

Appendices

Appendix A: 2017 Flood Damage Assessment

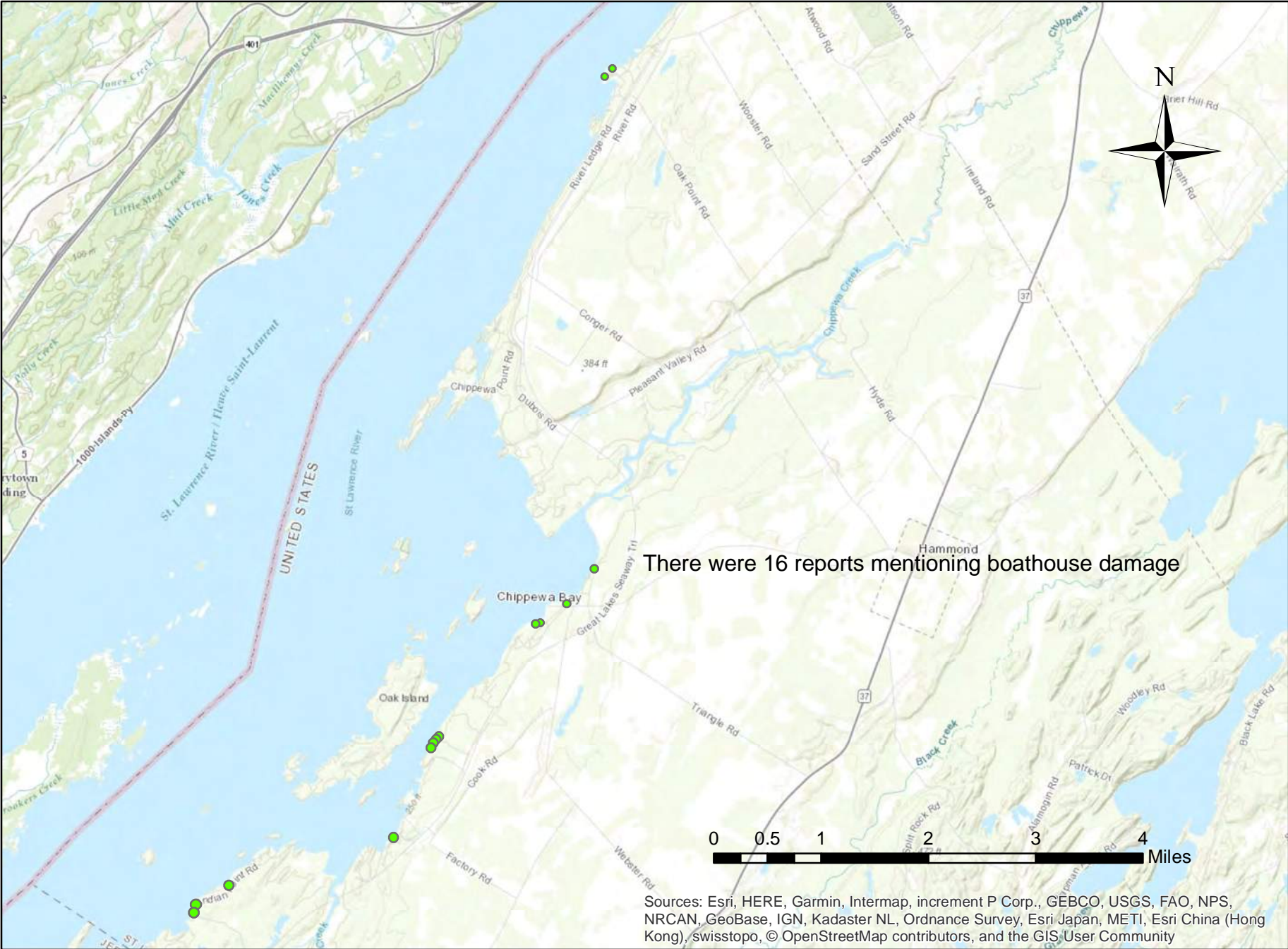
DAMAGE ASSESSMENT 2017 FLOOD EVENT



IJC VIDEO:

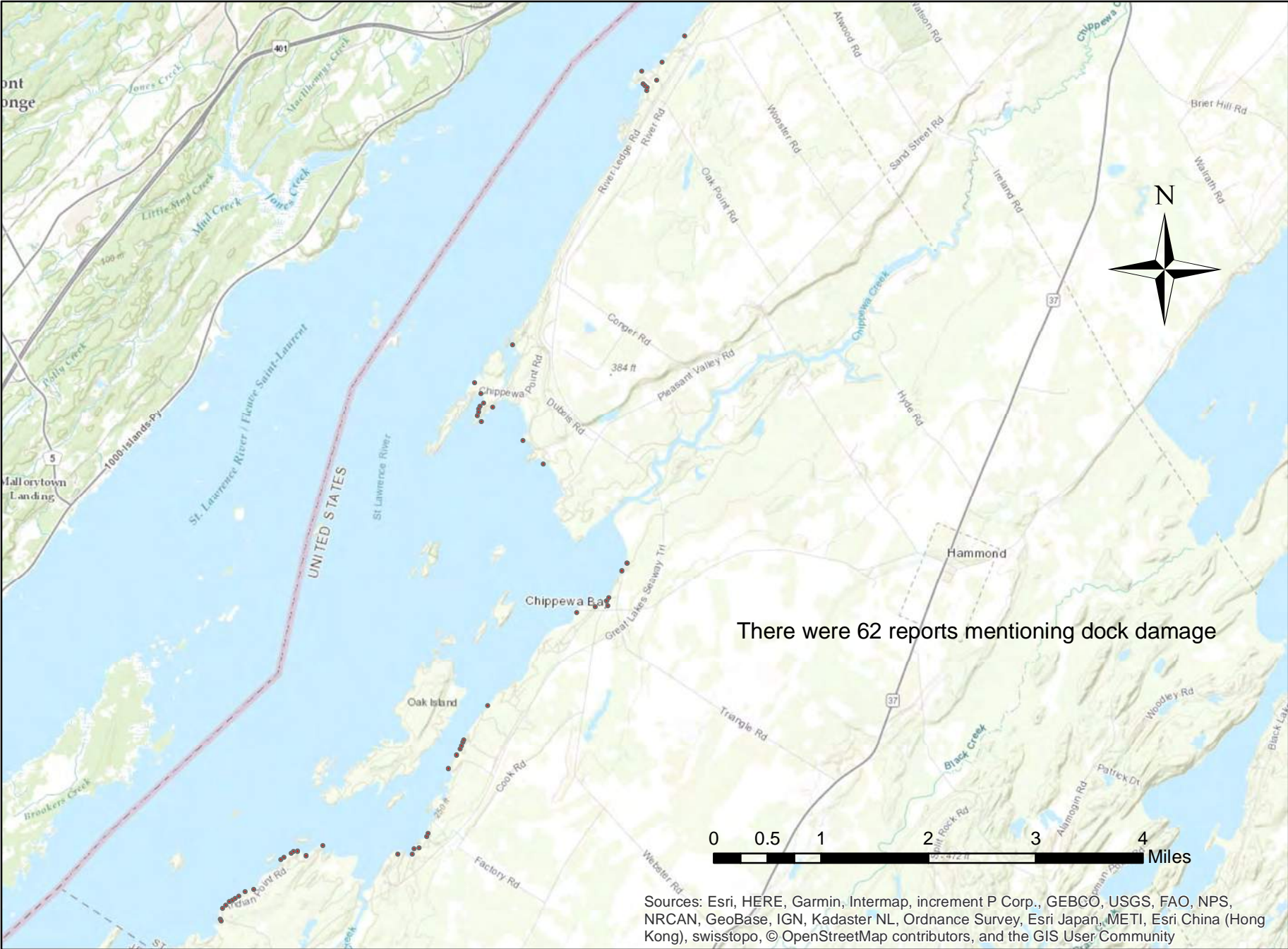
<https://vimeo.com/275669603>

Reported Boathouse Damage 2017- Hammond



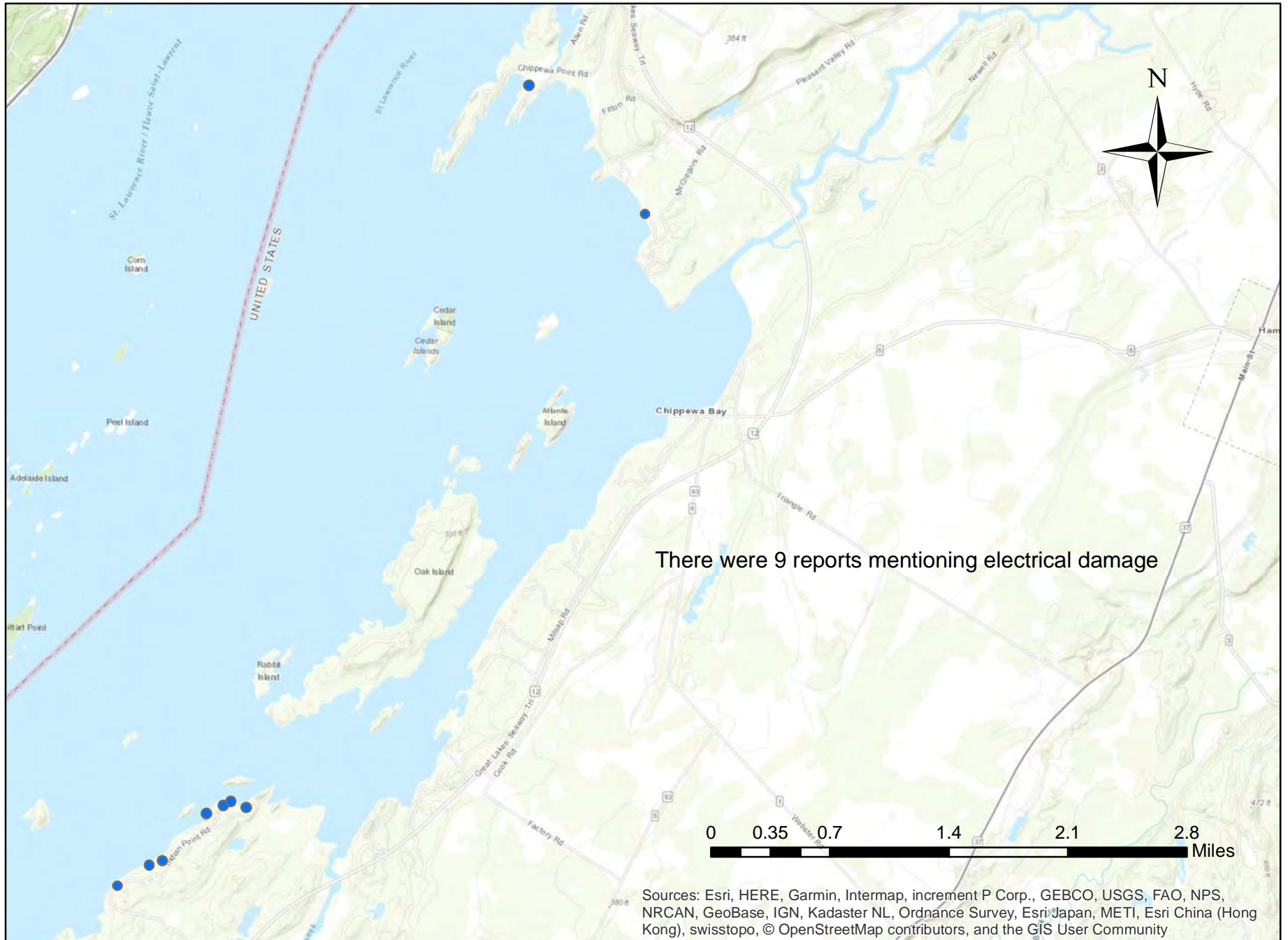
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Reported Dock Damage 2017- Hammond

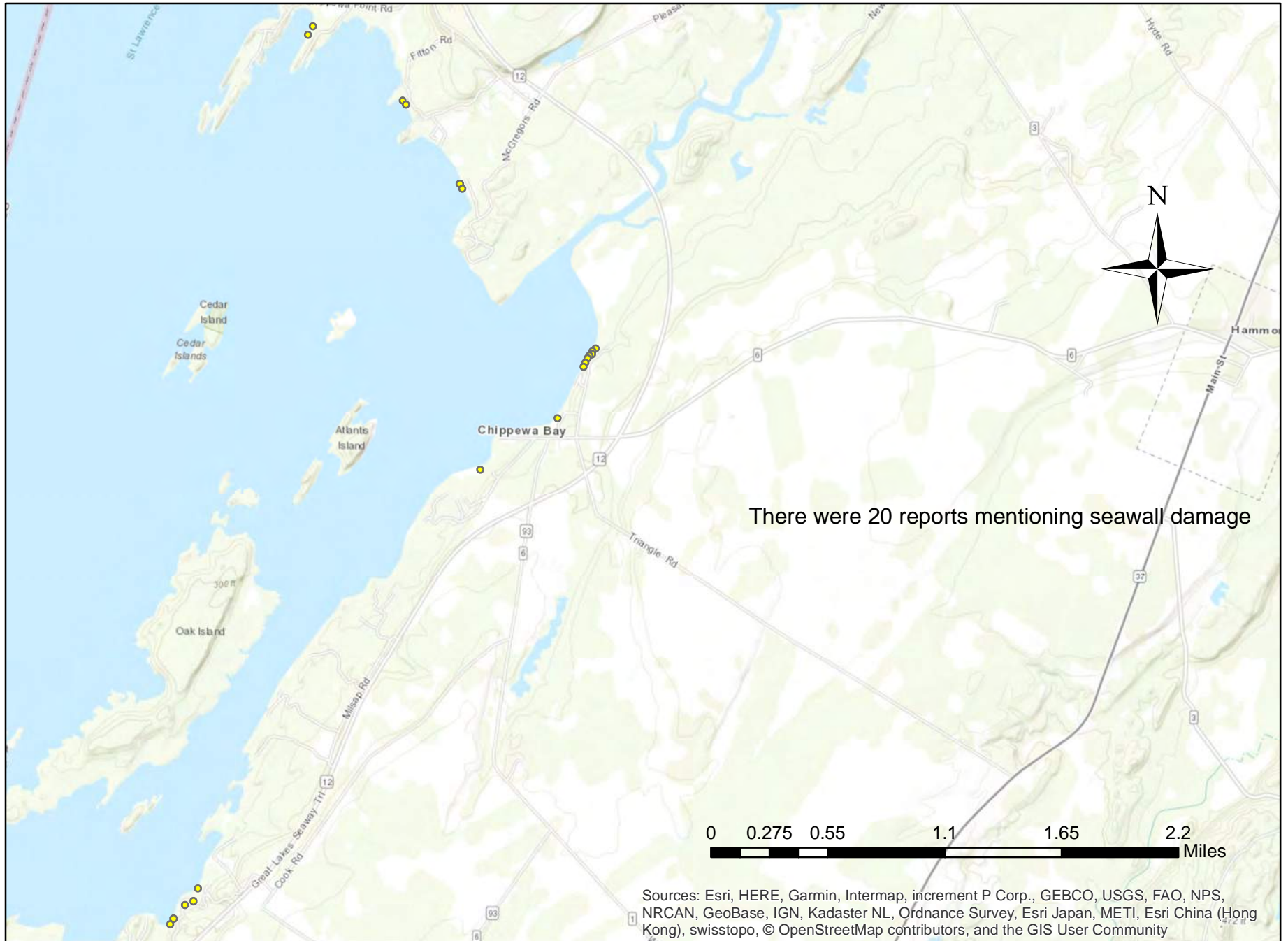


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

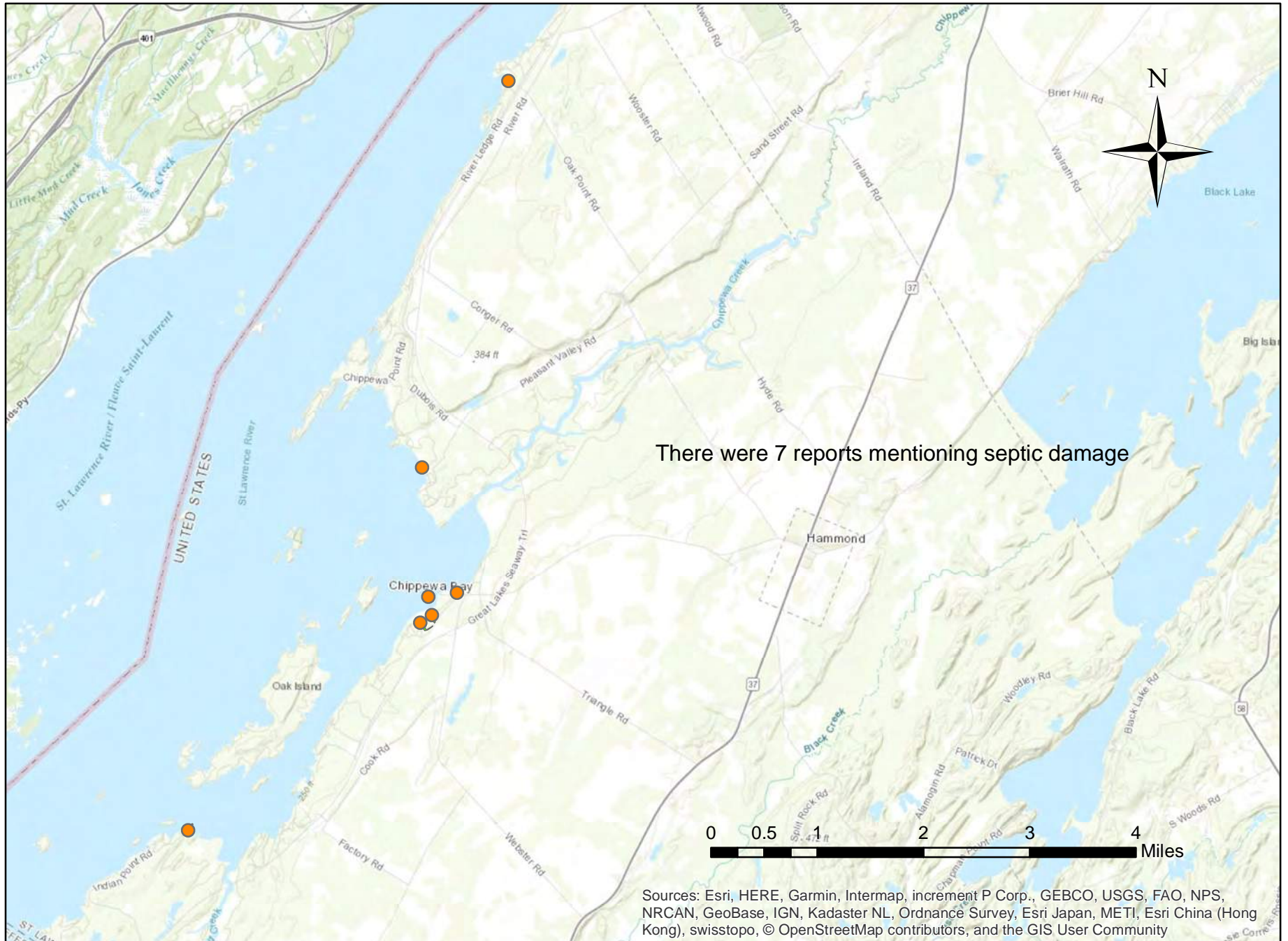
Reported Electrical Damage 2017- Hammond



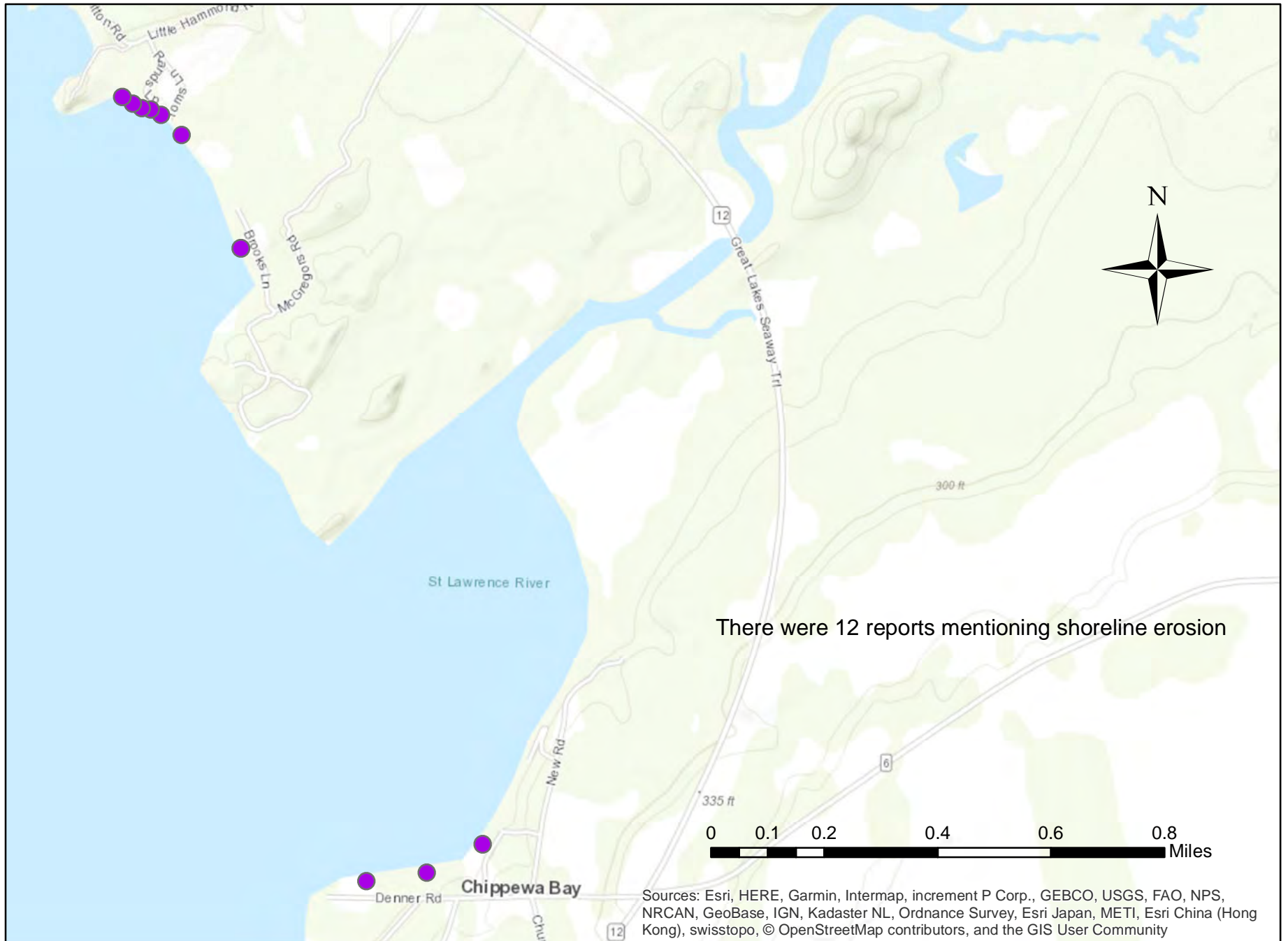
Reported Seawall Damage 2017- Hammond



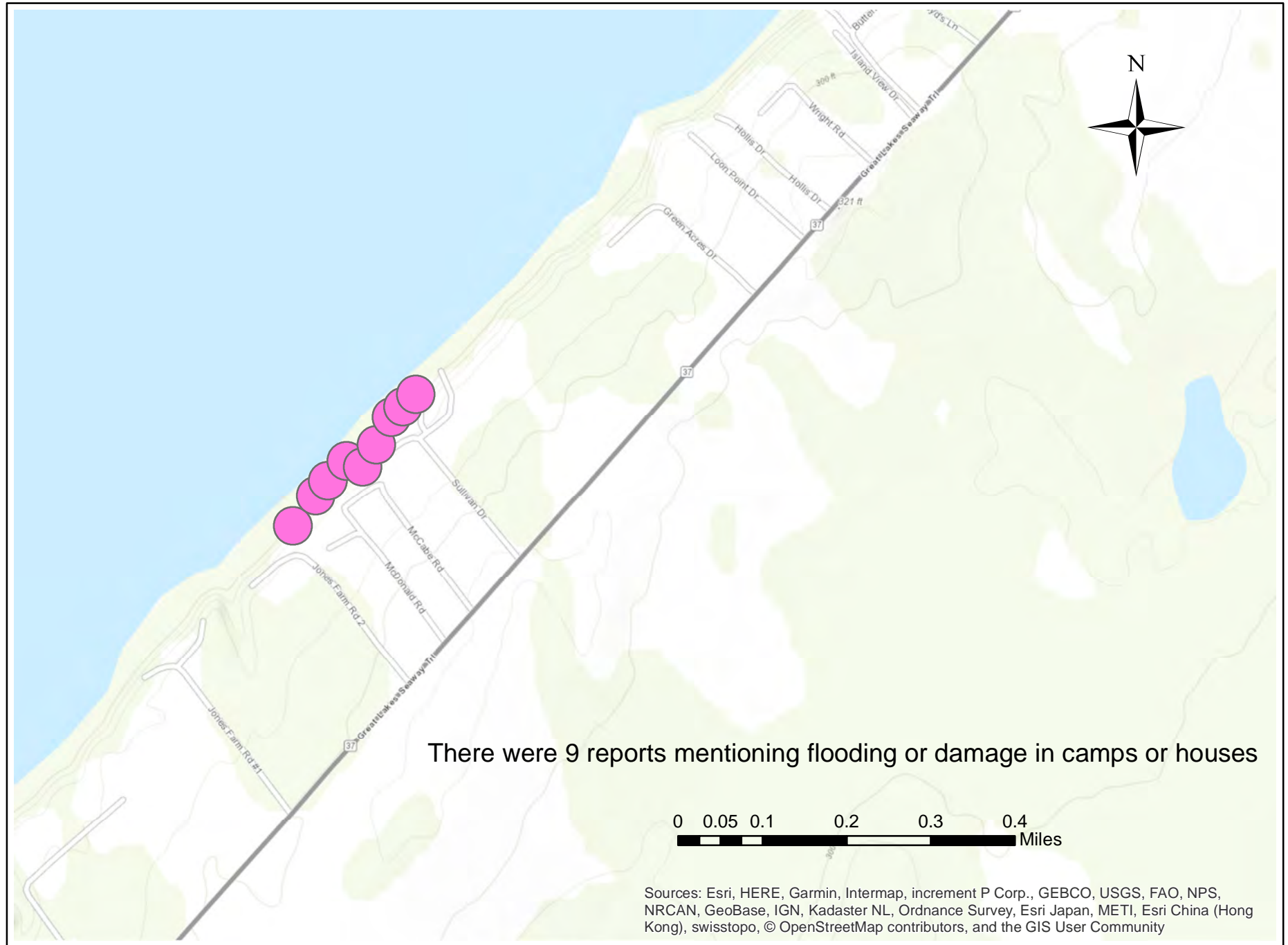
Reported Septic Damage 2017- Hammond



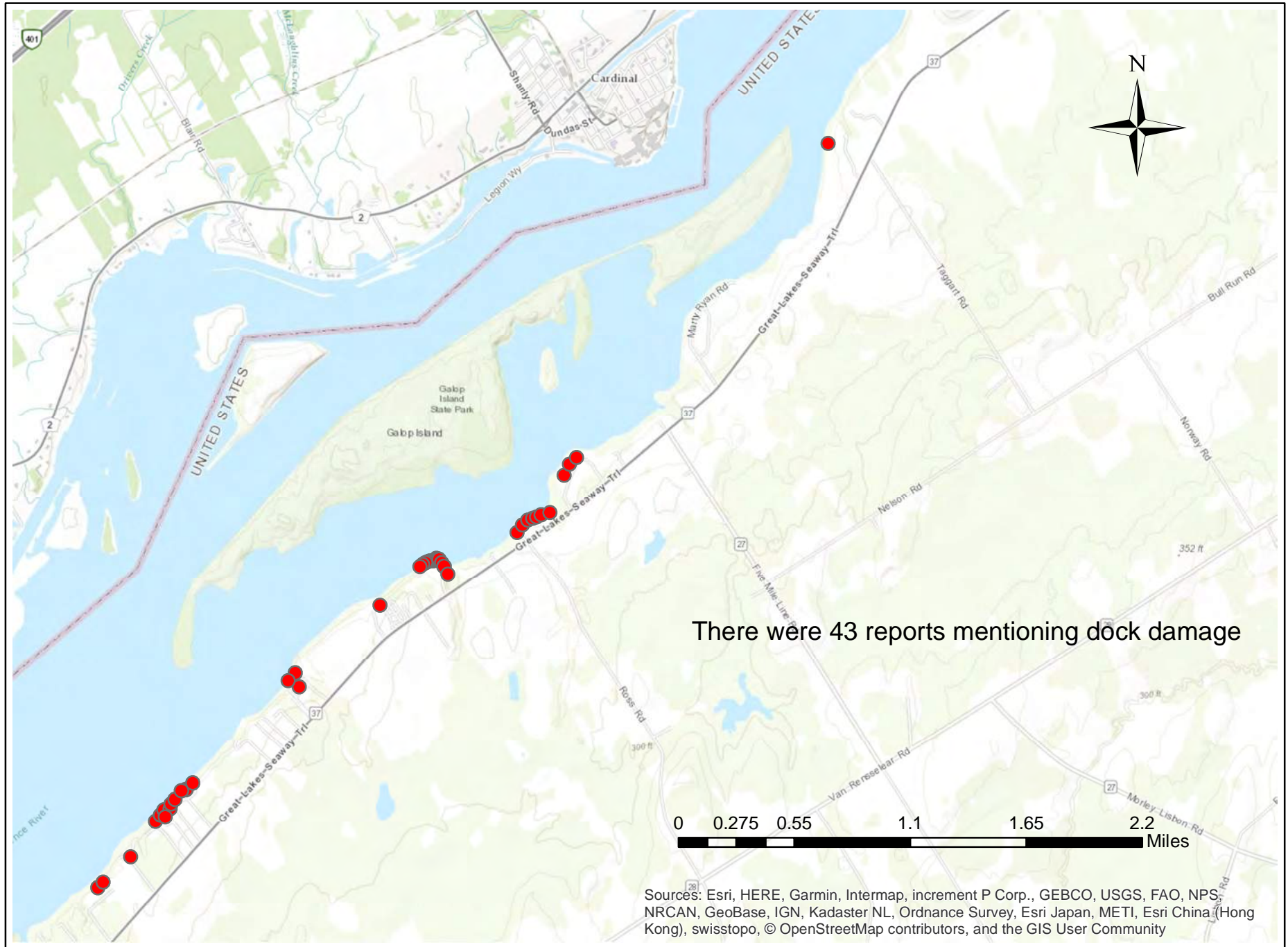
Reported Shoreline Erosion 2017- Hammond



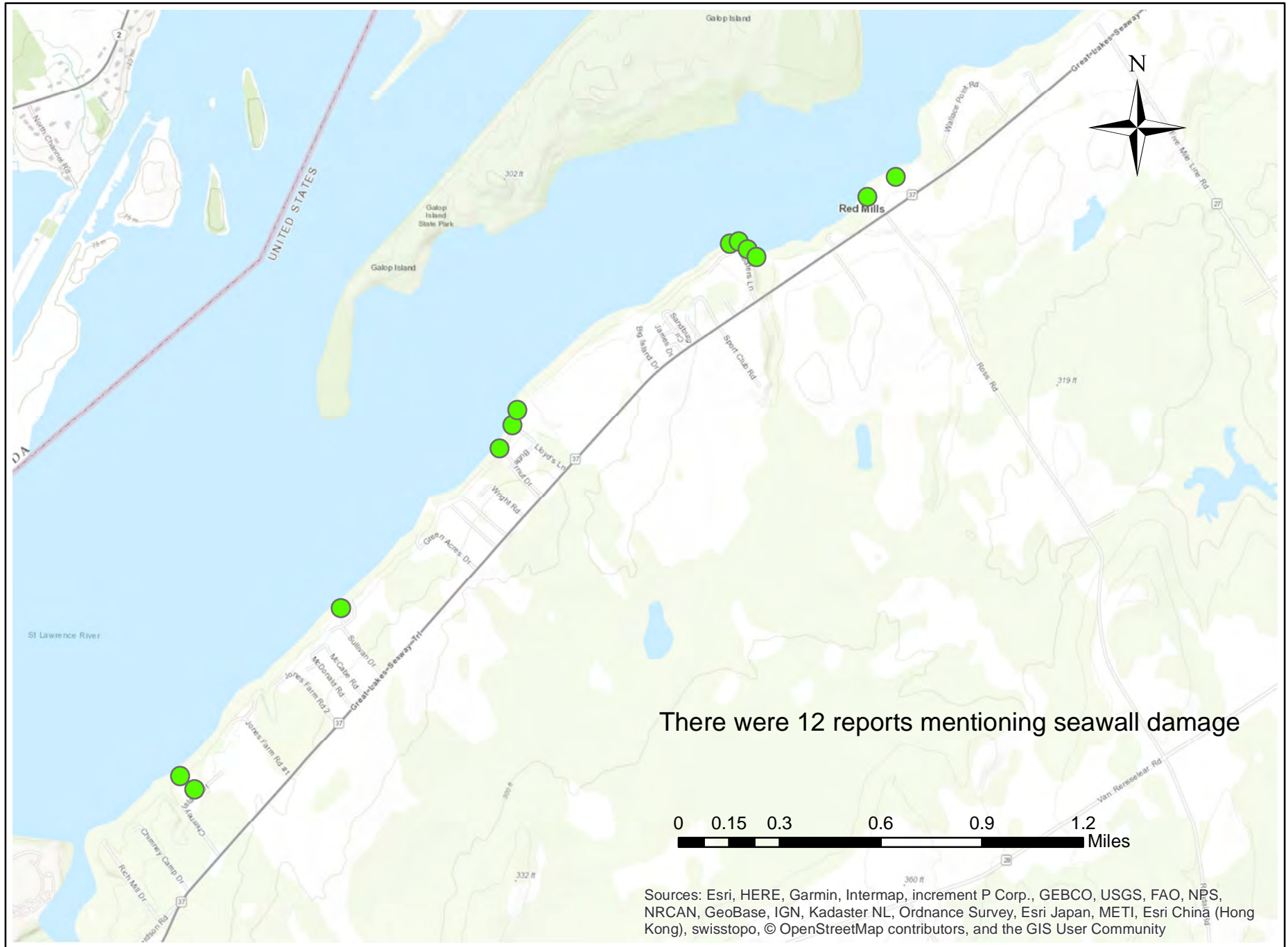
Reports of Camp/House Flooding or Damage 2017- Town of Lisbon



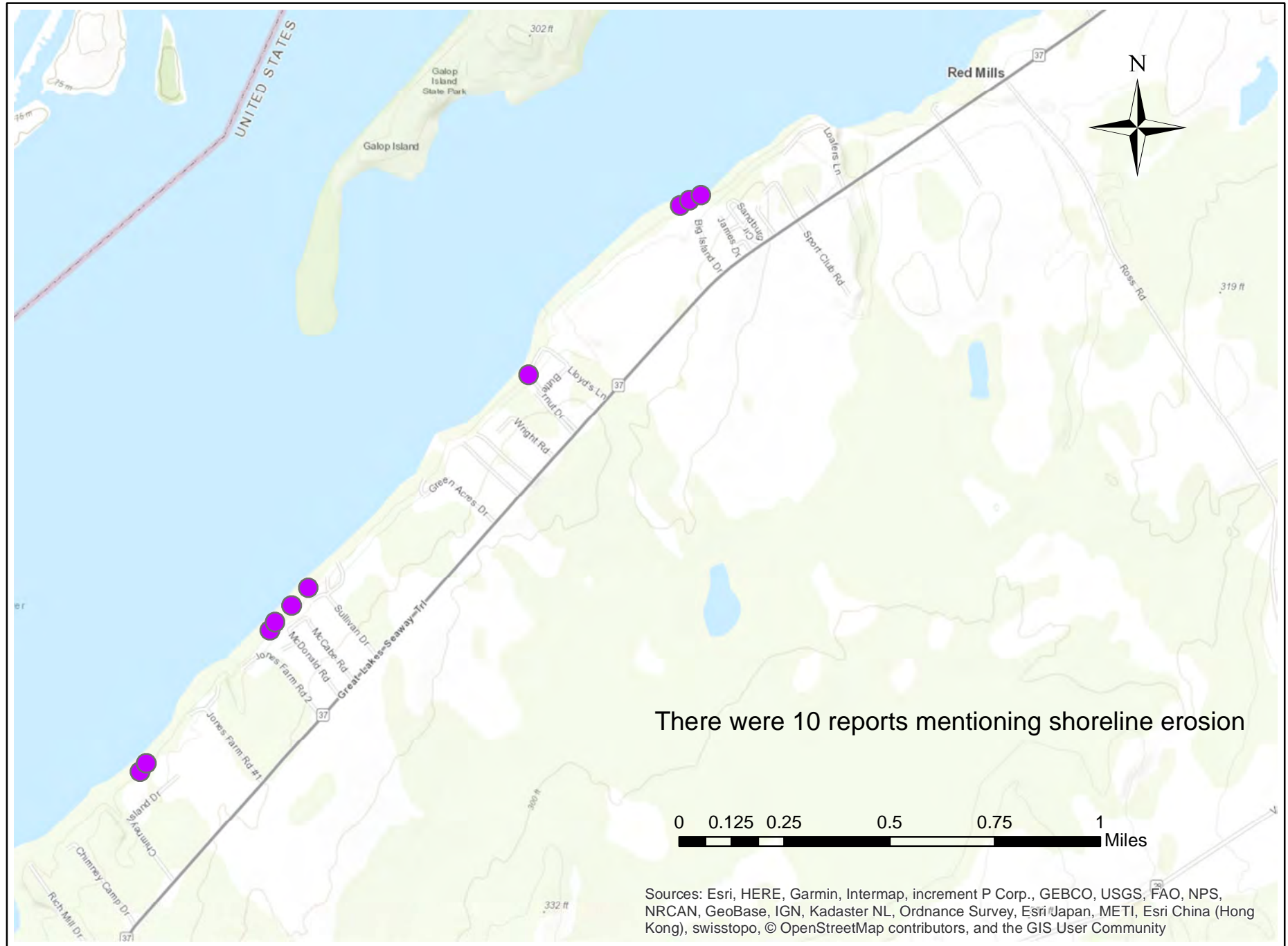
Reports of Dock Damage 2017- Town of Lisbon



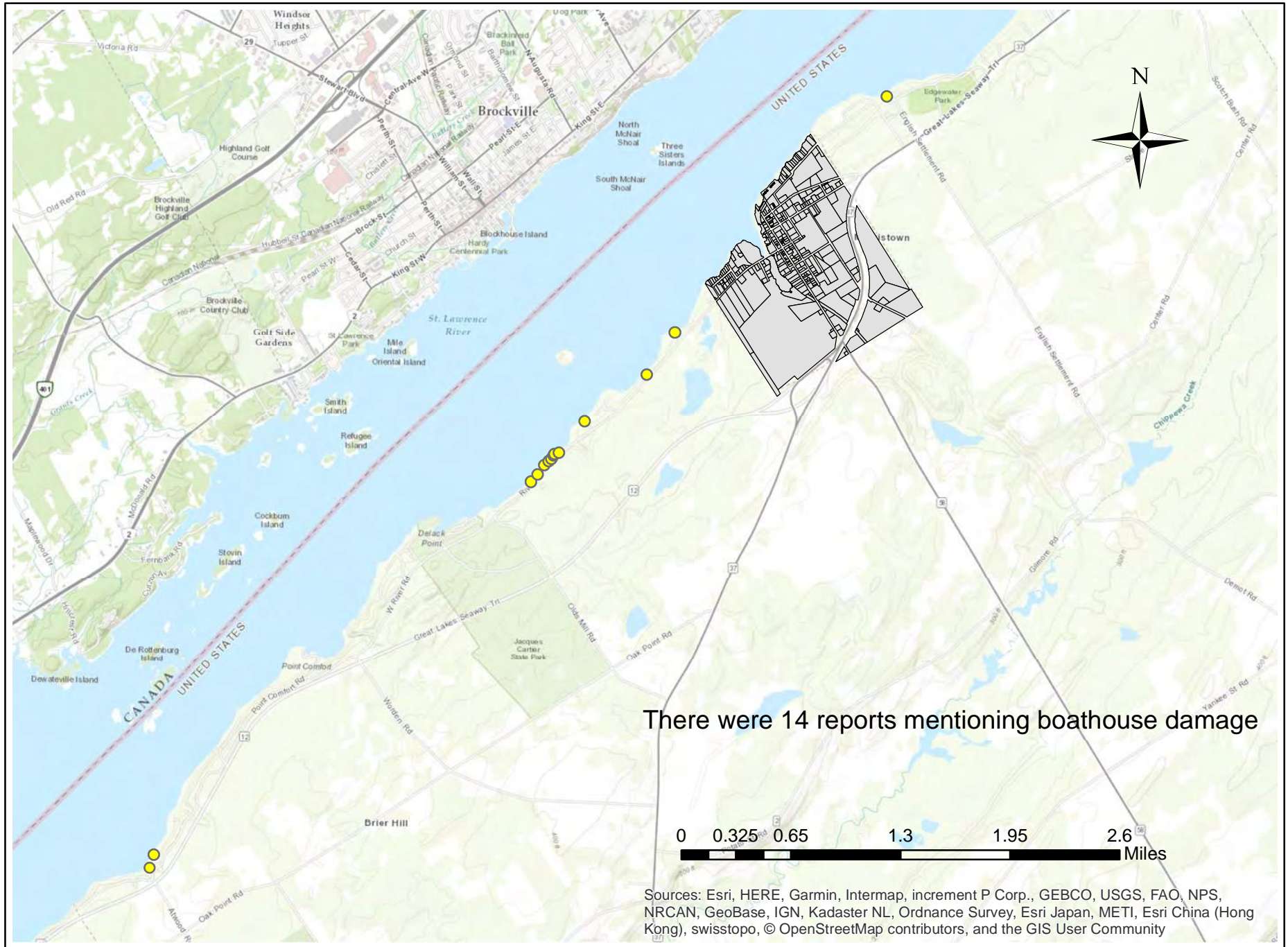
Reports of Seawall Damage 2017- Town of Lisbon



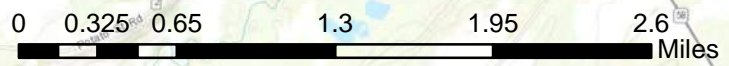
Reports of Shoreline Erosion 2017- Town of Lisbon



Reports of Boathouse Damage 2017- Town of Morristown

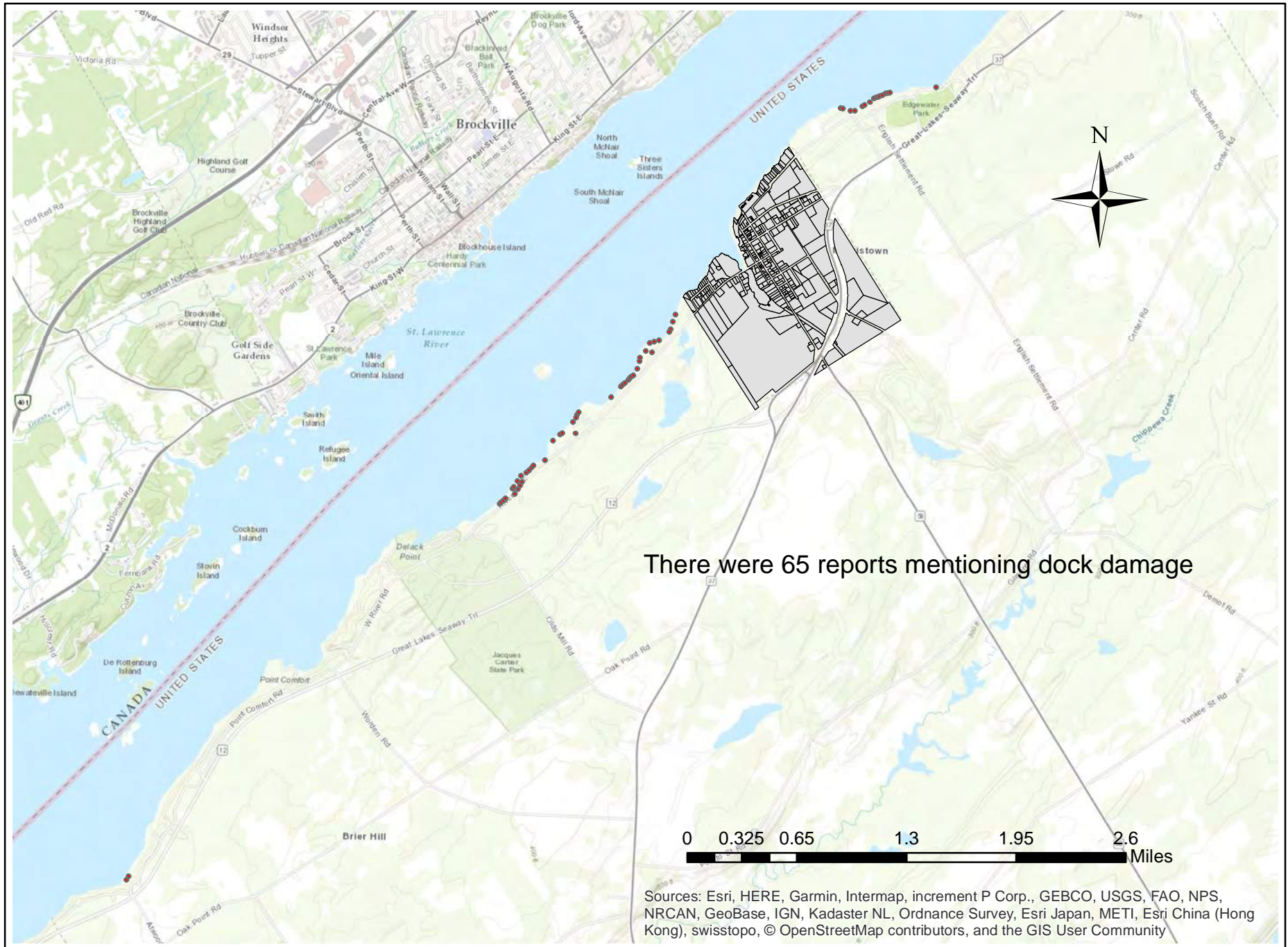


There were 14 reports mentioning boathouse damage

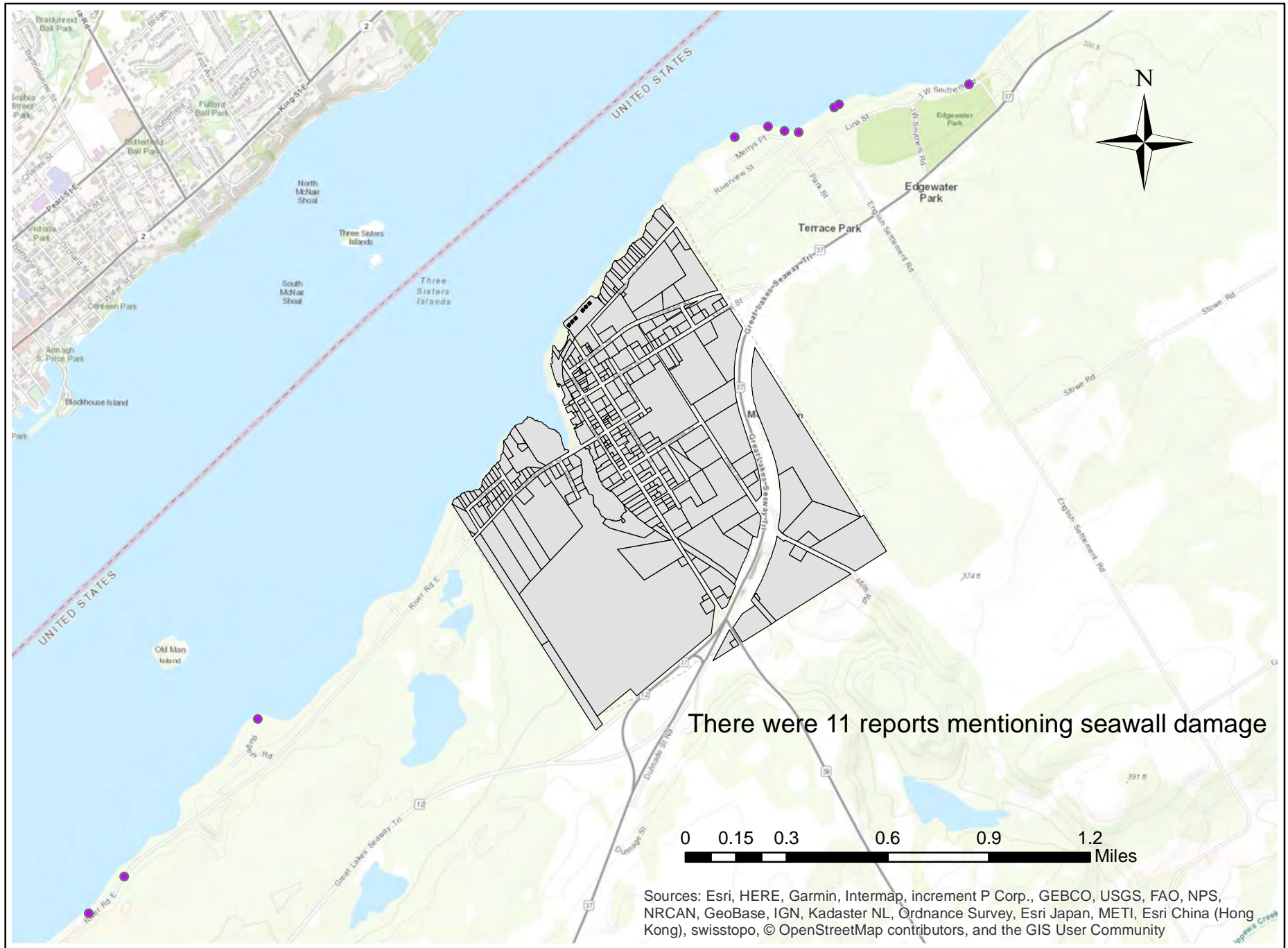


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Reports of Dock Damage 2017- Town of Morristown



Reports of Seawall Damage 2017- Town of Morrissetown

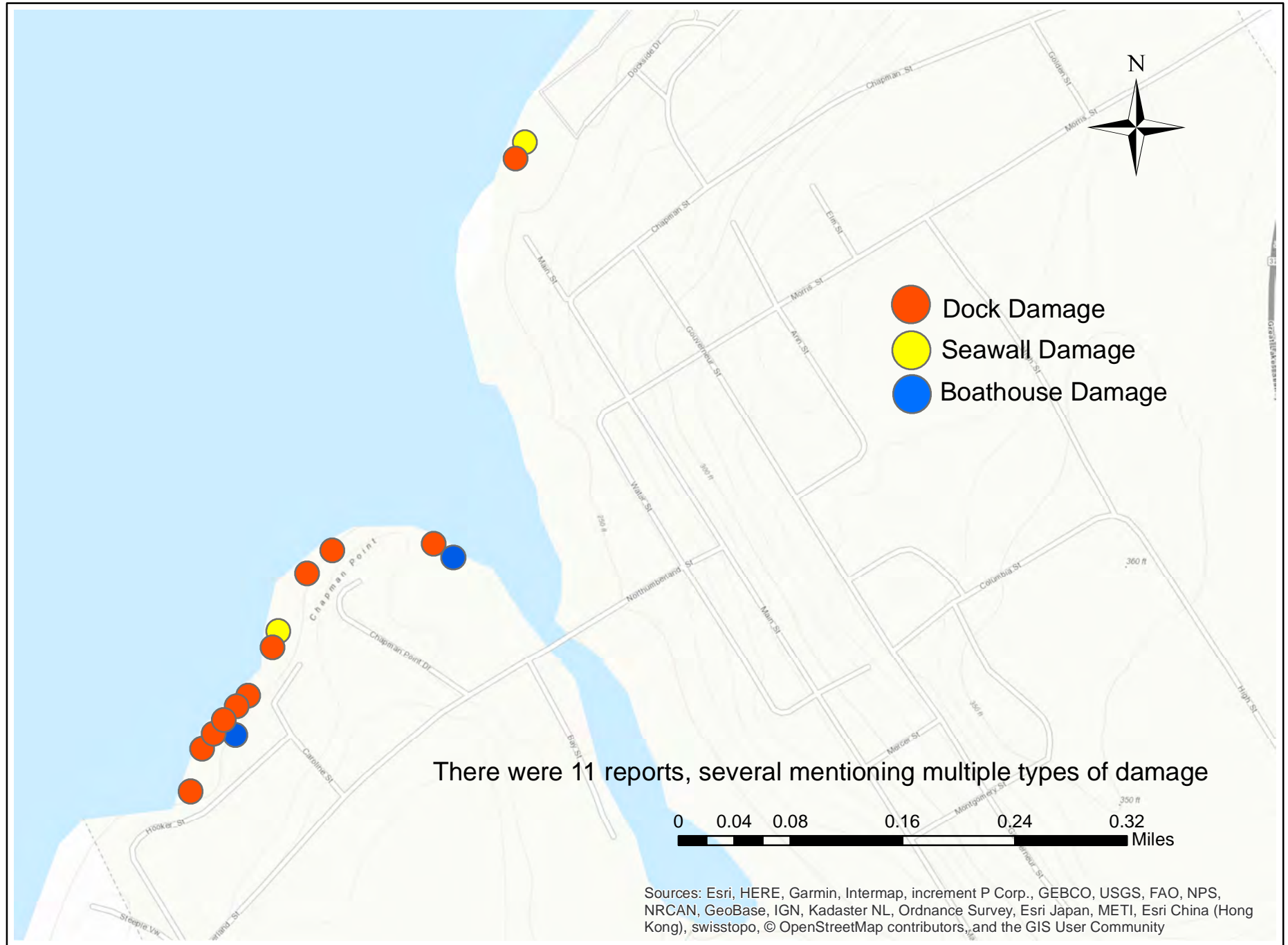


There were 11 reports mentioning seawall damage

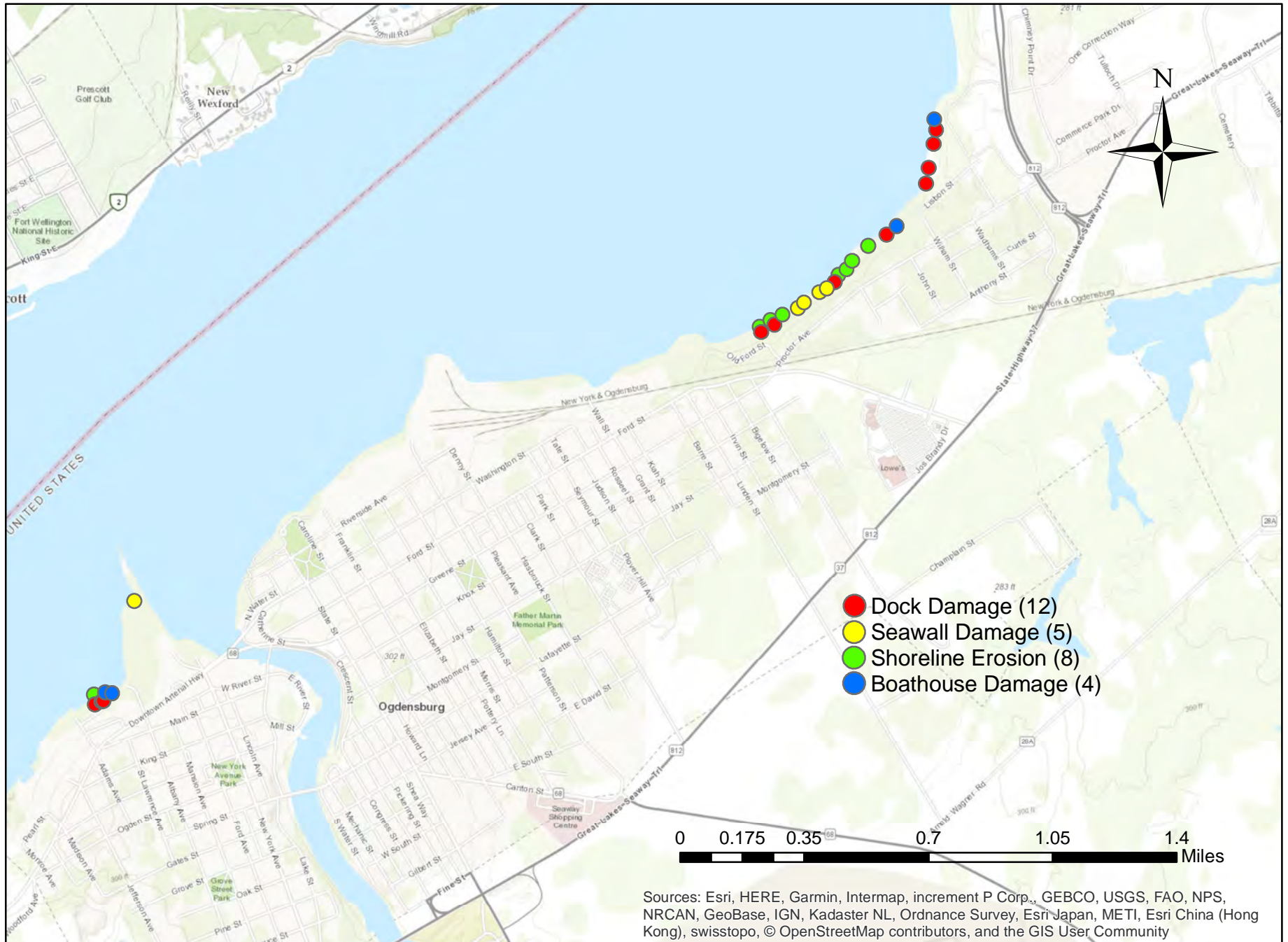
0 0.15 0.3 0.6 0.9 1.2 Miles

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

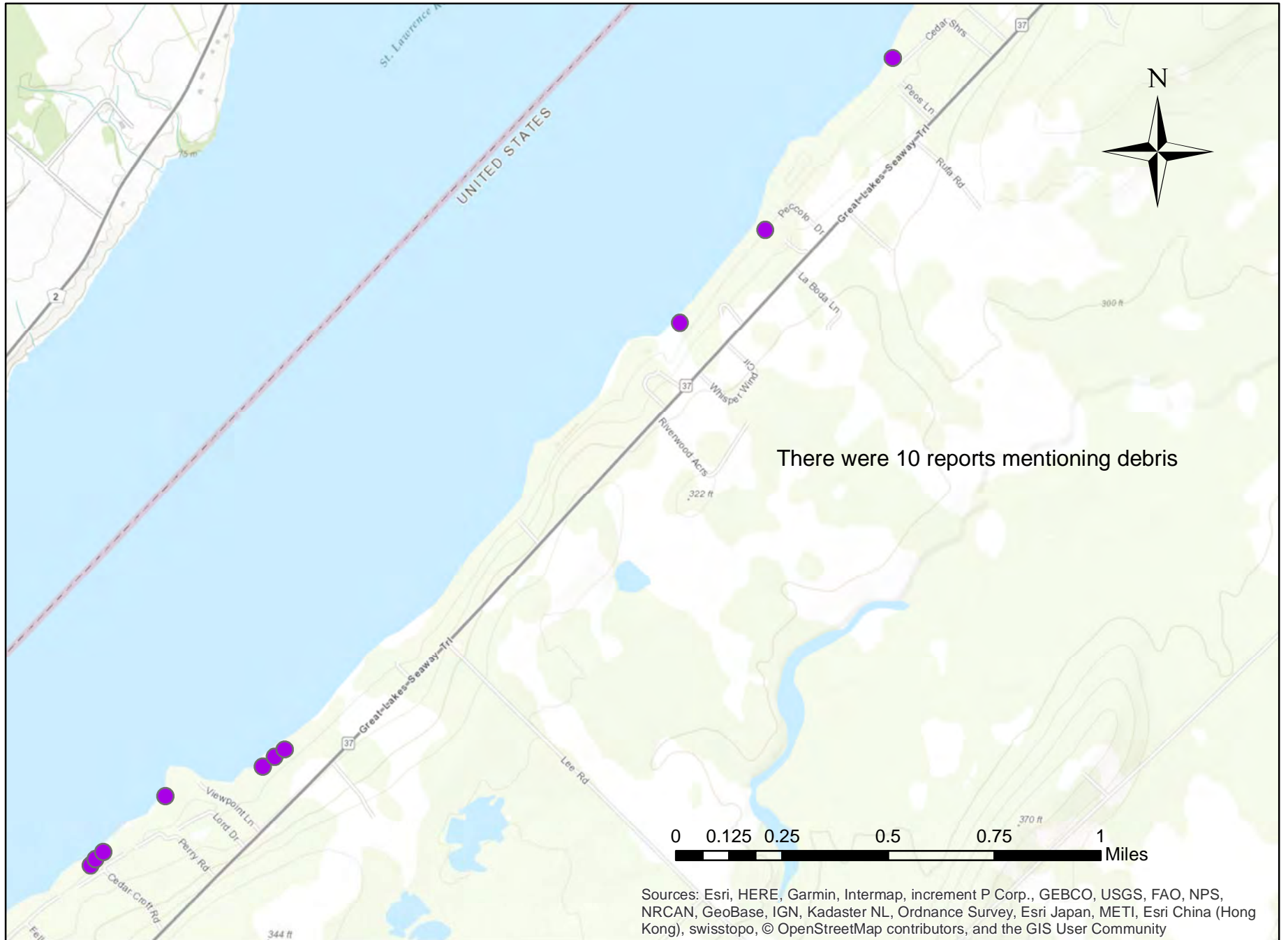
Damage Reports 2017- Village of Morristown



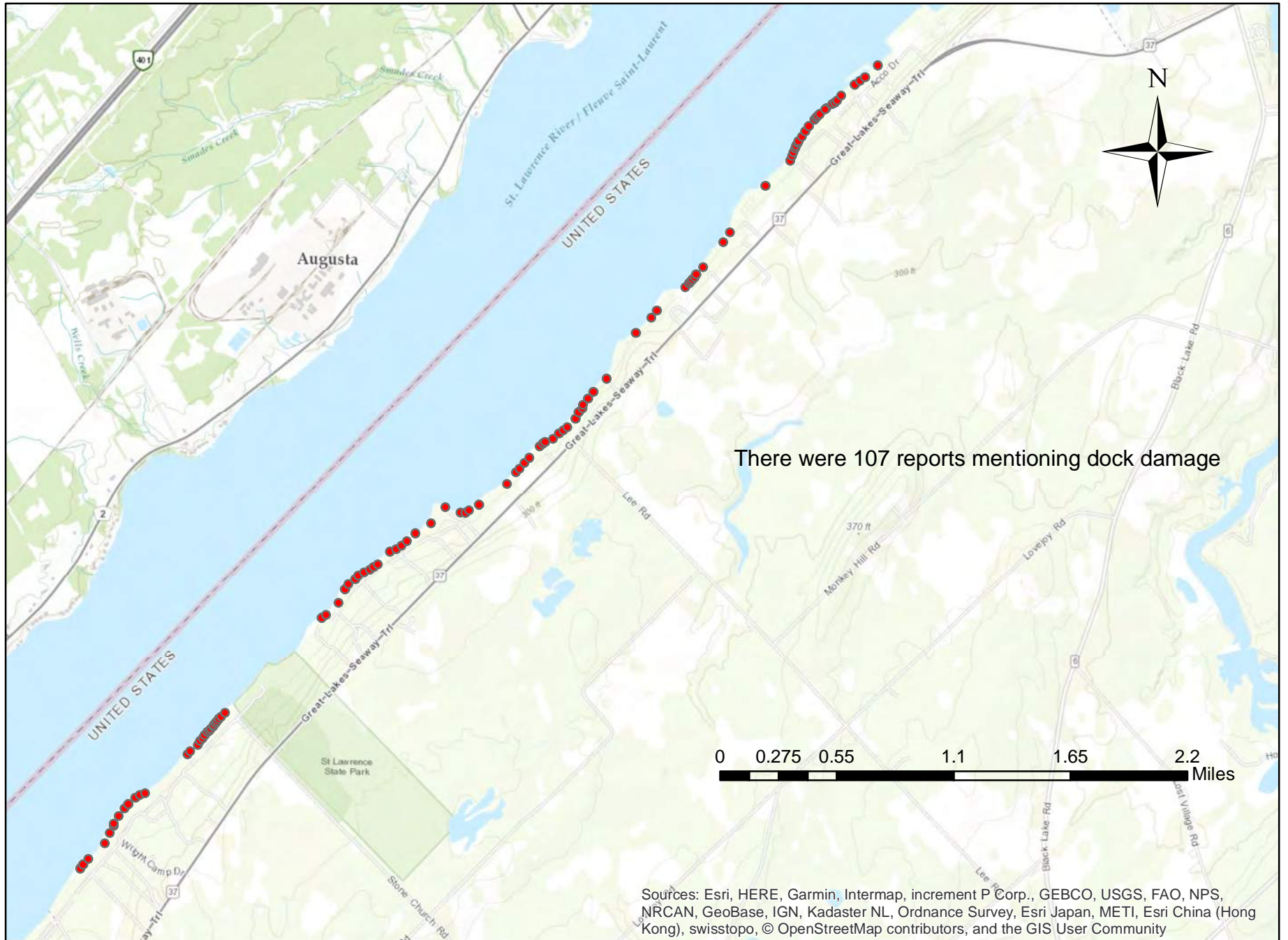
Flood Damage Reports 2017- Ogdensburg



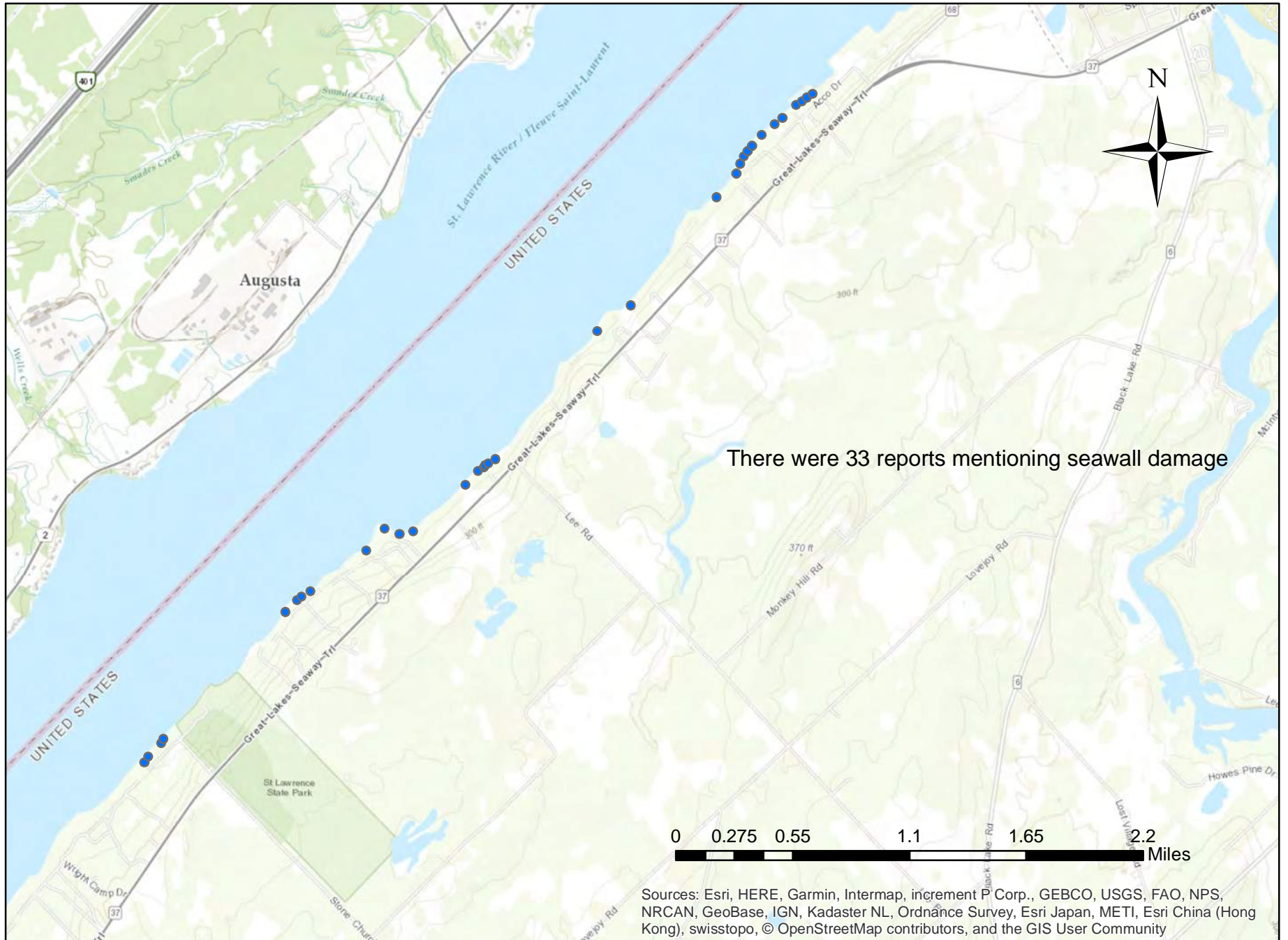
Debris Reports 2017- Oswegatchie



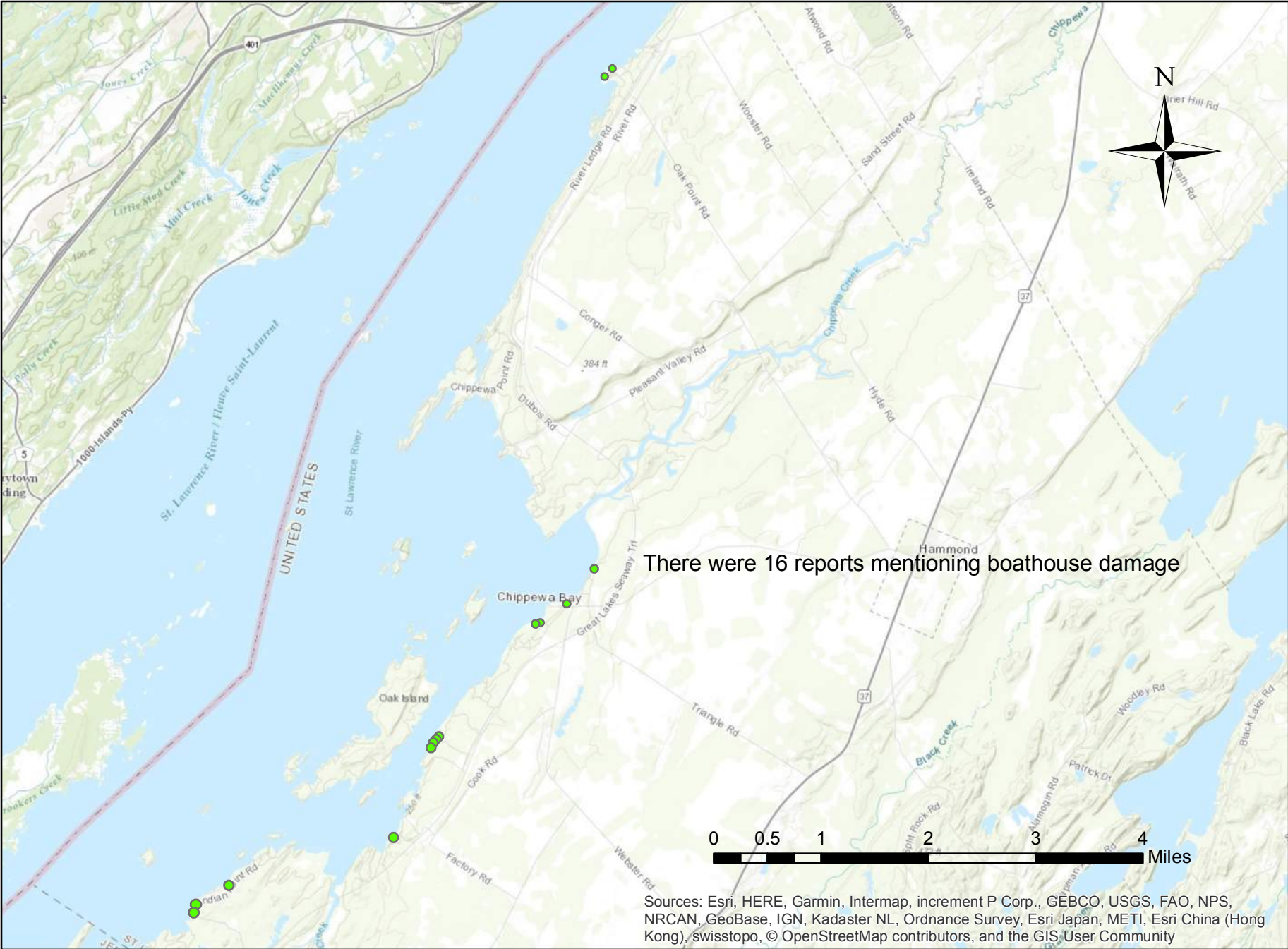
Reported Dock Damage 2017- Oswegatchie



Reported Seawall Damage 2017- Oswegatchie



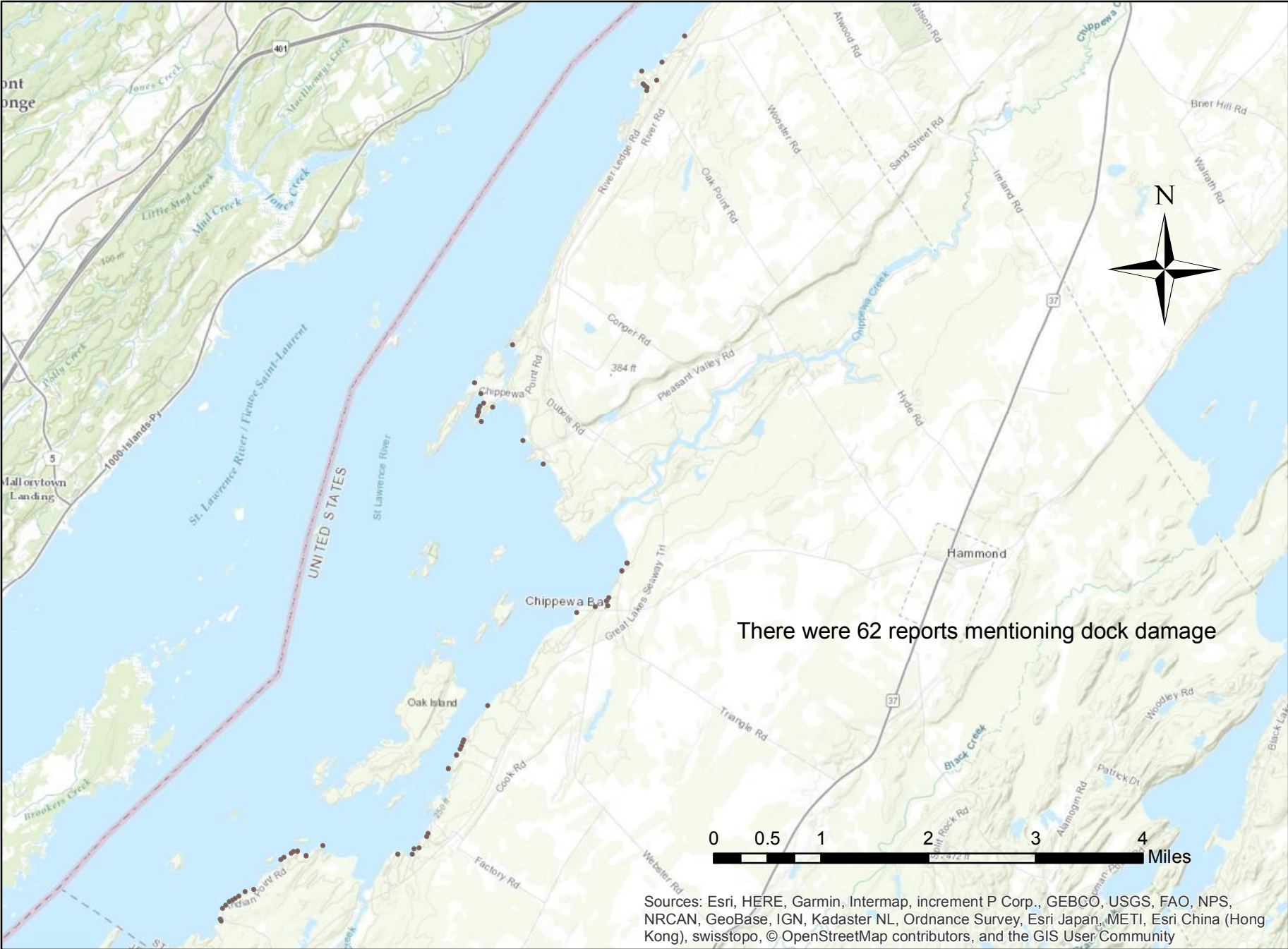
Reported Boathouse Damage 2017- Hammond



There were 16 reports mentioning boathouse damage

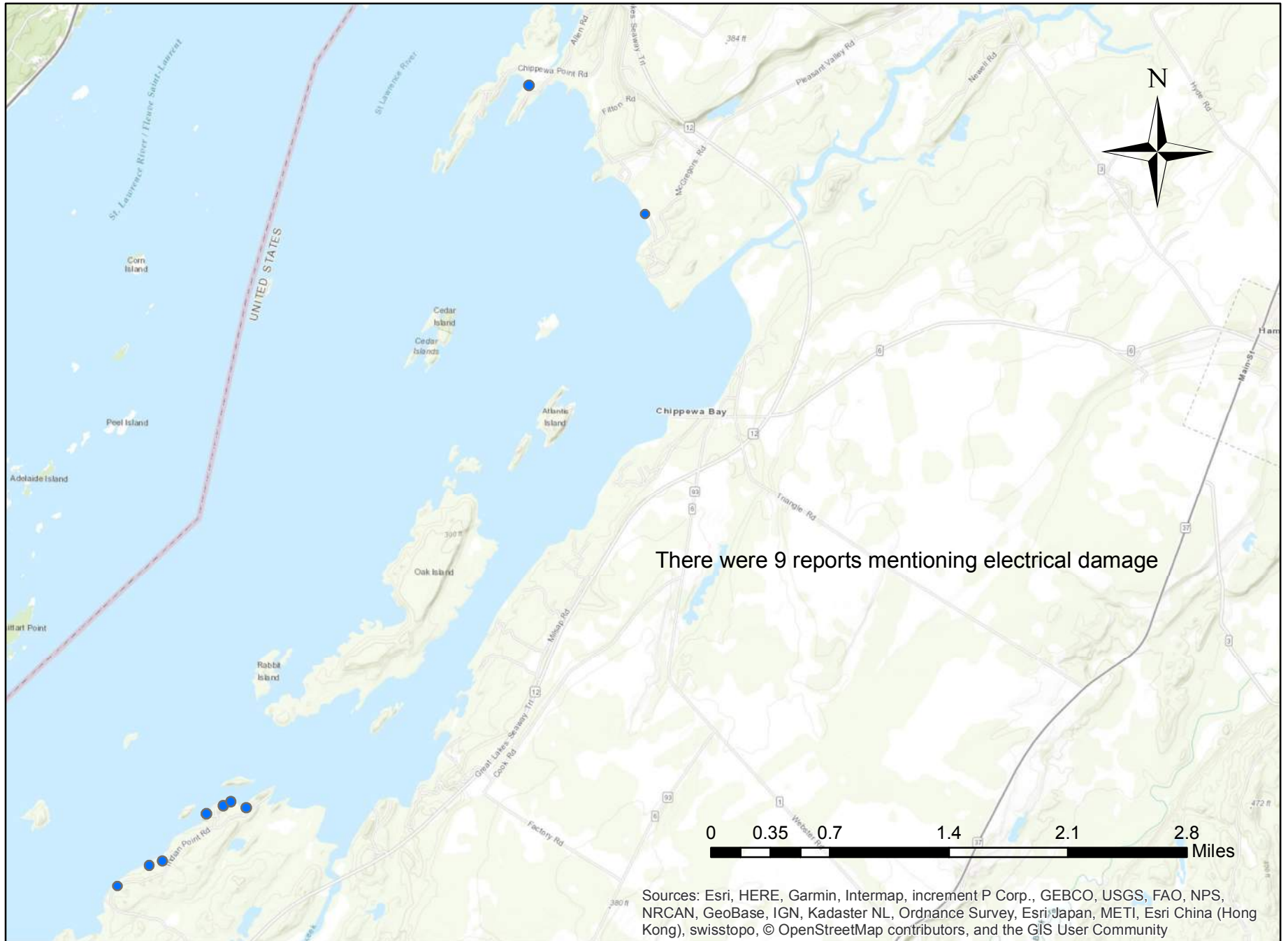
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Reported Dock Damage 2017- Hammond



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

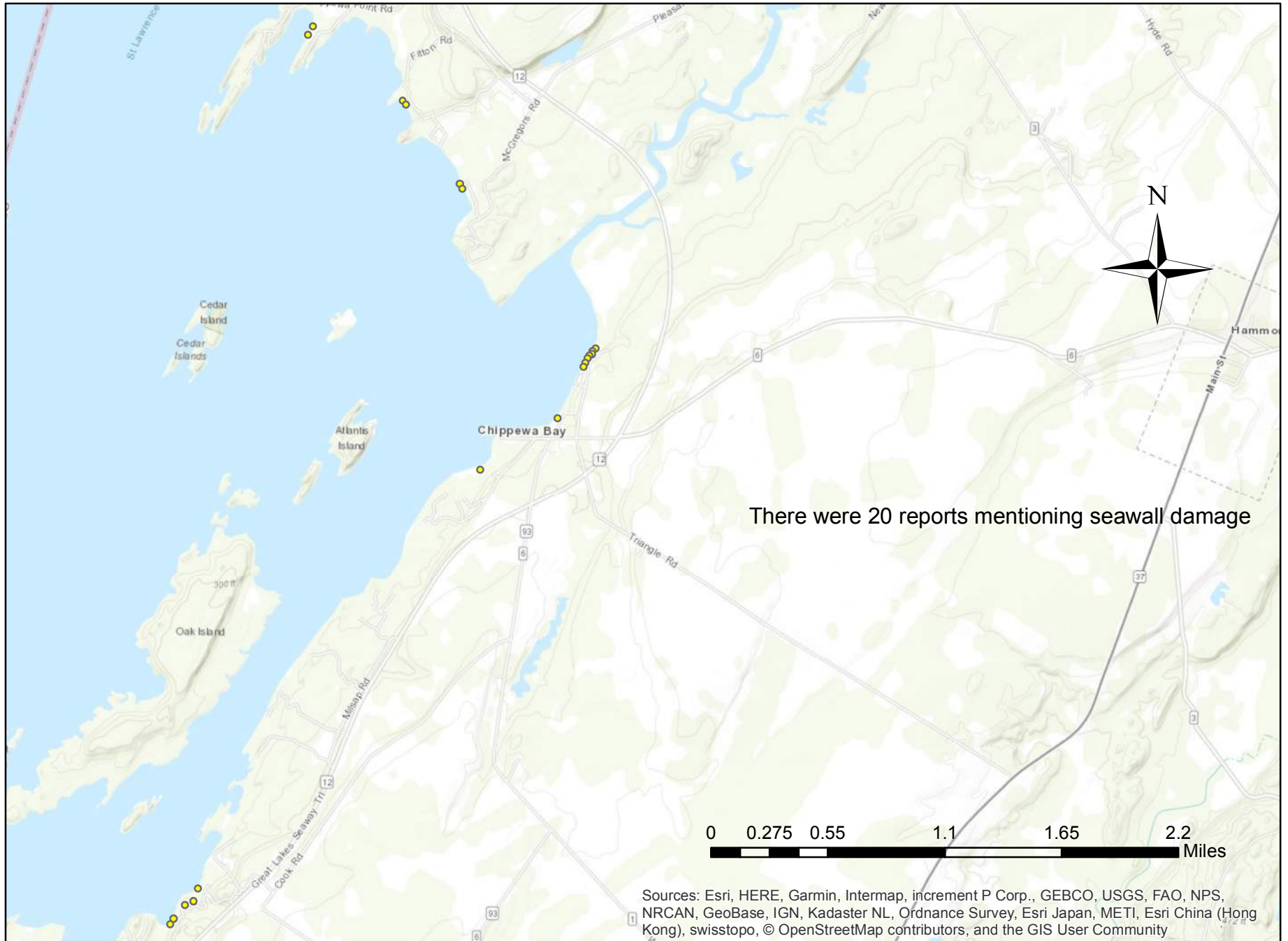
Reported Electrical Damage 2017- Hammond



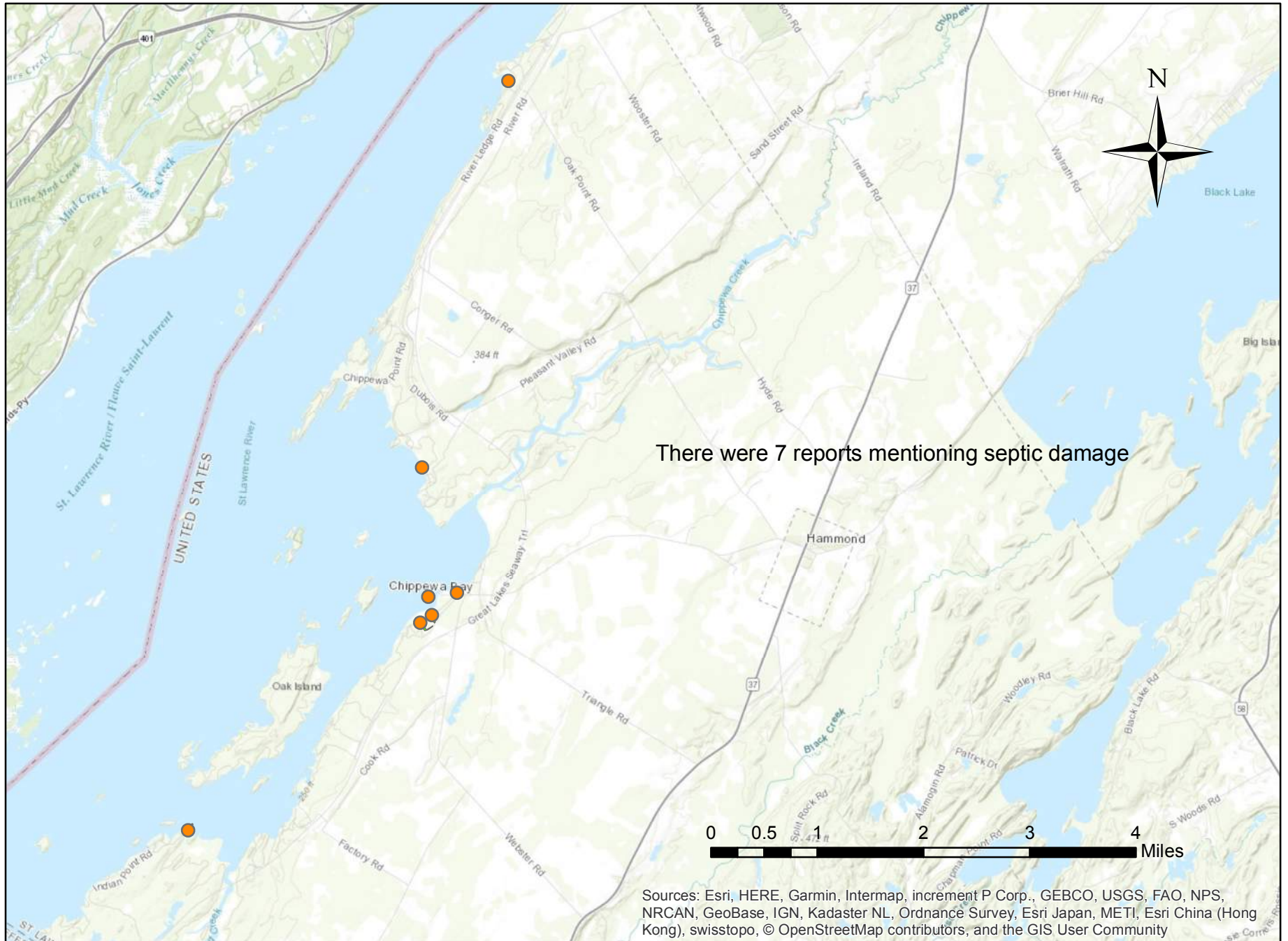
There were 9 reports mentioning electrical damage

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Reported Seawall Damage 2017- Hammond



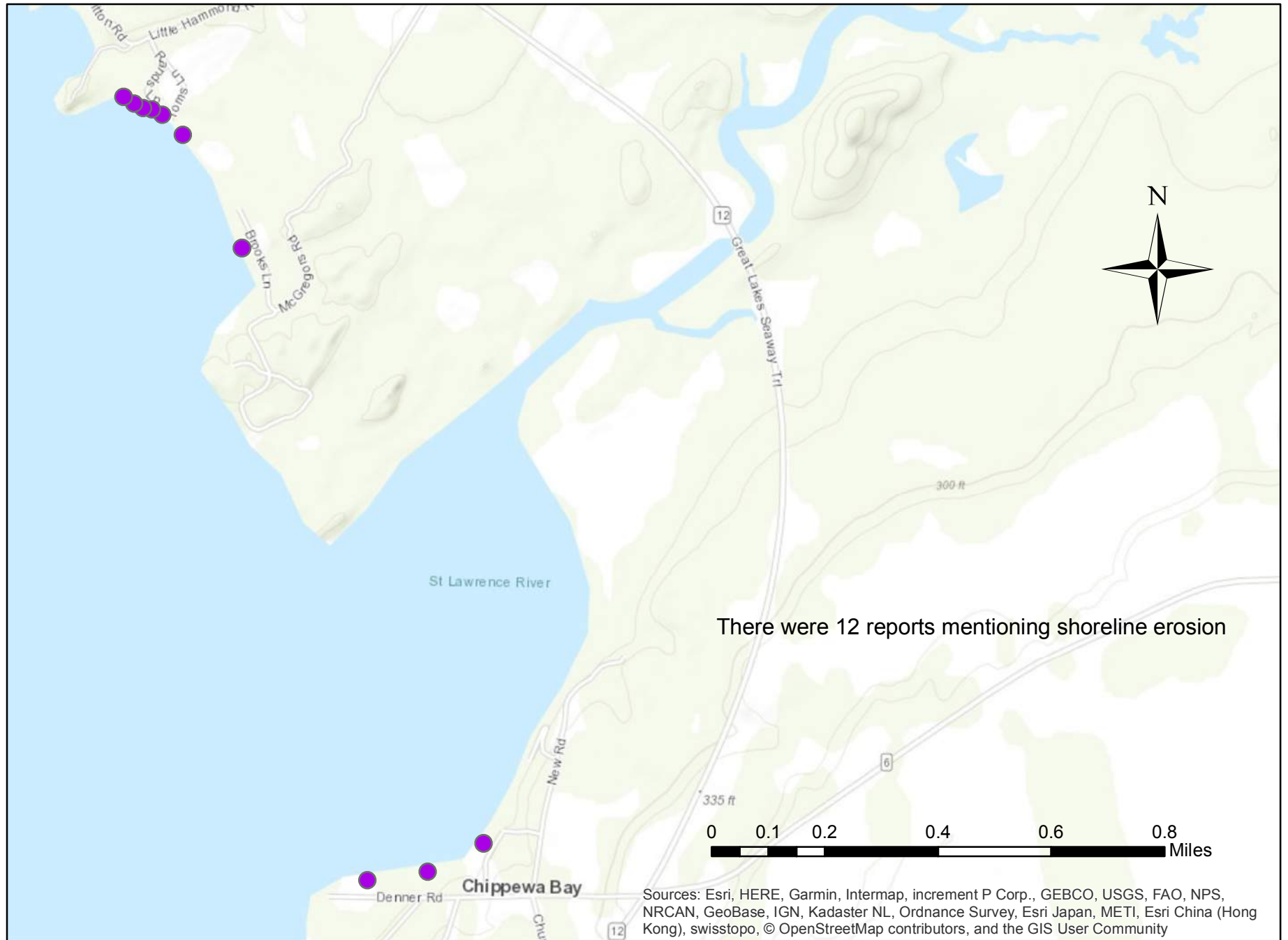
Reported Septic Damage 2017- Hammond



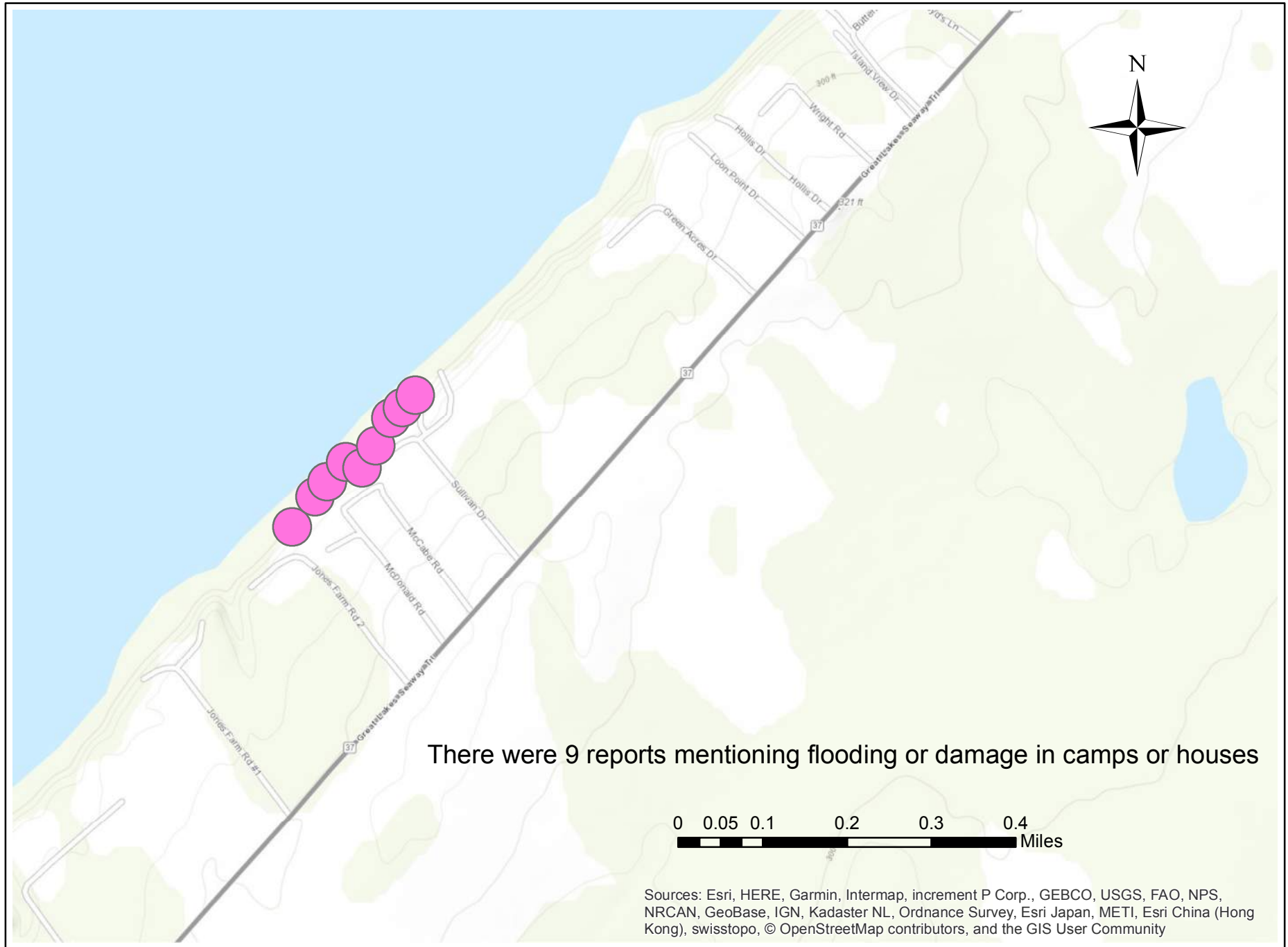
There were 7 reports mentioning septic damage

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

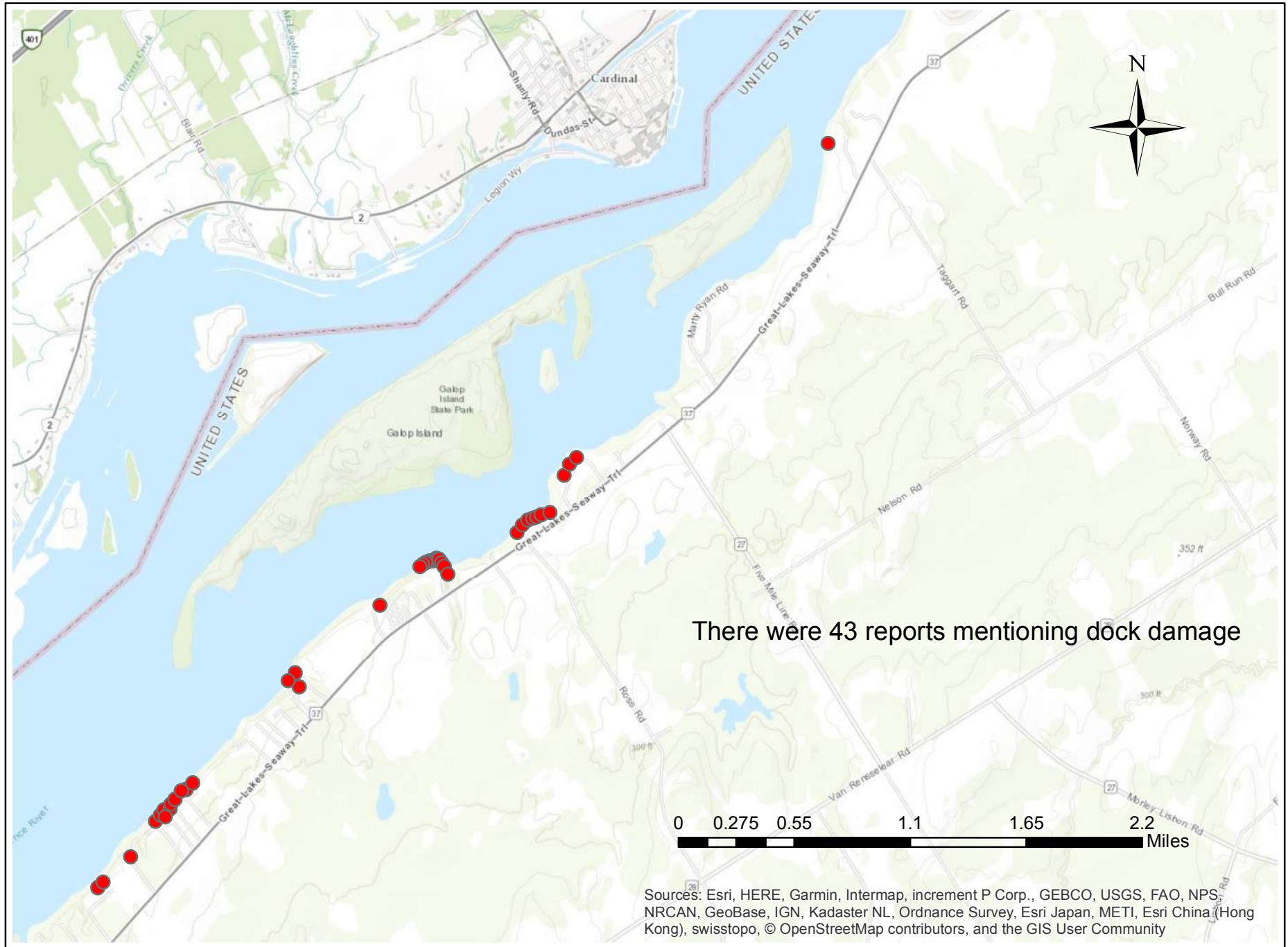
Reported Shoreline Erosion 2017- Hammond



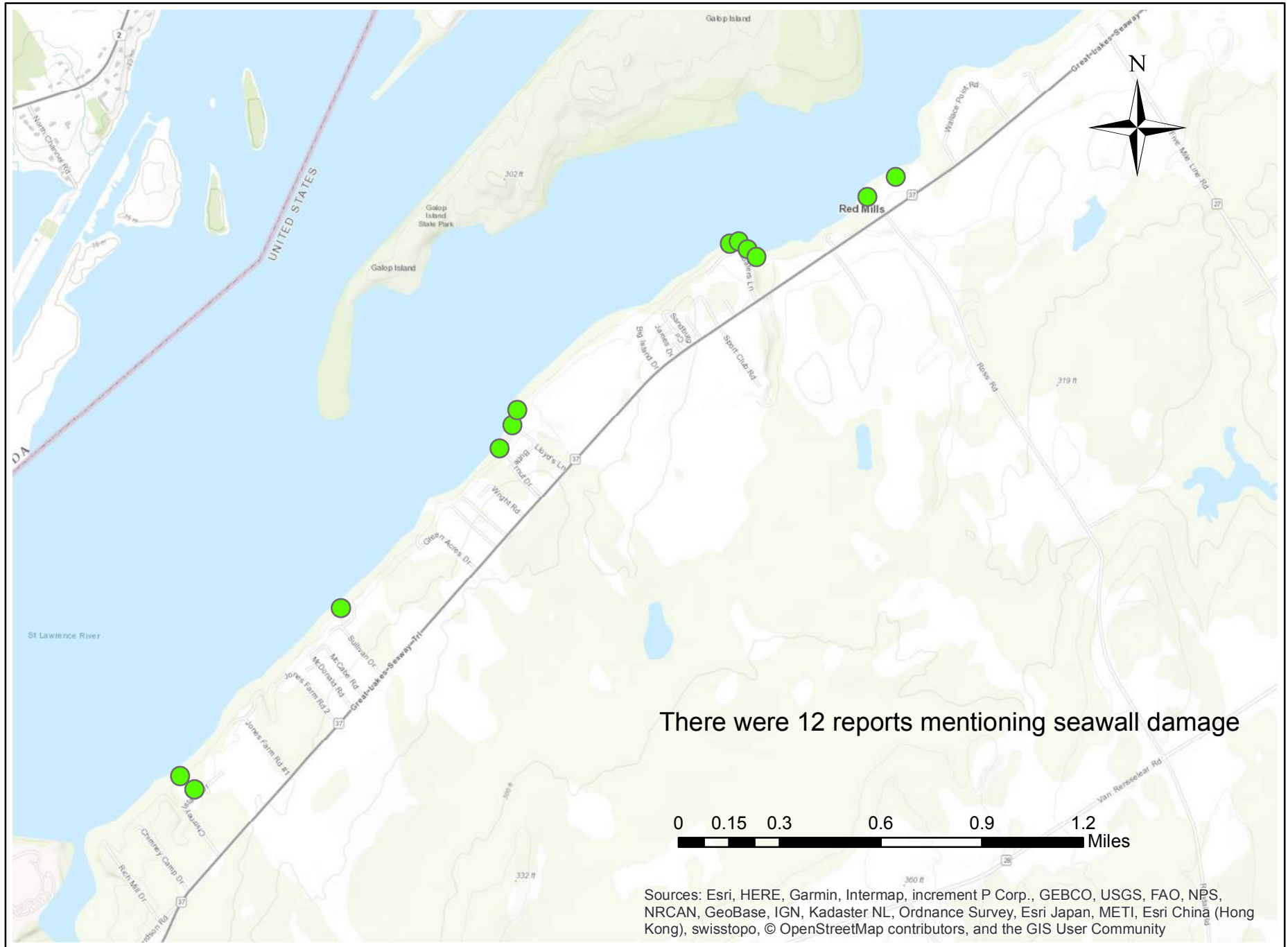
Reports of Camp/House Flooding or Damage 2017- Town of Lisbon



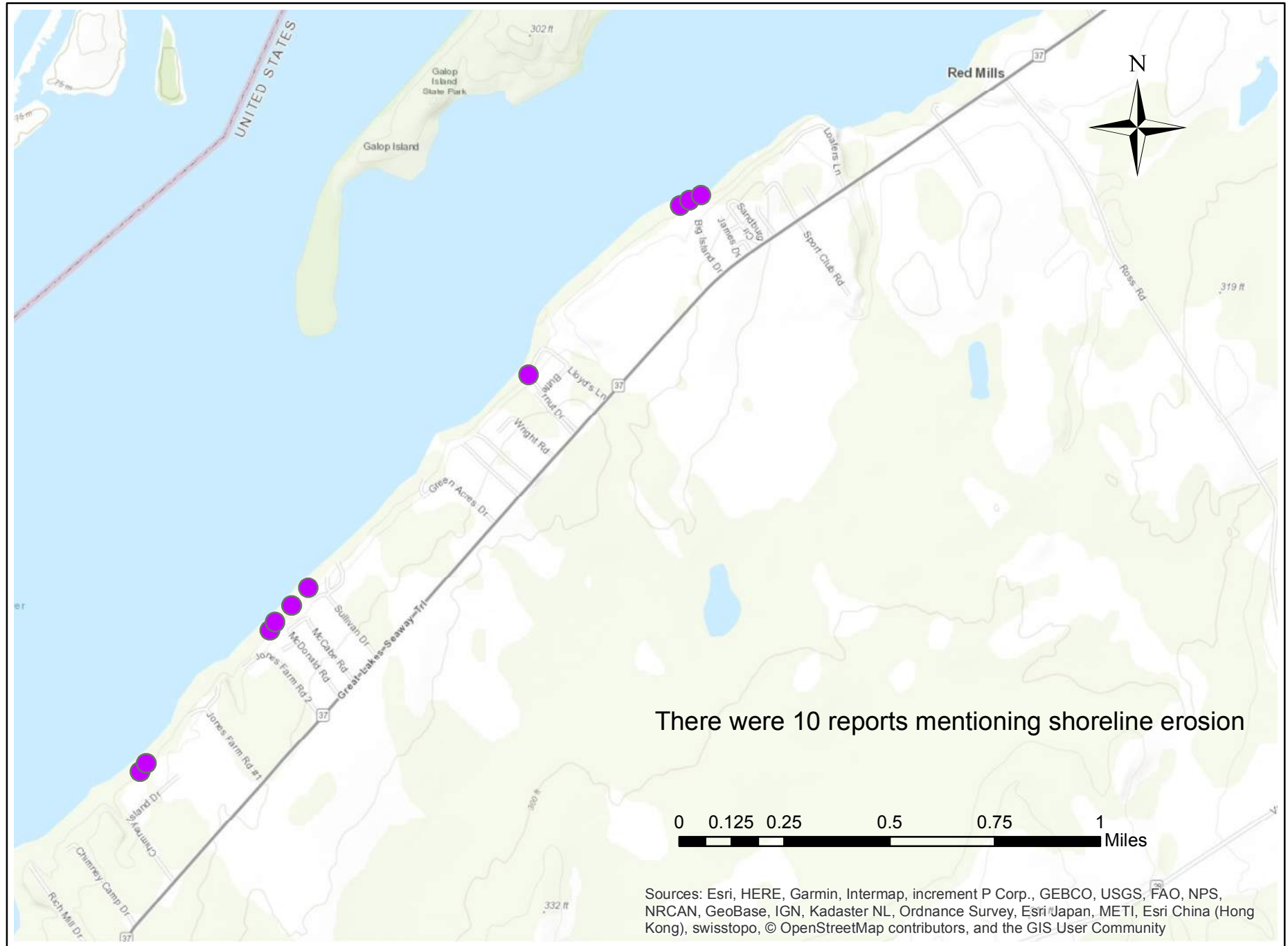
Reports of Dock Damage 2017- Town of Lisbon



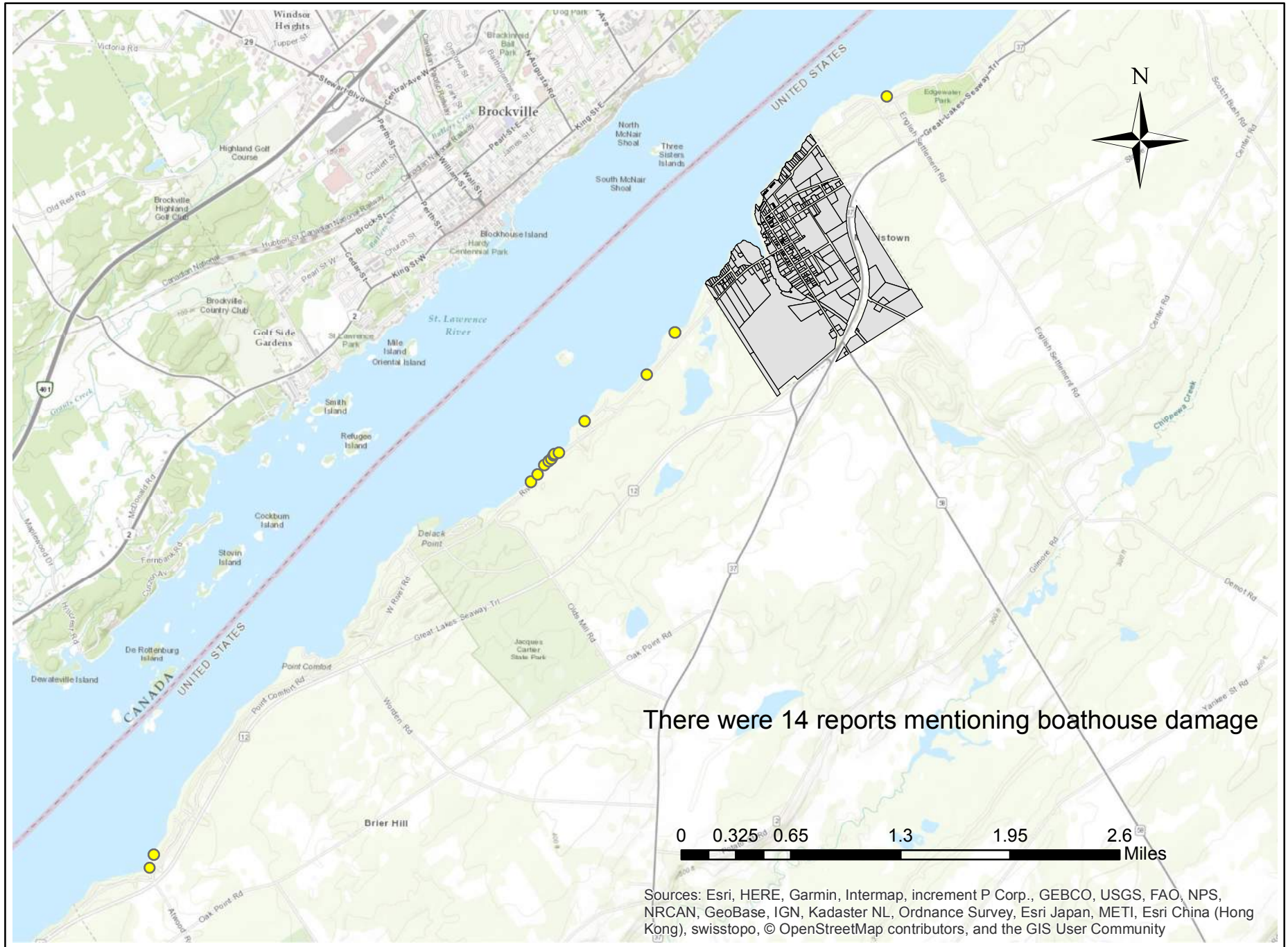
Reports of Seawall Damage 2017- Town of Lisbon



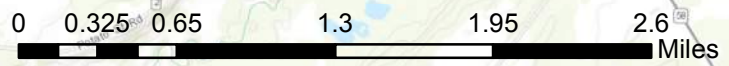
Reports of Shoreline Erosion 2017- Town of Lisbon



Reports of Boathouse Damage 2017- Town of Morristown

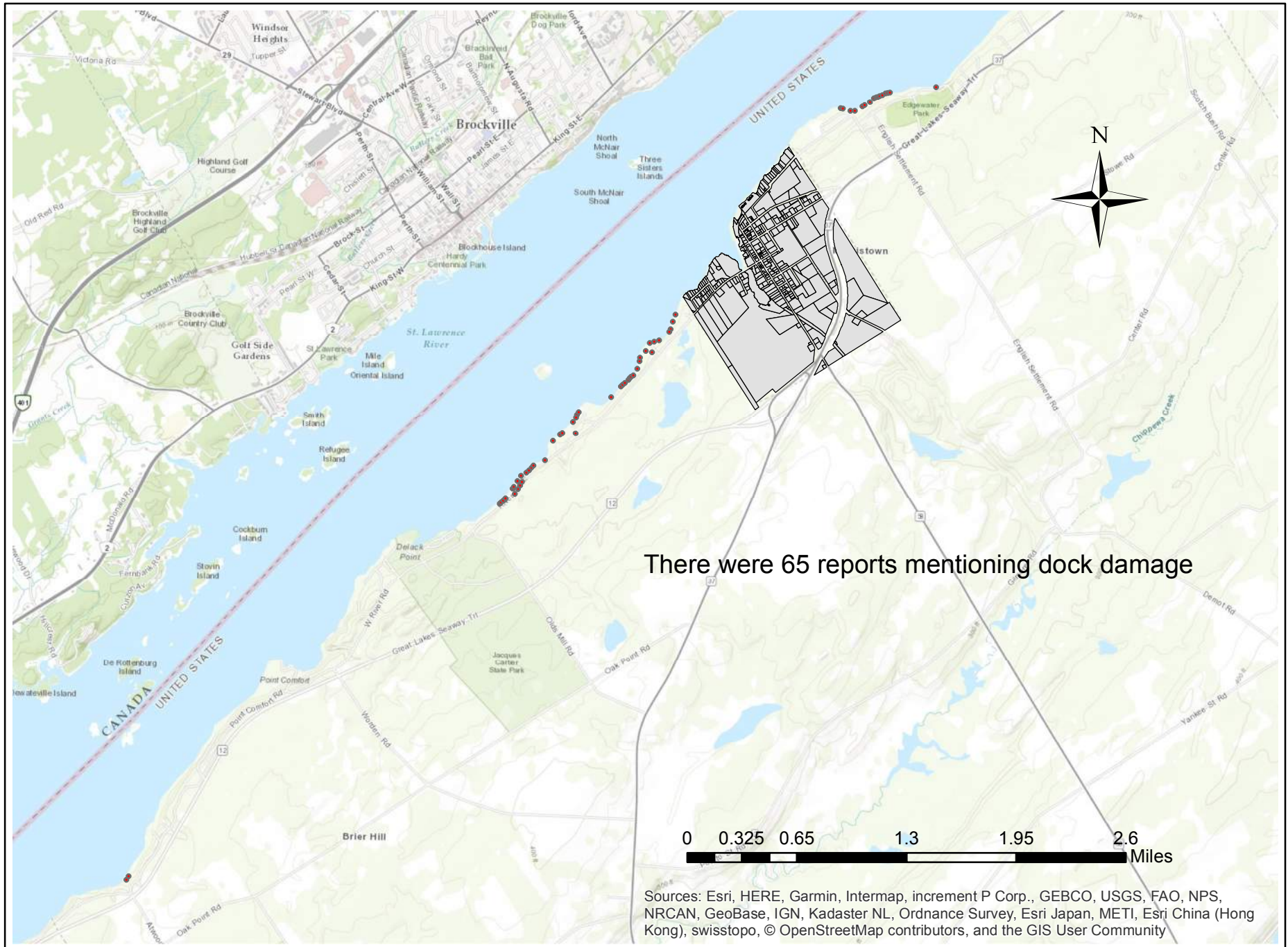


There were 14 reports mentioning boathouse damage



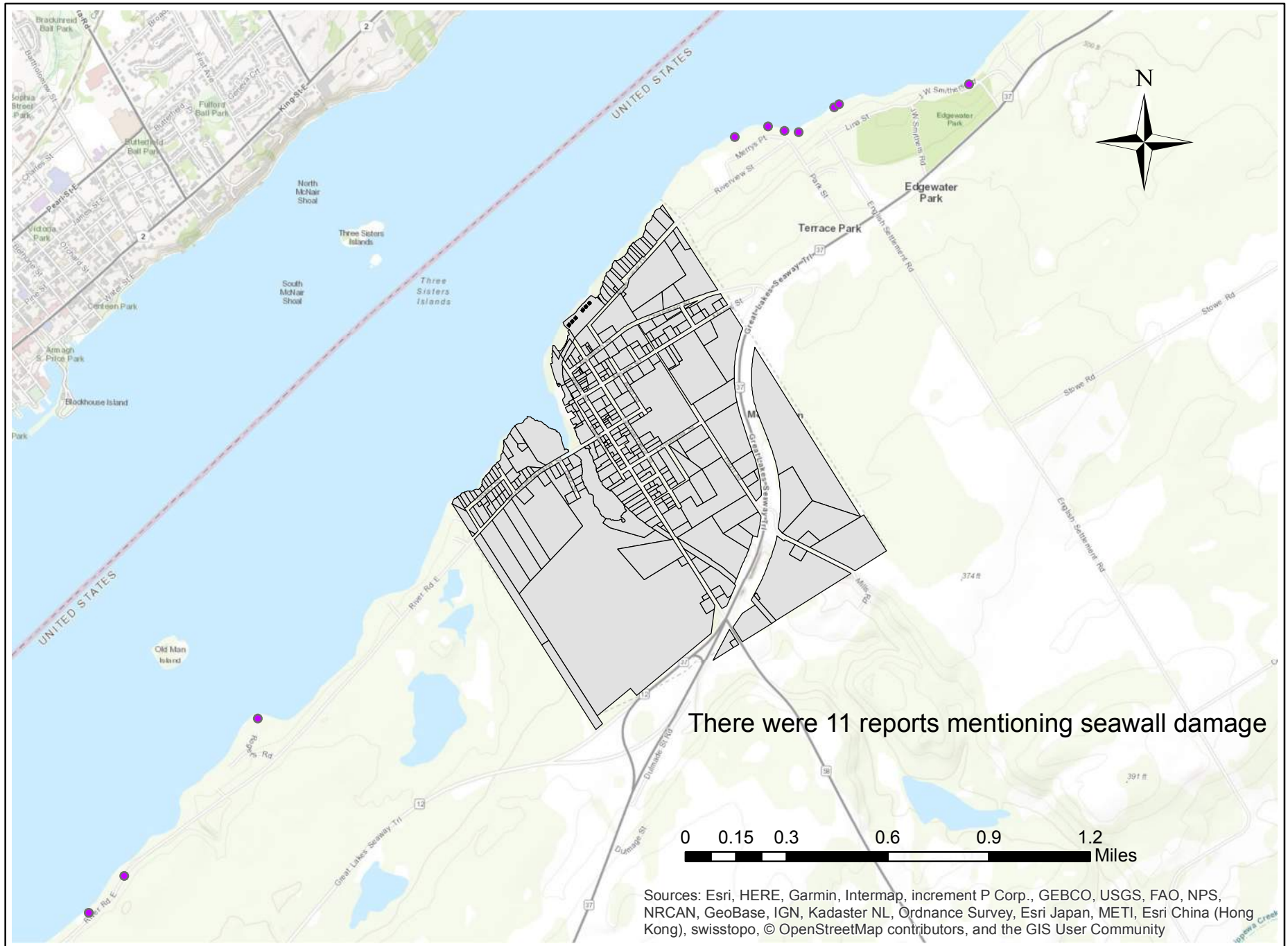
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Reports of Dock Damage 2017- Town of Morristown



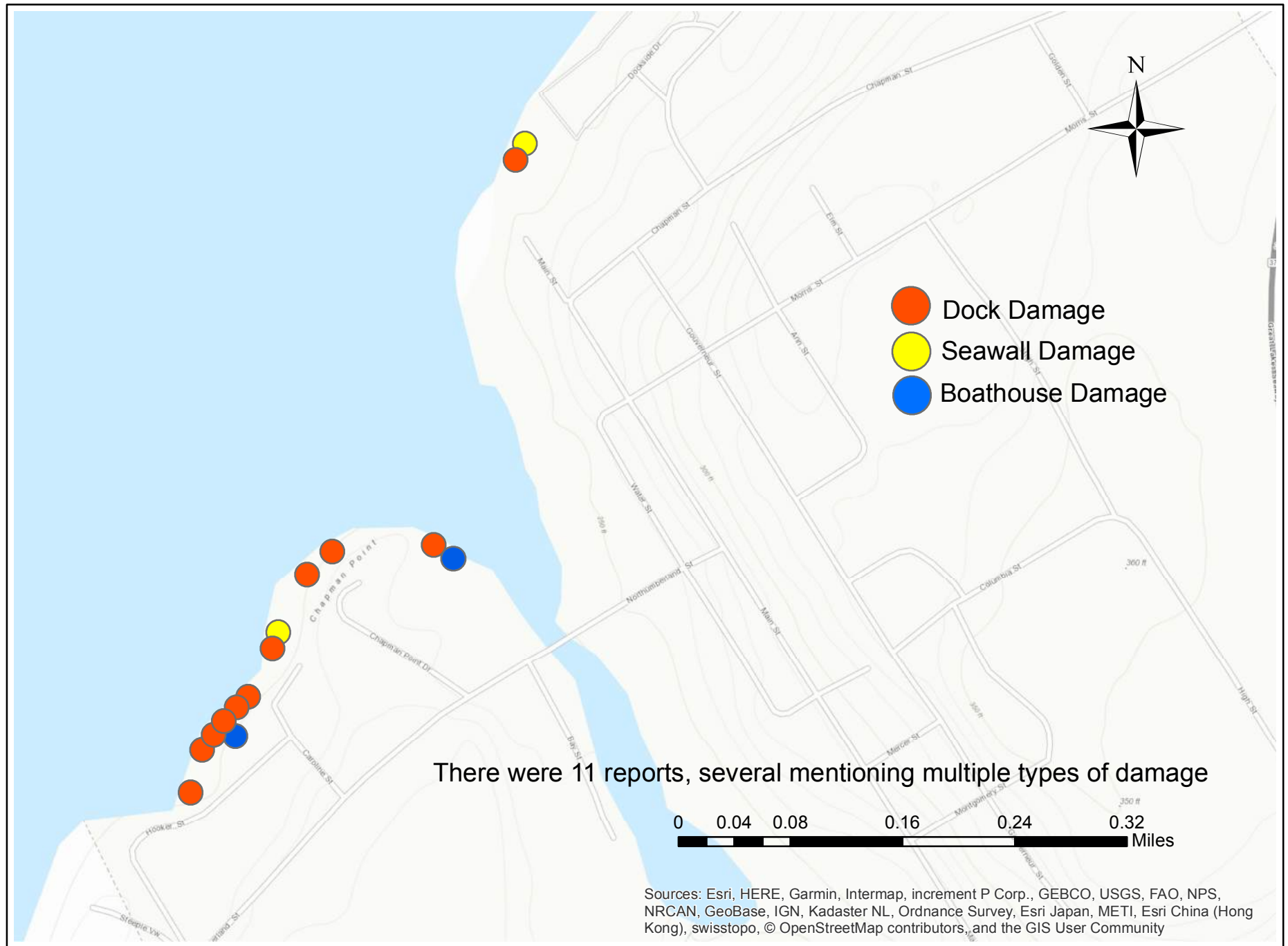
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Reports of Seawall Damage 2017- Town of Morristown

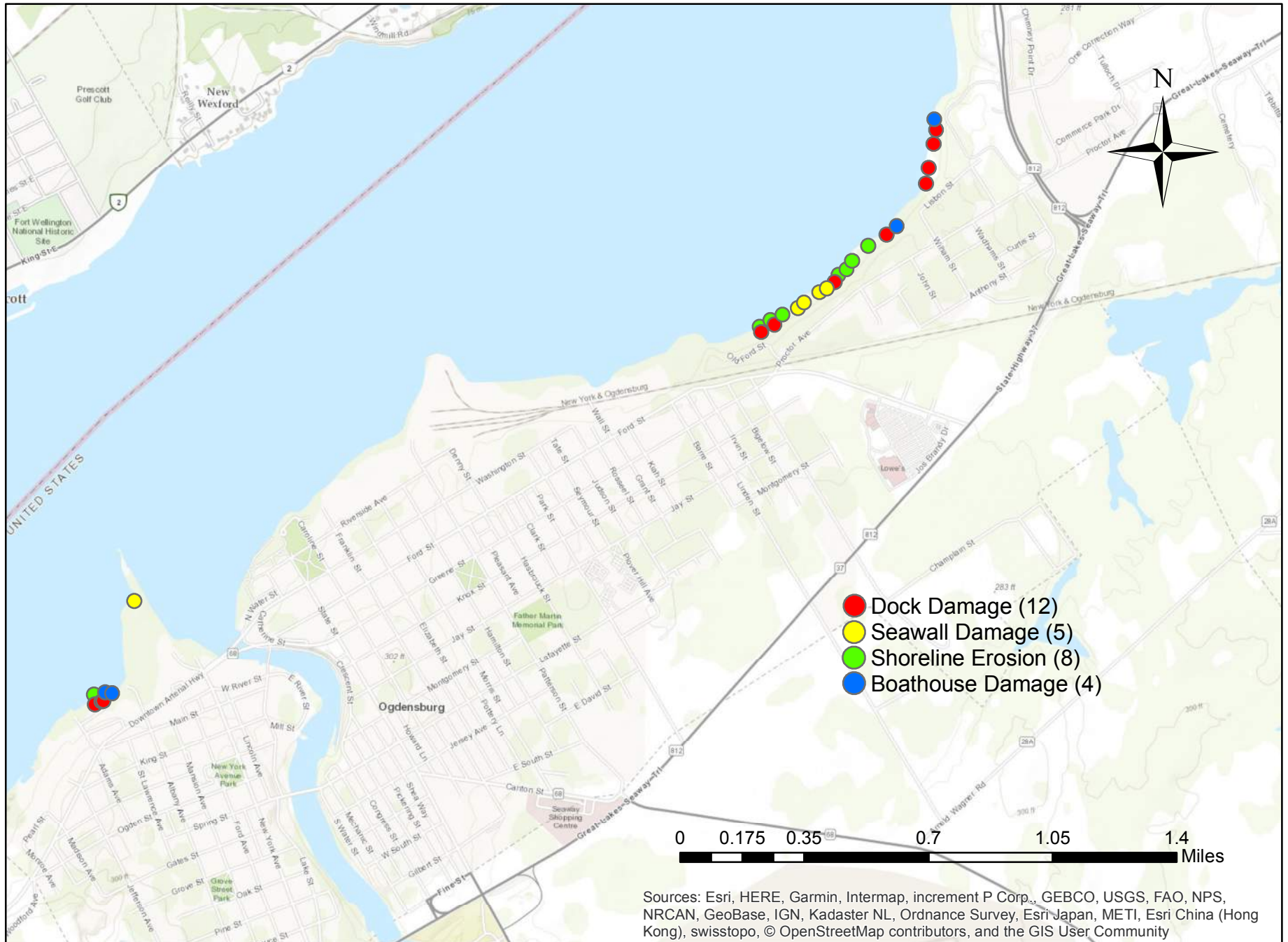


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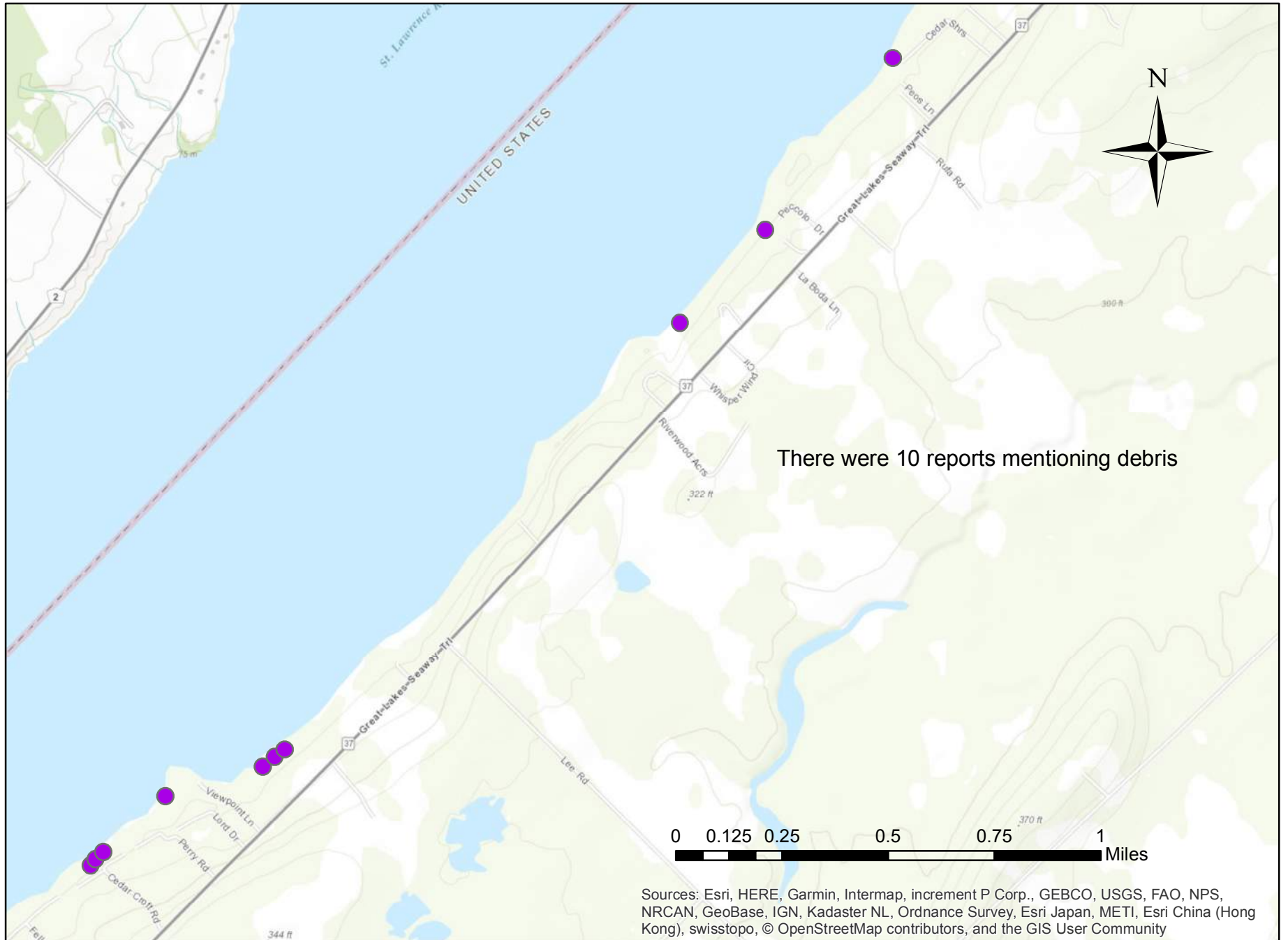


Flood Damage Reports 2017- Ogdensburg

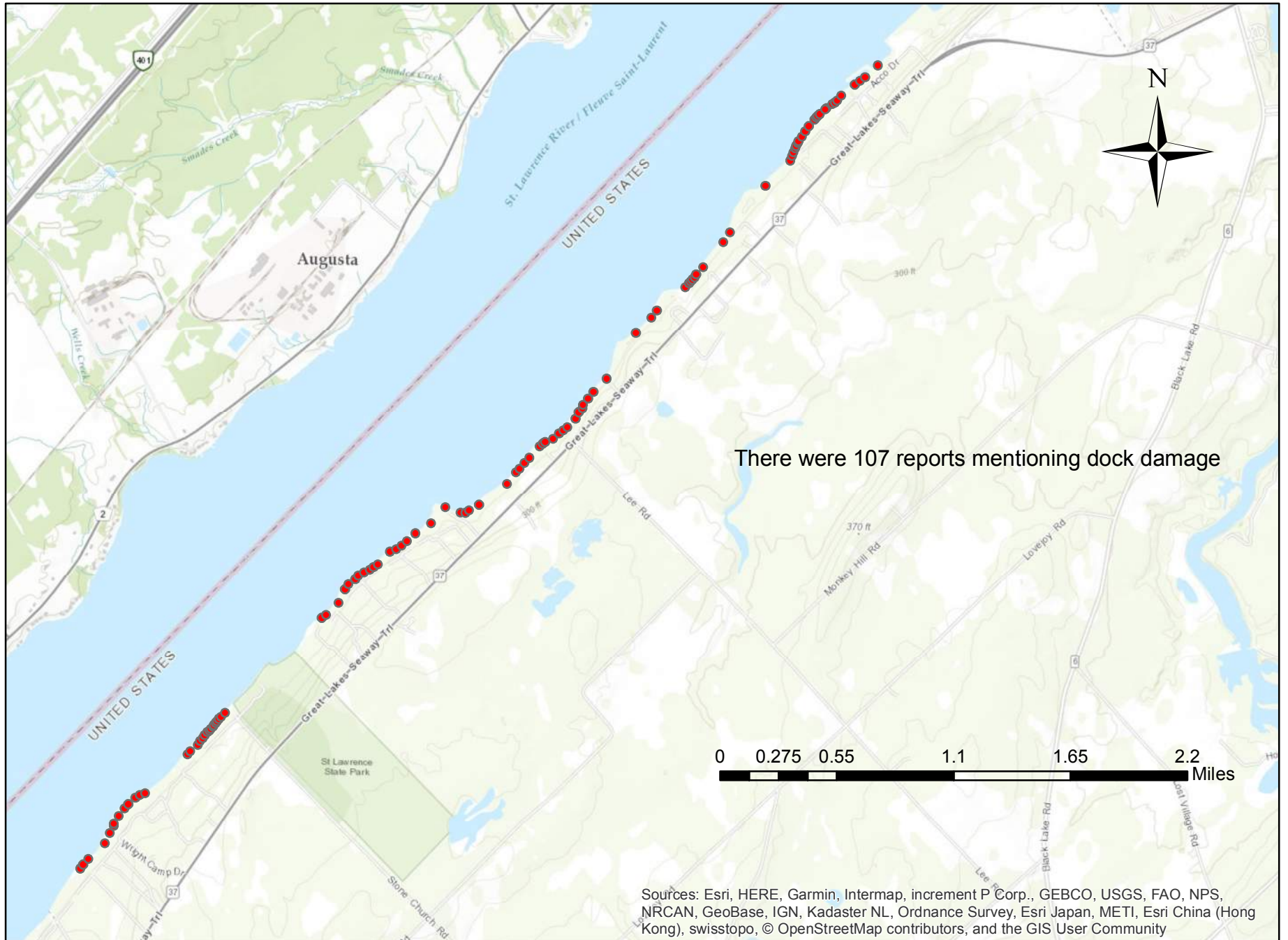


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

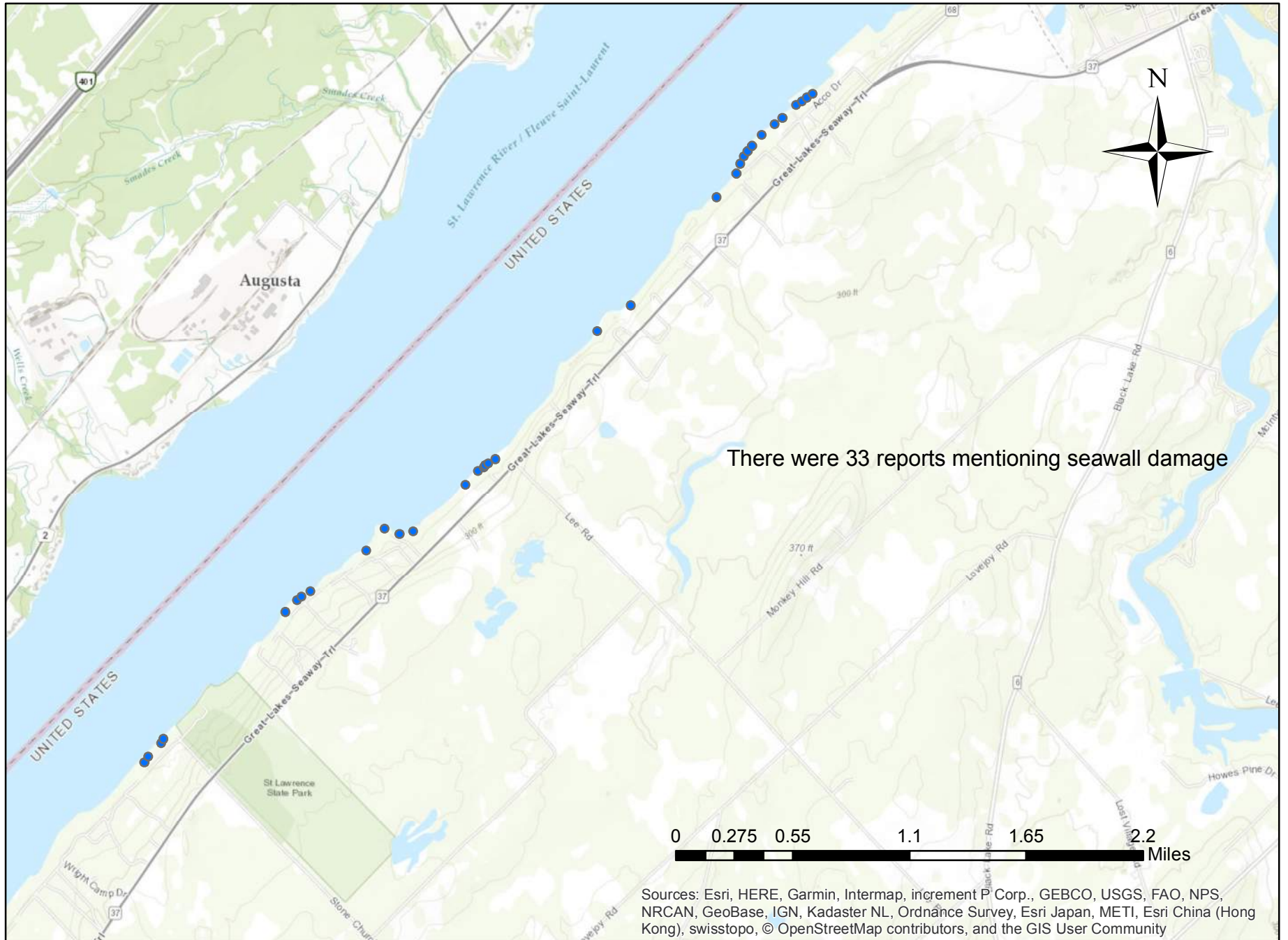
Debris Reports 2017- Oswegatchie



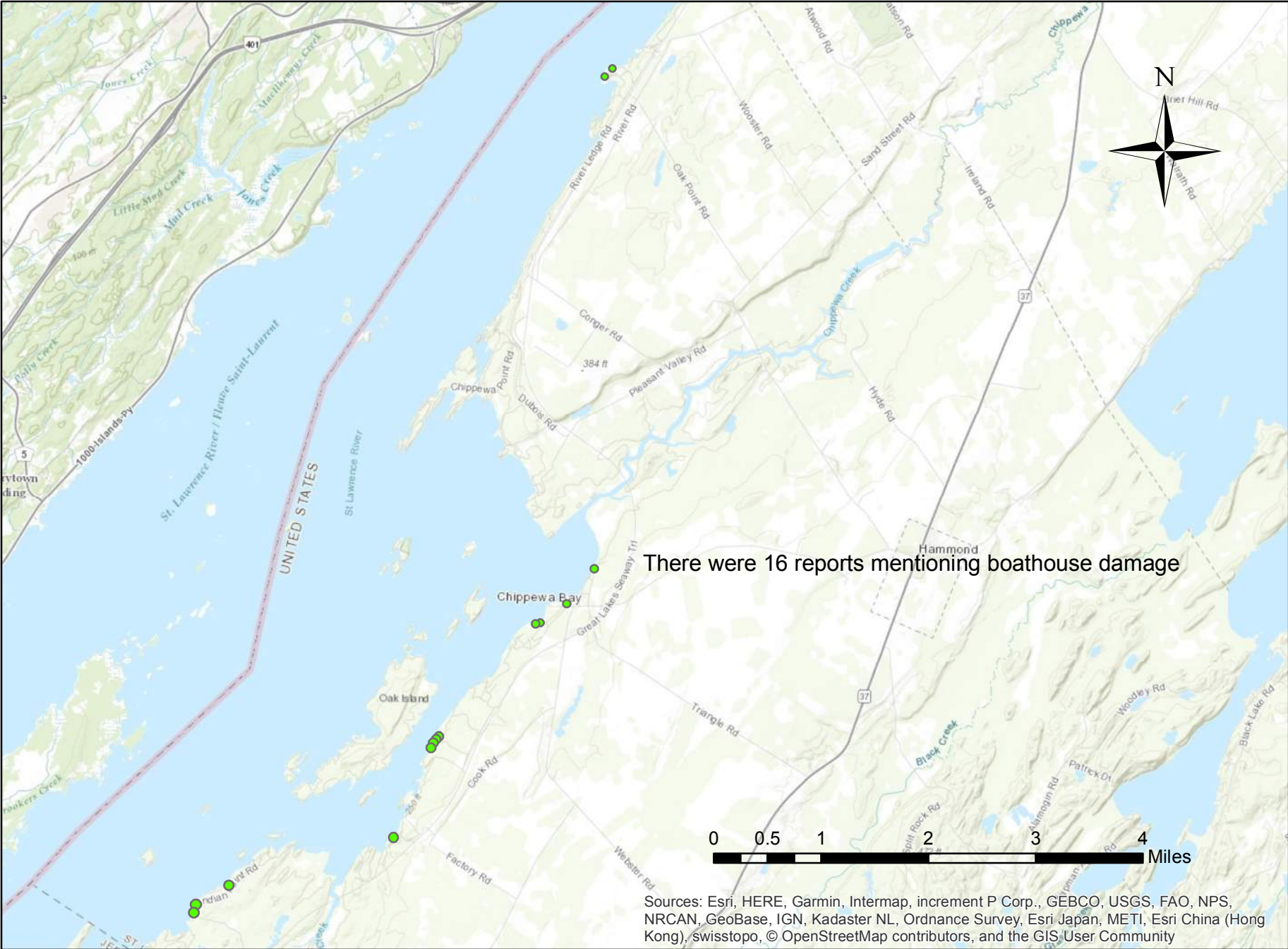
Reported Dock Damage 2017- Oswegatchie



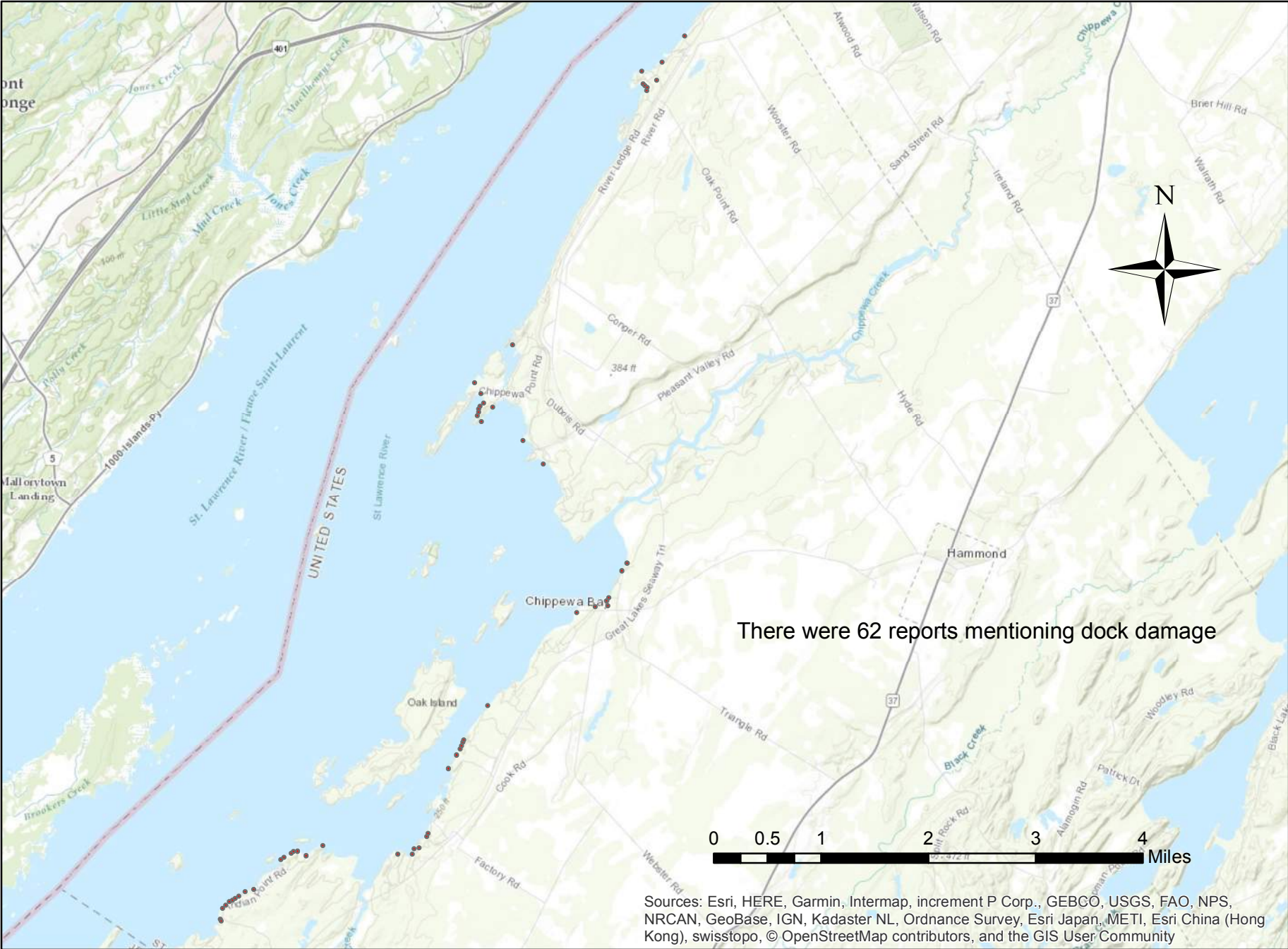
Reported Seawall Damage 2017- Oswegatchie



Reported Boathouse Damage 2017- Hammond

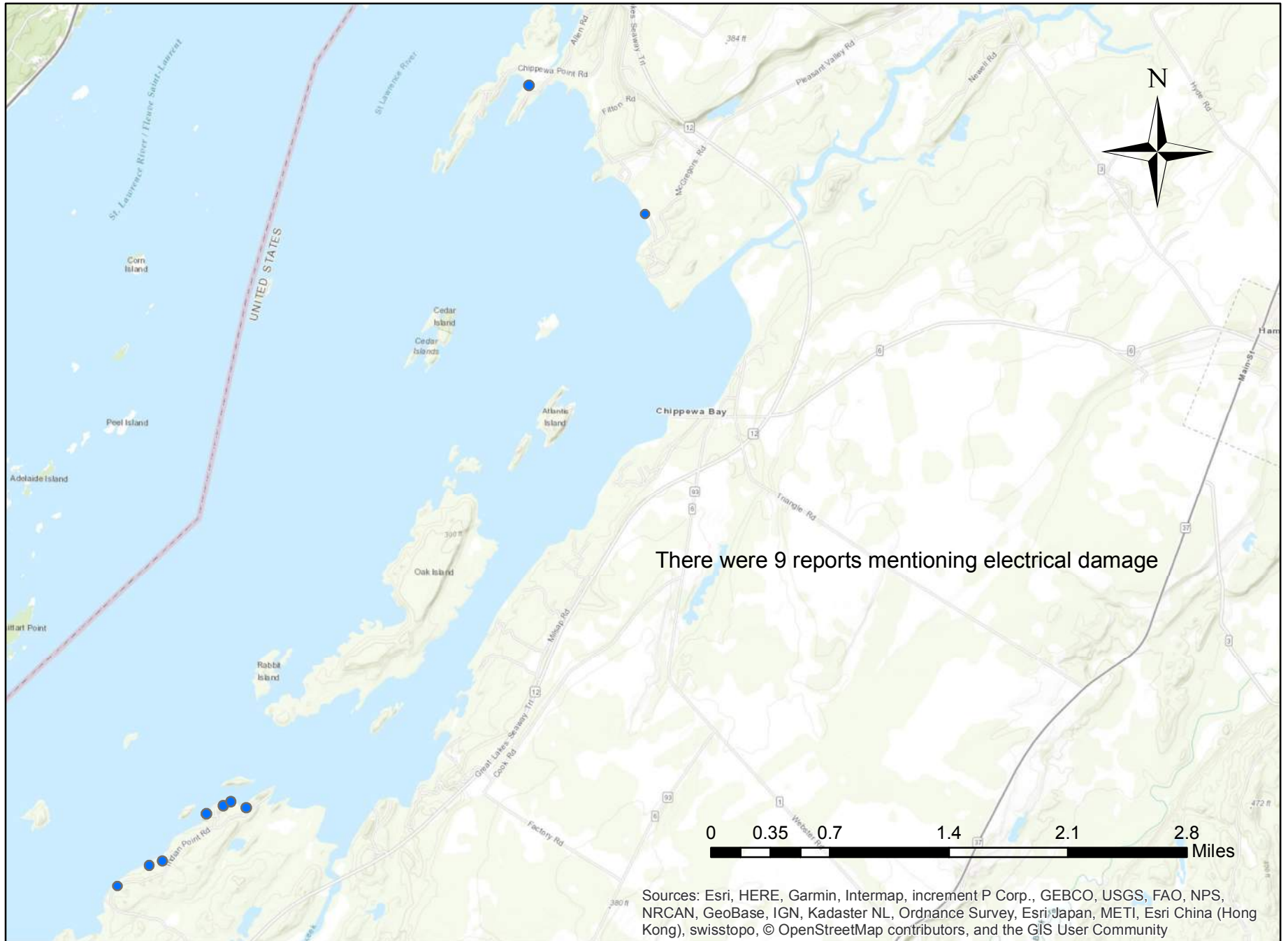


Reported Dock Damage 2017- Hammond

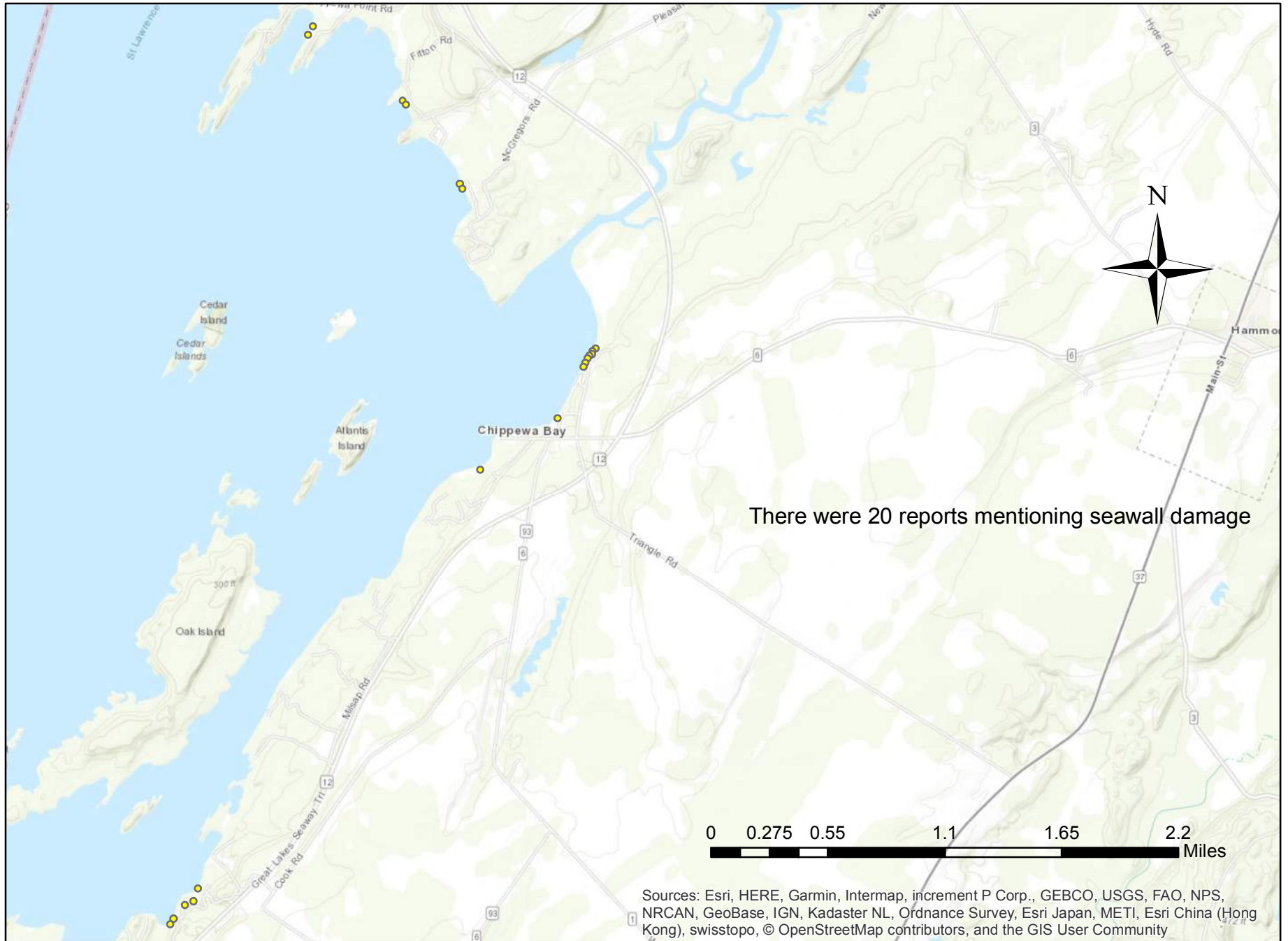


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

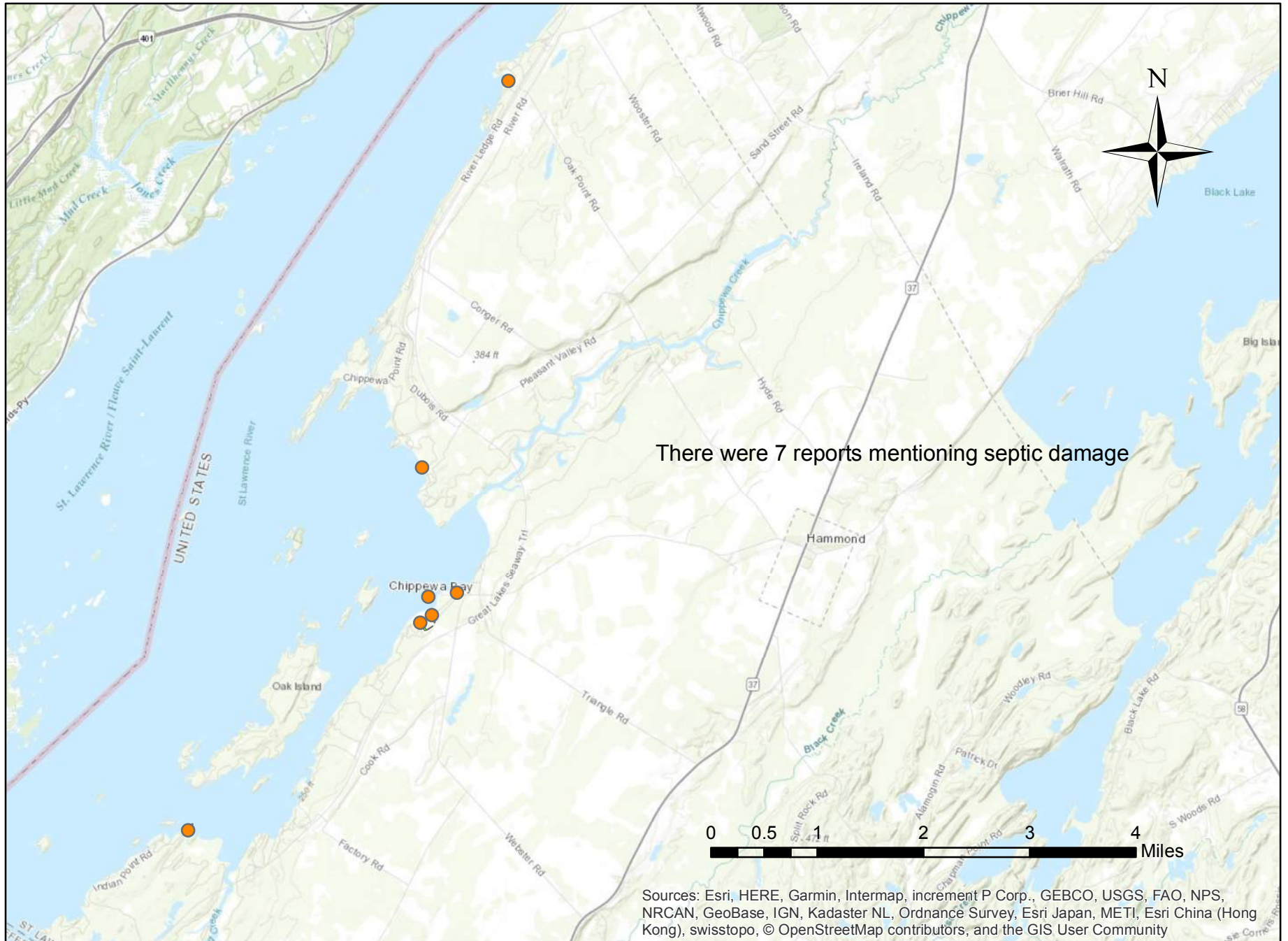
Reported Electrical Damage 2017- Hammond



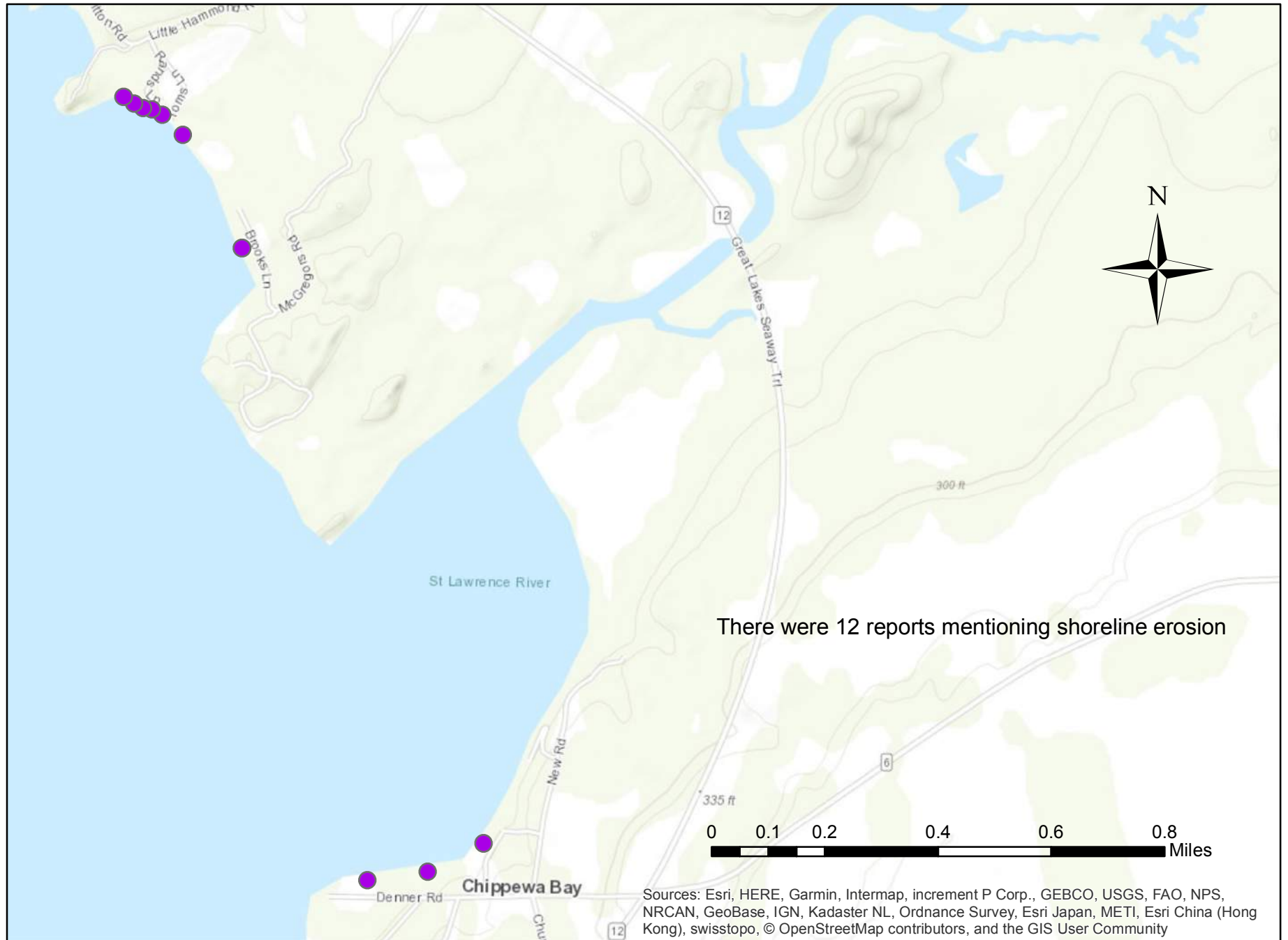
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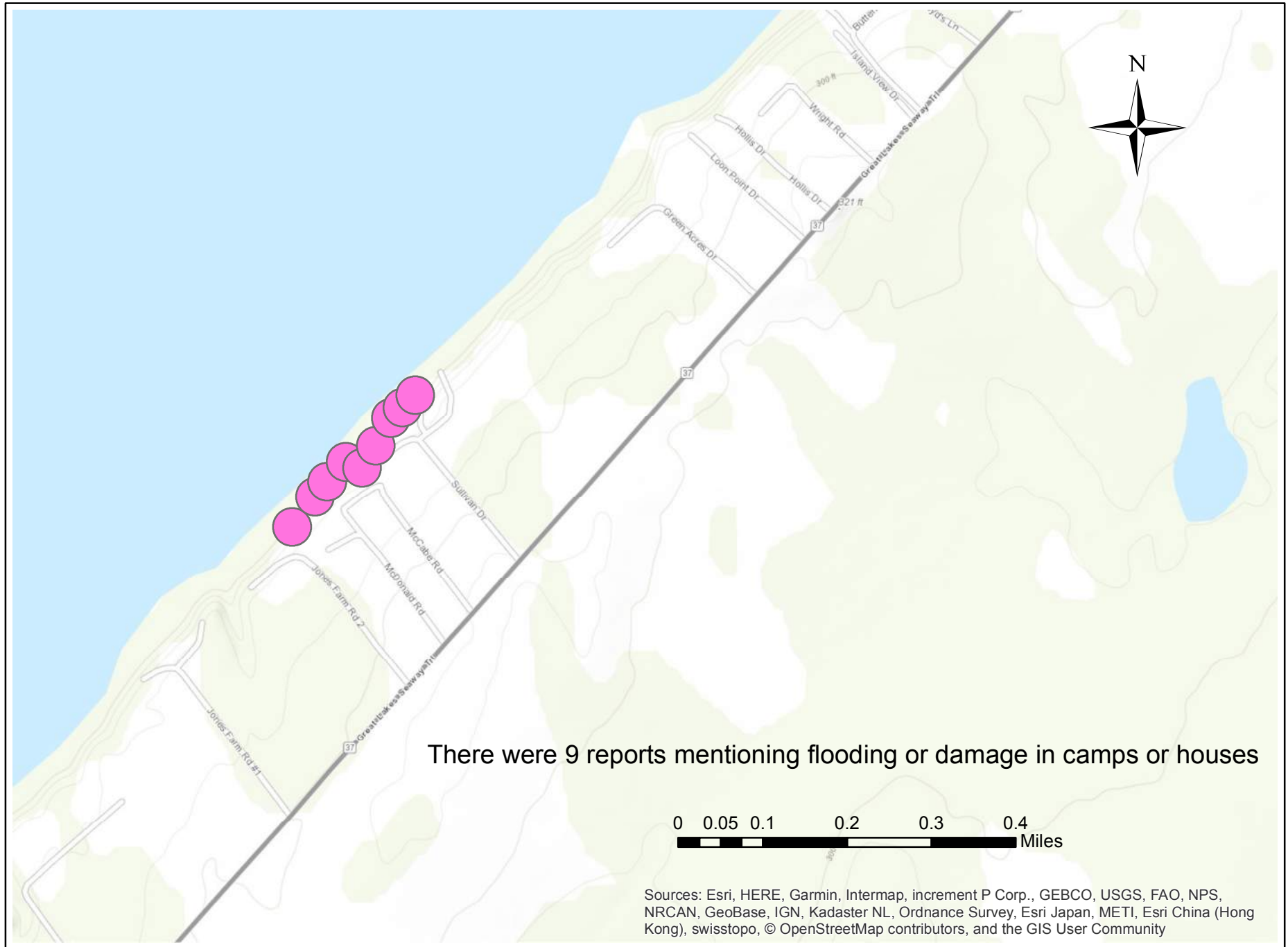
Reported Septic Damage 2017- Hammond



Reported Shoreline Erosion 2017- Hammond

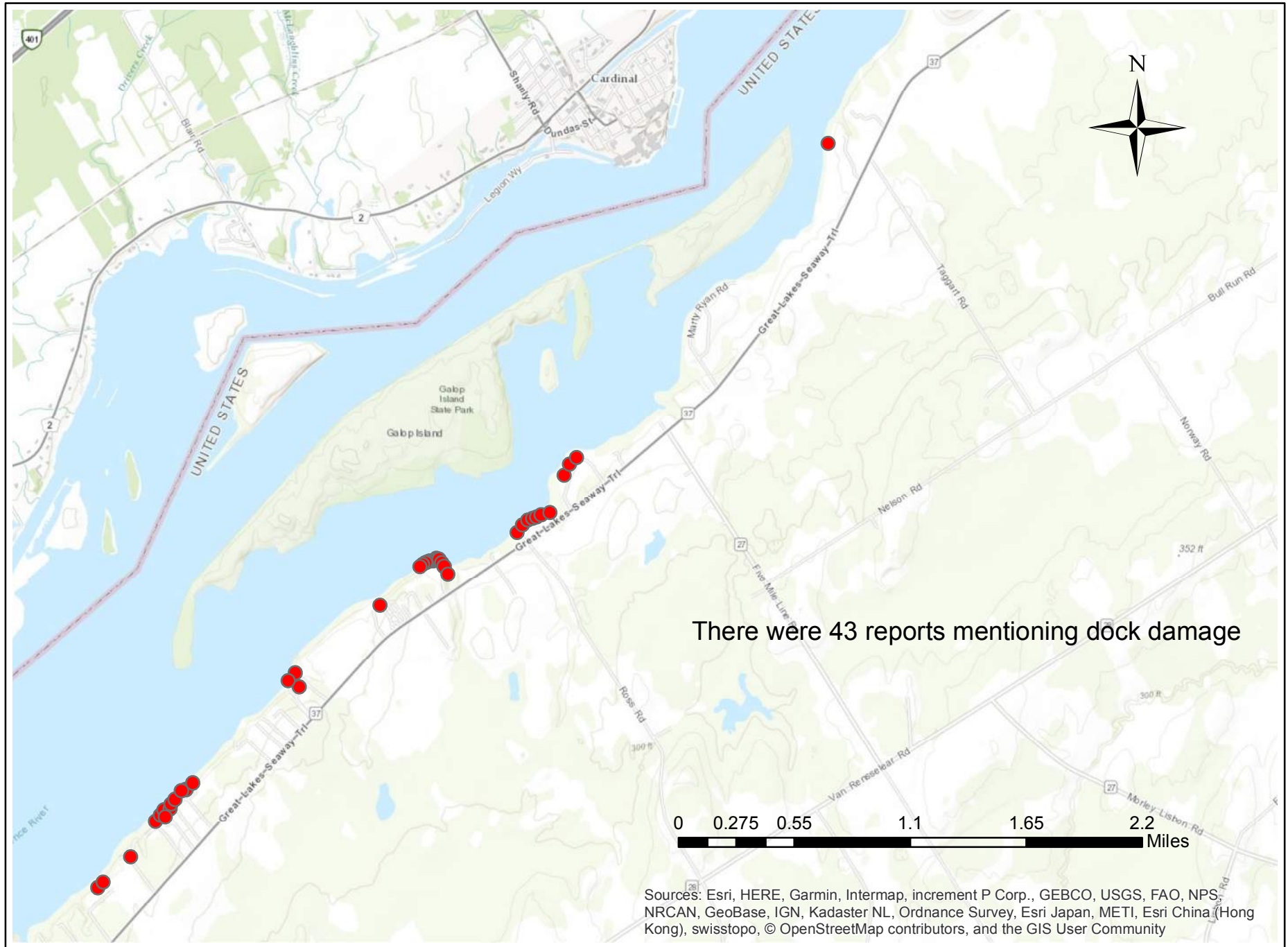


Reports of Camp/House Flooding or Damage 2017- Town of Lisbon

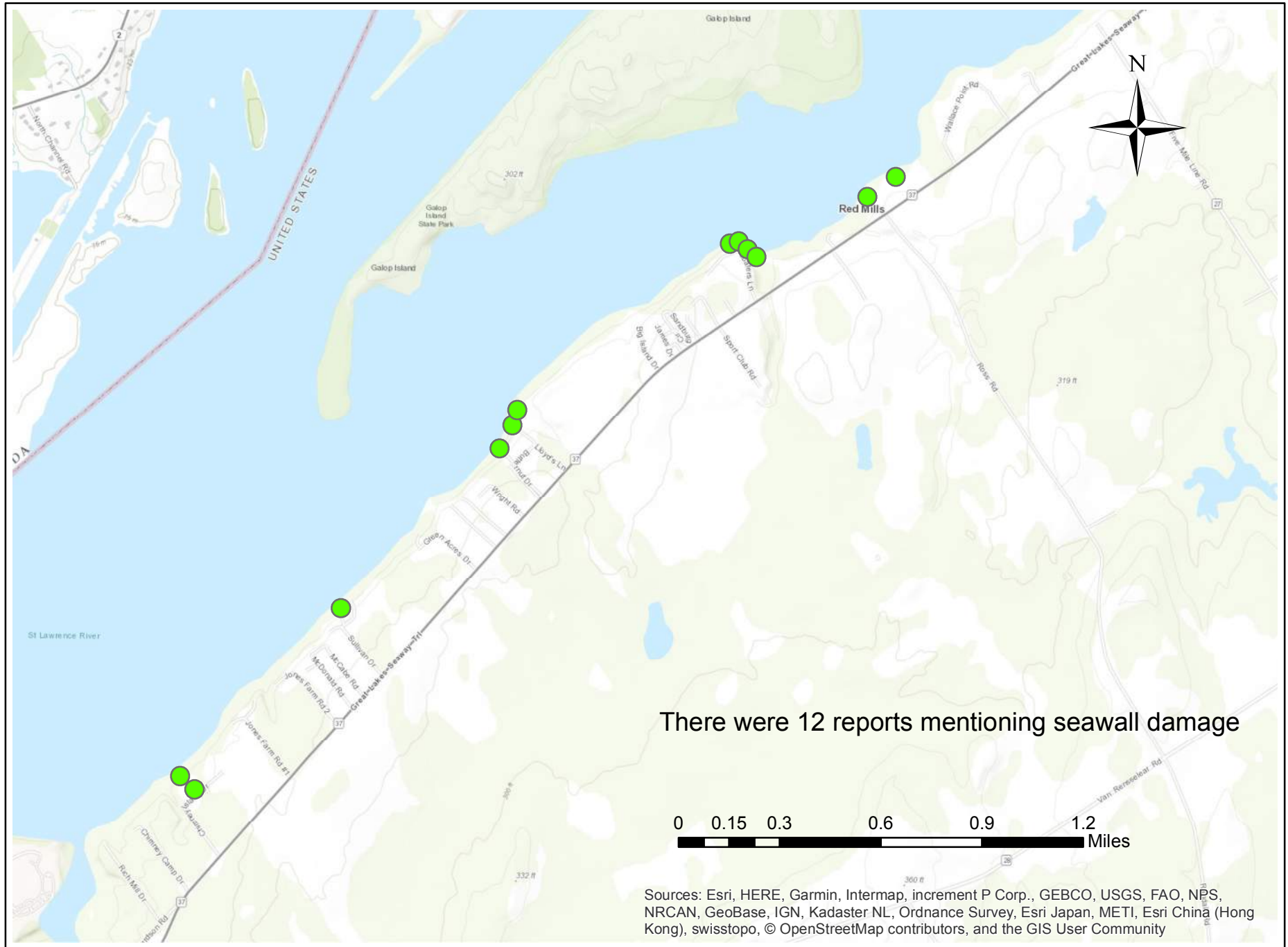


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

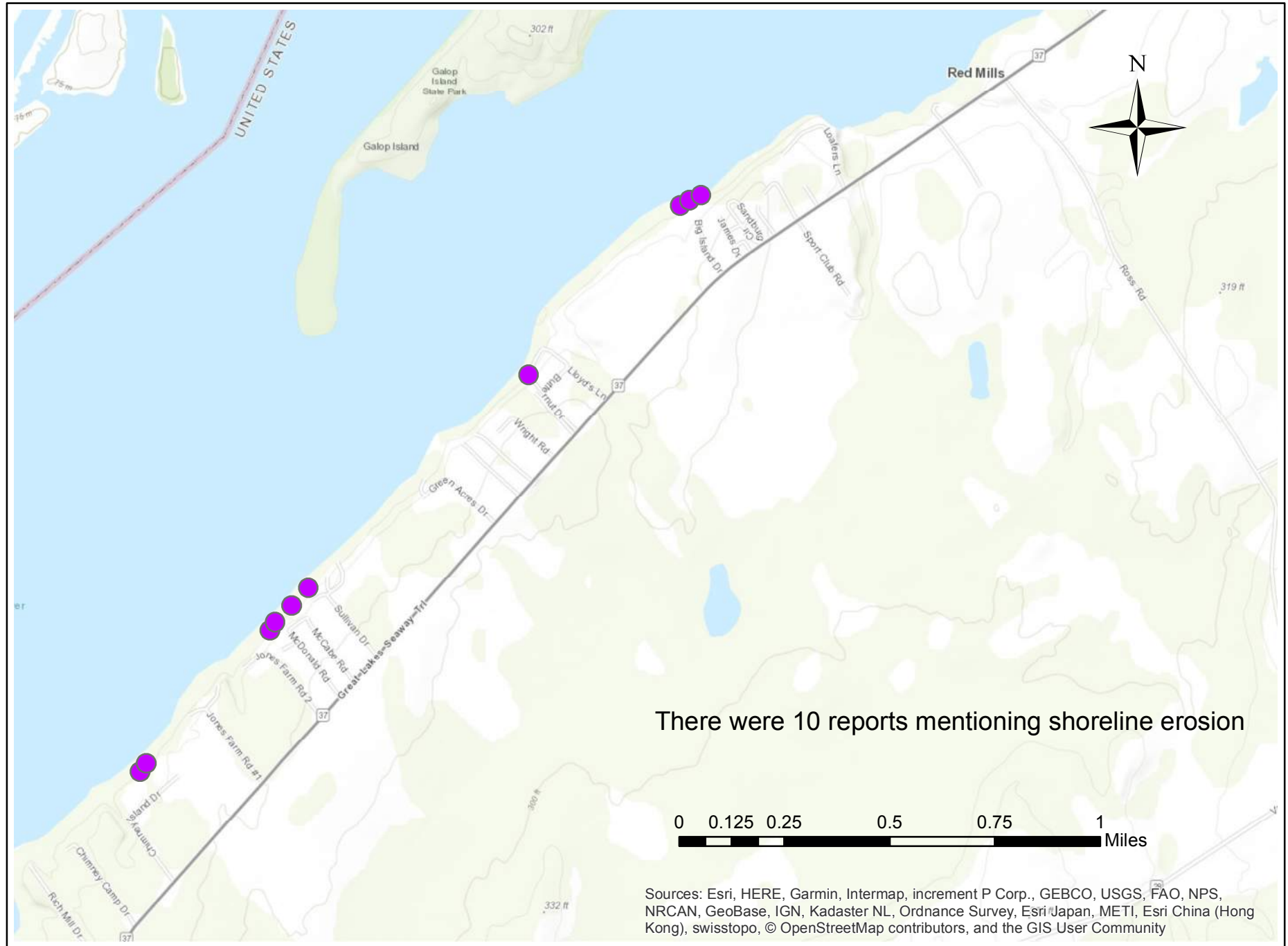
Reports of Dock Damage 2017- Town of Lisbon



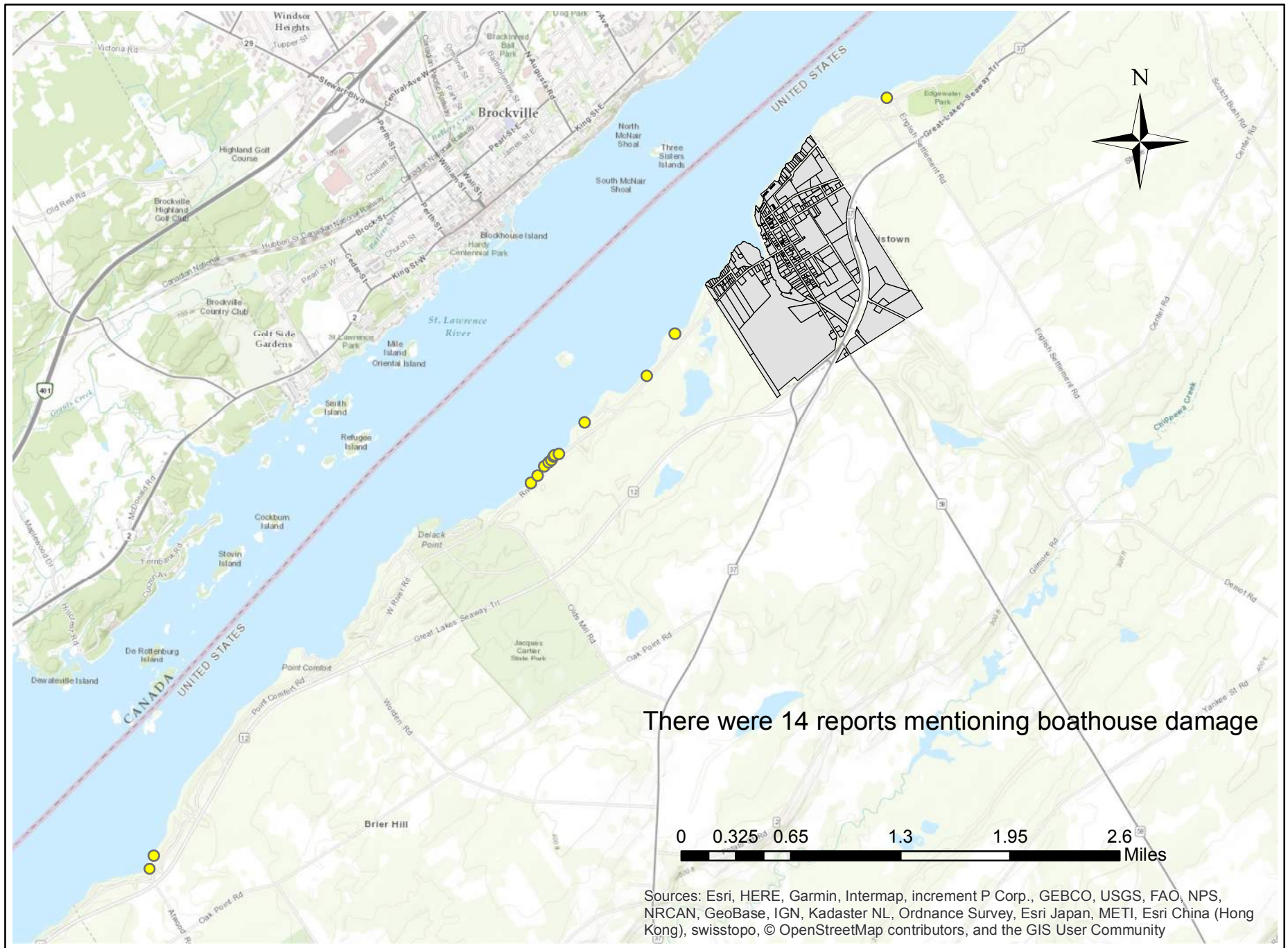
Reports of Seawall Damage 2017- Town of Lisbon



Reports of Shoreline Erosion 2017- Town of Lisbon



Reports of Boathouse Damage 2017- Town of Morristown

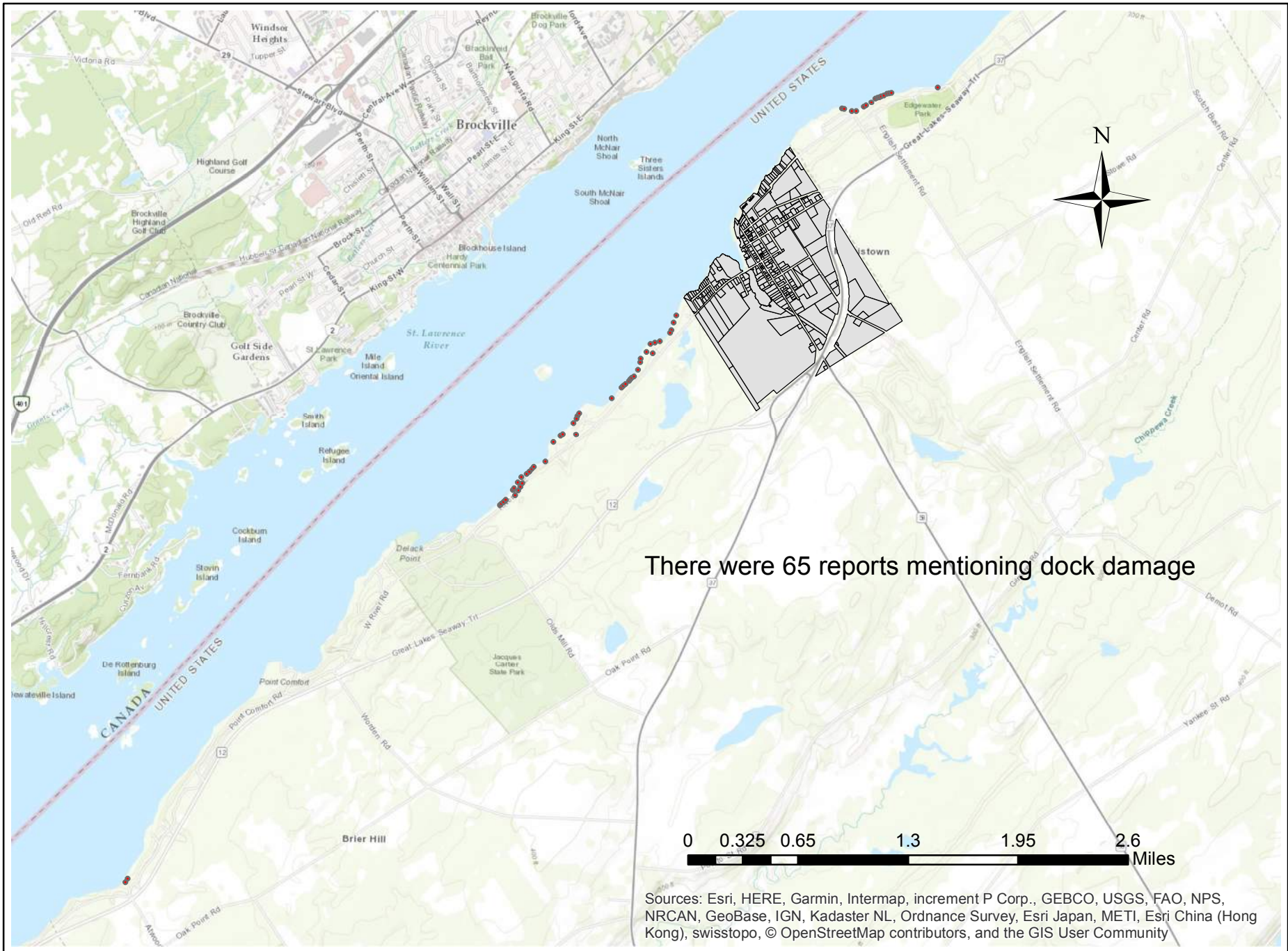


There were 14 reports mentioning boathouse damage

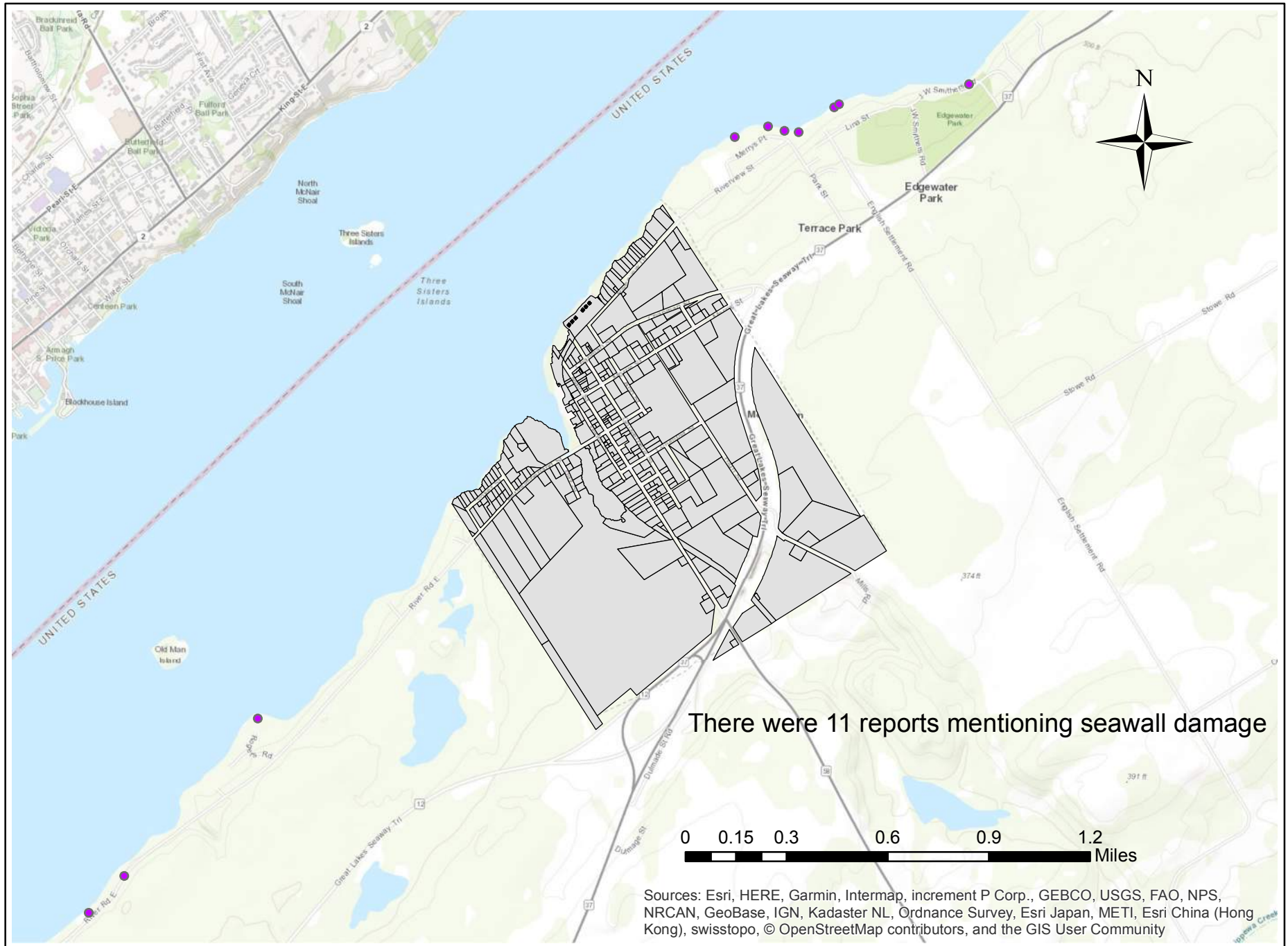
0 0.325 0.65 1.3 1.95 2.6 Miles

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

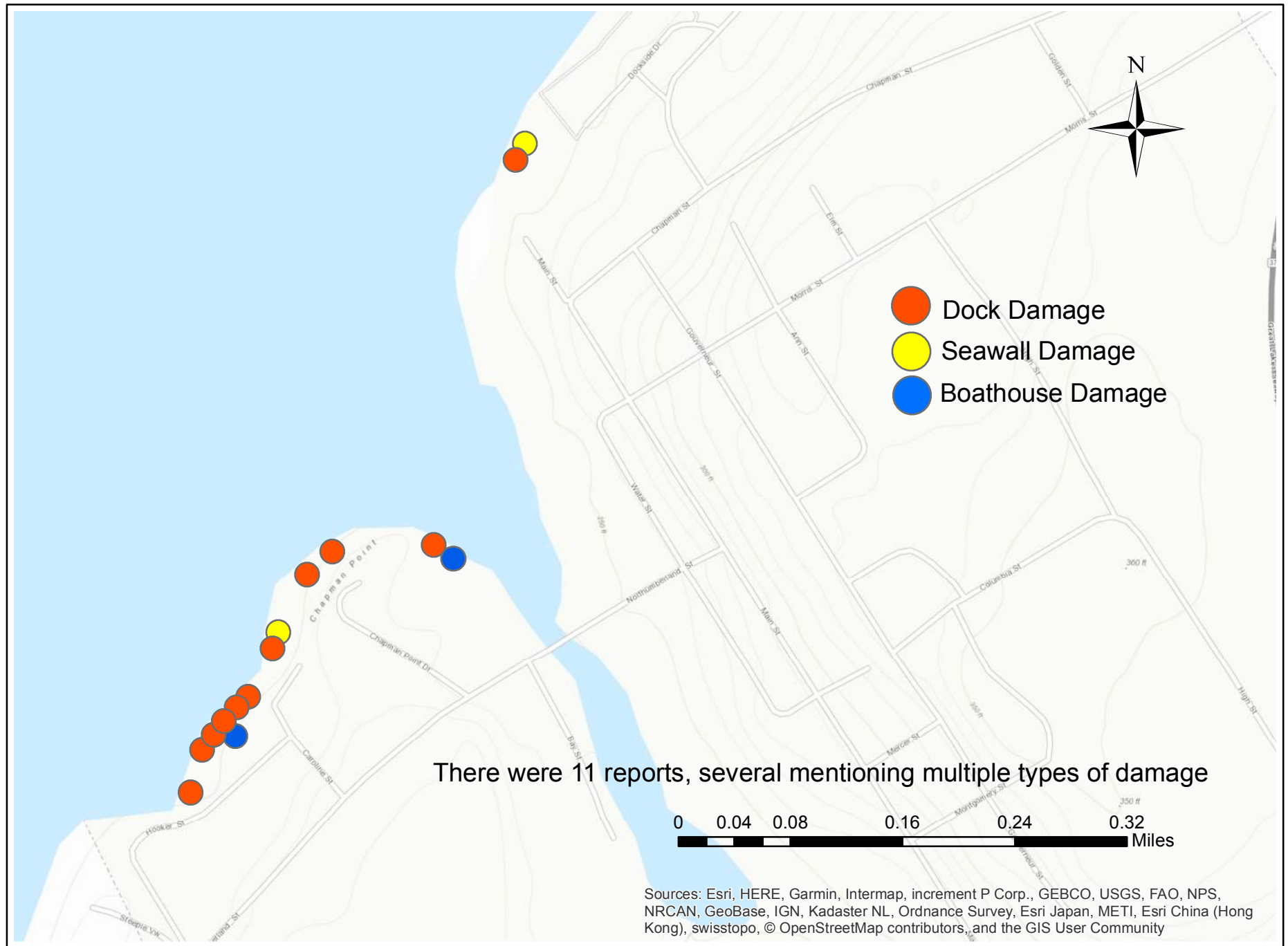
Reports of Dock Damage 2017- Town of Morristown



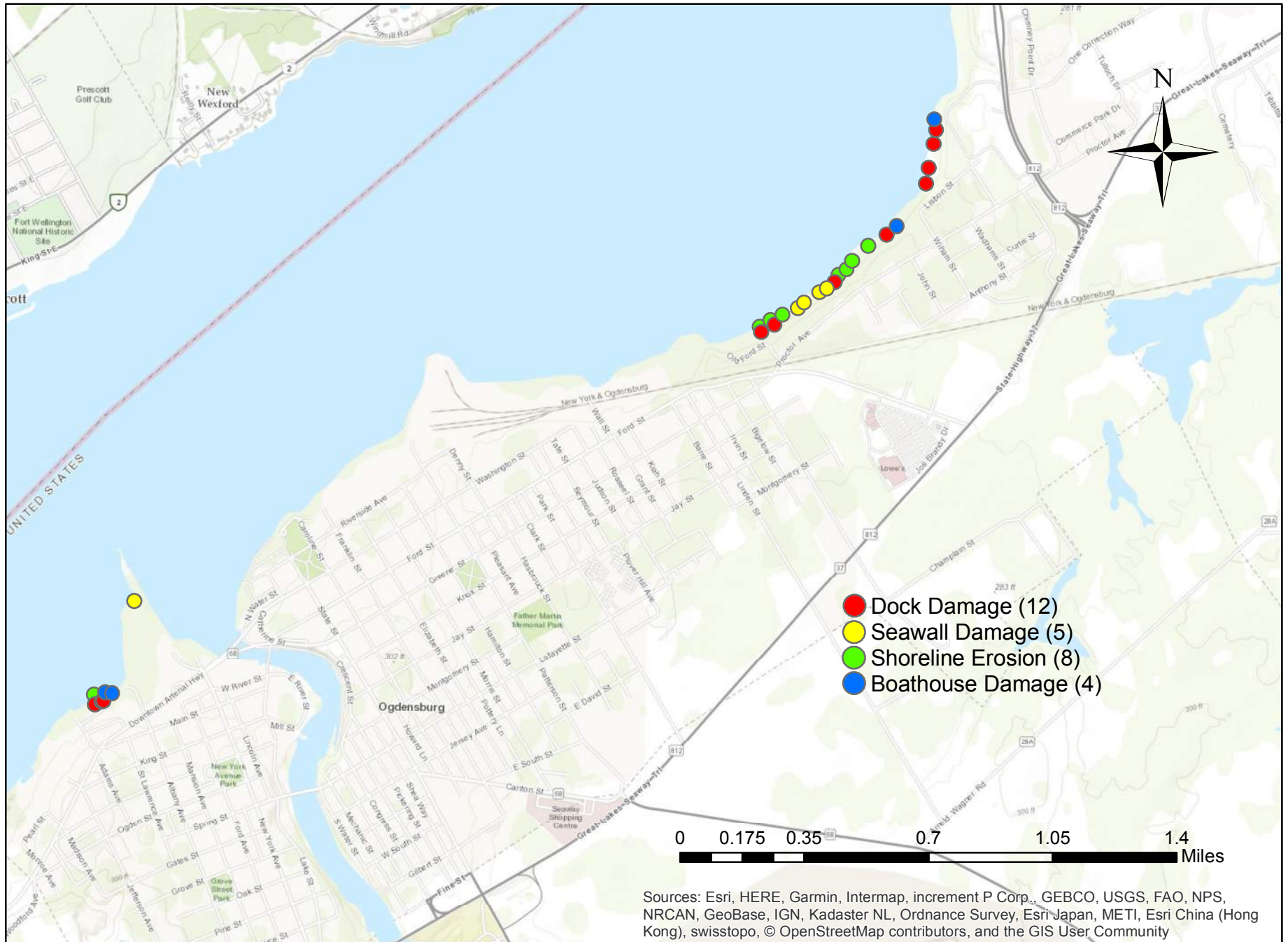
Reports of Seawall Damage 2017- Town of Morristown



Damage Reports 2017- Village of Morristown

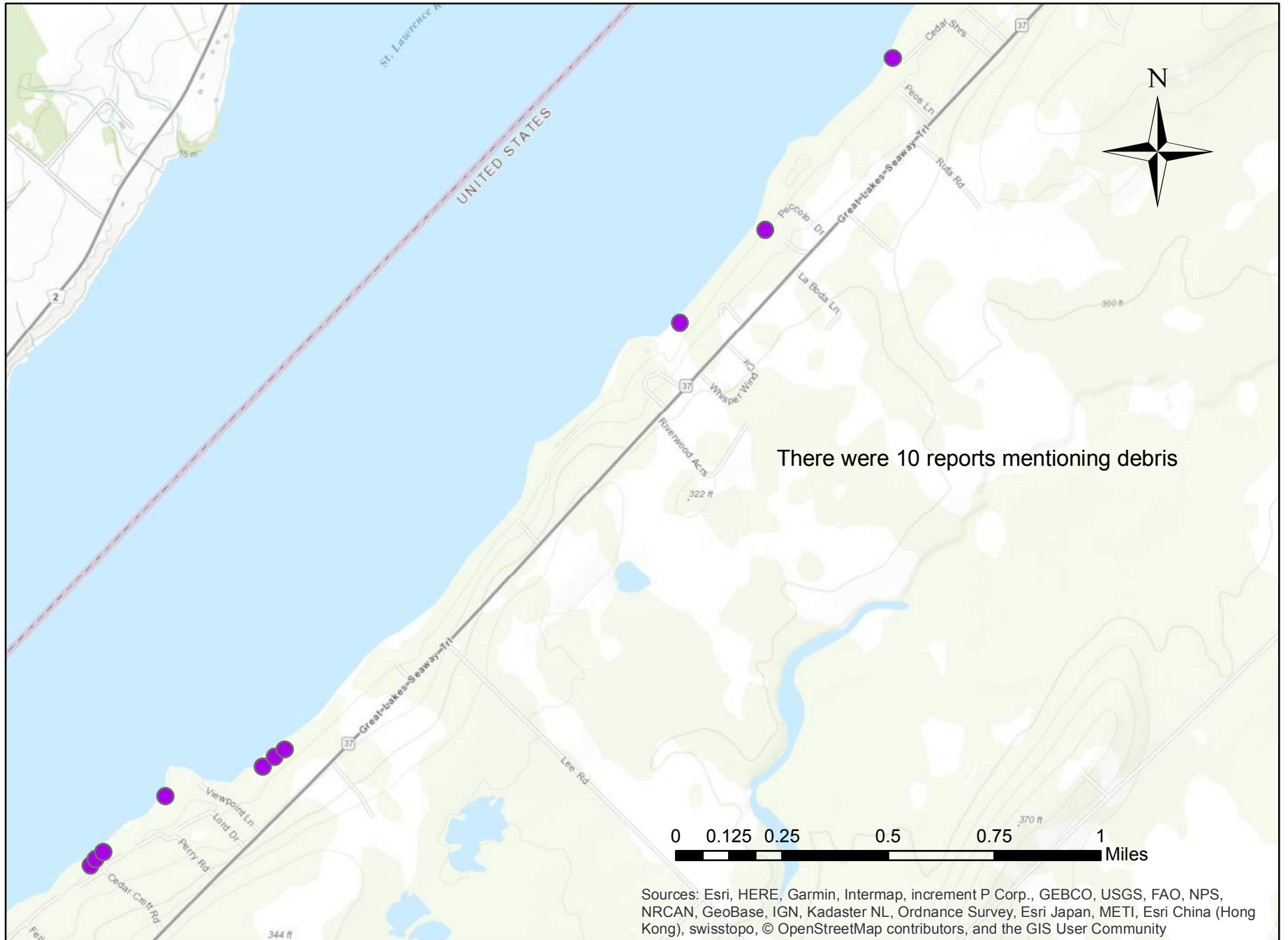


Flood Damage Reports 2017- Ogdensburg

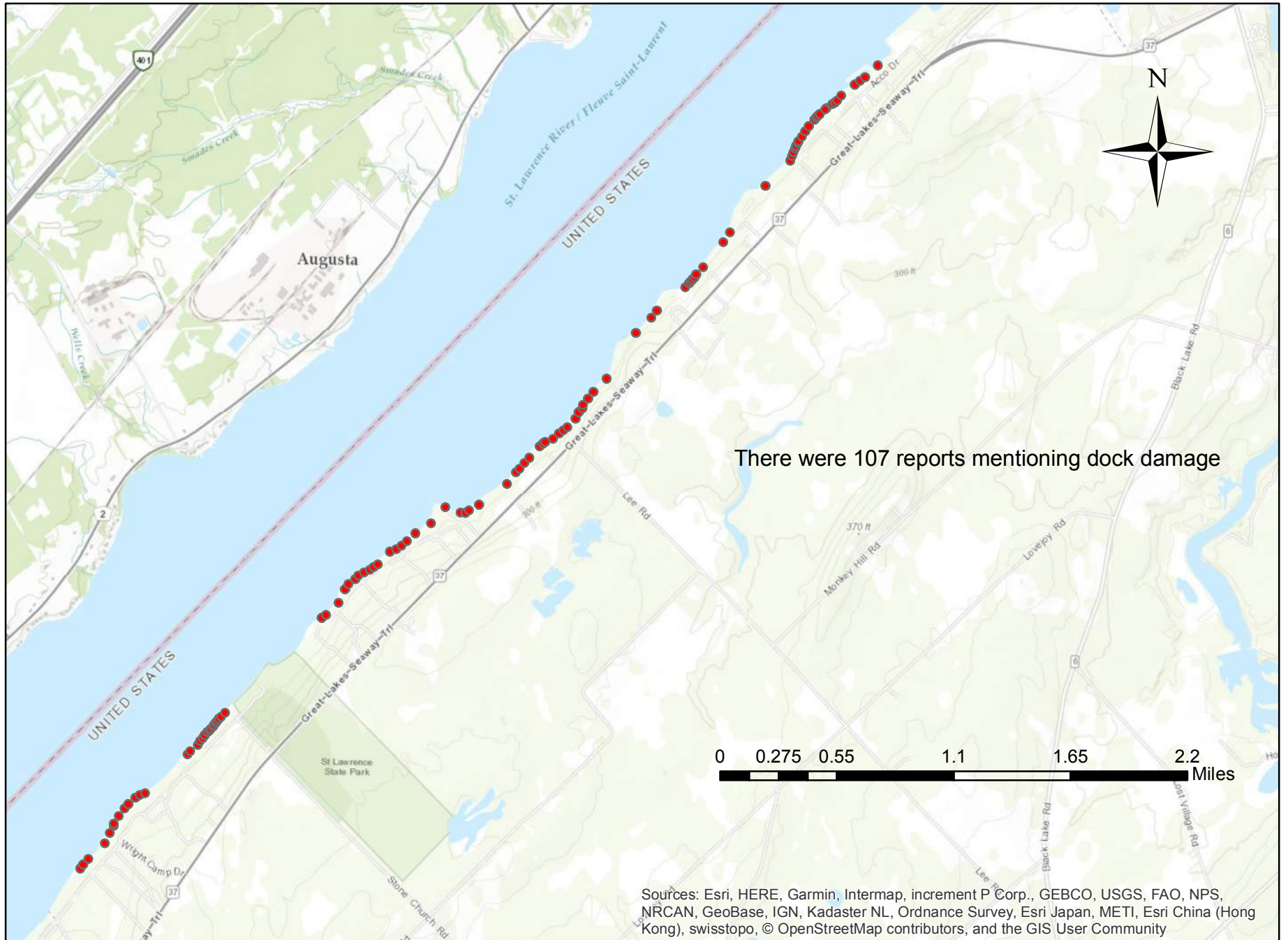


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

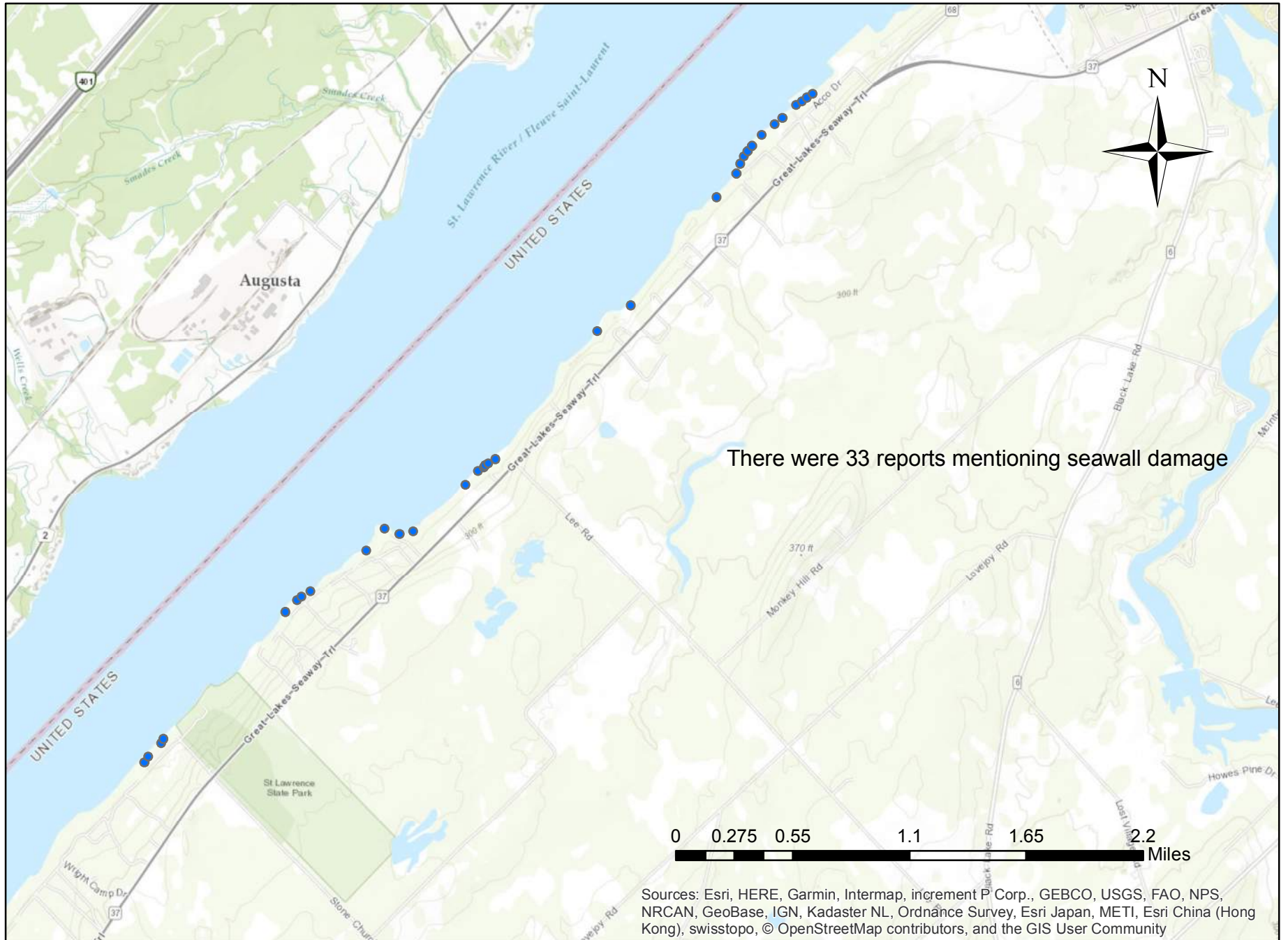
Debris Reports 2017- Oswegatchie



Reported Dock Damage 2017- Oswegatchie



Reported Seawall Damage 2017- Oswegatchie



Appendix B: Project Photographs



A naturally resilient shoreline example in Chippewa Bay



Vegetative Buffers and marsh areas support many valuable species as well as mitigating erosion



Residing along shorelines in flood risk areas requires adaptive building strategies to avoid damages



Elevating structures can be a method for mitigating flood damages



Naturally hard shorelines such as this one can be strategic building opportunities as they are able to resist much erosion



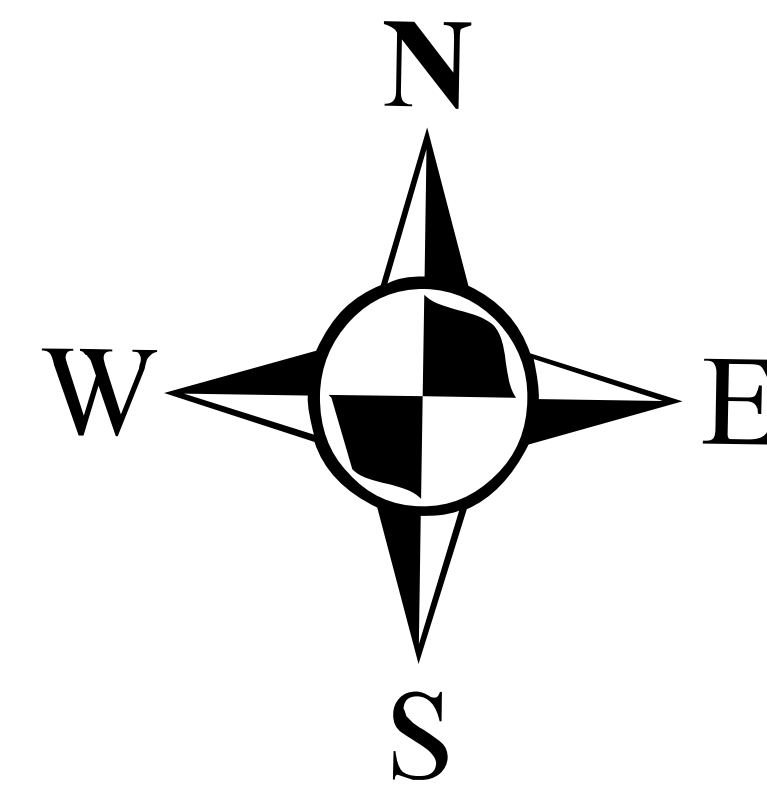
Accessory / noncritical infrastructure such as docks and boat garages are typically the assets for which the most damage is reported during a flood event




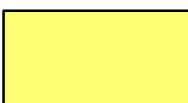
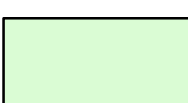
Preserving vegetation is critical to shoreline resiliency - this example shows a stone retaining wall designed around an existing tree to make use of its sturdy root system as part of the shoreline

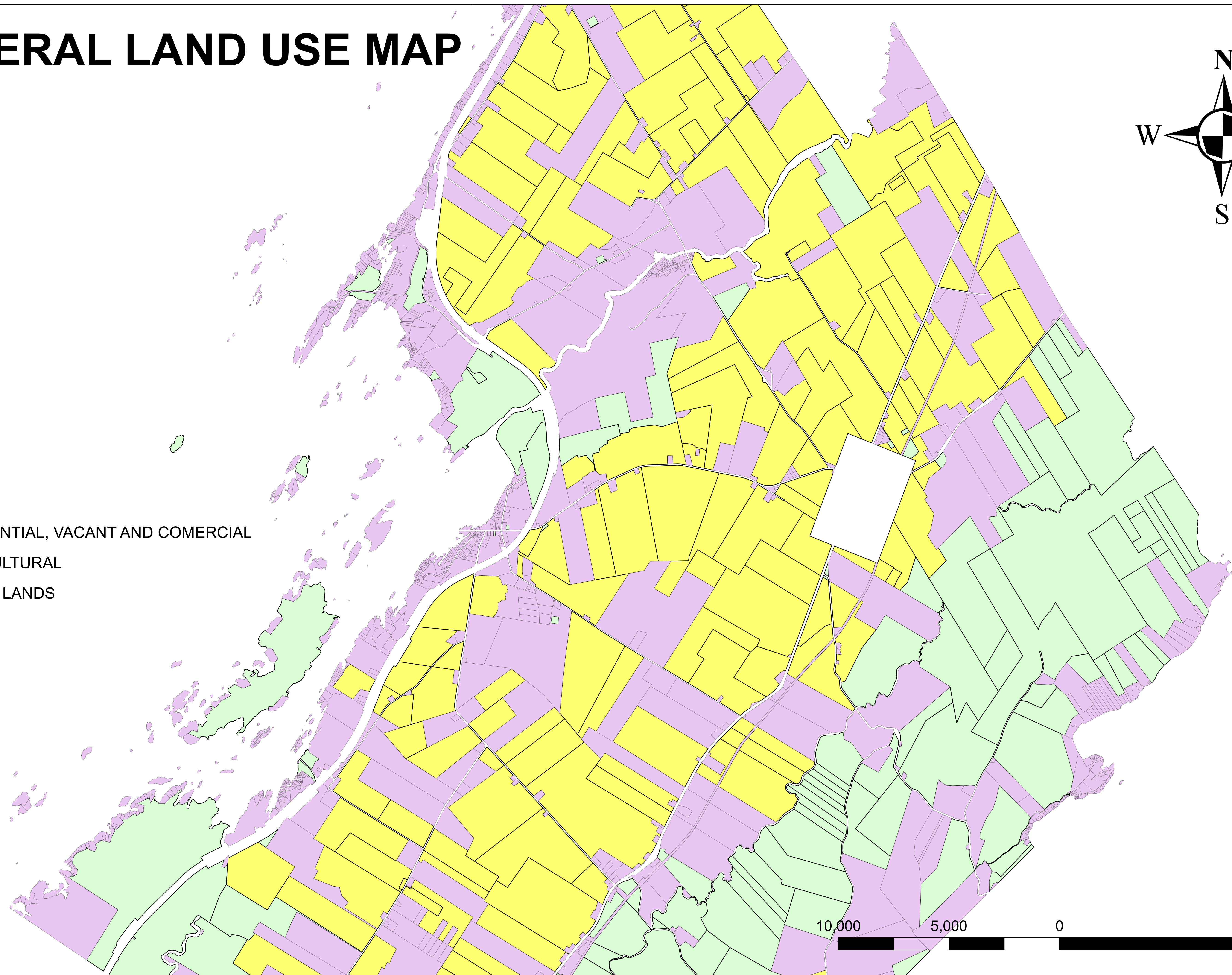
Appendix C: Demographic Data, Land Use, and Zoning

GENERAL LAND USE MAP

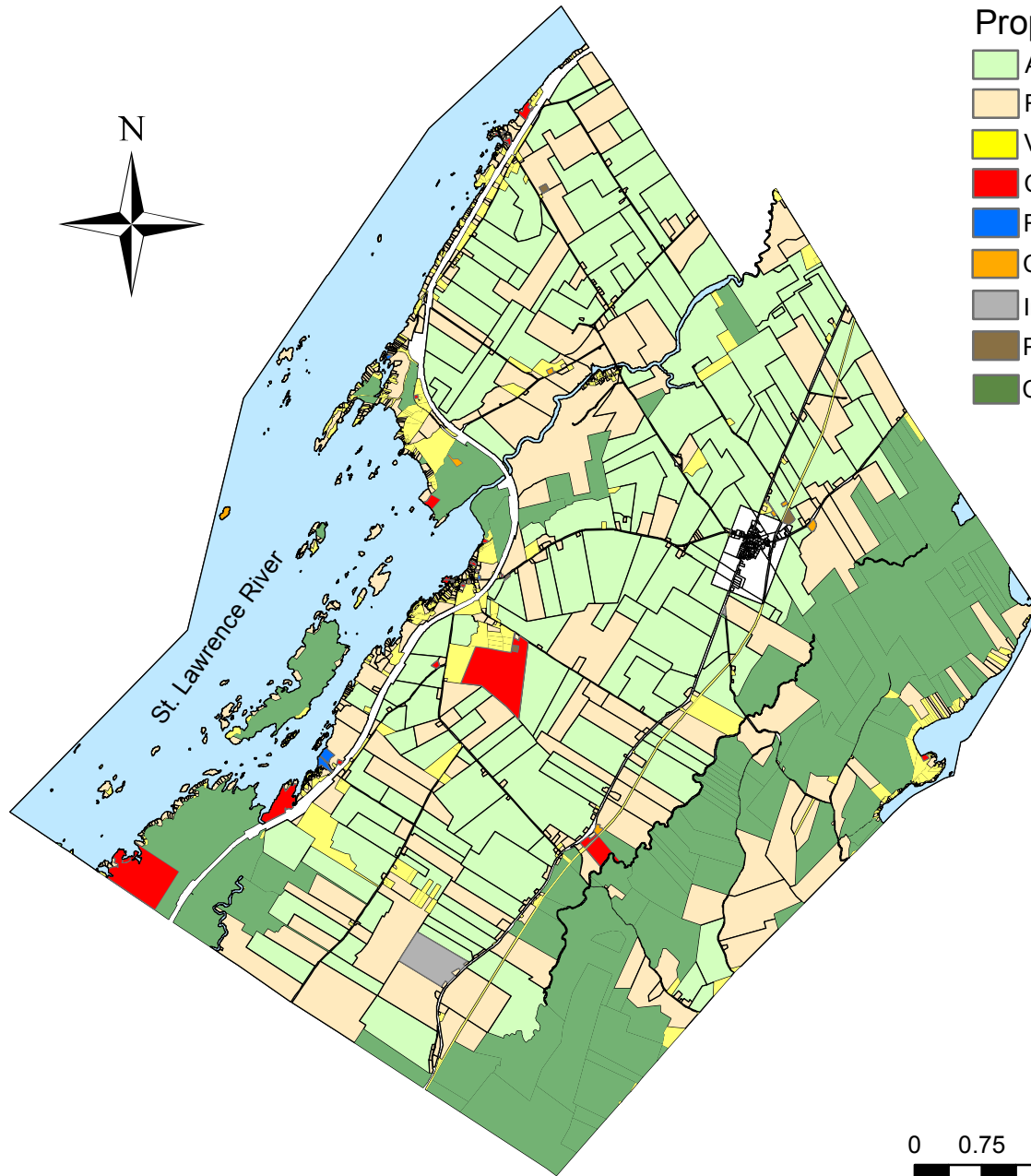


Legend






-  RESIDENTIAL, VACANT AND COMERCIAL
-  AGRICULTURAL
-  PUBLIC LANDS

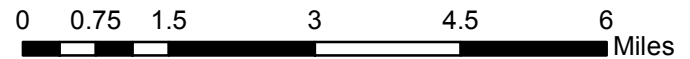


Town of Hammond Land Use Map

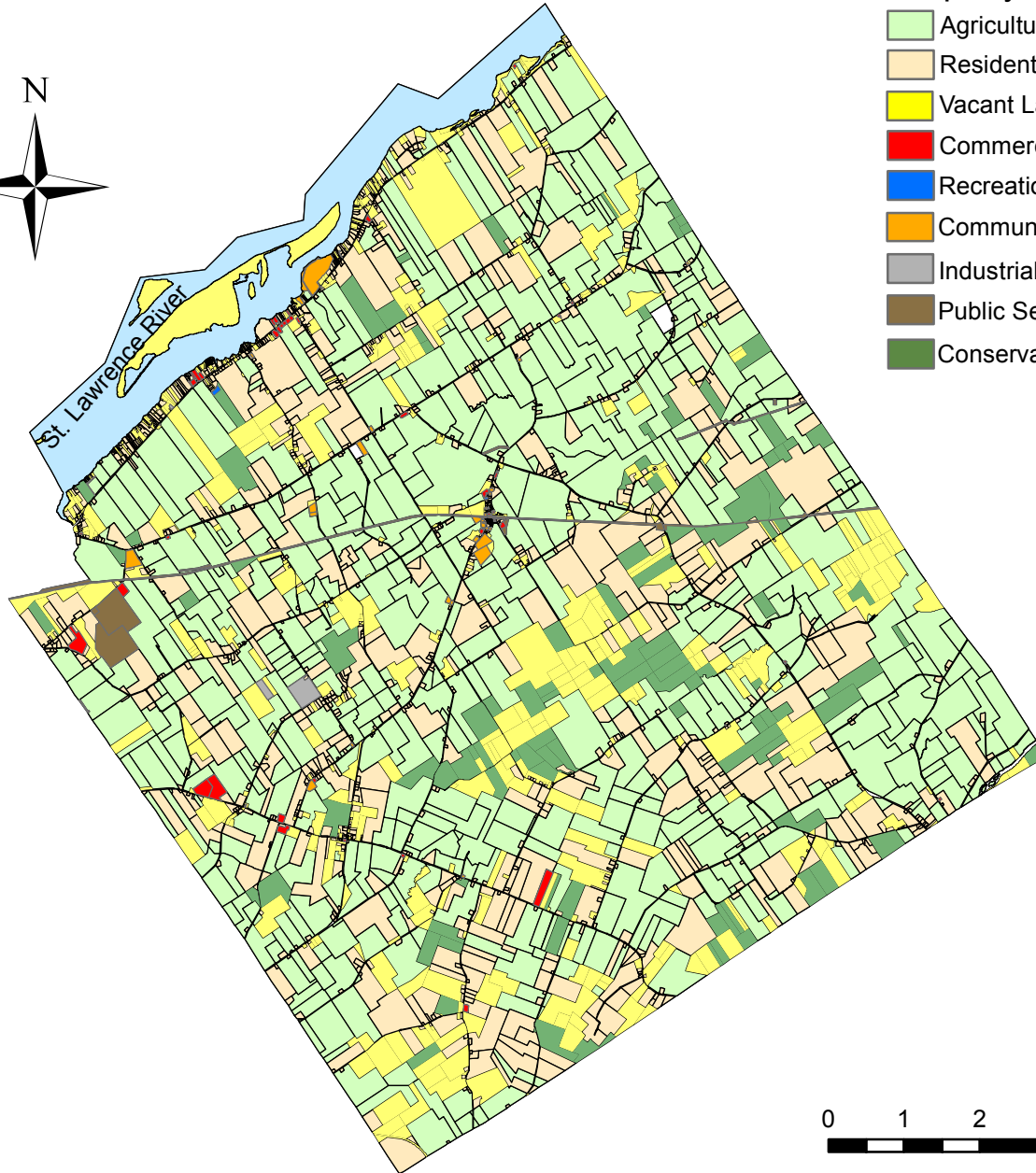


Property Class/ # of parcels/ # of acres










	Agricultural/ 174 parcels/ 18,215.6 acres
	Residential/ 1,111 parcels/ 15,655.38 acres
	Vacant Land/ 413 parcels/ 2,120.33 acres
	Commercial/ 24 parcels/ 612.17 acres
	Recreation & Entertainment/ 5 parcels/ 31.85 acres
	Community Services/ 10 parcels/ 26.85 acres
	Industrial/ 2 parcels/ 148.8 acres
	Public Services/ 4 parcels/ 13.72 acres
	Conservation & Parks/ 105 parcels/ 13,058.63 acres

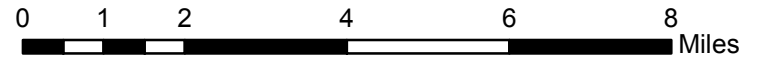


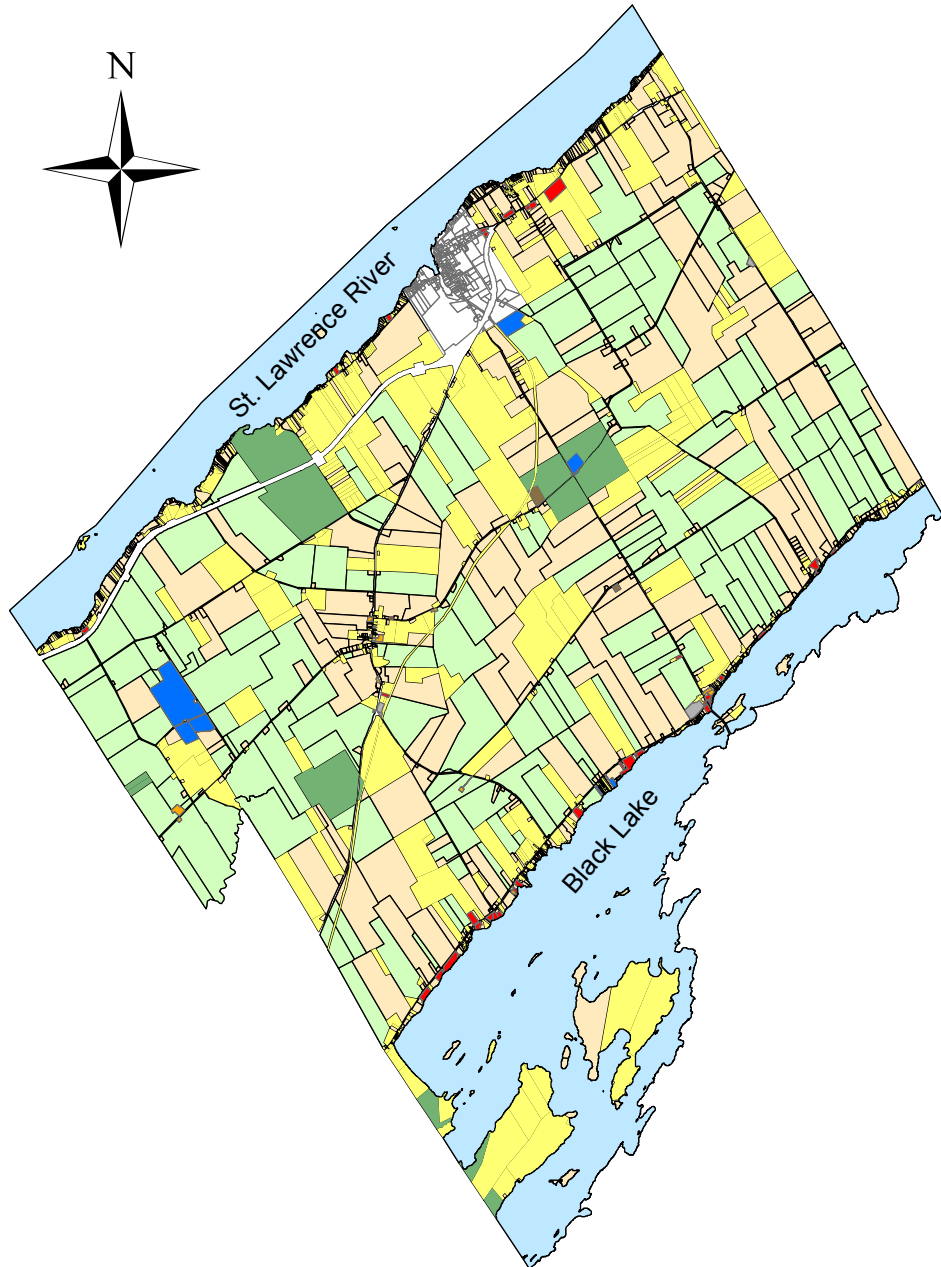
Town of Lisbon Land Use Map



Property Class/ # of parcels/ # of acres










	Agricultural/ 610 parcels/ 55,653.85 acres
	Residential/ 1516 parcels/ 22,176.05 acres
	Vacant Land/ 593 parcels/ 10,795.2 acres
	Commercial/ 47 parcels/ 202.79 acres
	Recreation & Entertainment/ 2 parcels/ 6 acres
	Community Services/ 35 parcels/ 190.79 acres
	Industrial/ 3 parcels/ 85 acres
	Public Services/ 30 parcels/ 1,499.9 acres
	Conservation & Parks/ 110 parcels/ 4,876.31 acres

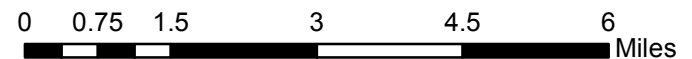




Town of Morristown Land Use Map

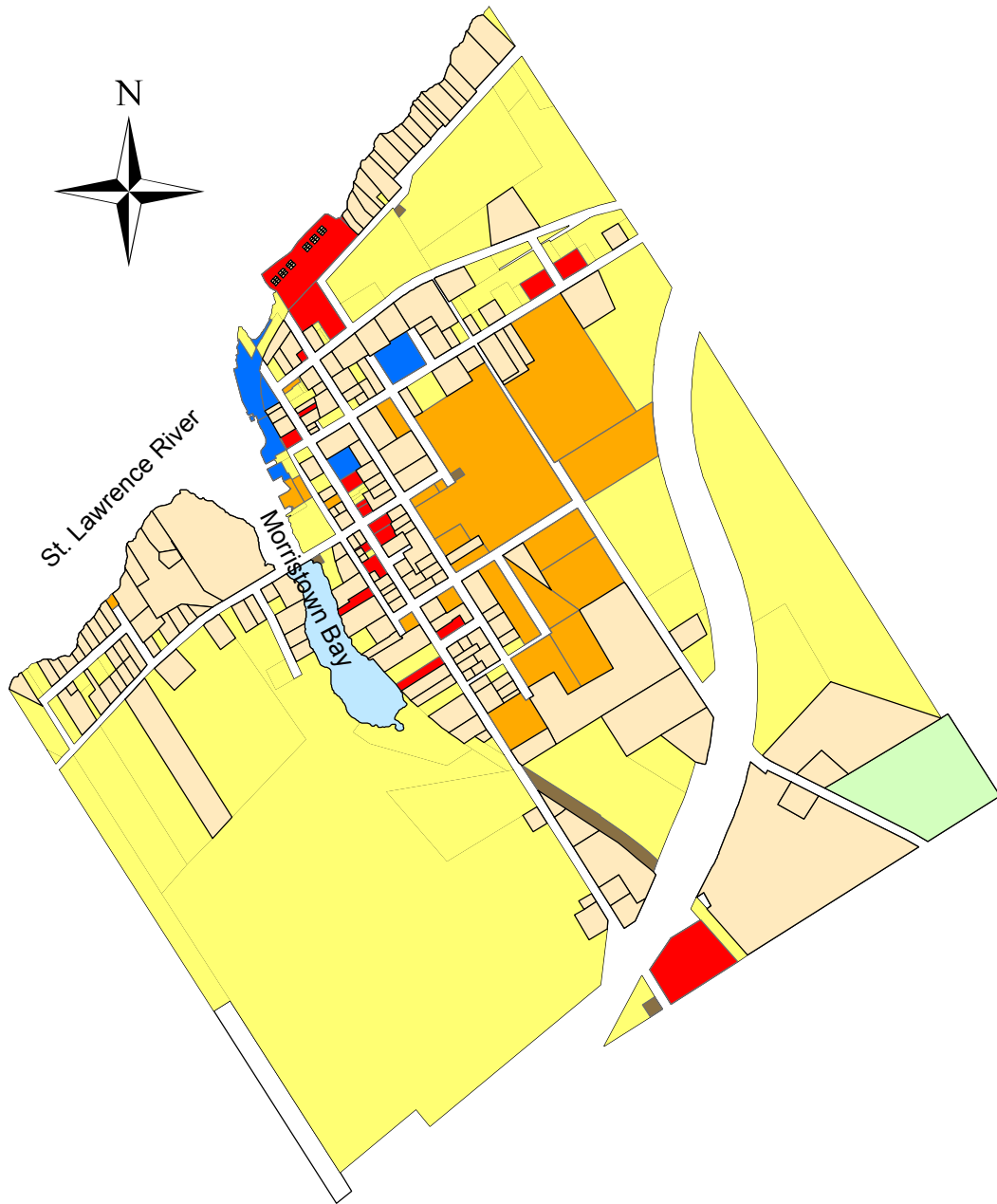
Property Class/ # of parcels/ # of acres

	Agricultural/ 169 parcels/ 14,387.51 acres
	Residential/ 1,232 parcels/ 13,357.66 acres
	Vacant Land/ 496 parcels/ 7,183.07 acres
	Commercial/ 44 parcels/ 108.69 acres
	Recreation & Entertainment/ 8 parcels/ 361.40 acres
	Community Services/ 12 parcels/ 22.64 acres
	Industrial/ 4 parcels/ 20 acres
	Public Services/ 5 parcels/ 26.88 acres
	Conservation & Parks/ 14 parcels/ 2,823.4 acres









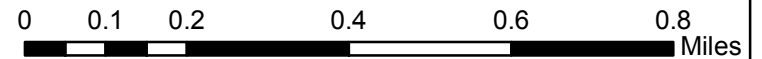


Village of Morristown Land Use Map

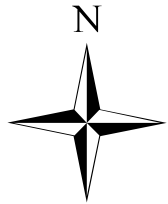


Property Class/ # of parcels/ # of acres










	Agricultural/ 1 parcel/ 12.2 acres
	Residential/ 218 parcels/ 103.5 acres
	Vacant Land/ 86 parcels/ 297.07 acres
	Commercial/ 19 parcels/ 10.73 acres
	Recreation & Entertainment/ 7 parcels/ 3.81 acres
	Community Services/ 22 parcels/ 56.81 acres
	Industrial/ 0 parcels/ 0 acres
	Public Services/ 5 parcels/ 2.44 acres
	Conservation & Parks/ 0 parcels/ 0 acres

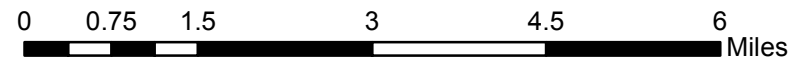
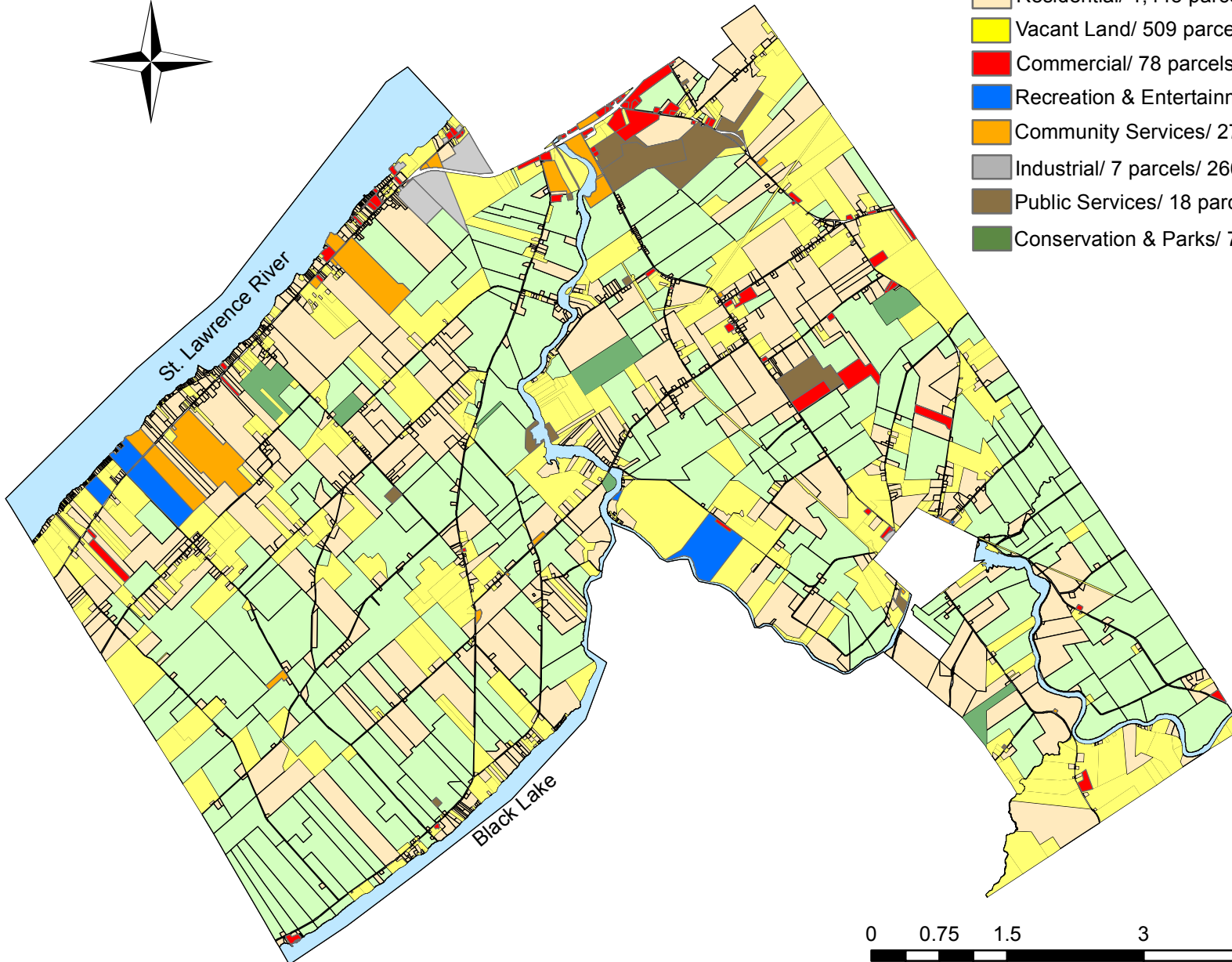


Town of Oswegatchie Land Use Map



Property Class/ # of parcels/ # of acres

	Agricultural/ 254 parcels/ 26,751.63 acres
	Residential/ 1,445 parcels/ 16,149.64 acres
	Vacant Land/ 509 parcels/ 9,106.4 acres
	Commercial/ 78 parcels/ 489.34 acres
	Recreation & Entertainment/ 6 parcels/ 540.2 acres
	Community Services/ 27 parcels/ 1,059.72 acres
	Industrial/ 7 parcels/ 266.4 acres
	Public Services/ 18 parcels/ 681.5 acres
	Conservation & Parks/ 7 parcels/ 472.2 acres



Appendix D: Floodplain Protection Overlay Districts

TOWN OF HAMMOND

FLOODPLAIN PROTECTION OVERLAY DISTRICT



Legend

- LargeCulverts_May2016
- Bridges_May2016

Town_Hammond_Contours_GreatLakes_FEMA_2ft

- LIMITS OF FLOODPLAIN PROTECTION OVERLAY DISTRICT
- NYS Wetlands with 100 ft protection zone
- ▲ DAMAGE REPORTS 2017



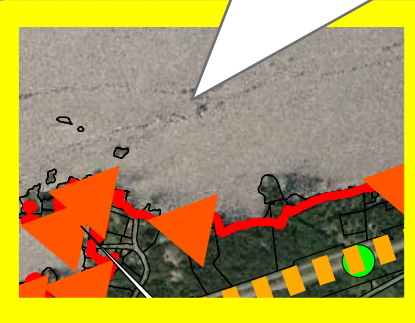
BLIND BAY



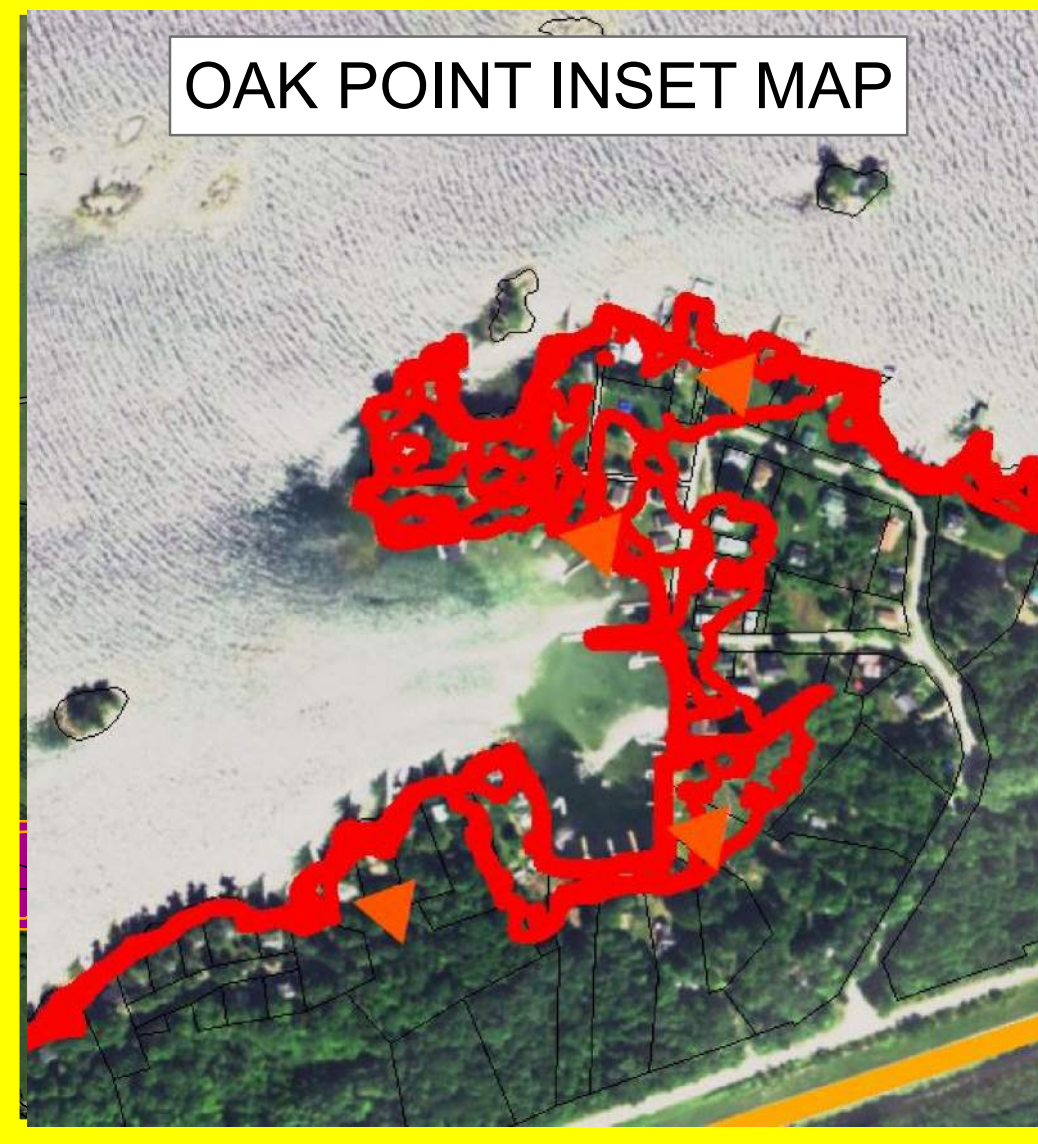
NYS ROUTE 12

STUDY BOUNDARY

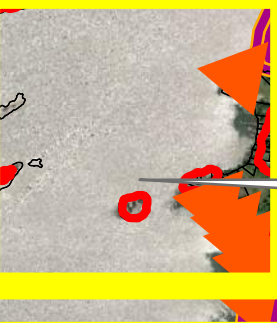
OAK POINT SEE INSET MAP



DAMAGE REPORTS 2017
126 TOTAL



LITTLE HAMMOND POINT



ALLENS POINT
SEE INSET MAP



CHIPPEWA BAY SEE INSET MAP



DAMAGES REPORTS 2017
126 TOTAL

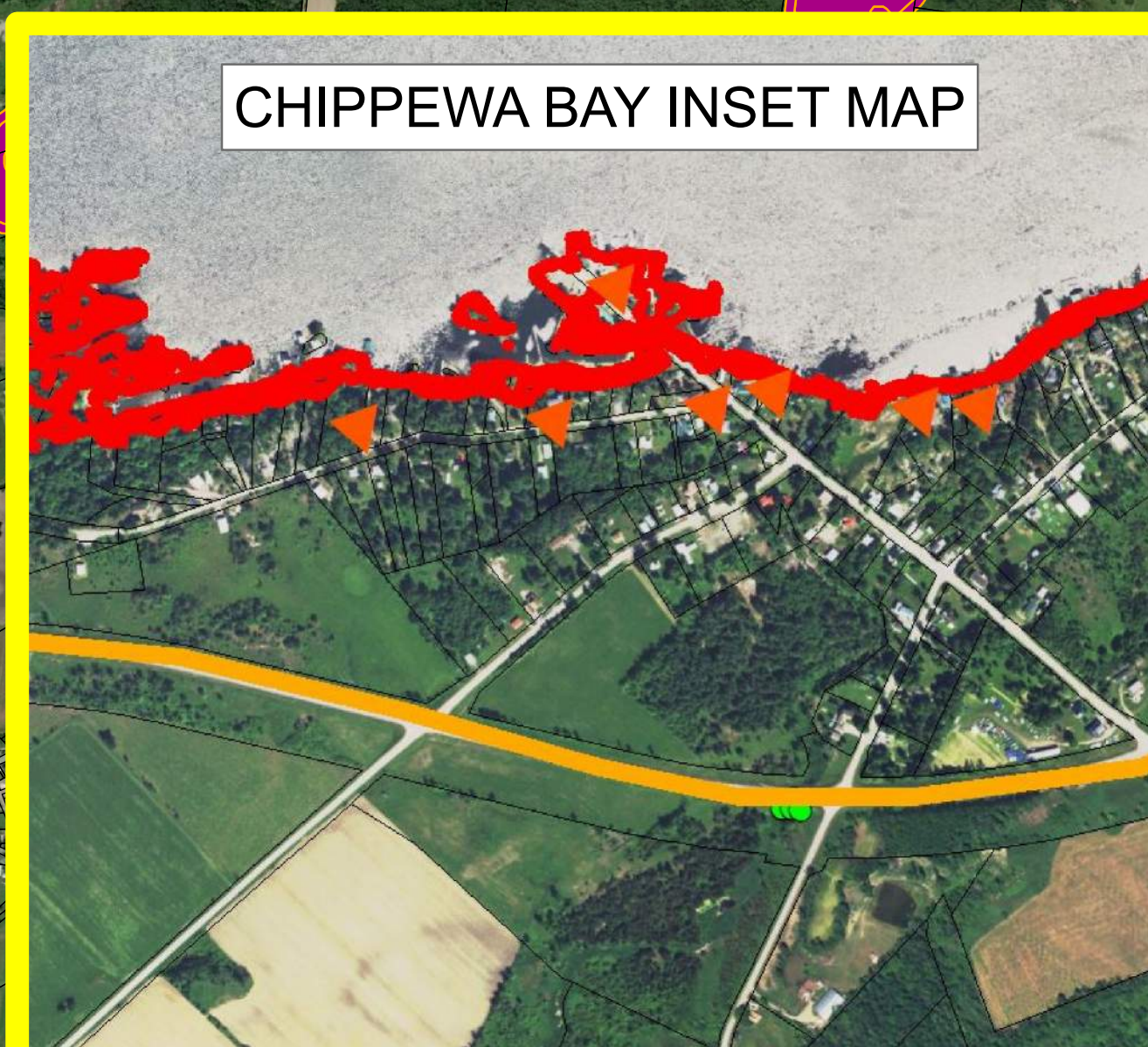
SCHERMERHORN LANDING
SEE INSET MAP



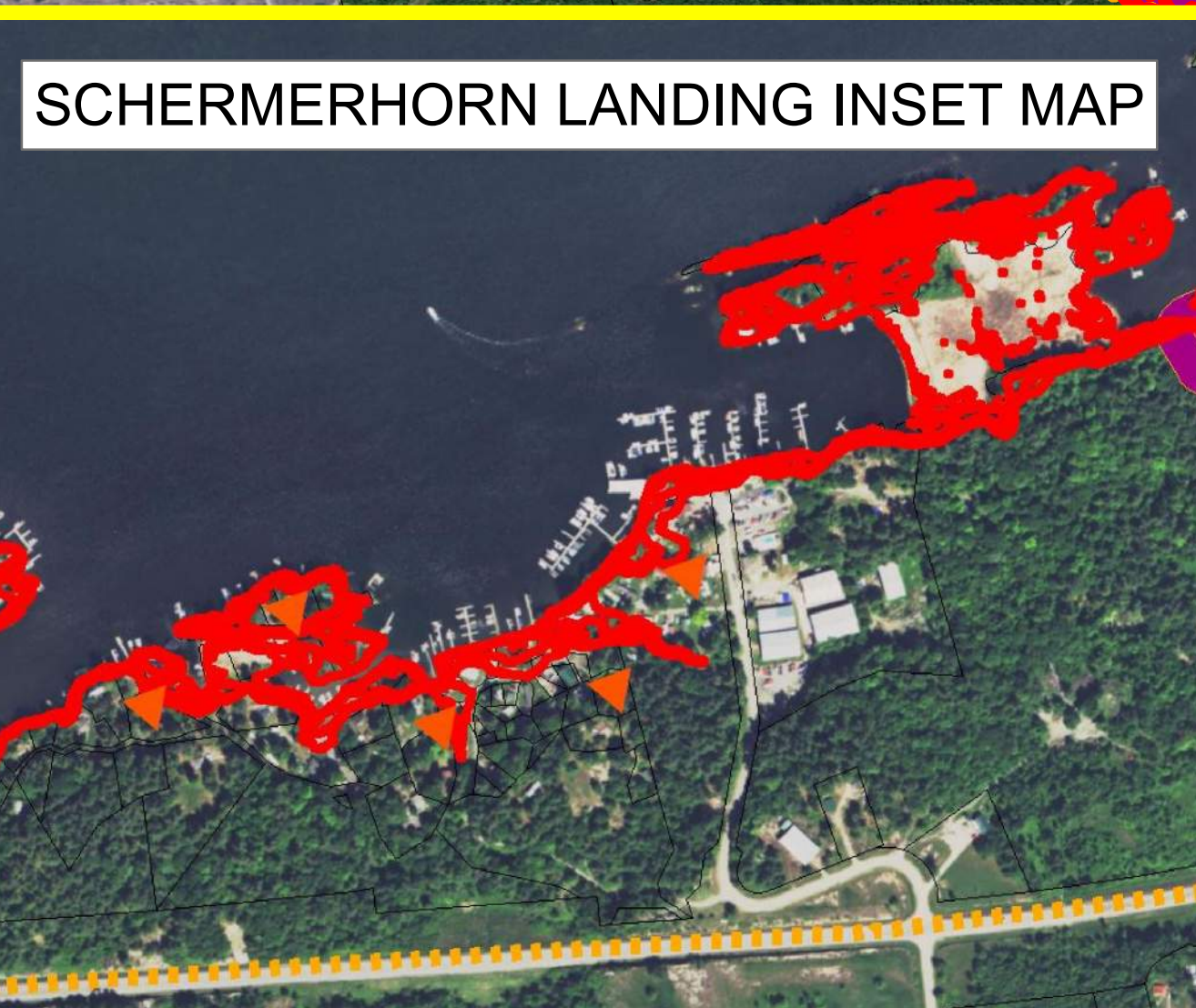
NYS ROUTE 12

DAMAGE REPORTS 2017
126 TOTAL

STUDY BOUNDARY

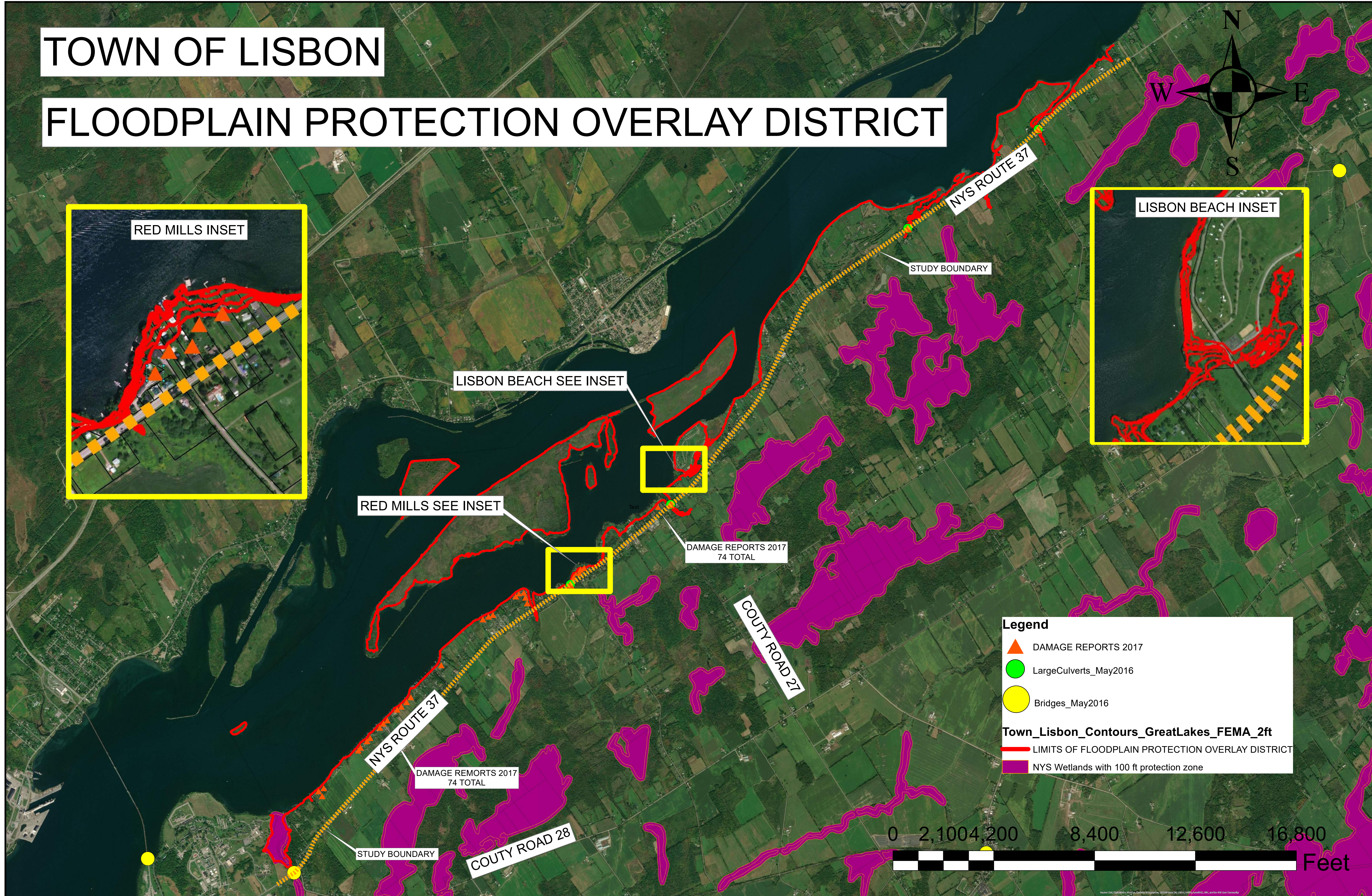
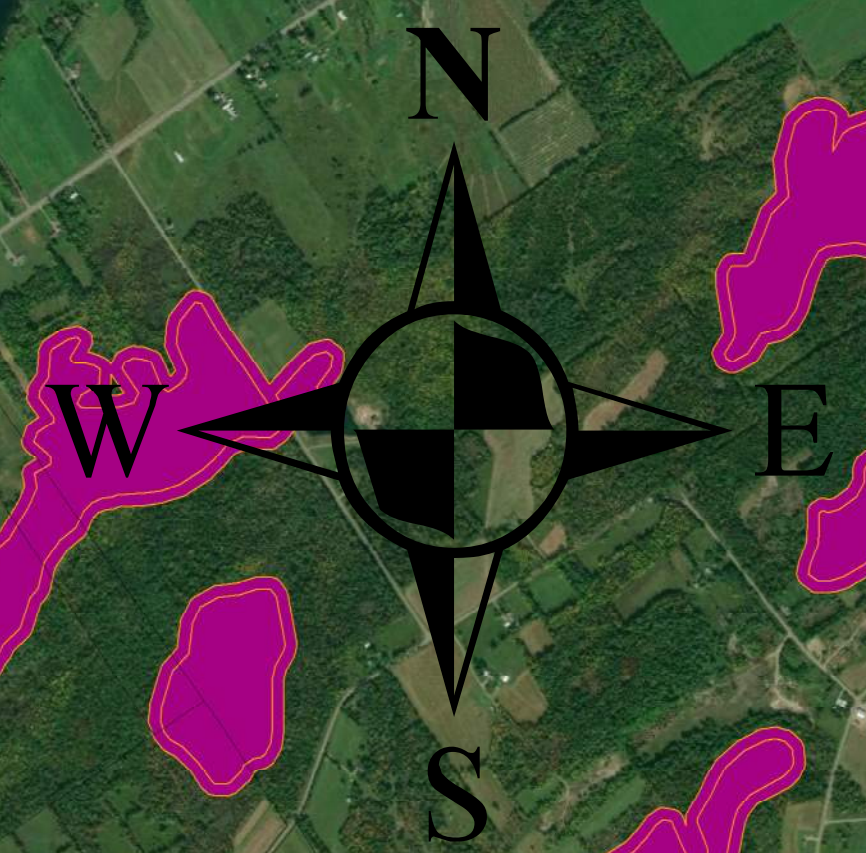


SCHERMERHORN LANDING INSET MAP



TOWN OF LISBON

FLOODPLAIN PROTECTION OVERLAY DISTRICT



LISBON BEACH SEE INSET

RED MILLS SEE INSET

DAMAGE REPORTS 2017
74 TOTAL

COUTY ROAD 27

DAMAGE REMORTS 2017
74 TOTAL

COUTY ROAD 28

STUDY BOUNDARY

STUDY BOUNDARY

NYS ROUTE 37

NYS ROUTE 37

Legend

- ▲ DAMAGE REPORTS 2017
- LargeCulverts_May2016
- Bridges_May2016

Town_Lisbon_Contours_GreatLakes_FEMA_2ft

- LIMITS OF FLOODPLAIN PROTECTION OVERLAY DISTRICT
- NYS Wetlands with 100 ft protection zone



TOWN OF MORRISTOWN

FLOODPLAIN PROTECTION OVERLAY DISTRICT



POINT COMFORT

JAQUES CARTIER STATE PARK

BROOKS POINT

SEE INSET MAP
RIVER ROAD

VILLAGE OF MORRISTOWN

LOMA INFORMATION

NYS ROUTE 12

DAMAGE REPORTS
90 TOTAL

NYS ROUTE 37

STUDY BOUNDARY



Legend

- ▲ DAMAGE REPORT 2017
- ★ LOMA INFORMATION
- LargeCulverts_May2016
- Bridges_May2016
- Water_Main
- Storm_Line
- Sewer_Main
- NYS Wetlands with 100 ft protection zone

Town_Morristown_Contours_GreatLakes_FEMA_2ft

— LIMITS OF FLOODPLAIN PROTECTION OVERLAY DISTRICT



TOWN OF OSWEGATCHIE FLOODPLAIN PROTECTION ZONE



DAMAGE REPORTS 2017
150 TOTAL

LOMA INFORMATION

NYS ROUTE 37

ST LAWRENCE PARK

STUDY BOUNDARY

LEE ROAD

MONKEY HILL ROAD

Legend

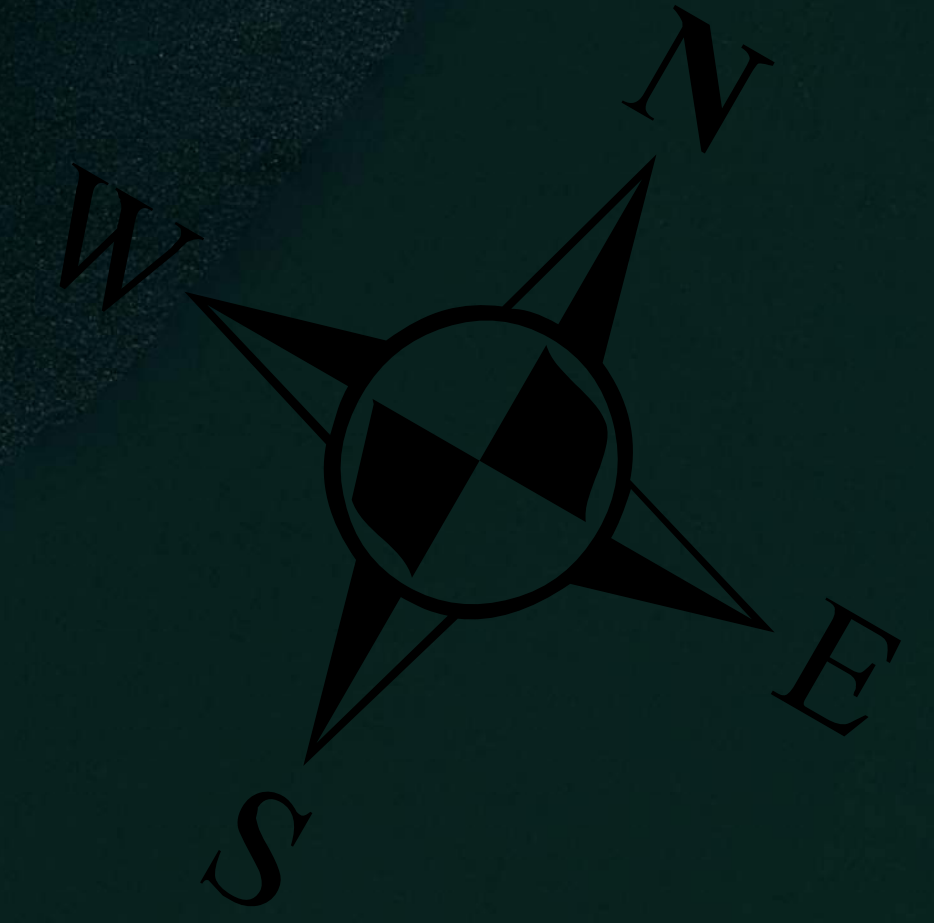
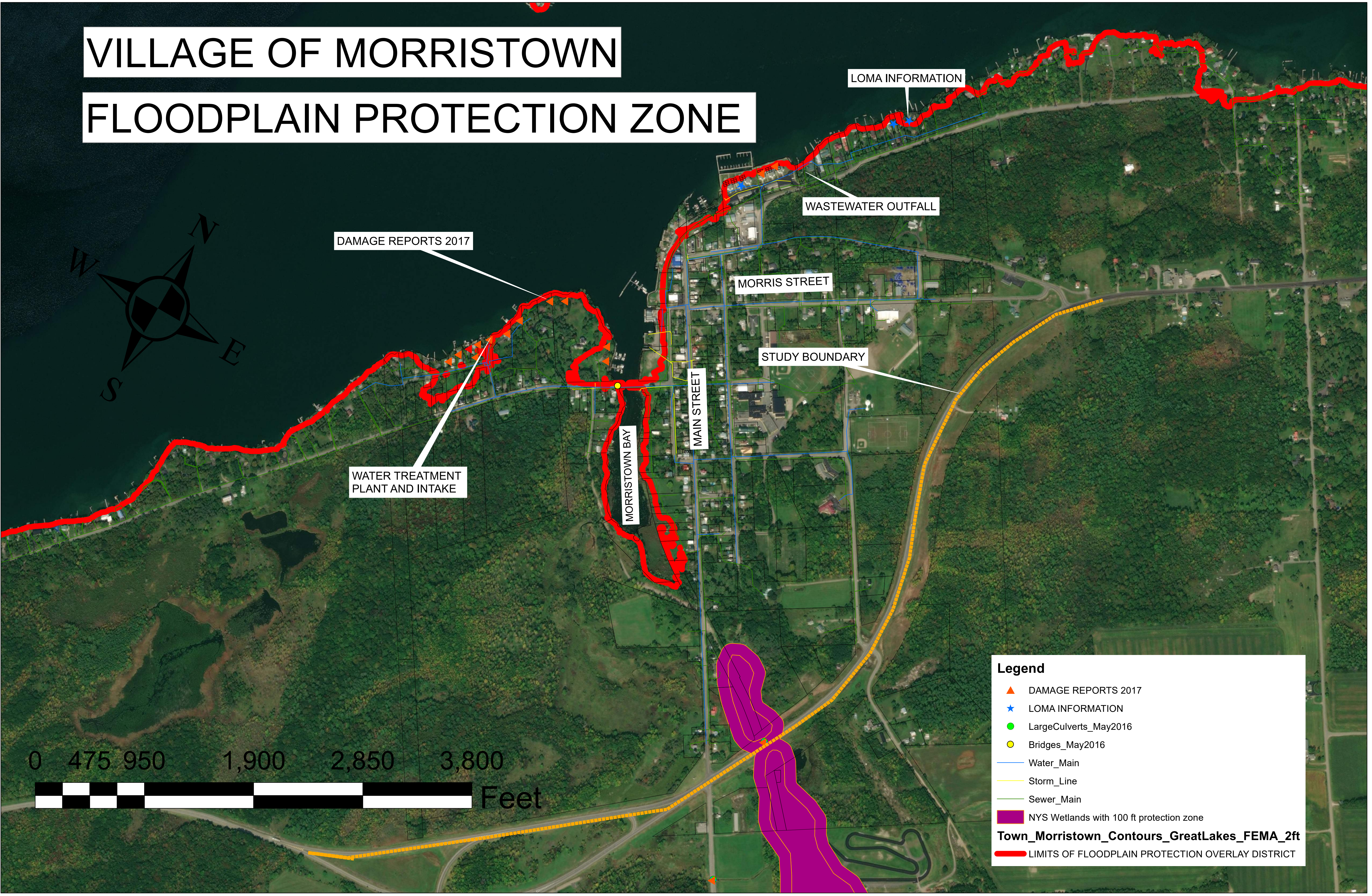
- ★ LOMA INFORMATION
- ▲ DAMAGE REPORTS 2017
- LargeCulverts_May2016
- Bridges_May2016

Town_Oswegatchie_Contours_GreatLakes_FEMA_2ft

- LIMITS OF FLOODPLAIN PROTECTION OVERLAY DISTRICT
- NYS Wetlands with 100 ft protection zone



VILLAGE OF MORRISTOWN FLOODPLAIN PROTECTION ZONE



Legend

- ▲ DAMAGE REPORTS 2017
- ★ LOMA INFORMATION
- LargeCulverts_May2016
- Bridges_May2016
- Water_Main
- Storm_Line
- Sewer_Main
- NYS Wetlands with 100 ft protection zone

Town_Morristown_Contours_GreatLakes_FEMA_2ft

— LIMITS OF FLOODPLAIN PROTECTION OVERLAY DISTRICT