Ohmsett Spill Research

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Topics

- Overview
- Recent R&D Testing
- Future Plans

One of the largest outdoor saltwater test tanks in the world

- 203 meters (667 feet) by 20 meters (65 feet) wide by 2.4 meters (8 feet) deep
- 10 million liters (2.6M gallons)
- Wave amplitude up to ~1 meter (~3 feet)
- Open ocean salinity (32 -35 ppt)

Managed by U.S. Department of Interior's Bureau of Safety and Environmental Enforcement (BSEE) and operated through a contract with Applied Research Associates, Inc. since September 2018

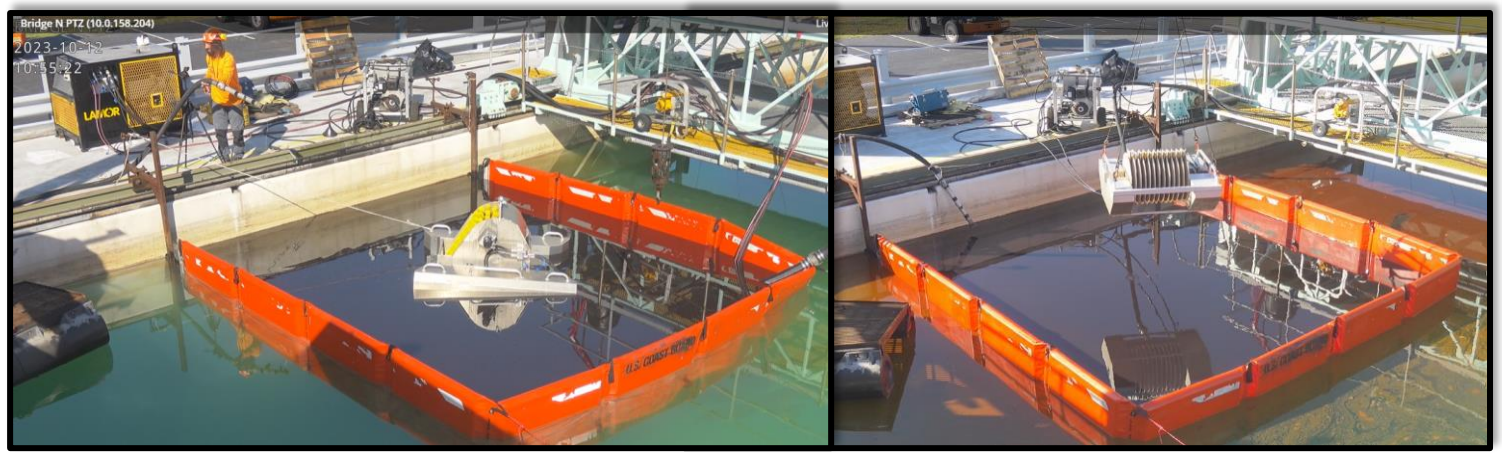
Focus Areas

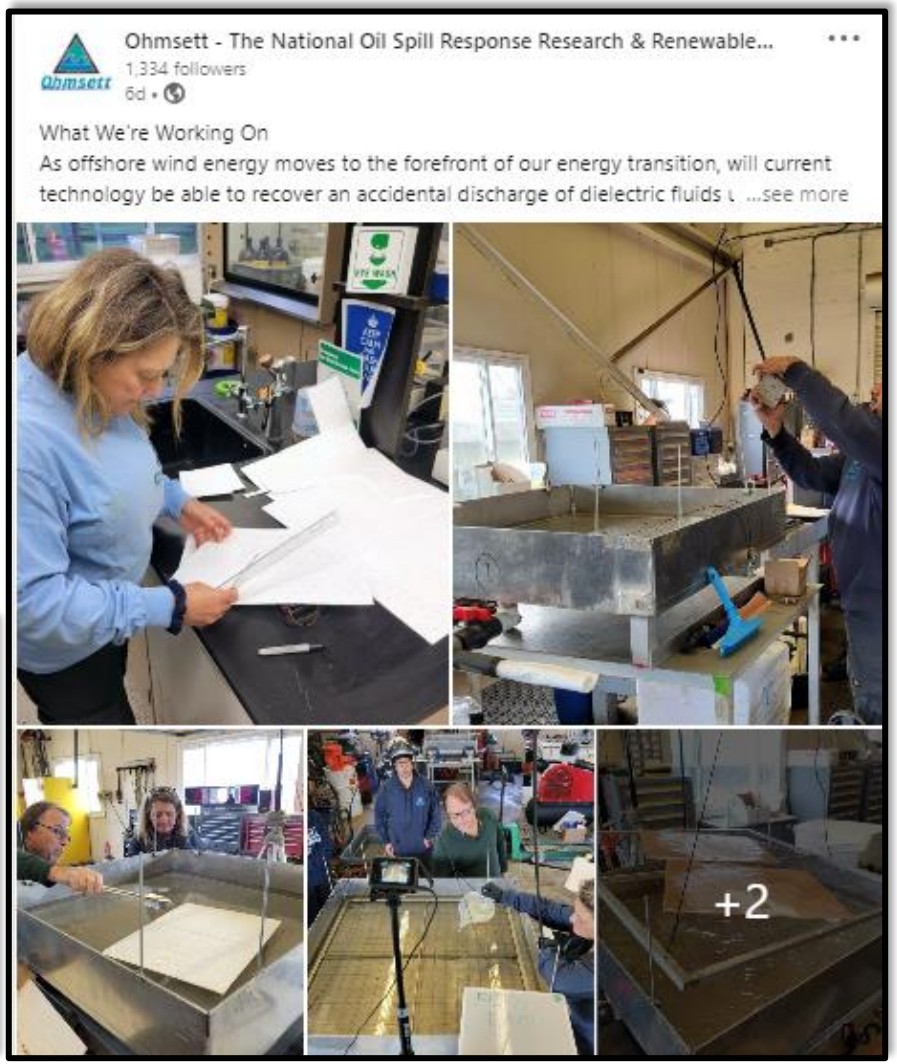
- Mechanical Recovery
  - ✓ Containment booms and skimmers
- Applied Treatments
  - ✓ Dispersants, Herders, Solidifiers
- Oil Behavior, Fate, and Transport
  - ✓ Dispersed and weathered oils
  - ✓ Emulsions
- Oil Behavior, Fate, and Transport
- Wave Energy Converters

- Remote Sensing
  - ✓ Numerous technologies
- Oil Handling
  - ✓ Storage, Pumps, Oil/water Separators
  - ✓ Surface and subsurface releases
- Marine Solids Removal, e.g., debris & plastic pellets
  - ✓ Boom and collection systems

Research & Development Projects

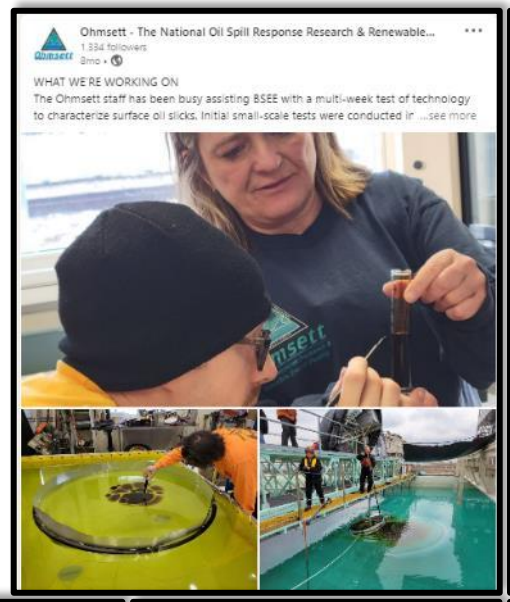
- Dielectric Fluid Evaluation
  - ✓ Dielectric fluids are of interest due to increased focus on off-shore renewable energy
  - ✓ Conduct testing of standard spill response techniques on several current fluids
  - ✓ Different chemistries may behave differently, e.g., natural vs synthetic esters vs hydrocarbons
  - ✓ ASTM laboratory testing and on-tank testing of different skimmers, e.g., brush vs “fuzzy”-disc

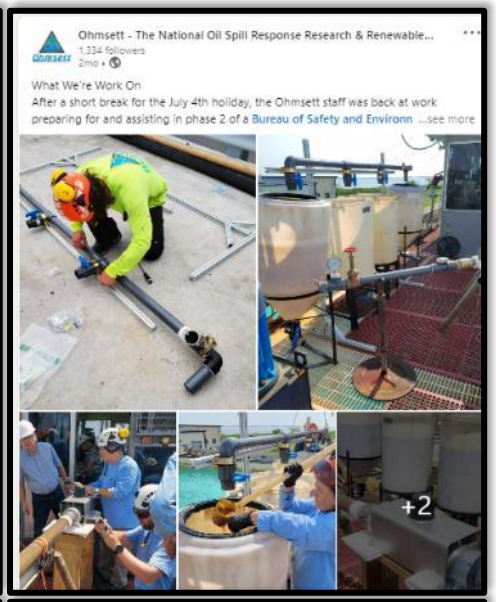


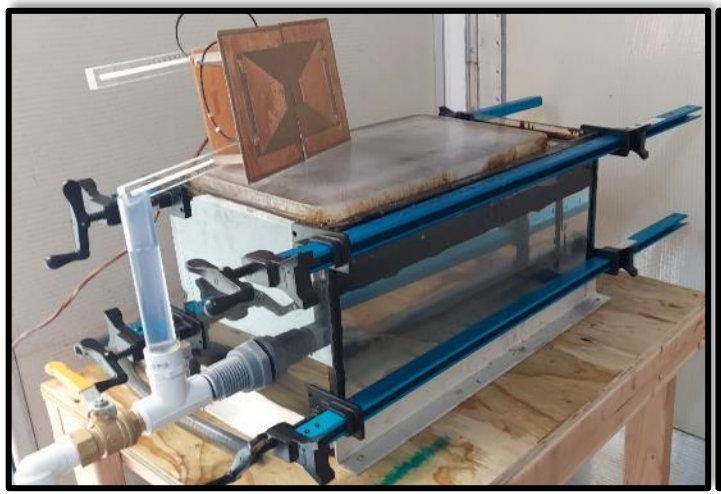


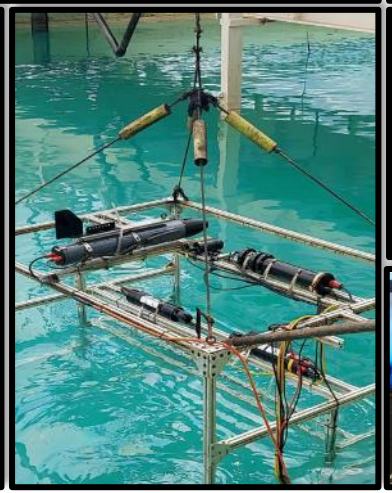
Research & Development Projects

- Sensing Technologies
  - ✓ LiDAR (NRL/BSEE); Oil slick thickness
  - ✓ Oil/Water Mixtures (Battelle/BSEE); Recovered oil determination
  - ✓ Oil Under Ice (AUB/BSEE); Determination of presence of oil under ice
  - ✓ Dispersant Effectiveness (NJIT/BSEE); Evaluation of fluorometer / droplet size equipment



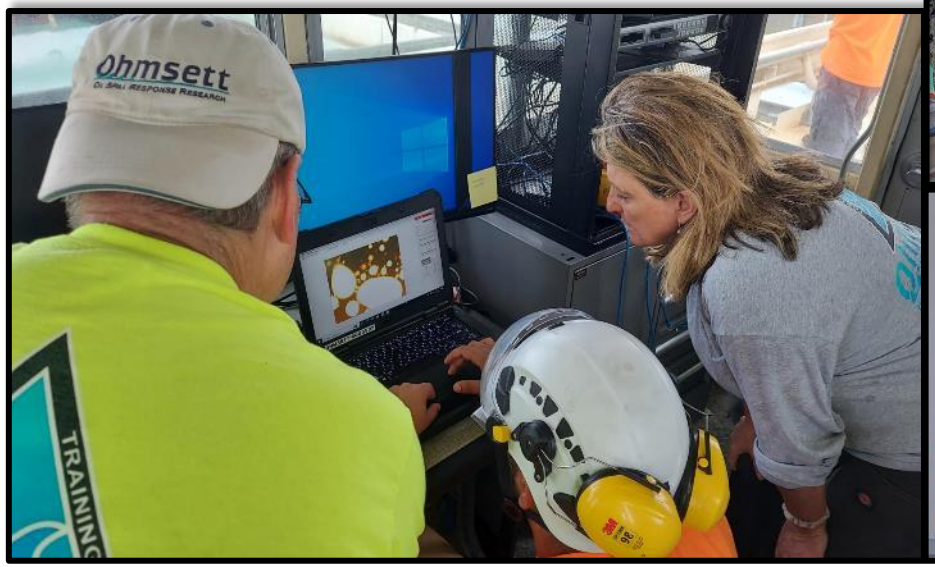






Research & Development Projects

- Enhanced Weathering Capabilities
  - ✓ Exposed to the elements for extended time periods, hours to days
  - ✓ Multiple samples can experience the same conditions, e.g., photo-oxidation and emulsification
  - ✓ Large samples sizes



New Oils

- Gulf of Mexico MC-20 Crude Oil
  - ✓USCG and BSEE working to provide large quantity to Ohmsett, e.g., 40,000 L, for future tests
  - ✓Potential to be a long-term reference oil

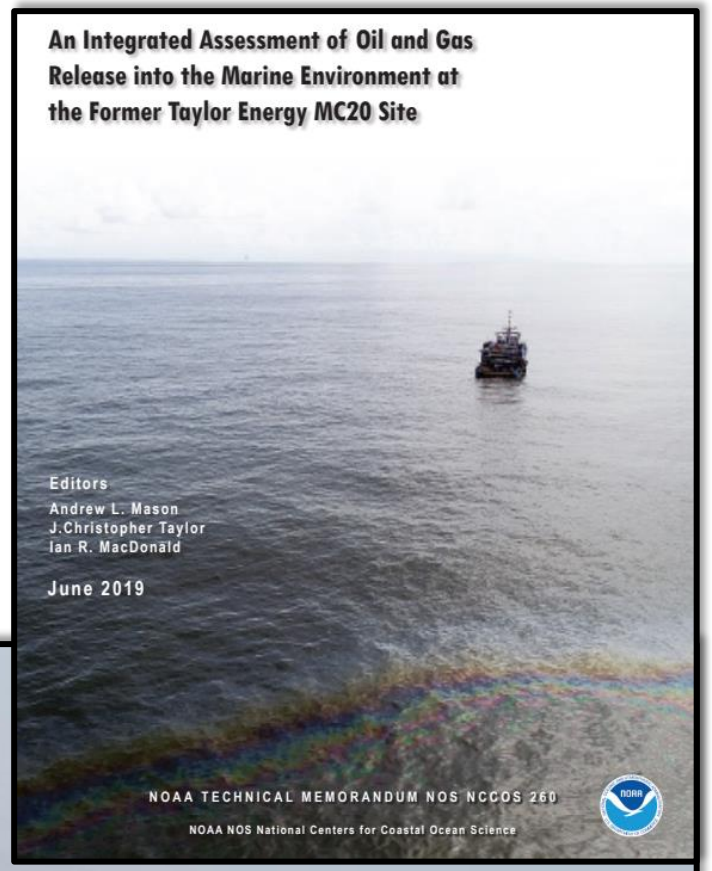


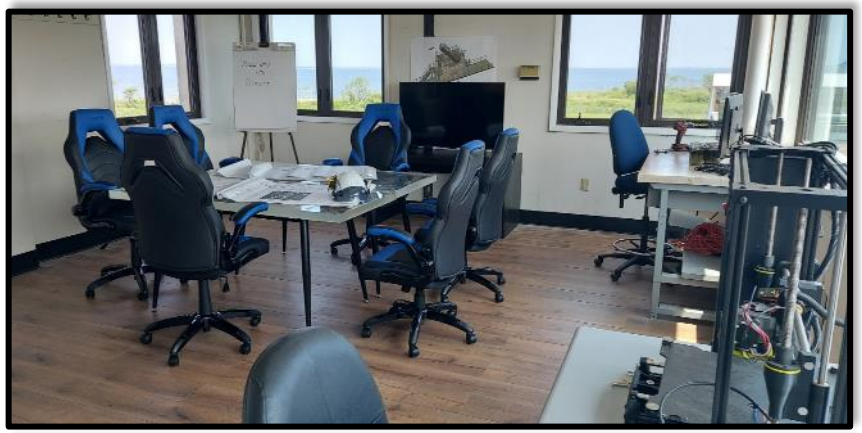
Table 7.4. Comparison of 1985 MC20 oils with 2018 MC20 mid-water column collected oil.

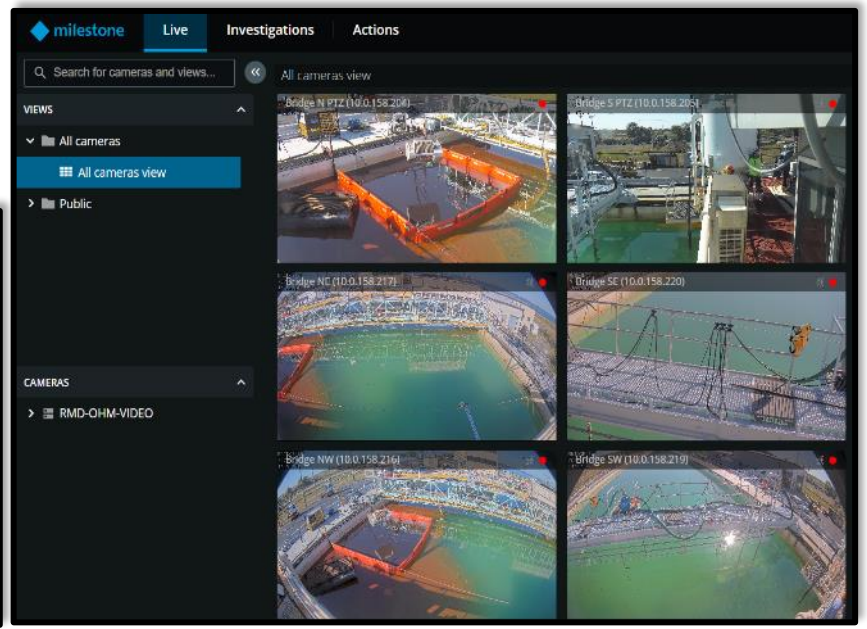
Identification	Latitude	Longitude	Depth (m)	API Gravity	Asphaltenes (%)
MC20 oil (2018)	28.93711	-88.96958	Water Column	25.74	Not measured
MC20 Well #9	28.92666	-88.97475	3,409	26.7	0.67
MC20 Well #2 A	28.93324	-88.98083	2,642	30.2	0.45
MC20 Well #2 B	28.93324	-88.98083	3,053	30.2	0.42

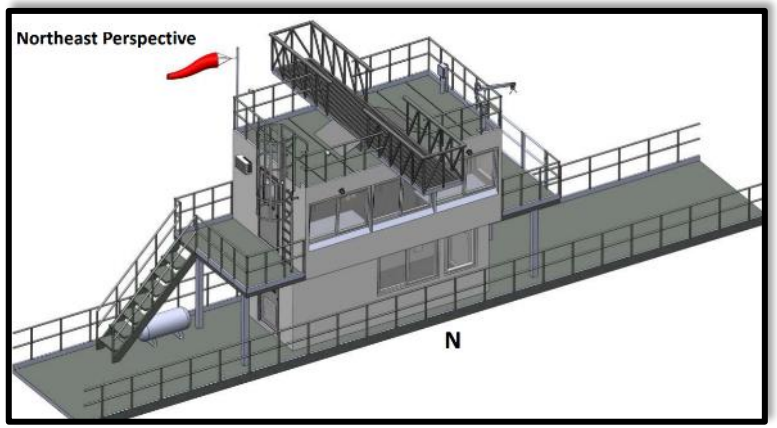
An Integrated Assessment of Oil and Gas Release - MC20

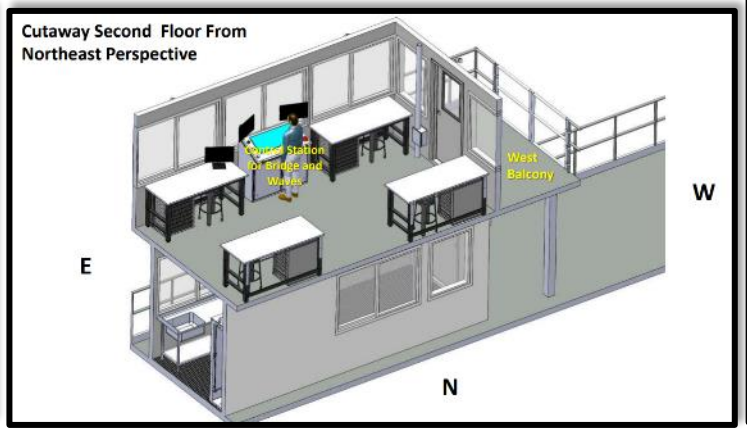
Ongoing and Future Plans

- Potential improvements and upgrades
  - ✓Enhanced customer facilities with ongoing focus on remote connectivity capabilities including site-wide cameras with pan/tilt/zoom and underwater capabilities
  - ✓Upgraded testing laboratory, e.g., new equipment
  - ✓Updated main wave tank bridge with enhanced space(s), e.g., observation deck & more inside square footage
  - ✓Smaller wave / flume tank (fresh / salt water)









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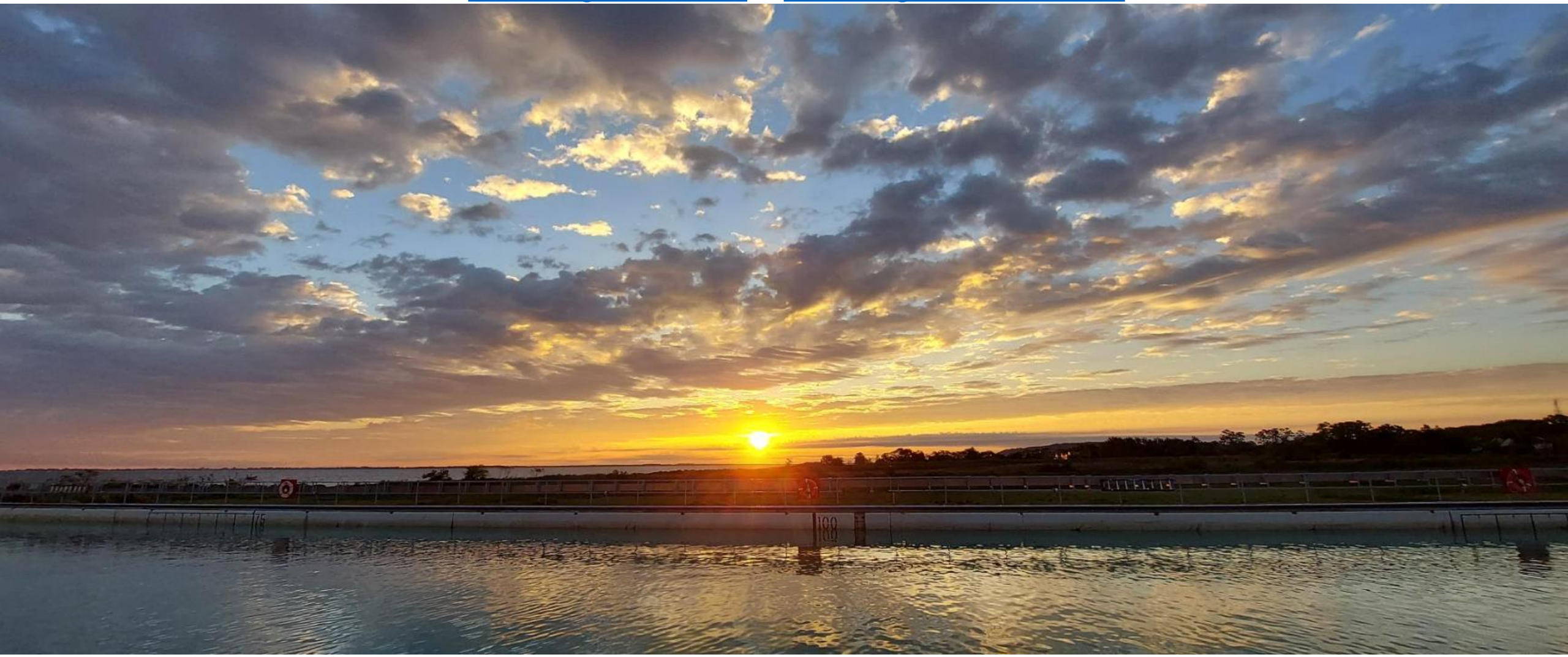
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