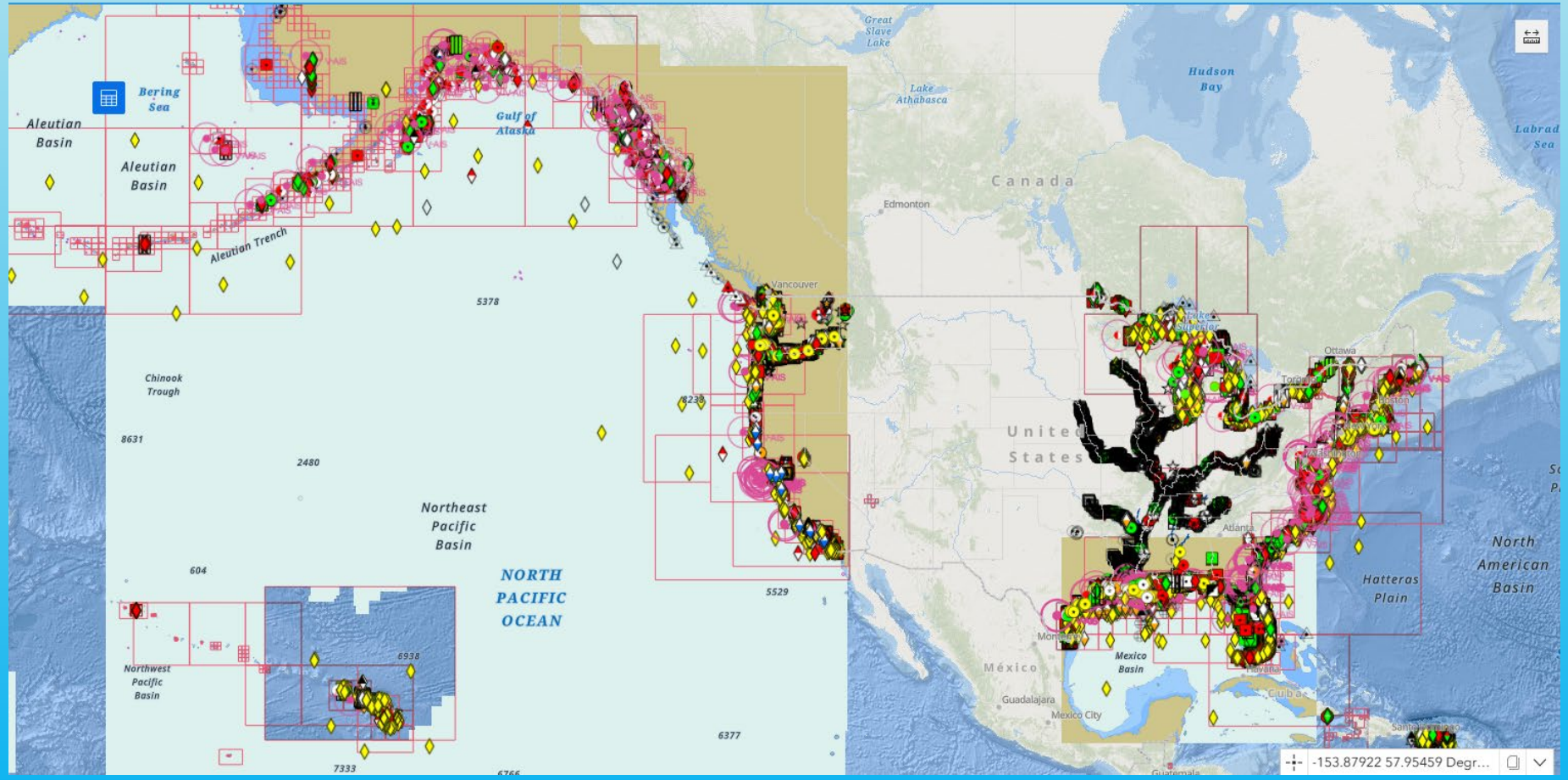
U.S. Coast Guard Implementation of eNavigation & S-100

Patrick Armstrong, USCG
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Organization and Responsibilities within U.S. Federal Agencies

- Hydrographic Offices: NGA/NOAA/USACE
- AtoN Authorities: USCG

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Why Implement e-Navigation?

Navigation Safety

The 1993 Big Bayou Canot train wreck was the worst in the history of the United States. Forty-seven people were killed and 103 more were injured. Investigation of this accident produced recommendations by the National Transportation Safety Board (NTSB), and the American Waterway Operators that the U.S. Army Corps of Engineers support production of low-cost electronic navigation for the Inland River System. This recommendation was followed by Congress directing and funding the Corps to develop and publish ENCs for the inland waterways. Thus began the development of eNavigation in the U.S.



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Why Implement e-Navigation?

Dissemination of Maritime Safety Information (MSI)

- The Delta Mariner cargo ship collided with the Eggner Ferry Bridge over the Tennessee River in southwest Kentucky, causing a portion of the span to collapse. The ship was carrying rocket components from Decatur, Alabama, to Cape Canaveral Air Force Station in Florida. Fortunately, there were no reported injuries in the accident. The NTSB recommended overall improvements to the Marine Safety Information (MSI).



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- S-101 Electronic Navigational Chart (ENC)
- S-102 Bathymetric Surface
- S-103 Sub-surface Navigation
- S-104 Water Level Information: Surface Navigation
- S-111 Surface Currents
- S-121 Maritime Limits and Boundaries
- S-122 Marine Protected Areas
- S-123 Marine Radio Services
- S-124 Navigational Warnings
- S-125 Marine Aids to Navigation (ATON)
- S-126 Marine Physical Environment
- S-127 Marine Traffic Management
- S-128 Catalogue of Nautical Products
- S-129 Under Keel Clearance Management (UKCM)
- S-130 Polygonal Demarcations of Global Sea Areas
- S-131 Marine Harbor Infrastructure
- S-2xx IALA Product Specifications



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Implementation of E-Navigation

Key Decision Points:

- ✓ Should we start from scratch or modernize existing systems?
- ✓ What products are we going to produce?
- ✓ How are the products going to be made available? What does your National Legislation say regarding distribution of Aids to Navigation (AtoN) & Marine Safety Information (MSI)?

- ➢ U.S. National Regulations regarding AtoN and Marine Safety Information
  https://www.law.cornell.edu/uscode/text/14/subtitle-I
  https://www.ecfr.gov/current/title-33/chapter-I/subchapter-C

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Key Events:

- 2011 – Began to development/modernization of our IT enterprise solution

  Legacy System ⟶ Modernized System *We decided to modernize vice replace*

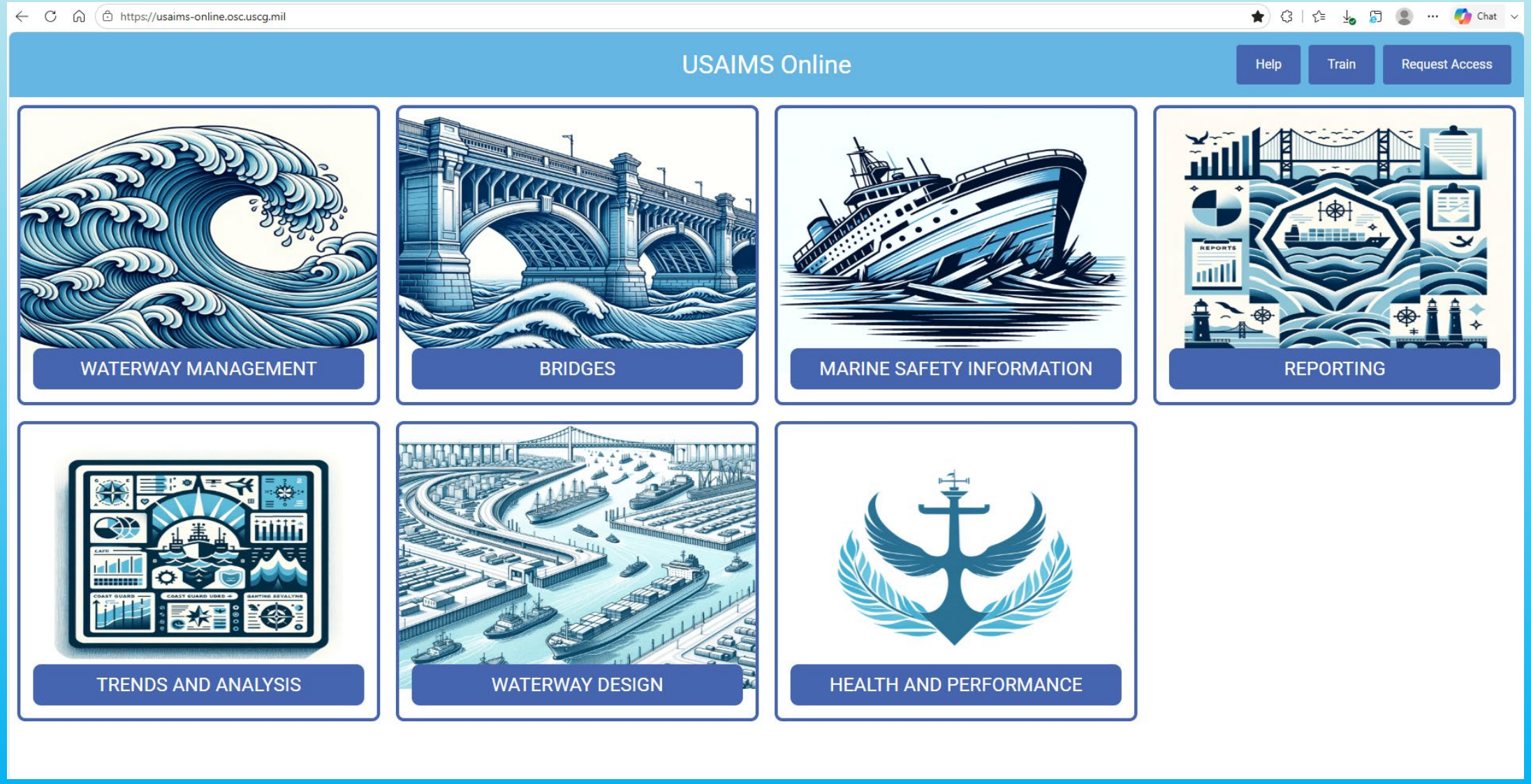
- 2012 – Released the United States Aids to Navigation Information & Management System (Field Unit version of USAIMS is entitled “USAIMS-Underway”)
- 2015 – Began providing weekly S-57 AtoN Dataset to USACE for their use to create a “Buoy Layer” IENC product
- 2016 – Issued Navigation Circular authorising ENC carriage in lieu of paper charts
- 2017 – NOAA revised their National Charting Plan indicating they were preparing to cancel paper chart production
- 2019 – NOAA formally announced 4-year plan to end paper chart production!!!
- 2019/21 – Mapped USCG AtoN Data to S-57 to encode ENCs

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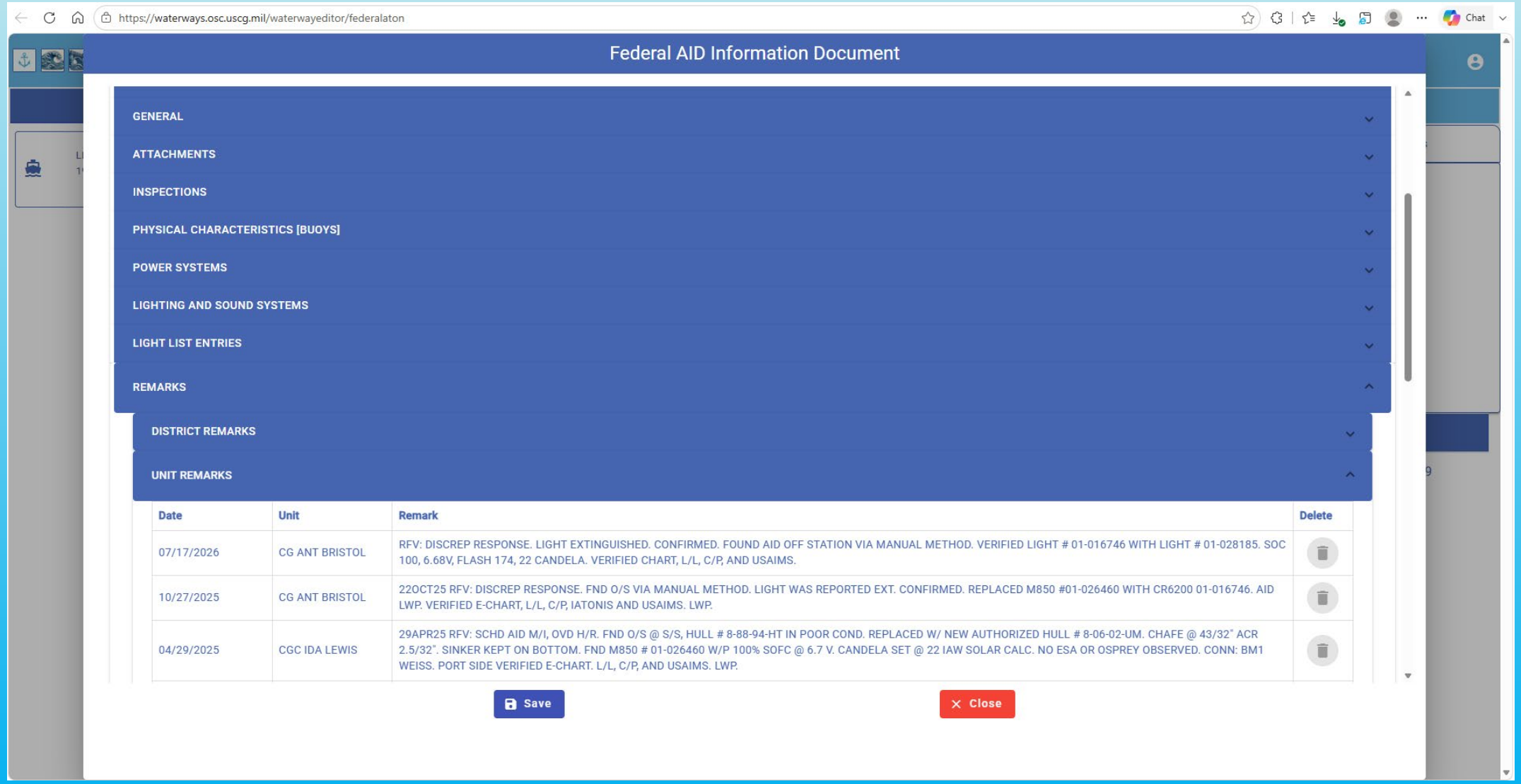
- 2022 – NOAA began using USCG S-57 datasets to encode AtoN in their ENCs
- 2022 – Opened U.S. Chart Carriage Regulation Revision Project
- 2022 – Began modernization of shoreside IT system (USAIMS)
- 2024 – USAIMS-Online achieved Initial Operating Capability (IOC), Full operational Capability (FOC) expected in 2027
- 2024 – Last NOAA paper chart was cancelled
- 2025 – RosePoint Electronic Charting System (ECS) began delivery of Marine Safety Information (MSI) and Light List to their customers (approximately 6000 vessels)
- 2026 – Release of RTCM 10900.8 Electronic Charting System (ECS) Standard
- 2026 – Regulatory Change covering use of ECS in Domestic Waters (ECDIS for SOLAS Vessels)
- 2026 – USCG S-124 Product Development Completed
- 2027 – USCG to begin delivery of the S-201 Dataset to Hydrographic Offices.

Live Demo

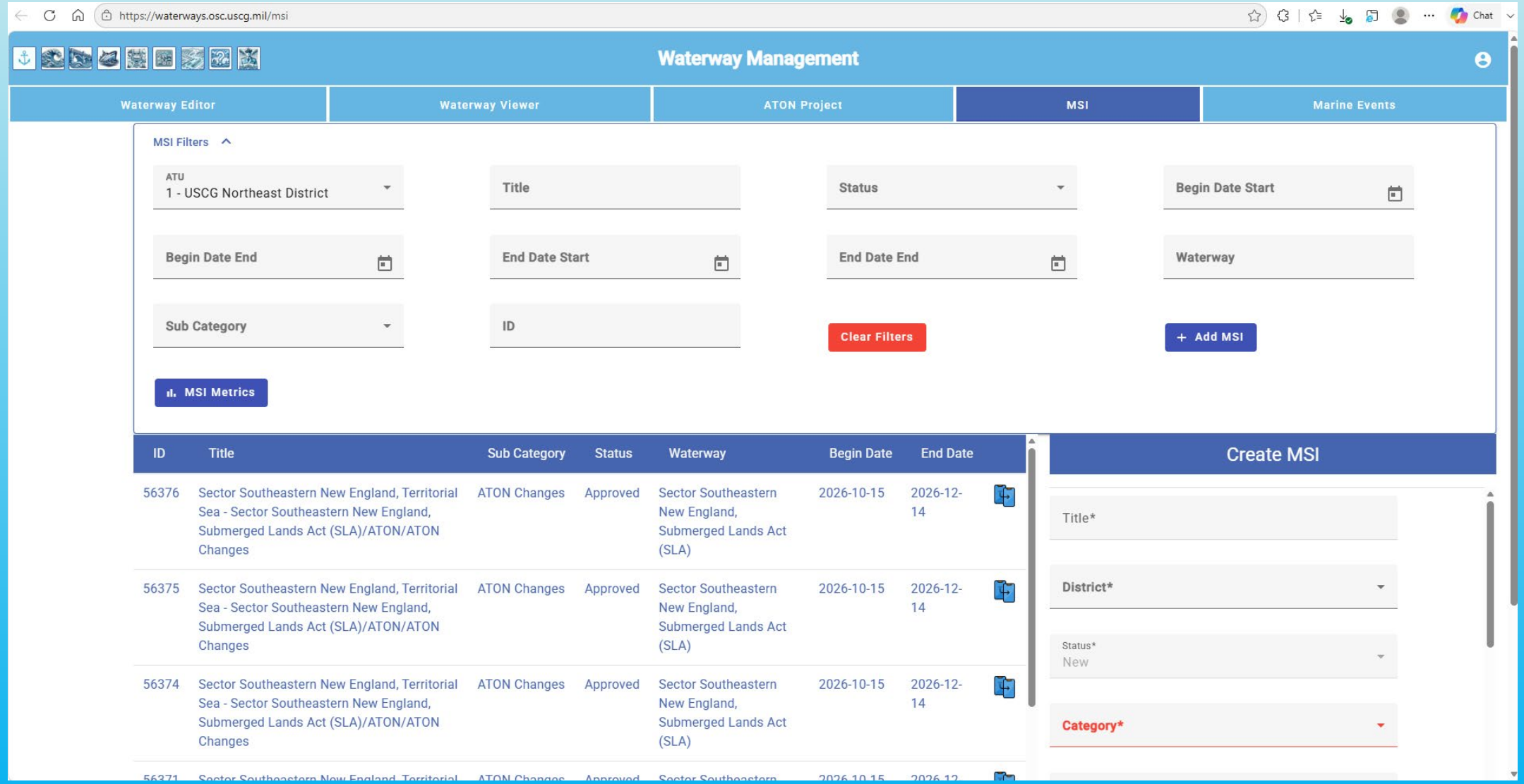
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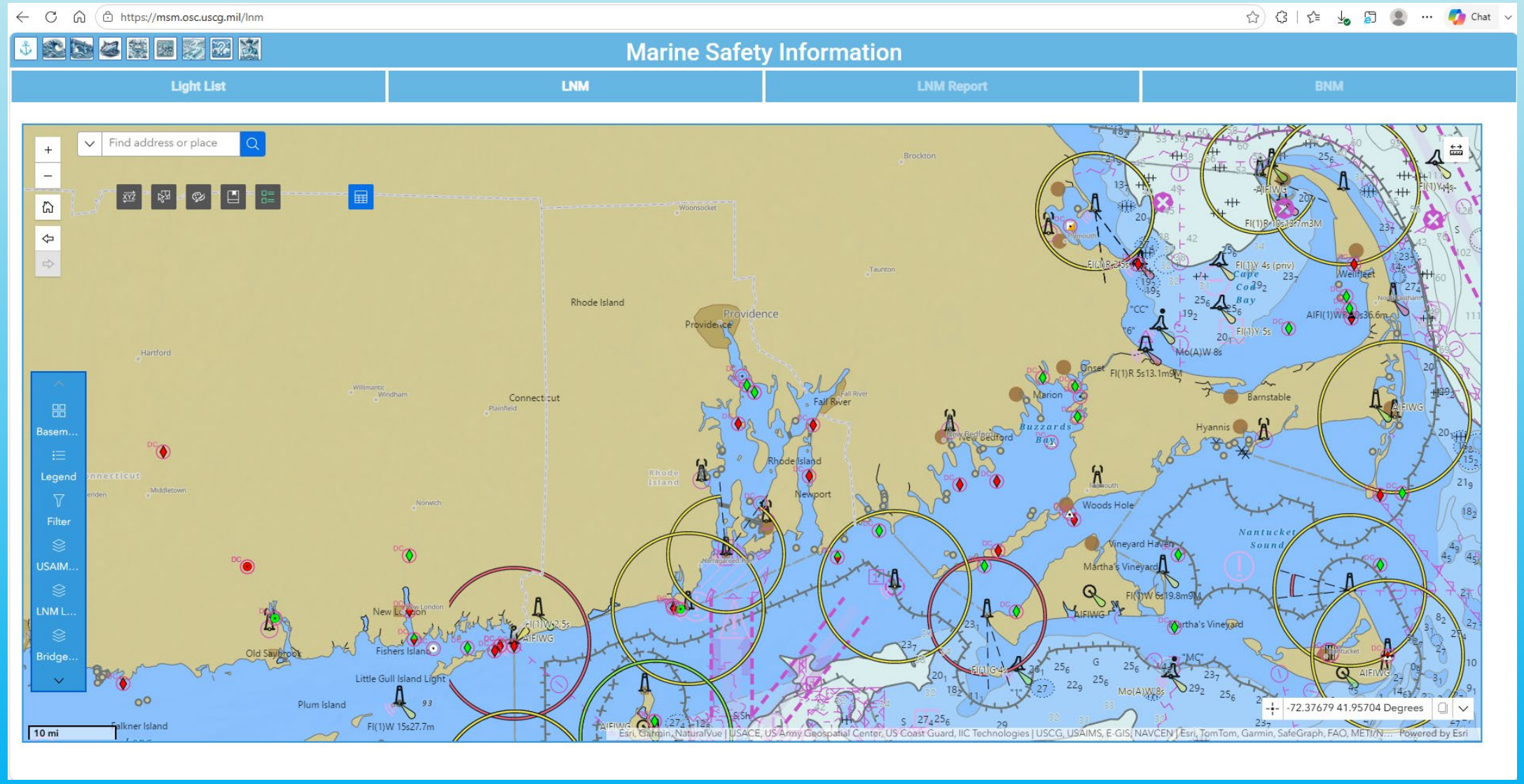
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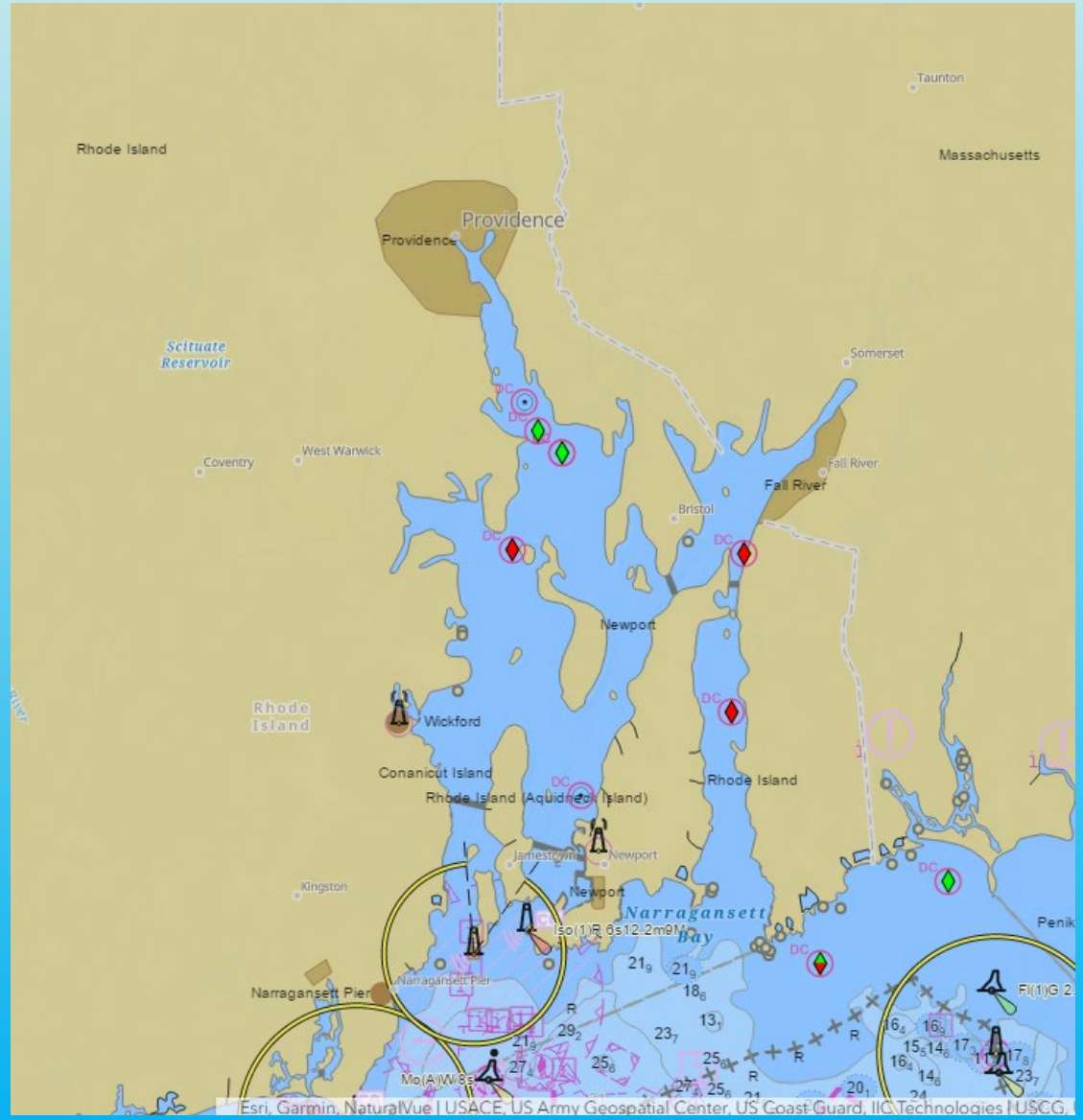
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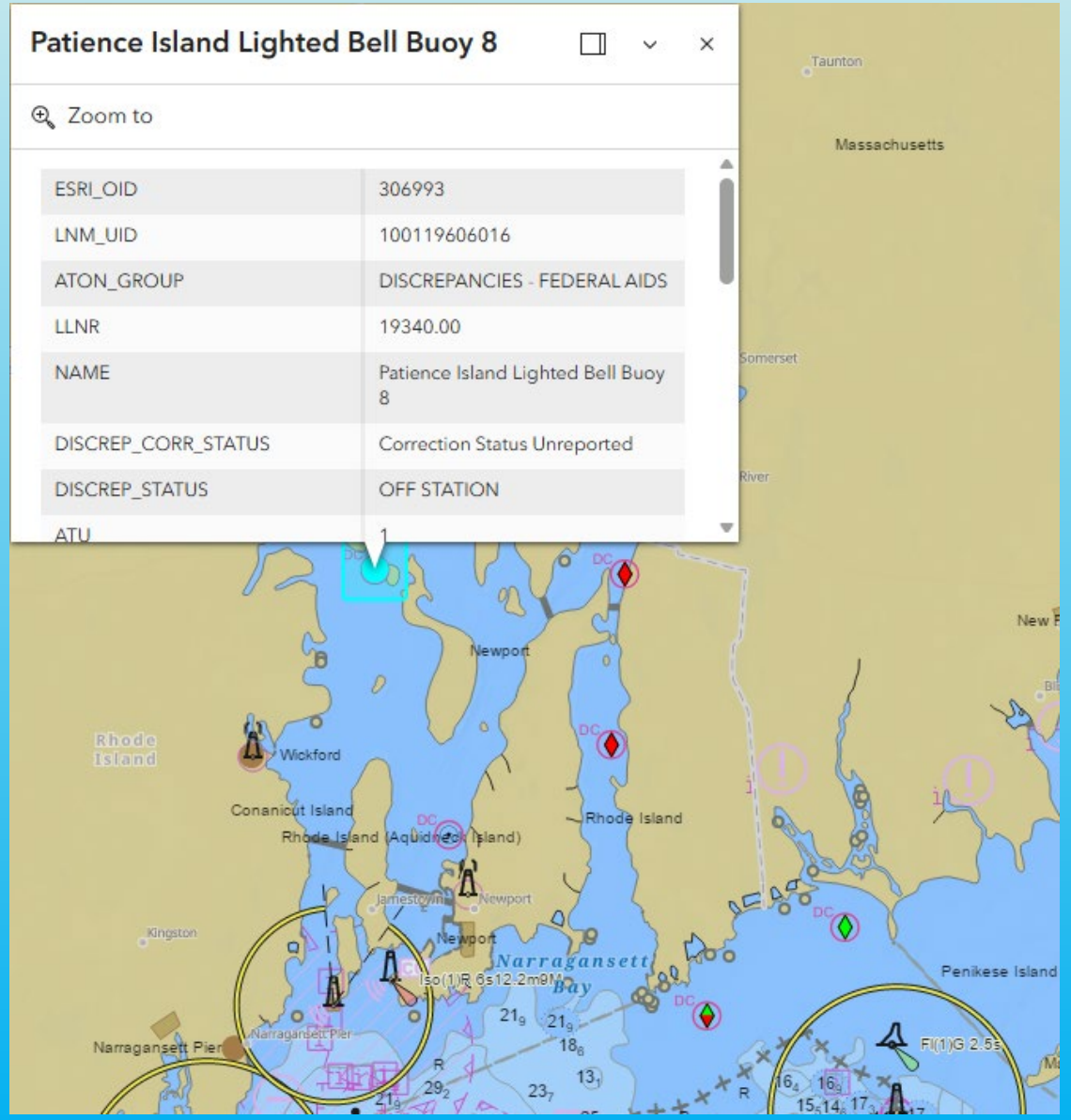
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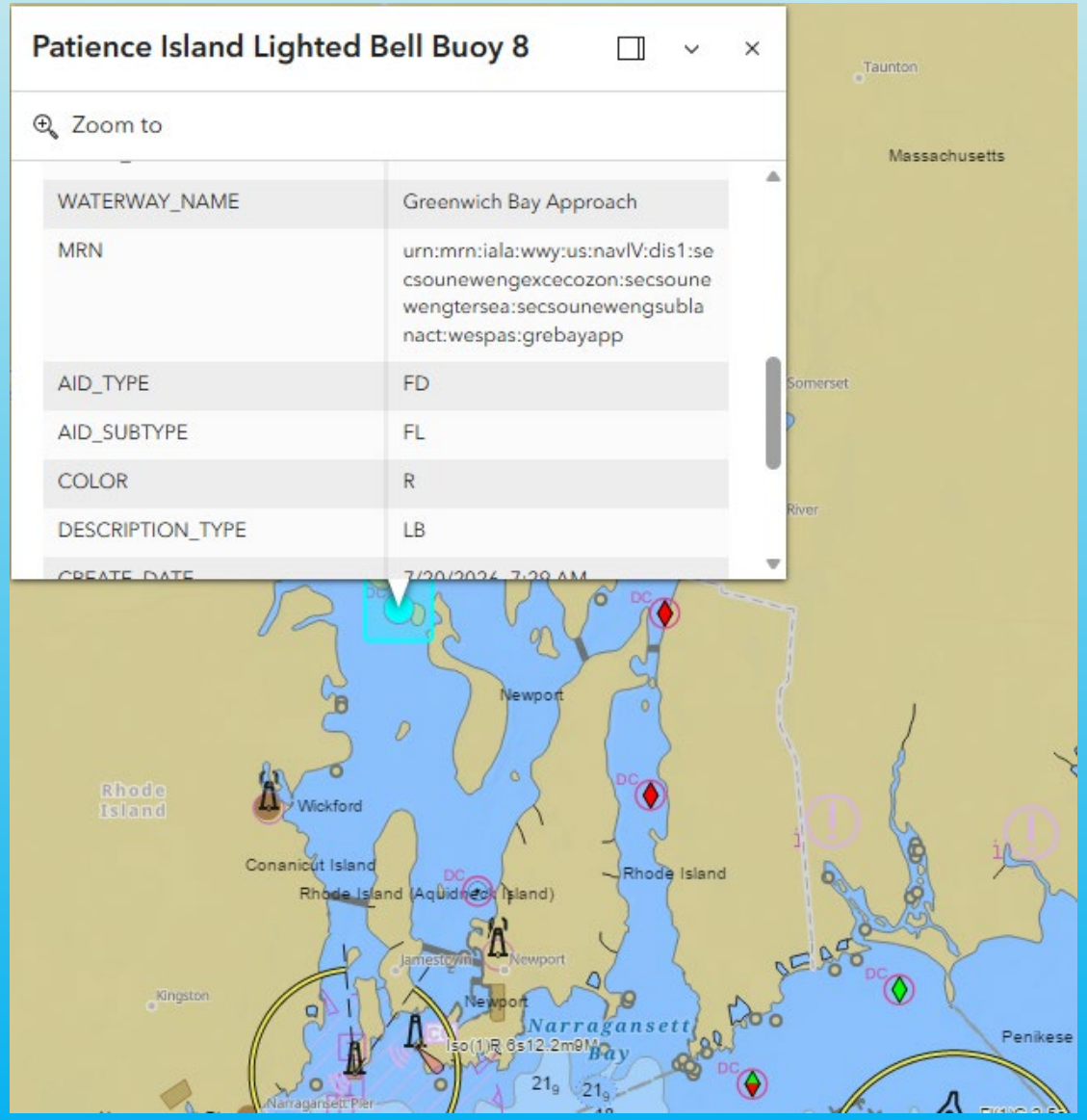
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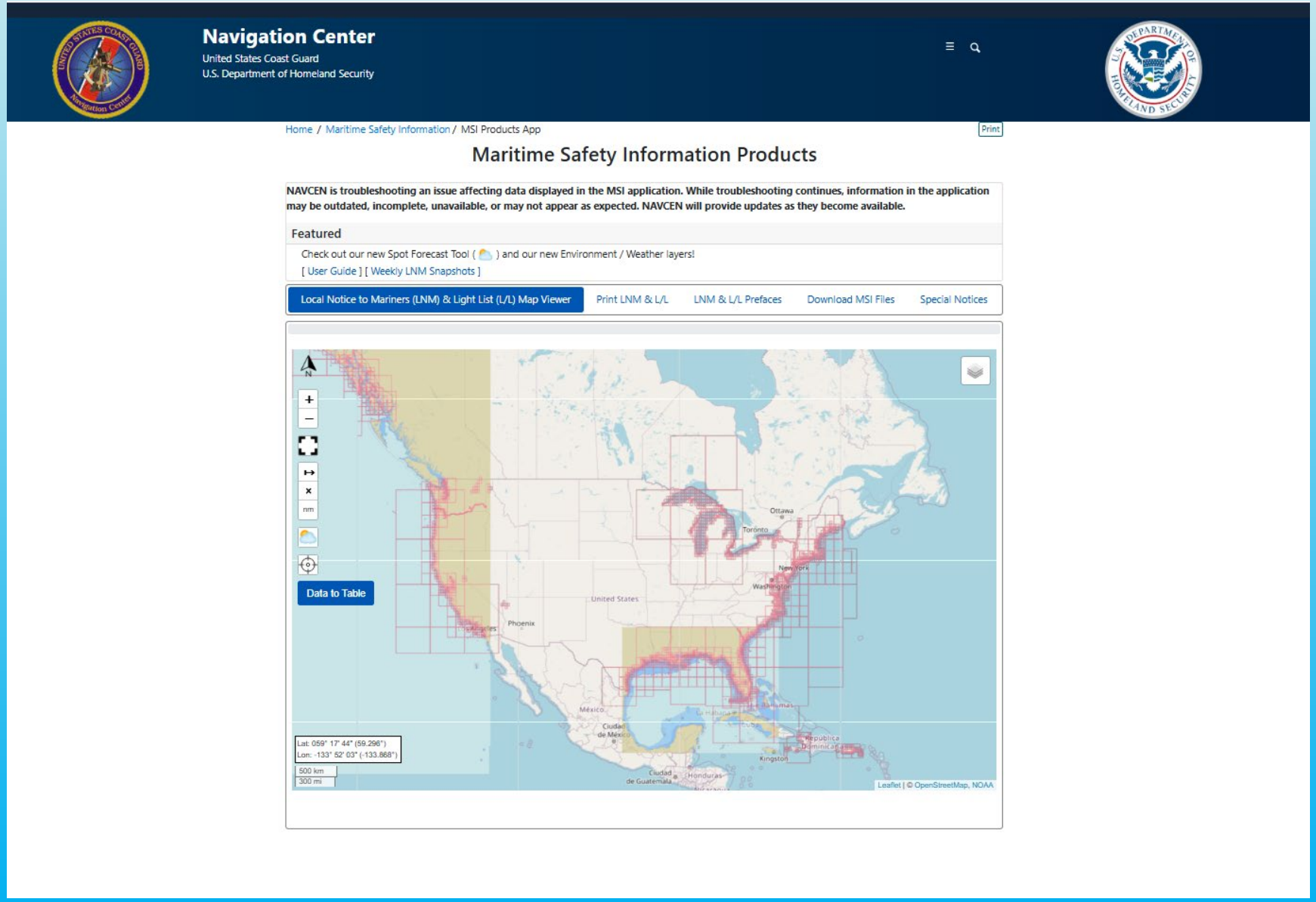
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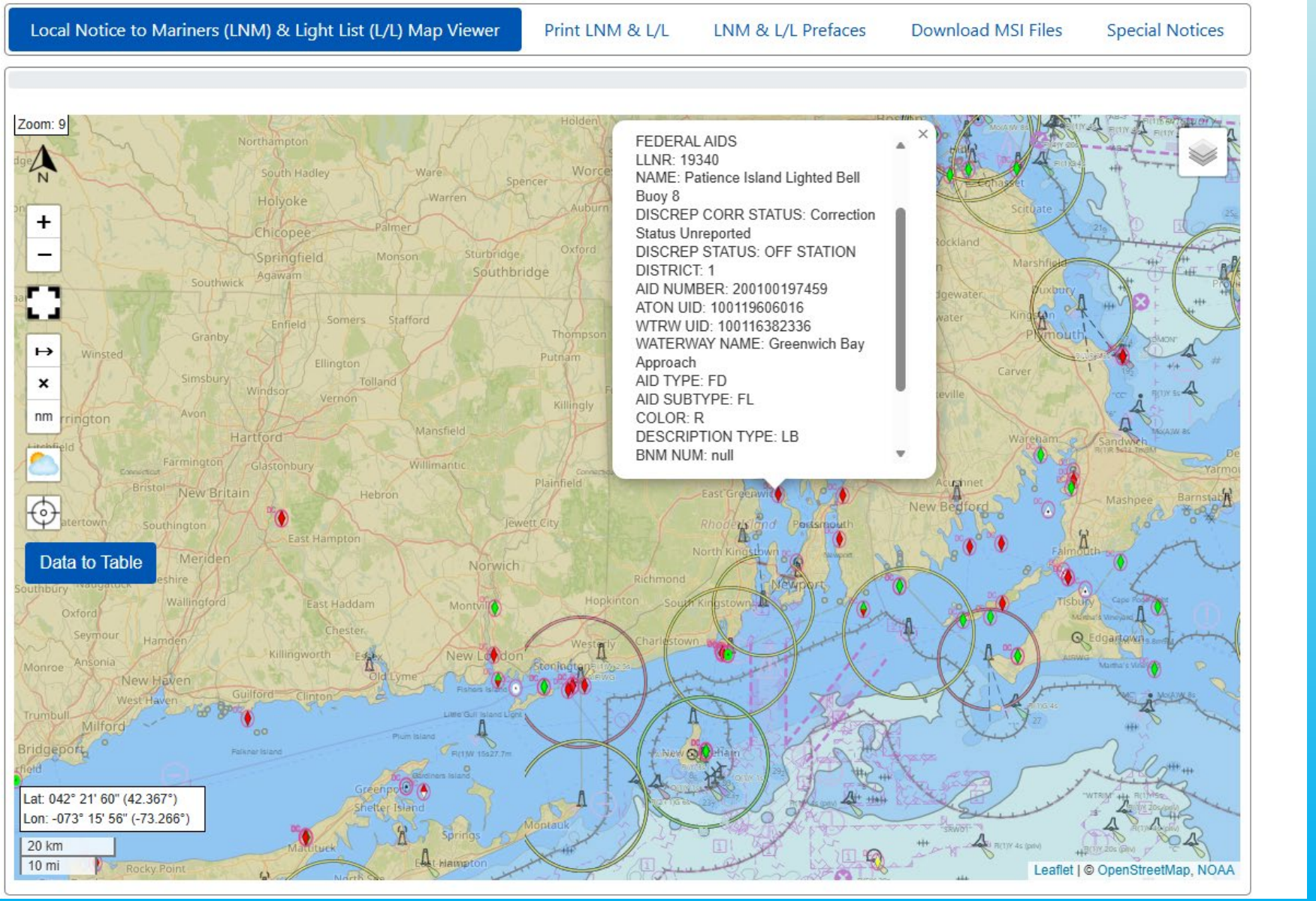
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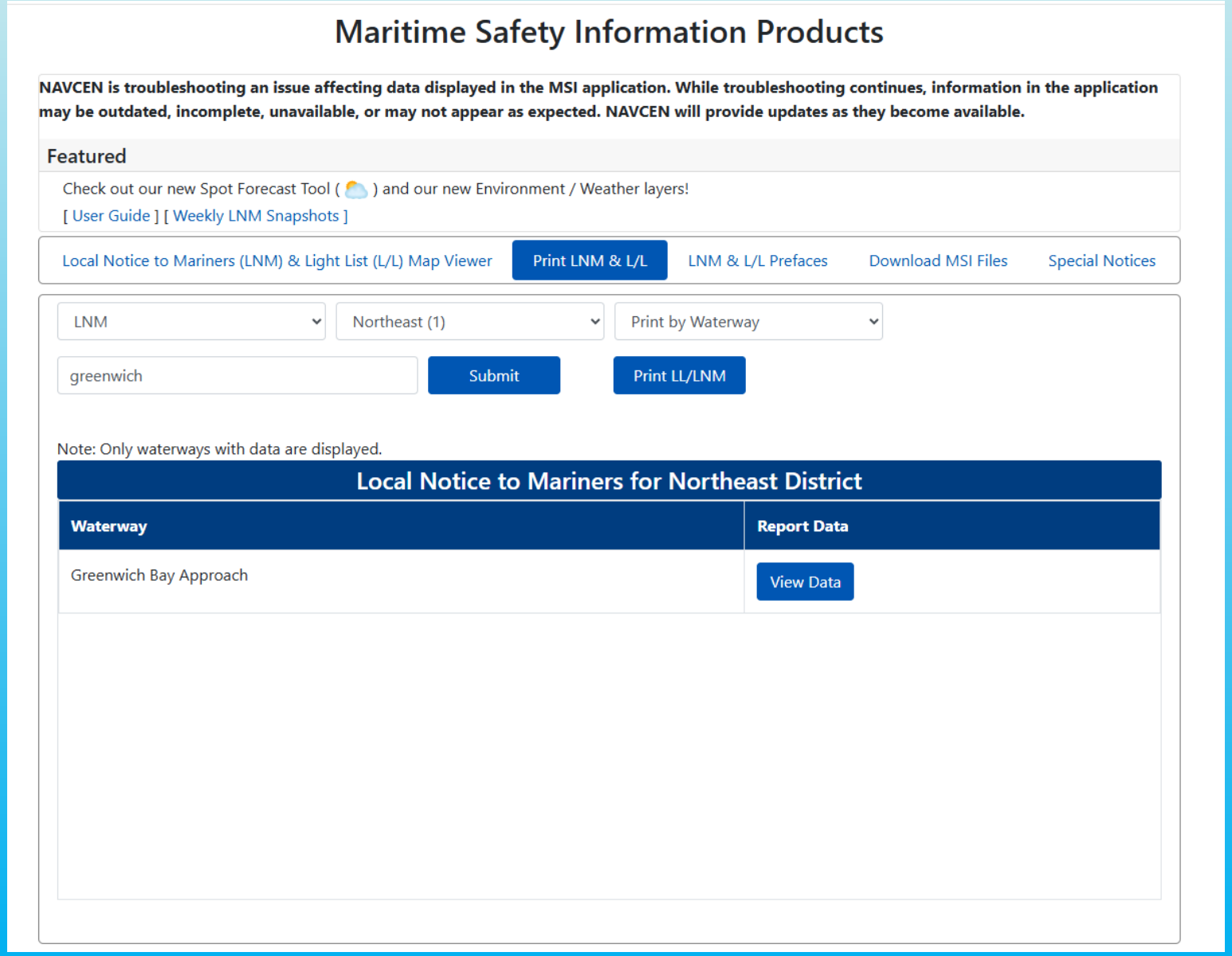
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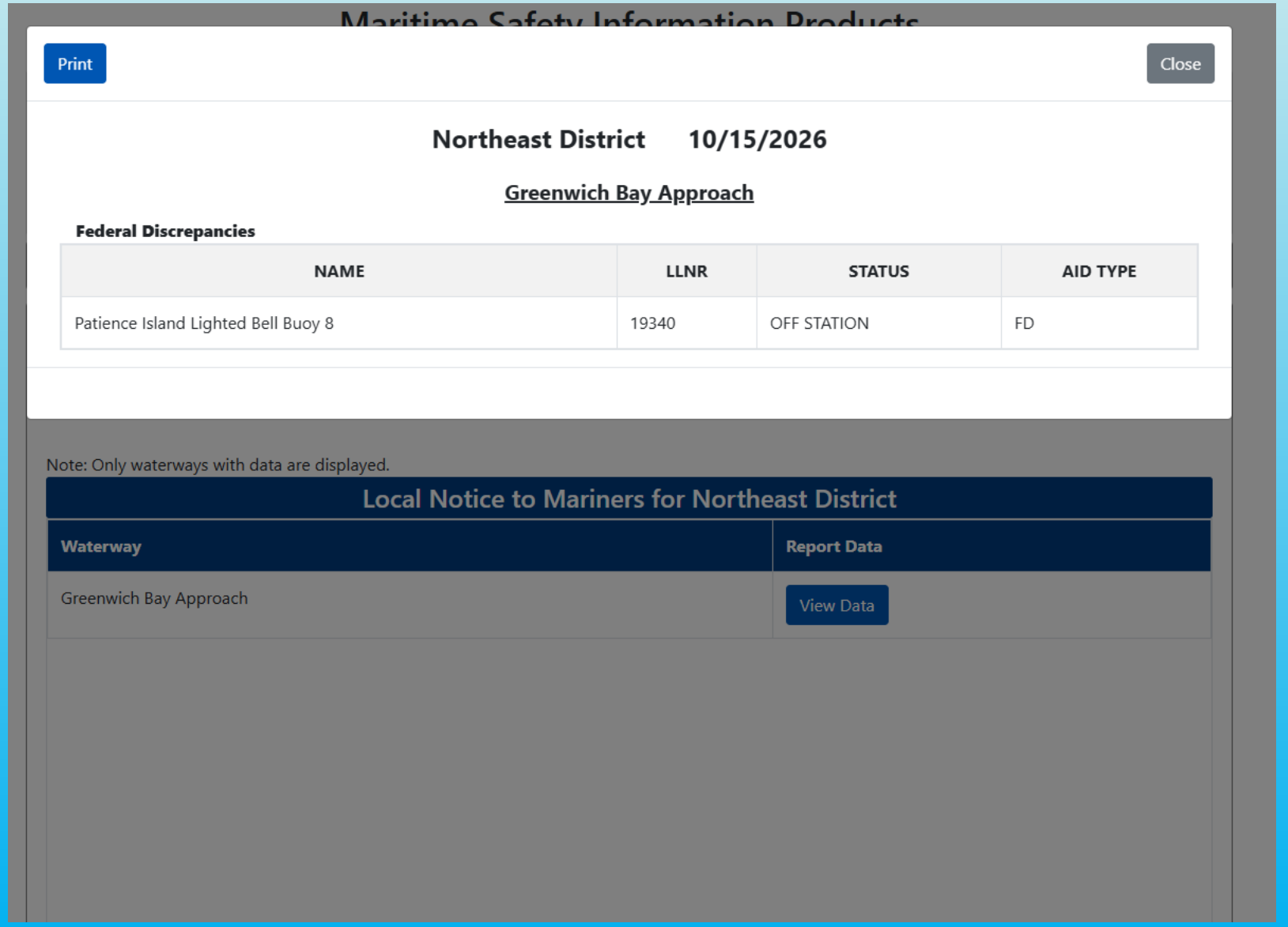
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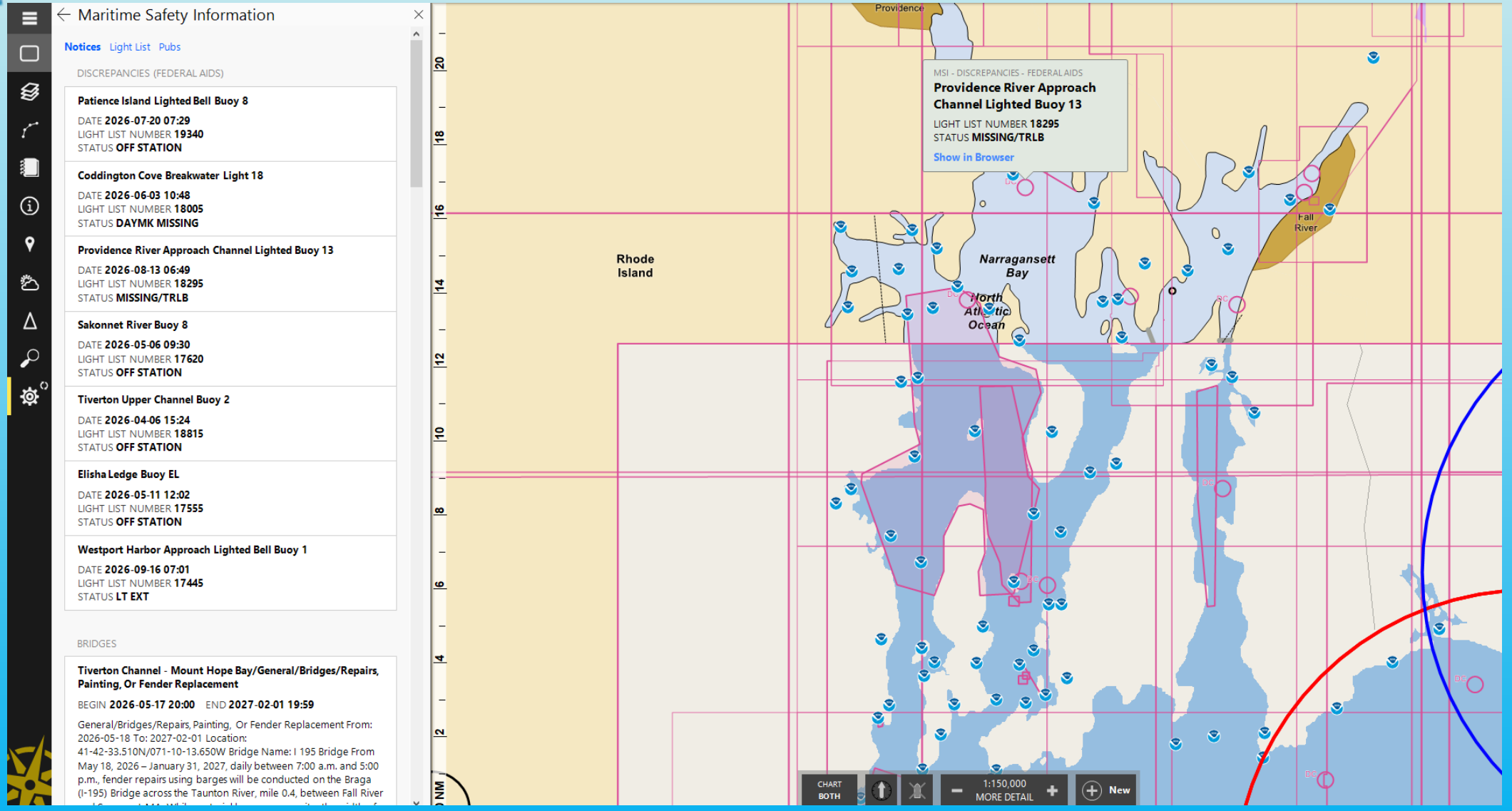
Light List Geojson Files

Light List District 01_1.geojson
Light List District 01_2.geojson
Light List District 01_3.geojson
Light List District 01_4.geojson
Light List District 01_5.geojson
Light List District 01_6.geojson
Light List District 01_7.geojson
Light List District 01_8.geojson
Light List District 01_9.geojson
Light List District 01_10.geojson
Light List District 02_1.geojson
Light List District 02_2.geojson
Light List District 02_3.geojson
Light List District 02_4.geojson
Light List District 05_1.geojson
Light List District 05_2.geojson
Light List District 05_3.geojson
Light List District 05_4.geojson
Light List District 05_5.geojson
Light List District 05_6.geojson
Light List District 05_7.geojson
Light List District 05_8.geojson
Light List District 05_9.geojson
Light List District 07_1.geojson
Light List District 07_2.geojson
Light List District 07_3.geojson
Light List District 07_4.geojson
Light List District 07_5.geojson
Light List District 07_6.geojson

LNM Geojson Files

Autonomous Vessel Operations Line 1.geojson
Autonomous Vessel Operations Point 1.geojson
Autonomous Vessel Operations Polygon 1.geojson
Bridges Polygon 1.geojson
Bridges 1.geojson
Buoys 1.geojson
Buoys 2.geojson
Buoys 3.geojson
Buoys 4.geojson
Buoys 5.geojson
Buoys 6.geojson
Buoys 7.geojson
Buoys 8.geojson
Buoys 9.geojson
Buoys 10.geojson
Buoys 11.geojson
Buoys 12.geojson
Advance Notice of Change 1.geojson
Proposed Notice of Change 1.geojson
Changes 1.geojson
Discrepant Federal Aids Corrected 1.geojson
Discrepant Federal Aids 1.geojson
Discrepant Federal Aids 2.geojson
Discrepant Federal Aids 3.geojson
Discrepant Private Aids Corrected 1.geojson
Discrepant Private Aids 1.geojson
Discrepant Private Aids 2.geojson
Discrepant Private Aids 3.geojson
Hazards to Navigation Line 1.geojson

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Questions?