



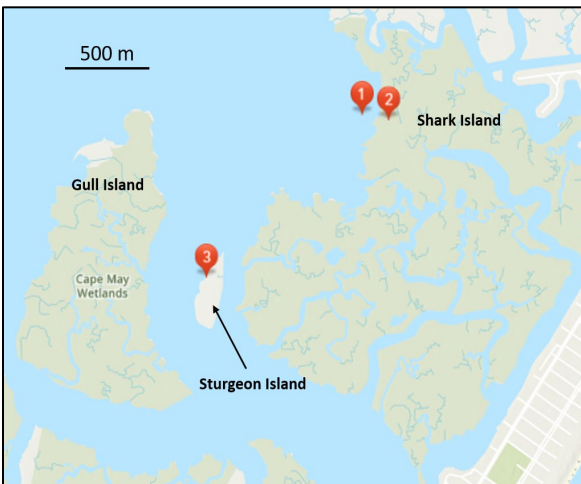
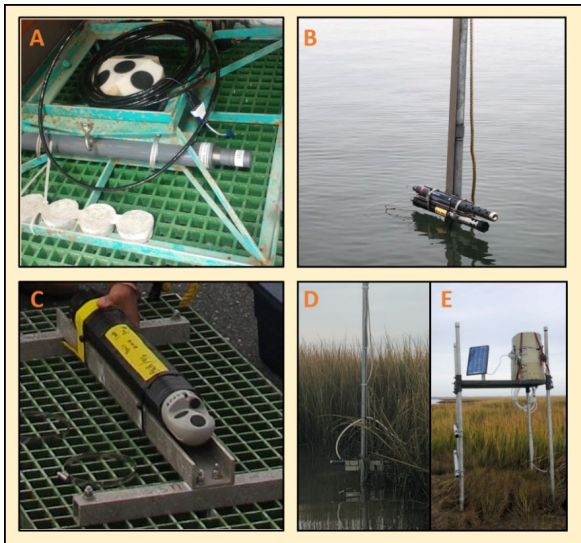
Monitoring Marsh Enhancement and Near Shore Placement: Turbidity and Sediment Profile Imaging

Kelsey Fall (USACE-ERDC)

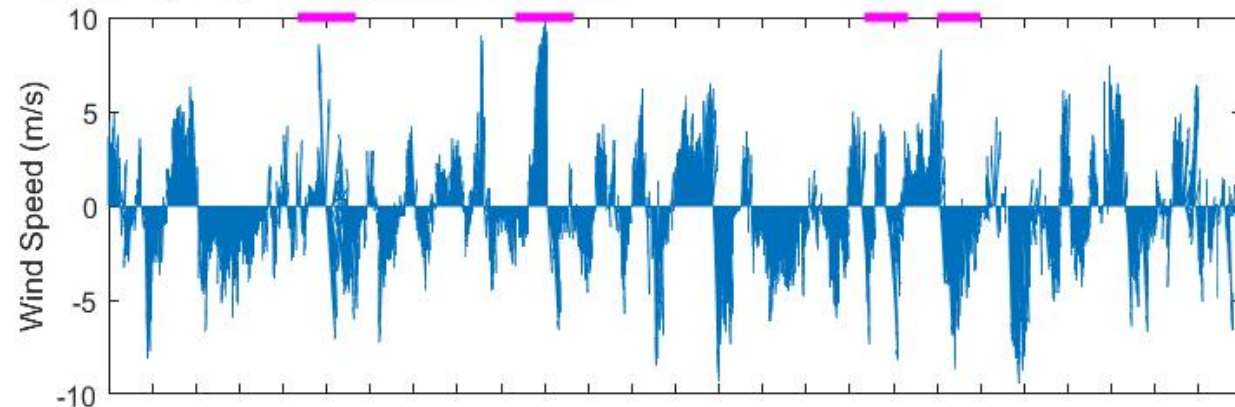
Seven Mile Island Innovation Lab Working Group Meeting

June 16, 2021

Turbidity Monitoring: Background Conditions October 2019-December 2019

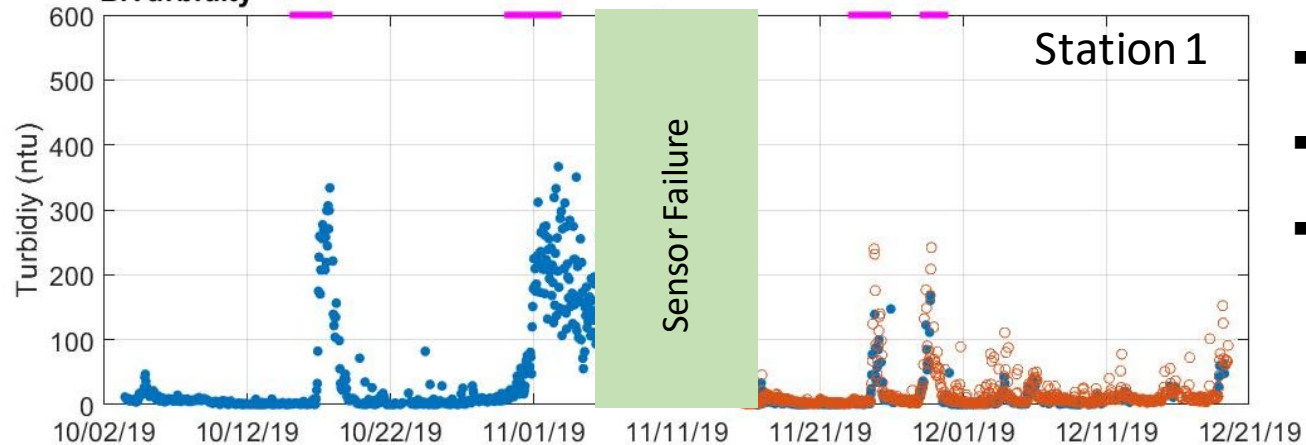


A. Cape May NJ, Winds Speed and Direction



*Wind arrow points to direction wind is blowing towards

B. Turbidity



Spikes in turbidity (250-380 ntu) during periods of winds >5m/s (11 mph, correspond to passage of Nor'easter and southerly wind event.

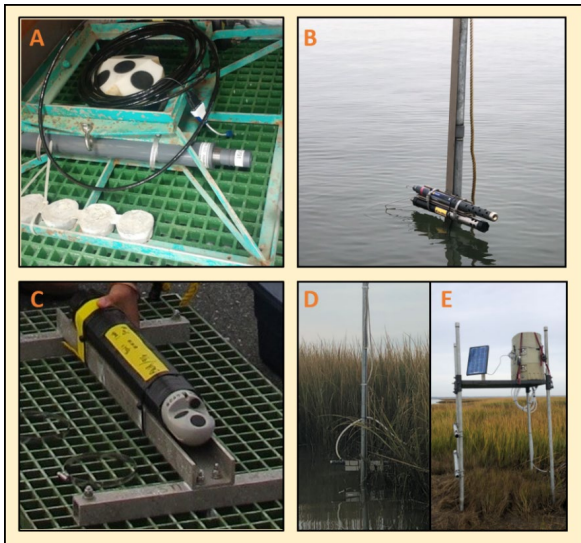
Preliminary monitoring:

Apart from punctuated wind events, the area is generally calm and waters are clear.

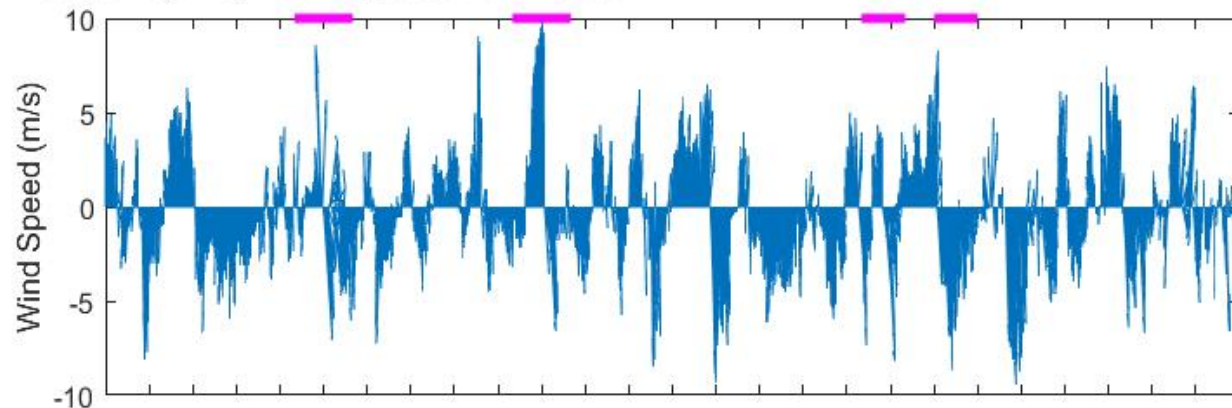
Generally:

- Small waves, <0.25 m
- Weak current (~0.1 m/s),
- Low turbidity (~10 ntu)
- Low SSC (~10–20 mg/L).

Turbidity Monitoring: Background Conditions October 2019-December 2019

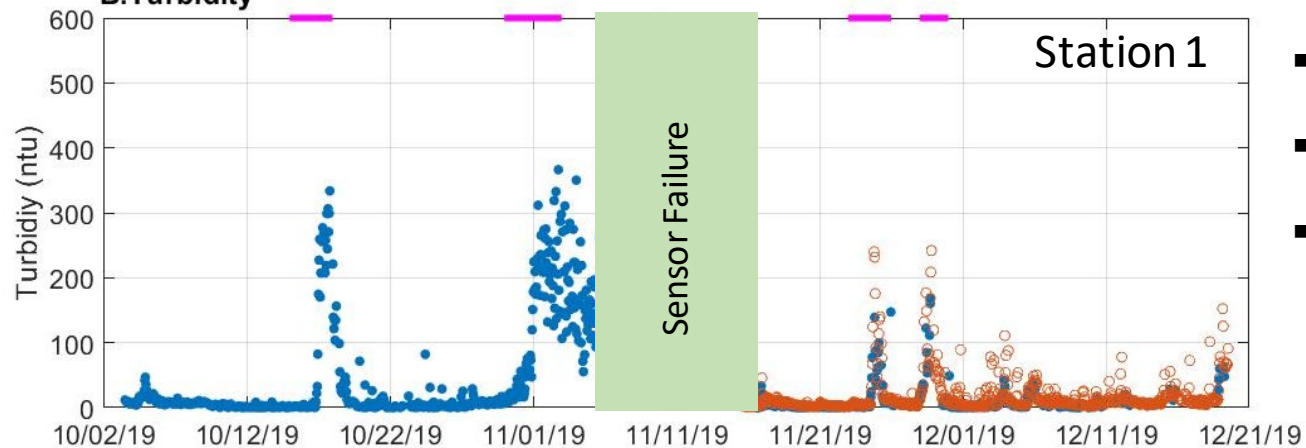


A. Cape May NJ, Winds Speed and Direction



*Wind arrow points to direction wind is blowing towards

B. Turbidity



Preliminary monitoring:

Apart from punctuated wind events, the area is generally calm and waters are clear.

Generally:

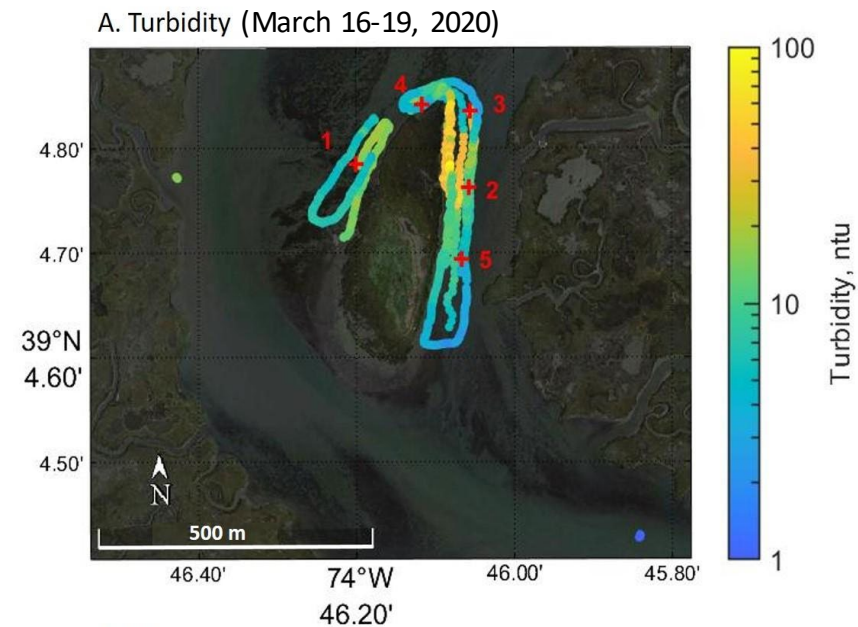
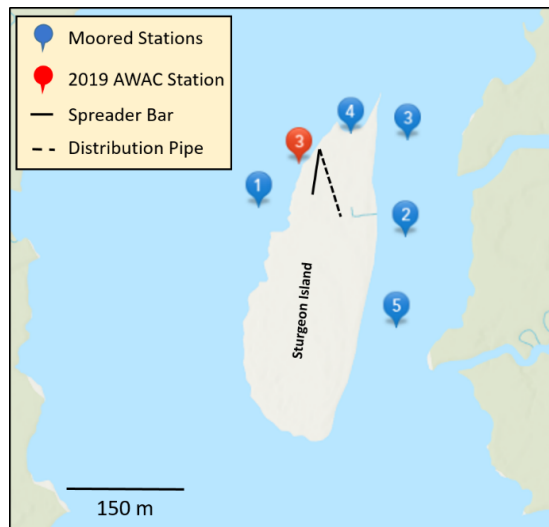
- Small waves, <0.25 m
- Weak current (~0.1 m/s),
- Low turbidity (~10 ntu)
- Low SSC (~10–20 mg/L).



Spikes in turbidity (250-380 ntu) during periods of winds >5m/s (11 mph, correspond to passage of Nor'easter and southerly wind event.

Turbidity Monitoring During Placement: On marsh platform & in water, along marsh edge

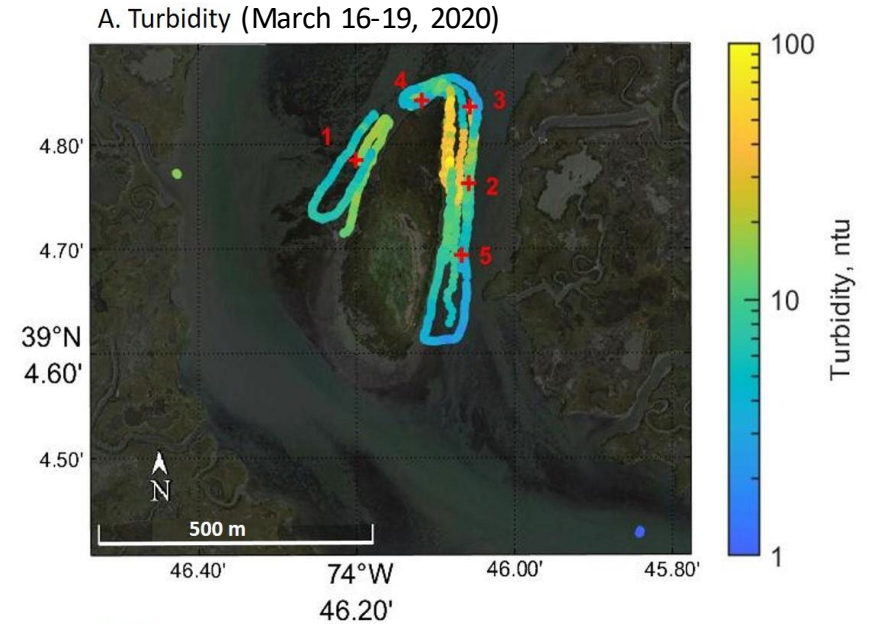
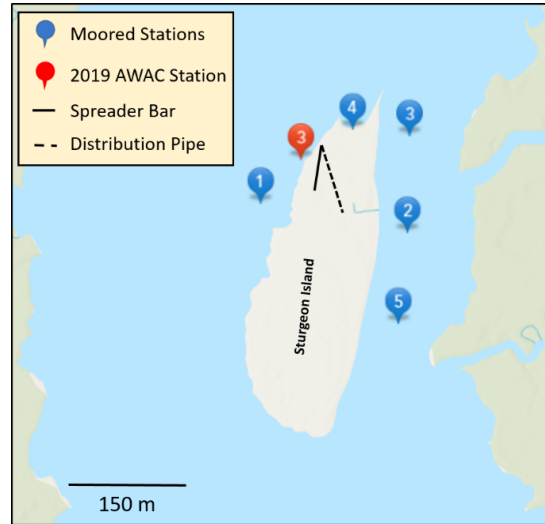
March 2020 Sturgeon Island (on Marsh)



Little to no turbidity plume, outside of the tidal creek mouth on NE side of island.

Turbidity Monitoring During Placement: On marsh platform & in water, along marsh edge

March 2020 Sturgeon Island (on Marsh)

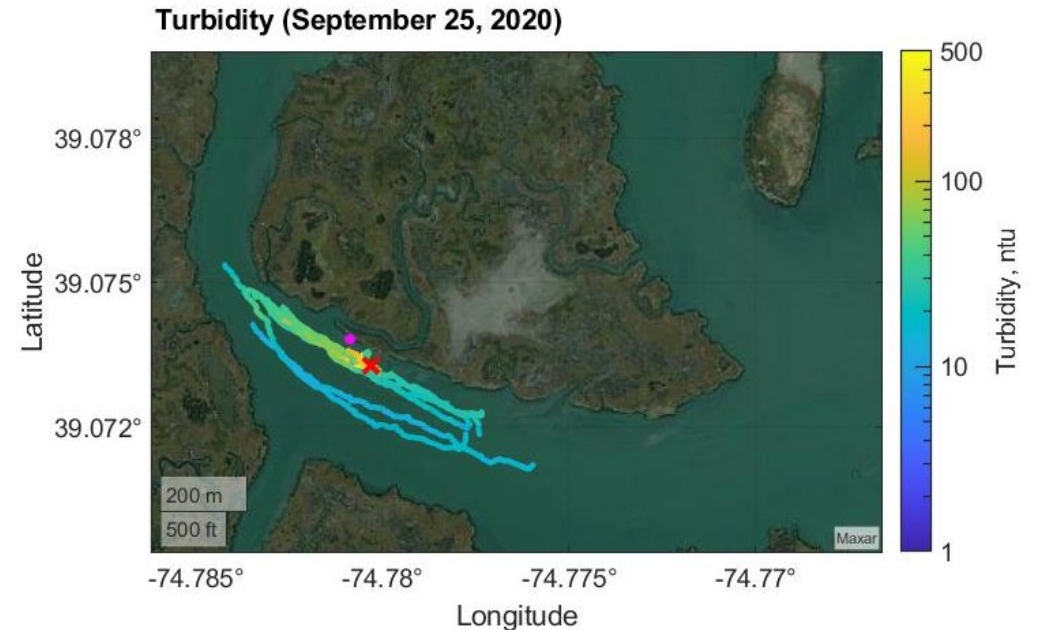


Little to no turbidity plume, outside of the tidal creek mouth on NE side of island.

September 2020 Gull Island (in water, marsh edge)

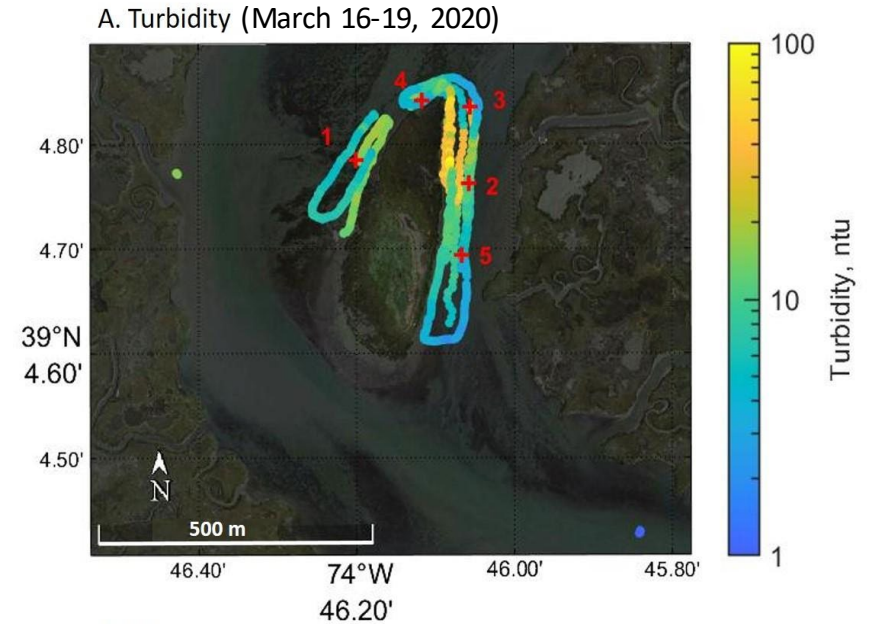
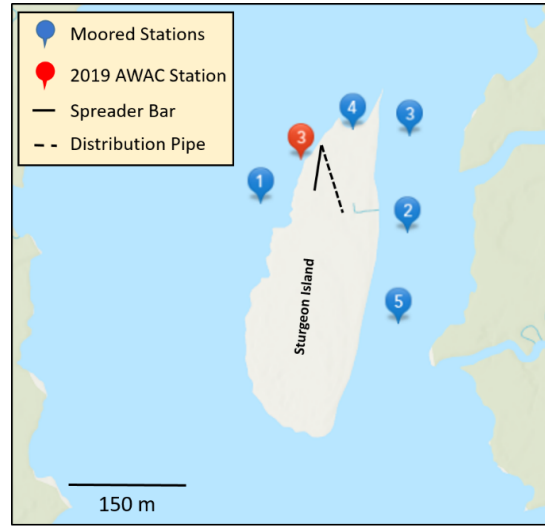


High turbidity close to the pipe (~250-300 feet, ~300-400 ntus). Direction of plume related to the tide. Berm feature developed.



Turbidity Monitoring During Placement: On marsh platform & in water, along marsh edge

March 2020 Sturgeon Island (on Marsh)

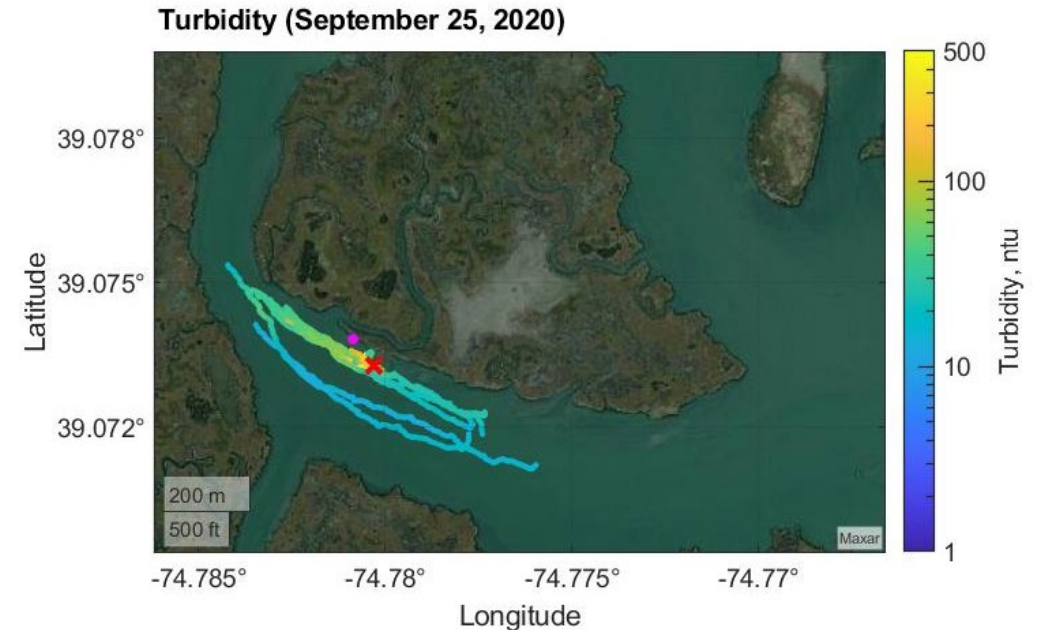


Little to no turbidity plume, outside of the tidal creek mouth on NE side of island.

September 2020 Gull Island (in water, marsh edge)



High turbidity close to the pipe (~250-300 feet, ~300-400 ntus). Direction of plume related to the tide. Berm feature developed.



Monitoring during and post nearshore placement with Sediment Profile Imaging Scanner (SPIScan)

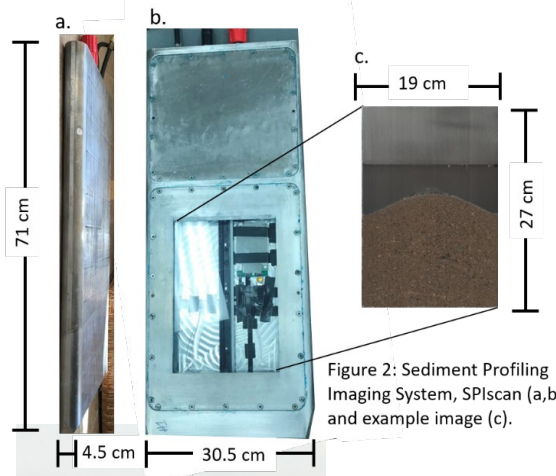
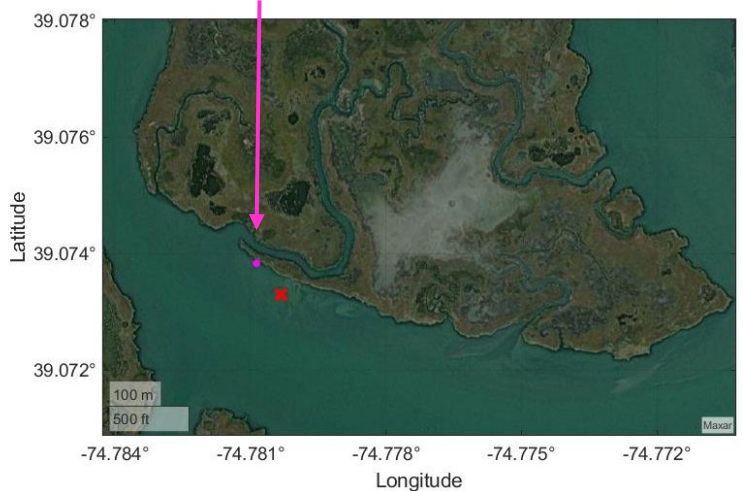


Figure 2: Sediment Profiling Imaging System, SPIScan (a,b) and example image (c).



SPIScan ~70 m/200 ft. NW with imaging face parallel to pipe (red x).



Monitoring during and post nearshore placement with Sediment Profile Imaging Scanner (SPIScan)

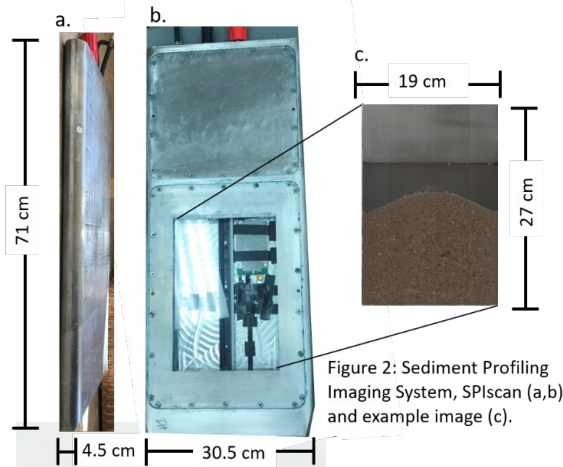


Figure 2: Sediment Profiling Imaging System, SPIScan (a,b) and example image (c).

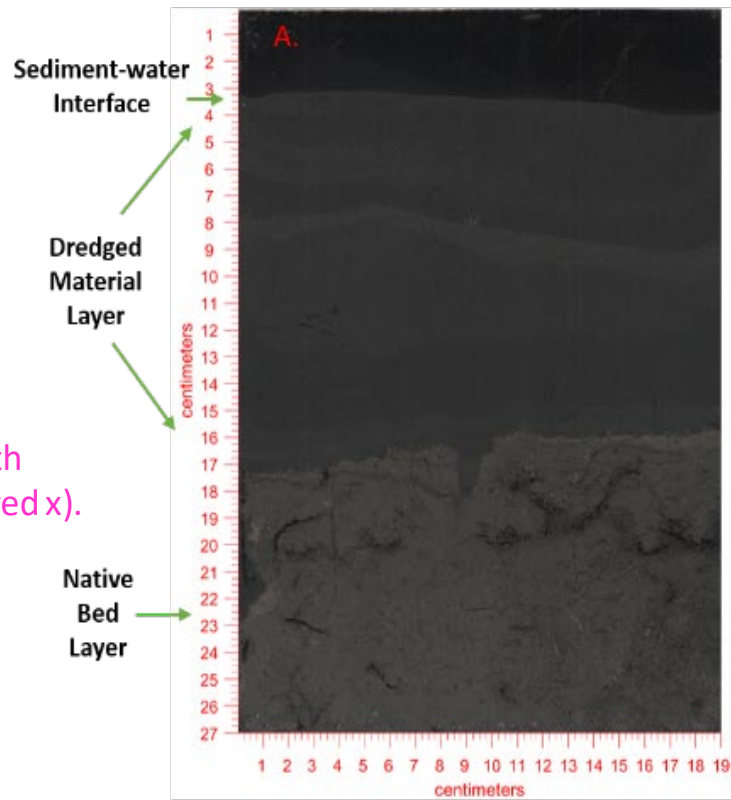
Material placed from 9/23 to 10/8 (~7500 cu. Yards). SPIScan deployed from 9/23/20-10/30/20 and captured imaged every 2 hours.



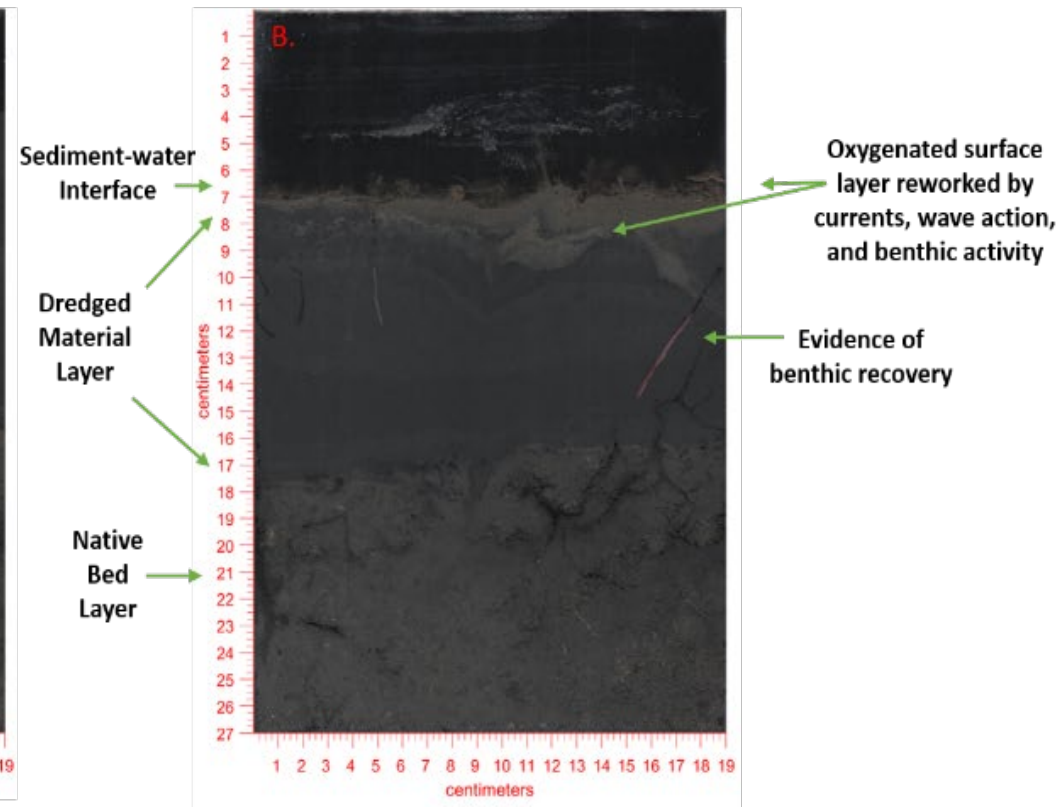
SPIScan ~70 m/200 ft. NW with imaging face parallel to pipe (red x).



End of Placement



~5 days Post Placement



Currently in progress: processing images evaluate deposition thickness, consolidation, track surface height (slope), identify benthic organisms and/or features to track recolonization.