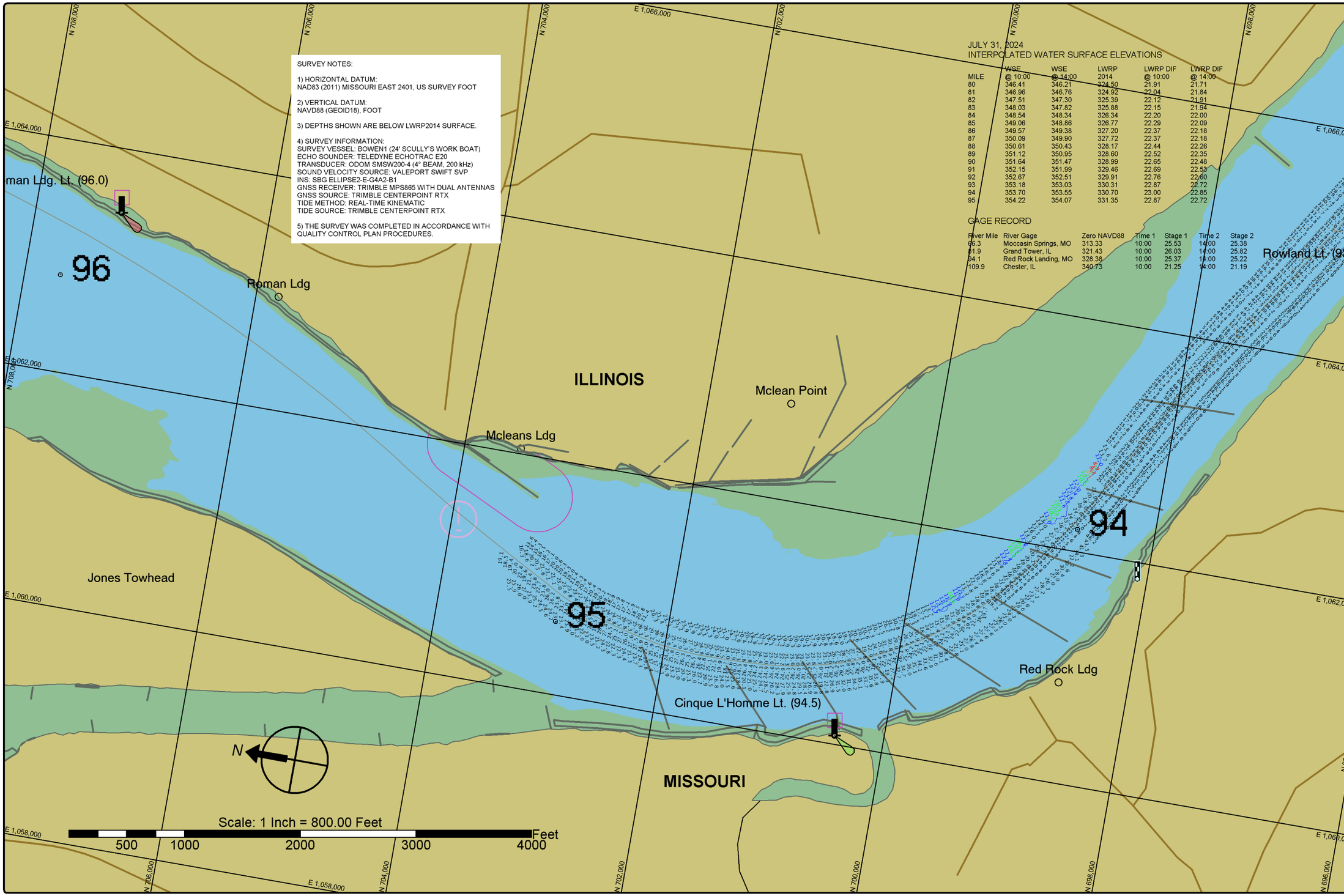


SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
80	346.41	346.21	324.50	21.91	21.71
81	346.96	346.76	324.92	22.04	21.84
82	347.51	347.30	325.39	22.12	21.91
83	348.03	347.82	325.88	22.15	21.94
84	348.54	348.34	326.34	22.20	22.00
85	349.06	348.86	326.77	22.29	22.09
86	349.57	349.38	327.20	22.37	22.18
87	350.09	349.90	327.72	22.37	22.18
88	350.61	350.43	328.17	22.44	22.26
89	351.12	350.95	328.60	22.52	22.35
90	351.64	351.47	328.99	22.65	22.48
91	352.15	351.99	329.46	22.69	22.53
92	352.67	352.51	329.91	22.76	22.60
93	353.18	353.03	330.31	22.87	22.72
94	353.70	353.55	330.70	23.00	22.85
95	354.22	354.07	331.35	22.87	22.72

GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
66.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
81.9	Grand Tower, IL	321.43	10:00	26.03	14:00	25.82
94.1	Red Rock Landing, MO	328.38	10:00	25.37	14:00	25.22
109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

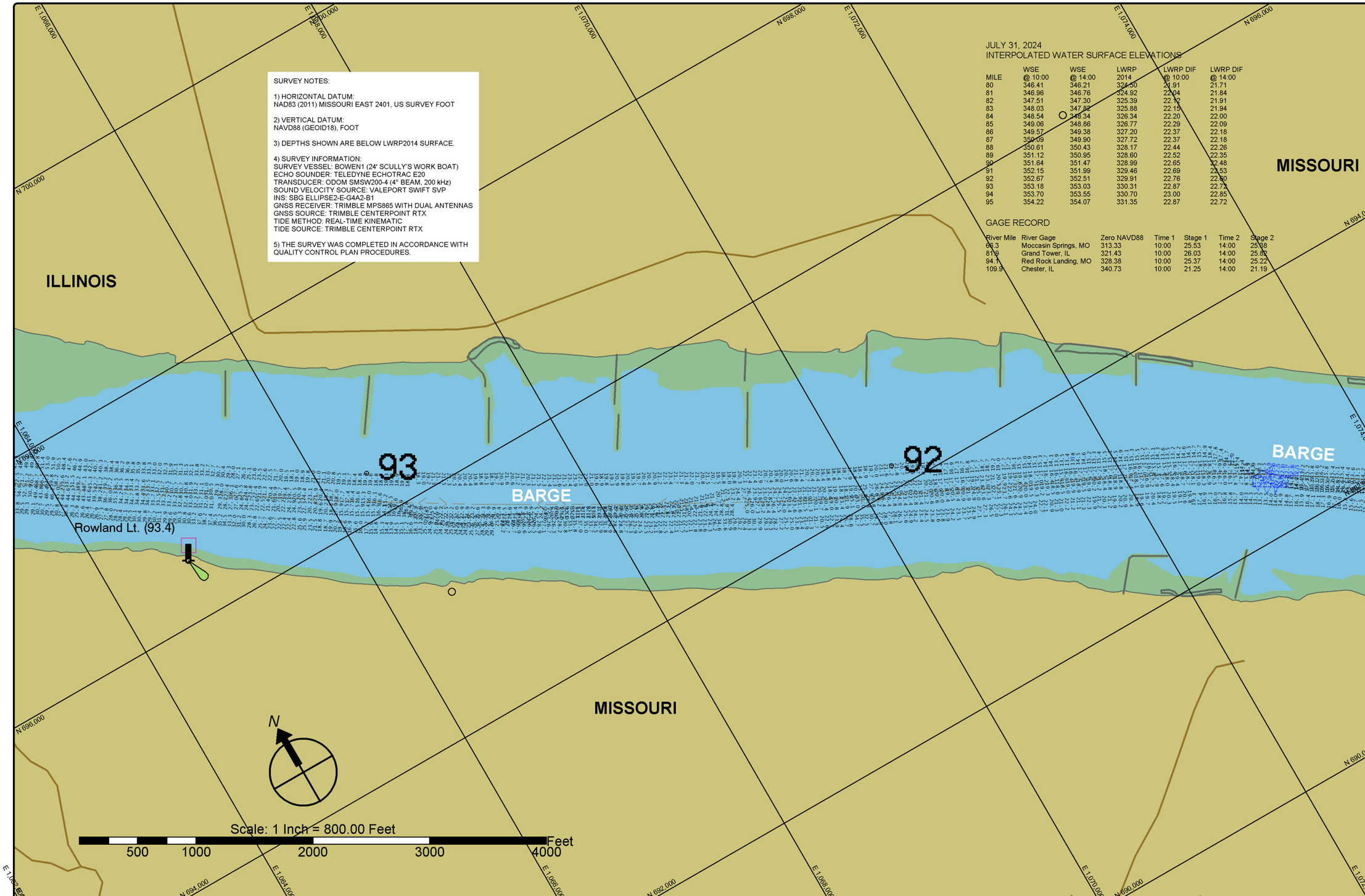
Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 93.5 - 95.8

SHEET NO.
1 OF 1



SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
80	346.41	346.21	324.50	21.91	21.71
81	346.96	346.76	324.92	22.04	21.84
82	347.51	347.30	325.39	22.12	21.91
83	348.03	347.82	325.88	22.15	21.94
84	348.54	348.34	326.34	22.20	22.00
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86	349.57	349.38	327.20	22.37	22.18
87	350.09	349.90	327.72	22.37	22.18
88	350.61	350.43	328.17	22.44	22.26
89	351.12	350.95	328.60	22.52	22.35
90	351.64	351.47	328.99	22.65	22.48
91	352.15	351.99	329.46	22.69	22.53
92	352.67	352.51	329.91	22.76	22.60
93	353.18	353.03	330.31	22.87	22.72
94	353.70	353.55	330.70	23.00	22.85
95	354.22	354.07	331.35	22.87	22.72

GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
68.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
81.9	Grand Tower, IL	321.43	10:00	26.03	14:00	25.82
94.1	Red Rock Landing, MO	328.38	10:00	25.37	14:00	25.22
109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 91.2 - 93.5

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
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85	349.06	348.86	326.77	22.29	22.09
86	349.57	349.38	327.20	22.37	22.18
87	350.09	349.90	327.72	22.37	22.18
88	350.61	350.43	328.17	22.44	22.26
89	351.12	350.95	328.60	22.52	22.35
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GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
66.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
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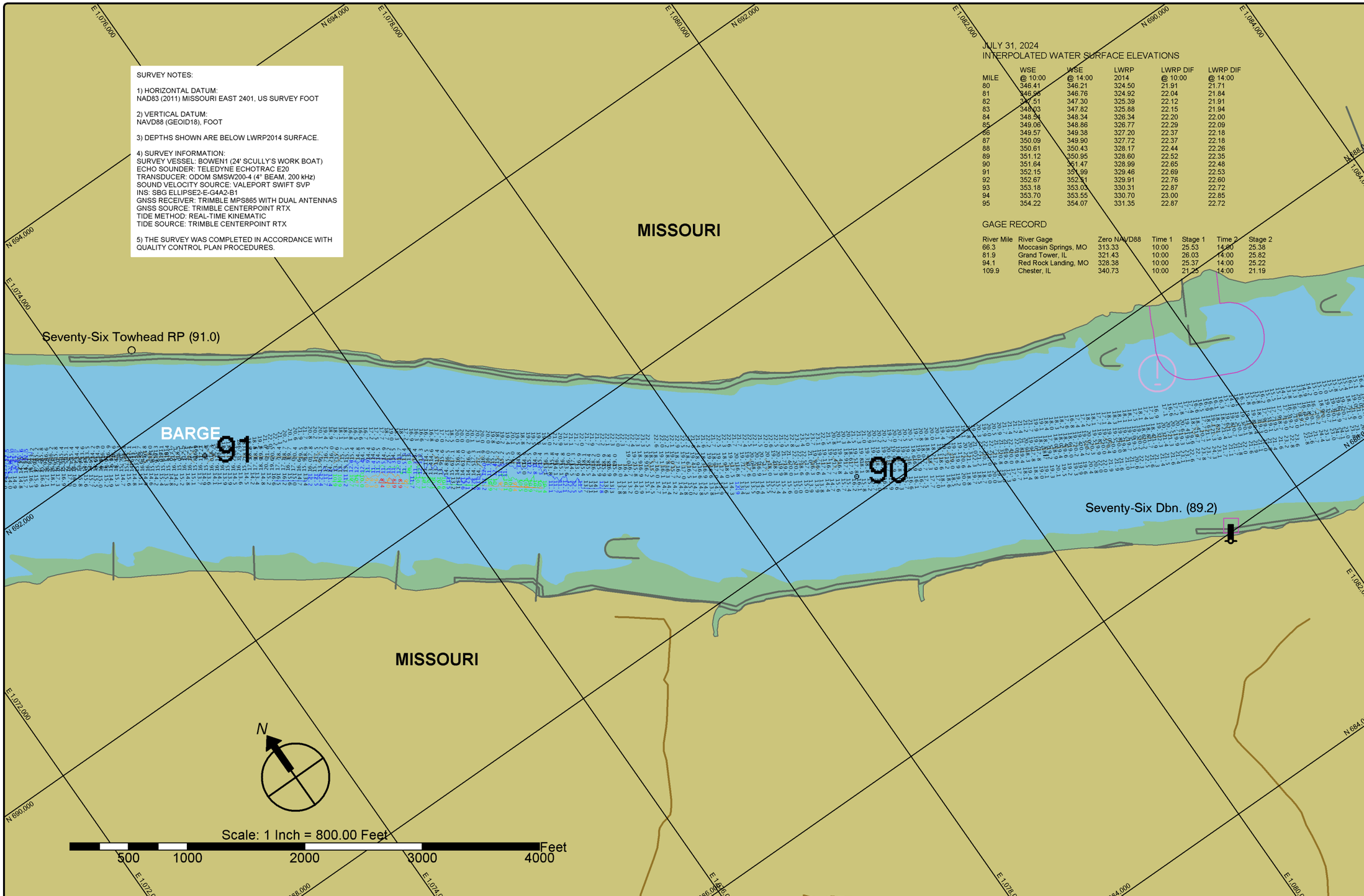
109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19



St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

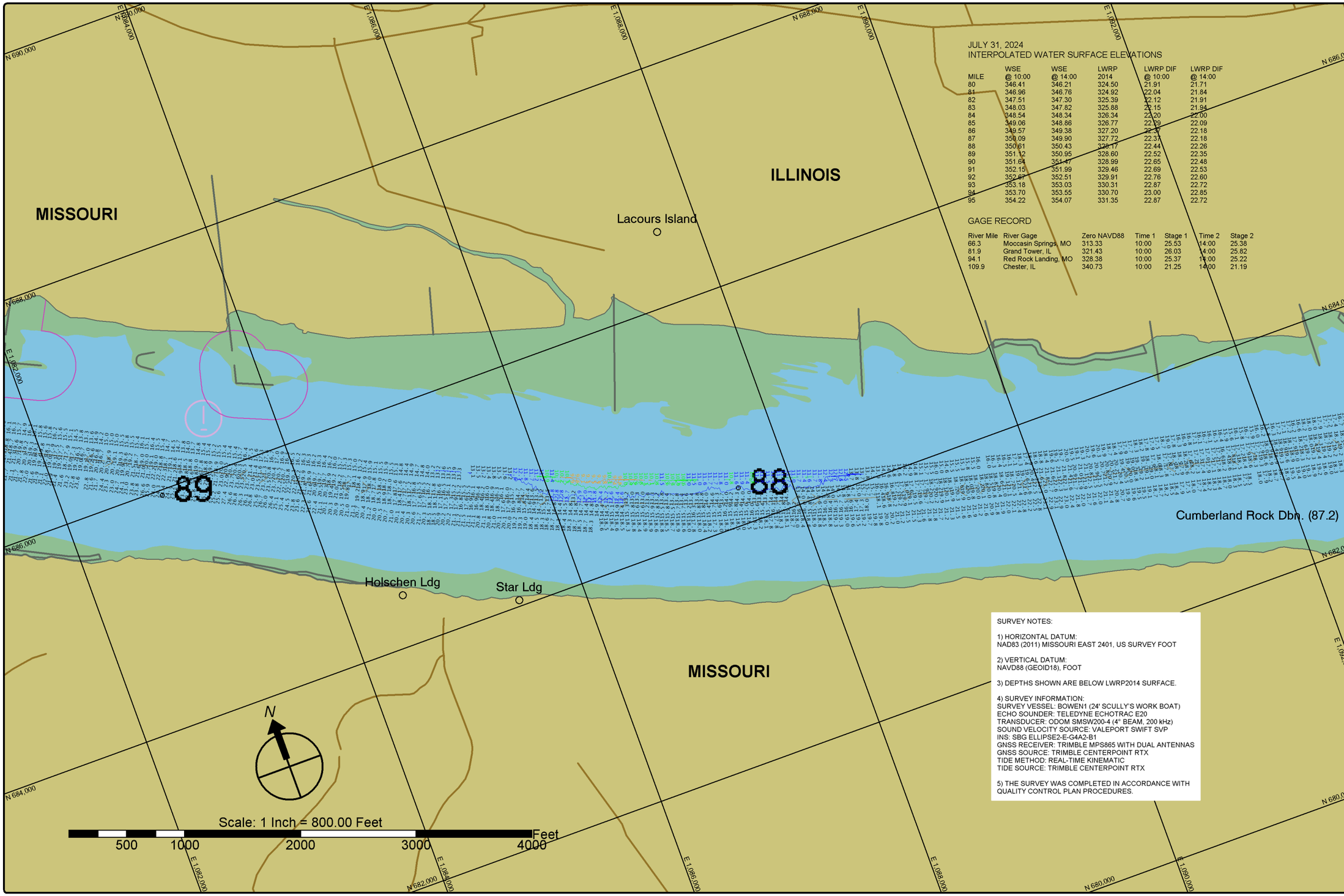
U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

CHANNEL PATROL
RIVER MILES 89.1 - 91.1

SHEET NO.
1 OF 1



JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
80	346.41	346.21	324.50	21.91	21.71
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89	351.12	350.95	328.60	22.52	22.35
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GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
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SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 87.1 - 89.1

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
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INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
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82	347.51	347.30	325.39	22.12	21.91
83	348.03	347.82	325.88	22.15	21.94
84	348.54	348.34	326.34	22.20	22.00
85	349.06	348.86	326.77	22.29	22.09
86	349.57	349.38	327.20	22.37	22.18
87	350.09	349.90	327.72	22.37	22.18
88	350.61	350.43	328.17	22.44	22.26
89	351.12	350.95	328.60	22.52	22.35
90	351.64	351.47	328.99	22.65	22.48
91	352.15	351.99	329.46	22.69	22.53
92	352.67	352.51	329.91	22.76	22.60
93	353.18	353.03	330.31	22.87	22.72
94	353.70	353.55	330.70	23.00	22.85
95	354.22	354.07	331.35	22.87	22.72

GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
66.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
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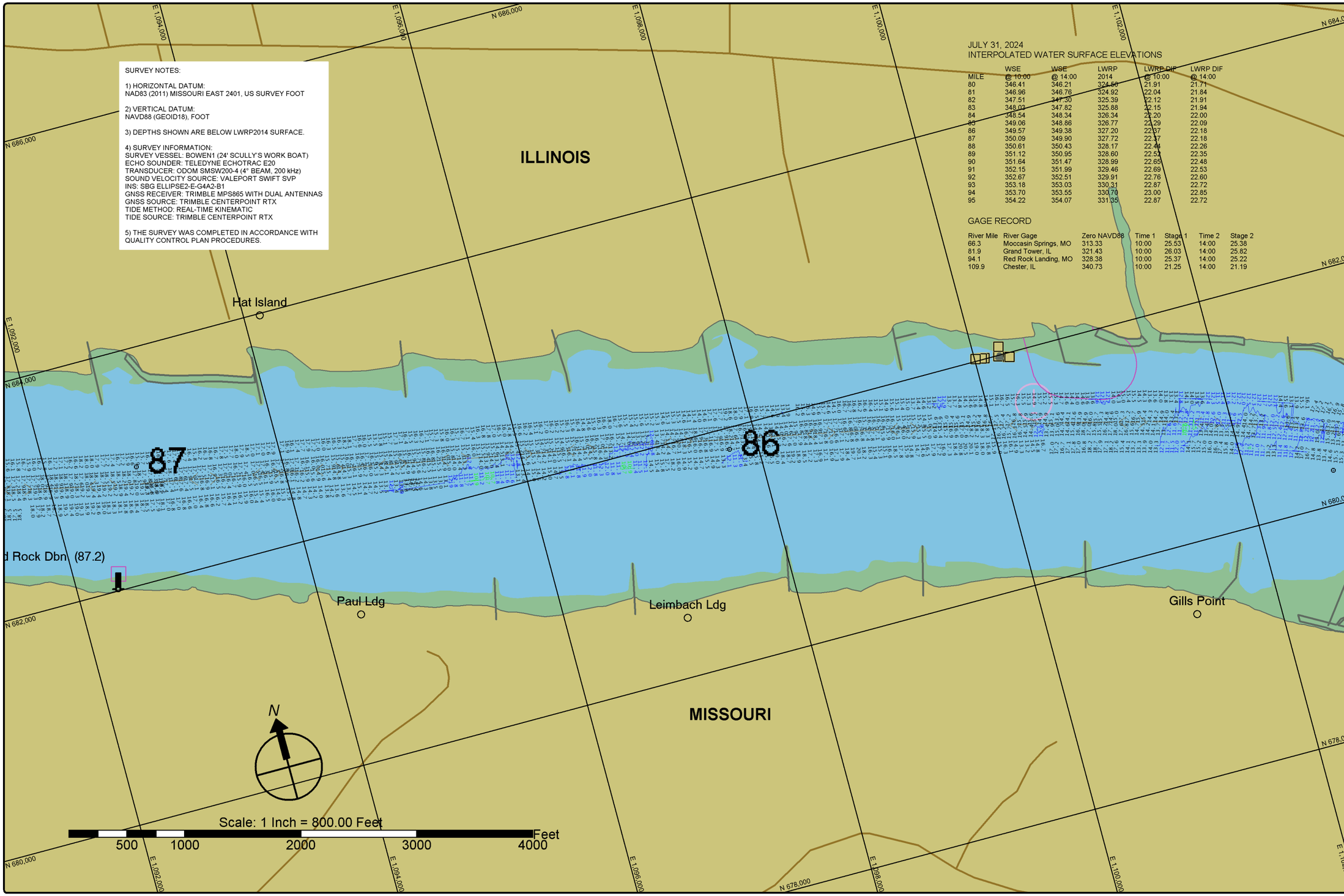

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER
BASIN
MISSISSIPPI RIVER

CHANNEL PATROL
RIVER MILES 85.0 - 87.1

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
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87	350.09	349.90	327.72	22.37	22.18
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89	351.12	350.95	328.60	22.52	22.35
90	351.64	351.47	328.99	22.65	22.48
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93	353.18	353.03	330.31	22.87	22.72
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GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
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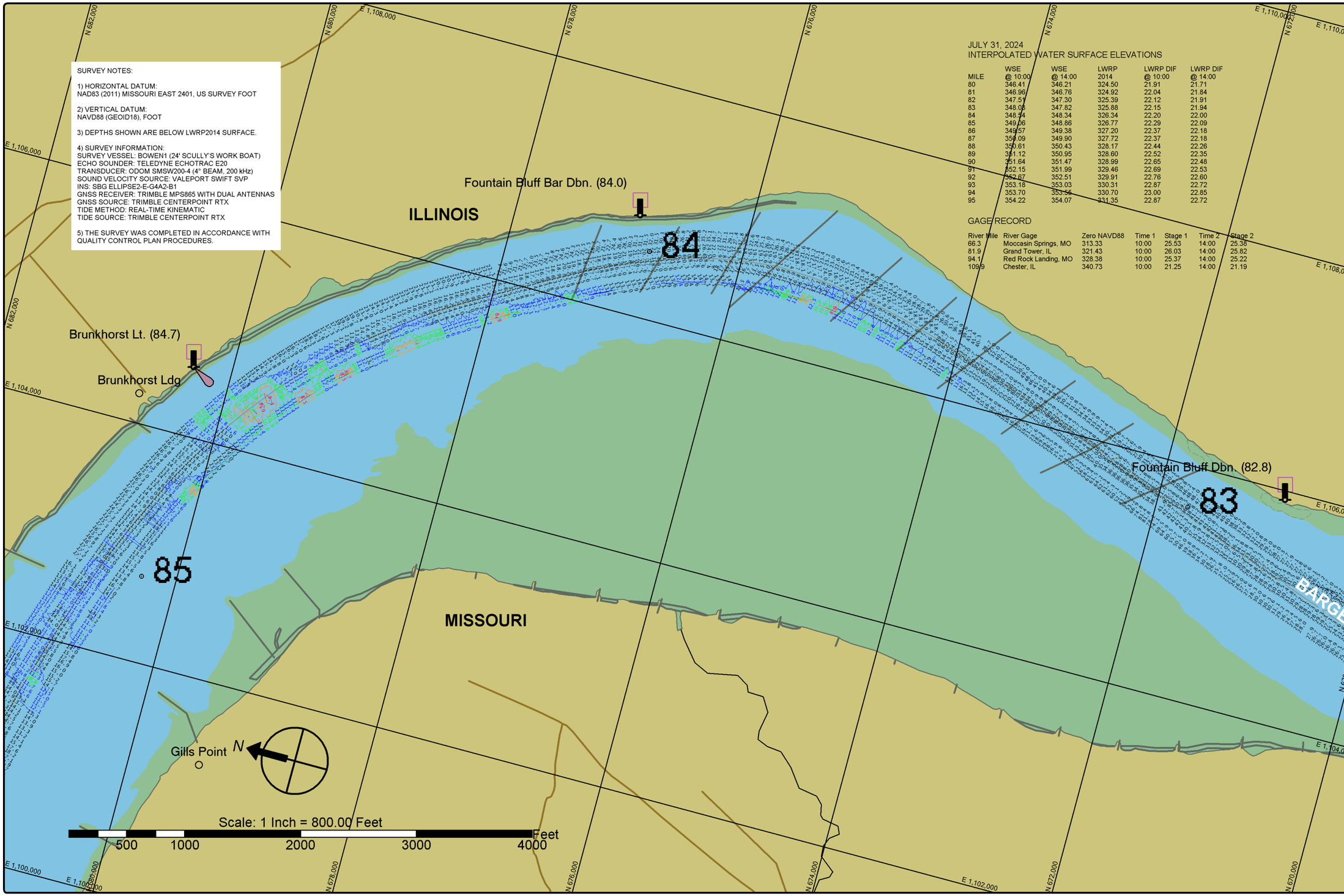

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEDIAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 82.7 - 85.0

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
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INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

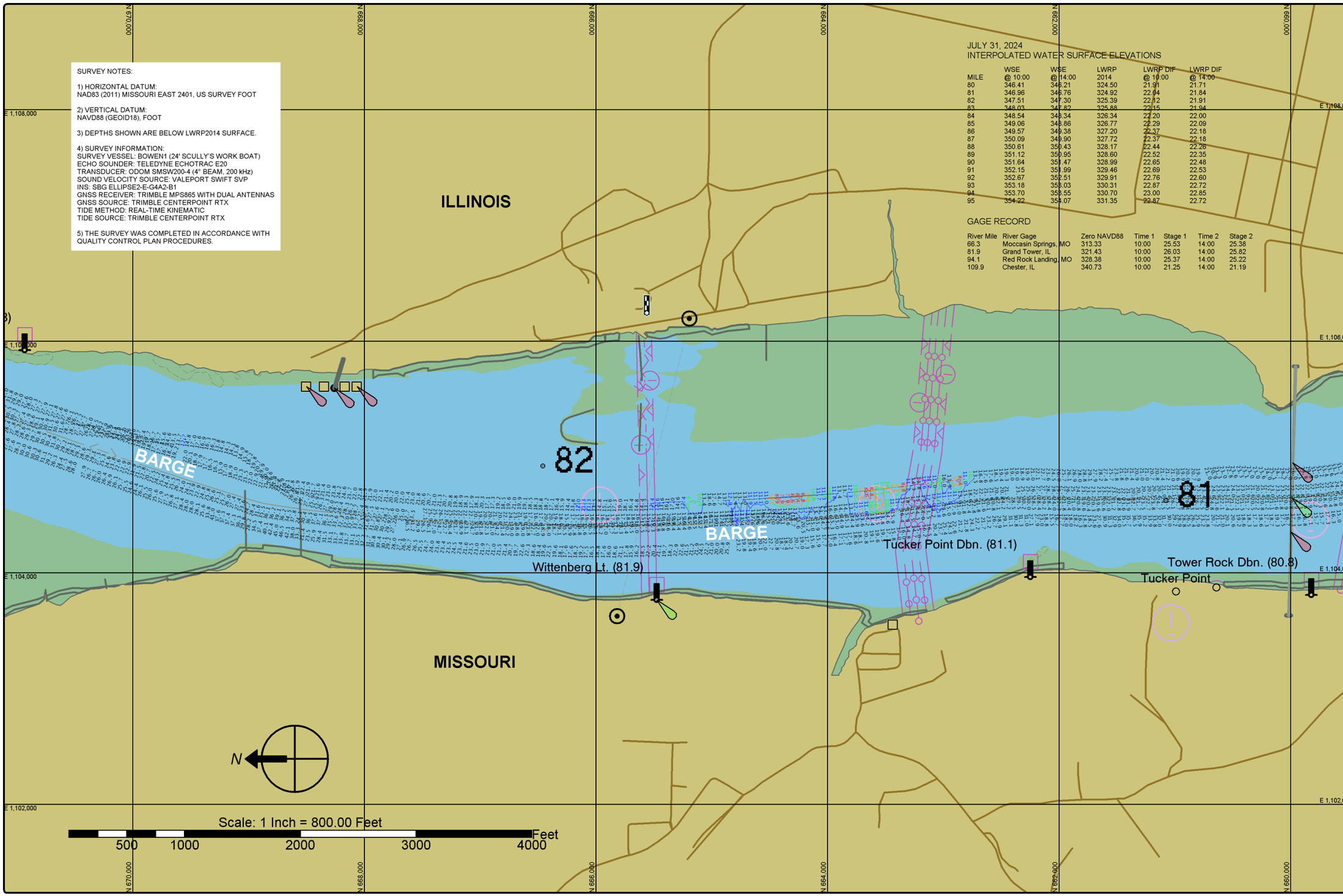
5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
80	346.41	346.21	324.50	21.91	21.71
81	346.96	346.76	324.92	22.04	21.84
82	347.51	347.30	325.39	22.12	21.91
83	348.03	347.82	325.88	22.15	21.94
84	348.54	348.34	326.34	22.20	22.00
85	349.06	348.86	326.77	22.29	22.09
86	349.57	349.38	327.20	22.37	22.18
87	350.09	349.90	327.72	22.37	22.18
88	350.61	350.43	328.17	22.44	22.26
89	351.12	350.95	328.60	22.52	22.35
90	351.64	351.47	328.99	22.65	22.48
91	352.15	351.99	329.46	22.69	22.53
92	352.67	352.51	329.91	22.76	22.60
93	353.18	353.03	330.31	22.87	22.72
94	353.70	353.55	330.70	23.00	22.85
95	354.22	354.07	331.35	22.87	22.72

GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
66.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
81.9	Grand Tower, IL	321.43	10:00	26.03	14:00	25.82
94.1	Red Rock Landing, MO	328.38	10:00	25.37	14:00	25.22
109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19



St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 80.7 - 82.7

SHEET NO.
1 OF 1

SURVEY NOTES:

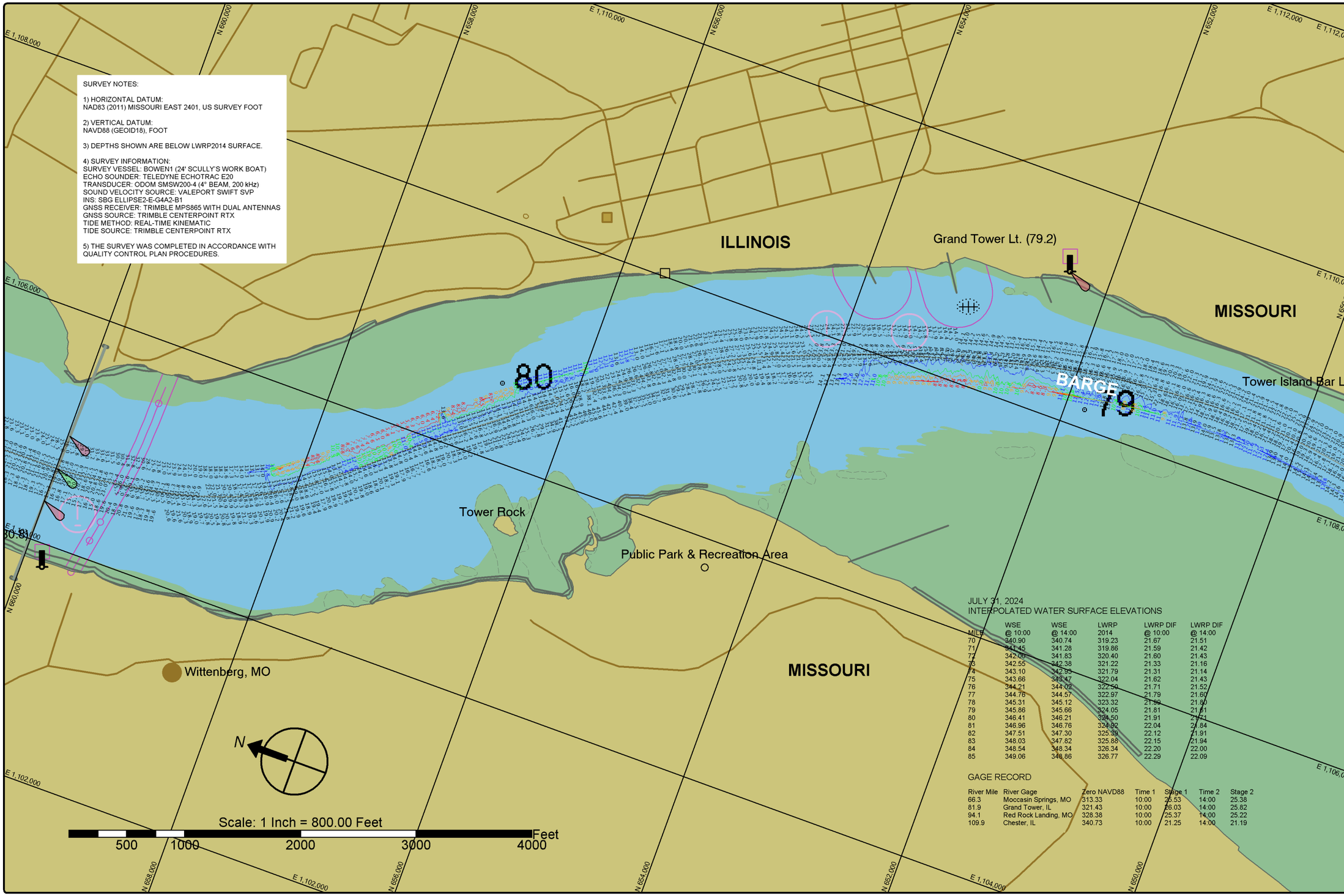
1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.



JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
70	340.90	340.74	319.23	21.67	21.51
71	341.45	341.28	319.86	21.59	21.42
72	342.00	341.83	320.40	21.60	21.43
73	342.55	342.38	321.22	21.33	21.16
74	343.10	342.93	321.79	21.31	21.14
75	343.66	343.47	322.04	21.62	21.43
76	344.21	344.02	322.50	21.71	21.52
77	344.76	344.57	322.97	21.79	21.60
78	345.31	345.12	323.32	21.99	21.80
79	345.86	345.66	324.05	21.81	21.61
80	346.41	346.21	324.50	21.91	21.71
81	346.96	346.76	324.92	22.04	21.84
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84	348.54	348.34	326.34	22.20	22.00
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GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
66.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
81.9	Grand Tower, IL	321.43	10:00	26.03	14:00	25.82
94.1	Red Rock Landing, MO	328.38	10:00	25.37	14:00	25.22
109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 76.8 - 80.7

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
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TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
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73	342.55	342.38	321.22	21.33	21.16
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76	344.21	344.02	322.50	21.71	21.52
77	344.76	344.57	322.97	21.79	21.60
78	345.31	345.12	323.32	21.99	21.80
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River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
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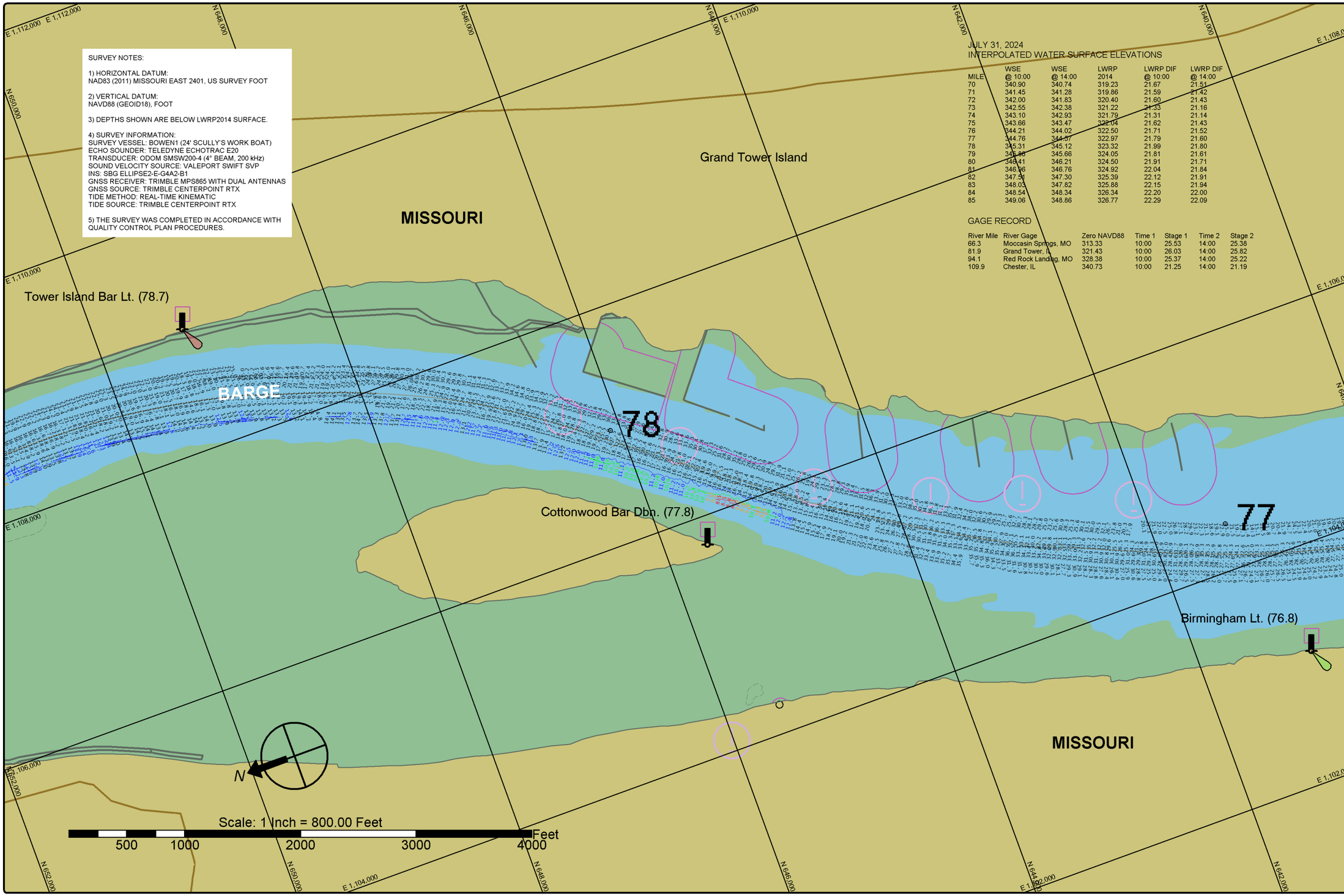

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 095_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEDIAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 76.8 - 78.6

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
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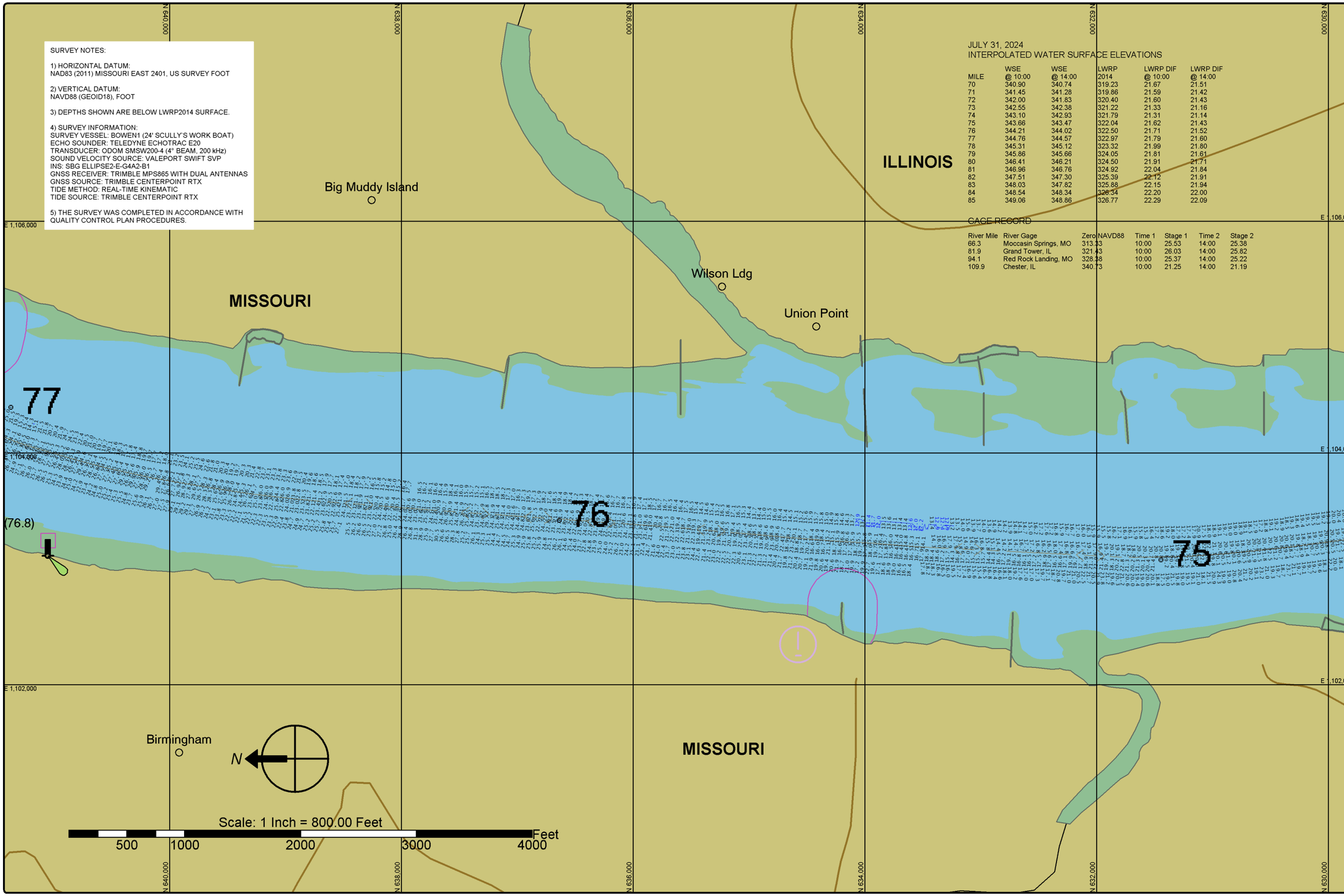
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.



JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
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71	341.45	341.28	319.86	21.59	21.42
72	342.00	341.83	320.40	21.60	21.43
73	342.55	342.38	321.22	21.33	21.16
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76	344.21	344.02	322.50	21.71	21.52
77	344.76	344.57	322.97	21.79	21.60
78	345.31	345.12	323.32	21.99	21.80
79	345.86	345.66	324.05	21.81	21.61
80	346.41	346.21	324.50	21.91	21.71
81	346.96	346.76	324.92	22.04	21.84
82	347.51	347.30	325.39	22.12	21.91
83	348.03	347.82	325.88	22.15	21.94
84	348.54	348.34	326.34	22.20	22.00
85	349.06	348.86	326.77	22.29	22.09

GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
66.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
81.9	Grand Tower, IL	321.43	10:00	26.03	14:00	25.82
94.1	Red Rock Landing, MO	328.38	10:00	25.37	14:00	25.22
109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 099_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

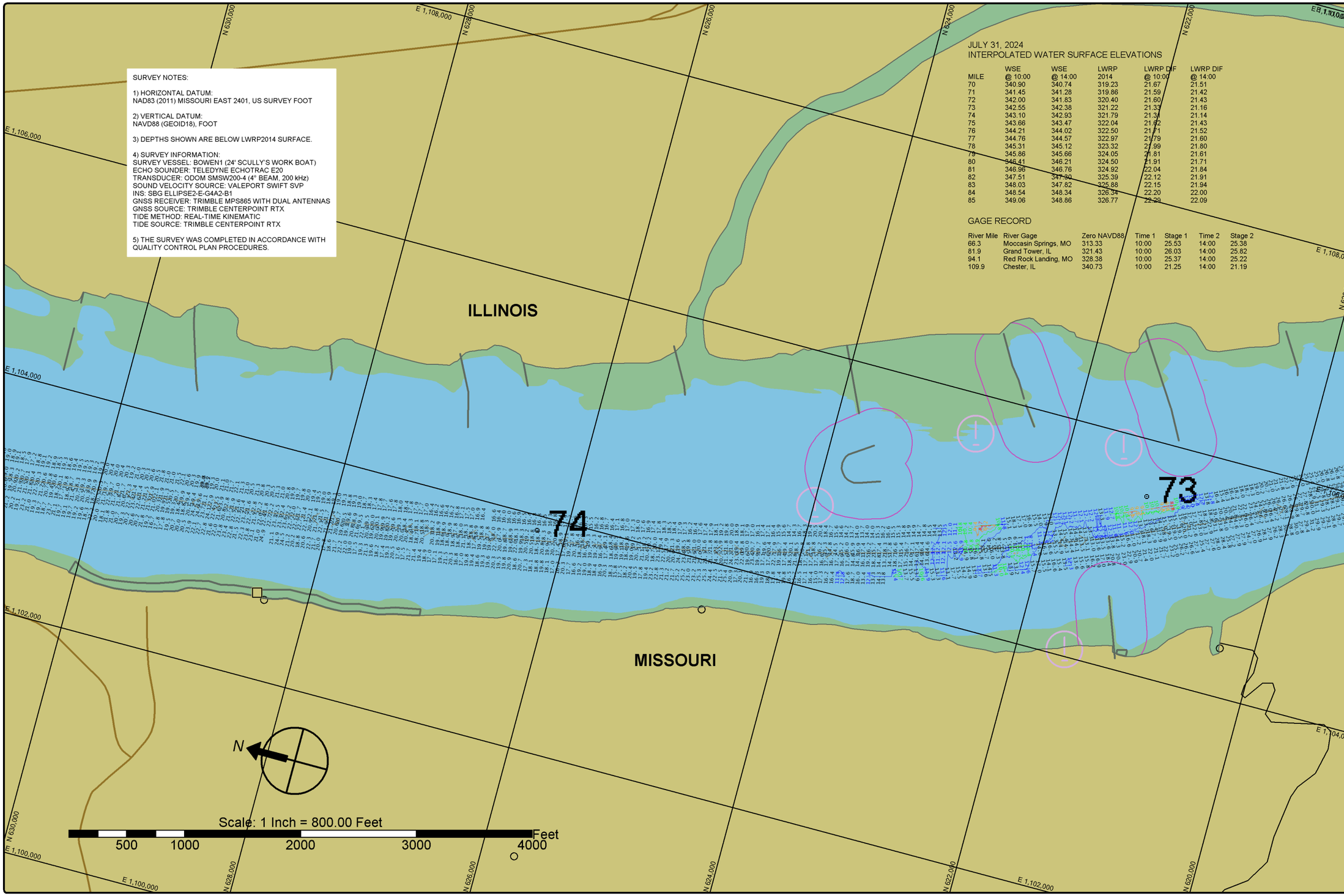
Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 74.7 - 76.8

SHEET NO.
1 OF 1



SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 14:00
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76	344.21	344.02	322.50	21.71	21.52
77	344.76	344.57	322.97	21.79	21.60
78	345.31	345.12	323.32	21.99	21.80
79	345.86	345.66	324.05	21.81	21.61
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109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 099_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

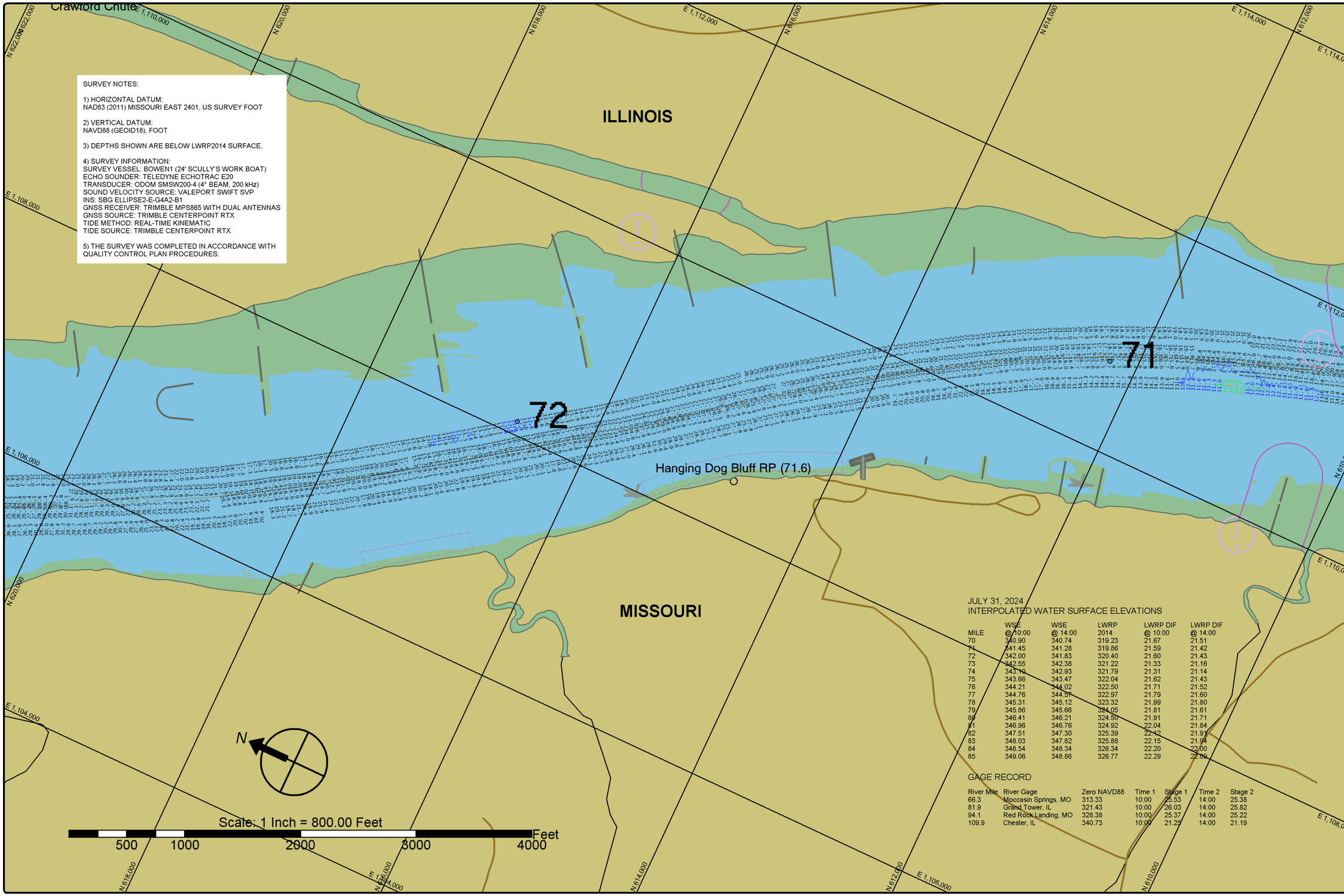
Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 72.7 - 74.7

SHEET NO.
1 OF 1



SURVEY NOTES:

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NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
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INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

JULY 31, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

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St. Louis District

DATES OF SURVEY:
JULY 31, 2024

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

FILE NO.: 099_070G3124
REQUEST NO.: W912P924F0029

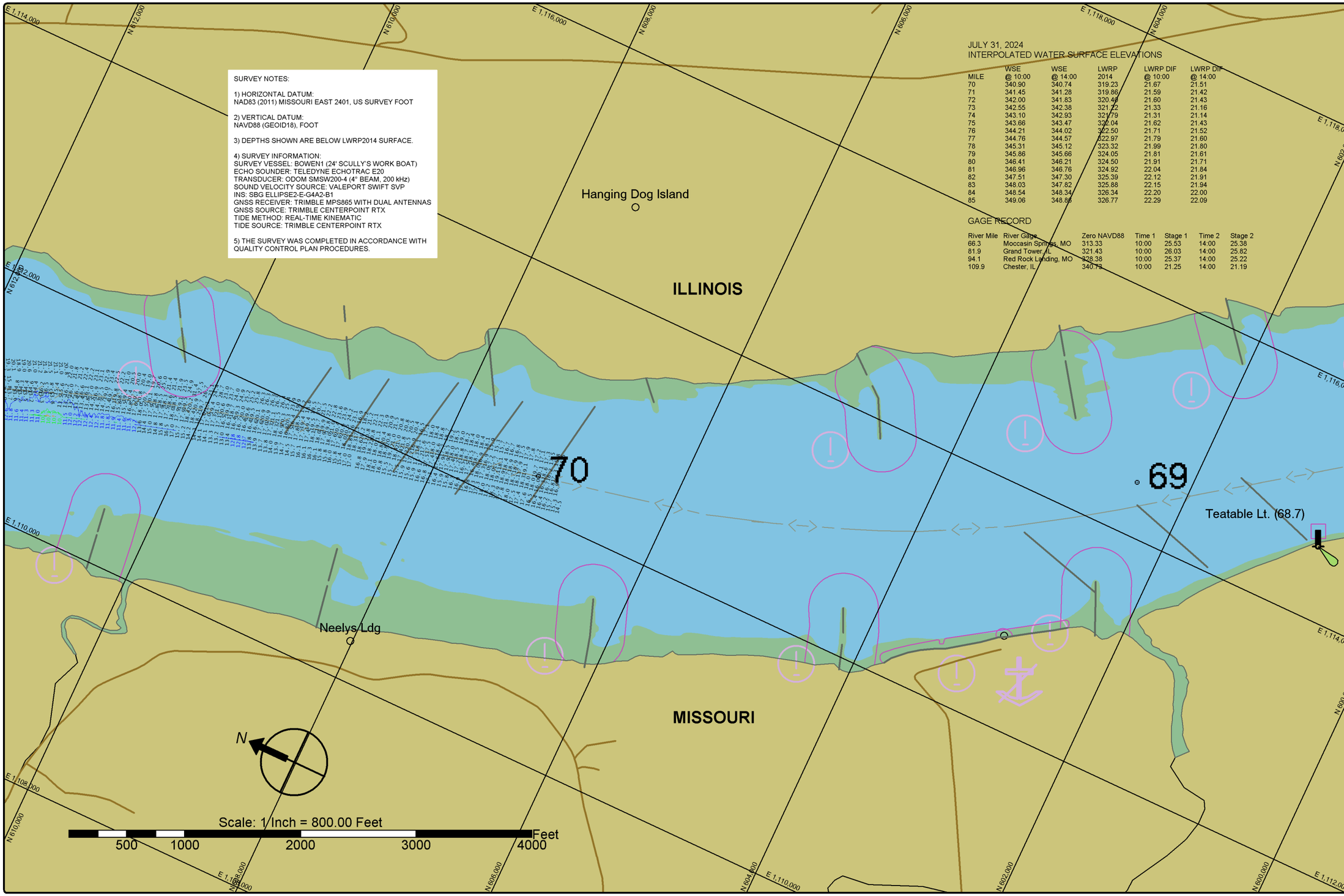
Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 70.7 - 72.7

SHEET NO.
1 OF 1



SURVEY NOTES:

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TIDE SOURCE: TRIMBLE CENTERPOINT RTX

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JULY 31, 2024
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76	344.21	344.02	322.50	21.71	21.52
77	344.76	344.57	322.97	21.79	21.60
78	345.31	345.12	323.32	21.99	21.80
79	345.86	345.66	324.05	21.81	21.61
80	346.41	346.21	324.50	21.91	21.71
81	346.96	346.76	324.92	22.04	21.84
82	347.51	347.30	325.39	22.12	21.91
83	348.03	347.82	325.88	22.15	21.94
84	348.54	348.34	326.34	22.20	22.00
85	349.06	348.88	326.77	22.29	22.09

GAGE RECORD

River Mile	River Gage	Zero NAVD88	Time 1	Stage 1	Time 2	Stage 2
66.3	Moccasin Springs, MO	313.33	10:00	25.53	14:00	25.38
81.9	Grand Tower, IL	321.43	10:00	26.03	14:00	25.82
94.1	Red Rock Landing, MO	328.38	10:00	25.37	14:00	25.22
109.9	Chester, IL	340.73	10:00	21.25	14:00	21.19

St. Louis District

DATES OF SURVEY:
JULY 31, 2024

FILE NO.: 099_070G3124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEDAR DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 68.7 - 70.7

SHEET NO.
1 OF 1