Electric Boat Final Report

Brooklyn V, Laura C, Jenifer C, Emily C, Dante H, and Jordan M

University of Connecticut

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Syma Ebbin

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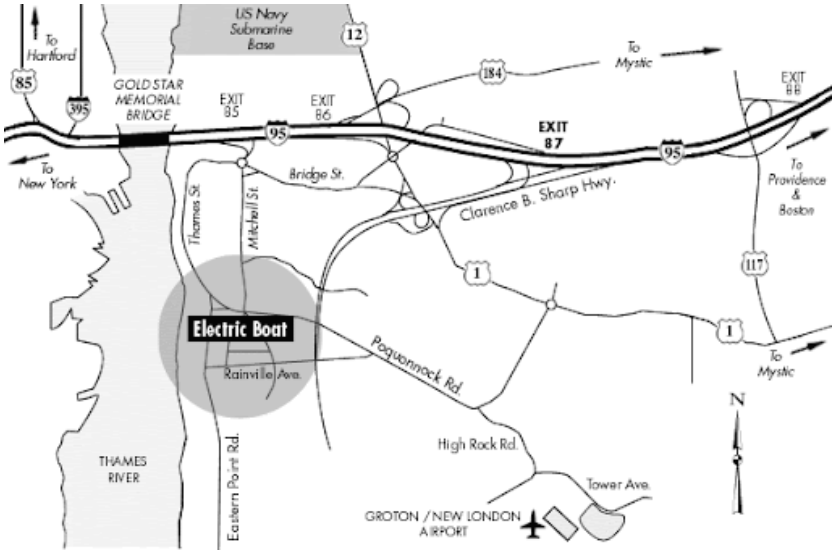
A brief description and map of the site

Electric Boat was founded in 1899 and is located along the Thames River in Groton, Connecticut. It is a shipyard and the primary builder of submarines for the United States Navy. According to the Locations section on General Dynamics Electric Boat's website, Electric Boat has over 118 acres and over 400,000 square feet of land across the river for the construction and testing of submarines.



Summary of data collected during the 2nd boat trip for that site, in both tabular and graphical format.

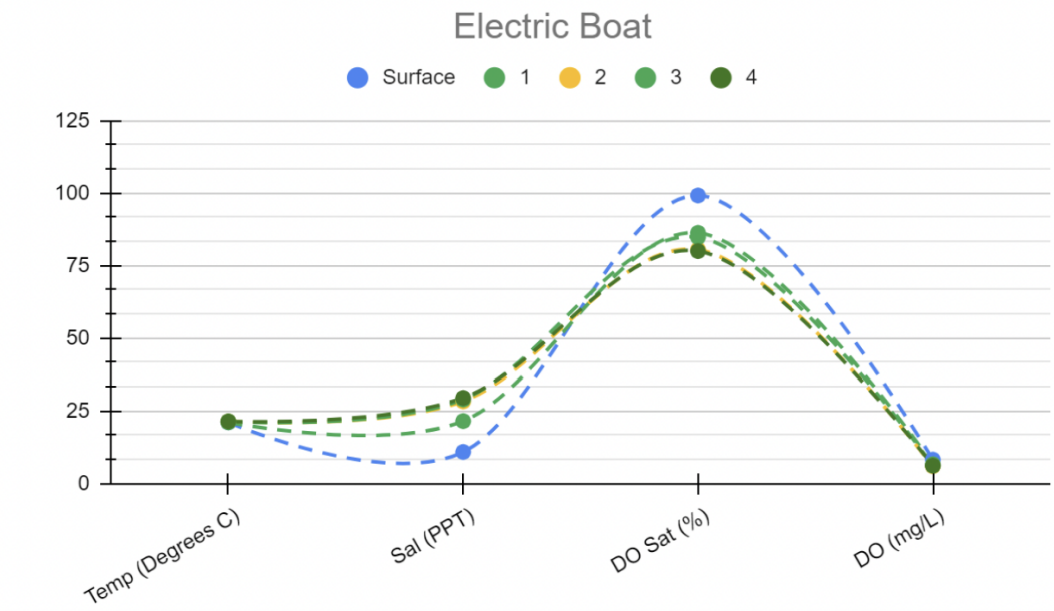
Electric Boat had a fairly stable temperature of around 21 degrees celsius. Surface salinity was recorded as being very low (~11 PPT), though still higher than Winthrop Cove. Salinity spiked from depths 1 to 2, from approximately 22 to 28 PPT, then 29 PPT towards the

bottom. DO saturation was slightly lower than Winthrop Cove's, with a range of approximately 99% down to 80%. DO followed the same trend, ranging from approximately 8 to 6 mg/L.

Electric Boat: Temperature was normal, below 24 degrees celsius. Salinity was not normal, over 28 PPT at depths 2, 3, and 4. DO was healthy, between 5 to 14 mg/L.

ELECTRIC BOAT Data

Depth	Temp (Degrees C)	Sal (PPT)	DO Sat (%)	DO (mg/L)
SURFACE	21.12	10.90	99.2	8.26
1	21.11	21.55	86.3	6.67
2	21.46	28.35	80.5	5.98
3	21.44	29.01	84.8	6.20
4	21.45	29.52	80.0	6.18



Using the data collected on the Project O cruises along with the EPA EJScreen, Neighborhoods at Risk, and any other relevant data, **identify and explain any environmental justice concerns that you find.**

What environmental amenities are located near the area?

Electric Boat is a private manufacturing company and shipyard, so their amenities are not open to the public. However, for the employees, students, and residential staff, there are several beneficial amenities close by. These include a free library on campus, a fire department, an optical shop with licensed doctors to do free exams, a family pharmacy, residences for employees and students, a ride home program that guarantees everyone has a ride home in the form of carpooling, and 19 parking lots open to employees and students to use.

What environmental hazards are located near the area?

Environmental hazards from Electric Boat include pollution consisting of lead paint, gas, oil, and asbestos. There is also a great amount of Co2 released into the atmosphere from multiple warehouses on site. Many workers are at risk for possible illnesses and cancer due to working with asbestos and other chemicals. Although asbestos is now banned, during the repair and recommissions of boats, workers are exposed. There is also a risk for electric shock. Electric currents run through the water, therefore putting workers such as underwater welders at risk. The use of dry docks increases the risk of pollution in the Thames River. Basically, the dry dock is flooded and submarines come in. All water is drained so workers can have access to the ship. Once work is complete, the area is flooded once again and the submarine is released. During this flooding, any chemical spills directly flow into the river.

What past land uses may have influenced the results?

WWII submarines were painted with leaded paint, and asbestos was commonly used. Also the risk of diesel fuel leakage. Electric Boat has dumped hazardous waste in the 1960s, leading to two active superfund waste sites.

What present land uses may be influencing the results?

In 2019, Electric Boat received a contract “valued at $22.2 billion for the construction of 9 new Virginia-class submarines” (Electric Boat). The contract also allowed for a tenth ship to be constructed within the contract time frame, which raised the value of the contract. This not only created more jobs but caused the facilities to be in use for longer periods of the day. With the

construction of the submarines, there was also an expansion of one of the assembly buildings in 2020. This allowed for the contracts to be modified and expanded further, furthering production. All of these factors contribute to the salinity in the water surrounding the Electric Boat facilities. Additionally, the light, noise, air, and land pollution, produced by Electric Boat, all can affect the salinity in the water.

What is the demographic composition (income, minority population, etc.) of the community adjacent to the sampling sites?

The available housing that surrounds Electric Boat isn't very expensive. This is due to the fact that living near this site increases one's exposure to possible negative health impacts from all of the pollutants. Due to housing being low income, minority populations typically inhabit such areas.

Describe new question(s) that should be investigated to build on these results, and what future data should be collected to answer these questions.

To understand the Electric Boat's contribution to the Thames River and ecosystems within one would need to investigate more in-depth. Biosolids are nutrient-rich organic materials created by wastewater treatment facilities. Identifying these organic matters will allow scientists to understand human health or environmental health. The National Pretreatment Program explores discharge standards applying them to non-domestic wastewater discharged to publicly owned treatment works. Weathering is the breaking down or dissolving of rocks and minerals. To

understand the weathering of rocks and land we must keep track of the non-renewable gases used by sites to track changes inland.

Describe an Action Project that might be developed at each impacted site to improve conditions for the local community.

An Action Project that can be developed at the Electric Boat site can involve The Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters. This doctrine makes sure all involved parties maintain effective control over all sources of pollution in the water. It also states that one should pledge to prevent polluting the sea by dumping waste and other hazards to protect all marine life and body of water. Taking the pledge to protect and minimize waste, should be the first step to an Action Project. The construction of submarines at this site has greatly impacted the water by inserting pollutants and altering the salinity. The next steps should be to develop a sustainable process of building submarines and maintaining a clean environment.

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