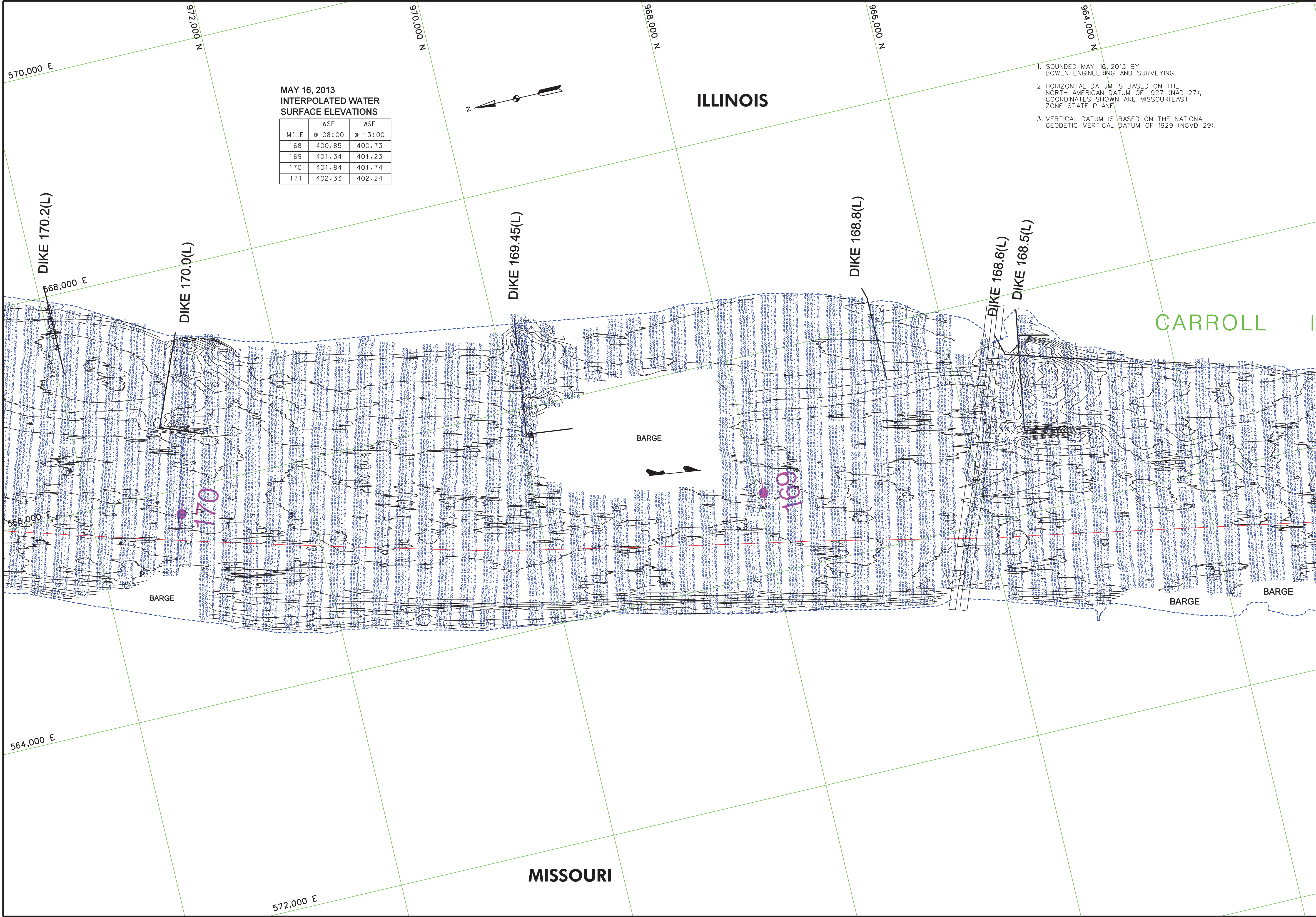




MAY 16, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 13:00
168	400.85	400.73
169	401.34	401.23
170	401.84	401.74
171	402.33	402.24

1. SOUNDED MAY 16, 2013 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).



BRIDGES' LANDING, MO	WATER'S POINT	JEFFERSON BARBERS	ST. LOUIS, MO
357.78	370.39	377.69	379.84
356.0	359.5	368.7	370.6
356.2	357.4	372.8	376.4
27.26(8/07) 27.15(13/00)	DAMAGED - NOT USABLE	23.5(8/07) 23.4(2/30)	26.64(8/07) 26.65(13/00)

ELEVATIONS ARE REFERRED TO M.S.L. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) (1988-89 U.S.)

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by: BOWEN ENGINEERING	Survey Date: May 16, 2013
UPPER MISSISSIPPI RIVER BASIN	Drawn by: X	Reviewed by: X
MISSISSIPPI RIVER	SUBMITTED: X	APPROVED: X
	File Name: ##DESIGN##REFERRATION##	Plot Date: ##DATE/TIME##

HYDROGRAPHIC SURVEYS RIVER MILES 168.2 - 170.1



MAY 16, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 13:00
168	400.85	400.73
169	401.34	401.23
170	401.84	401.74
171	402.33	402.24

1. SOUNDED MAY 15 AND 16, 2013 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

MAY 15, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 09:00	WSE @ 16:00
163	398.89	398.86
164	399.38	399.36
165	399.88	399.85
166	400.37	400.35
167	400.86	400.85
168	401.35	401.34

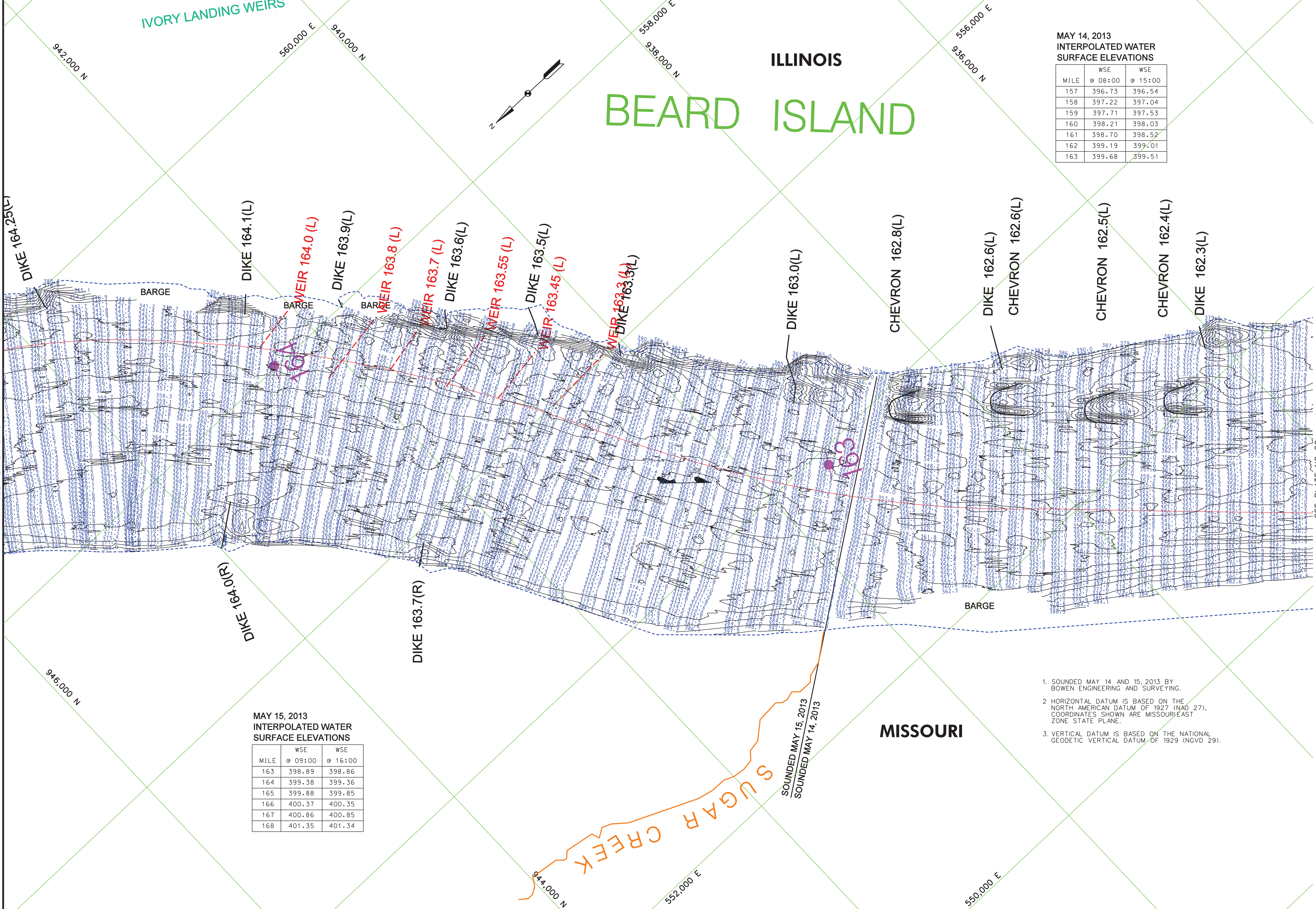


BROCK'S LANDING, MO	WATER'S POINT	JEFFERSON BARRACKS	ST. LOUIS, MO
357.78	370.39	377.69	379.84
MILE	158.5	158.7	170.6
L.W.R.D.	356.2	377.4	376.4
15 MAY 2013	27.878(00) 27.671(6.00)	DAMAGED - NOT USABLE	24.005(50) 24.005(25)
16 MAY 2013	27.265(00) 27.151(5.00)	DAMAGED - NOT USABLE	23.618(10) 23.472(30)
ELEVATIONS ARE REFERRED TO NGVD 29. CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (LWRP) 1984-00 (F.S.)			

Surveyed by: BOWEN ENGINEERING	Survey Date: May 15 and 16, 2013
Drawn by: X	Reviewed by: X
Submitted: X	Approved: X
File Name: ##DESIGN##	Plot Date: ##DATE##

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

HYDROGRAPHIC SURVEYS
RIVER MILES 166.3 - 168.2



IVORY LANDING WEIRS

ILLINOIS

BEARD ISLAND

MAY 14, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	WSE
	@ 08:00	@ 15:00
157	396.73	396.54
158	397.22	397.04
159	397.71	397.53
160	398.21	398.03
161	398.70	398.52
162	399.19	399.01
163	399.68	399.51

MAY 15, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	WSE
	@ 09:00	@ 16:00
163	398.89	398.86
164	399.38	399.36
165	399.88	399.85
166	400.37	400.35
167	400.86	400.85
168	401.35	401.34

1. SOUNDED MAY 14 AND 15, 2013 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI/EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).



CAGE RECORD		ST. LOUIS MO
BROCK'S LANDING, MO	JEFFERSON BARRACKS	
0	370.39	379.84
1	370.39	379.84
2	370.39	379.84
3	370.39	379.84
4	370.39	379.84
5	370.39	379.84
6	370.39	379.84
7	370.39	379.84
8	370.39	379.84
9	370.39	379.84
10	370.39	379.84
11	370.39	379.84
12	370.39	379.84
13	370.39	379.84
14	370.39	379.84
15	370.39	379.84
16	370.39	379.84
17	370.39	379.84
18	370.39	379.84
19	370.39	379.84
20	370.39	379.84
21	370.39	379.84
22	370.39	379.84
23	370.39	379.84
24	370.39	379.84
25	370.39	379.84
26	370.39	379.84
27	370.39	379.84
28	370.39	379.84
29	370.39	379.84
30	370.39	379.84
31	370.39	379.84
32	370.39	379.84
33	370.39	379.84
34	370.39	379.84
35	370.39	379.84
36	370.39	379.84
37	370.39	379.84
38	370.39	379.84
39	370.39	379.84
40	370.39	379.84
41	370.39	379.84
42	370.39	379.84
43	370.39	379.84
44	370.39	379.84
45	370.39	379.84
46	370.39	379.84
47	370.39	379.84
48	370.39	379.84
49	370.39	379.84
50	370.39	379.84
51	370.39	379.84
52	370.39	379.84
53	370.39	379.84
54	370.39	379.84
55	370.39	379.84
56	370.39	379.84
57	370.39	379.84
58	370.39	379.84
59	370.39	379.84
60	370.39	379.84
61	370.39	379.84
62	370.39	379.84
63	370.39	379.84
64	370.39	379.84
65	370.39	379.84
66	370.39	379.84
67	370.39	379.84
68	370.39	379.84
69	370.39	379.84
70	370.39	379.84
71	370.39	379.84
72	370.39	379.84
73	370.39	379.84
74	370.39	379.84
75	370.39	379.84
76	370.39	379.84
77	370.39	379.84
78	370.39	379.84
79	370.39	379.84
80	370.39	379.84
81	370.39	379.84
82	370.39	379.84
83	370.39	379.84
84	370.39	379.84
85	370.39	379.84
86	370.39	379.84
87	370.39	379.84
88	370.39	379.84
89	370.39	379.84
90	370.39	379.84
91	370.39	379.84
92	370.39	379.84
93	370.39	379.84
94	370.39	379.84
95	370.39	379.84
96	370.39	379.84
97	370.39	379.84
98	370.39	379.84
99	370.39	379.84
100	370.39	379.84

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Survey Date: May 14 and 15, 2013
Drawn by: X	Reviewed by: X
Submitted: X	Approved: X
File Name: #PROJECT/INTERPOLATED#	Plot Date: #DATE/TIME###
UPPER MISSISSIPPI RIVER BASIN	
MISSISSIPPI RIVER	

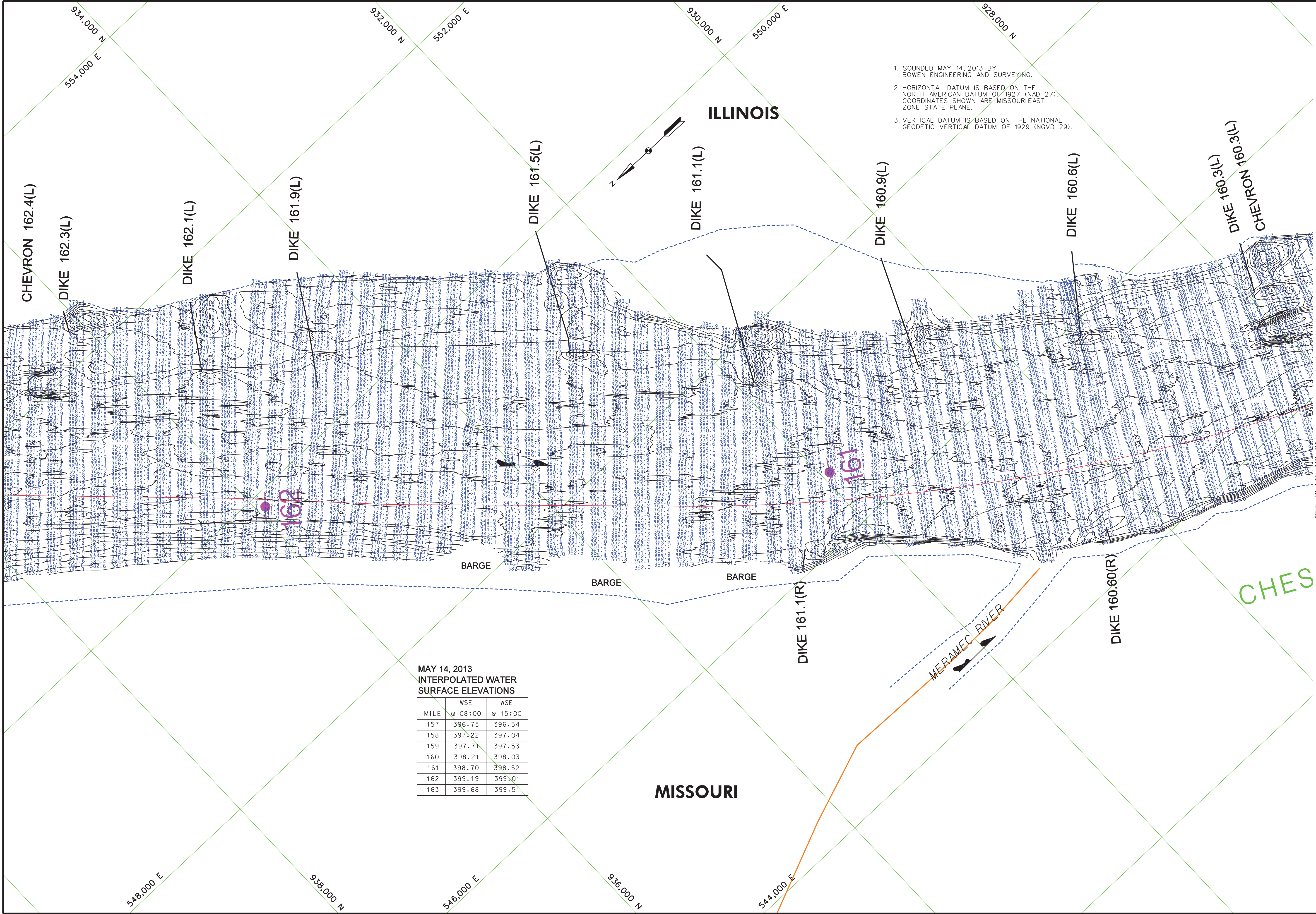
120
400
800
1200
0
400
800
1200
0
400
800
1200

240 METERS
800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONTOUR OF THE TERRAIN.

HYDROGRAPHIC SURVEYS

RIVER MILES 162.3 - 164.3



MAY 14, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	WSE
	@ 08:00	@ 15:00
157	396.73	396.54
158	397.22	397.04
159	397.71	397.53
160	398.21	398.03
161	398.70	398.52
162	399.19	399.01
163	399.68	399.51

1. SOUNDED MAY 14, 2013 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).



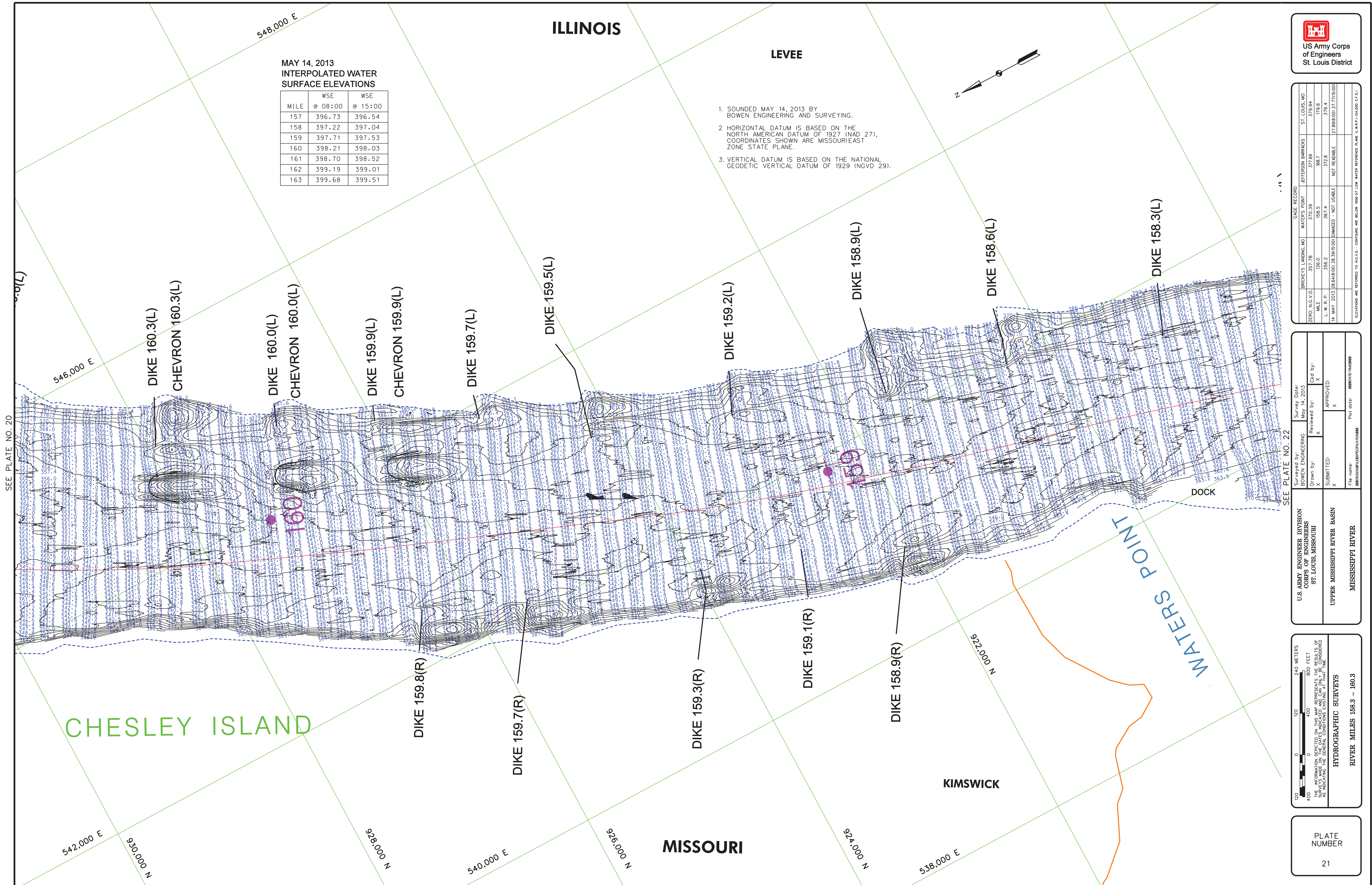
CAGE RECORD	ST. LOUIS MO	JEFFERSON BARBERS
BROCK'S LANDING MO	370.39	371.69
ZERO N.G.V.D.	357.78	358.5
MILE	357.78	358.5
L.W.R.D.	357.4	357.8
14 MAY 2013	28.64(8.00) 28.59(15.00)	27.89(8.00) 27.77(15.00)
DAMAGED	NOT USABLE	NOT USABLE

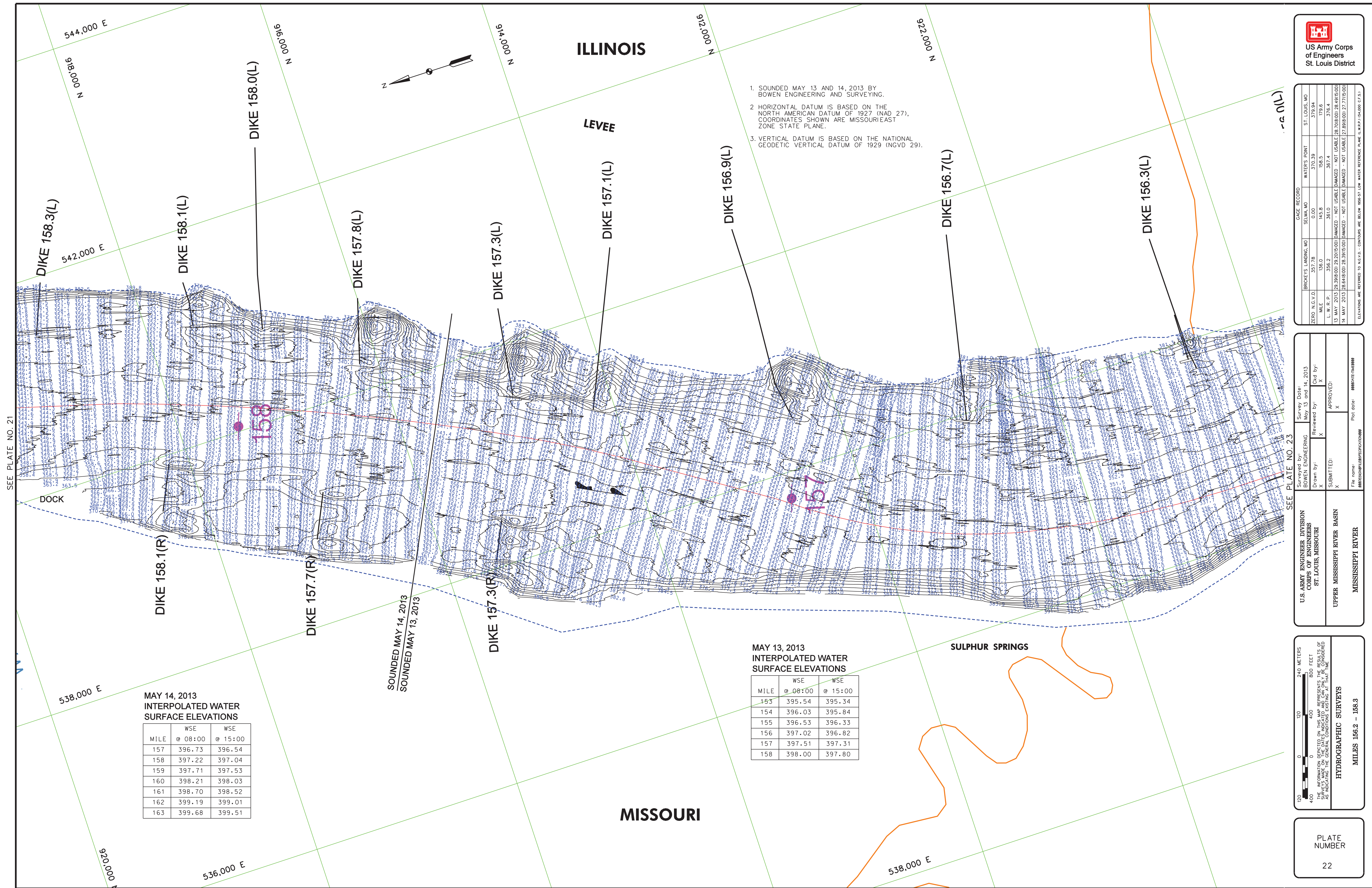
Surveyed by	Survey Date	Reviewed by	Ckd by
BOWEN ENGINEERING	MAY 14, 2013	X	X
Drawn by			
X			
SUBMITTED			
X			
APPROVED			
X			
File name	Plot Date: ##/##/##		
##/##/##	##/##/##		

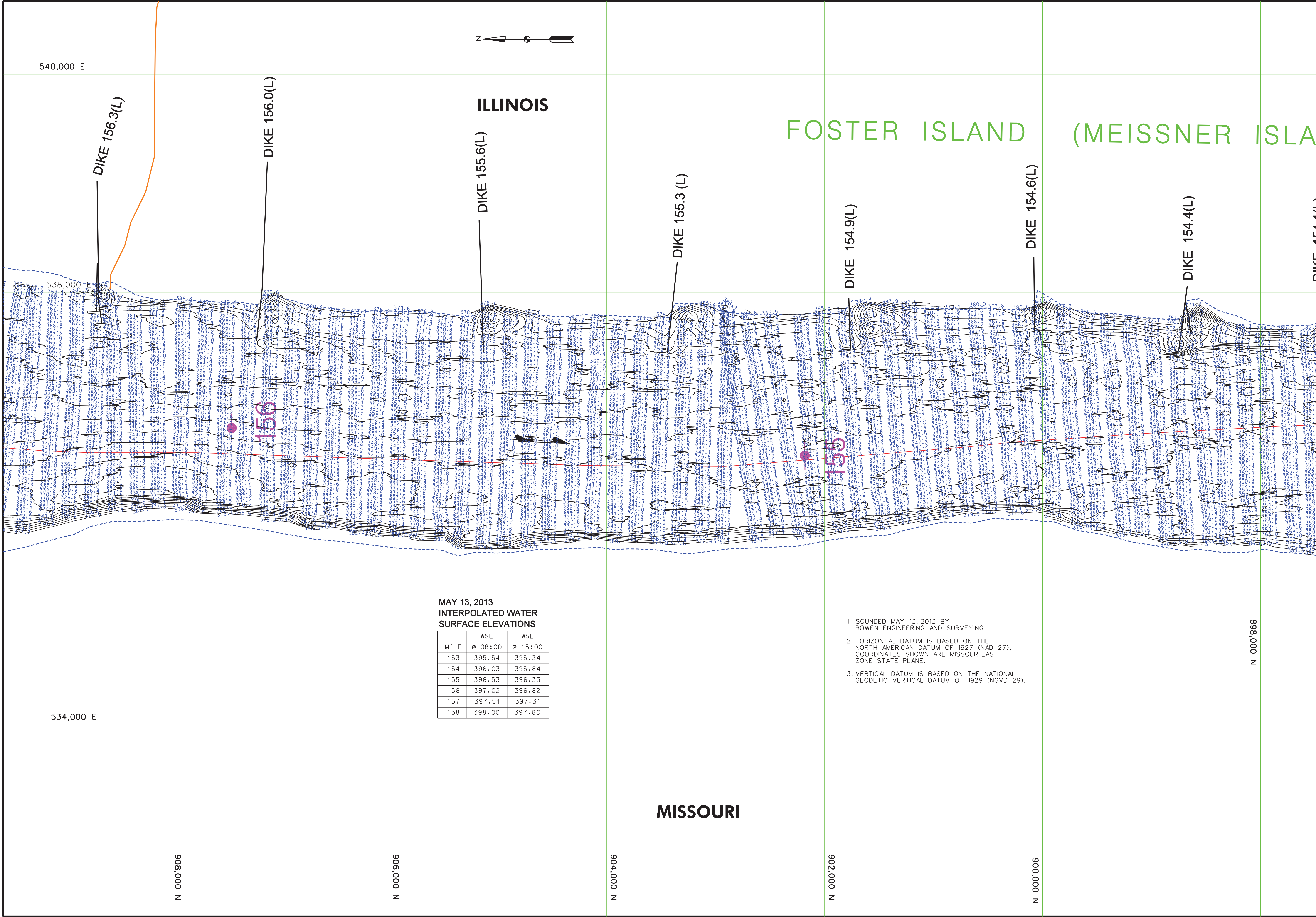
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER
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HYDROGRAPHIC SURVEYS RIVER MILES 160.3 - 162.3

PLATE NUMBER 20







MAY 13, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 15:00
153	395.54	395.34
154	396.03	395.84
155	396.53	396.33
156	397.02	396.82
157	397.51	397.31
158	398.00	397.80

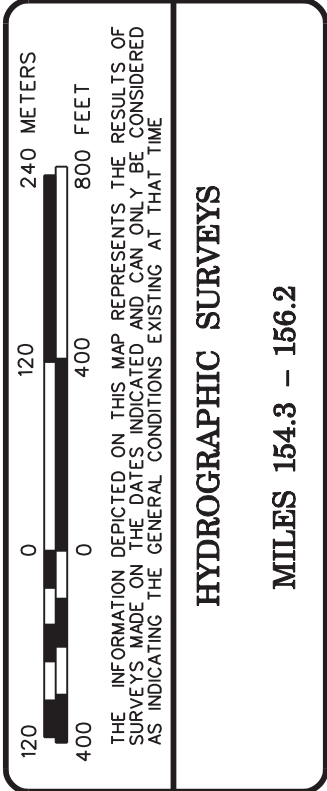
1. SOUNDED MAY 13, 2013 BY:
BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE
NORTH AMERICAN DATUM OF 1927 (NAD 27),
COORDINATES SHOWN ARE MISSOURI/EAST
ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL
GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

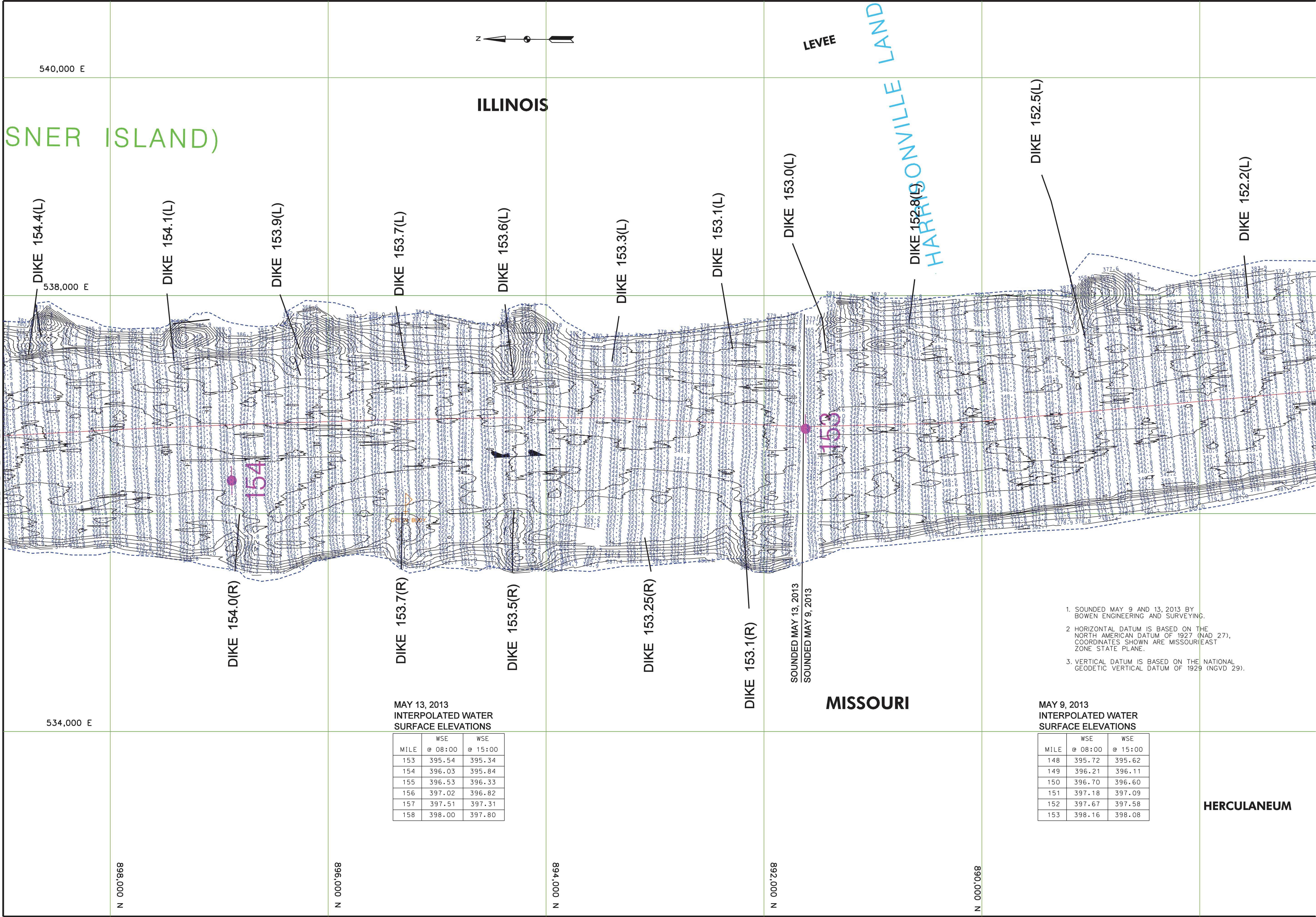


CAGE RECORD			
BRICKEY'S LANDING, MO	SEMA, MO	WATER'S POINT	ST. LOUIS, MO
357.78	140.00	370.39	379.84
356.0	145.8	368.5	379.6
356.2	361.0	367.4	376.4
13 MAY 2013 29.39(8:00) 29.20(15:00)	DAMAGED - NOT USABLE	DAMAGED - NOT USABLE	28.70(8:00) 28.49(15:00)

ELEVATIONS ARE REFERRED TO NGVD - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (LWRP) 11(14,000 OF 5.1)

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Survey Date: May 13, 2013
Drawn by: X	Reviewed by: X
Submitted: X	Approved: X
File Name: ##PROJECT##	Plot Date: ##DATE/TIME##





US Army Corps of Engineers St. Louis District

CAGE RECORD		WATER'S POINT		ST. LOUIS MO	
BROCK'S LANDING MO	SEMA MO	10.00	370.39	379.84	
ZERO NGVD	137.78	145.8	158.5	379.6	
MILE	136.7	361.0	377.4	376.4	
L.W.R.D.	356.2	DAMAGED - NOT USABLE		372.8(400) 372.1(500)	
09 MAY 2013 32.07(800) 3.94(1500)		DAMAGED - NOT USABLE		372.8(400) 372.1(500)	
13 MAY 2013 29.39(600) 29.20(1500)		DAMAGED - NOT USABLE		26.70(800) 26.49(1500)	
				ELEVATIONS ARE REFERRED TO NGVD - CONTOURS ARE BELOW 1006.57 LOW WATER REFERENCE PLANE (LWRP) 104.000 OF S.1	

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by: BOWEN ENGINEERING	Survey Date: May 9 and 13, 2013
	Drawn by: X	Reviewed by: X
UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER	SUBMITTED: X	APPROVED: X
	File Name: ##DESIGN##REFERRATION##	Plot Date: ##DATE##

120
400
0
0
100
240 METERS

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL LOCATIONS OF SURVEYED FEATURES.

HYDROGRAPHIC SURVEYS
RIVER MILES 152.2 - 154.4

PLATE NUMBER
24

1. SOUNDED MAY 9 AND 13, 2013 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI/EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).