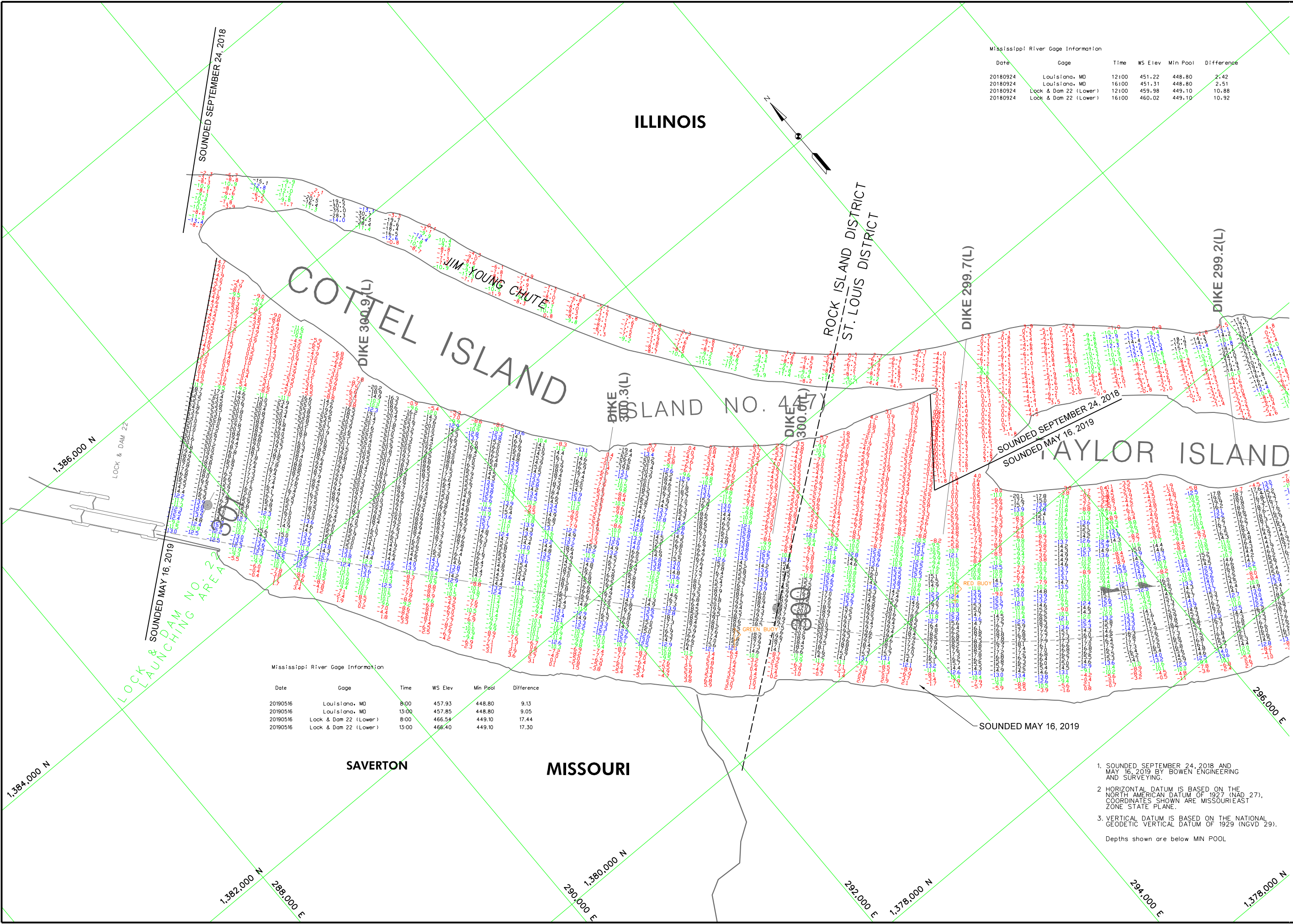




Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180924	Louisiana, MO	12:00	451.22	448.80	2.42
20180924	Louisiana, MO	16:00	451.31	448.80	2.51
20180924	Lock & Dam 22 (Lower)	12:00	459.98	449.10	10.88
20180924	Lock & Dam 22 (Lower)	16:00	460.02	449.10	10.92

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190516	Louisiana, MO	8:00	457.93	448.80	9.13
20190516	Louisiana, MO	13:00	457.85	448.80	9.05
20190516	Lock & Dam 22 (Lower)	8:00	466.54	449.10	17.44
20190516	Lock & Dam 22 (Lower)	13:00	466.40	449.10	17.30

1. SOUNDED SEPTEMBER 24, 2018 AND MAY 16, 2019 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).
- Depths shown are below MIN POOL

US Army Corps of Engineers
St. Louis District

Survey Date: SEP 24, 2018 & MAY 16, 2019

Reviewed by: [Signature]

Drawn by: [Signature]

Submitted: [Signature]

Approved: [Signature]

Plot Date: [Signature]

File Name: [Signature]

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

170 0 120 240 METERS

400 0 800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND SHALL BE CONSIDERED CORRECT UNLESS OTHERWISE NOTED.

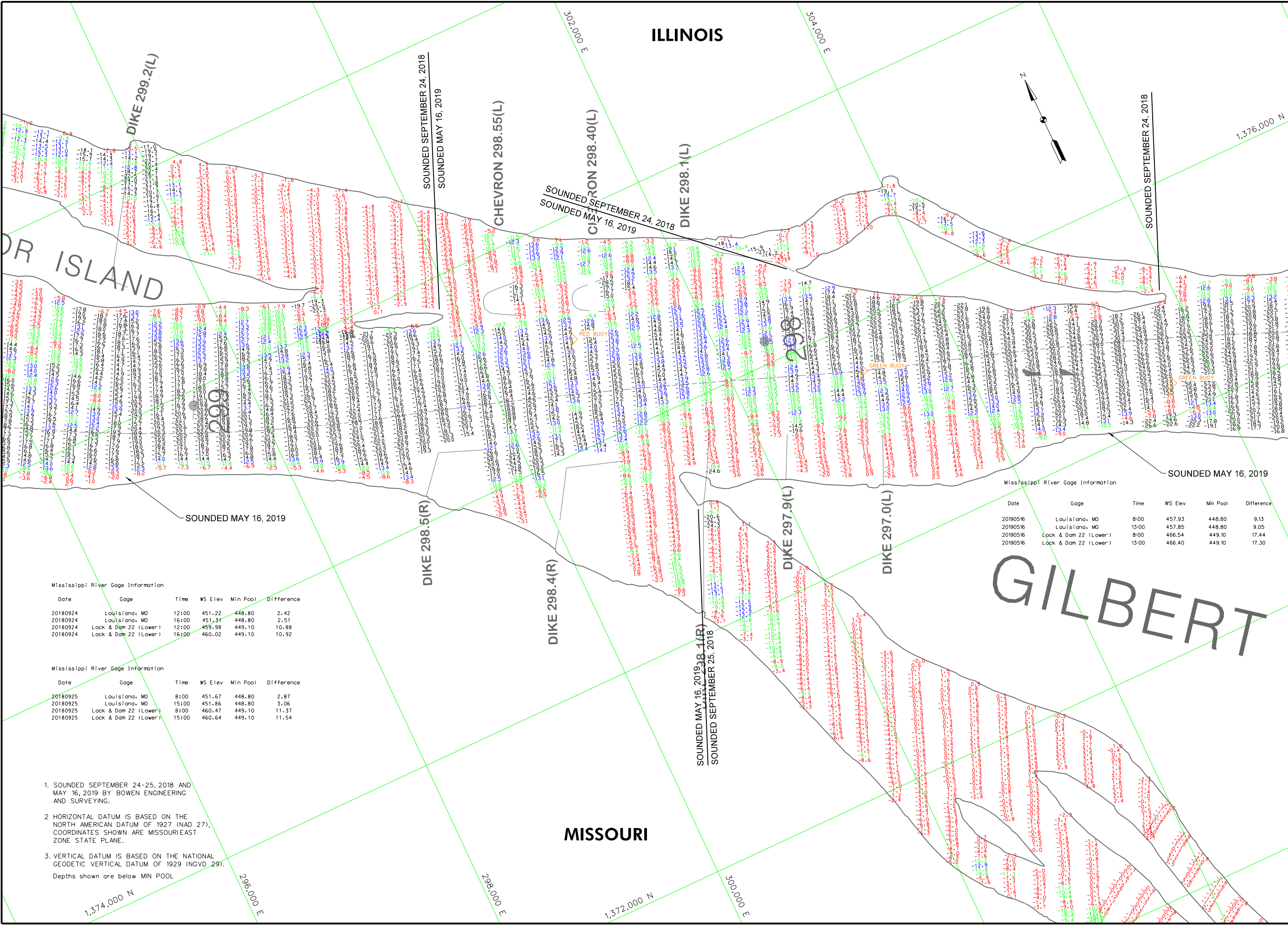
HYDROGRAPHIC SURVEYS

MILE: 299.4 - 301.0

PLATE NUMBER

1

L & D 22 (LOWER)	MANDY'S LANDING	LOUISIANA, MO	L & D 24 UPPER
446.10	441.85	437.33	431.81
301.1	293.0	282.0	273.5
449.1	449.0	448.8	449.3
13,889,000 13,920,000	X	13,890,000 13,940,000	X
20,410,000 20,510,000	X	20,400,000 20,510,000	X



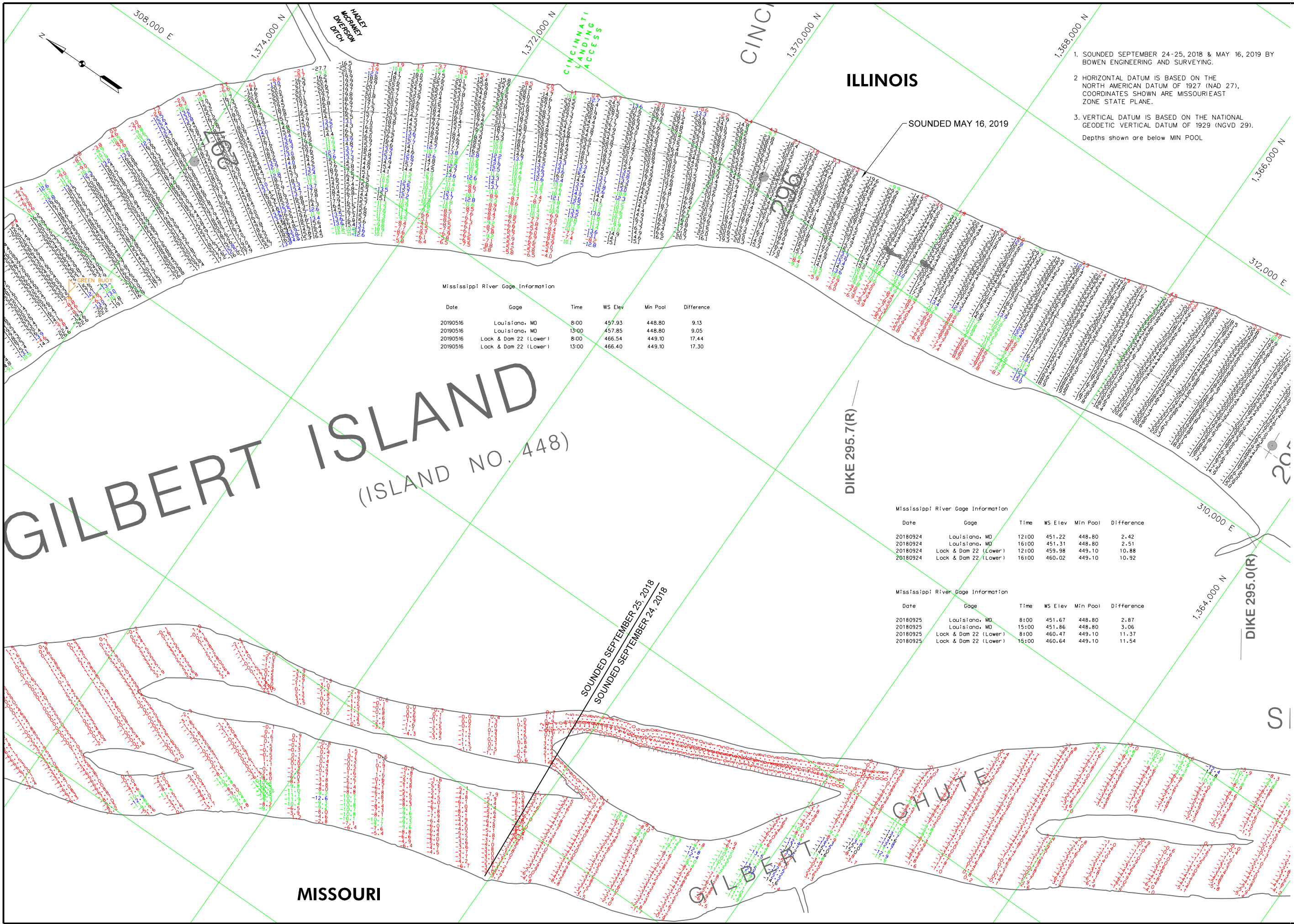
GAGE RECORD					
L & D 22 (LOWER)	MANDY'S LANDING	L & D 24 UPPER			
20190516	446.10	431.85	437.33	431.81	
MILE	301.1	293.0	282.0	273.5	
MIN POOL	449.1	449.0	445.8	445.3	
24 SEP 2018	13.89(200) 13.91(600)	X	X	13.89(200) 13.91(600)	X
25 SEP 2018	13.79(600) 13.51(500)	X	X	13.54(600) 13.55(500)	X
16 MAY 2019	20.14(000) 20.30(500)	X	X	20.60(000) 20.50(500)	X

Survey Data		SEP 24, 2018 - MAY 16, 2019	
Surveyed by:	BOWEN ENGINEERING	Reviewed by:	X
Drawn by:	X	Checked by:	X
SUBMITTED:		APPROVED:	
X		X	
File Name:		Plot Date:	
BOWEN ENGINEERING		BOWEN ENGINEERING	

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

120	0	120	240 METERS
400	0	400	800 FEET
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN BE CONSIDERED AS SUCH. THE GENERAL LOCATION AND SCALE OF THE SURVEYED AREA ARE SHOWN.			
HYDROGRAPHIC SURVEYS			
MILE: 297.1 - 299.4			

PLATE NUMBER
2



Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190516	Louisiana, MO	8:00	457.93	448.80	9.13
20190516	Louisiana, MO	13:00	457.85	448.80	9.05
20190516	Lock & Dam 22 (Lower)	8:00	466.54	449.10	17.44
20190516	Lock & Dam 22 (Lower)	13:00	466.40	449.10	17.30

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180924	Louisiana, MO	12:00	451.22	448.80	2.42
20180924	Louisiana, MO	16:00	451.31	448.80	2.51
20180924	Lock & Dam 22 (Lower)	12:00	459.98	449.10	10.88
20180924	Lock & Dam 22 (Lower)	16:00	460.02	449.10	10.92

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180925	Louisiana, MO	8:00	451.67	448.80	2.87
20180925	Louisiana, MO	15:00	451.86	448.80	3.06
20180925	Lock & Dam 22 (Lower)	8:00	460.47	449.10	11.37
20180925	Lock & Dam 22 (Lower)	15:00	460.64	449.10	11.54

1. SOUNDED SEPTEMBER 24-25, 2018 & MAY 16, 2019 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURIEAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).
Depths shown are below MIN POOL

US Army Corps of Engineers
St. Louis District

GAGE RECORD	
L & D 22 (LOWER)	LOUISIANA MO
MIN POOL	448.80
24 SEP 2018	449.10
25 SEP 2018	449.10
16 MAY 2019	449.10

Surveyed by: BOWEN ENGINEERING	Survey Date: SEP 24, 2018 - MAY 16, 2019
Drawn by: X	Reviewed by: X
Submitted: X	Approved: X
File name: BOWEN-ENGINEERING-ATVME	Plot date: 8/8/2019

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

170 0 120 240 METERS
400 0 400 800 FEET

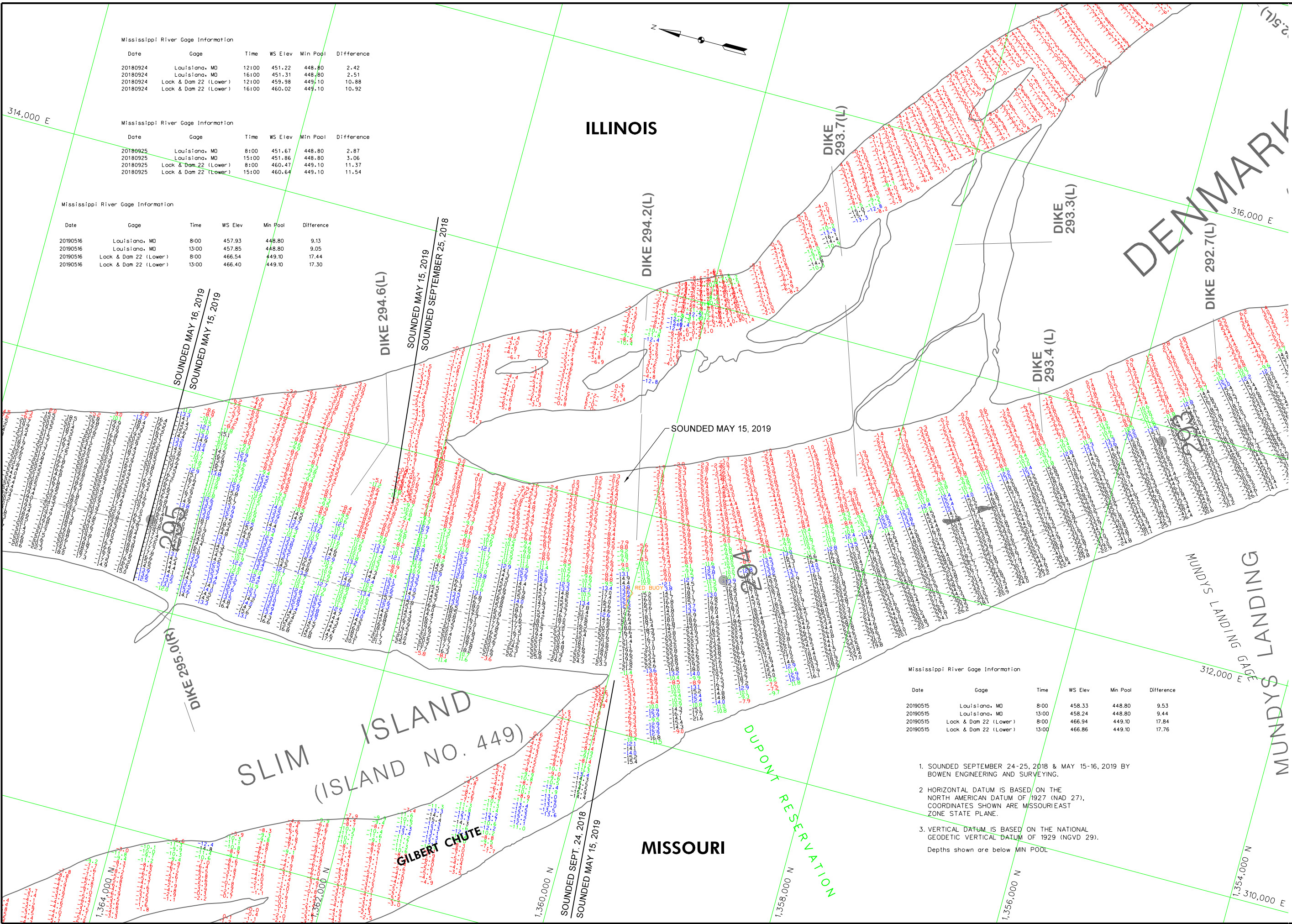
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND ARE NOT TO BE CONSIDERED AS A GUARANTEE OF ACCURACY OR A STATEMENT OF LIABILITY.

HYDROGRAPHIC SURVEYS

MILE: 295.0 - 297.1

PLATE NUMBER

3



Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180924	Louisiana, MO	12:00	451.22	448.80	2.42
20180924	Louisiana, MO	16:00	451.31	448.80	2.51
20180924	Lock & Dam 22 (Lower)	12:00	459.98	449.10	10.88
20180924	Lock & Dam 22 (Lower)	16:00	460.02	449.10	10.92

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180925	Louisiana, MO	8:00	451.67	448.80	2.87
20180925	Louisiana, MO	15:00	451.86	448.80	3.06
20180925	Lock & Dam 22 (Lower)	8:00	460.47	449.10	11.37
20180925	Lock & Dam 22 (Lower)	15:00	460.64	449.10	11.54

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190516	Louisiana, MO	8:00	457.93	448.80	9.13
20190516	Louisiana, MO	13:00	457.85	448.80	9.05
20190516	Lock & Dam 22 (Lower)	8:00	466.54	449.10	17.44
20190516	Lock & Dam 22 (Lower)	13:00	466.40	449.10	17.30

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190515	Louisiana, MO	8:00	458.33	448.80	9.53
20190515	Louisiana, MO	13:00	458.24	448.80	9.44
20190515	Lock & Dam 22 (Lower)	8:00	466.94	449.10	17.84
20190515	Lock & Dam 22 (Lower)	13:00	466.86	449.10	17.76

1. SOUNDED SEPTEMBER 24-25, 2018 & MAY 15-16, 2019 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).
- Depths shown are below MIN POOL



GAGE RECORD

L & D 22 (LOWER)	MANDY'S LANDING	L & D 24 UPPER
ZERO NGVD	446.10	437.33
M.E.	30.11	293.0
MIN POOL	449.1	449.0
24 SEP 2018	13.89(200) 13.92(600)	X
25 SEP 2018	13.78(600) 13.54(1500)	X
15 MAY 2019	20.84(600) 20.70(1500)	X
16 MAY 2019	20.44(600) 20.30(1500)	X

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

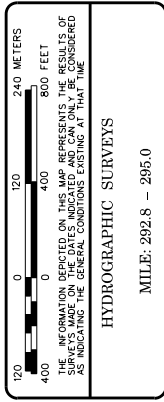
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

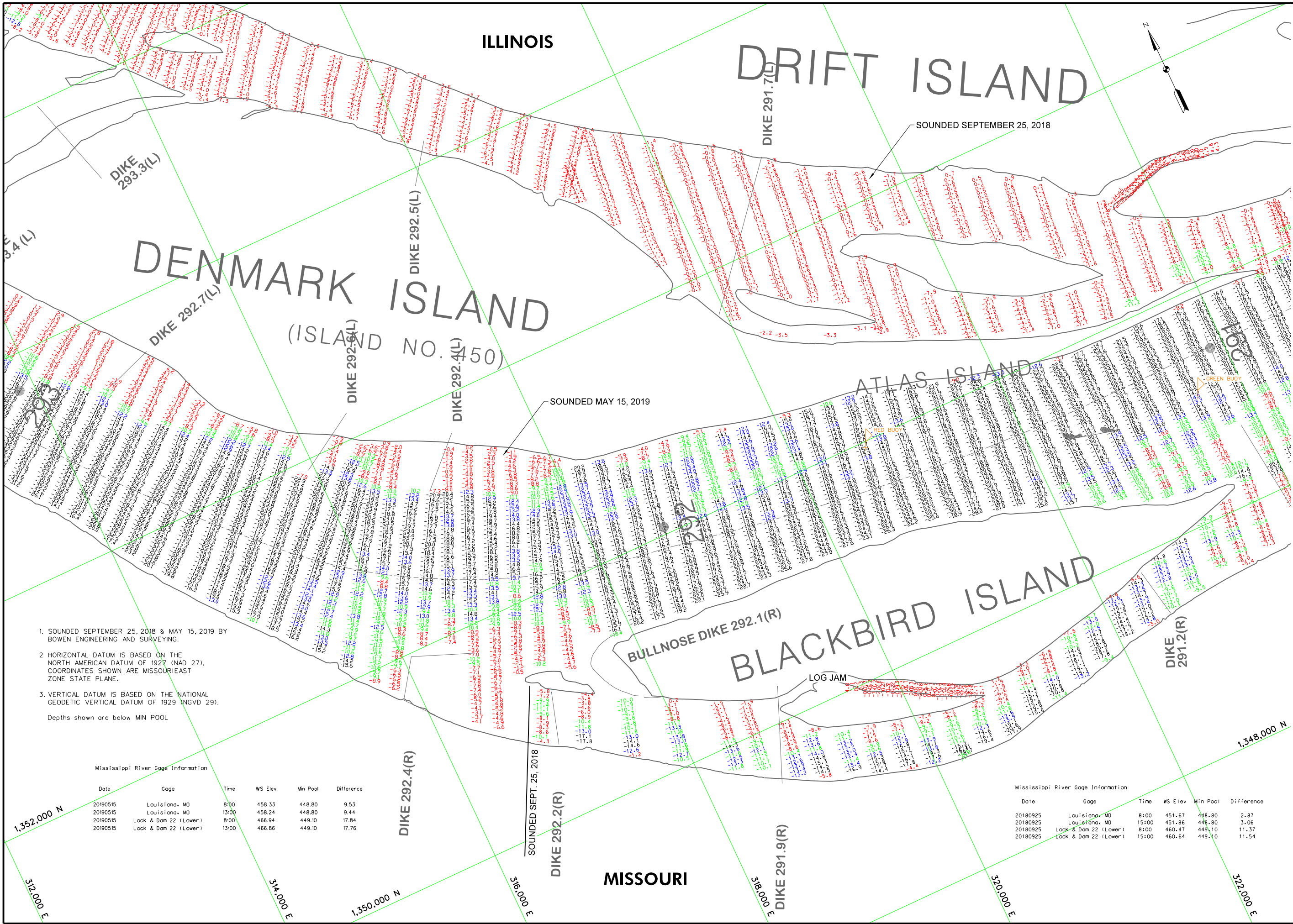
Survey Date: SEP 24, 2018 - MAY 16, 2019

Drawn by: [Signature] Reviewed by: [Signature] Ckd by: [Signature]

SUBMITTED: [Signature] APPROVED: [Signature]

File Name: [Signature] Plot Date: [Signature]





1. SOUNDED SEPTEMBER 25, 2018 & MAY 15, 2019 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).
- Depths shown are below MIN POOL

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190515	Louisiana, MO	8:00	458.33	448.80	9.53
20190515	Louisiana, MO	13:00	458.24	448.80	9.44
20190515	Lock & Dam 22 (Lower)	8:00	466.94	449.10	17.84
20190515	Lock & Dam 22 (Lower)	13:00	466.86	449.10	17.76

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180925	Louisiana, MO	8:00	451.67	448.80	2.87
20180925	Louisiana, MO	15:00	451.86	448.80	3.06
20180925	Lock & Dam 22 (Lower)	8:00	460.47	449.10	11.37
20180925	Lock & Dam 22 (Lower)	15:00	460.64	449.10	11.54

US Army Corps of Engineers
St. Louis District

GAGE RECORD		LOUISIANA MO		L & D 24 UPPER	
L & D 22 (LOWER)	MANDY'S LANDING	446.10	441.85	437.33	431.81
ZERO NGVD		301.1	293.0	282.0	273.5
MILE		440.1	449.0	448.8	449.3
MIN POOL		437.800	434.050	X	X
25 SEP 2018		X	X	X	X
15 MAY 2019		X	X	X	X

Surveyed by: BOWEN ENGINEERING	Survey Date: SEP 25, 2018 & MAY 15, 2019	Drawn by: X	Reviewed by: X	Cad by: X
SUBMITTED: X				APPROVED: X
File Name: PROJECT/STATE/DATE				Plot Date: 8/8/2019

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

170 0 120 240 METERS

400 0 400 800 FEET

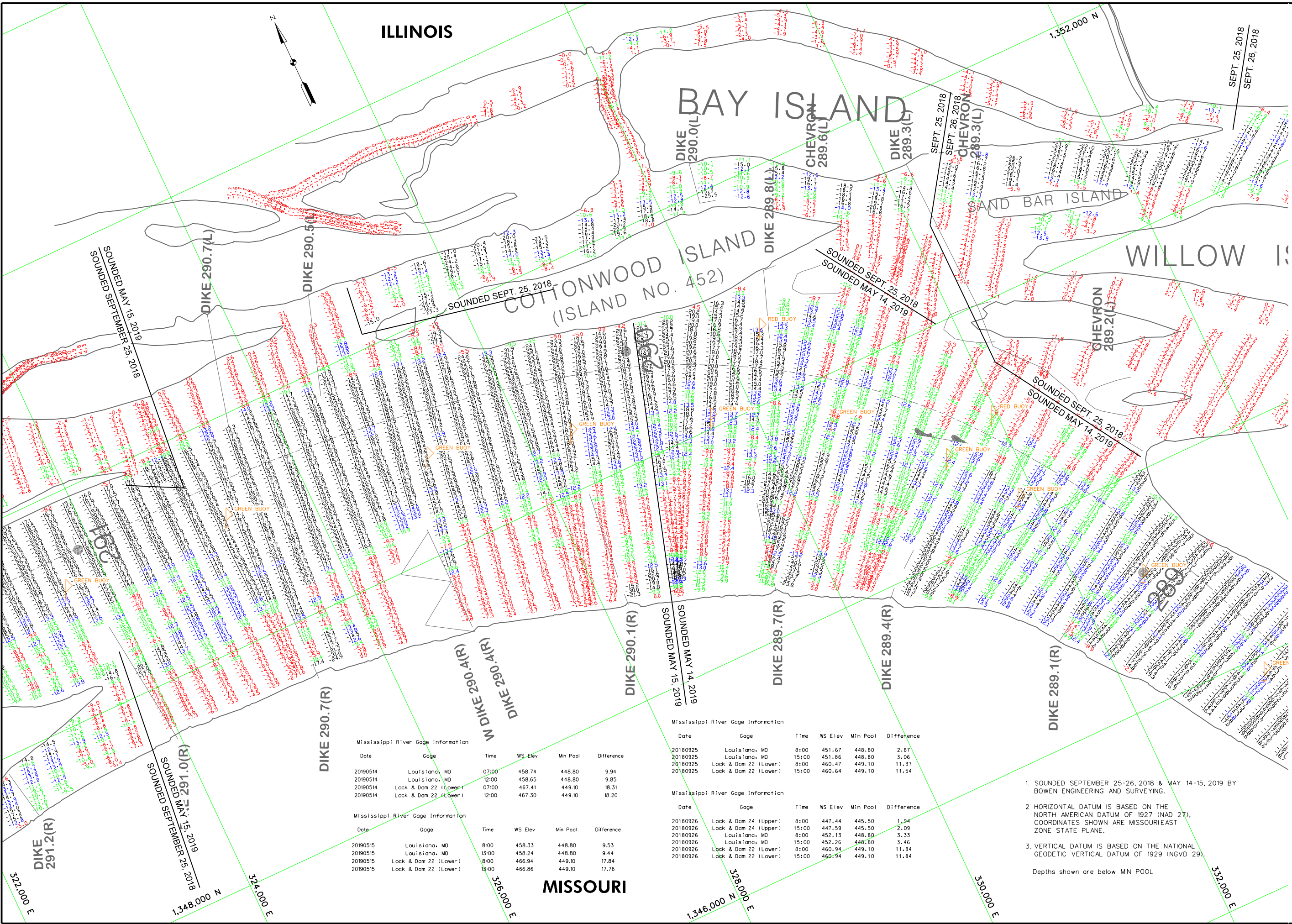
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND ARE NOT TO BE CONSIDERED GUARANTEED OR WARRANTED BY THE U.S. ARMY CORPS OF ENGINEERS.

HYDROGRAPHIC SURVEYS

MILE: 291.0 - 292.8

PLATE NUMBER

5



Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190514	Louisiana, MO	07:00	458.74	448.80	9.94
20190514	Louisiana, MO	12:00	458.65	448.80	9.85
20190514	Lock & Dam 22 (Lower)	07:00	467.41	449.10	18.31
20190514	Lock & Dam 22 (Lower)	12:00	467.30	449.10	18.20

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190515	Louisiana, MO	8:00	458.33	448.80	9.53
20190515	Louisiana, MO	13:00	458.24	448.80	9.44
20190515	Lock & Dam 22 (Lower)	8:00	466.94	449.10	17.84
20190515	Lock & Dam 22 (Lower)	13:00	466.86	449.10	17.76

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180925	Louisiana, MO	8:00	451.67	448.80	2.87
20180925	Louisiana, MO	15:00	451.86	448.80	3.06
20180925	Lock & Dam 22 (Lower)	8:00	460.47	449.10	11.37
20180925	Lock & Dam 22 (Lower)	15:00	460.64	449.10	11.54

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180926	Lock & Dam 24 (Upper)	8:00	447.44	445.50	1.94
20180926	Lock & Dam 24 (Upper)	15:00	447.59	445.50	2.09
20180926	Louisiana, MO	8:00	452.13	448.80	3.33
20180926	Louisiana, MO	15:00	452.26	448.80	3.46
20180926	Lock & Dam 22 (Lower)	8:00	460.94	449.10	11.84
20180926	Lock & Dam 22 (Lower)	15:00	460.94	449.10	11.84

1. SOUNDED SEPTEMBER 25-26, 2018 & MAY 14-15, 2019 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).
- Depths shown are below MIN POOL

US Army Corps of Engineers
St. Louis District

GAGE RECORD	
L & D 22 (LOWER)	L & D 24 (UPPER)
ZERO NGVD	MANDY'S LANDING
446.10	437.33
301.1	282.0
233.0	273.5
449.0	445.8
449.1	445.8
1,378,000 N 341,000 E	1,348,000 N 341,000 E
26 SEP 2018	1,348,000 N 341,000 E
14 MAY 2019	2,337,000 N 341,000 E
15 MAY 2019	2,337,000 N 341,000 E

Surveyed by	Survey Date	Reviewed by	Checked by
BOWEN ENGINEERING	SEP 25, 2018 - MAY 15, 2019	X	X

APPROVED: X

File name: BOWEN-ENGINEERING-2018-2019

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

170 0 100 200 300 400 500 600 700 800 900 1000 METERS

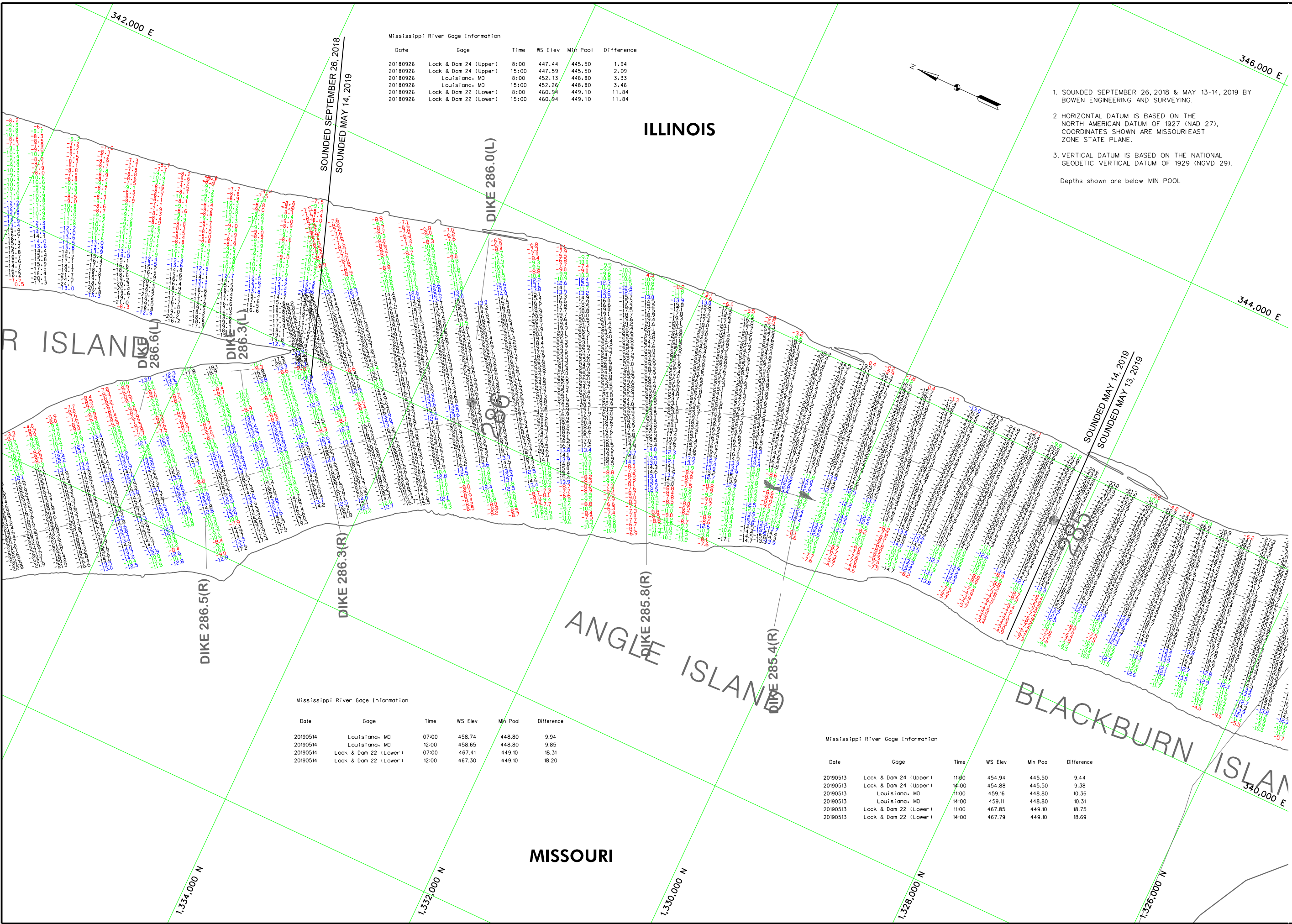
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES NOTICED AND SHOULD BE CONSIDERED AS SUCH.

HYDROGRAPHIC SURVEYS

MILE: 288.8 - 291.0

PLATE NUMBER

6



Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180926	Lock & Dam 24 (Upper)	8:00	447.44	445.50	1.94
20180926	Lock & Dam 24 (Upper)	15:00	447.59	445.50	2.09
20180926	Louisiana, MO	8:00	452.13	448.80	3.33
20180926	Louisiana, MO	15:00	452.26	448.80	3.46
20180926	Lock & Dam 22 (Lower)	8:00	460.94	449.10	11.84
20180926	Lock & Dam 22 (Lower)	15:00	460.94	449.10	11.84

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190514	Louisiana, MO	07:00	458.74	448.80	9.94
20190514	Louisiana, MO	12:00	458.65	448.80	9.85
20190514	Lock & Dam 22 (Lower)	07:00	467.41	449.10	18.31
20190514	Lock & Dam 22 (Lower)	12:00	467.30	449.10	18.20

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190513	Lock & Dam 24 (Upper)	11:00	454.94	445.50	9.44
20190513	Lock & Dam 24 (Upper)	14:00	454.88	445.50	9.38
20190513	Louisiana, MO	11:00	459.16	448.80	10.36
20190513	Louisiana, MO	14:00	459.11	448.80	10.31
20190513	Lock & Dam 22 (Lower)	11:00	467.85	449.10	18.75
20190513	Lock & Dam 22 (Lower)	14:00	467.79	449.10	18.69

ILLINOIS

ANGLET ISLAND

BLACKBURN ISLAND

MISSOURI

US Army Corps of Engineers
St. Louis District

1. SOUNDED SEPTEMBER 26, 2018 & MAY 13-14, 2019 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).

Depths shown are below MIN POOL

GAGE RECORD	
L & D 22 (LOWER)	L & D 24 (UPPER)
ZERO NGVD	LOUISIANA MO
446.10	431.81
441.85	421.81
301.1	282.0
293.0	273.5
449.0	445.8
449.1	445.5
14.80(800) 14.80(500)	25.63(800) 25.63(500)
13 MAY 2019 21.75(100) 21.69(1400)	23.81(100) 23.81(1400)
14 MAY 2019 23.87(100) 23.87(200)	24.10(100) 24.10(200)

Surveyed by: BOWEN ENGINEERING	Survey Date: SEP 26, 2018 & MAY 13-14, 2019
Drawn by: X	Reviewed by: X
Submitted: X	Approved: X
File Name: HYDROGRAPHIC SURVEYS	Plot Date: 8/8/2019

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

120 0 120 240 METERS

400 0 400 800 FEET

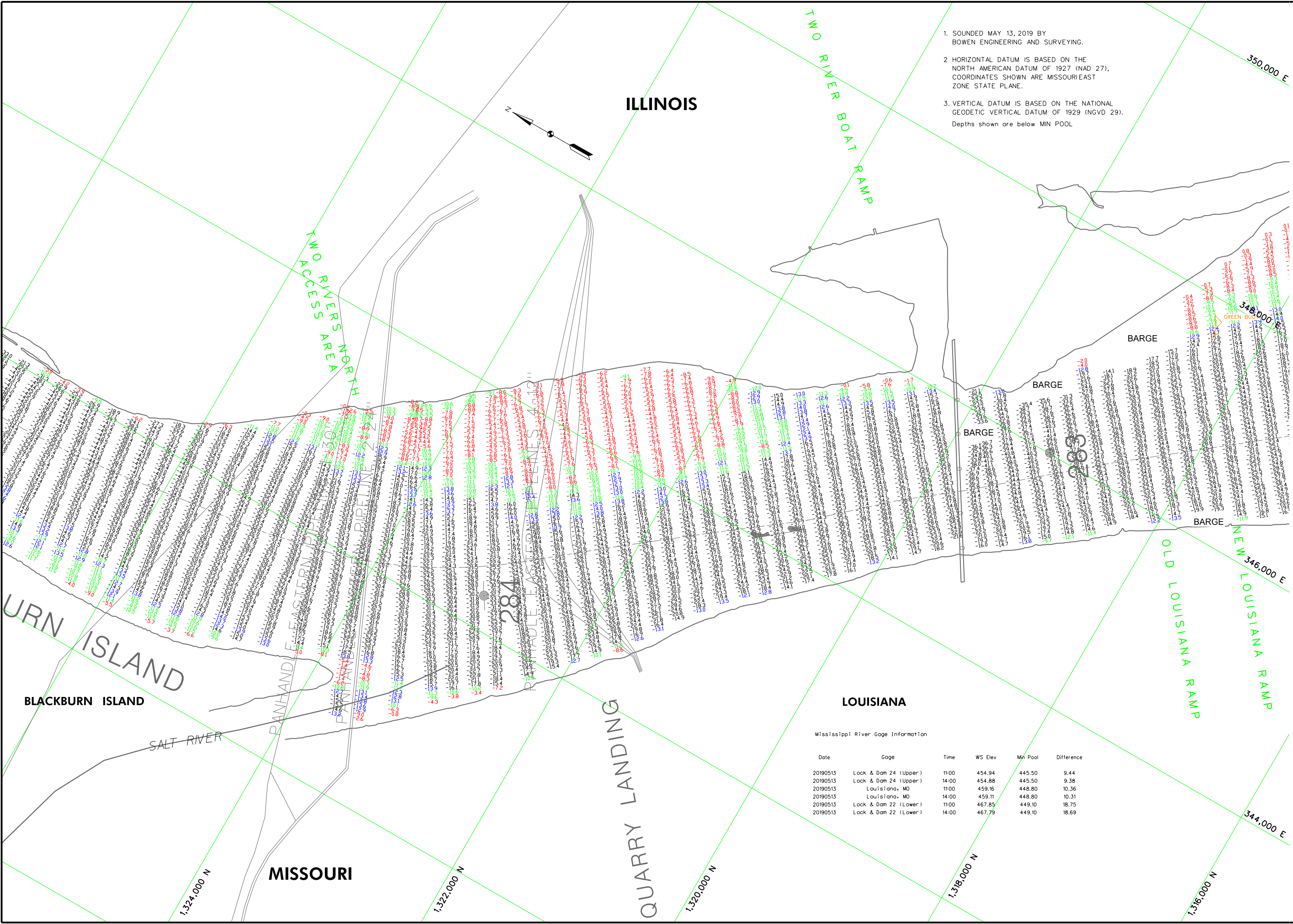
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES NOTICED AND ARE NOT TO BE CONSIDERED GUARANTYING THE GENERAL CONDITIONS AND NOT TO BE USED FOR ANY OTHER PURPOSE.

HYDROGRAPHIC SURVEYS

SCALE: 284.8 - 286.8

PLATE NUMBER

8



1. SOUNDED MAY 13, 2019 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). Depths shown are below MIN POOL



L & D 24 (UPPER)	L & D 22 (LOWER)	MANDY'S LANDING	LOUISIANA MO	L & D 24 (UPPER)
421.81	441.85	441.85	437.33	421.81
233.0	301.1	233.0	282.0	233.0
449.1	449.1	449.0	448.8	449.1
21.81 (ND) 21.81 (ND)	21.81 (ND) 21.81 (ND)	X	X	21.81 (ND) 21.81 (ND)

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		Survey Date: MAY 13, 2019	
Drawn by: X	Reviewed by: X	Submitted by: X	Approved by: X
UPPER MISSISSIPPI RIVER BASIN		MISSISSIPPI RIVER	

Date	Gage	Time	WS Elev	Min Pool	Difference
20190513	Lock & Dam 24 (Upper)	11:00	454.94	445.50	9.44
20190513	Lock & Dam 24 (Upper)	14:00	454.88	445.50	9.38
20190513	Louisiana, MO	11:00	459.16	448.80	10.36
20190513	Louisiana, MO	14:00	459.11	448.80	10.31
20190513	Lock & Dam 22 (Lower)	11:00	467.85	449.10	18.75
20190513	Lock & Dam 22 (Lower)	14:00	467.79	449.10	18.69

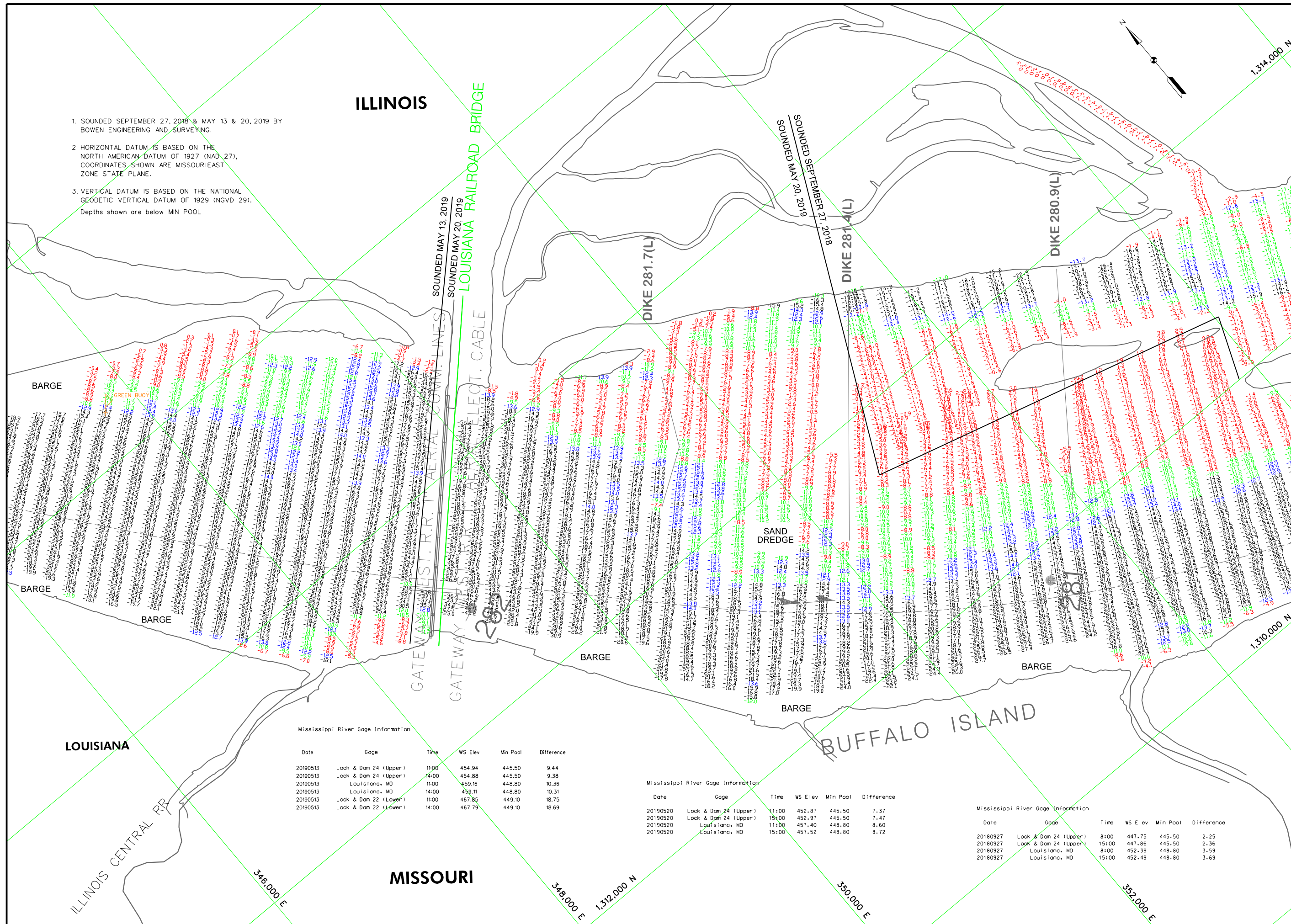
GAGE RECORD				
L & D 22	LOWER	MUNDY'S LANDING	LOUISIANA, MO	L & D 24 UPPER
2017	NG.V.D.	446.10	441.85	421.81
	MALE	301.2	283.0	
2018	MIN. POOL	449.1	449.0	446.5
2017	SEP. 27	X	X	15.068.00 16.915.00
2018	22 JUN 2019	X	X	21.837.00 21.784.00
2019	13 MAY 2019	X	X	33.910.00 33.974.00
2020	20 MAY 2019	X	X	31.668.00 31.816.00
2021	20 MAY 2019	X	X	22.071.00 20.785.00
2022	20 MAY 2019	X	X	20.877.00 20.877.00

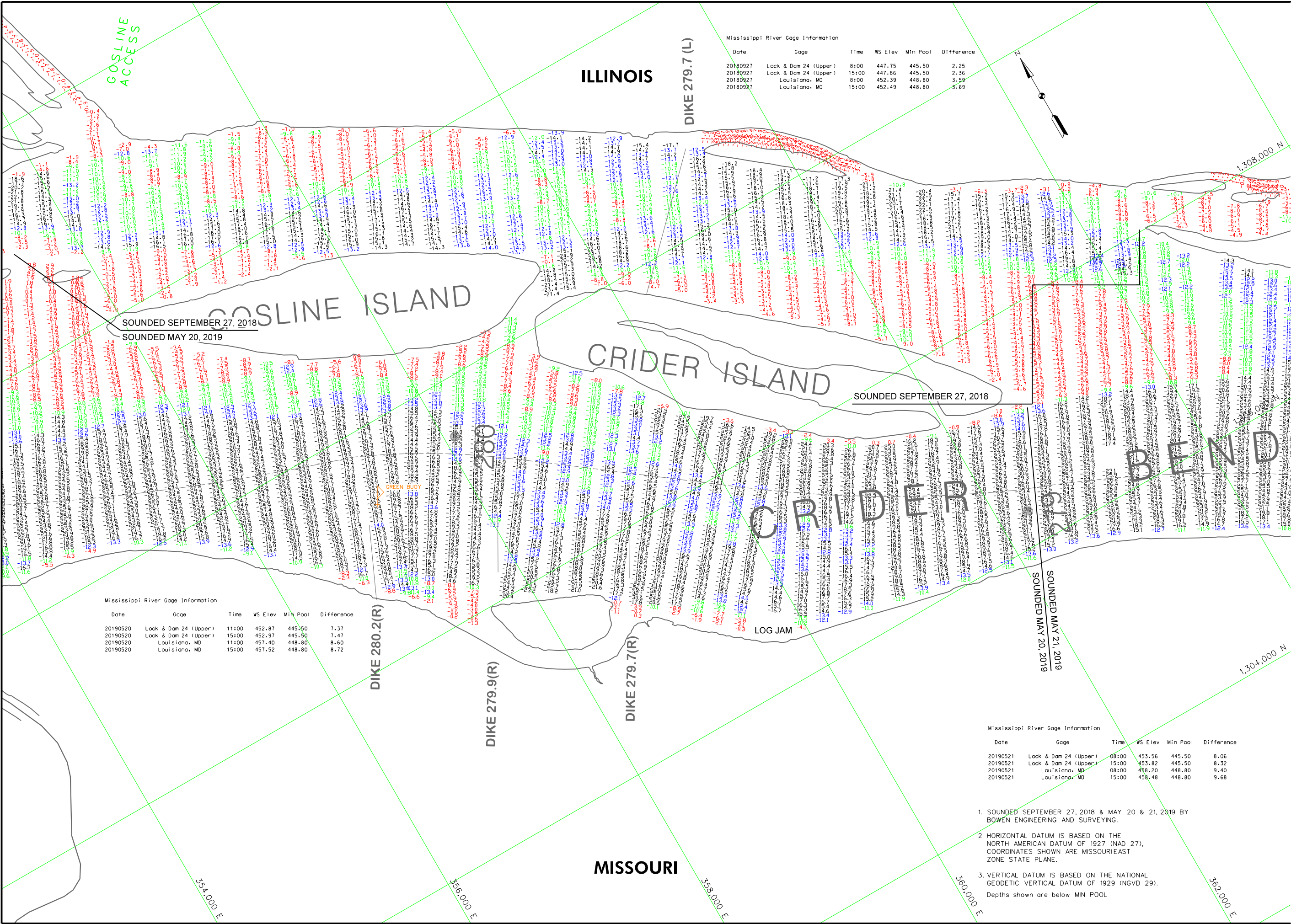
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by: BOWEN ENGINEERING	Survey Date: SEP-27-2018 - MAY 20-2019
UPPER MISSISSIPPI RIVER BASIN	Reviewed by: A	Ctd by: A
	Submitted: X	Approved: X
MISSISSIPPI DIVISION	File name:	Plot date: APPROXIMATE (if needed)

[illegible]

PLATE
NUMBER

10





Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190520	Lock & Dam 24 (Upper)	11:00	452.87	445.50	7.37
20190520	Lock & Dam 24 (Upper)	15:00	452.97	445.50	7.47
20190520	Louisiana, MO	11:00	457.40	448.80	8.60
20190520	Louisiana, MO	15:00	457.52	448.80	8.72

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180927	Lock & Dam 24 (Upper)	8:00	447.75	445.50	2.25
20180927	Lock & Dam 24 (Upper)	15:00	447.86	445.50	2.36
20180927	Louisiana, MO	8:00	452.39	448.80	3.59
20180927	Louisiana, MO	15:00	452.49	448.80	3.69

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190521	Lock & Dam 24 (Upper)	08:00	453.56	445.50	8.06
20190521	Lock & Dam 24 (Upper)	15:00	453.82	445.50	8.32
20190521	Louisiana, MO	08:00	458.20	448.80	9.40
20190521	Louisiana, MO	15:00	458.48	448.80	9.68

1. SOUNDED SEPTEMBER 27, 2018 & MAY 20 & 21, 2019 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). Depths shown are below MIN POOL



GAGE RECORD

L & D	22 (LOWER)	23 (MID)	24 (UPPER)
LOUISIANA, MO	441.85	437.33	431.81
MIN. POOL	301.7	293.0	273.5
27 SEP 2018	449.1	444.0	445.5
20 MAY 2019	X	X	X
21 MAY 2019	X	X	X

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

Survey Date: SEP 27, 2018 - MAY 21, 2019

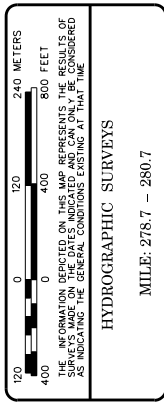
Drawn by: X

Reviewed by: X

Submitted: X

Approved: X

Plot Date: 8/8/2019



Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180927	Lock & Dam 24 (Upper)	8:00	447.75	445.50	2.25
20180927	Lock & Dam 24 (Upper)	15:00	447.86	445.50	2.36
20180927	Louisiana, MO	8:00	452.39	448.80	3.59
20180927	Louisiana, MO	15:00	452.49	448.80	3.69

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190521	Lock & Dam 24 (Upper)	08:00	453.56	445.50	8.06
20190521	Lock & Dam 24 (Upper)	15:00	453.82	445.50	8.32
20190521	Louisiana, MO	08:00	458.20	448.80	9.40
20190521	Louisiana, MO	15:00	458.48	448.80	9.68

1. SOUNDED SEP. 27, 2018 & MAY 21, 2019 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).

Depths shown are below MIN POOL

ILLINOIS

MISSOURI



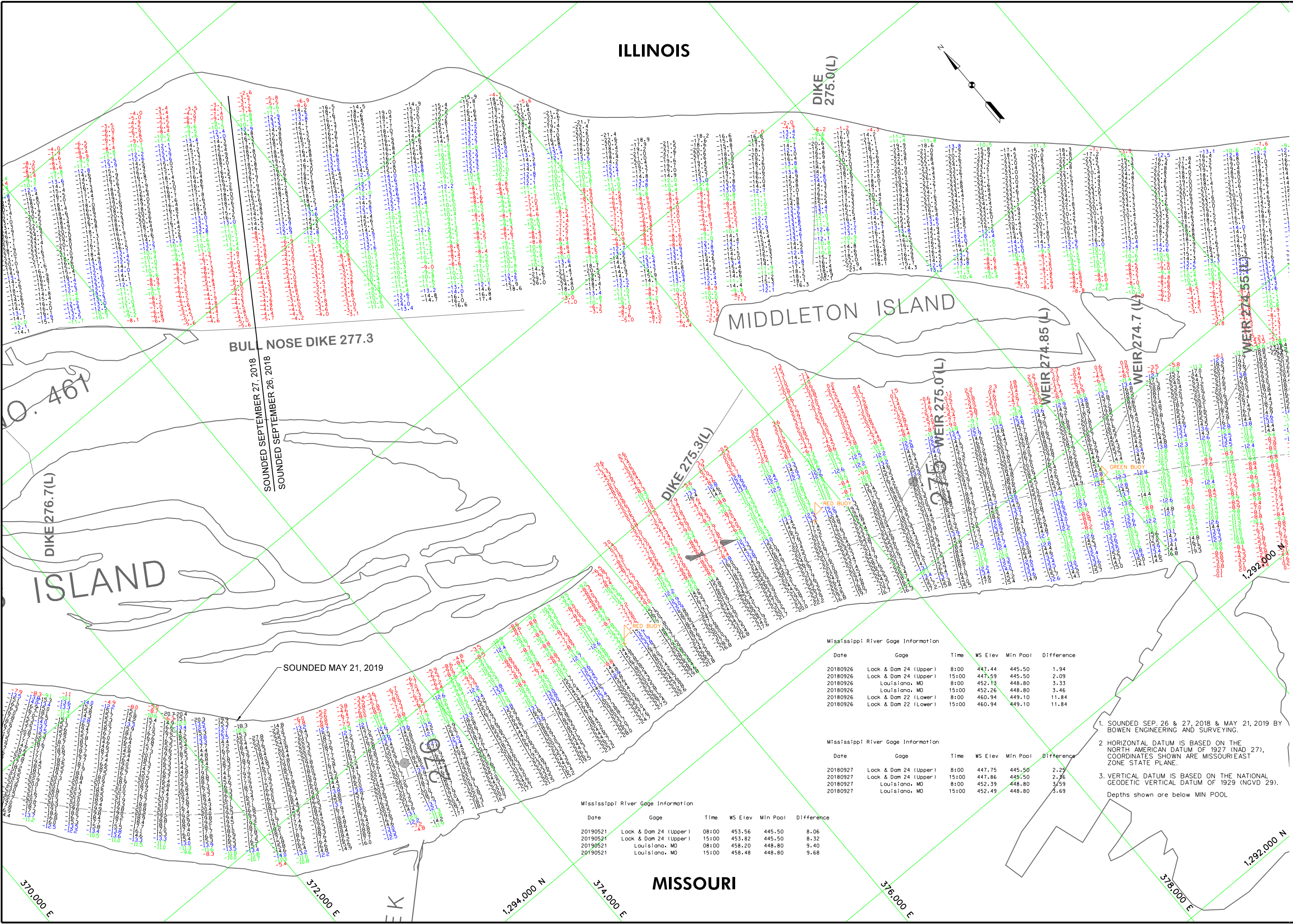
US Army Corps
of Engineers
St. Louis District

GAGE RECORD		L & D 22 (LOWER)	MANDY'S LANDING	L & D 24 (UPPER)
ZERO NGVD		446.70	441.85	431.81
MILE		301.7	283.0	273.5
MIN POOL		449.1	449.0	445.5
27 SEP 2018		X	X	X
21 MAY 2019		X	X	X

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		Survey Date: SEP. 27, 2018 & MAY 21, 2019
UPPER MISSISSIPPI RIVER BASIN	Drawn by:	Reviewed by:
	X	X
	Submitted:	Approved:
X		X
File Name:		Plot Date:
PROJECT/COMP/DATE/TITLE		DATE/TITLE/NUMBER

HYDROGRAPHIC SURVEYS	
MILE: 276.8 - 278.7	

PLATE NUMBER
12



Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20190521	Lock & Dam 24 (Upper)	08:00	453.56	445.50	8.06
20190521	Lock & Dam 24 (Upper)	15:00	453.82	445.50	8.32
20190521	Louisiana, MO	08:00	458.20	448.80	9.40
20190521	Louisiana, MO	15:00	458.48	448.80	9.68

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180926	Lock & Dam 24 (Upper)	8:00	447.44	445.50	1.94
20180926	Lock & Dam 24 (Upper)	15:00	447.59	445.50	2.09
20180926	Louisiana, MO	8:00	452.13	448.80	3.33
20180926	Louisiana, MO	15:00	452.26	448.80	3.46
20180926	Lock & Dam 22 (Lower)	8:00	460.94	449.10	11.84
20180926	Lock & Dam 22 (Lower)	15:00	460.94	449.10	11.84

Mississippi River Gage Information

Date	Gage	Time	WS Elev	Min Pool	Difference
20180927	Lock & Dam 24 (Upper)	8:00	447.75	445.50	2.25
20180927	Lock & Dam 24 (Upper)	15:00	447.86	445.50	2.36
20180927	Louisiana, MO	8:00	452.39	448.80	3.59
20180927	Louisiana, MO	15:00	452.49	448.80	3.69

1. SOUNDED SEP. 26 & 27, 2018 & MAY 21, 2019 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURIEAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).
Depths shown are below MIN POOL

US Army Corps of Engineers
St. Louis District

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

Scale: 1" = 240 METERS
0 120 240 METERS
0 400 800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE IN THE DATES INDICATED AND CAN BE CONSIDERED ACCURATE FOR THE GENERAL PURPOSES OF NAVIGATION.

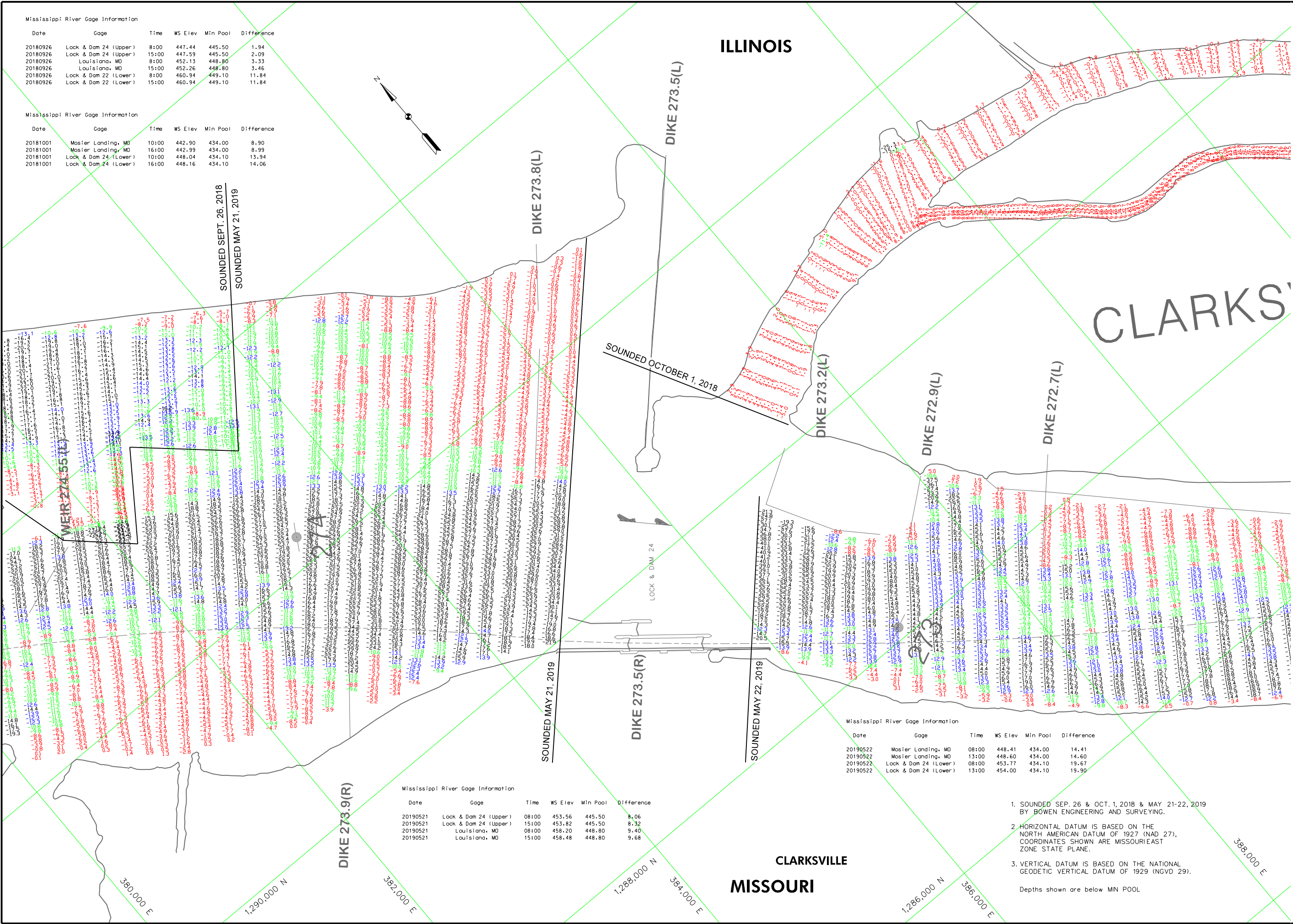
HYDROGRAPHIC SURVEYS

PLATE NUMBER

Surveyed by: BOWEN ENGINEERING
Drawn by: X
SUBMITTED: X
File Name: BOWEN-ENGINEERING-ATMERS

Survey Date: SEP. 26, 2018 - MAY 21, 2019
Reviewed by: X
Ctd by: X
APPROVED: X
Plot Date: BOWEN-ENGINEERING

L & D	22 (LOWER)	MIDWAY'S LANDING	L & D	24 UPPER
ZERO NGVD	446.10	441.85	437.33	431.81
MIN POOL	301.1	293.0	282.0	273.5
26 SEP 2018	449.1	449.0	448.8	445.5
27 SEP 2018	449.0	449.0	448.8	445.5
21 MAY 2019	X	X	X	X



Mississippi River Gage Information					
Date	Gage	Time	WS Elev	Min Pool	Difference
20180926	Lock & Dam 24 (Upper)	8:00	447.44	445.50	1.94
20180926	Lock & Dam 24 (Upper)	15:00	447.59	445.50	2.09
20180926	Louisiana, MO	8:00	452.13	448.80	3.33
20180926	Louisiana, MO	15:00	452.26	448.80	3.46
20180926	Lock & Dam 22 (Lower)	8:00	460.94	449.10	11.84
20180926	Lock & Dam 22 (Lower)	15:00	460.94	449.10	11.84

Mississippi River Gage Information					
Date	Gage	Time	WS Elev	Min Pool	Difference
20181001	Mosier Landing, MO	10:00	442.90	434.00	8.90
20181001	Mosier Landing, MO	16:00	442.99	434.00	8.99
20181001	Lock & Dam 24 (Lower)	10:00	448.04	434.10	13.94
20181001	Lock & Dam 24 (Lower)	16:00	448.16	434.10	14.06

Mississippi River Gage Information					
Date	Gage	Time	WS Elev	Min Pool	Difference
20190521	Lock & Dam 24 (Upper)	08:00	453.56	445.50	8.06
20190521	Lock & Dam 24 (Upper)	15:00	453.62	445.50	8.12
20190521	Louisiana, MO	08:00	458.20	448.80	9.40
20190521	Louisiana, MO	15:00	458.48	448.80	9.68

Mississippi River Gage Information					
Date	Gage	Time	WS Elev	Min Pool	Difference
20190522	Mosier Landing, MO	08:00	448.41	434.00	14.41
20190522	Mosier Landing, MO	13:00	448.60	434.00	14.60
20190522	Lock & Dam 24 (Lower)	08:00	453.77	434.10	19.67
20190522	Lock & Dam 24 (Lower)	13:00	454.00	434.10	19.90

1. SOUNDED SEP. 26 & OCT. 1, 2018 & MAY 21-22, 2019 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).

Depths shown are below MIN POOL



GAGE RECORD					
LOUISIANA, MO	L & D 24, UPPER	L & D 24, LOWER	MOSIER		
ZERO NGVD	437.33	431.81	400.0		
MILE	282.9	273.5	260.3		
MIN POOL	448.8	443.5	434.0		
26 SEP 2018	448.000 14.30(15.00)	25.63(8.00) 22.60(15.00)	26.23(8.00) 26.35(16.00)	42.90(8.00) 42.99(8.00)	
01 OCT 2018					
21 MAY 2019	28.87(8.00) 27.15(15.00)	31.75(8.00) 32.01(15.00)			
22 MAY 2019					

Surveyed by		Survey Date		Plot Date	
BOWEN ENGINEERING		SEP. 26, 2018 - MAY 22, 2019			
Drawn by	X	Reviewed by	X	Checked by	
SUBMITTED	X	APPROVED	X		
File Name:		PROJECT/DATE/STATION/NAME		Plot Date:	

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER
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120 400 800 1200 240 METERS	0 400 800 1200 240 METERS
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE BY THE U.S. ARMY ENGINEER DIVISION AND IS NOT TO BE CONSIDERED A GUARANTEE OF THE DATA. COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.	
HYDROGRAPHIC SURVEYS	
MILE: 272.6 - 274.5	

PLATE NUMBER
14