

NOTES:
 1. PROJECT CHANNEL 60 FT DEEP MAINTAINED AT 60 FT, 1,300 FT WIDE AND 10 MILES LONG BETWEEN THE 60 FT CONTOURS IN THE LOWER CHESAPEAKE BAY AND THE ATLANTIC OCEAN.
 2. NOT FOR NAVIGATION USE. THE INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED & CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
 3. SOUNDINGS, SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 75 FT RADIUS GENERATED FROM HYDRO SURVEY DATA.
 4. BACKGROUND NOAA CHART DISPLAY SERVICE - OCC WEB MAP SERVICE (WMS)
 5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET ON DATE OF SURVEY.
 6. SURVEY 'XXYZ' (XXYZ AND METADATA *.MET) FILE NAME REFERENCED BY #HYDRO FILE NAME.

PROJECTED COORDINATE SYSTEM: STATE PLANE
 HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
 HORIZONTAL UNITS: US SURVEY FEET
 IMPLIED HORIZONTAL ACCURACY: RTKLEICA SMARTNET
 HORIZONTAL CONTROL: RTKLEICA SMARTNET
 TIDAL EPOCH: 1983-2001
 IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET
 VERTICAL CONTROL: RTKLEICA SMARTNET
 SYSTEM METHOD: MULTI-BEAM
 BIN SIZE: 5x5
 AVERAGE CELL CENTER

GEODETIC CONTROL MONUMENTS
 NAVD83
 25.13 (GEOD18)

MLLW
 NOS '863 8863 Tidal No. 3', 1975
 26.96'

MEAN RANGE OF TIDE
 2.55'

AREA
 1630+00 to 2215+00

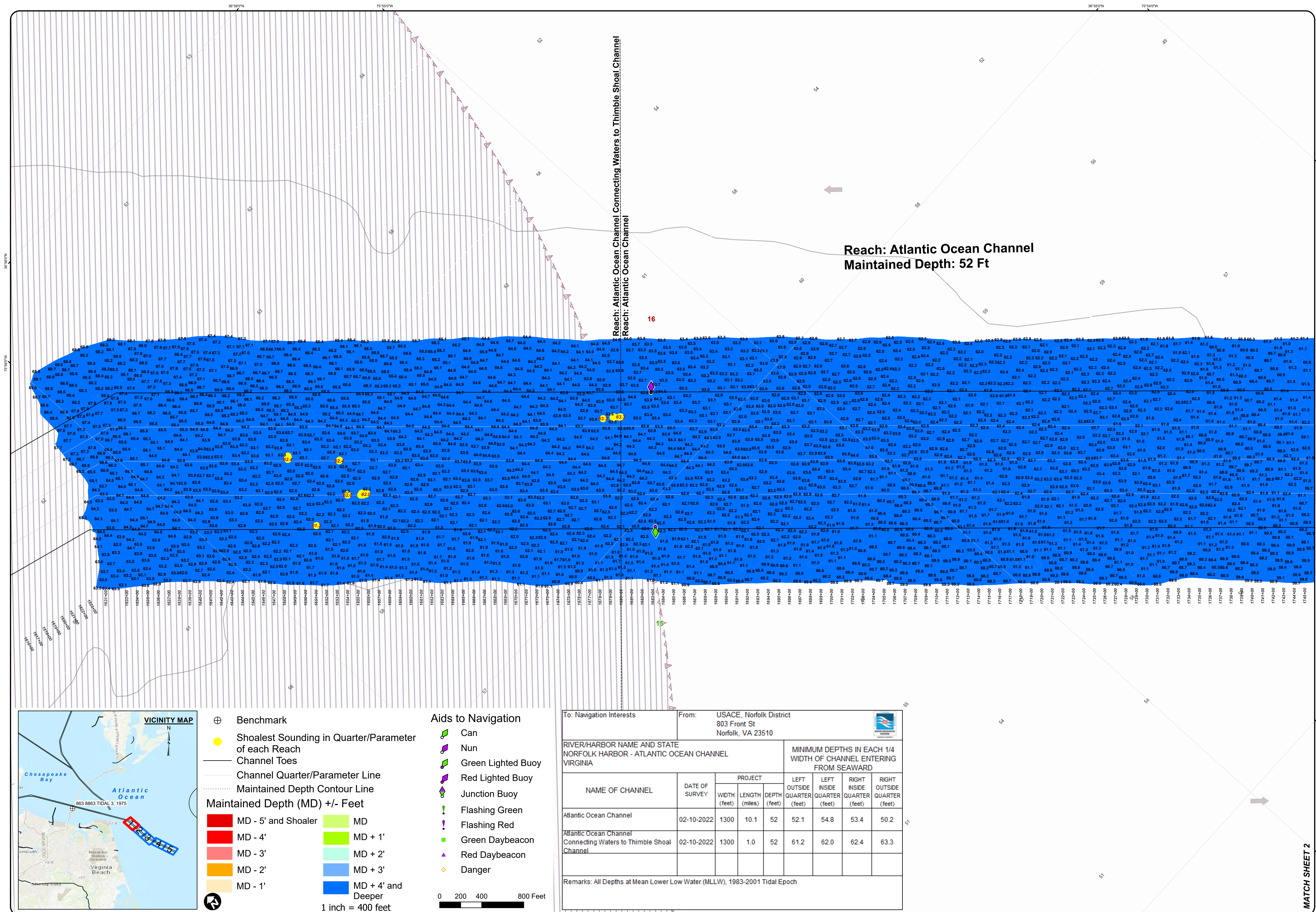
NORFOLK HARBOR
ATLANTIC OCEAN CHANNEL
 (SOUTHERN APPROACH)
PROJECT CONDITION SURVEY
 (PLANS AND SPECIFICATIONS)

SURVEY DATES:
 February 10, 17 & 22; March 1 & 3, 2022

SURVEY BY: USACE Team Lead: D. Brooker
 #HYDRO FILE: NH_01_AOC_20220210_CS

SHEET 1 of 5
 Map Produced: 4/27/2022

APPROVED:
 Chief, Navigation Analysis Section
 Chief, Navigation Support and Survey Section



Aids to Navigation

- Can
- Nun
- Green Lighted Buoy
- Red Lighted Buoy
- Junction Buoy
- Flashing Green
- Flashing Red
- Green Daybeacon
- Red Daybeacon
- Danger

Maintained Depth (MD) +/- Feet

- MD - 5' and Shoaler
- MD - 4'
- MD - 3'
- MD - 2'
- MD - 1'
- MD
- MD + 1'
- MD + 2'
- MD + 3'
- MD + 4' and Deeper

1 inch = 400 feet

To: Navigation Interests From: USACE, Norfolk District
 803 Front St
 Norfolk, VA 23510

NAME OF CHANNEL	DATE OF SURVEY	WIDTH (feet)	LENGTH (miles)	DEPTH (feet)	MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD			
					LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
Atlantic Ocean Channel	02-10-2022	1300	10.1	52	52.1	54.8	53.4	50.2
Atlantic Ocean Channel Connecting Waters to Thimble Shoal Channel	02-10-2022	1300	1.0	52	61.2	62.0	62.4	63.3

Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch

MATCH SHEET 2

NOTES:
 1. PROJECT CHANNEL (8 FT DEEP MAINTAINED AT 2 FT), 1,300 FT WIDE AND 10 MILES LONG BETWEEN THE 60 FT CONTOURS IN THE LOWER CHESAPEAKE BAY AND THE ATLANTIC OCEAN.
 2. NOT FOR NAVIGATION USE. THE INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED & CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
 3. SOUNDINGS, SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 75 FT RADIUS GENERATED FROM HYDRO SURVEY DATA.
 4. BACKGROUND NOAA CHART DISPLAY SERVICE - OCC WEB MAP SERVICE (WMS)
 5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET ON DATE OF SURVEY.
 6. SURVEY XYZ ('XXYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY #HYDRO FILE NAME.

VERTICAL REFERENCE DATUM: NOS MLLW
 TIDAL EPOCH: 1983-2001
 IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET
 HORIZONTAL CONTROL: RTKLEICA DYNAMIC MDO
 IMPLIED HORIZONTAL ACCURACY: MULTI BEAM
 SYSTEM METHOD: BINSIZE
 BIN SELECTION METHOD: AVERAGE CELL CENTER

PROJECTED COORDINATE SYSTEM: STATE PLANE
 HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
 HORIZONTAL CONTROL: US SURVEY FEET
 IMPLIED HORIZONTAL ACCURACY: RTKLEICA SMARTNET
 HORIZONTAL CONTROL: BINSIZE
 BIN SELECTION METHOD: AVERAGE CELL CENTER

NORFOLK HARBOR
ATLANTIC OCEAN CHANNEL
 (SOUTHERN APPROACH)
PROJECT CONDITION SURVEY
 (PLANS AND SPECIFICATIONS)
 SURVEY DATES: February 10, 17 & 22; March 1 & 3, 2022
 SURVEY BY: USACE Team Lead: D. Brooker
 #HYDRO FILE: NH_01_AOC_20220210_CS

MATCH SHEET 1



Aids to Navigation

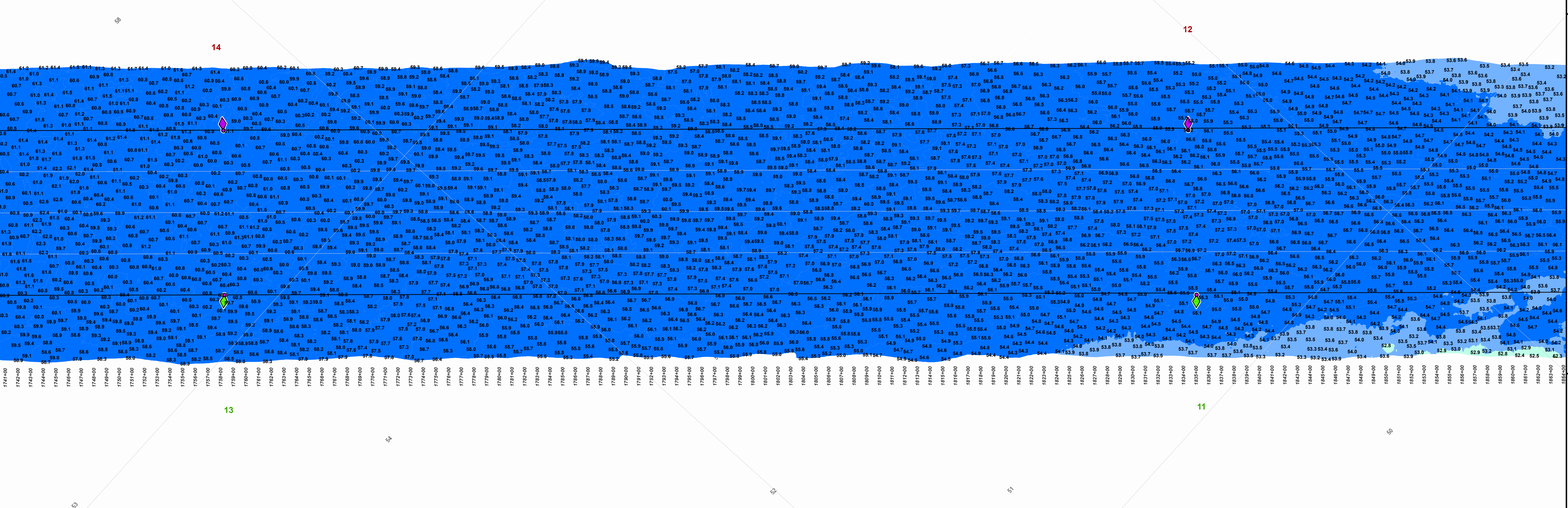
- Benchmark
- Shoalest Sounding in Quarter/Parameter of each Reach
- Channel Toes
- Channel Quarter/Parameter Line
- Maintained Depth Contour Line
- Maintained Depth (MD) +/- Feet
 - MD - 5' and Shoaler
 - MD - 4'
 - MD - 3'
 - MD - 2'
 - MD - 1'
 - MD
 - MD + 1'
 - MD + 2'
 - MD + 3'
 - MD + 4' and Deeper

Aids to Navigation

- Can
- Nun
- Green Lighted Buoy
- Red Lighted Buoy
- Junction Buoy
- Flashing Green
- Flashing Red
- Green Daybeacon
- Red Daybeacon
- Danger

0 200 400 800 Feet
1 inch = 400 feet

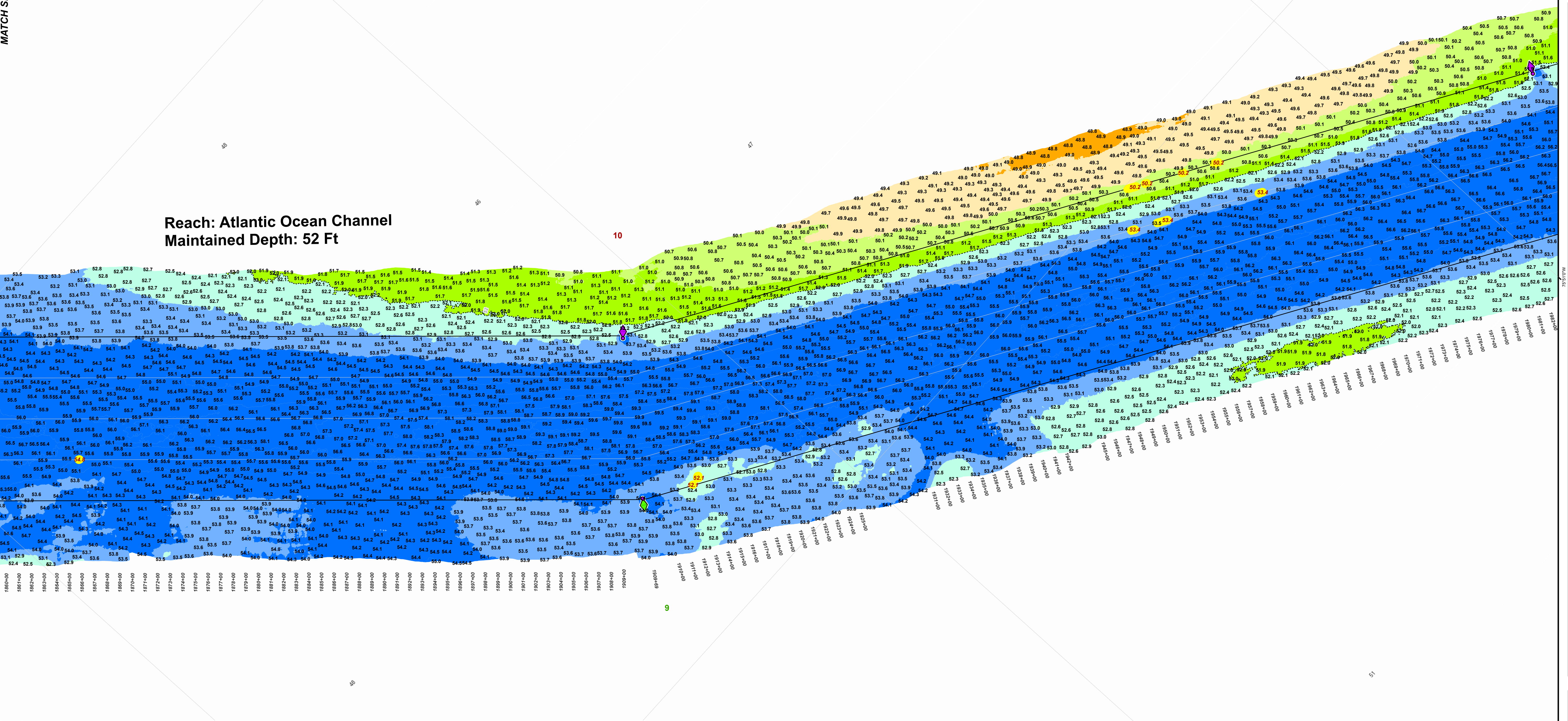
Reach: Atlantic Ocean Channel
Maintained Depth: 52 Ft



To: Navigation Interests		From: USACE, Norfolk District 803 Front St Norfolk, VA 23510						
RIVER/HARBOR NAME AND STATE NORFOLK HARBOR - ATLANTIC OCEAN CHANNEL VIRGINIA		MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD						
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)				
Atlantic Ocean Channel	02-10-2022	1300	10.1	52	52.1	54.8	53.4	50.2
Atlantic Ocean Channel Connecting Waters to Thimble Shoal Channel	02-10-2022	1300	1.0	52	61.2	62.0	62.4	63.3

Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch

MATCH SHEET 3



- Benchmark
 - Shoalest Sounding in Quarter/Parameter of each Reach
 - Channel Toes
 - Channel Quarter/Parameter Line
 - Maintained Depth Contour Line
- Maintained Depth (MD) +/- Feet
- | | |
|--|--|
| | |
| | |
| | |
| | |
| | |
- 1 inch = 400 feet
- Aids to Navigation
 - Can
 - Nun
 - Green Lighted Buoy
 - Red Lighted Buoy
 - Junction Buoy
 - Flashing Green
 - Flashing Red
 - Green Daybeacon
 - Red Daybeacon
 - Danger
- 0 200 400 800 Feet

To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510							
RIVER/HARBOR NAME AND STATE NORFOLK HARBOR - ATLANTIC OCEAN CHANNEL VIRGINIA								
MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD								
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)				
Atlantic Ocean Channel	02-10-2022	1300	10.1	52	52.1	54.8	53.4	50.2
Atlantic Ocean Channel Connecting Waters to Thimble Shoal Channel	02-10-2022	1300	1.0	52	61.2	62.0	62.4	63.3
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch								

NOTES:
 1. PROJECT CHANNEL 60 FT DEEP MAINTAINED AT 60 FT, 1,300 FT WIDE AND 10 MILES LONG BETWEEN THE 60 FT CONTOURS IN THE LOWER CHESAPEAKE BAY AND THE ATLANTIC OCEAN.
 2. NOT FOR NAVIGATION USE. THE INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
 3. SOUNDINGS SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 75 FT RADIUS GENERATED FROM HYDRO SURVEY DATA.

1. PROJECT CHANNEL 60 FT DEEP MAINTAINED AT 60 FT, 1,300 FT WIDE AND 10 MILES LONG BETWEEN THE 60 FT CONTOURS IN THE LOWER CHESAPEAKE BAY AND THE ATLANTIC OCEAN.
 2. NOT FOR NAVIGATION USE. THE INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
 3. SOUNDINGS SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 75 FT RADIUS GENERATED FROM HYDRO SURVEY DATA.

PROJECTED COORDINATE SYSTEM: STATE PLANE	VIRGINIA SOUTH ZONE	US SURVEY FEET	VERTICAL CONTROL: RTKLEICA SMARTNET MULTI-BEAM	SYSTEM METHOD: BIN SELECTION	AVERAGE CELL CENTER
HORIZONTAL ACCURACY: +/- 0.3 FEET	VERTICAL ACCURACY: +/- 0.3 FEET	DATE: 02-10-2022	PROJECT: ATLANTIC OCEAN CHANNEL	SCALE: 1" = 400'	AREA: 1630+00 TO 2215+00
MONUMENT: NOS '863 8863 Tidal No. 3', 1975	MLLW: 26.96'	NAVDB88: 25.13' (GEOD18)	MEAN RANGE OF TIDE: 2.55'	GEODETIC CONTROL MONUMENTS	

NORFOLK HARBOR ATLANTIC OCEAN CHANNEL (SOUTHERN APPROACH) PROJECT CONDITION SURVEY (PLANS AND SPECIFICATIONS)

SURVEY DATES: February 10, 17 & 22; March 1 & 3, 2022

Map Produced: 4/27/2022

SHEET 3 of 5

APPROVED: _____

Chief, Navigation Analysis Section

APPROVED: _____

Chief, Navigation Support and Survey Section

NOTES:
 1. PROJECT CHANNEL (8 FT DEEP MAINTAINED AT 6 FT), 1,300 FT WIDE AND 10 MILES LONG BETWEEN THE 60 FT CONTOUR IN THE LOWER CHESAPEAKE BAY AND THE ATLANTIC OCEAN.
 2. NOT FOR NAVIGATION USE. THE INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED & CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
 3. SOUNDINGS, SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 75 FT RADIUS GENERATED FROM HYDRO SURVEY DATA.
 4. BACKGROUND NOAA CHART DISPLAY SERVICE - OCC WEB MAP SERVICE (WMS)
 5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET ON DATE OF SURVEY.
 6. SURVEY 'XYZ' (XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY #HYDRO FILE NAME.

VERTICAL REFERENCE DATUM: NOS MLLW
 TIDAL EPOCH: 1983-2001
 IMPLIED VERTICAL ACCURACY: +/- 0.3 FEET
 HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
 PROJECTED COORDINATE UNITS: US SURVEY FEET
 IMPLIED HORIZONTAL ACCURACY: +/- 0.3 FEET
 HORIZONTAL CONTROL: RTKLEICA SMARTNET
 SYSTEM METHOD: MULTI-BEAM
 BIN SIZE: 5x5
 AVERAGE CELL CENTER

GEODETIC CONTROL MONUMENTS

STATE PLANE
 VIRGINIA SOUTH ZONE
 US SURVEY FEET
 MONUMENT
 NOS '863 8863 Tidal No. 3', 1975
 NAVD83
 25.13 (GEOID18)
 MEAN RANGE OF TIDE
 AREA
 1630.00 TO 2215.00
 2.55'

NORFOLK HARBOR
ATLANTIC OCEAN CHANNEL
 (SOUTHERN APPROACH)
PROJECT CONDITION SURVEY
 (PLANS AND SPECIFICATIONS)

SHEET 4 of 5
 Map Produced: 4/27/2022

APPROVED: _____
 Chief, Navigation Analysis Section

APPROVED: _____
 Chief, Navigation Support and Survey Section

SURVEY DATES: February 10, 17 & 22; March 1 & 3, 2022
 SURVEY BY: USACE Team Lead: D. Brooke
 #HYDRO FILE: NH_01_AOC_20220210_CS

Reach: Atlantic Ocean Channel Maintained Depth: 52 Ft

MATCH SHEET 3

MATCH SHEET 5



Aids to Navigation

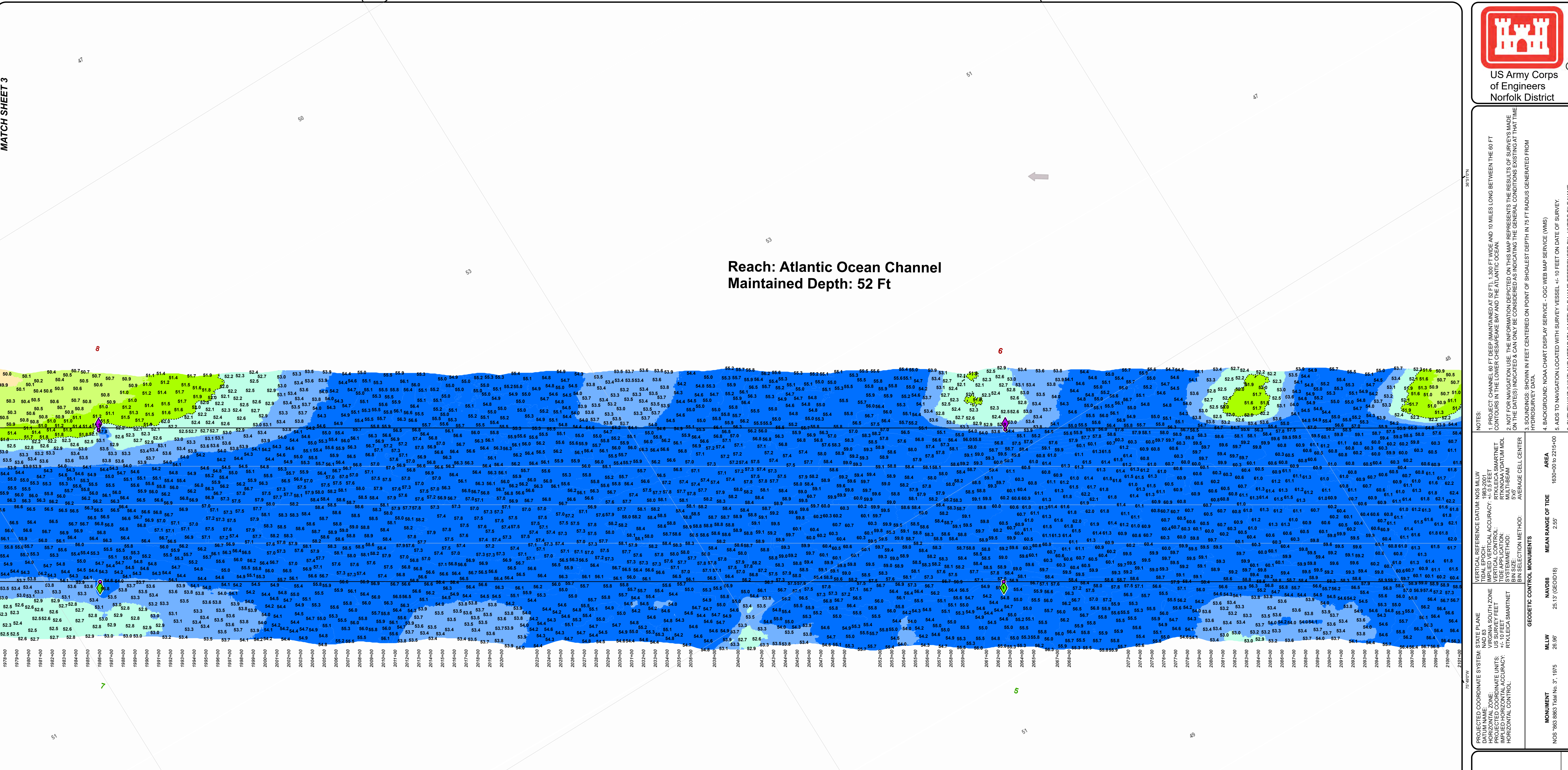
- Benchmark
- Shoalest Sounding in Quarter/Parameter of each Reach
- Channel Toes
- Quarter/Parameter Line
- Maintained Depth Contour Line

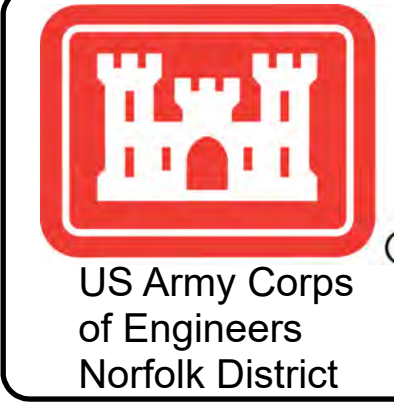
Maintained Depth (MD) +/- Feet

1 inch = 400 feet

0 200 400 800 Feet

To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510							
RIVER/HARBOR NAME AND STATE NORFOLK HARBOR - ATLANTIC OCEAN CHANNEL VIRGINIA								
NAME OF CHANNEL	DATE OF SURVEY	WIDTH (feet)	LENGTH (miles)	DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
Atlantic Ocean Channel	02-10-2022	1300	10.1	52	52.1	54.8	53.4	50.2
Atlantic Ocean Channel Connecting Waters to Thimble Shoal Channel	02-10-2022	1300	1.0	52	61.2	62.0	62.4	63.3
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch								

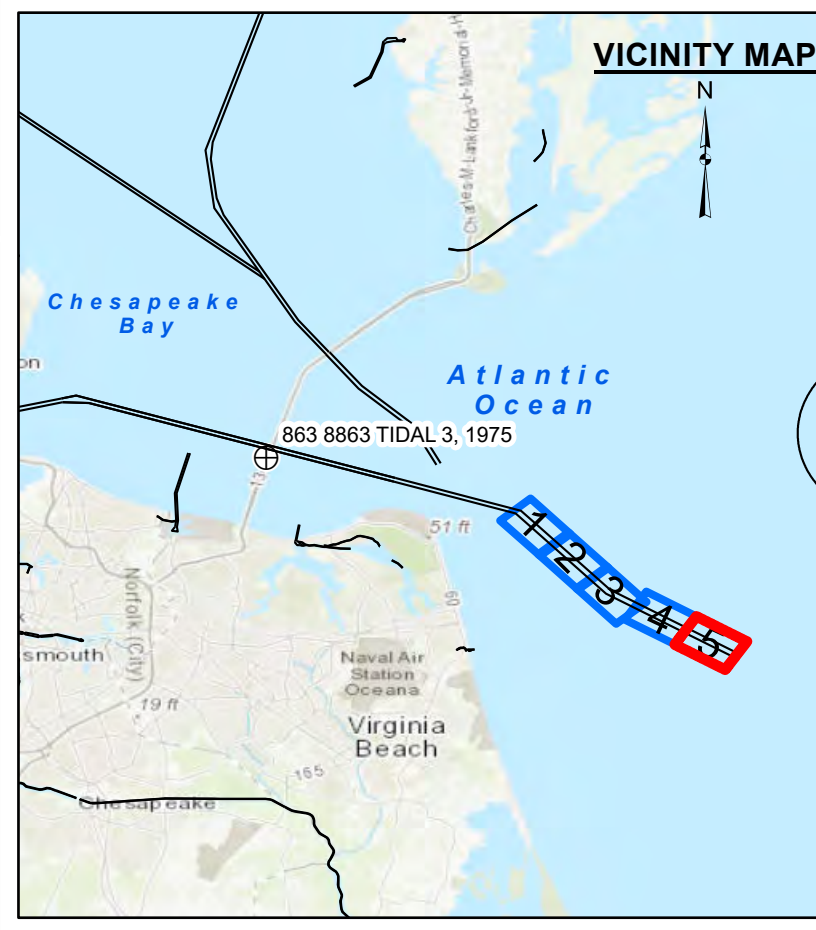
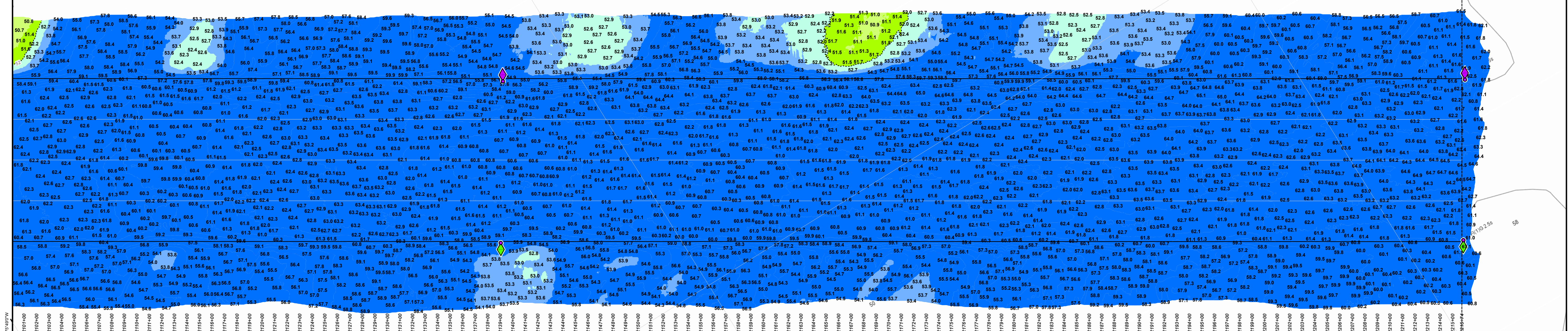




NOTES:
 1. PROJECT CHANNEL 60 FT DEEP MAINTAINED AT 2 FT, 1,300 FT WIDE AND 10 MILES LONG BETWEEN THE 60 FT CONTOURS IN THE LOWER CHESAPEAKE BAY AND THE ATLANTIC OCEAN.
 2. NOT FOR NAVIGATION USE. THE INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED & CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
 3. SOUNDINGS, SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 75 FT RADIUS GENERATED FROM HYDRO SURVEY DATA.
 4. BACKGROUND NOAA CHART DISPLAY SERVICE - OCC WEB MAP SERVICE (WMS)
 5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL 4'-10 FEET ON DATE OF SURVEY.
 6. SURVEY XYZ ('XXYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY #HYDRO FILE NAME.

Reach: Atlantic Ocean Channel
 Maintained Depth: 52 Ft

Reach: Atlantic Ocean Channel
 Reach: None



Legend

- Benchmark
- Shoalest Sounding in Quarter/Parameter of each Reach
- Channel Toes
- Channel Quarter/Parameter Line
- Maintained Depth Contour Line

Maintained Depth (MD) +/- Feet

MD - 5' and Shoaler	MD
MD - 4'	MD + 1'
MD - 3'	MD + 2'
MD - 2'	MD + 3'
MD - 1'	MD + 4' and Deeper

Aids to Navigation

- Can
- Nun
- Green Lighted Buoy
- Red Lighted Buoy
- Junction Buoy
- Flashing Green
- Flashing Red
- Green Daybeacon
- Red Daybeacon
- Danger

0 200 400 800 Feet

1 inch = 400 feet

To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510							
RIVER/HARBOR NAME AND STATE NORFOLK HARBOR - ATLANTIC OCEAN CHANNEL VIRGINIA								
MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD								
NAME OF CHANNEL	DATE OF SURVEY	WIDTH (feet)	LENGTH (miles)	DEPTH (feet)	PROJECT			
					LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
Atlantic Ocean Channel	02-10-2022	1300	10.1	52	52.1	54.8	53.4	50.2
Atlantic Ocean Channel Connecting Waters to Thimble Shoal Channel	02-10-2022	1300	1.0	52	61.2	62.0	62.4	63.3
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch								

PROJECTED COORDINATE SYSTEM: STATE PLANE
 HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
 PROJECTED COORDINATE UNITS: US SURVEY FEET
 IMPLIED HORIZONTAL CONTROL: RTKLEICA SMARTNET
 HORIZONTAL CONTROL: RTKLEICA SMARTNET
 IMPLICIT VERTICAL CONTROL: RTKLEICA SMARTNET
 TYPICAL VERTICAL ACCURACY: +/- 0.2 FEET
 VERTICAL CONTROL: RTKLEICA SMARTNET
 SYSTEM METHOD: MULTI-BEAM
 BIN SIZE: 5x5
 BIN SELECTION METHOD: AVERAGE CELL CENTER

GEODETIC CONTROL MONUMENTS

MLLW	MEAN RANGE OF TIDE	AREA
NOS '863 8863 Tidal No. 3, 1975	2.55'	1630+00 to 2215+00
NAVDB88	25.13' (GEOID18)	

**NORFOLK HARBOR
 ATLANTIC OCEAN CHANNEL
 (SOUTHERN APPROACH)
 PROJECT CONDITION SURVEY
 (PLANS AND SPECIFICATIONS)**

SURVEY DATES:
 February 10, 17 & 22; March 1 & 3, 2022

SHEET 5 of 5
Map Produced: 4/27/2022

APPROVED: _____
 Chief, Navigation Analysis Section

APPROVED: _____
 Chief, Navigation Support and Survey Section

FILE: NH_01_AOC_20220210_CS