**Day in the Life of the Hudson River 10/20/15 Data**

**RIVER MILE 25W**

**Piermont Pier**

**Margie Turrin & 9 Lamonters, Lamont-Doherty Earth Observatory**

**Latitude N 41 degrees 02’591 Longitude W 73 degrees 53’794**

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| **Tom Mullane, Eileen McCaffrey, and Catherine Bonanno– Pearl River HS APES – 44 Students** | **Jennifer Mazza**  **Clarkstown South HS**  **13 Environmental Science Students** |

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**Julie West, Oak Meadow School**

**4 students**

**Location:** Piermont Pier, Piermont NY

**Area:** Man made fishing/shipping pier at the east end, long pier with paved roadway and vegetated strip along both sides

**Surrounding Land Use:** Urban/residential 80% , Forested 20%

**Sampling Site:** Pier, roadway in center of whole pier, parking area at end, Plants and trees along side. Shoreline Rip Rap, collected wood in area and piping entering river on the south of sampling site

**Plants in area:** no submerged aquatic plants in the water

**Water depth**: Varied by location on the pier and by tide

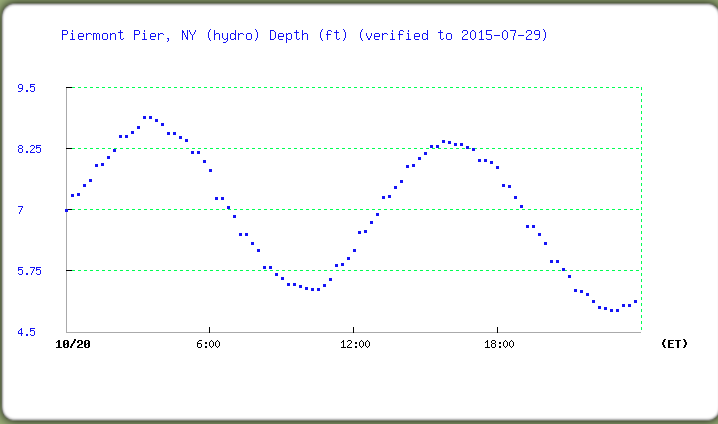
**River Bottom** – sandy/rocky bottom with marsh grass growing in or near the water

**Plants in area:** sumac and other plants 15%; phragmites 85%

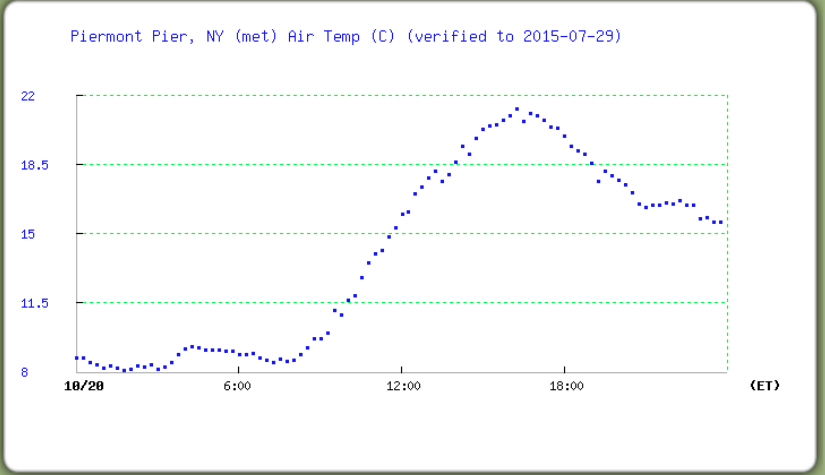
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***ITEM*** | ***Time*** | | ***Temperature*** | | ***Weather & Observations*** | | | | | |
| ***Physical*** |  | |  | |  | | | | | |
| **Air Temperature** | 9:10AM | | 12.2°C  °F | | Beaufort 2 Mph 10 SW | | | | Cloud cover 26-50% | |
|  | 9:45 AM | | 13°C  °F | | Beaufort 1  1-3 kts | | | | Cloud cover 26-50% | |
|  | 10:45 AM | | 15°C  °F | | Beaufort 3 Mph 8-12 SW | | | | Cloud cover 0-25% | |
|  | 12:15 PM | | 17°C | | Beaufort 3 Mph 8-12 SSW | | | | Cloud cover 0-25% | |
|  | 1: 10 PM | | 18.5 °C  °F | | Wind S | | | | | |
| Weather today | No precip | | | | | | | | | |
| Weather last 3 days | COLD – constantly, no precip. | | | | | | | | | |
| ***Water Temperature*** | **Time** | **Surface Sample thermometer** | | | | | **Meter sample** | | |  |
|  | 9:10AM | 5.2°C | | | | |  | | |  |
|  | 9:45 AM | 13.3°C | | | | |  | | |  |
|  | 10:45 AM | 11.9°C | | | | | 13.1°C | | |  |
|  | 12:15 PM | 15.5°C | | | | | 14.2 °C | | |  |
|  | 1: 10 PM | 14.7 °C | | | | |  | | |  |
| ***Turbidity –*** | **Time** | **Long Site Tube** | | | | | **Average** | | |  |
| ***Long Site Tube*** | 9:10AM | 10 cm  14 cm  10.5 cm  11 cm | | | | | 11.1 cm | | |  |
|  | 10:00 AM | 10.0 cm  9.5 cm | | | | | 9.75 cm | | |  |
|  | 10:45 AM | 22.6 cm  27.8 cm  16.6 cm  28.0 cm | | | | | 23.75 cm | | |  |
|  | 12:12 PM | 16.5 cm  11 cm  12 cm | | | | | 13.17 cm | | |  |
|  | 1:15 PM | 7.1 cm  8 cm | | | | | 7.55 cm | | |  |
| ***Secchi*** | 9:10 | 30 cm  30  40  30  26  60  65  60 | | | | | 43.8 cm | | |  |
|  | 10:00 AM | 40 cm  40  35  35  40  40  45  47  50 | | | | | 41.33 cm | | |  |
|  | 10:40 AM | 45 cm  40  40  27  27  28  40  45  48 | | | | | 37.8 cm | | |  |
|  | 10:48 AM | 69 cm  50  40 | | | | | 53 cm | | |  |
|  | 12:15 PM | 10 cm  7  9  9  8  10  20  20  20 | | | | | 12.6 cm | | |  |
|  | 1:15 PM | 19 cm  12  8  17  16.5  15  32 | | | | | 17.1 cm | | |  |
| ***Water Depth - tides*** | **Time** | **Pier to Bottom** | | | | | **Pier to water surface** | | | **Water Depth @ pier end** |
|  | 9:04 AM | 127 cm | | | | | 51 cm | | | 76 cm/fall |
|  | 9:27 AM | 111 cm | | | | | 51 cm | | | 60 cm/fall |
|  | 9:53 AM | 88 cm | | | | | 46 cm | | | 42 cm/fall |
| ***Transition to rising tide*** | 10:10 AM | 111 cm | | | | | 52 cm | | | 59 cm/rise |
| ***\*read in center of pier - found a deeper pocket*** | \*10:40 AM | 155 cm | | | | | 53 cm | | | 102 cm/rise |
| 12:15 PM | 190 cm | | | | | 110 cm | | | 80 cm/rise |
| ***See HRECOS depth data below*** | |  | | | | |  | | |  |
| ***Chemical*** | **SAMPLES \* see HRECOS readings appended at the end of the student reporting** | | | | | | | | | |
| **DO** | **TIME** | | **DO Reading** | | | **Water Temp** | | **% Saturation** | | |
| ***Drop count*** | 9:10AM | | 14 ppm | | | 5.2°C | | 110% | | |
|  | 9:45 AM | | 9 ppm | | | 13.3°C | | 85% | | |
|  | 10:45 AM | | 12 ppm (bubble) | | | 11.9°C | | 110% | | |
|  | 12:15 PM | | 3 | | | 15.5 | | 30% | | |
|  | 1: 10 PM | | 10 ppm | | | 14.7°C | | 96% | | |
| ***pH*** | **TIME** | |  | | |  | |  | | |
| *colorimeter* | 9:10AM | | 7.8 | | |  | |  | | |
|  | 9:45 AM | | 8.0 | | |  | |  | | |
|  | 10:45 AM | | 7.5 | | |  | |  | | |
|  | 12:15 PM | | 7.5 | | |  | |  | | |
|  | 1: 10 PM | | 8.3 | | |  | |  | | |
| ***Other Chemistry*** | **TIME** | | **Phosphates**  *colorimeter* | | | **Nitrates**  *Drop count* | | **Alkalinity**  *Drop count* | | |
|  | 9:10AM | | 0.2 mg/L | | | 0.44 mg/L | | 59 ppm | | |
|  | 9:45 AM | | 0.42 mg/L | | | 0 mg/L | | 72 ppm | | |
|  | 10:45 AM | | 0.5 mg/L | | | 0 mg/L | | 136 ppm | | |
|  | 12:15 PM | | 0 mg/L | | | 0 mg/L | | 60 ppm | | |
| ***\*Salinity -*** | **Refracto.** | | **Glass**  **Hydrometer** | | | **meter ppt** | |  | | |
| 9:10AM | 10 ppt | | 9.2 ppt  1.007s.g.@5.2 C | | |  | |  | | |
| 9:45 AM |  | | 8.7 ppt | | |  | |  | | |
| 10:45 AM | 10 ppt | |  | | | 8.5 ppt | |  | | |
| 12:15 PM | 9 ppt | | 8.9 ppt  1.0075 s.g. | | | 8.8 ppt | |  | | |
| 1: 10 PM | 14 ppt | |  | | | 8.9 ppt | |  | | |
| ***Fish Catch***  ***Northside of pier*** | ***Number Caught*** | | ***Species*** | | | ***Measure of largest*** | | ***TIME & CATCH*** | | |
| ***Rotation #1***  ***Fish*** | 14 | | Atlantic Silverside | | | 14 cm | | ***9:30 AM***  ***F -DIV - 2*** | | |
|  | 2 | | Striped Bass | | | 9 cm | | ***16 Totals*** | | |
| ***Macroinvert*** | 500 + | | Comb jellies | | | 6 cm | | ***Macro*** | | |
|  | 17 | | Blue Crab | | | 6 cm | | ***M - DIV 3*** | | |
|  | 1 | | Sand Shrimp | | | 2.5 cm | | ***518 Totals*** | | |
| ***Rotation #2***  ***Fish*** | 21 | | Atlantic Silverside | | | 9.5 cm | | ***10:25 AM***  ***F-DIV 3*** | | |
|  | 3 | | Striped Bass | | | 11cm | | ***25 totals*** | | |
|  | 1 | | American Eel | | | 15 cm | |  | | |
| ***Macroinvert*** | 1 | | Blue Crab | | | 3.5 cm | | ***Macro*** | | |
|  | 8 | | Sand Shrimp | | | 4 cm | | ***M – DIV 3*** | | |
|  | 20 | | Comb Jellies | | | 4 cm | | ***29 Totals*** | | |
| ***Rotation #3***  ***Fish*** | 49 | | Atlantic Silverside | | | 11 cm | | ***10:45 AM***  ***Fish*** | | |
|  | 10 | | Striped Bass | | | 16 cm | | ***F - DIV 4*** | | |
|  | 1 | | mummichog | | | NR | | ***61 Totals*** | | |
|  | 1 | | White Perch | | | 14 cm | |  | | |
| ***Macroinvert*** | 75 | | Comb Jelly | | |  | | ***Macro*** | | |
|  | 6 | | Blue Crab | | | 3 cm | | ***DIV – 3*** | | |
|  | 2 | | Sand Shrimp | | | 2.5 cm | | ***83 Totals*** | | |
| ***Rotation #4***  ***Fish*** | 104 | | Atlantic Silverside | | | 8.3 cm | | ***12:20 PM***  ***Fish*** | | |
|  | 2 | | Striped Bass | | | 9 cm | | ***DIV 2***  ***106 Total*** | | |
| ***Macroinvert*** | 40 | | Comb Jelly | | | 10 cm | | ***Macro*** | | |
|  | 2 | | Blue Crab | | | 3.5 cm | | ***M - DIV - 3*** | | |
|  | 5 | | Sand Shrimp | | | 3 cm | | ***47 Total*** | | |
| ***Rotation #5***  ***Fish*** | 52 | | Atlantic Silversides | | | 7 cm | | ***1:00 PM***  ***FISH*** | | |
|  | 3 | | Striped Bass | | | 10 cm | | **F - DIV - 3** | | |
|  | 1 | | White Perch | | | 8 cm | | **56 - Total** | | |
| ***Macroinvert*** | 100 | | Comb Jellies | | |  | | **M - DIV 1**  **100 Total** | | |
| ***GRAND TOTALS*** | ***FISH***  ***DIV - 5*** | | ***FISH***  ***TOTAL – 264*** | | | ***MACRO***  ***DIV- 3*** | | ***MACRO TOTAL - 777*** | | |
| **Sediment Cores – (Nichole & Clare helping from core lab)** | **Length** | | **H2S Smell** | **Rare** | | **Common** | | **Abundant** | | |
| **9:30 AM**  **shallow** | ***7 cm total:***  ***Oxidized top***  bottom ~5 cm plant material,  top ~ 2 cm sand | | No | Clay | | Sand  Gravel | | N/R | | |
| **9:30 AM**  **deep** | ***32cm with oxidized top*** top 7 cm -  4 layers noted:  ~1-2 cms bottom  ~13 cm next  ~7 cm next  ~7 cm top | | Yes | Sand  Gravel  Pebbles  Coal | | N/R | | Clay | | |
| **10:00 AM –**  **Shallow** | ***11cm***  bottom ~ half plant material, ~top half sand | | No | Clay | | Sand  Gravel | | N/R | | |
| **10:00 AM deep** | **32 cm**  1) bottom few cm sand, 2) main section clay, 3) top few cm sand | | No | Sand | | N/R | | Clay, | | |
| **10:40 AM –**  **shallow** | 11 cm disaggregated | | No | N/R | | N/R | | Clay  Mud  Sand  Gravel | | |
| **10:40 AM**  **deep** | **30 cm**  **oxidized top (no measure on this)** | | No | Sand  Gravel | | N/R | | Clay  Mud | | |
| **12:30 PM**  **Shallow** | **9 cm**  **oxidized top (no measure on this)** | | Yes | Mud | | Pebbles | | Sand  Gravel | | |
| **12:30 PM**  **deep** | **11.5 cm oxidized top (4 cm)** | | Yes | Gravel  Pebbles  Wood (roots?)  Brick  Living veget.  (sprouts & roots) | | Sand | | Clay  Mud | | |
| **1:07 PM**  **left shore** | **12 cm no oxidized top** | | Yes | Mud  Shells | | Sand  Gravel  Pebbles  Coal (image below) | | N/R | | |
| Above core- pebbles, sand, coal | | | | | | | | | | |
| **1:07 PM**  **deep core** | **17.5 cm**  **no oxidized top** | | No | Pebbles | | Mud  Sand | | Gravel | | |

***Piermont HRECOS Screen Captures on following pages***

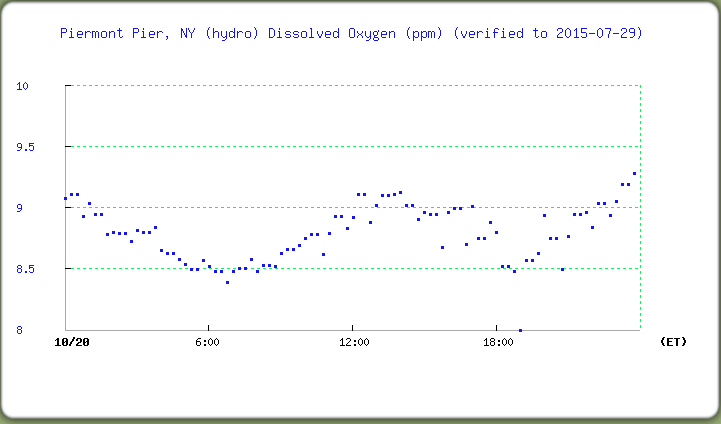
HRECOS site is located just behind the rectangular eastern end of the pier attached to one of the pier stations. When operational it is a continuous data feed recorded every 15 minutes.

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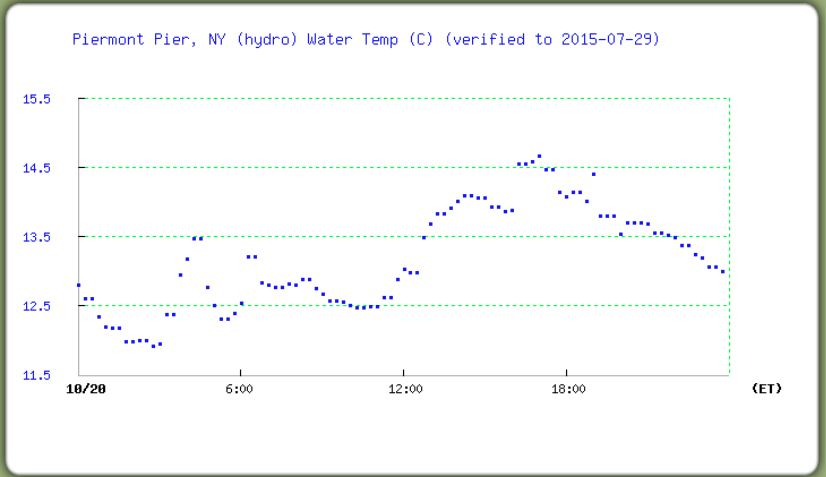
**Depth – sampling team captured the transition from a falling to rising tide**

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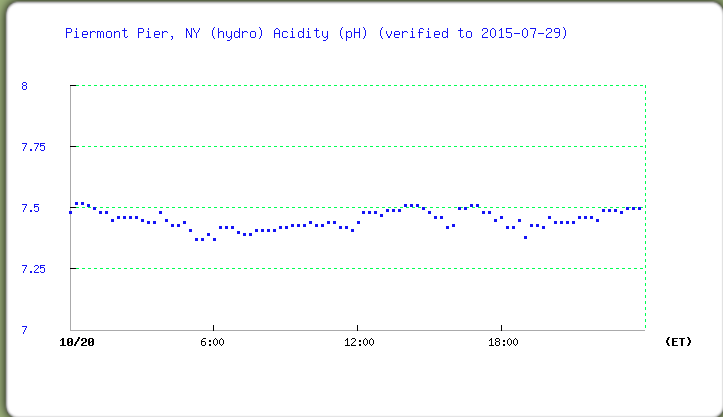
**Air Temperature**

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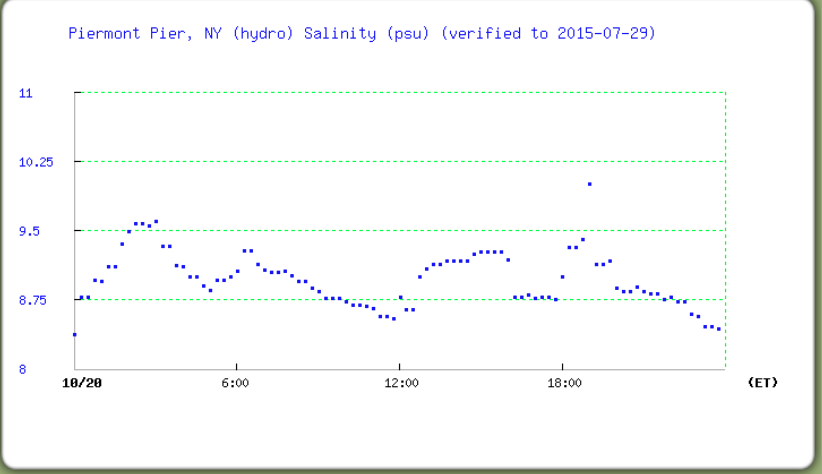
**DO ppm**

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**Water temperature**

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**pH**

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**Salinity in psu (equates in the Hudson to ppt)**