

LEG

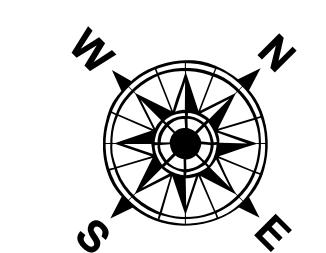
- Federal Navigation Channel  Fixed Navigation Aids
 - Channel Center Line  Red Navigation Buoy
 - Cable or Pipeline Area  Green Navigation Buoy
 - Contour Line  Shoaling Area
 -  Obstruction Point  Shoalest Sounding**

** Shoalest Sounding per Quarter

1" = 50'

50 0 50 100

GRAPHIC SCALE



Notes:

Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: U.S. Survey Feet
Vessel Name: CELESTIAL
Sonar System: R2 Sonic 2024 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS TIDES
GPS_System: Trimble SPS 855 (RTK)
RTK Base Station: Station 1771B
Software Used: Hypack
Sounding Sort Distance: 10'
Field Books: R&H 4307
Survey No.: MA_04_ESS_20210816_CS_035
Reference NOAA Chart No.: 13279_1

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

The sounding information shown on this map represents the SHOALEST soundings of those obtained from hydrographic surveys conducted during July 21. The sounding information depicted on this map represents the results of surveys made on the dates indicated and can only be considered as indicating the conditions existing at that time. The positions of aids to navigation were located during survey operations, are provided for information only and should not be used for navigation. Orthoimagery is from a variety of sources and dates and is intended to portray general characteristics of the shoreline and other features. Temporal changes may have occurred since this dataset was collected and some parts may no longer be an accurate representation of the conditions. The information depicted on this map should NOT be used to determine volumes as volumes are determined from more sounding information than shown.

Volumes are determined from more sounding information than shown.

Project Remarks
Federal navigation project not surveyed in its entirety, shoaling mudflats preventing coverage in some areas. Survey extended beyond channel reaches include multiple approaches to navigation project (Recon Survey).

Water Level Information

des were recorded using RTK GPS. The MLLW to NAVD88 correction for this project is 5.21 feet. This correction was established in the vicinity of NOAA Bench Marks at Essex, Essex River, Massachusetts (Station ID 8441771, 4/21/2003). The reference points established for the correction are BM 1771 A B and TBM George. NAVD88 is above MLLW; therefore the correction should be added to NAVD88 to convert to MLLW. No tide gauges were used on this project.

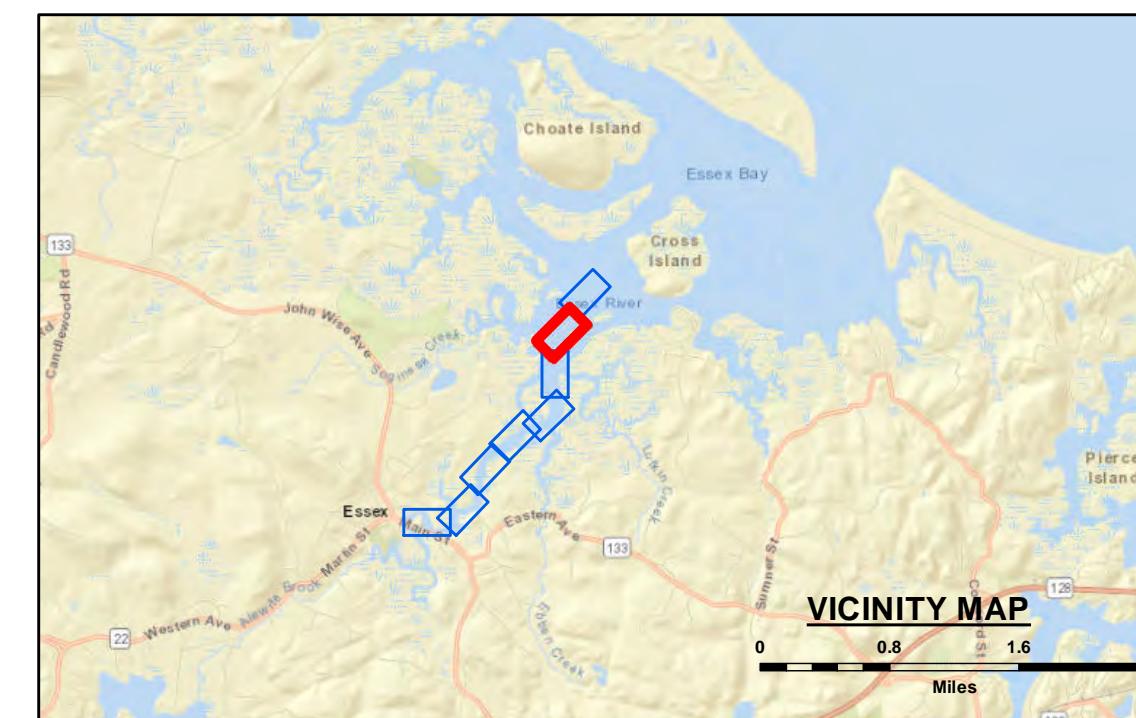
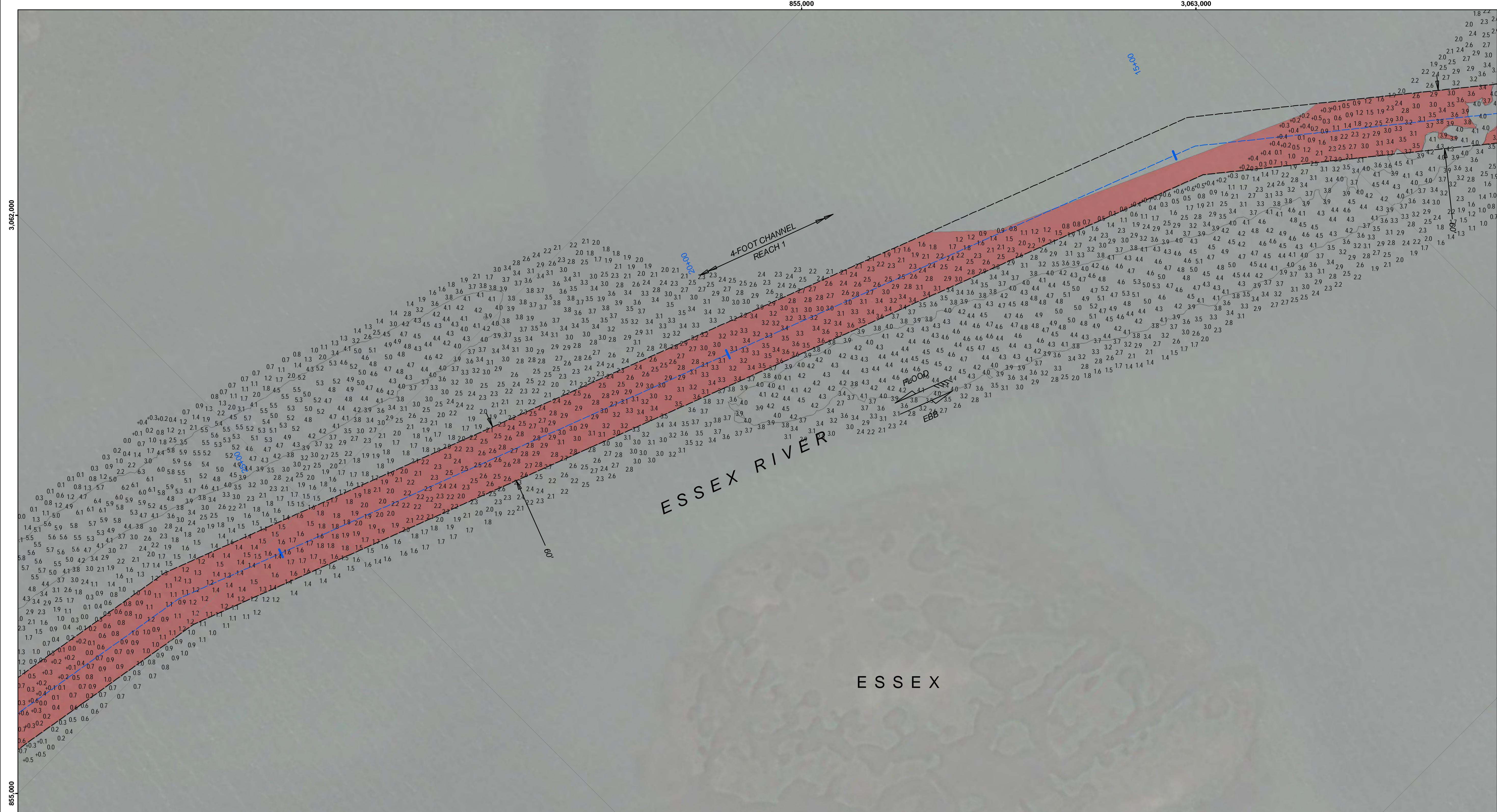
ESSEX RIVER ESSEX MASSACHUSETTS

CONDITION SURVEY 1-FOOT CHANNEL

C
4

SHEET IDENTIFICATION

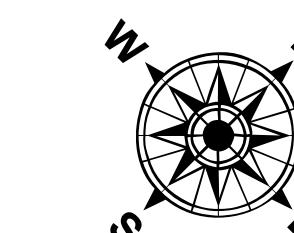
Chapter 4.2



LEG

- | | | | |
|-------|----------------------------|--|-----------------------|
| --- | Federal Navigation Channel | | Fixed Navigation Aids |
| — | Channel Center Line | | Red Navigation Buoy |
| | Cable or Pipeline Area | | Green Navigation Buoy |
| — | Contour Line | | Shoaling Area |
| | Obstruction Point | | Shoalest Sounding* |

** Shoalest Sounding per Quarter



Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: U.S. Survey Feet
Vertical Datum: MLLW
Depth Units: U.S. Survey Feet
Vessel Name: CELESTIAL
Sonar System: R2 Sonic 2024 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS TIDES
GPS_System: Trimble SPS 855 (RTK)
RTK Base Station: Station 1771B
Software Used: Hypack
Sounding Sort Distance: 10'
Field Books: R&H 4307
Survey No.: MA_04_ESS_20210816_CS_035
Reference NOAA Chart No.: 13279_1

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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Water Level Information

Tides were recorded using RTK GPS. The MLLW to NAVD88 correction for this project is 5.21 feet. This correction was established in the vicinity of NOAA Bench Marks at Essex, Essex River, Massachusetts (Station ID 8441771, 04/21/2003). The reference points established for the correction are BM 1771 A & B and TBM George. NAVD88 is above MLLW; therefore the correction should be added to NAVD88 to convert to MLLW. No tide gauges were used on this project.

Project Remarks

Project Remarks
Federal navigation project not surveyed in its entirety, shoaling mudflats preventing coverage in some areas. Survey extended beyond channel reaches to include multiple approaches to navigation project (Beacon Survey).

U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DISTRICT		SUBMITTED BY: <u>Zachary McAvoay</u>	SURVEYED BY: <u>MJV</u>	ISSUE DATE: <u>8/27/2021</u>
APPROVED BY: <u>NAE Survey</u>	CHECKED BY: <u>ZSM</u>	MAP DOCUMENT: <u>MA_04_ESS_20210816_CS_035</u>	SIZE: <u>ANSI D</u>	

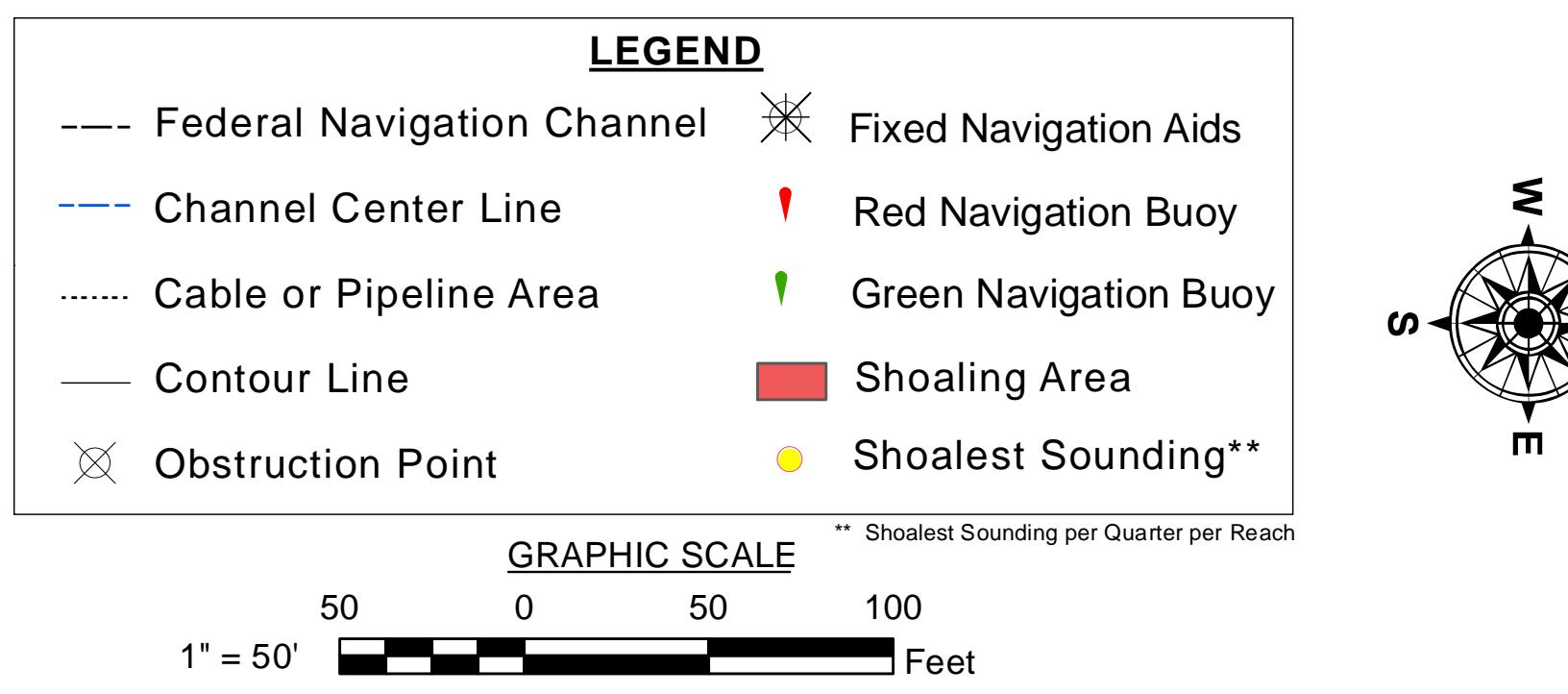
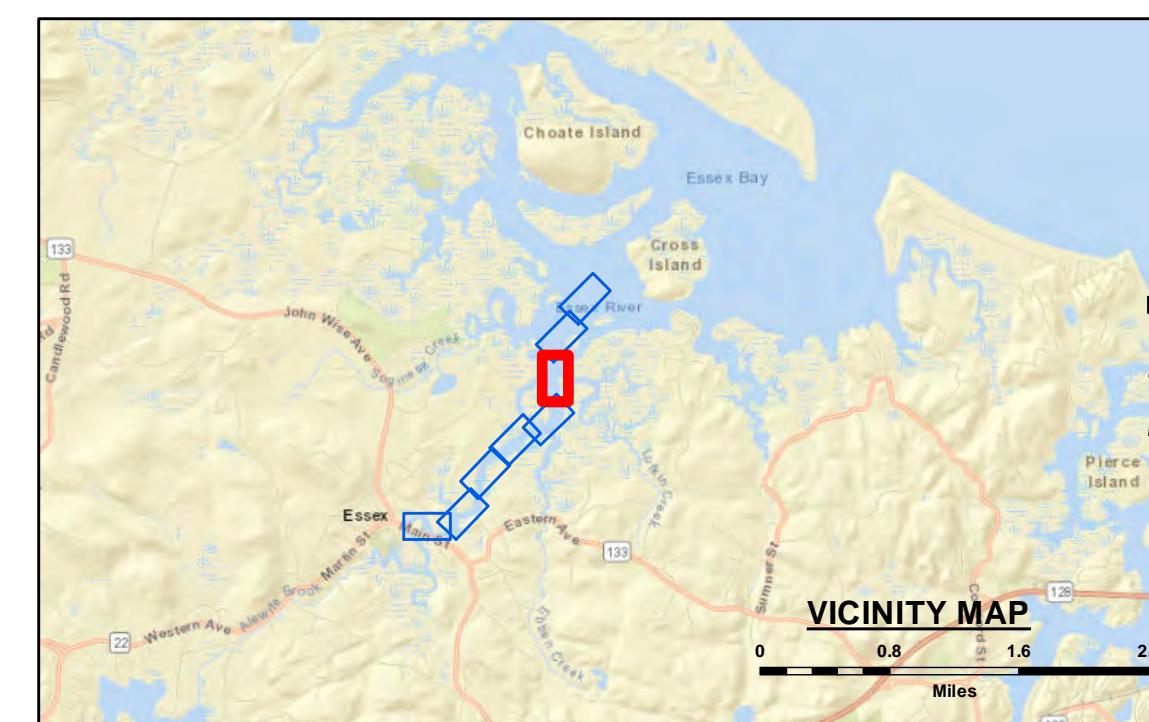
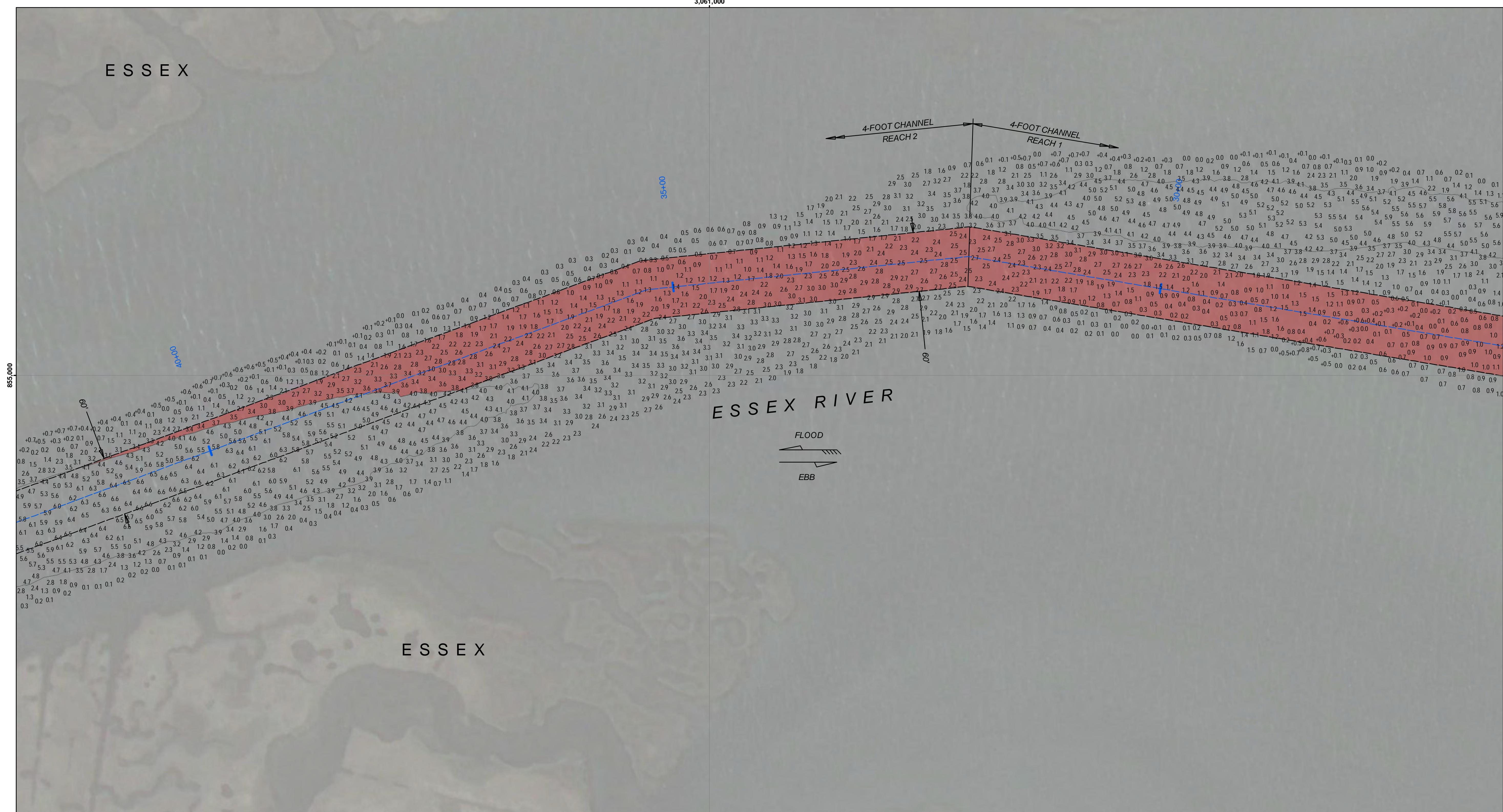
**ESSEX RIVER
ESSEX, MASSACHUSETTS**

**CONDITION SURVEY
4-FOOT CHANNEL**

File Name: MA_04_ESS_20210816_CS_035

**SHEET
IDENTIFICATION**

Essex River



Notes:
 Horizontal Datum: Mass Mainland, MA-2001 NAD 83
 Distance Units: U.S. Survey Feet
 Vertical Datum: MLLW
 Depth Units: U.S. Survey Feet
 Vessel Name: CELESTIAL
 Sonar System: R2 Sonic 2024 (Multibeam Sonar)
 Sounding Frequency: 300 kHz
 Survey Method: RTK GPS TIDES
 GPS System: Trimble GPS 855 (RTK)
 RTK Base Station: Station 1771B
 Software Used: Hypack
 Sounding Sort Distance: 10'
 Field Books: R&H 4307
 Survey No.: MA_04_ESS_20210816_CS_035
 Reference NOAA Chart No.: 13279_1

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
 Federal navigation project not surveyed in its entirety, shoaling mudflats preventing coverage in some areas. Survey extended beyond channel reaches to include multiple approaches to navigation project (Recon Survey).

Water Level Information
 Tides were recorded using RTK GPS. The MLLW to NAVD88 correction for this project is 5.21 feet. This correction was established in the vicinity of NOAA Bench Marks at Essex, Essex River, Massachusetts (Station ID 8441771, 04/21/2003). The reference points established for the correction are BM 1771 A & B and TBM George. NAVD88 is above MLLW; therefore the correction should be added to NAVD88 to convert to MLLW. No tide gauges were used on this project.

ESSEX RIVER
ESSEX, MASSACHUSETTS
CONDITION SURVEY
4-FOOT CHANNEL

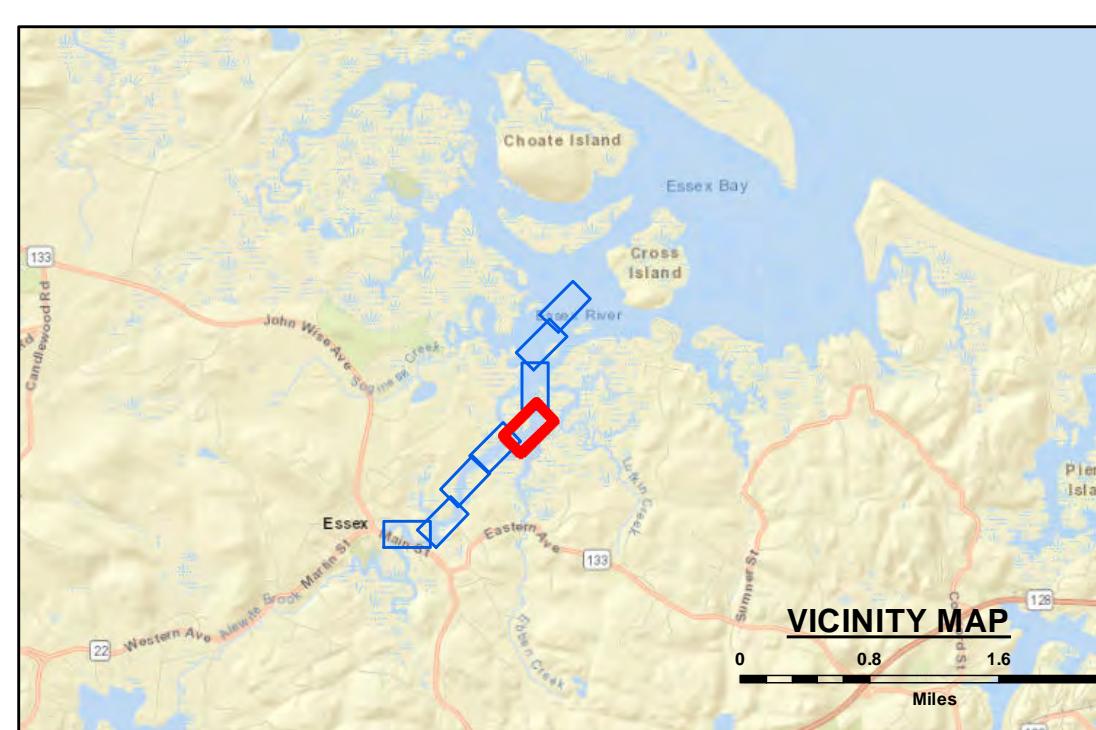
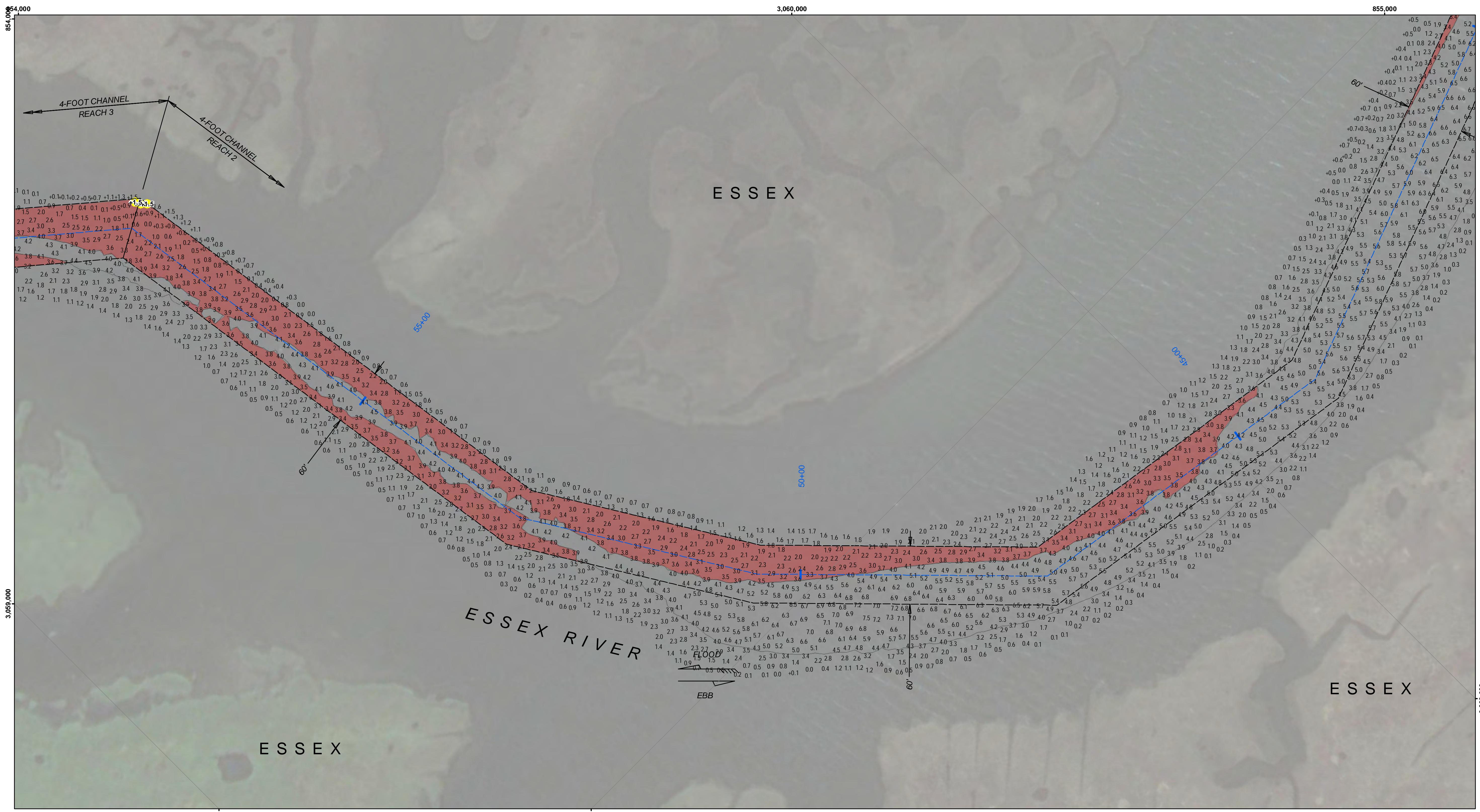
SHEET IDENTIFICATION
Essex River
Sheet 3 of 8

Revision Number: 4.2-20200420

U.S. ARMY CORPS OF ENGINEERS	
SUBMITTED BY:	Zachary McAvoy
SURVEYED BY:	MAR
CHECKED BY:	ZSM
APPROVED BY:	NAE Survey
SIZE:	ANSI D
MAP DOCUMENT:	MA_04_ESS_20210816_CS_035
ISSUE DATE:	8/27/2021

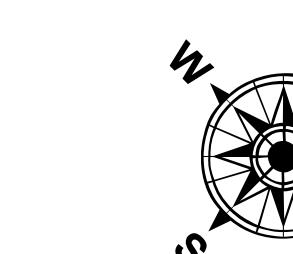
Distribution Label: The data represents the results of data collection processing for a specific US Army Corps of Engineers active and indicates the general existing conditions. The data is provided "as is" without warranty. The user assumes responsibility for the use of this data for their intended purpose.

US Army Corps of Engineers
District: CENAE



NOTES:

Horizontal Datum: Mass Mainland, MA-2001 NAD 83
 Distance Units: U.S. Survey Feet
 Vertical Datum: MLLW
 Depth Units: U.S. Survey Feet
 Vessel Name: CELESTIAL
 Sonar System: R2 Sonic 2024 (Multibeam Sonar)
 Sounding Frequency: 300 kHz
 Survey Method: RTK GPS TIDES
 GPS System: Trimble GPS 855 (RTK)
 RTK Base Station: Station 1771B
 Software Used: Hypack
 Sounding Units: FATHOMS
 Field Books: R&H 4307
 Survey No.: MA_04_ESS_20210816_CS_035
 Reference NOAA Chart No.: 13279_1



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Water Level Information
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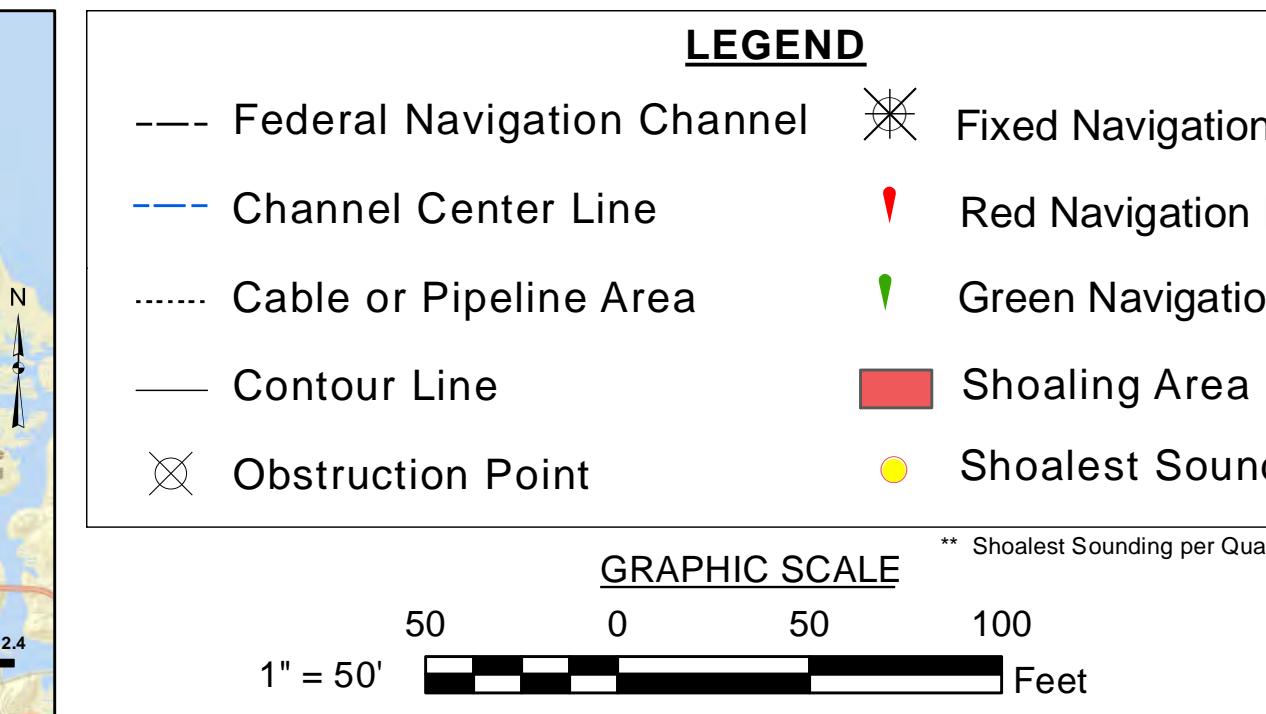
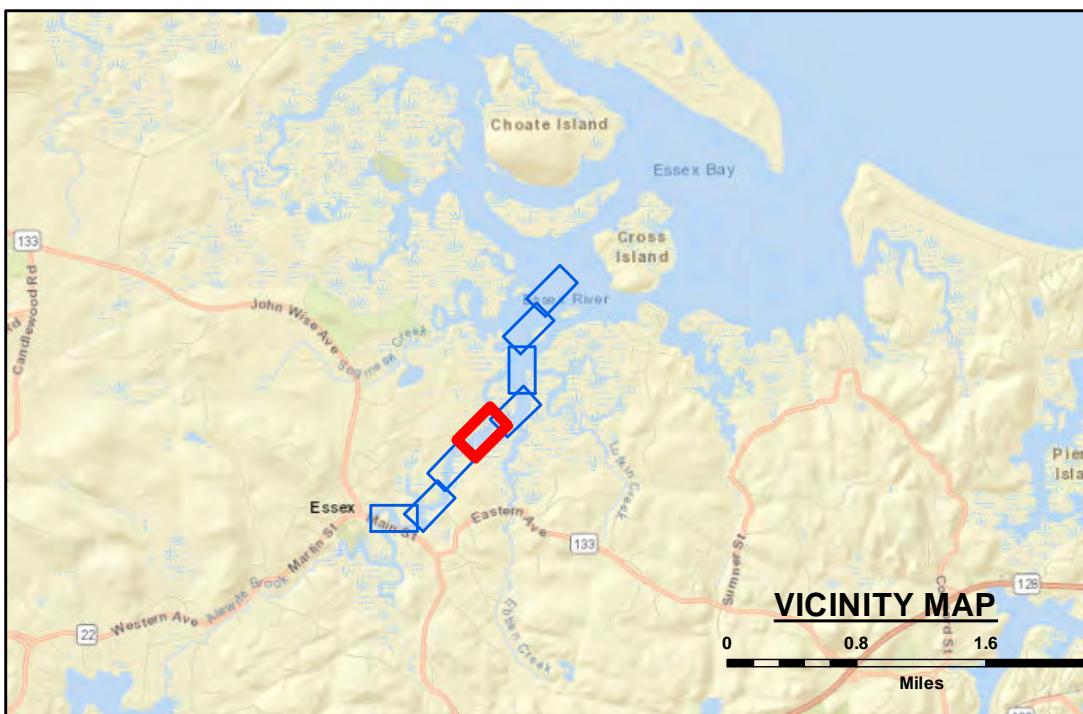
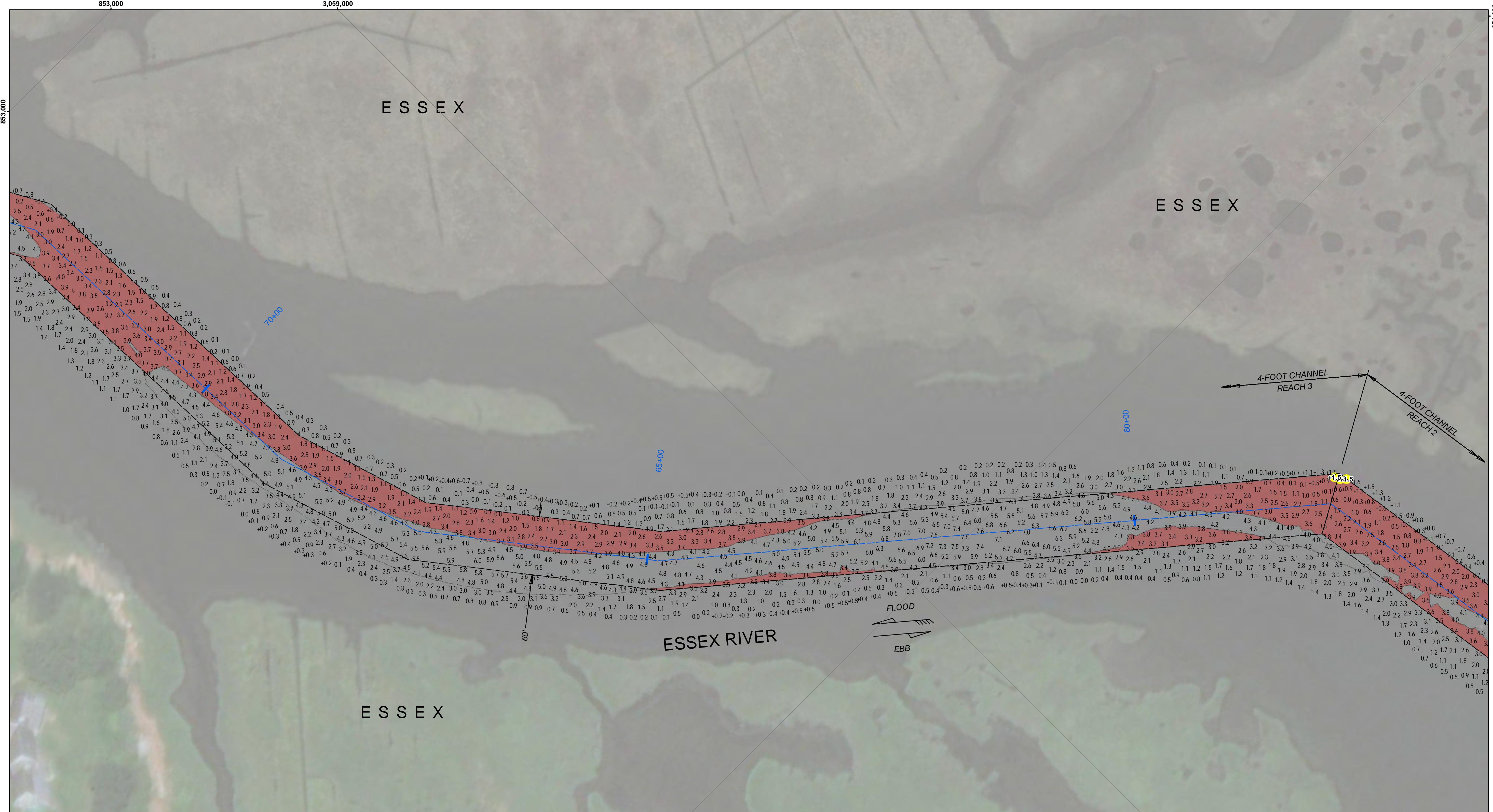
ESSEX, MASSACHUSETTS
CONDITION SURVEY
4-FOOT CHANNEL
 File Name: MA_04_ESS_20210816_CS_035

SHEET IDENTIFICATION
Essex River
Sheet 4 of 8
 Revision Number: 4.2-20200420

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
 SURVEYED BY:
 MAY _____
 CHECKED BY:
 ZSM _____
 APPROVED BY: NAE Survey
 ISSUE DATE:
 8/27/2021

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 The United States Government, The United States Army Corps of Engineers, and the New England District accept and bear the responsibility for the use of these data and neither represent nor warrant that the data is necessarily accurate, current, or suitable for any particular purpose. The United States shall be under no liability whatsoever to any party in respect of any use made of the data furnished. The user is responsible for the results obtained from the use of this data for other than its intended purpose.

US Army Corps of Engineers
District: CENAE



Distribution Label: The data represents the results of data collection processes for a specific US Army Corps of Engineers active and uses them with the express understanding that the US Government makes no warranties, expressed or implied, regarding the accuracy, reliability, or completeness of such data. The user assumes responsibility for the use of this data for other than its intended purpose.

DISCLAIMER	The United States Government retains these data as another respondent accepted and uses them with the express understanding that the US Government makes no warranties, expressed or implied, regarding the accuracy, reliability, or completeness of such data. The user assumes responsibility for the use of this data for other than its intended purpose.		
SURVEYED BY:	MAV	CHECKED BY:	ZSM
SUBMITTED BY:	ZSM	APPROVED BY:	NME Survey
MAP DOCUMENT:	MA_04_ESS_20210816_CS_035	SIZE:	ANSI D
ISSUE DATE:	8/27/2021		

ESSEX, MASSACHUSETTS

CONDITION SURVEY

4-FOOT CHANNEL

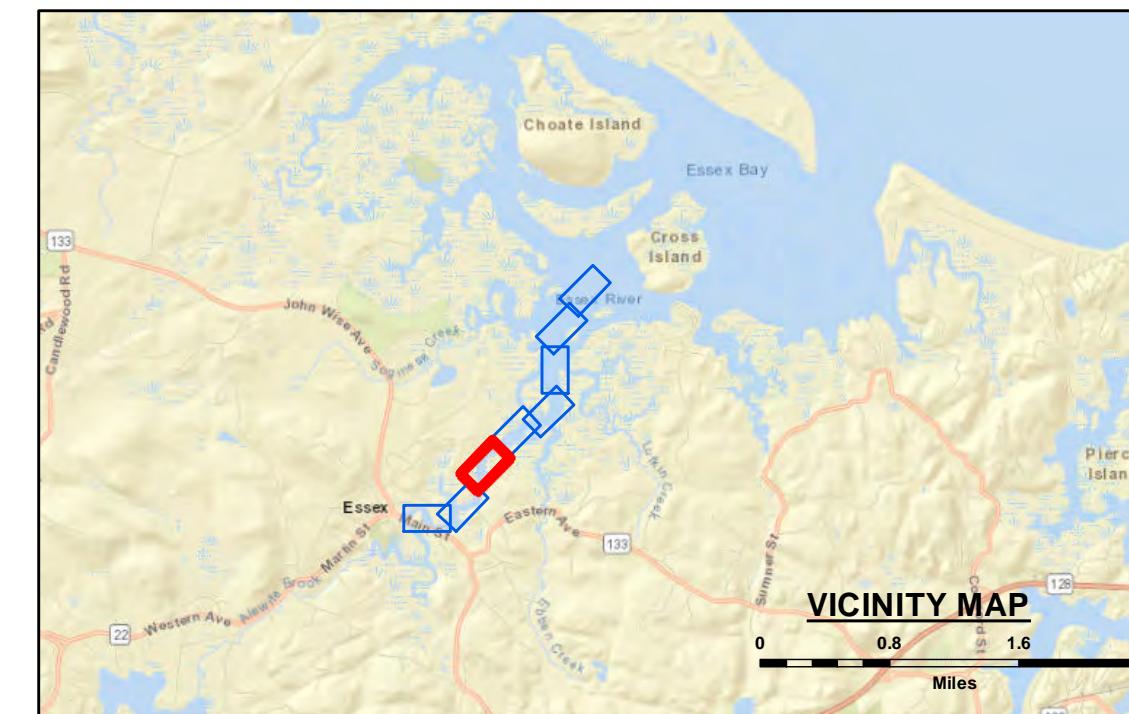
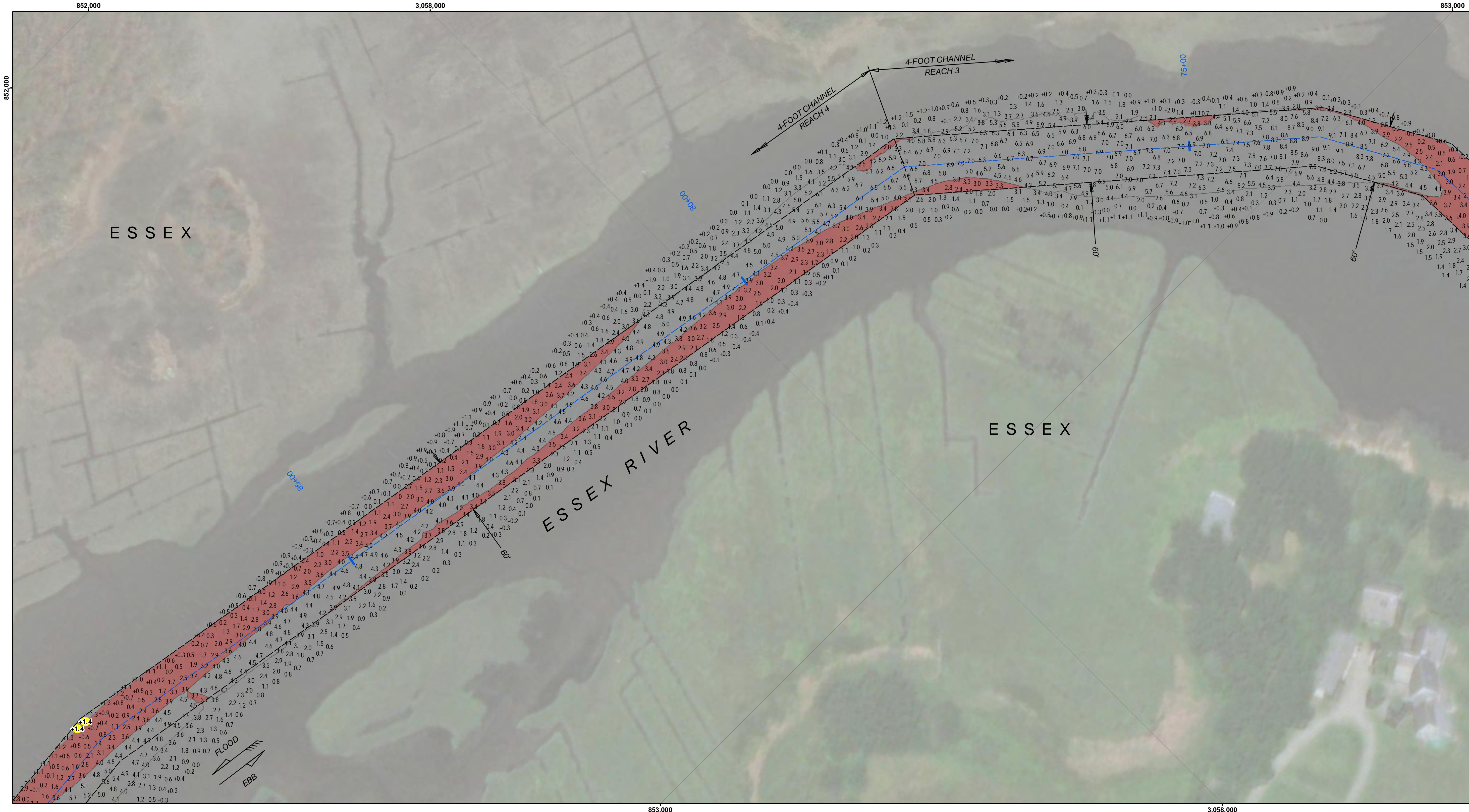
File Name: MA_04_ESS_20210816_CS_035

SHEET IDENTIFICATION

Essex River

Sheet 5 of 8

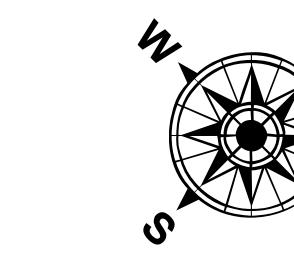
Revion Number: 4.2-20200420



LEGEND	
— Federal Navigation Channel	★ Fixed Navigation Aids
— Channel Center Line	● Red Navigation Buoy
..... Cable or Pipeline Area	● Green Navigation Buoy
— Contour Line	■ Shoaling Area
☒ Obstruction Point	● Shoalest Sounding**

GRAPHIC SCALE
50 0 50 100
1" = 50' Feet

** Shoalest Sounding per Quarter per Reach



Notes:
Horizontal Datum: Mass Mainland, MA-2001 NAD 83
Distance Units: M.S. Survey Feet
Vertical Datum: MLLW
Depth Units: U.S. Survey Feet
Vessel Name: CELESTIAL
Sonar System: R2 Sonic 2024 (Multibeam Sonar)
Sounding Frequency: 300 kHz
Survey Method: RTK GPS TIDES
GPS System: Trimble GPS 855 (RTK)
RTK Base Station: Station 1771B
Software Used: Hypack
Sounding Sort Distance: 10'
Field Books: R&H 4307
Survey No.: MA_04_ESS_20210816_CS_035
Reference NOAA Chart No.: 13279_1

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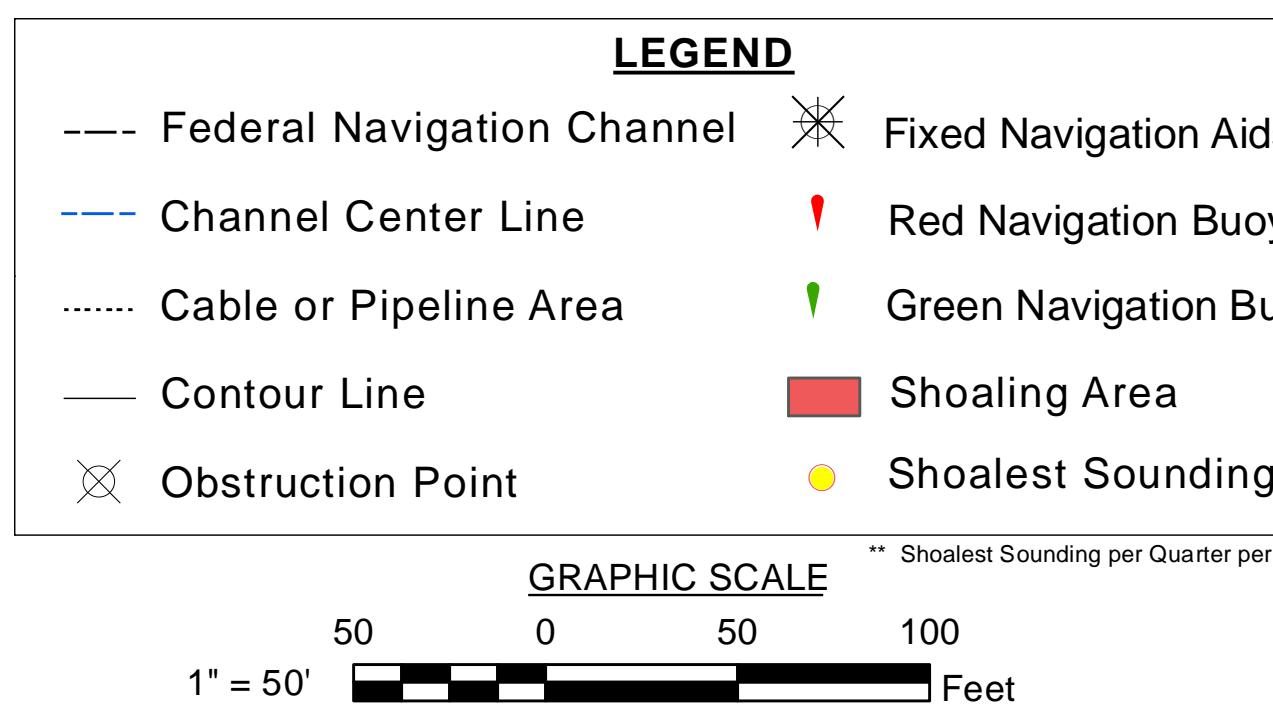
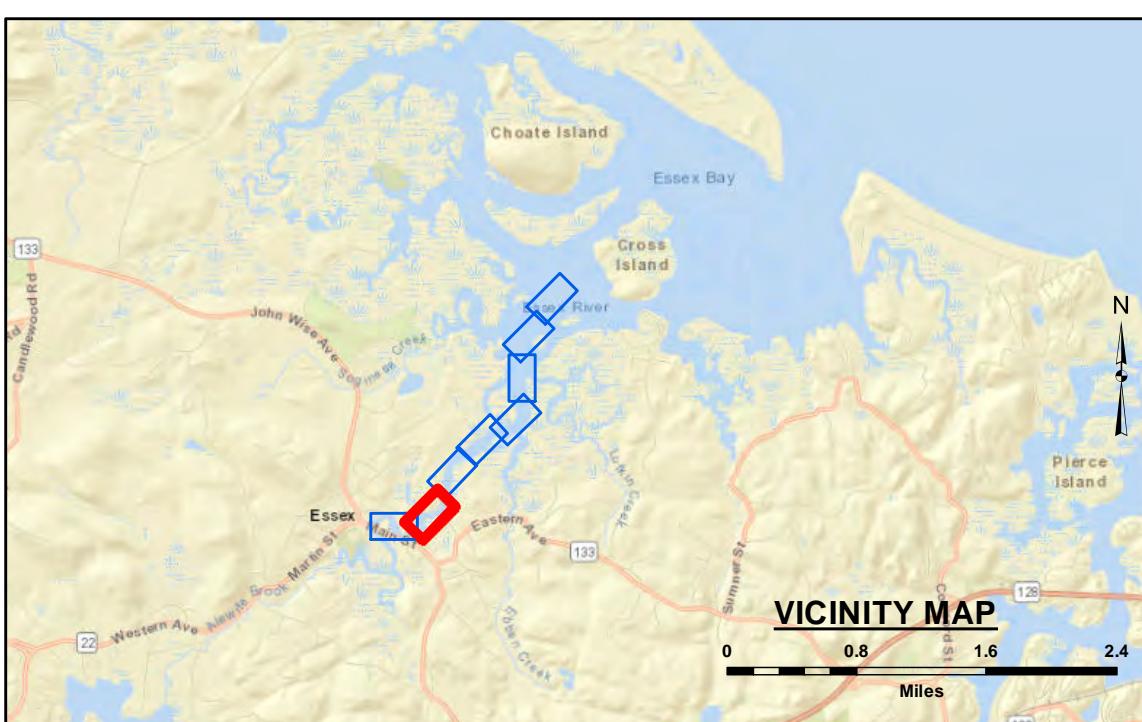
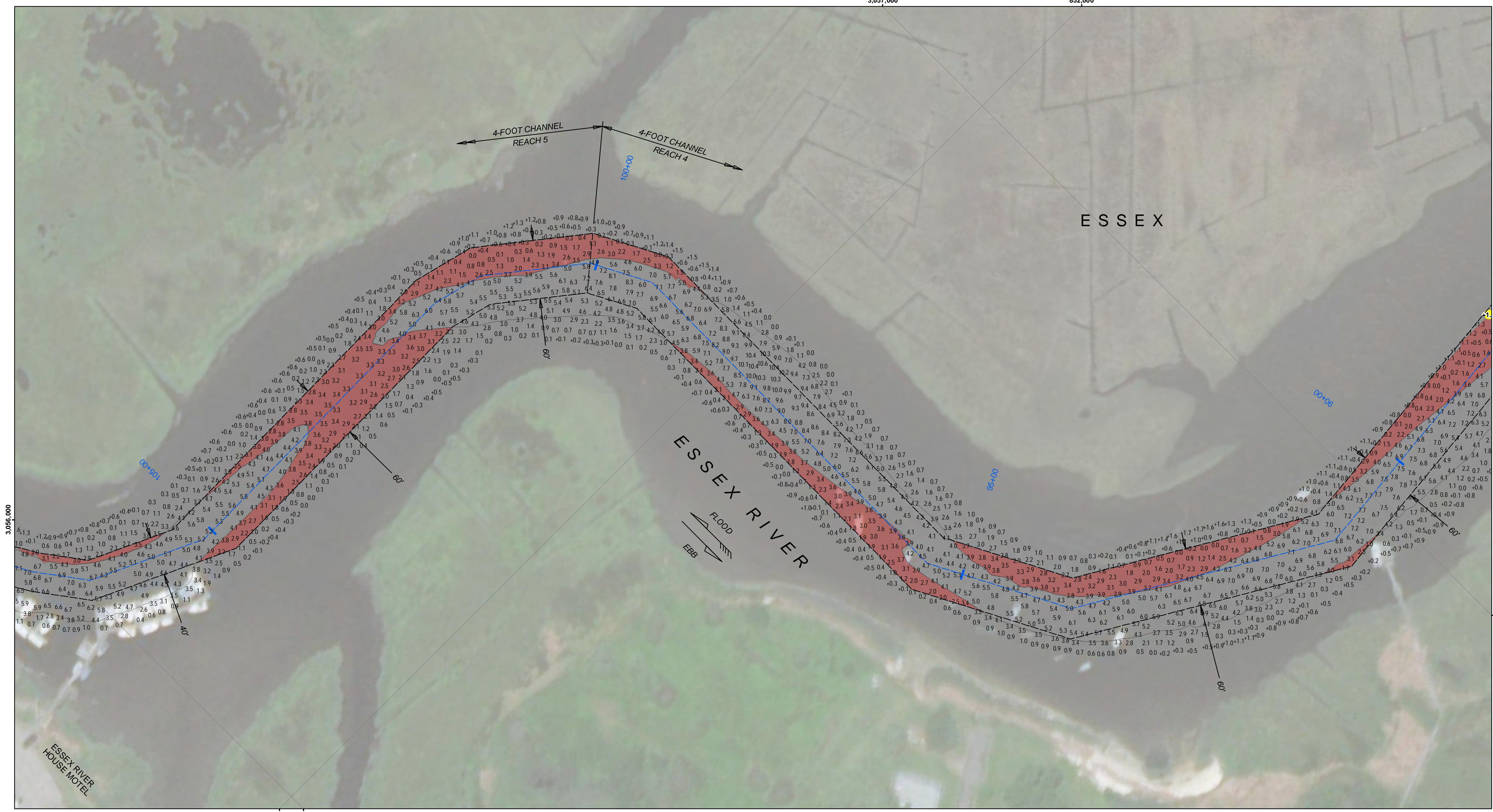
ESSEX, MASSACHUSETTS
CONDITION SURVEY
4-FOOT CHANNEL
File Name: MA_04_ESS_20210816_CS_035

SHEET IDENTIFICATION
Essex River
Sheet 6 of 8

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
SUBMITTED BY: Zachary McAvoy
SURVEYED BY: MAY
CHECKED BY: ZSM
APPROVED BY: NAE Survey
SIZE: ANSI D
MAP DOCUMENT: MA_04_ESS_20210816_CS_035
ISSUE DATE: 8/27/2021

Distribution Label: The data represents the results of data collection procedures for a specific U.S. Army Corps of Engineers active and indicates the general existing conditions. The data is provided for surveying, engineering, and scientific purposes. The user is responsible for the results of any use of the application of this data for other than its intended purpose.

US Army Corps
of Engineers
District: CENAE



Distribution Label: The data represents the results of data collection operations for a specific US Army Corps of Engineers active and indicates the general existing conditions. It is not necessarily accurate or current. It is the responsibility of the user to determine the suitability of the data for their intended purpose.

DISCLAIMER: The data is provided by the United States Government, which is neither responsible nor liable for any damages resulting from the use of the data. The user is responsible for determining the suitability of the data for their intended purpose. The data is provided "as is" without warranty of any kind, either express or implied, including but not limited to the warranties of merchantability, fitness for a particular purpose, or non-infringement. The user agrees to indemnify and hold harmless the United States Government, its employees, agents, and contractors from any claims, damages, or expenses arising out of the use of the data.

SURVEYED BY:	MAY
CHECKED BY:	ZSM
ISSUE DATE:	8/27/2021

U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DISTRICT	MADE BY:
SUBMITTED BY: Zachary McKey	APPROVED BY: NAE Survey
SIZE: ANSI D	MAP DOCUMENT: MA_04_ESS_20210816_CS_035

ESSEX RIVER
ESSEX, MASSACHUSETTS
CONDITION SURVEY
4-FOOT CHANNEL
File Name: MA_04_ESS_20210816_CS_035

SHEET IDENTIFICATION
Essex River
Sheet 7 of 8

Revision Number: 4.2-20200420

