water temperature	21.60 °C
Average water column ΔT	0.89 °C
Average surface salinity	25.31 ppt
Average bottom salinity	25.94 ppt

Survey #3 Narrative Summary

The 3rd weekly summer survey took place on Tuesday, July 13th, 2021. The survey began at 05:21 and ended at 09:55, with low tide at 08:18 and 08:00 at Kings Point, NY and New Rochelle, NY, respectively. Cloud cover was consistently estimated to be 100% across all stations. The weather station at LaGuardia Airport reported 0.03 inches and 0.61 inches of precipitation, respectively, for the 24-hour and 48-hour period prior to the start of the survey. Secchi disk measurements were relatively high and ranged from 3.0 ft 6.0 ft across all stations.

DO concentrations for all stations were >3.0 mg/L at bottom and surface depths, thus no stations exhibited hypoxia. These relatively high DO concentrations could be due to the weather conditions at the time, which were foggy, misty, cloudy, and extremely windy. In fact, we observed and experienced water waves that were 4 to 5 feet in height, likely causing substantial mixing throughout the water column. This may also explain the low difference in water temperature between surface and bottom depths. It should be noted that **tropical storm Elsa** moved through New England starting July 9th, a few days before this survey, and became an extratropical (wave) cyclone ([source: NOAA National Hurricane Center](#)).

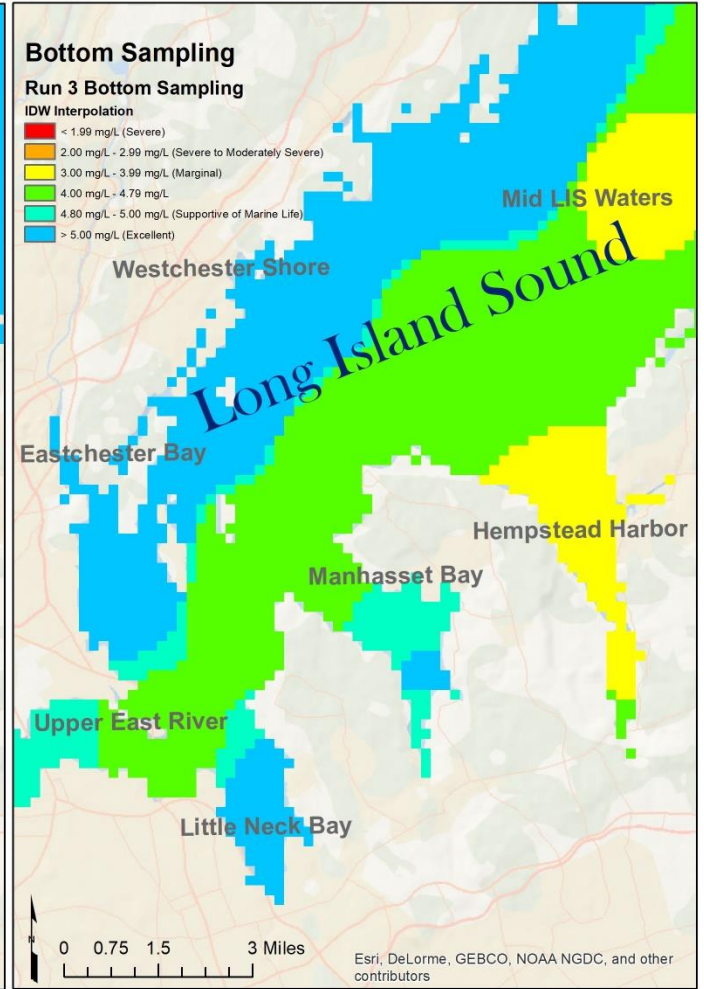


The Long Island Sound Study defines hypoxia as DO values which are below a concentration of 3.00 mg/L.

Interstate Environmental Commission Western Long Island Sound Sampling July 13, 2021



Interstate Environmental Commission Western Long Island Sound Sampling
 July 13, 2021



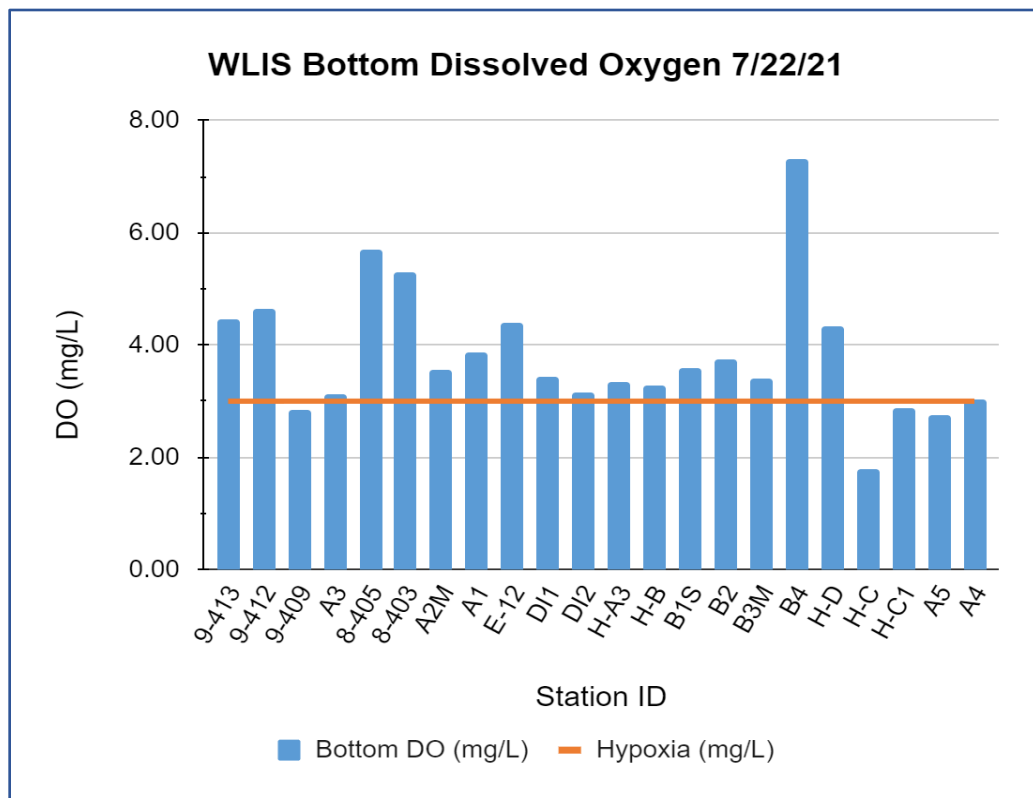
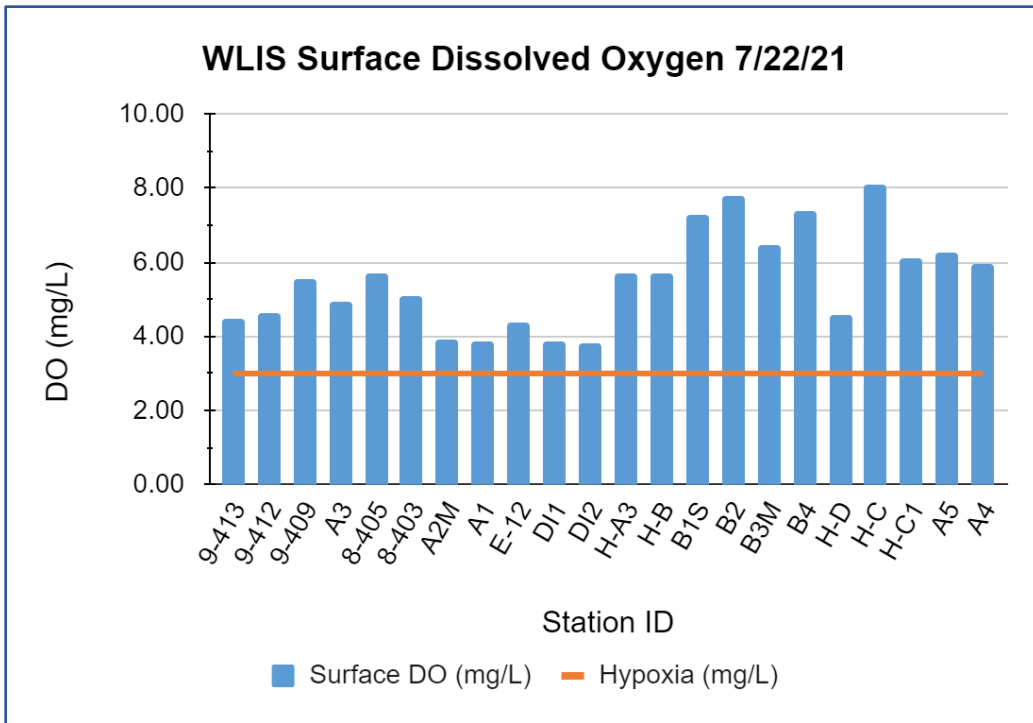
SURVEY # 4 AT A GLANCE 07/22/2021

Hypoxia (DO <3.00 mg/L)	Four stations exhibited hypoxia at bottom depths. (9-409 in Manhasset Bay; H-C, H-C1, and A5 in/near Hempstead Harbor)
Lowest surface DO concentration	3.79 mg/L (Station DI2 at Westchester Shore)
Lowest bottom DO concentration	1.78 mg/L (Station H-C in Hempstead Harbor)
Average surface DO concentration	5.52 mg/L
Average bottom DO concentration	3.81 mg/L
Average surface water temperature	22.88 °C
Average bottom water temperature	21.40 °C
Average water column ΔT	1.48 °C
Average surface salinity	25.68 ppt
Average bottom salinity	26.26 ppt

Survey #4 Narrative Summary

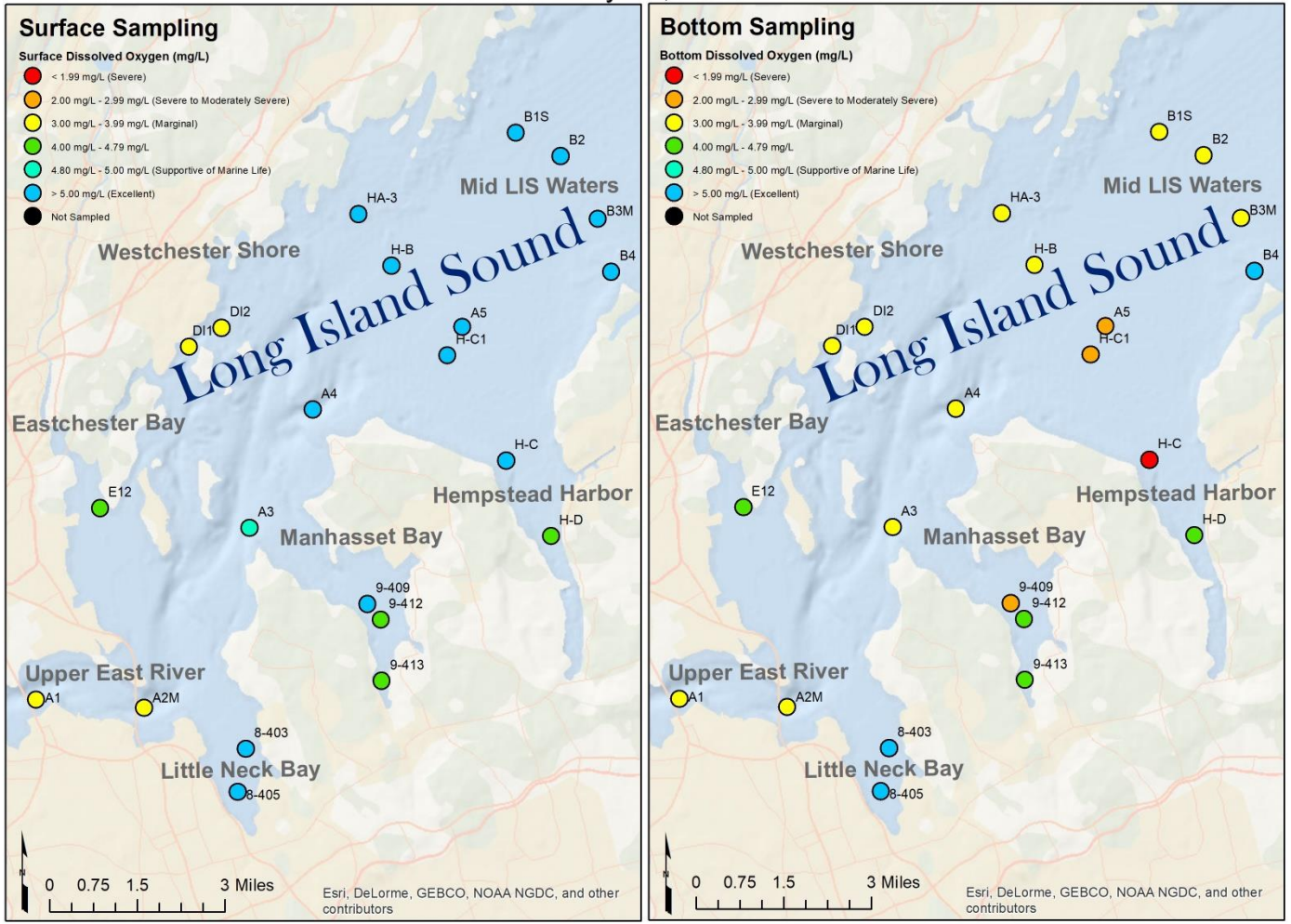
Weekly summer survey #4 took place on Thursday, July 22nd, 2021, and was very different from Survey #3. Four stations exhibited hypoxia (<3.0 mg/L DO) at bottom depths: 9-409 in Manhasset Bay; H-C, H-C1, and A5 in and near Hempstead Harbor. The survey began at 05:22 and ended at 08:44, with low tide at 05:03 and 04:45 at Kings Point, NY and New Rochelle, NY, respectively. The weather was sunny with clear skies throughout the survey, and percent cloud cover was consistently estimated to be 0% across all stations. The weather station at LaGuardia Airport reported 0.16 inches of precipitation for the 24 and 48-hour period prior to the start of the survey. Secchi disk measurements ranged from 1.5 ft in Manhasset and Little Neck Bay to 6.5 ft in the Mid-LIS waters.

It should be noted that an **oil spill** occurred in New Rochelle, NY on July 17th, days before this survey. Con Edison estimated that 17,000 to 61,500 gallons of dielectric fluid, a mineral oil-like substance, leaked from an electric feeder cable running under Neptune Avenue and into the waters around Wright Island. Con Edison reported the spill to NYSDEC, repaired the line, and cleaned the oil spill with the help of contractors. ([Source: Talk of the Sound, ABC News](#)). We did not notice oil at the surface of the water during this survey, but we did notice it during Survey #5. Although the oil is reportedly non-toxic to wildlife, there is still a concern that birds had difficulty flying with oil in their feathers or drying off their wings properly, and how it can affect wildlife such as crabs that ingest the oil.



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 July 22, 2021



Map by: Jessica Bonamusa

Interstate Environmental Commission

Map Made: 8/2/21

Interstate Environmental Commission Western Long Island Sound Sampling
 July 22, 2021

