⊕ 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

0 100 200 400 Feet
1 INCH = 200 FEET

To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510							
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA						MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

US Army Corps of Engineers Norfolk District

NOTES:

1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD 83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
IMPLIED HORIZONTAL ACCURACY:	+/- 10 FEET
IMPLIED VERTICAL ACCURACY:	+/- 0.5 FEET
VERTICAL REFERENCE DATUM:	NOS MLLW
TIDAL EPOCH:	1983-2001
POSITIONING SYSTEM:	RTK/NOAA VDATUM MDL
SYSTEM/METHOD:	MULTI-BEAM
BIN SIZE:	3'x3'
BIN SELECTION METHOD:	AVERAGE CELL CENTER
AREA SURVEYED:	74+00 to 911+00

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88	MEAN RANGE OF TIDE
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)	3.04'
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)	3.02'
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)	2.89'
TBM Hack NOS	12.73'	N/A	2.90'
CE "BH-1 JEB, 1931"	8.64'	7.06' (GEOID18)	2.56'

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES: December 9-11, 2025

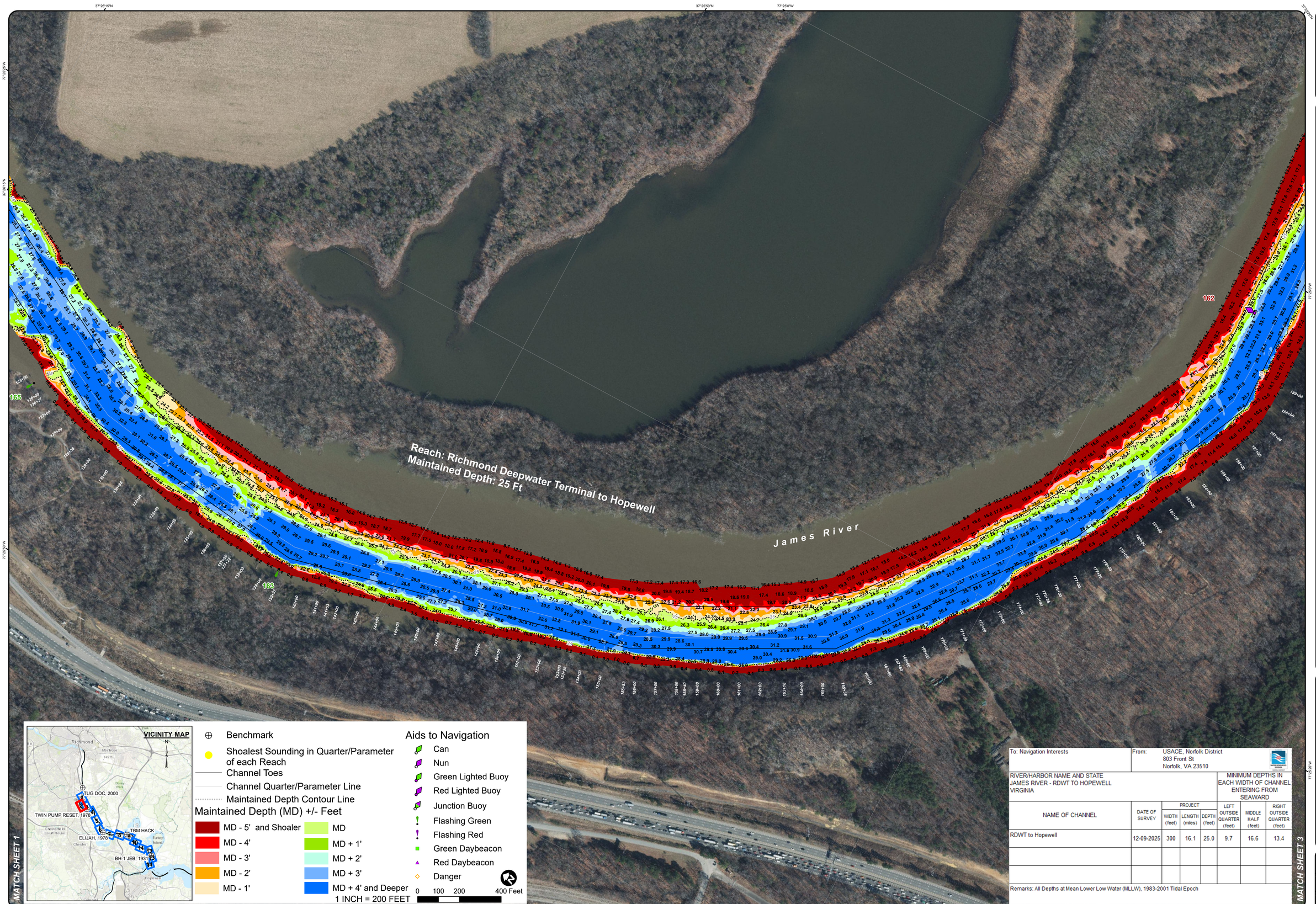
SURVEY BY: USACE Team Lead: Broccolo

eHYDRO FILE: JR_08_RTH_20251209_CS

Map Produced: 2/20/2026

APPROVED:
Andrew T. Tierney
Chief, Navigation Analysis Section

APPROVED:
Digitally signed by eric legaspi
Date: 2026.03.01 19:23:57 -05'00'
Chief, Survey Section



To: Navigation Interests	From:	USACE, Norfolk District 803 Front St Norfolk, VA 23510					
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch							

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM: MLLW
TIDAL EPOCH: 1983-2001
POSITIONING SYSTEM: RTK/NOAA VDATUM
SYSTEM/METHOD: MULTI-BEAM
BIN SIZE: 5 FEET
BIN SELECTION METHOD: AVERAGE CELL CENTER
AREA SURVEYED: 74+00 to 911+00

PROJECTED COORDINATE SYSTEM: STATE PLANE
DATUM: NAD 83
HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS: US SURVEY FEET
BASIS OF HORIZONTAL ACCURACY: +/- 0.5 FEET
IMPLIED VERTICAL ACCURACY:

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)
TBM Hack NGS	12.73'	N/A
CE "BH-1 JEB, 1931"	8.64'	7.08' (GEOID18)

MEAN RANGE OF TIDE

	3.04'
	3.02'
	2.89'
	2.90'
	2.96'

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

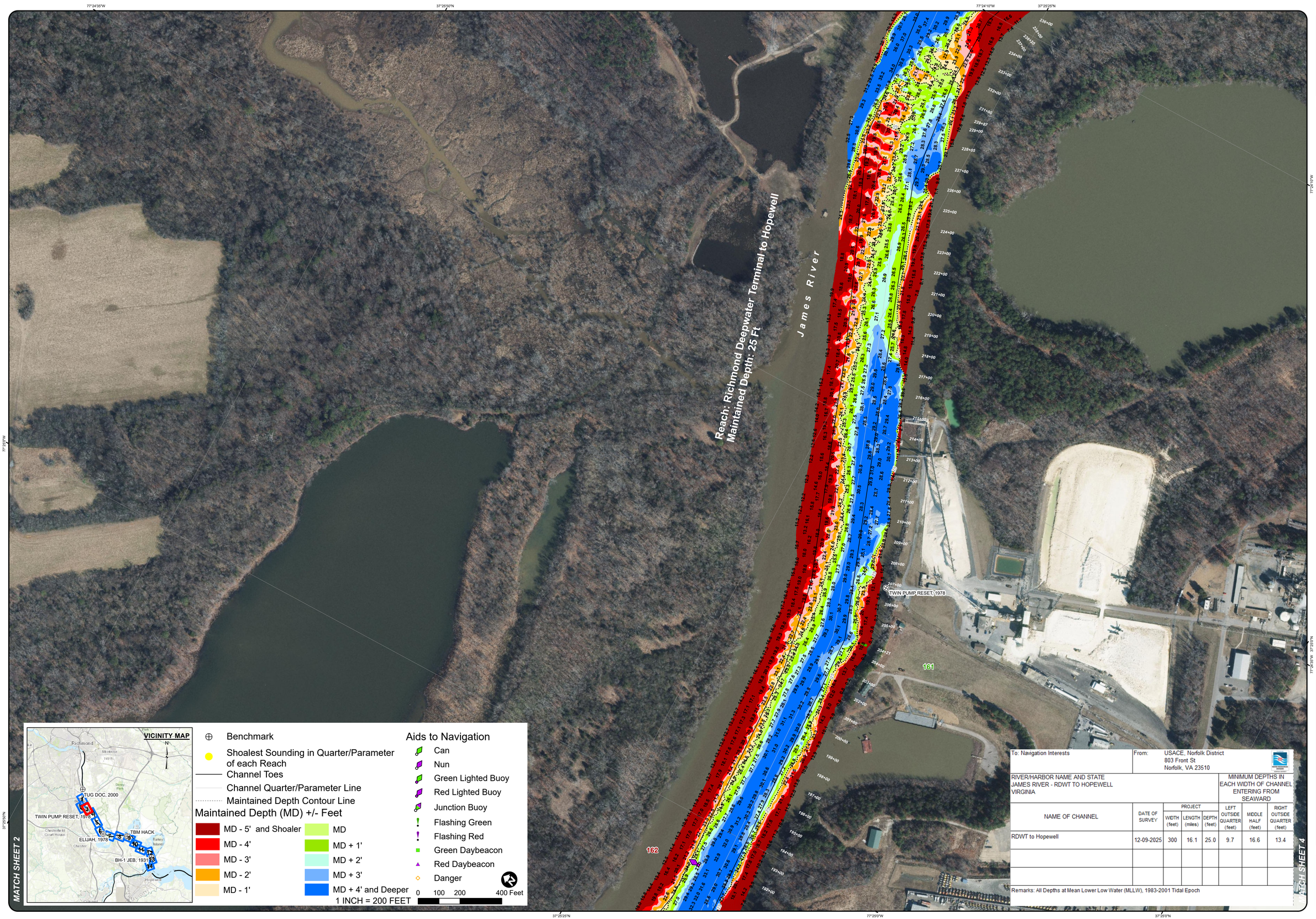
SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_09_RTH_20251209_CS

SHEET 2 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section



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

1 INCH = 200 FEET

0 100 200 400 Feet

Aids to Navigation

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

US Army Corps of Engineers
Norfolk District

NOTES:

1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD 83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
MAPPED HORIZONTAL ACCURACY:	+/- 1.0 FEET
IMPLIED VERTICAL ACCURACY:	+/- 0.5 FEET

VERTICAL REFERENCE DATUM:	NOS MLLW
TIDAL EPOCH:	1983-2001
POSITIONING SYSTEM:	RTK/NOAA VDATUM
SYSTEM/METHOD:	MULTI-BEAM
SWATH SIZE:	512
BIN SELECTION METHOD:	AVERAGE CELL CENTER
AREA SURVEYED:	74+00 to 911+00

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)
CE USE "Twin Pump, 1978"	25.01'	23.41' (GEOID18)
CE "Elijah, 1978"	16.47'	14.92' (GEOID18)
TBM Hack NOS	12.73'	N/A
CE "BH-1 JEB, 1931"	8.64'	7.06' (GEOID18)

MEAN RANGE OF TIDE

3.04'	
3.02'	
2.89'	
2.90'	
2.58'	

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_09_RTH_20251209_CS

To: Navigation Interests

From: USACE, Norfolk District
803 Front St
Norfolk, VA 23510

RIVER/HARBOR NAME AND STATE
JAMES RIVER - RDWT TO HOPEWELL
VIRGINIA

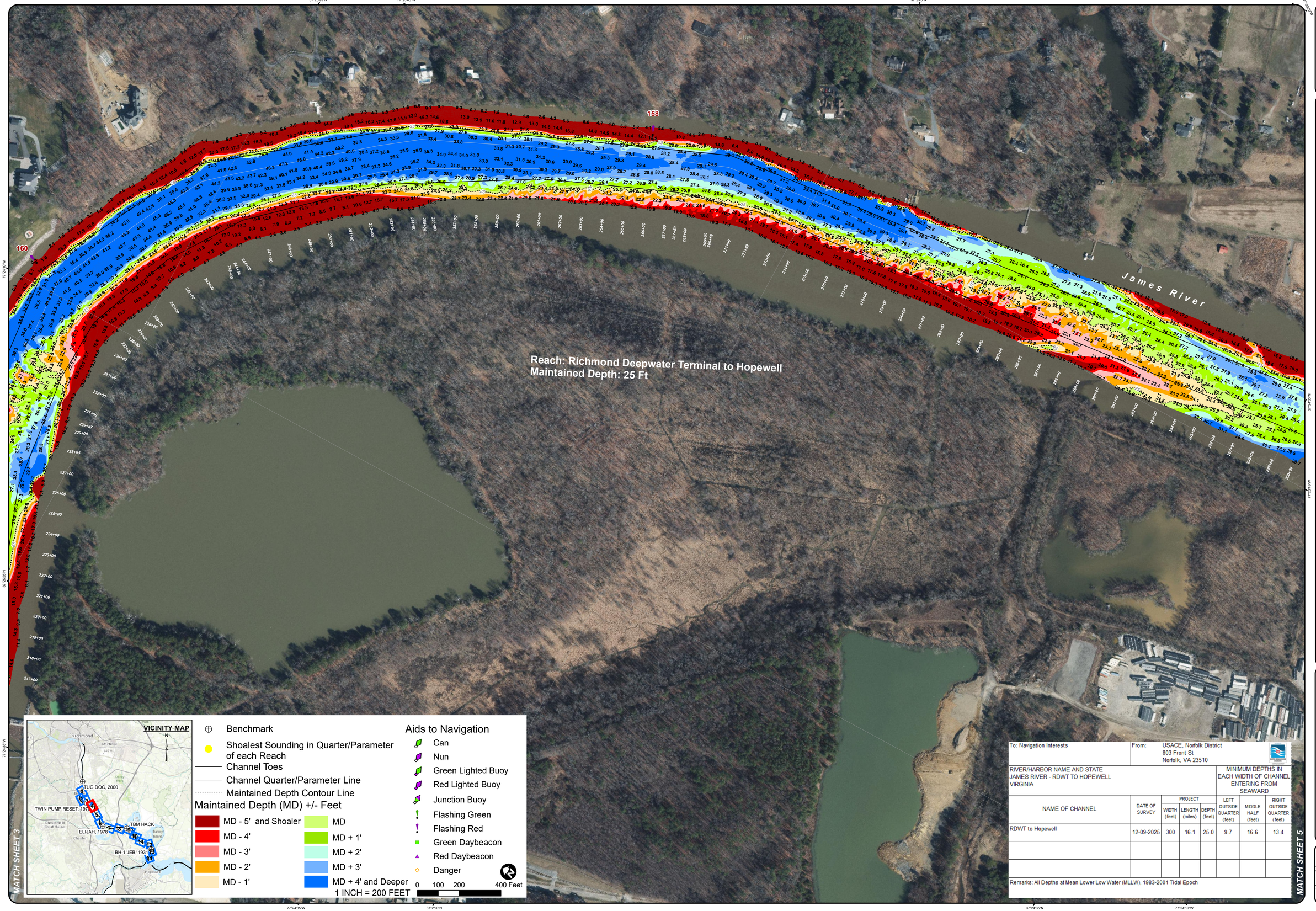
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD: LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

SHEET 3 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section



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

1 INCH = 200 FEET

Aids to Navigation

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

0 100 200 400 Feet

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

RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM:	MLLW
TIDAL EPOCH:	1983-2001
POSITIONING SYSTEM:	RTKNOAA VDATUM MDL
SYSTEM/METHOD:	MULTI-BEAM
BIN SIZE:	3 FEET
BIN SELECTION METHOD:	AVERAGE CELL CENTER
AREA SURVEYED:	74+00 to 911+00

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD 83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
HORIZONTAL ACCURACY:	+/- 0.5 FEET
IMPLIED VERTICAL ACCURACY:	+/- 0.5 FEET

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)
TBM Hack,1905	17.73'	NA
CE "BH-1 JEB, 1931"	8.64'	7.08' (GEOID18)

MEAN RANGE OF TIDE

	3.04'
	3.02'
	2.89'
	2.90'
	2.58'

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

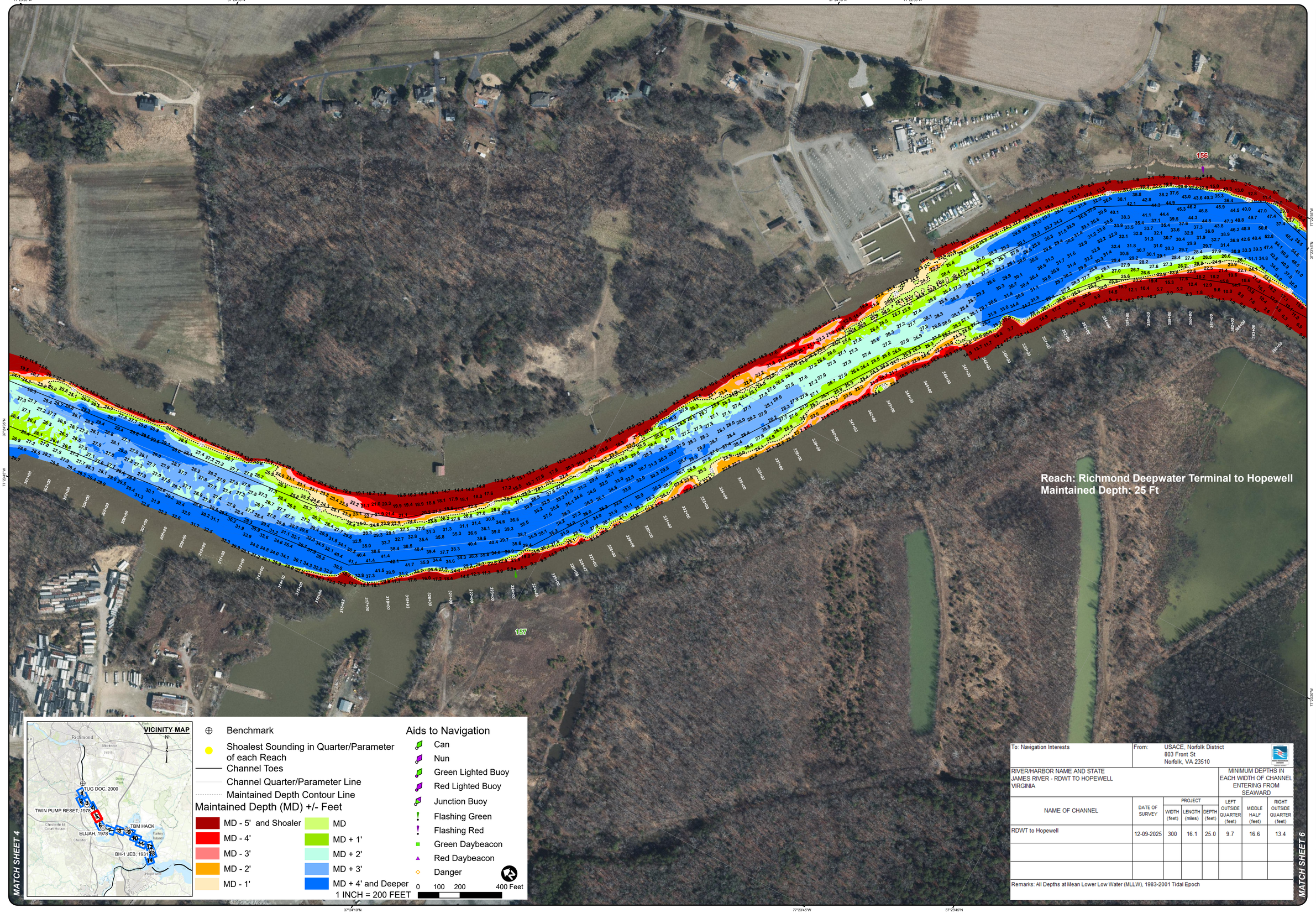
SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_08_RTH_20241209_CS

SHEET 4 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section



US Army Corps of Engineers
Norfolk District

NOTES:

1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM:	MLLW
TIDAL EPOCH:	1983-2001
POSITIONING SYSTEM:	RTKNOAA VDATUM MDL
SYSTEM/METHOD:	MULTI-BEAM
BIN SELECTION METHOD:	SHOALEST
AREA SURVEYED:	AVERAGE CELL CENTER 74+00 to 911+00

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
IMPLIED HORIZONTAL ACCURACY:	+/- 0.5 FEET
IMPLIED VERTICAL ACCURACY:	

GEODETIC CONTROL MONUMENTS
NAVD88

MONUMENT	MLLW
CE "Tug Doc, 2000"	27.14'
CE USE "Twin Pump, 1978"	25.01'
CE "Elijah, 1978"	16.47'
TBM Hack NGS	12.73'
CE "BH-1 JEB, 1931"	6.64'

MONUMENT	MEAN RANGE OF TIDE
	3.04'
	3.02'
	2.89'
	2.90'
	2.58'

To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510						
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_09_RTH_20251209_CS

SHEET 5 of 14
Map Produced: 2/20/2026

APPROVED:

Chief, Navigation Analysis Section

APPROVED:

Chief, Survey Section

37°23'45"N
37°23'20"N
77°22'30"W
37°22'55"N
77°23'05"W
77°23'30"W

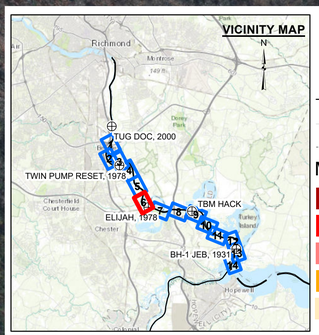
James River

Reach: Richmond Deepwater Terminal to Hopewell
Maintained Depth: 25 Ft

155A
154
152A
155
ELIJAH, 1978

MATCH SHEET 5
MATCH SHEET 7

VICINITY MAP



- 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

1 INCH = 200 FEET
0 100 200 400 Feet

Aids to Navigation

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

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

RIVER/HARBOR NAME AND STATE
JAMES RIVER - RDWT TO HOPEWELL
VIRGINIA

MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD

NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM: NOS MLLW
TIDAL EPOCH: 1983-2001
POSITIONING SYSTEM: RTK/NOAA VDATUM MDL
SYSTEM METHOD: MULTI-BEAM
SCALE: 1:2,400
BIN SELECTION METHOD: AVERAGE CELL CENTER
AREA SURVEYED: 74+00 to 911+00

PROJECTED COORDINATE SYSTEM: STATE PLANE
DATUM NAME: NAD 83
HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS: US SURVEY FEET
MAXIMUM HORIZONTAL ACCURACY: 15.0 FEET
IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET

GEODETIC CONTROL MONUMENTS

MONUMENT	MLW	NAVD88
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)
CE USE "Twin Pump, 1978"	25.01'	23.41' (GEOID18)
CE "Elijah, 1978"	16.47'	14.92' (GEOID18)
CE "BM Hack NOS"	12.73'	NA
CE "BH-1 JEB, 1931"	8.64'	7.06' (GEOID18)

MEAN RANGE OF TIDE

	3.04'
	3.02'
	2.89'
	2.90'
	2.58'


JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_09_RTH_20241209_CS

SHEET 6 of 14
Map Produced: 2/20/2026

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



To: Navigation Interests		From: USACE, Norfolk District 803 Front St Norfolk, VA 23510						
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA						MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)		LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0		9.7	16.6	13.4

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

US Army Corps of Engineers
Norfolk District

NOTES:

1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

PROJECTED COORDINATE SYSTEM: STATE PLANE
DATUM NAME: NAD 83
HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS: US SURVEY FEET
IMPLIED HORIZONTAL ACCURACY: +/- 10 FEET
IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET

VERTICAL REFERENCE DATUM: NOS MLLW
TIDAL EPOCH: 1983-2001
POSITIONING SYSTEM: RTK/NOAA VDATUM MDL
SYSTEM/METHOD: MULTI-BEAM
BIN SIZE: 3'x3'
BIN SELECTION METHOD: AVERAGE CELL CENTER
AREA SURVEYED: 74+00 to 911+00

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88	MEAN RANGE OF TIDE
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)	3.04'
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)	3.02'
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)	2.89'
TBM Hack NOS	12.73'	N/A	2.90'
CE "BH-1 JEB, 1931"	8.64'	7.06' (GEOID18)	2.56'

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_08_RTH_20251209_CS

SHEET 7 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section

77°20'50"W 77°20'25"W 77°22'55"N 77°20'0"W

Reach: Richmond Deepwater Terminal to Hopewell
Maintained Depth: 25 Ft

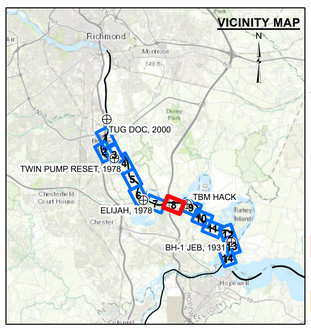
James River

MATCH SHEET 7

MATCH SHEET 9

37°22'55"N 37°22'30"N 77°20'50"W 77°20'25"W 77°20'0"W

VICINITY MAP



- 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

1 INCH = 200 FEET

Aids to Navigation

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

0 100 200 400 Feet

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM: NGS MLLW
TIDAL EPOCH: 1983-2001
POSITIONING SYSTEM: RTKNOAA VDATUM MDL
SYSTEM/METHOD: MULTI-BEAM
BIN SIZE: 5' X 5'
BIN SELECTION METHOD: AVERAGE CELL CENTER
AREA SURVEYED: 74+00 to 911+00

PROJECTED COORDINATE SYSTEM: STATE PLANE
DATUM NAME: NAD 83
HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS: US SURVEY FEET
IMPLIED HORIZONTAL ACCURACY: +/- 1.0 FEET
IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88	MEAN RANGE OF TIDE
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)	3.04'
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)	3.02'
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)	2.89'
TBM Hack W33	12.73'	N/A	2.90'
CE "BH-1 JEB, 1931"	8.64'	7.06' (GEOID18)	2.58'

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

RIVER/HARBOR NAME AND STATE
JAMES RIVER - RDWT TO HOPEWELL
VIRGINIA

MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD

NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_00_RTH_20251209_CS

SHEET 8 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section

77°19'35"W 37°22'55"N 77°19'10"W 77°18'45"W

Reach: Richmond Deepwater Terminal to Hopewell
Maintained Depth: 25 Ft

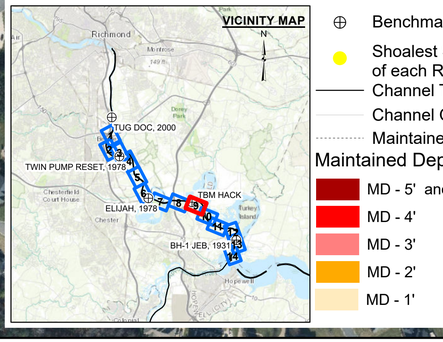
James River

TBM HACK

146 147 144 143

MATCH SHEET 8

MATCH SHEET 10



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

1 INCH = 200 FEET

Aids to Navigation

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

0 100 200 400 Feet

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM: MLW, MLLW, NGVD29, NAVD88
TIDAL EPOCH: 1983-2001
POSITIONING SYSTEM: RTK/NOAA VDATUM MDL
SYSTEM METHOD: MULTI-BEAM
BASIS OF SOUNDINGS: MLLW
AREA SURVEYED: AVERAGE CELL CENTER 74+00 to 911+00
BIN SELECTION METHOD:

MEAN RANGE OF TIDE
3.04'
3.02'
2.89'
2.90'
2.98'

PROJECTED COORDINATE SYSTEM: STATE PLANE
DATUM NAME: NAD 83
HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS: US SURVEY FEET
INSTRUMENTATION ACCURACY: 0.1 FEET
IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)
TBM Hack NGS	12.73	NA
CE "BH-1 JEB, 1931"	8.64	7.06' (GEOID18)

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_09_RTH_20251209_CS

To: Navigation Interests

From: USACE, Norfolk District
803 Front St
Norfolk, VA 23510

RIVER/HARBOR NAME AND STATE
JAMES RIVER - RDWT TO HOPEWELL
VIRGINIA

MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD

NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

SHEET 9 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section

77°18'45"W 77°18'20"W 77°17'55"W 37°22'5"N 37°21'40"N

Reach: Richmond Deepwater Terminal to Hopewell
Maintained Depth: 25 Ft

James River

MATCH SHEET 9

MATCH SHEET 11

To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510						
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

VICINITY MAP

Richmond, Manchester, Dutch Gap, TUG DOC, 2000, TWIN PUMP RESET, 1978, ELIJAH, 1978, TBM HACK, BH-1 JEB, 1931, Chesterfield Court House, Chester, Turkey Island, Hopewell, Colonial Heights

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

0 100 200 400 Feet
1 INCH = 200 FEET

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM:	MLLW
TIDAL EPOCH:	NOS 1983-2001
POSITIONING SYSTEM:	RTKNOAA VDATUM MDL
SYSTEM METHOD:	MULTI-BEAM
BIN SIZE:	3m x 3m
BIN SELECTION METHOD:	AVERAGE CELL CENTER
AREA SURVEYED:	74+00 to 911+00

GEODETIC CONTROL MONUMENTS NAD88		
MONUMENT	MLLW	MEAN RANGE OF TIDE
CE "Tug Doc, 2000"	27.14'	3.04'
CE USE "Twin Pump, 1978"	25.01'	3.02'
CE "Elijah, 1978"	16.47'	2.89'
TBM Hack NOS	12.73'	2.90'
CE "BH-1 JEB, 1931"	10.84'	2.58'

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD 83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
PROJECTED COORDINATE ACCURACY:	+/- 0.5 FEET
IMPLIED VERTICAL ACCURACY:	+/- 0.5 FEET

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_08_RTH_20251209_CS

SHEET 10 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section

77°17'55"W 37°21'40"N 77°17'30"W 77°17'5"W

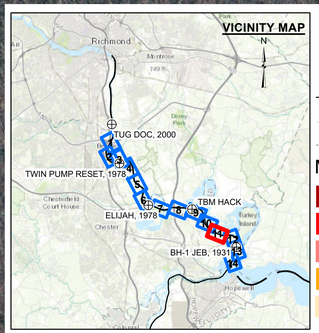
James River

Reach: Richmond Deepwater Terminal to Hopewell
Maintained Depth: 25 Ft

To: Navigation Interests	From:	USACE, Norfolk District 803 Front St Norfolk, VA 23510					
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

VICINITY MAP



- 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

1 INCH = 200 FEET

Aids to Navigation

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

0 100 200 400 Feet

MATCH SHEET 10

MATCH SHEET 12

77°18'20"W 77°17'55"W 77°17'30"W 37°20'50"N 37°21'40"N

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

VERTICAL REFERENCE DATUM:	MLLW
TIDAL EPOCH:	NOS 1983-2001
POSITIONING SYSTEM:	RTKNOAA VDATUM MDL
SYSTEM/METHOD:	MULTI-BEAM
BIN SELECTION METHOD:	MEAN
BIN SELECTION METHOD:	AVERAGE CELL CENTER
AREA SURVEYED:	74+00 to 911+00

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
BIN SIZE / GRID SPACING:	+/- 25 FEET
IMPLIED VERTICAL ACCURACY:	+/- 0.5 FEET

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88	NAD83 (GEOID18)
CE "Tug Doc, 2000"	27.14'	25.69'	(GEOID18)
CE USE "Twin Pump, 1978"	25.01'	23.41'	(GEOID18)
CE Elijah, 1978"	16.43'	14.92'	(GEOID18)
TBM Hack 1978	17.73'	NA	
CE "BH-1 JEB, 1931"	8.64'	7.08'	(GEOID18)

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY


SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_08_RTH_20251209_CS

SHEET 11 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section



US Army Corps of Engineers
Norfolk District

NOTES:

1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD 83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
IMPLIED HORIZONTAL ACCURACY:	+/- 10 FEET
IMPLIED VERTICAL ACCURACY:	+/- 0.5 FEET

VERTICAL REFERENCE DATUM:	NOS MLLW
TIDAL EPOCH:	1983-2001
POSITIONING SYSTEM:	RTK/NOAA VDATUM MDL
SYSTEM/METHOD:	MULTI-BEAM
BIN SIZE:	3'x3'
BIN SELECTION METHOD:	AVERAGE CELL CENTER
AREA SURVEYED:	74+00 to 911+00

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88	MEAN RANGE OF TIDE
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)	3.04'
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)	3.02'
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)	2.89'
TBM Hack NOS	12.73'	N/A	2.90'
CE "BH-1 JEB, 1931"	8.64'	7.06' (GEOID18)	2.56'

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_08_RTH_20251209_CS

SHEET 12 of 14
Map Produced: 2/20/2026

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

To: Navigation Interests					From: USACE, Norfolk District, 803 Front St, Norfolk, VA 23510		
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet)	PROJECT LENGTH (miles)	PROJECT DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

VICINITY MAP
Richmond
TUG DOC, 2000
TWIN PUMP RESET, 1978
ELIJAH, 1978
TBM HACK
BH-1 JEB, 1931
Chesterfield Court House
Chester
Hopewell

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

0 100 200 400 Feet
1 INCH = 200 FEET

Reach: Richmond Deepwater Terminal to Hopewell
Maintained Depth: 25 Ft

James River

BH-1 JEB, 1931

MATCH SHEET 12

MATCH SHEET 14

To: Navigation Interests	From:	USACE, Norfolk District 803 Front St Norfolk, VA 23510					
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch							



- 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

1 INCH = 200 FEET

Aids to Navigation

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

0 100 200 400 Feet

US Army Corps of Engineers
Norfolk District

NOTES:
1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

PROJECTED COORDINATE SYSTEM:	STATE PLANE
DATUM NAME:	NAD 83
HORIZONTAL ZONE:	VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS:	US SURVEY FEET
MAXIMUM POSITIONAL ACCURACY:	+/- 1 FEET
IMPLIED VERTICAL ACCURACY:	+/- 0.5 FEET

VERTICAL REFERENCE DATUM:	MLLW
TIDAL EPOCH:	NOS 1983-2001
POSITIONING SYSTEM:	RTK/NOAA VDATUM MDL
SYSTEM/METHOD:	MULTI-BEAM
BIN SIZE:	50 FT
BIN SELECTION METHOD:	AVERAGE CELL CENTER
AREA SURVEYED:	74+00 to 911+00

GEODETIC CONTROL MONUMENTS	MLLW	NAVD88
MONUMENT	MEAN RANGE OF TIDE	
CE "Tug Doc, 2000"	3.04'	25.69' (GEOID18)
CE USE "Twin Pump, 1978"	3.02'	23.41'(GEOID18)
CE "Elijah, 1978"	2.89'	16.47'
TBM Hack NGS	2.90'	14.92'(GEOID18)
CE "BH-1 JEB, 1931"	2.58'	7.08' (GEOID18)

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY


SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_08_RTH_20251209_CS

SHEET 13 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section



To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510						
RIVER/HARBOR NAME AND STATE JAMES RIVER - RDWT TO HOPEWELL VIRGINIA					MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD		
		PROJECT					
NAME OF CHANNEL	DATE OF SURVEY	WIDTH (feet)	LENGTH (miles)	DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
RDWT to Hopewell	12-09-2025	300	16.1	25.0	9.7	16.6	13.4

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

VICINITY MAP

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

0 100 200 400 Feet
1 INCH = 200 FEET

US Army Corps of Engineers
Norfolk District

NOTES:

1. A CHANNEL 35 FEET DEEP AND 300 FEET WIDE MAINTAINED UNDER A PREVIOUS PROJECT TO 25 FEET DEEP.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) 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 50 FT RADIUS GENERATED FROM HYDROSURVEY DATA
4. BACKGROUND: NOAA RASTER CHART GIS WEB SERVICE.
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET.
6. SURVEY XYZ (*.XYZ) AND METADATA (*.MET) FILE NAME REFERENCED BY eHYDRO FILE NAME.

PROJECTED COORDINATE SYSTEM: STATE PLANE
DATUM NAME: NAD 83
HORIZONTAL ZONE: VIRGINIA SOUTH ZONE
PROJECTED COORDINATE UNITS: US SURVEY FEET
IMPLIED HORIZONTAL ACCURACY: +/- 10 FEET
IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET

VERTICAL REFERENCE DATUM: NOS MLLW
TIDAL EPOCH: 1983-2001
POSITIONING SYSTEM: RTK/NOAA VDATUM MDL
SYSTEM/METHOD: MULTI-BEAM
BIN SIZE: 3'x3'
BIN SELECTION METHOD: AVERAGE CELL CENTER
AREA SURVEYED: 74+00 to 911+00

GEODETIC CONTROL MONUMENTS

MONUMENT	MLLW	NAVD88	MEAN RANGE OF TIDE
CE "Tug Doc, 2000"	27.14'	25.69' (GEOID18)	3.04'
CE USE "Twin Pump, 1978"	25.01'	23.41'(GEOID18)	3.02'
CE "Elijah, 1978"	16.47'	14.92'(GEOID18)	2.89'
TBM Hack NOS	12.73'	N/A	2.90'
CE "BH-1 JEB, 1931"	8.64'	7.06' (GEOID18)	2.56'

JAMES RIVER
RDWT TO HOPEWELL
PROJECT CONDITION SURVEY

SURVEY DATES:
December 9-11, 2025

SURVEY BY: USACE Team Lead: Broccolo
eHYDRO FILE: JR_08_RTH_20251209_CS

SHEET 14 of 14
Map Produced: 2/20/2026

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Chief, Survey Section