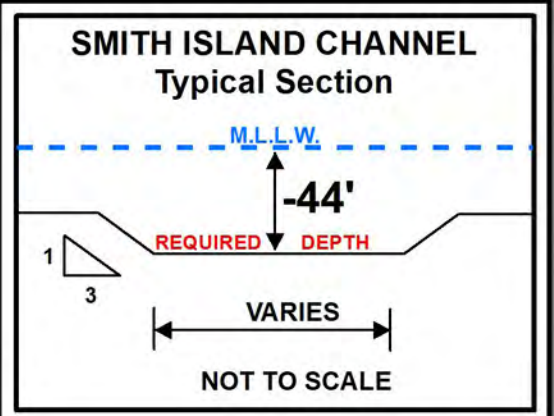
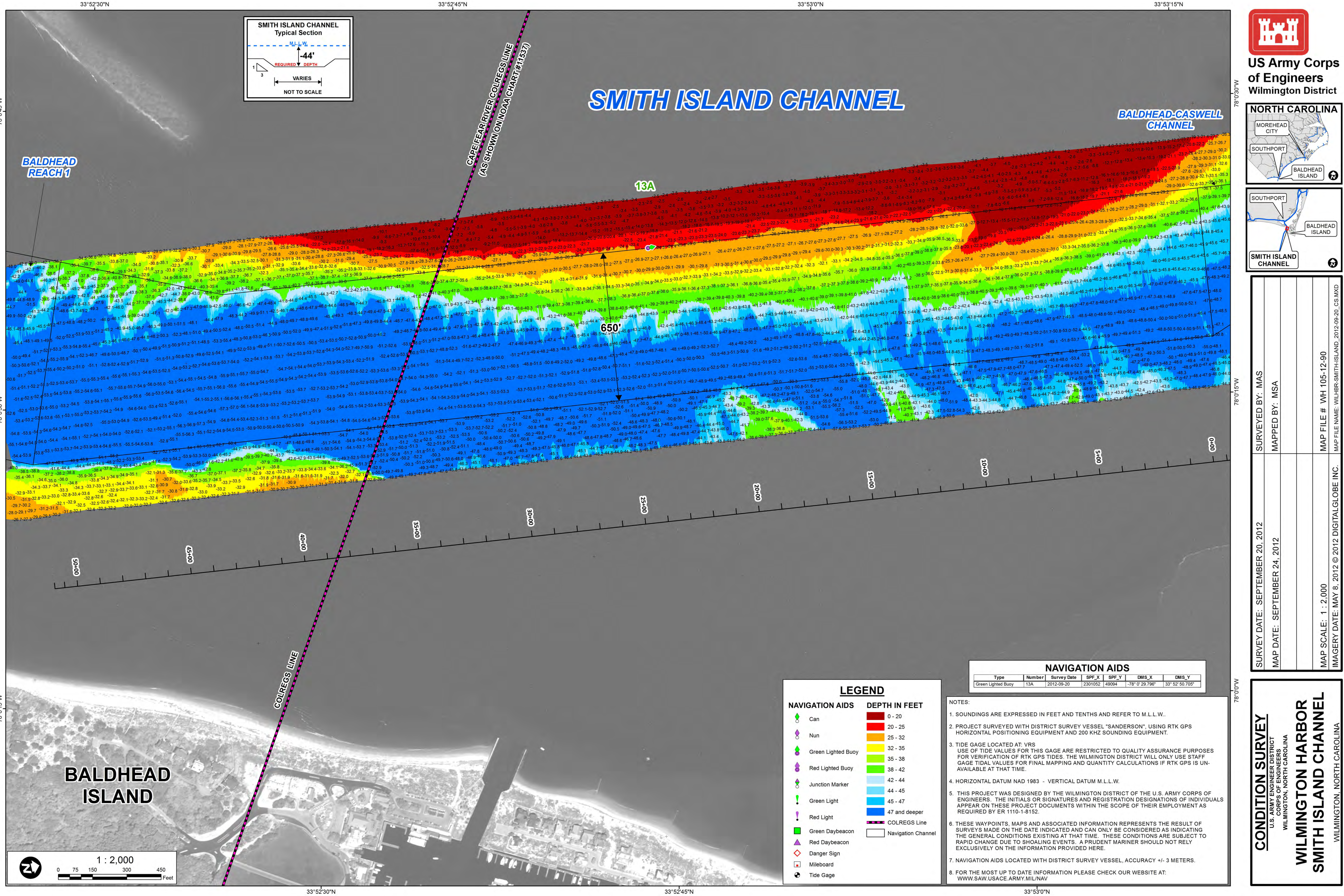


APPENDIX E

USACE HYDROGRAPHIC SURVEYS



SMITH ISLAND CHANNEL

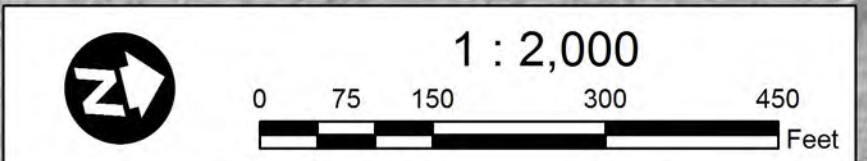
BALDHEAD-CASWELL CHANNEL

BALDHEAD REACH 1

CAPE FEAR RIVER COLREGS LINE
(AS SHOWN ON NOAA CHART #11637)

COLREGS LINE

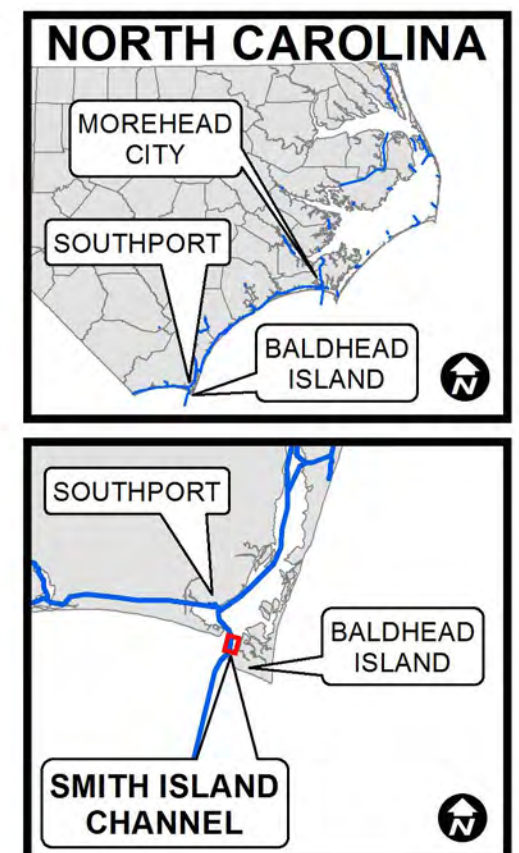
BALDHEAD ISLAND



Type	Number	Survey Date	SPF_X	SPF_Y	DMS_X	DMS_Y
Green Lighted Buoy	13A	2012-08-20	2301052	49084	-78° 0' 29.796"	33° 52' 50.705"

NAVIGATION AIDS		DEPTH IN FEET	
Can	Green Lighted Buoy	0 - 20	20 - 25
Nun	Red Lighted Buoy	25 - 32	32 - 35
Green Lighted Buoy	Junction Marker	35 - 38	38 - 42
Red Lighted Buoy	Green Light	42 - 44	44 - 45
Junction Marker	Red Light	45 - 47	47 and deeper
Green Light	Green Daybeacon	47 and deeper	Navigation Channel
Red Light	Red Daybeacon		
Danger Sign	Milebuoy		
Tide Gauge			

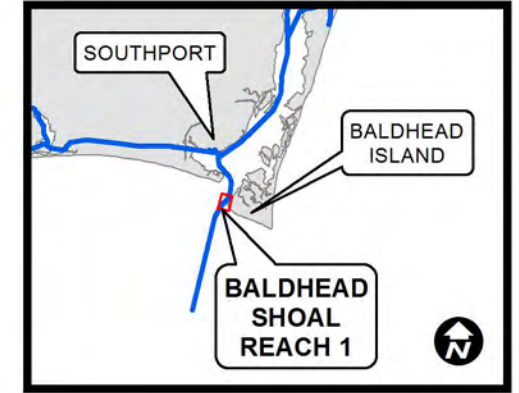
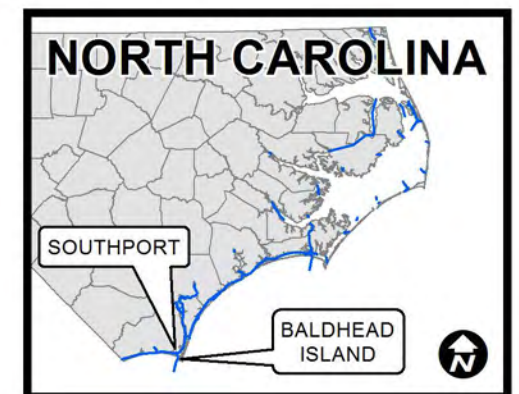
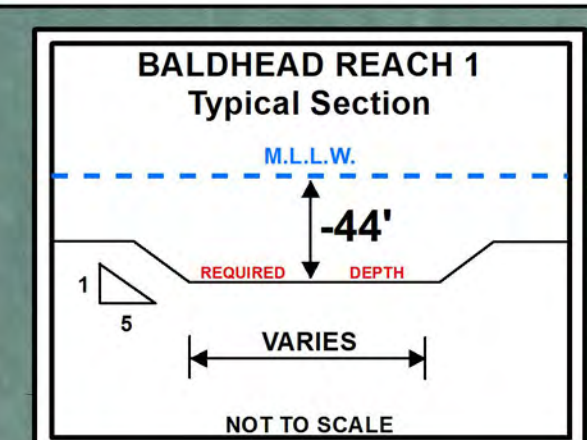
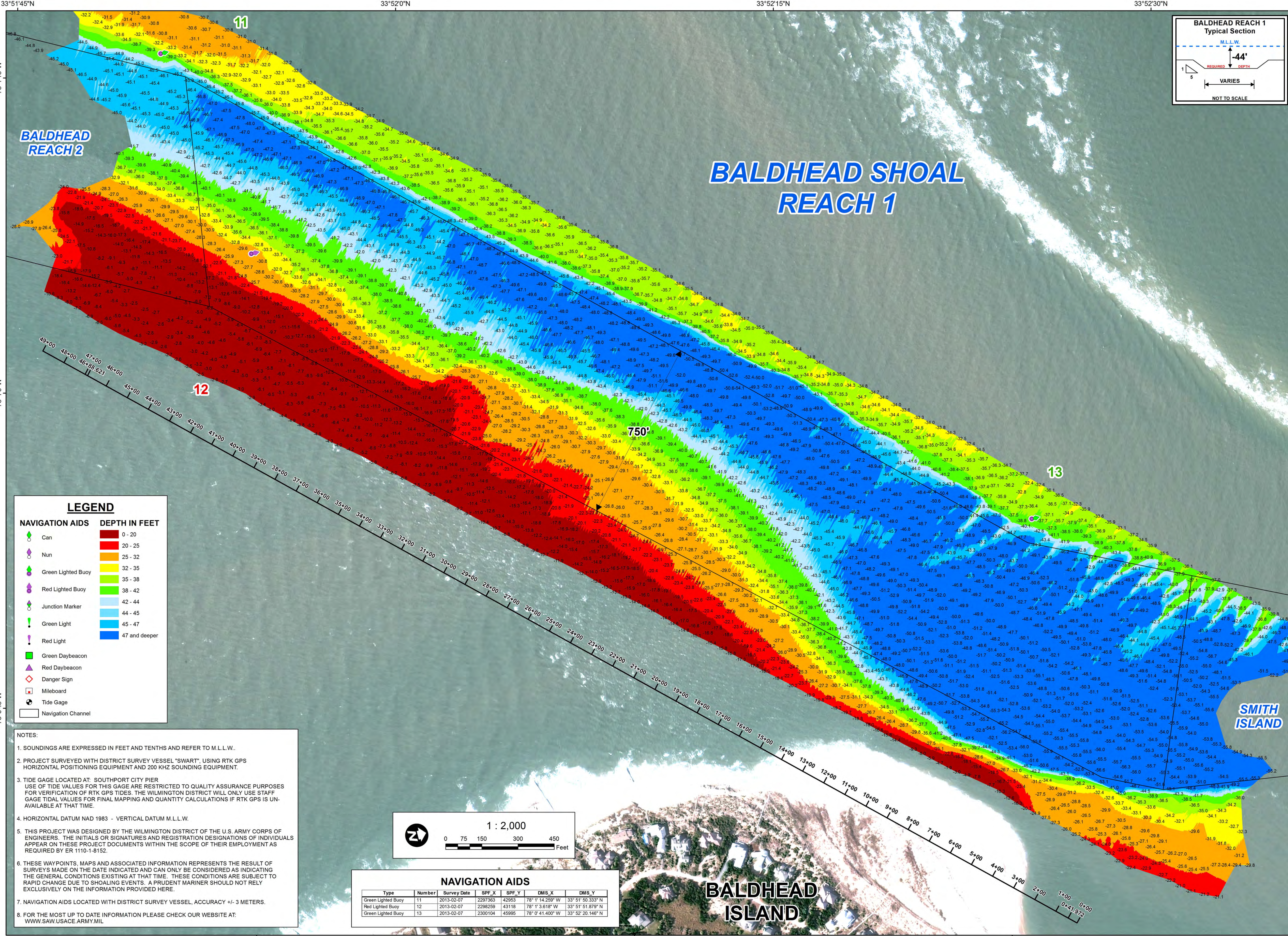
- NOTES:
- SOUNDINGS ARE EXPRESSED IN FEET AND TENTHS AND REFER TO M.L.L.W.
 - PROJECT SURVEYED WITH DISTRICT SURVEY VESSEL "SANDERSON", USING RTK GPS HORIZONTAL POSITIONING EQUIPMENT AND 200 KHZ SOUNDING EQUIPMENT.
 - TIDE GAGE LOCATED AT: VRS
USE OF TIDE VALUES FOR THIS GAGE ARE RESTRICTED TO QUALITY ASSURANCE PURPOSES FOR VERIFICATION OF RTK GPS TIDES. THE WILMINGTON DISTRICT WILL ONLY USE STAFF GAGE TIDE VALUES FOR FINAL MAPPING AND QUANTITY CALCULATIONS IF RTK GPS IS UNAVAILABLE AT THAT TIME.
 - HORIZONTAL DATUM NAD 1983 - VERTICAL DATUM M.L.L.W.
 - THIS PROJECT WAS DESIGNED BY THE WILMINGTON DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.
 - THESE WAYPOINTS, MAPS AND ASSOCIATED INFORMATION REPRESENTS THE RESULT OF SURVEYS MADE ON THE DATE INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME. THESE CONDITIONS ARE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE.
 - NAVIGATION AIDS LOCATED WITH DISTRICT SURVEY VESSEL, ACCURACY +/- 3 METERS.
 - FOR THE MOST UP TO DATE INFORMATION PLEASE CHECK OUR WEBSITE AT: WWW.SAW.USACE.ARMY.MIL/NAV



SURVEYED BY: MAS	MAP FILE # WH 105-12-90
MAPPED BY: MSA	MAP FILE NAME: WILHBRS-SMITHISLAND_2012-08-20_CS.MXD
SURVEY DATE: SEPTEMBER 20, 2012	IMAGERY DATE: MAY 8, 2012 © 2012 DIGITALGLOBE INC.
MAP DATE: SEPTEMBER 24, 2012	MAP SCALE: 1 : 2,000

CONDITION SURVEY
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WILMINGTON, NORTH CAROLINA

**WILMINGTON HARBOR
SMITH ISLAND CHANNEL**
WILMINGTON, NORTH CAROLINA

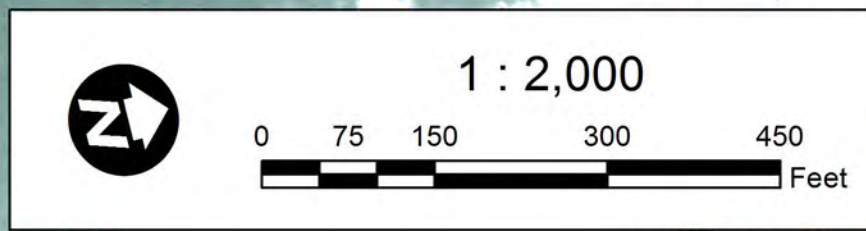


SURVEYED BY: MAS, WWW	MAP FILE NAME: BALDHEADSHOAL1_2013-02-07_CS.MXD
MAPPED BY: MSA	
SURVEY DATE: FEBRUARY 6-7, 2013	IMAGERY DATE: DECEMBER 19, 2012 © 2012 DIGITALGLOBE INC.
MAP DATE: FEBRUARY 11, 2013	MAP SCALE: 1 : 2,000

LEGEND

NAVIGATION AIDS	DEPTH IN FEET
Can	0 - 20
Nun	20 - 25
Green Lighted Buoy	25 - 32
Red Lighted Buoy	32 - 35
Junction Marker	35 - 38
Green Light	38 - 42
Red Light	42 - 44
Green Daybeacon	44 - 45
Red Daybeacon	45 - 47
Danger Sign	47 and deeper
Mileboard	
Tide Gage	
Navigation Channel	

- NOTES:**
- SOUNDINGS ARE EXPRESSED IN FEET AND TENTHS AND REFER TO M.L.L.W.
 - PROJECT SURVEYED WITH DISTRICT SURVEY VESSEL "SWART", USING RTK GPS HORIZONTAL POSITIONING EQUIPMENT AND 200 KHZ SOUNDING EQUIPMENT.
 - TIDE GAGE LOCATED AT: SOUTHPORT CITY PIER
USE OF TIDE VALUES FOR THIS GAGE ARE RESTRICTED TO QUALITY ASSURANCE PURPOSES FOR VERIFICATION OF RTK GPS TIDES. THE WILMINGTON DISTRICT WILL ONLY USE STAFF GAGE TIDAL VALUES FOR FINAL MAPPING AND QUANTITY CALCULATIONS IF RTK GPS IS UNAVAILABLE AT THAT TIME.
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 - THIS PROJECT WAS DESIGNED BY THE WILMINGTON DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.
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 - NAVIGATION AIDS LOCATED WITH DISTRICT SURVEY VESSEL. ACCURACY +/- 3 METERS.
 - FOR THE MOST UP TO DATE INFORMATION PLEASE CHECK OUR WEBSITE AT: WWW.SAW.USACE.ARMY.MIL



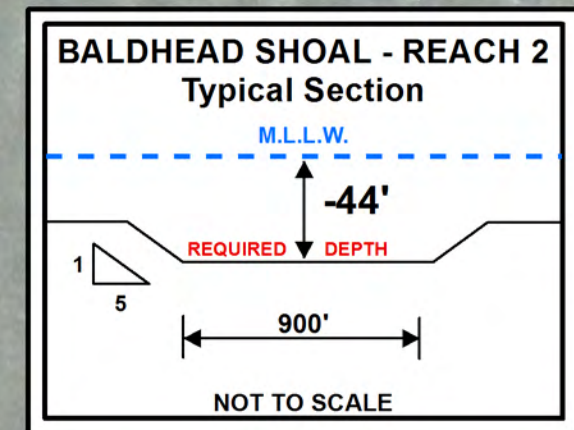
NAVIGATION AIDS

Type	Number	Survey Date	SPF_X	SPF_Y	DMS_X	DMS_Y
Green Lighted Buoy	11	2013-02-07	2297363	42963	78° 1' 14.259" W	33° 51' 50.333" N
Red Lighted Buoy	12	2013-02-07	2298259	43118	78° 1' 3.618" W	33° 51' 51.879" N
Green Lighted Buoy	13	2013-02-07	2300104	45995	78° 0' 41.400" W	33° 52' 20.146" N

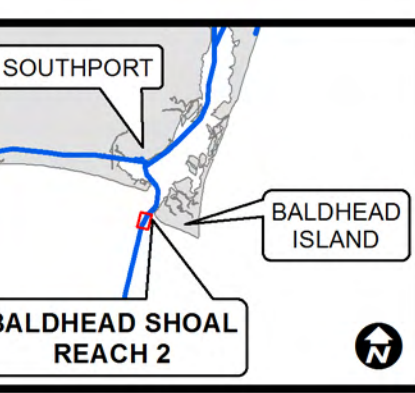
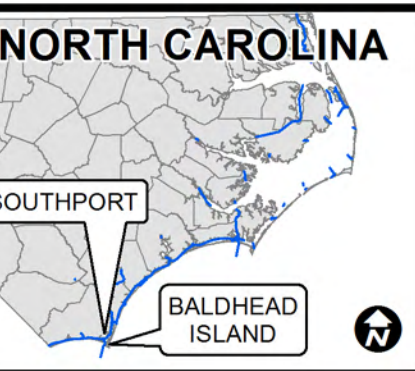
BEFORE DREDGE SURVEY
 U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 WILMINGTON, NORTH CAROLINA

**WILMINGTON HARBOR
 BALDHEAD SHOAL - REACH 1**
 WILMINGTON, NORTH CAROLINA

BALDHEAD SHOAL REACH 2



US Army Corps of Engineers
Wilmington District

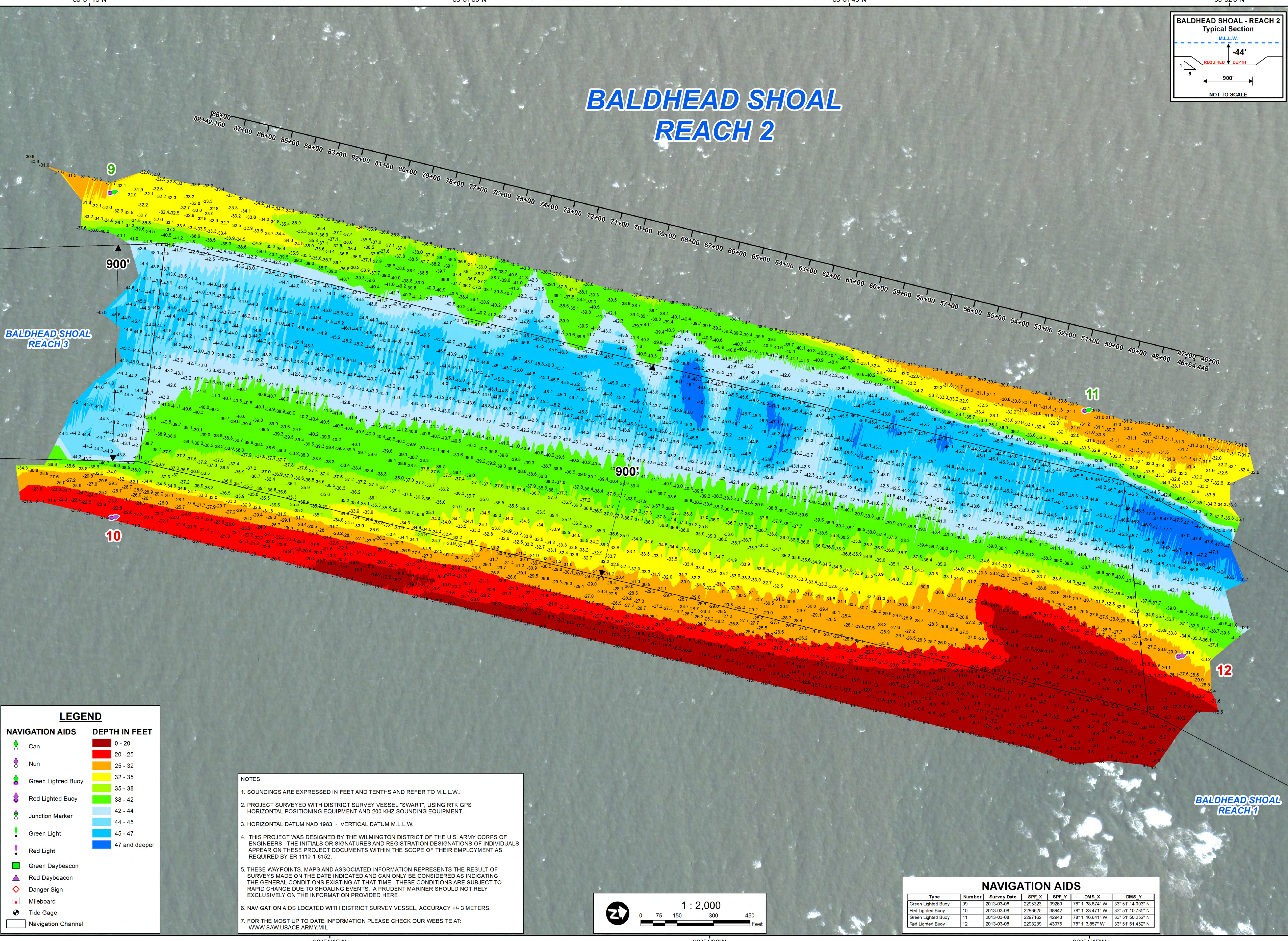


SURVEYED BY: MAS, WWW
MAPPED BY: MSA

SURVEY DATE(S): MARCH 8, 2013
MAP DATE: MARCH 12, 2013
MAP SCALE: 1 : 2,000
IMAGERY DATE: FEBRUARY 28, 2013 © DIGITALGLOBE, INC.

HYDROGRAPHIC SURVEY
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WILMINGTON, NORTH CAROLINA

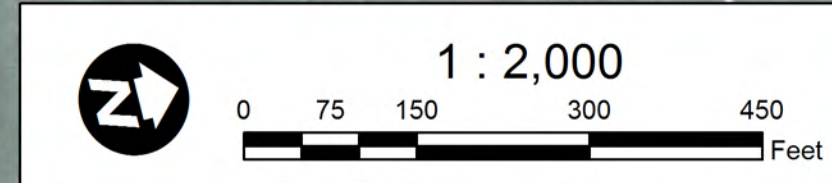
WILMINGTON HARBOR
BALDHEAD SHOAL - REACH 2
WILMINGTON, NORTH CAROLINA



LEGEND

NAVIGATION AIDS	DEPTH IN FEET
Can	0 - 20
Nun	20 - 25
Green Lighted Buoy	25 - 32
Red Lighted Buoy	32 - 35
Junction Marker	35 - 38
Green Light	38 - 42
Red Light	42 - 44
Green Daybeacon	44 - 45
Red Daybeacon	45 - 47
Danger Sign	47 and deeper
Mileboard	
Tide Gage	
Navigation Channel	

- NOTES:**
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 - FOR THE MOST UP TO DATE INFORMATION PLEASE CHECK OUR WEBSITE AT: WWW.SAW.USACE.ARMY.MIL



NAVIGATION AIDS

Type	Number	Survey Date	SPF_X	SPF_Y	DMS_X	DMS_Y
Green Lighted Buoy	09	2013-03-08	2295323	39260	78° 1' 36.874" W	33° 51' 14.003" N
Red Lighted Buoy	10	2013-03-08	2296205	39862	78° 1' 23.471" W	33° 51' 10.757" N
Green Lighted Buoy	11	2013-03-08	2297162	42943	78° 1' 16.641" W	33° 51' 50.252" N
Red Lighted Buoy	12	2013-03-08	2298239	43075	78° 1' 3.857" W	33° 51' 51.452" N