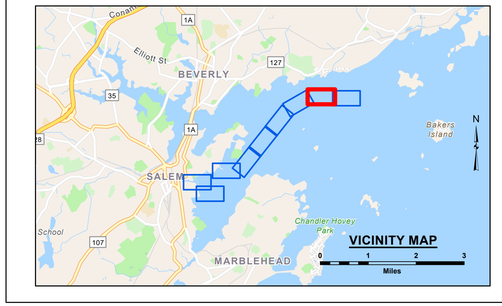




LEGEND

- Federal Navigation Channel
- Cable or Pipe Areas
- Channel Center Line
- State Maintained
- Marine Infrastructure*
- Contour Line
- Fixed Navigation Aids
- Obstruction Point
- Red Navigation Buoy
- Green Navigation Buoy
- Shoaling Area
- Shoalest Sounding**

** Shoalest Sounding per Quarter per Reach

GRAPHIC SCALE

100 0 100 200

1" = 100' Feet

N W E S

Notes:

Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: Depth_Units
Vessel Name: POPHAM BEACH
Sonar System: Reson T50 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS Tides
GPS_System: INS Integrated Reson (RTK)
RTK Base Station: MTS Smartnet Max
Software Used: Hypack
Sounding Sort Distance: 30'
Field Books: R&H 4981
Survey No.: MA_11_SAL_20250320_CS_007
Reference NOAA Chart No.: US5MA1RH, US5MA1SH

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Project Remarks

Marine Infrastructure surveyed with lidar.

Water Level Information

Tides were recorded using RTK GPS. NAVD88 to MLLW corrections were logged utilizing NOAA's V-Datum regional model Maine/New Hampshire/Massachusetts Version 2.3. The corrections in the project area range from 5.13 feet to 5.16 feet. MLLW is below NAVD88; therefore, the correction should be added to NAVD88 to convert to MLLW (e.g.-10 NAVD88 = -8 MLLW when using a 2-foot correction).

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NEW ENGLAND DISTRICT

SUBMITTED BY: Zachary McAvoy
APPROVED BY: NAE Survey
SURVEYED BY: BTM
CHECKED BY: ZSM
ISSUE DATE: 4/25/2025
SIZE: ANSI D
MAP DOCUMENT: MA_11_SAL_20250320_CS_007

US Army Corps of Engineers
District: CENAE

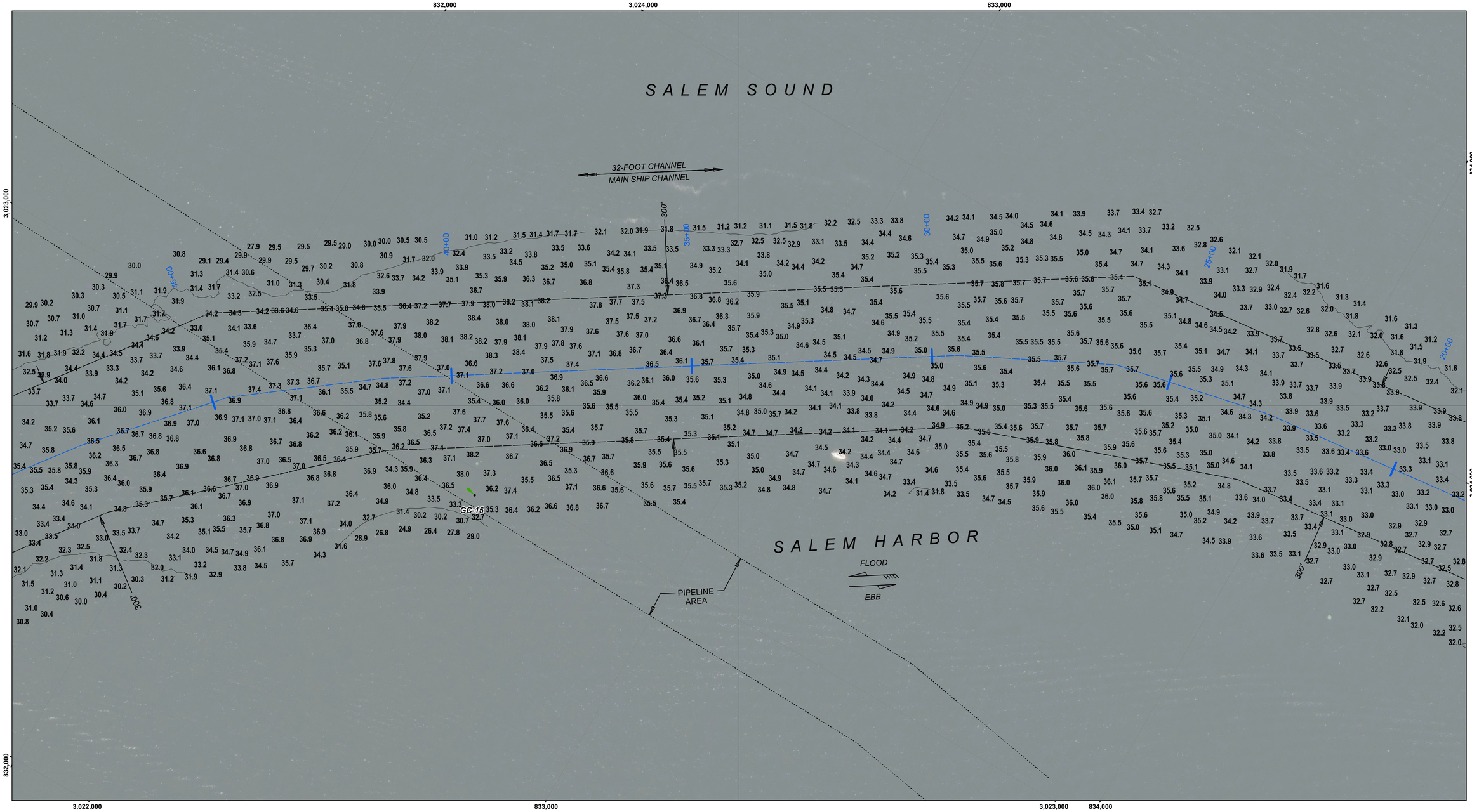
SALEM HARBOR
SALEM, BEVERLY, AND MARBLEHEAD, MASSACHUSETTS
CONDITION SURVEY
32, 10, 8 AND 6-FOOT CHANNELS, 8-FOOT CHANNEL AND TURNING BASIN

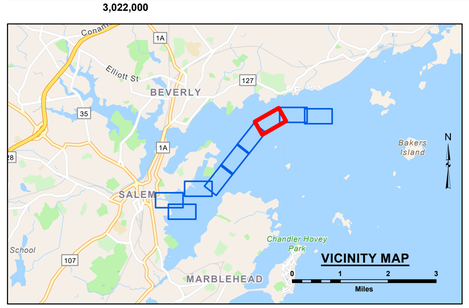
File Name: MA_11_SAL_20250320_CS_007

SHEET IDENTIFICATION
Salem Harbor

Sheet 2 of 9

Revision Number: 5.24.09.03-5.24.09.03





LEGEND

- Federal Navigation Channel
- Cable or Pipe Areas
- Channel Center Line
- State Maintained
- Marine Infrastructure*
- Contour Line
- Fixed Navigation Aids
- Obstruction Point
- Red Navigation Buoy
- Green Navigation Buoy
- Shoaling Area
- Shoalest Sounding**

** Shoalest Sounding per Quarter per Reach

GRAPHIC SCALE

100 0 100 200

1" = 100' Feet

Notes:

Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: Depth_Units
Vessel Name: POPHAM BEACH
Sonar System: Reson T50 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS Tides
GPS_System: INS Integrated Reson (RTK)
RTK Base Station: MTS Smartnet Max
Software Used: Hypack
Sounding Sort Distance: 30'
Field Books: R&H 4981
Survey No.: MA_11_SAL_20250320_CS_007
Reference NOAA Chart No.: US5MA1RH, US5MA1SH

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Project Remarks

Marine Infrastructure surveyed with lidar.

Water Level Information

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US Army Corps of Engineers
District: CENAE

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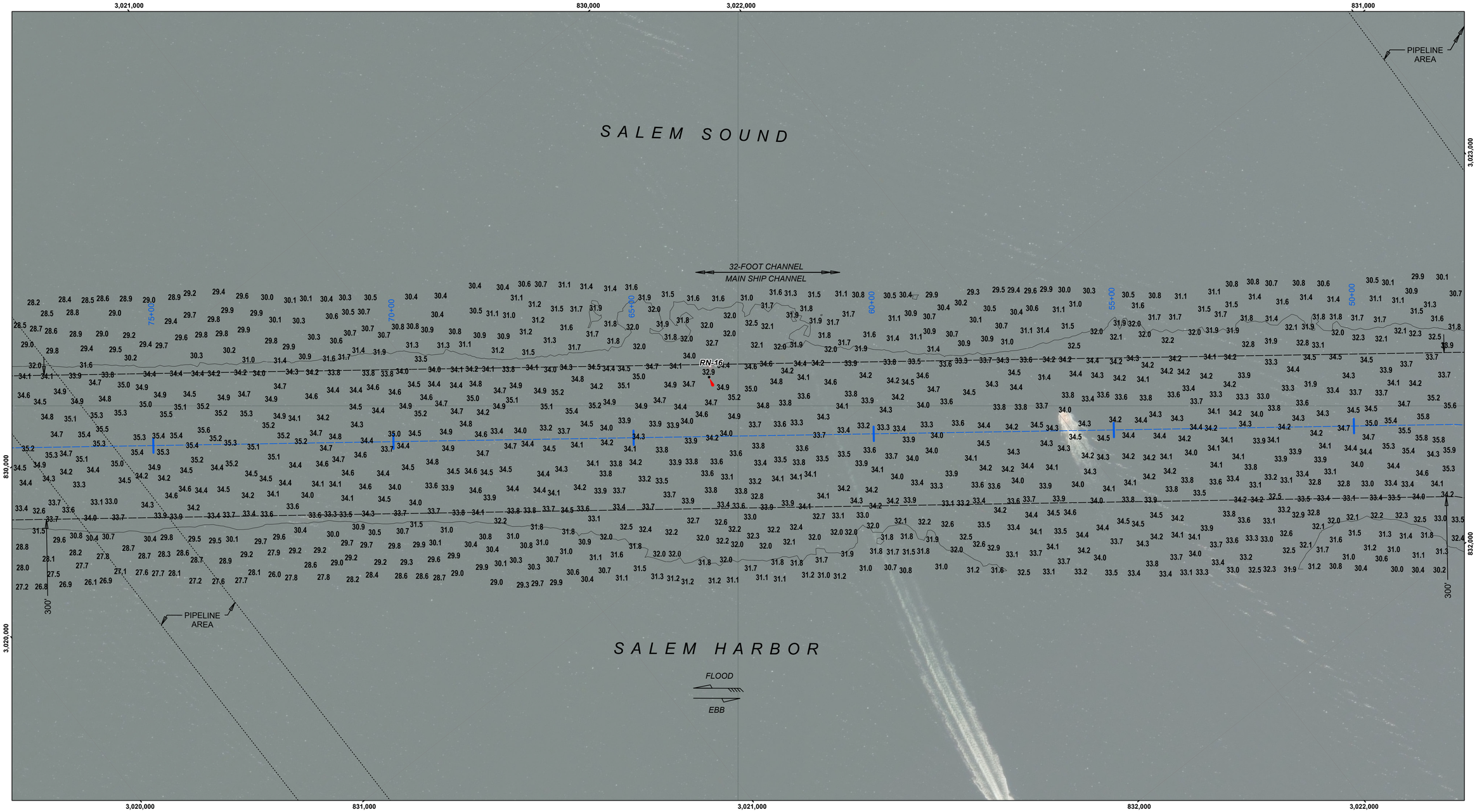
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

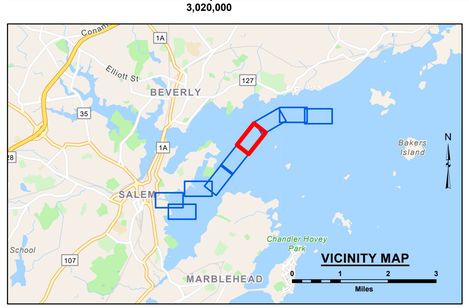
SUBMITTED BY: Zachary McAvoy
APPROVED BY: NAE Survey
SURVEYED BY: BTM
CHECKED BY: ZSM
ISSUE DATE: 4/25/2025
SIZE: ANSI D
MAP DOCUMENT: MA_11_SAL_20250320_CS_007

SALEM HARBOR
SALEM, BEVERLY, AND MARBLEHEAD, MASSACHUSETTS
CONDITION SURVEY
32, 10, 8 AND 6-FOOT CHANNELS, 8-FOOT CHANNEL AND TURNING BASIN
File Name: MA_11_SAL_20250320_CS_007

SHEET IDENTIFICATION
Salem Harbor
Sheet 3 of 9

Revision Number: 5.24.09.03-5.24.09.03





LEGEND

- Federal Navigation Channel
- Cable or Pipe Areas
- Channel Center Line
- State Maintained
- Marine Infrastructure*
- Contour Line
- Fixed Navigation Aids
- Obstruction Point
- Red Navigation Buoy
- Green Navigation Buoy
- Shoaling Area
- Shoalest Sounding**

** Shoalest Sounding per Quarter per Reach

GRAPHIC SCALE

100 0 100 200

1" = 100' Feet



Notes:
Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: Depth_Units
Vessel Name: POPHAM BEACH
Sonar System: Reson T50 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS Tides
GPS_System: INS Integrated Reson (RTK)
RTK Base Station: MTS Smartnet Max
Software Used: Hypack
Sounding Sort Distance: 30'
Field Books: R&H 4981
Survey No.: MA_11_SAL_20250320_CS_007
Reference NOAA Chart No.: US5MA1RH, US5MA1SH

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Project Remarks
Marine Infrastructure surveyed with lidar.

Water Level Information
Tides were recorded using RTK GPS. NAVD88 to MLLW corrections were logged utilizing NOAA's V-Datum regional model Maine/New Hampshire/Massachusetts Version 2.3. The corrections in the project area range from 5.13 feet to 5.16 feet. MLLW is below NAVD88; therefore, the correction should be added to NAVD88 to convert to MLLW (e.g.-10 NAV88 = -8 MLLW when using a 2-foot correction).

US Army Corps of Engineers
District: CENAE

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NEW ENGLAND DISTRICT

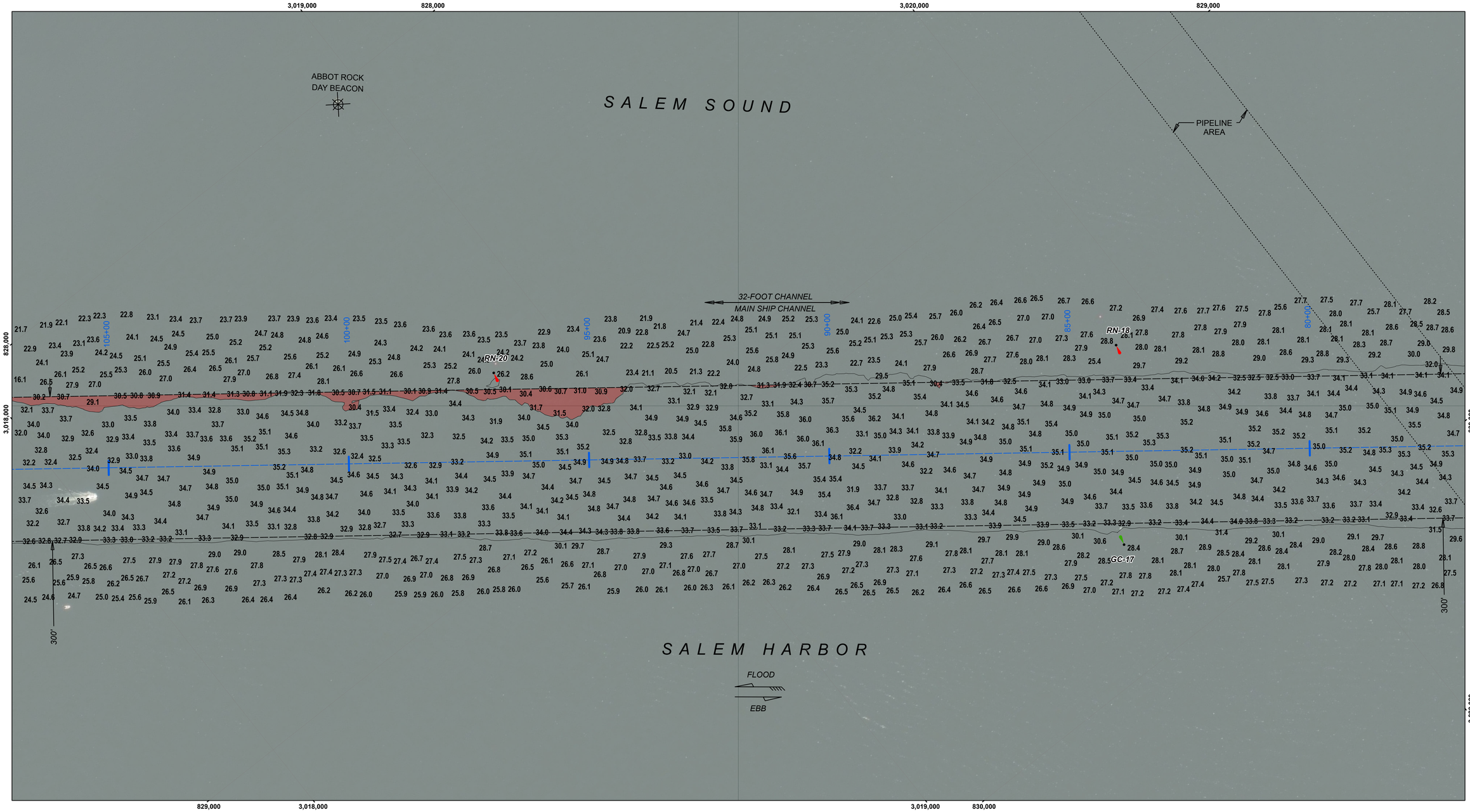
SURVEYED BY: BTM
CHECKED BY: ZSM
ISSUE DATE: 4/25/2025
SUBMITTED BY: Zachary McAvoy
APPROVED BY: NAE Survey
MAP DOCUMENT: MA_11_SAL_20250320_CS_007
SIZE: ANSI D

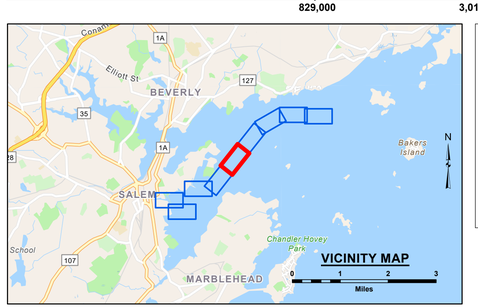
SALEM HARBOR
SALEM, BEVERLY, AND MARBLEHEAD, MASSACHUSETTS
CONDITION SURVEY
32, 10, 8 AND 6-FOOT CHANNELS, 8-FOOT CHANNEL AND TURNING BASIN
File Name: MA_11_SAL_20250320_CS_007

SHEET IDENTIFICATION
Salem Harbor

Sheet 4 of 9

Revision Number: 5.24.09.03-5.24.09.03





LEGEND

- Federal Navigation Channel
- Cable or Pipe Areas
- Channel Center Line
- State Maintained
- Marine Infrastructure*
- Contour Line
- Fixed Navigation Aids
- Obstruction Point
- Red Navigation Buoy
- Green Navigation Buoy
- Shoaling Area
- Shoalest Sounding**

** Shoalest Sounding per Quarter per Reach

GRAPHIC SCALE

1" = 100' 100 0 100 200 Feet



Notes:
Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: Depth_Units
Vessel Name: POPHAM BEACH
Sonar System: Reson T50 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS Tides
GPS_System: INS Integrated Reson (RTK)
RTK Base Station: MTS Smartnet Max
Software Used: Hypack
Sounding Sort Distance: 30'
Field Books: R&H 4981
Survey No.: MA_11_SAL_20250320_CS_007
Reference NOAA Chart No.: US5MA1RH, US5MA1SH

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Project Remarks
Marine Infrastructure surveyed with lidar.

Water Level Information
Tides were recorded using RTK GPS. NAVD88 to MLLW corrections were logged utilizing NOAA's V-Datum regional model Maine/New Hampshire/Massachusetts Version 2.3. The corrections in the project area range from 5.13 feet to 5.16 feet. MLLW is below NAVD88; therefore, the correction should be added to NAVD88 to convert to MLLW (e.g.-10 NAV88 = -8 MLLW when using a 2-foot correction).

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NEW ENGLAND DISTRICT

SURVEYED BY: BTM
CHECKED BY: ZSM
ISSUE DATE: 4/29/2025
SUBMITTED BY: Zachary McAvoy
APPROVED BY: NAE Survey
MAP DOCUMENT: MA_11_SAL_20250320_CS_007
SIZE: ANSI D

SALEM HARBOR
SALEM, BEVERLY, AND MARBLEHEAD, MASSACHUSETTS
CONDITION SURVEY
32, 10, 8 AND 6-FOOT CHANNELS, 8-FOOT CHANNEL AND TURNING BASIN
File Name: MA_11_SAL_20250320_CS_007

SHEET IDENTIFICATION
Salem Harbor

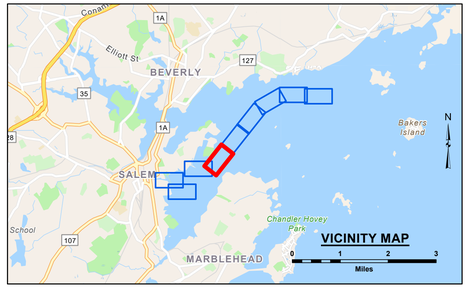
Sheet 5 of 9

Revision Number: 5.24.09.03-5.24.09.03

826,000 3,017,000 827,000 3,018,000

WINTER ISLAND
FORT PICKERING
FORT PICKERING LIGHT
135+00
130+00
125+00
120+00
115+00
110+00
32-FOOT CHANNEL
MAIN SHIP CHANNEL
RN-22
GC-21
826,000
3,016,000
300'
SALEM HARBOR
FLOOD
EBB

827,000 3,016,000 828,000 3,017,000



VICINITY MAP

LEGEND

- Federal Navigation Channel
- Cable or Pipe Areas
- Channel Center Line
- State Maintained
- Marine Infrastructure*
- Contour Line
- Fixed Navigation Aids
- Obstruction Point
- Red Navigation Buoy
- Green Navigation Buoy
- Shoaling Area
- Shoalest Sounding**

** Shoalest Sounding per Quarter per Reach

GRAPHIC SCALE

100 0 100 200

1" = 100' Feet

Notes:

Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: Depth_Units
Vessel Name: POPHAM BEACH
Sonar System: Reson T50 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS Tides
GPS_System: INS Integrated Reson (RTK)
RTK Base Station: MTS Smartnet Max
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Field Books: R&H 4981
Survey No.: MA_11_SAL_20250320_CS_007
Reference NOAA Chart No.: US5MA1RH, US5MA1SH

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Project Remarks

Marine Infrastructure surveyed with lidar.

Water Level Information

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US Army Corps of Engineers
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NEW ENGLAND DISTRICT

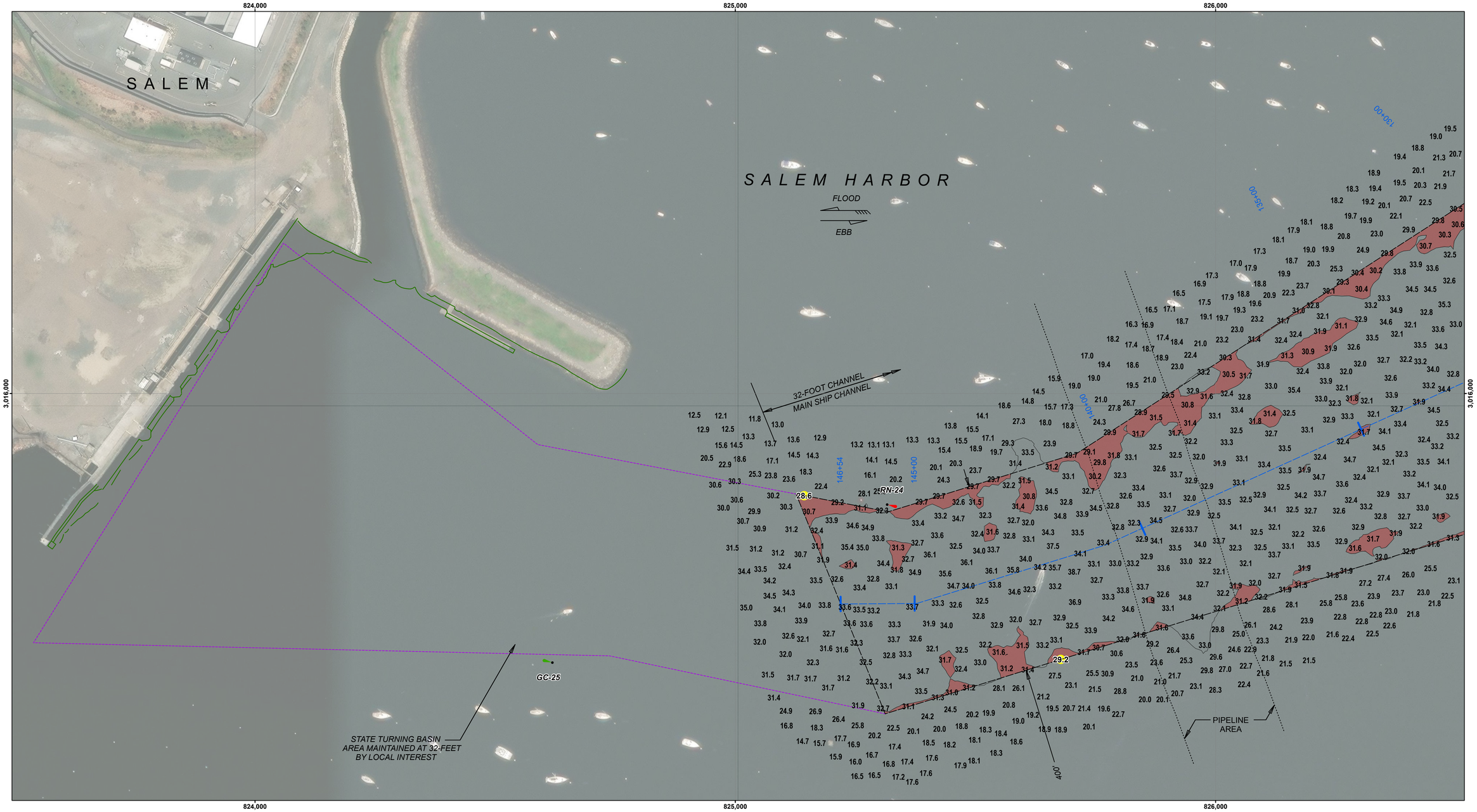
SURVEYED BY: BTM
CHECKED BY: ZSM
ISSUE DATE: 4/25/2025
SUBMITTED BY: Zachary McAvoy
APPROVED BY: NAE Survey
MAP DOCUMENT: MA_11_SAL_20250320_CS_007
SIZE: ANSI D

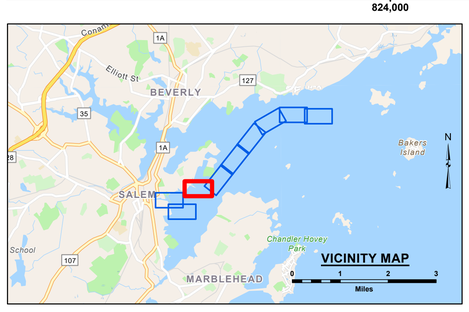
SALEM HARBOR
SALEM, BEVERLY, AND MARBLEHEAD, MASSACHUSETTS
CONDITION SURVEY
32, 10, 8 AND 6-FOOT CHANNELS, 8-FOOT CHANNEL AND TURNING BASIN
File Name: MA_11_SAL_20250320_CS_007

SHEET IDENTIFICATION
Salem Harbor

Sheet 6 of 9

Revision Number: 5.24.09.03-5.24.09.03





LEGEND

- Federal Navigation Channel
- Cable or Pipe Areas
- Channel Center Line
- State Maintained
- Marine Infrastructure*
- Contour Line
- Fixed Navigation Aids
- Obstruction Point
- Red Navigation Buoy
- Green Navigation Buoy
- Shoaling Area
- Shoalest Sounding**

** Shoalest Sounding per Quarter per Reach

GRAPHIC SCALE

100 0 100 200

1" = 100' Feet

N W E S

Notes:

Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: Depth_Units
Vessel Name: POPHAM BEACH
Sonar System: Reson T50 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS Tides
GPS_System: INS Integrated Reson (RTK)
RTK Base Station: MTS Smartnet Max
Software Used: Hypack
Sounding Sort Distance: 30'
Field Books: R&H 4981
Survey No.: MA_11_SAL_20250320_CS_007
Reference NOAA Chart No.: US5MA1RH, US5MA1SH

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Project Remarks

Marine Infrastructure surveyed with lidar.

Water Level Information

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US Army Corps of Engineers
District: CENAE

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U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

SURVEYED BY: BTM
CHECKED BY: ZSM
ISSUE DATE: 4/25/2025
SUBMITTED BY: Zachary McAvoy
APPROVED BY: NAE Survey
SIZE: ANSI D
MAP DOCUMENT: MA_11_SAL_20250320_CS_007

SALEM HARBOR
SALEM, BEVERLY, AND MARBLEHEAD, MASSACHUSETTS
CONDITION SURVEY
32, 10, 8 AND 6-FOOT CHANNELS, 8-FOOT CHANNEL AND TURNING BASIN
File Name: MA_11_SAL_20250320_CS_007

SHEET IDENTIFICATION
Salem Harbor

Sheet 7 of 9

Revision Number: 5.24.09.03-5.24.09.03

822,000 823,000 824,000

3,014,000 3,013,000

SALEM HARBOR

FLOOD

EBB

DERBY WHARF

DERBY WHARF LIGHTHOUSE

SOUTH RIVER

LONG POINT

PALMER COVE

8-FOOT CHANNEL DERBY WHARF CHANNEL AND TURNING BASIN

10-FOOT CHANNEL SOUTH RIVER CHANNEL

8-FOOT CHANNEL SOUTH RIVER CHANNEL

10-FOOT CHANNEL SOUTH RIVER CHANNEL

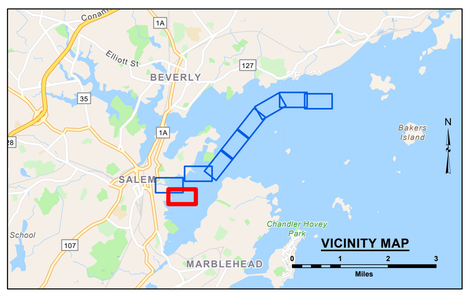
RN-4

90'

200'

300'

5+00 10+00 15+00 20+00 25+00 0+00



LEGEND

- Federal Navigation Channel
- Cable or Pipe Areas
- Channel Center Line
- State Maintained
- Marine Infrastructure*
- Contour Line
- Fixed Navigation Aids
- Obstruction Point
- Red Navigation Buoy
- Green Navigation Buoy
- Shoaling Area
- Shoalest Sounding**

** Shoalest Sounding per Quarter per Reach

GRAPHIC SCALE

100 0 100 200

1" = 100' Feet

N W E S

Notes:

Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: Depth_Units
Vessel Name: POPHAM BEACH
Sonar System: Reson T50 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS Tides
GPS_System: INS Integrated Reson (RTK)
RTK Base Station: MTS Smartnet Max
Software Used: Hypack
Sounding Sort Distance: 30'
Field Books: R&H 4981
Survey No.: MA_11_SAL_20250320_CS_007
Reference NOAA Chart No.: US5MA1RH, US5MA1SH

The information depicted on these charts represents the results of surveys made on the dates indicated, and can only be considered as indicating the conditions existing at that time.

General Notes

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Project Remarks

Marine Infrastructure surveyed with lidar.

Water Level Information

Tides were recorded using RTK GPS. NAVD88 to MLLW corrections were logged utilizing NOAA's V-Datum regional model Maine/New Hampshire/Massachusetts Version 2.3. The corrections in the project area range from 5.13 feet to 5.16 feet. MLLW is below NAVD88; therefore, the correction should be added to NAVD88 to convert to MLLW (e.g.-10 NAV88 = -8 MLLW when using a 2-foot correction).

US Army Corps of Engineers
District: CENAE

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U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

SURVEYED BY: BTM
CHECKED BY: ZSM
ISSUE DATE: 4/25/2025
SUBMITTED BY: Zachary McAvoy
APPROVED BY: NAE Survey
SIZE: ANSI D
MAP DOCUMENT: MA_11_SAL_20250320_CS_007

SALEM HARBOR
SALEM, BEVERLY, AND MARBLEHEAD, MASSACHUSETTS
CONDITION SURVEY
32, 10, 8 AND 6-FOOT CHANNELS, 8-FOOT CHANNEL AND TURNING BASIN
File Name: MA_11_SAL_20250320_CS_007

SHEET IDENTIFICATION
Salem Harbor

Sheet 8 of 9

Revision Number: 5.24.09.03-5.24.09.03

821,000 822,000 823,000

3,015,000

SALEM

SALEM HARBOR

FLOOD

EBB

PICKERING WHARF

CENTRAL WHARF

SOUTH RIVER

6-FOOT CHANNEL
SOUTH RIVER CHANNEL

8-FOOT CHANNEL
SOUTH RIVER CHANNEL

8-FOOT CHANNEL
DERBY WHARF CHANNEL
AND TURNING BASIN

DERBY WHARF

DERBY WHARF LIGHTHOUSE

40+00

35+00

30+00

10+00

5+00

12+27

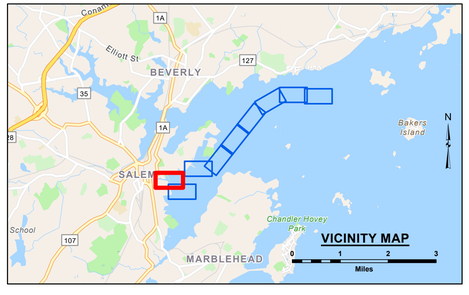
90'

200'

50'

3,014,000

821,000 822,000 823,000



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US Army Corps of Engineers
District: CENAE

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

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Sheet 9 of 9

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